

9.1.8

34 BUSBY STREET PLANNING PROPOSAL

File No: 20.00373

RECOMMENDATION:

That Council:

- a) forward the Planning Proposal for 34 Busby Street, South Bathurst, inclusive of the amendments to the Planning Proposal as recommended in this report, to the NSW Department of Planning, Housing and Infrastructure requesting a Gateway Determination;
 - b) as part of the Gateway Determination request, seek the inclusion of conditions of the Gateway Determination as recommended in this report, including an independent peer review of the submitted Traffic Impact and Noise Impact Assessments prior to public exhibition of the Planning Proposal;
 - c) seek a further report on the matter where the Peer Reviews identify any adverse noise or traffic impacts that cannot be appropriately mitigated and either issue remain unresolved;
 - d) accept any delegations from the NSW Department of Planning, Housing and Infrastructure relating to this Planning Proposal; and
 - e) call a division.
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EXECUTIVE SUMMARY:

The purpose of this report is to provide Council's initial assessment of the Planning Proposal lodged in relation to 34 Busby St, South Bathurst to determine if Council supports progression of the Planning Proposal to the NSW Department of Planning, Housing and Infrastructure (DPHI) for a Gateway Determination to enable public exhibition of the planning proposal.

It is noted that a separate planning proposal has been submitted on the adjoining land at 50 Busby St which is the subject of a separate report to Council (see item 9.2.4).

Summary of the Planning Proposal assessment

A Planning Proposal has been submitted to Council which seeks to rezone land, increase the height of building limit, update minimum allotment provisions, and insert a site-specific additional local provision clause into the Bathurst Regional Local Environmental Plan 2014 (LEP).

The Planning Proposal relates to part of the property at 34 Busby Street, South Bathurst, part Lot 22 DP1033481 which currently contains local heritage item St Joseph's Mount (Logan Brae). The site has a current approval under Development Application (DA) 2020/50, granted on 3 June 2021, for a three-lot subdivision of the land. The three resultant lots would contain:

- 'Lot 223', being a 550m² lot containing the existing single-storey 'Gatekeeper's Cottage'
- 'Lot 225', being a 2.3ha lot containing the existing St Joseph's Mount (Logan Brae) and associated heritage curtilage and vegetation buffer
- 'Lot 226', a 2.28ha residual lot.

The LEP amendments that are sought in this Planning Proposal relate only to the land defined as 'Lot 226'. The subdivision has not yet been released at this time. Note that in some of the attached documentation the subject lots are identified by different lot numbers. For clarity figure 1 below shows the location of each lot the subject of the approved subdivision and will be so referenced throughout this report.

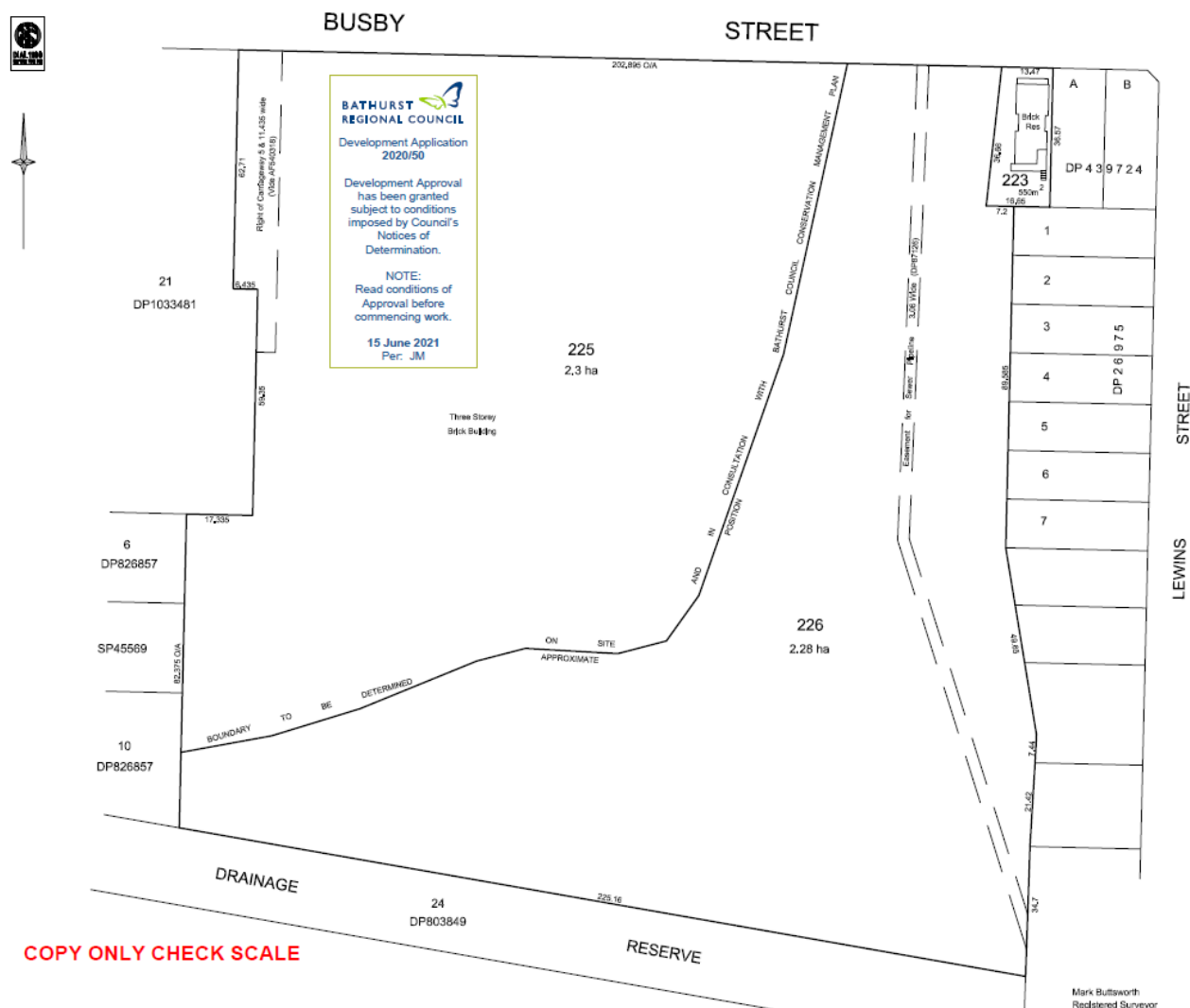


Figure 1 – Subdivision plan approved in DA 2020/50.

The LEP amendments seek to facilitate the development of proposed lot 226 (the residual lot) for residential flat building development on the site at a density and height greater than that permissible under Council's current planning provisions. The resulting development is expected to yield approximately 218 dwellings. An additional permitted use (APU) under schedule 1 of the LEP is also sought to support the inclusion of retail premises which would otherwise be prohibited in the proposed R3 Medium Density Residential zone.

The Planning Proposal will facilitate the delivery of an increased supply of rarer housing typologies into the Bathurst housing market, particularly 1- and 2-bedroom formats. The Planning Proposal will contribute significantly to housing diversity and choice in a location close to community and educational facilities and within reasonable proximity to the CBD. Whether the Planning Proposal is able to deliver affordable dwellings is a matter that is not easily determined given that the noise attenuation that may be required and other amenity and market factors may influence the price point above acceptable affordability levels. Nonetheless it will improve housing diversity and choice.

The Planning Proposal is supported by a Master Plan and a range of other technical documentation attached to this report.

The proposal is generally consistent with Council, State and Regional strategic plans and strategies.

Council's assessment of the Planning Proposal has, however, highlighted the need for Peer Reviews of the submitted Traffic and Noise Impact Assessments to ensure the Planning Proposal is consistent with the objectives of the Bathurst 2036 Housing Strategy and Vision Bathurst 2040 – the Bathurst Region Local Strategic Planning Statement (LSPS). The Peer Reviews are recommended to ensure Council fully understands:

- the potential impacts of noise from the Mount Panorama racing circuit on the proposed development; and
- the ability for the local road network to support traffic generation from the proposed development.

It is recommended that the submitted Noise Impact Assessment and the Traffic Impact Assessment are peer reviewed by an independent external consultant as a condition of DPHI's Gateway Determination, prior to public exhibition.

To ensure design excellence is achieved it is recommended that a new local provision be inserted in the LEP, as part of the Planning proposal, that requires a site-specific DCP to be in place before development consent can be granted. Council should not consider the concept master plan as the final design of the development as this is expected to change in response to design guidelines incorporated into the recommended site-specific DCP. **At this stage, Council is not endorsing the design or final arrangement of building envelopes of the development as presented in the Master Plan.**

Proposed Amendments to the LEP

The table below summarises the LEP amendments proposed for Lot 226 of the subdivision of Lot 22 DP1033481 by the applicant and those recommended to Council in this report as the finalised Planning Proposal.

Planning control	<i>Existing</i> development controls	<i>Proposed</i> development controls
Zoning	R1 General Residential	R3 Medium Density Residential
Minimum Subdivision Lot Size	550m ²	1300m ²

Minimum Subdivision Lot Size – Dual Occupancy, manor houses, multi dwelling housing and residential flat buildings	850m ²	Remove site from dual occupancy map (because dual occupancies are prohibited in the R3 zone)
Height of Buildings (HOB)	9m	18m
Additional Permitted Use – Schedule 1	N/A	Food and Drink Premises restricted to a floor area of 150m ² for each individual tenancy on the site and to a total maximum floor area of 300m ² .
Additional Local Clause – ensure that development on land occurs in accordance with a site-specific development control plan	N/A	Development consent must not be granted for development on land to which this clause applies unless a development control plan that provides for the range of matters required to achieve design excellence has been prepared for the land.
Amendments to the relevant mapping layers	<ul style="list-style-type: none"> • Land Zoning Map • Height of Buildings Map • Lot Size Map • Additional Permitted Uses Map • Minimum Lot Size – Dual Occupancy Map 	

In relation to the proposed APU, the proponent has proposed the APU to be for all Retail Premises to enable food and drink premises, or similar, to serve the local community if needed. Both retail premises and food and drink premises are land uses that are normally prohibited in the R3 Medium Density Residential zone. Given that the proponent has not justified the need to enable retail premises in its broadest form, which could enable conflictual land uses in a predominantly residential area, the APU should be specific to enable food and drink premises only. This is consistent with the LEP amendments proposed at the adjacent 50 Busby Street site. It should be noted that neighbourhood shops are permitted in the R3 zone to a maximum floor area of 150m².

Recommended Gateway conditions

It is recommended that, at a minimum, the following conditions are imposed by DPHI as conditions of their Gateway Determination:

- 1) Draft LEP maps are to be provided in a manner consistent with the Department's *Standard Technical Requirements for Spatial Datasets and Maps* guidelines accurately identifying the boundaries of proposed lot 226 to

which the LEP amendments will apply.

- 2) The Acoustic Impact Assessment for 34 Busby Street is to be peer reviewed by a Council appointed external consultant in conjunction with the Noise Impact Assessment for 50 Busby Street, prior to public exhibition.
- 3) The Traffic and Parking Assessment Report for 34 Busby Street is to be peer reviewed by a Council appointed external consultant in conjunction with the Traffic Impact Assessment for 50 Busby Street, prior to public exhibition.
- 4) A Visual Impact Assessment is to be submitted, prior to public exhibition. The assessment is to consider the full extent of the proposed building envelopes at their full height using the LEP definition of Height of Buildings. The visual impact is to consider the full height building envelopes proposed for the development, the cumulative impacts of those building envelopes and the cumulative impact of building envelopes proposed on the adjoining development site at 50 Busby Street.

The assessment must be in to-scale representations and should show the relationship of the proposal to the ground plane, adjacent buildings, streets and open spaces.

The visual analysis must provide 360° views to and from the site, to at least 100m from the site's boundaries, and should include analysis of, at a minimum, the following viewpoints:

- a. From the street frontage of lot 226 with Busby Street
- b. From Lewins Street
- c. From Rose Street
- d. From Prospect Street
- e. Between the site and 50 Busby Street (i.e. within the sites)
- f. From the front and side of the Gatekeeper's Cottage
- g. From the Busby Street frontage of 6 Brilliant Street
- h. From the intersection at Torch and Brilliant Streets
- i. From Ben Chifley House (state heritage item)
- j. From St Stanislaus College (local heritage item)
- k. From the viewing platform at Mount Panorama Wahluu
- l. From the approach into Bathurst on Sydney Road (eastern side of the bridge)

The analysis should present conclusions as to how the building height envelop configurations may need to be modified by way of appropriate DCP provisions (e.g. upper floor setbacks, boundary setbacks), to mitigate impacts on view corridors, streetscapes, and the site's setting within the Bathurst Heritage Conservation Area.

The Visual Impact Assessment should be in the form of a 3D computer model. That model can be inserted into the Bathurst Digital Twin if the extent of the digital twin can include the subject site and its immediate surrounds.

Preparation of the Visual Impact Assessment in conjunction with the proposed development on the adjoining site at 50 Busby Street is encouraged.

- 5) An updated overshadowing analysis is to be submitted, prior to public exhibition. The assessment is to consider the full extent of the proposed building envelopes at their potential full height (not the proposed building designs) on all adjoining and

adjacent properties. The shadow diagrams are to be presented for each hourly interval for the winter solstice.

The analysis should present conclusions as to how the building height envelop configurations may need to be modified by way of appropriate DCP provisions (e.g. upper floor setbacks, boundary setbacks) to achieve compliance with or exceed compliance with Council's current DCP requirements. The analysis should also consider internal implications of overshadowing within the development site.

- 6) The servicing strategy is to be updated to quantify the loading to the water and sewer networks, inclusive of fire protection needs, to enable Council to model implications of the potential full development for both proposed lots 225 and 226 on its network.
- 7) The servicing strategy is to be updated to model the proposed stormwater system for the potential full development of both proposed lots 225 and 226 and in particular to identify if on-site detention will be required and can be accommodated on site.

It is recommended that Council withdraws its support for the Planning Proposal if the necessary conditions listed above are not included in DPHI's Gateway Determination.

Further, it is recommended that this matter be referred to Council for **reconsideration** if the outcomes of the peer reviews for the Traffic Impact Assessment and Noise Impact Assessment are such that any adverse impacts are not able to be appropriately mitigated. Council must be assured that existing and future activities at the Mount Panorama Racing Circuit are not jeopardised by increased living densities in proximity to the Mount Panorama 50dBA noise contour. Council must also be satisfied that the local road network can support the traffic generated from the future development. The Planning Proposal should not proceed if either of these issues remain unresolved.

REPORT:

1.0 Introduction

A Planning Proposal has been submitted to Council which seeks to amend the Bathurst Regional Local Environmental Plan 2014 (LEP) to:

- rezone land,
- increase the height of building limit,
- update minimum allotment provisions, and
- insert an additional permitted use (APU) in schedule 1.

The purpose of this report is to:

1. Provide Council's initial assessment of the Planning Proposal to determine if Council supports progression of the Planning Proposal to the NSW Department of Planning, Housing and Infrastructure (DPHI) for a Gateway Determination to enable public exhibition of the planning proposal.
2. Identify any additional information requirements that might be required prior to the public exhibition stage.

Should Council support the Planning Proposal at this time it is only to the extent that it supports its progression to the next stage (public exhibition). A report will be presented to Council after public exhibition to determine if Council supports the making of the LEP amendment and any alterations it seeks to include in the final amendment.

The format of this report and the questions it responds to correlates with those matters set out in the Department of Planning's Local Environmental Plan Making Guideline dated August 2023 and generally follows the format of the Planning Proposal as lodged by the proponent.

1.1 The Proposal

The Planning Proposal has been prepared and submitted independently from Council by Hamptons Property Services (Hamptons).

The proposal relates to 34 Busby Street, South Bathurst, Lot 22 DP 1033481, which currently contains St Joseph's Mount (Logan Brae) and the Gatekeeper's cottage. DA 2020/50 gave consent for the land to be subdivided into three lots; one containing St Joseph's Mount (Logan Brae) and associated buildings, one containing the Gatekeeper's cottage, and a residual vacant lot which is the subject of this planning proposal. The proposed LEP amendments only relate to the land which will be created as the residual allotment, being proposed lot 226 (refer figure



1).

Figure 2 – Aerial image of site

The Planning Proposal in full can be viewed in **Attachment 1** and its supporting appendices (**Attachments 2 to 9**).

The Planning Proposal seeks a range of amendments to the Bathurst Regional Local Environmental Plan 2014 (LEP) to facilitate the redevelopment of proposed lot 226 for the purposes of a residential flat building development at a density and height beyond that currently permissibly under the LEP. The resulting development is proposed to achieve approximately 218 dwellings across 7 apartment buildings.

An additional permitted use (APU) under schedule 1 of the LEP is also sought to support the inclusion of retail premises, with the intent of a food and drink premises or similar to serve local community needs.

The Planning Proposal, as submitted, seeks the following LEP amendments:

Planning control	Existing development controls	Proposed development controls
Zoning	R1 General Residential	R3 Medium Density Residential
Minimum Subdivision Lot Size	550m ²	1300m ²
Minimum Subdivision Lot Size – Dual Occupancy, manor houses, multi dwelling housing and residential flat buildings	850m ²	Remove site from dual occupancy map (because dual occupancies are prohibited in the R3 zone)
Height of Buildings (HOB)	9m	18m
Additional Permitted Use under schedule 1	N/A	Retail Premises (to enable Food and Drink Premises on the site)

Several meetings were held prior to the lodgement of the Planning Proposal between Council and the applicant, including:

- 12 July 2023
- 14 November 2023
- 7 March 2024
- 13 March 2024 – Councillor briefing
- 26 March 2024

Council provided formal Pre-Lodgement advice on 29 November 2023 (included at **Attachment 10**). The Planning Proposal was formally lodged on 21 May 2024.

1.2 Attachments

Attachment No.	Attachment Title
1	Planning Proposal
2	Vegetation Management Plan (June 2022)
3A	Place Analysis and Urban Design Report (pages 1-26)
3B	Place Analysis and Urban Design Report (pages 27-62)
4	Conservation Management Plan (15 March 2021)
5	Services Strategy Report
6	Traffic and Parking Assessment Report

7	Acoustic Impact Assessment
8	Heritage Impact Statement
9	Social Impact Assessment
10	Pre-lodgement advice

Attachment 3 was not able to be inserted as a single attachment given its file size. It has been split into two for this report.

2.0 Site Description and Context

34 Busby Street is located in South Bathurst and is currently zoned R1 General Residential. The site's only street frontage is on Busby Street.



Figure 3 – Site detail including local heritage item layer (beige).

The current lot has an area of approximately 4.67ha and contains St Joseph's Mount Convent and Novitiate, a significant building complex located on a well-elevated portion of the site, and the Gatekeeper's Cottage which is located on the north-eastern corner of the current allotment. St Joseph's Mount was formerly known as Logan Brae, constructed as a villa in 1877 for John Busby and his family. The original building was designed by renowned Bathurst architect, Edward Gell.

Logan Brae was blessed with a new name, St Joseph's Mount, in 1909 when the Bathurst Sisters of Mercy began to occupy it, the site having been purchased for the Sisters by local retailer John Meagher the year prior. A chapel was built in 1916 with additional buildings to come later, including the Novitiate Wing in 1962. The style of this building influenced the construction of St Catherine's Aged Care facility adjacent to St Joseph's Mount, at 50 Busby Street, in 1966. The nursing home enabled the elderly Sisters to

reside closely and remain involved in the activities of the Sisters at St Joseph's Mount. As such the two sites have been historically linked.

Whilst it is important to highlight the social, religious and heritage significance of the St Joseph's Mount building complex, the land to which this planning proposal relates is on the residual allotment (proposed lot 226) that is proposed in DA 2020/50. This area does not contain any significant buildings, only landscaped area. Proposed lot 226 has an area of 2.28ha, and fronts Busby Street.

A condition of consent of DA 2020/50 required that a Vegetation Management Plan (VMP) be submitted in relation to the evaluation and retention of existing trees across the entire site. This VMP has been submitted as part of the Planning Proposal (see **Attachment 2**). A tree protection zone was identified within the curtilage of the heritage item, and recommendations were provided for which trees should be removed, replaced, and what species might be appropriate for replacement planting. The recommendations were translated into a Landscape Plan, see figure 4 below.

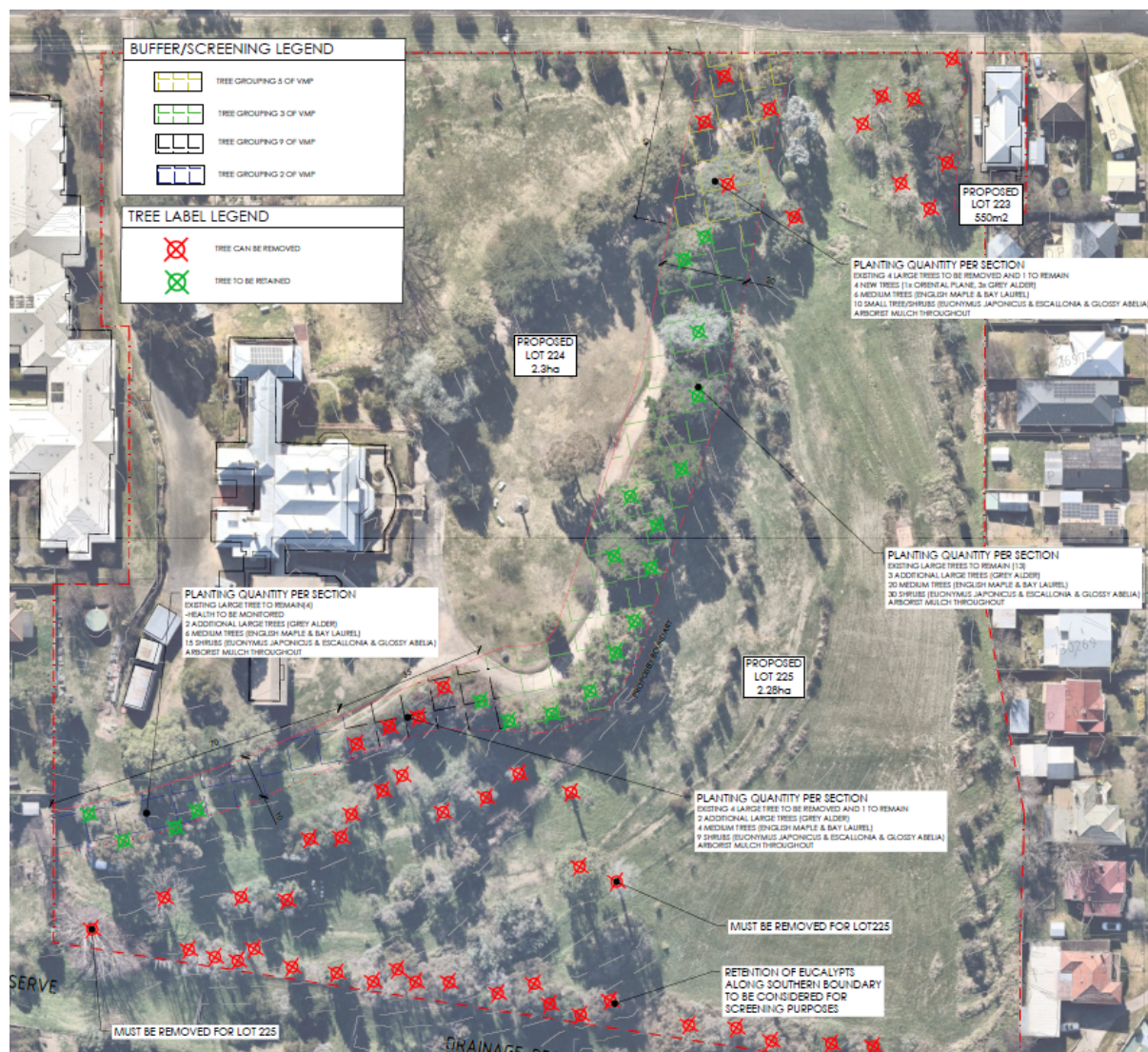


Figure 4 – Landscape Plan submitted for DA 2020/50

The VMP and the Landscape Plan relates to the Planning Proposal because they identify that there are a number of trees with low significance that are suitable for removal, and some trees that are of low significance but can be considered to be kept for screening

purposes between the allotments. The trees that are identified as suitable for removal are largely within the residual allotment which would enable its development for residential purposes.

There is significant fall across the full site. The highest point of the site is in the north-western corner in front of St Joseph's Mount, closer to Busby Street. In this location, there are gardens and a potting shed that were formerly used by the Sisters of Mercy when they occupied the site. The land then falls away towards the south and east, with an overall cross fall of approximately 24m. This means that the land at the rear and eastern portions of the site is much lower than the prominent location on which St Joseph's Mount sits.

The site is within the Bathurst Heritage Conservation area and the immediate surrounding area is characterised by low density residential development, generally single storey fronting Busby Street with the exception of the former St Catherine's Aged Care Facility at 50 Busby Street. The northern side of Busby Street generally does not have dwellings fronting the street, rather they present rear yards and sheds to the street. The lower end of Busby Street contains single storey dwellings and includes the Chifley Museum, former Prime Minister Ben Chifley's house, which is a state heritage listed item.

St Joseph's Mount (Logan Brae) presents as one of the most prominent buildings in the immediate area, followed by former St Catherine's Aged Care Facility at 50 Busby Street. Several other heritage items are nearby, including:

- Approximately 140m south-east of local item I9 'St Stanislaus College'
- Approximately 40m south of local item I397, a Federation dwelling house fronting Spencer Street
- Approximately 108m south of local item I396, a Federation dwelling house fronting Havannah Street
- Approximately 60m south of local item I361 'St Barnaby's Rectory', a Late Victorian dwelling house fronting Brilliant Street
- Approximately 270m south-east of local item I307, 'Bishop's Court'
- Approximately 100m west of state item I246 'Ben Chifley House' and local item I395 a residence attached to Ben Chifley House.



Figure 5 – Nearby heritage items.

Nearby education facilities include Bathurst South Public School, St Stanislaus College, St Philomena's School, Skillset Senior College and Charles Sturt University.

The site is located approximately 1.1km from the Bathurst CBD and its likely collector roads are Busby, Prospect, Havannah, Brilliant, Bant, Torch and Rocket Streets.

Existing active transport connectivity from the site is poor given that the only footpath that is on Busby Street spans the width of 50 Busby Street, but does not extend any further. There is a footpath on the northern side of Havannah Street which traverses nearly the entire length of Havannah Street. It passes the intersection of Havannah with Busby and Prospect Streets, however it currently does not link to the short pathway on Busby Street.

Significant views lie to the east from St Joseph's Mount (Logan Brae) and can include views to the north toward St Stanislaus College, and to the south-west toward Mount Panorama Wahluu.

3.0 Master Plan

The proponent has prepared a concept Master Plan (Place Analysis and Urban Design Report) for the site which is available at **Attachment 3A and 3B**.

The development of the Master Plan took into consideration the physical and environmental constraints of the land, while celebrating the heritage attributes that attach to both the site and the heritage conservation area. These elements have been combined

to establish a Master Plan that will attribute a higher level of residential density in South Bathurst to support housing supply that is a form, scale, mix and design that responds to changing demographics and market trends for dwelling type.

The Master Plan relates only to the residual lot (proposed lot 226) that would be created from DA 2020/50. The residual lot does not contain any significant buildings. The Conservation Management Plan (CMP) that was prepared for DA 2020/50 and submitted as part of this Planning Proposal (see **Attachment 4**), included recommendations to conserve the St Joseph's Mount building complex and gardens, and also included recommendations as to where the site might be appropriately developed whilst still respecting the significance of St Joseph's Mount. The residual allotment was one of the areas identified as being appropriate for residential development.

Interestingly, the CMP also recommended that new buildings could be at a maximum height of 10m despite the current maximum Height of Building (HOB) control being 9m. Whilst the Planning Proposal involves proposing the HOB control to be increased to 18m, the fact that the CMP recommended a HOB control above what is currently permitted suggests that the HOB control can be increased provided that the development is carried out in a way that mitigates impacts to St Joseph's Mount.

Using the recommendations of the CMP as the basis of the development of the Master Plan, 218 dwellings across seven (7) separate apartment buildings has been proposed. The seven apartment buildings vary in height to respond to both the streetscape and topography of the land, having a maximum height of 18m.

The location of buildings was decided upon by looking at four different potential built form options, as follows.

Option 1 proposed a series of traditional rectangular building forms through the site, that followed the alignment of St Joseph's Mount with a vehicular and pedestrian circulation space between the buildings, from Busby Street. The separation distances between buildings allowed for adequate separation but were somewhat limiting in terms of views towards the western side of the site.

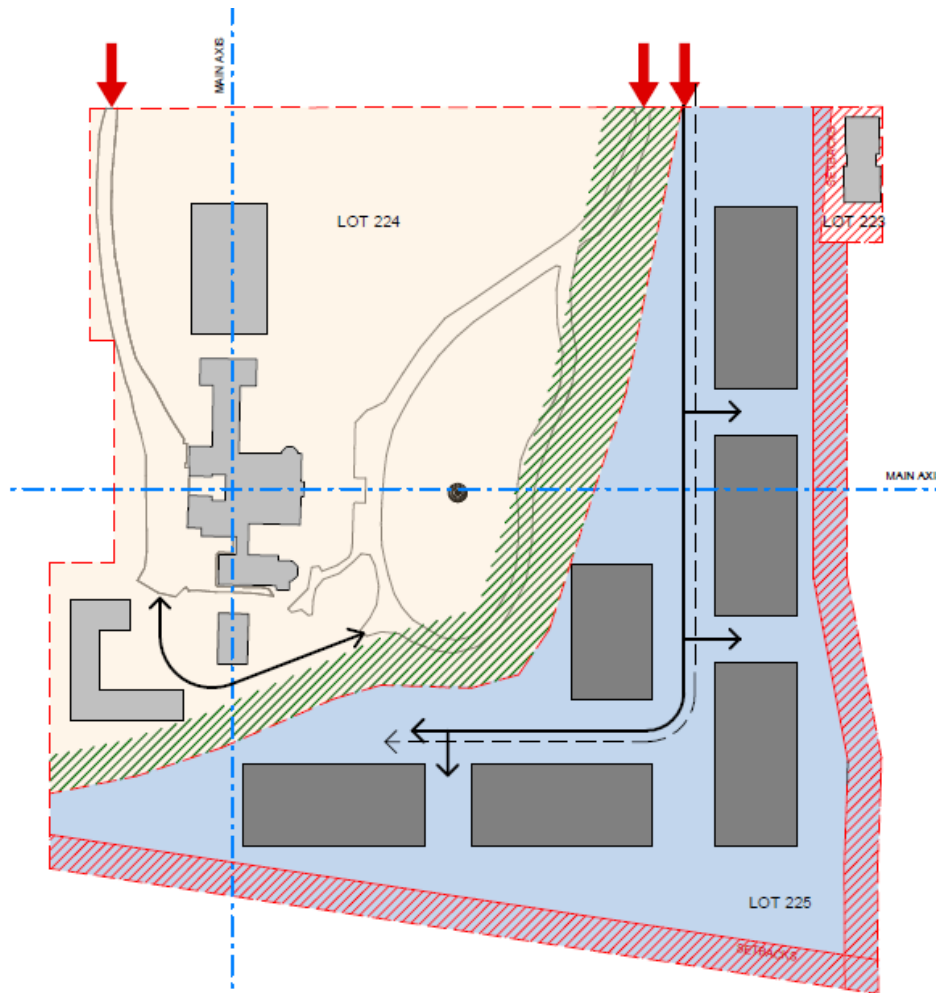


Figure 6a – Option 1 (Marchese Partners | Life^{3A}, 2024)

Option 2 provided a series of more angular buildings following the topography of the site. Due to their awkward shape, some of these were longer in form and provided disjointed view corridors across the site.

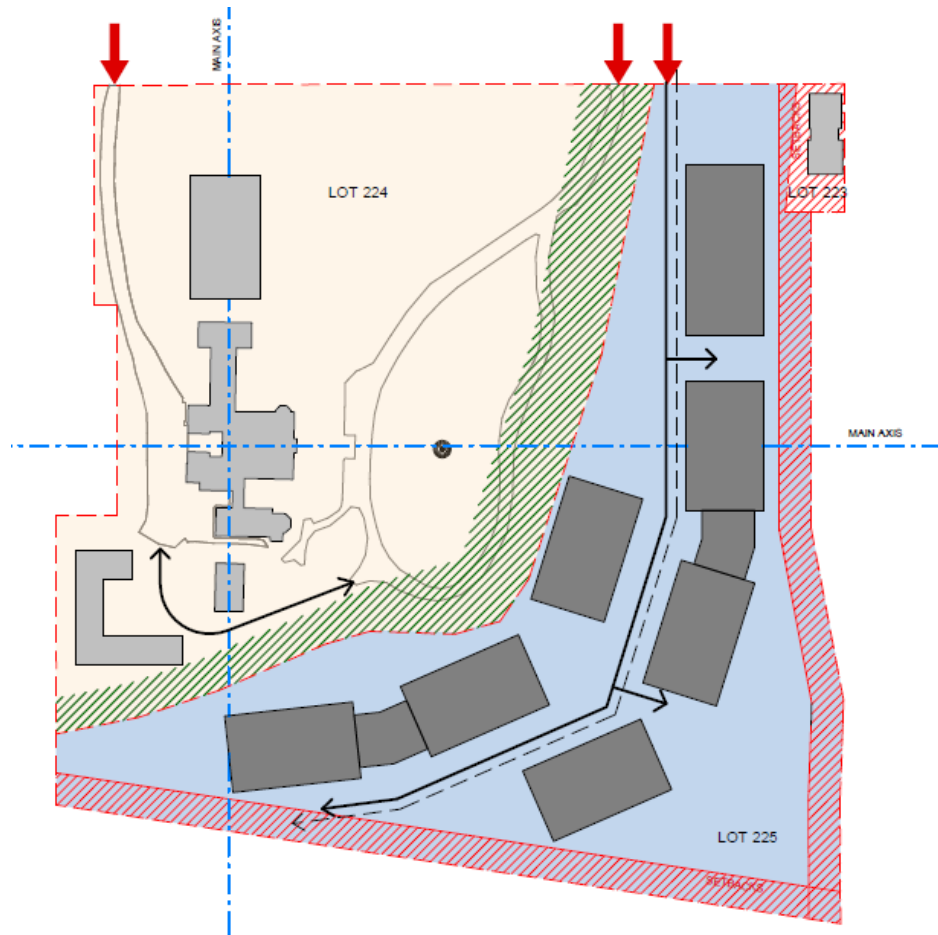


Figure 6b – Option 2 (Marchese Partners | Life^{3A}, 2024)

Option 3 combined rectangular and curvilinear building forms, with the larger buildings, at the lower part of the site, longer in dimension, on a north-south axis. This scheme was similar to Option 1, being consistent with the heritage axis and vehicular access through the centre of the proposal. This scheme was problematic in its ability to achieve sufficient cross ventilation and solar access due to the longer building forms.

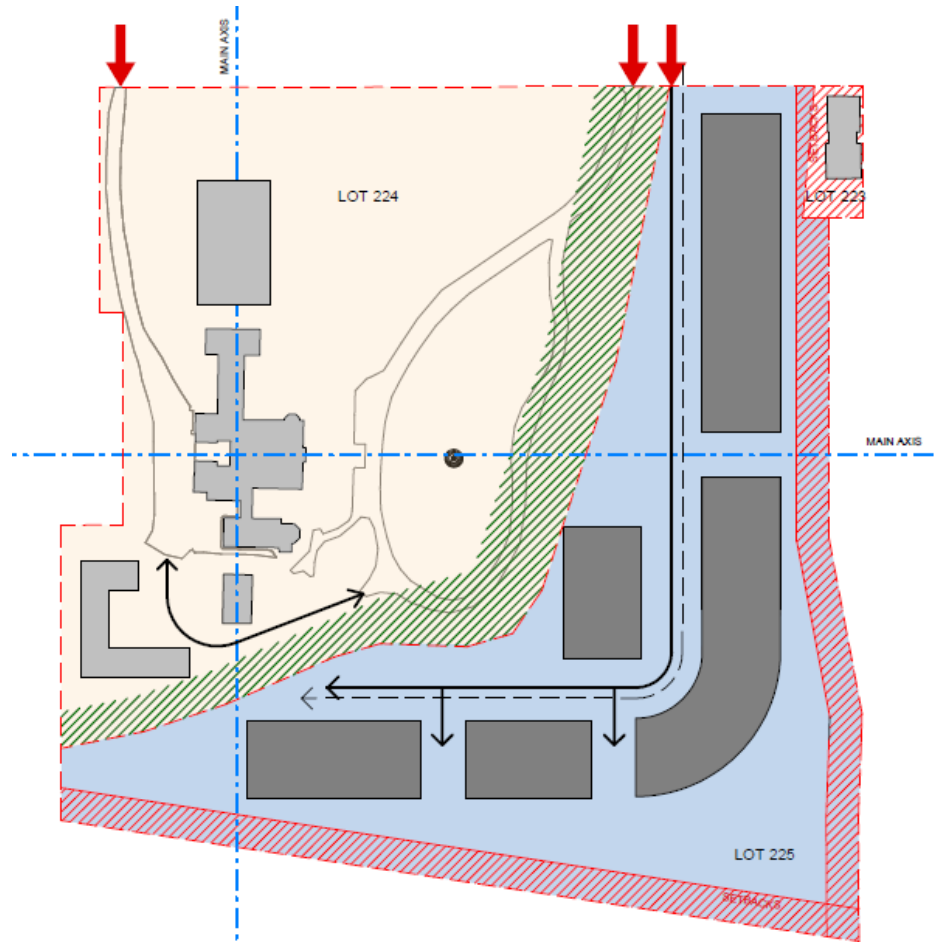


Figure 6c – Option 3 (Marchese Partners | Life^{3A}, 2024)

Option 4 follows the north-south heritage access, but is provided in a series of smaller building footprints to enable a higher proportion of view corridors to be enjoyed across the site and to the surrounds. The proposed form also ensures that there are sufficient views to, and across, the site to respect St Joseph's Mount and the associated landscape corridor.

The position of the internal roadway on the lower part of the site also ensures that there is a distinct expression between active and passive areas for residential and recreational enjoyment, without interference, while also providing a further separation buffer with existing residential accommodation to the east and south. The smaller footprints also allow for a highly permeable pedestrian network through the site which will maximise opportunities for internal access and connectivity with St Joseph's Mount.

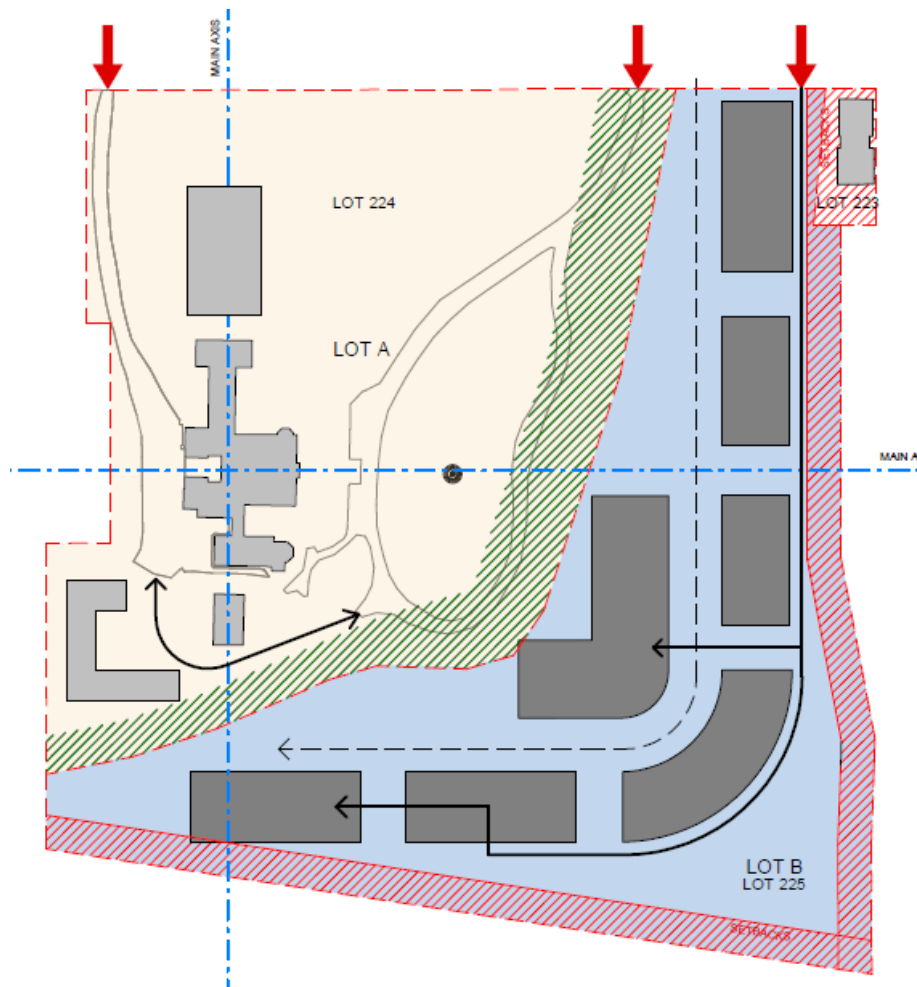


Figure 6d – Option 4 (Marchese Partners | Life^{3A}, 2024)

Option 4 was found to be the most suitable and as such the Master Plan was developed around that option, allowing for 218 dwellings, comprising 30 x 1-bedroom (14%); 159 x 2-bedroom (73%) and 29 x 3-bedroom dwellings (13%). This would be subject to detailed refinement at the DA stage.



Figure 7 – Site plan [N.B. edited to clearly show letters for each apartment building.] (Marchese Partners | Life^{3A}, 2024)

It must be noted that **Attachment 3A and 3B** indicates locations of cabins, a function centre, and car parking areas on the lot (proposed lot 225) which will contain St Joseph's Mount. These proposed buildings and uses are permissible under their current zoning and so are not the subject of this Planning Proposal and would be subject to a separate Development Approval process. Their future use remains relevant to consideration of this planning proposal and the planning proposal for 50 Busby Street in terms of traffic estimation for the whole precinct, impacts they might generate (e.g. noise) on new adjoining medium density development and impacts that the new medium density development might have on enabling the adaptive reuse of the heritage item.

Dwelling Density

The area of the proposed lot 226 is 2.28ha. Under the current R1 General Residential zoning and the provisions of chapter 4.2.2.4 of the Bathurst Regional Development Control Plan 2014 (DCP), the maximum density of persons permitted on site for the purposes of medium density development is no more than 136.8 persons (current standard is 60 persons per site hectare). The proposal is expected to generate a projected population of approximately 505 persons (closer to 250 persons per site hectare). Hence a rezoning to the R3 Medium Density zone is being sought.

Building Height

The Master Plan proposes seven buildings with various heights as they respond to the topography of the land, with a maximum building height of 18m. Buildings closer to Busby Street, particularly apartment blocks A and B are proposed to be of a lower scale to respond to the heritage streetscape character of Busby Street. The site will see the greatest height of buildings located deep in the block, furthest away from the street.

Figure 8 below demonstrates the proposed buildings in relation to the existing 9m height limit.

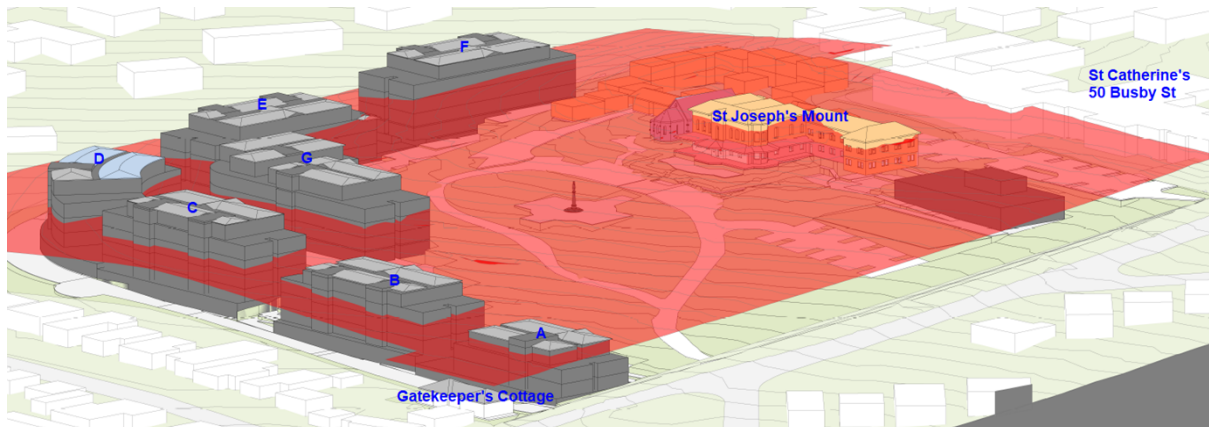


Figure 8 – Existing 9m height limit in relation to proposed building locations. [N.B. Edited to include apartment reference letters and key building names.] (Marchese Partners | Life^{3A}, 2024)

Attachment 3B demonstrates the proposed 18m height plane on page 61 however the angle at which the diagrams are presented makes the relationship of the height limit increase unclear. The relationship might best be viewed on pages 36-41 which display several cross sections of the site. Figures 8a-8d show the view to the site from the outer boundaries.

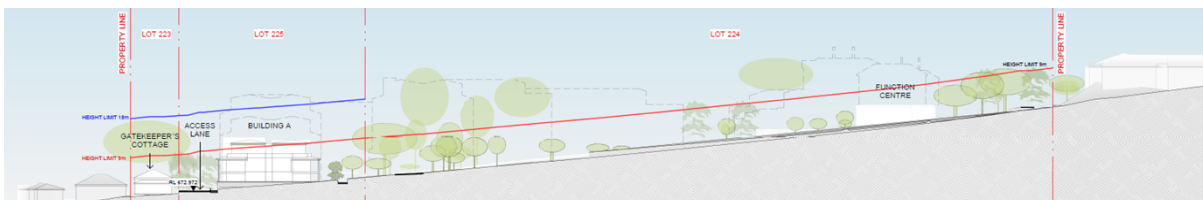


Figure 8a – View facing North, viewing from Busby Street. (Marchese Partners | Life^{3A}, 2024)

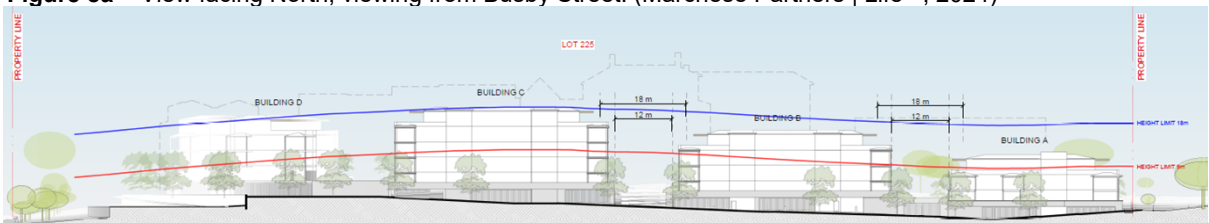


Figure 8b – View facing East, viewing from behind dwellings on Lewins Street. (Marchese Partners | Life^{3A}, 2024)

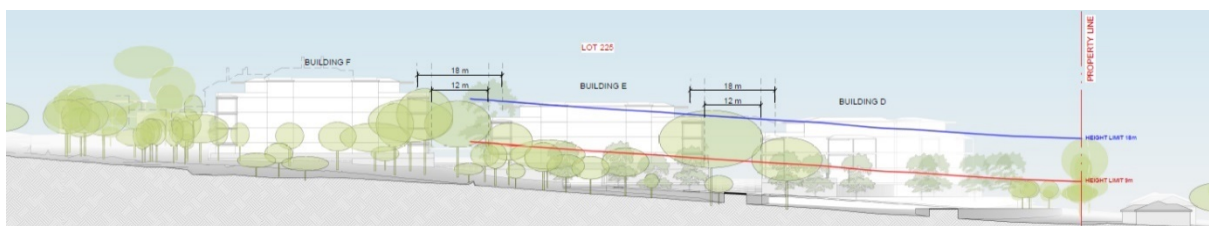


Figure 8c – View facing South, from behind dwellings on Rose Street. (Marchese Partners | Life^{3A}, 2024)

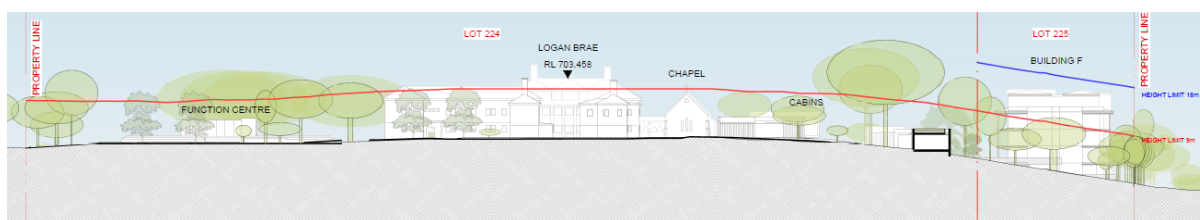


Figure 8d – View facing West, from in between 34 and 50 Busby Street. (Marchese Partners | Life^{3A}, 2024)

The LEP currently restricts building height at the subject land to 9m hence the planning proposal seeks an increase in building height to 18m.

Site Design

The proponent's place analysis determined that there are no setbacks applicable to the development. In consideration of the recommendations of the CMP, the building locations were sited with respect to preserving St Joseph's Mount's view corridor. Setbacks were established 6m from the southern boundary, and 12m to the eastern boundary.

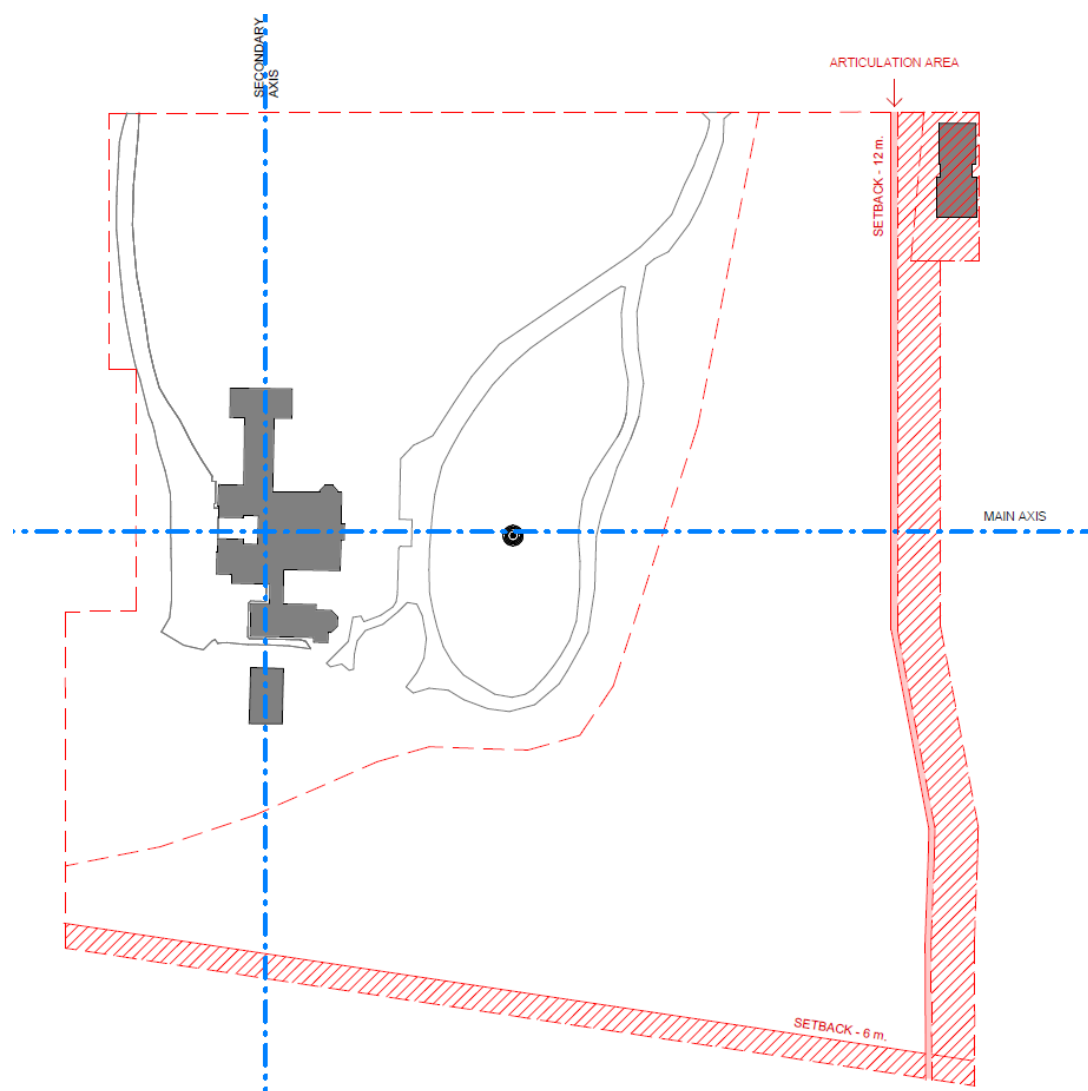


Figure 9a – Setbacks diagram (Marchese Partners | Life^{3A}, 2024)

The setbacks at the Busby Street frontage appear to be undefined in the Master Plan, possibly zero. The side setback to the Gatekeeper's Cottage allotment appears to envelope part of its boundary in order to create vehicular access, resulting in a side setback from 3m to 8m, inclusive of a 1.5m 'articulation' zone that traverses the entire side boundary setback proposal. This articulation zone is to allow for some flexibility in the built form.

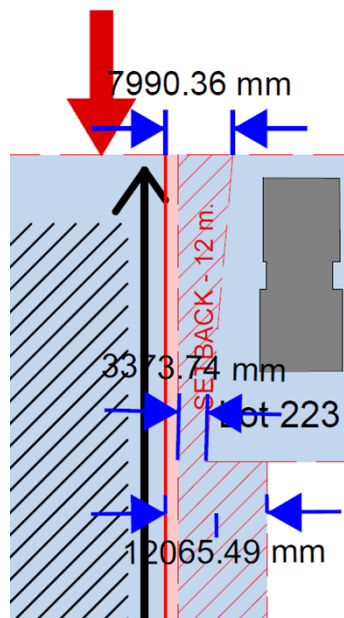


Figure 9b – Setbacks detail.[N.B. Scale 1:1250 used to measure in millimetres the proposed setbacks.]
(Marchese Partners | Life^{3A}, 2024)

The height plane diagram as shown in [Figure 8](#) above suggest that apartment block A will be 2-3 storeys at the Busby Street frontage, with an additional storey stepped back. Apartment block B will be five storeys, and block C 6 storeys, and so on, such that the height is distributed to increase deeper into the block than at the street boundary.

Between each block, pedestrian pathways and vehicular accessways are proposed, presenting a highly connective site. [Figure 10](#) below displays the vehicular and pedestrian circulation diagram.

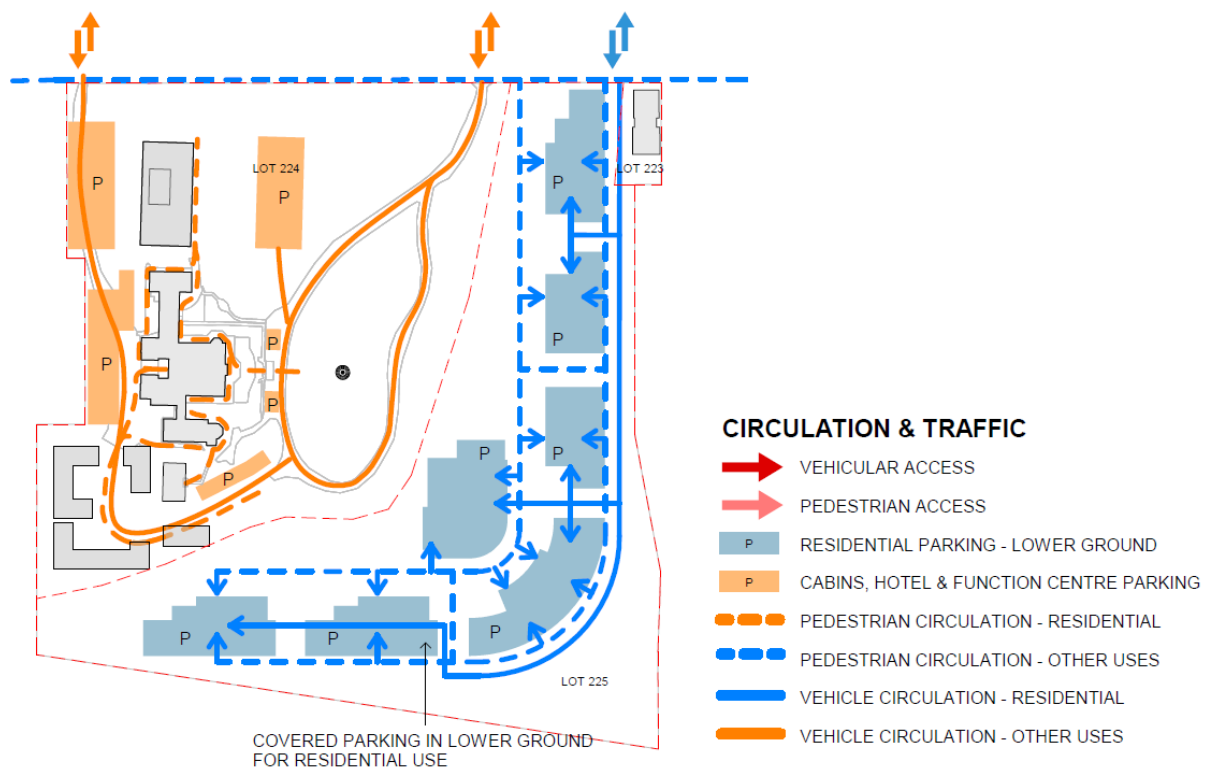


Figure 10 – Vehicular and pedestrian circulation (Marchese Partners | Life^{3A}, 2024)

The plans demonstrate that there will be no pedestrian connection between the development on Lot 226 or the lot that will contain St Joseph's Mount, and likewise no connection between St Joseph's Mount and the adjacent 50 Busby Street.

Vegetation and green areas are proposed in the Master Plan, which includes the retention of many existing trees.

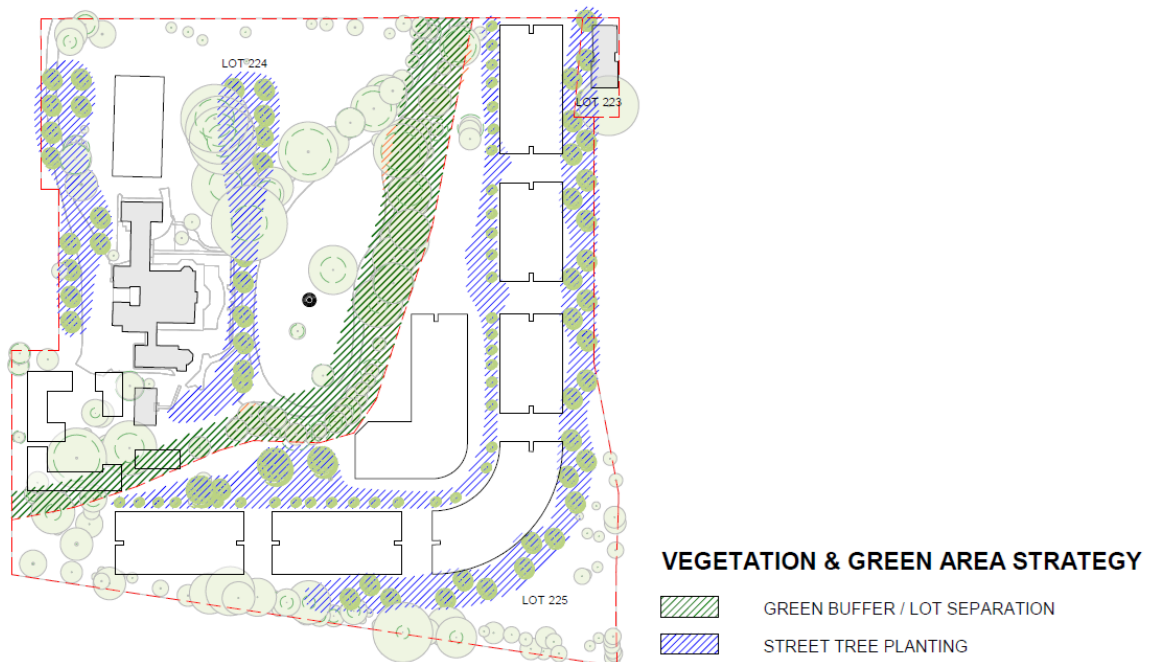


Figure 11 – Potential landscaping and open space (Marchese Partners | Life^{3A}, 2024)

Additional Permitted Use

The Planning Proposal seeks to insert a site-specific Additional Permitted Use (APU) clause to enable retail premises on the site. The intention is to enable the provision of food and drink premises as needed. The proposed R3 zoning restricts these commercial uses and so the Planning Proposal seeks the inclusion of an APU (under schedule 1 of the LEP) to permit these development types on this site only (as opposed to permitting these land uses across all lands within the R3 zone).

4.0 Council's Assessment of Planning Proposal

The purpose of this report is to provide Council's initial assessment of the Planning Proposal, as submitted, to determine if Council supports progression of the Planning Proposal to the NSW Department of Planning, Housing and Infrastructure (DPHI) for a Gateway Determination to enable public exhibition of the planning proposal. The initial assessment of the Planning Proposal is outlined in the following sections, the format of which correlates with those matters set out in the Department of Planning's Local Environmental Plan Making Guideline dated August 2023.

Objectives and Intended Outcomes

The Planning Proposal was prepared and submitted independently from Council by the applicant, Hamptons Property Services (Hamptons) on behalf of the owner ANAT Investments Pty Limited. It was prepared to enable the proposed Master Plan as described above.

The proponent has developed the Planning Proposal based on the following objectives.

- To increase the diversity in housing choice available in the South Bathurst precinct, on land that is suited for residential development.
- To provide a range of dwelling product, with the opportunity for a higher proportion of smaller dwellings to service the anticipated future housing market, seeking more affordable options in a regional location, which are adaptable in design.
- To create an in situ community that is able to benefit from the heritage character and attributes of the site and locality, by exposing the future development, in design and access terms, to St Joseph's Mount and its future facilities.
- To provide a design outcome, through suitable development controls, that maintains the curtilage and view corridors towards St Joseph's Mount.
- To ensure that the density of development does not result in adverse cumulative impacts on the local road network.
- To ensure that future development is designed so that it does not restrict the future operation of the Mount Panorama precinct, from an acoustic perspective.
- To ensure that high quality urban design outcomes are achieved and are responsive to the physical characteristics and topography of the site.

The intended outcomes of the Planning Proposal are to:

- Rezone the site to facilitate a higher density of development consistent with the above outcomes, in alignment with the Master Plan.
- Allow for sufficient areas for infrastructure within the site to support the development.
- Accommodate a diversity of dwelling type to align with future market conditions and population growth to ensure that the future scale of development responds to the existing character of the area, while establishing design principles that are appropriate to the desired future character.
- Ensure that the design response is appropriate in the context of the heritage listing of the land, specifically St Joseph's Mount, and its curtilage.
- Facilitate a strong network of open space and pedestrian pathways across the land that encourage integration of uses and connection with the surrounding community.

In assessing a Planning Proposal, Council must consider whether the Planning Proposal is the best means of achieving the intended objectives and outcomes.

A Clause 4.6 variation to the Bathurst Regional Local Environmental Plan 2014 provides a degree of flexibility in applying certain development standards to development in particular circumstances. Given the significant increase in residential density and building height proposed by the Master Plan the use of a clause 4.6 variation is not considered appropriate. An amendment to the LEP (Planning Proposal) is considered the best means to achieve the intended objectives and outcomes.

A subsequent amendment to the Bathurst Regional Development Control Plan 2014 will also be required to ensure that detailed development controls can be applied to the site to ensure the Master Plan objectives and outcomes are achieved.

To this end it will be recommended that Council include, in the planning proposal, the insertion of an additional clause in the LEP requiring that development consent cannot be granted for development to which the clause applies until such time as controls for the range of relevant matters has been prepared. This will be discussed later in the report.

At this stage, maps consistent with the Department's *Standard Technical Requirements for Spatial Datasets and Maps* guidelines have not been provided by the proponent. It is expected that draft mapping will be provided by the proponent to ensure accuracy in identifying the boundaries of proposed lot 226 to which the LEP amendments will apply.

4.2 Explanation of Provisions

The Planning Proposal seeks a range of amendments to the LEP to facilitate the proposed development on the site as outlined in the sections below.

4.2.1 Land Zoning Map (LZN)

The planning proposal seeks to rezone proposed lot 226 from R1 General Residential to R3 Medium Density as the current LEP and DCP provisions do not allow for the density that is proposed in the Master Plan.

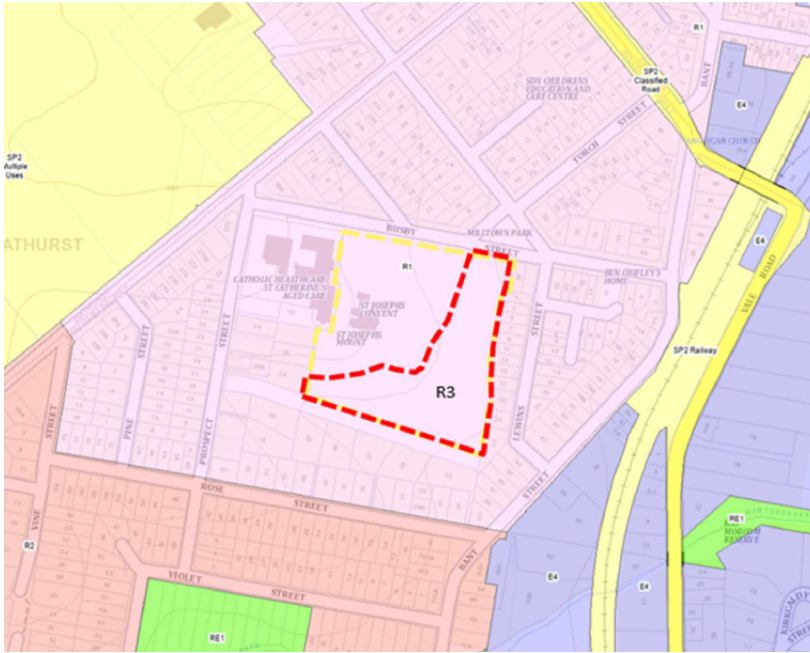


Figure 12 – Proposed location of R3 zone (Hamptons, 2024)

The use of the R3 zone is the most appropriate mechanism to achieve the residential density outcomes sought in the Master Plan.

A subsequent amendment to the Development Control Plan will be required to establish the detailed controls that should apply to the R3 zone at this site. As part of the Planning Proposal, Council should insert an appropriate additional clause in the LEP to provide surety as to the outcomes of future development on the site.

4.2.2 Lot Size Map (LSZ)

The current minimum lot size for the erection of a dwelling that applies to the site is 550m². Consistent with Council's pre-lodgement advice, the Planning Proposal seeks to increase the minimum lot size for the erection of a dwelling to 1,300m². The change in lot size seeks to:

- Encourage medium-density development over single-dwelling house development.
- Minimise the possible fragmentation of the site and so ensure the concepts in the Master Plan can be achieved.

It is the intention of the current owner to fully develop the land as proposed in the Master Plan. The increase in minimum lot size for the erection of a single dwelling is considered the best means to ensure the Master Plan concept reaches fruition.

The current minimum lot size that applies to the area for multi-dwelling housing or residential flat buildings is 1300m². This will remain unchanged and will facilitate the staging of the Master Plan concept.



Figure 13 – Proposed Minimum Lot Size (Hamptons, 2024)

4.2.3 Minimum Lot Size – Dual Occupancy Map (LSD)

The R3 Medium Density zone prohibits dual occupancies to encourage a greater density of dwellings in the zone, such as multi-dwelling housing (e.g. townhouses) and residential flat buildings (e.g. apartments).

A minimum lot size for dual occupancies currently applies to the land under its current R1 General Residential zoning. The Planning Proposal proposes the rezoning of the site to the R3 Medium Density zone, necessitating the need to remove the minimum lot size for dual occupancy developments on the LSD as it relates to this site as it will no longer be relevant.

4.2.4 Height of Buildings (HOB)

The current height of buildings applicable to the site is 9m. The Planning Proposal seeks to increase that height to 18m.



Figure 15 – Proposed Height of Buildings map (Hamptons, 2024)

A setback of zero has been proposed at the front boundary with Busby Street with a 2-3 storey unit fronting the street. Due to the slope of the land, the current architectural model presents as 2-storeys from the street, with additional storeys stepping back as the buildings are set deeper into the block. From a heritage perspective, Council would not normally accept a building at the maximum height on the street frontage with zero setback.

Again, a subsequent amendment to the Development Control Plan will be required to establish the detailed controls that should apply to manage the change in permissible height. As part of the Planning Proposal, Council should insert an appropriate additional clause in the LEP to provide surety of the outcomes of future development on the site.

4.2.5 Additional Permitted Use (APU)

Schedule 1 of the LEP provides the opportunity to permit certain additional permitted uses (APUs) on a site that might otherwise be prohibited in the broader zone that applies to that site.

The Master Plan proposes the insertion of an APU to permit retail premises on the site. The Bathurst Regional Local Environmental Plan 2014 defines retail premises as the following.

retail premises means a building or place used for the purpose of selling items by retail, or hiring or displaying items for the purpose of selling them or hiring them out, whether the items are goods or materials (or whether also sold by wholesale), and includes any of the following—

- (a), (b) (Repealed)
- (c) food and drink premises,
- (d) garden centres,
- (e) hardware and building supplies,
- (f) kiosks,
- (g) landscaping material supplies,
- (h) markets,
- (i) plant nurseries,
- (j) roadside stalls,
- (k) rural supplies,
- (l) shops,
- (la) specialised retail premises,
- (m) timber yards,
- (n) vehicle sales or hire premises,

but does not include farm gate premises, highway service centres, service stations, industrial retail outlets or restricted premises.

The Planning Proposal states that the intention behind this insertion is to enable the provision of food and drink premises as needed. The proposed R3 zoning restricts these commercial uses and so the Planning Proposal seeks the inclusion of an APU to permit these development types on this site only (as opposed to permitting these land uses across all lands within the R3 zone).

If all retail premise types were permitted in a residential zone, it could permit large-scale development such as the likes of hardware stores, car sales yards, and other uses that could create undesirable traffic, noise, waste and amenity impacts. It could also permit medium scale shops such as supermarkets, and small scale retail premises other than food and drink premises which could significantly impact the primacy of the Bathurst CBD.

The Planning Proposal has not justified why Council should permit all retail premise types, providing no assessment against relevant planning strategies, or providing any assessment of the impacts such a use might have via any of the supporting reports.

It is understood the intent behind the request to insert retail premises as a site-specific APU is to enable food and drink premises. The APU should therefore be specifically limited to food and drink premises only and be restricted to a floor area of 150m² per tenancy, for a total area of 300m² for all food and drink premises on the site. The proponent has not provided any justification as to why food and drink premises might be compatible on the site and in the surrounding area. Nonetheless should Council restrict the floor area for small scale premises as recommended, such a restriction would be deemed appropriate because it would minimise conflict with the commercial activity of the Bathurst CBD and is similarly proposed on the adjacent site at 50 Busby Street. It should also be noted that Neighbourhood shops are already permissible in the R3 zone to a maximum floor area of 150m².

4.3 Assessment of Strategic Merit

Is the Planning Proposal consistent with an endorsed LSPS, strategic study or report?

The Planning Proposal is considered against relevant planning strategies at the local, regional, and state levels, including:

Local Strategies:

- Vision Bathurst 2040: Bathurst Regional Local Strategic Planning Statement (LSPS)
- Bathurst 2036 Housing Strategy (Housing Strategy)
- Bathurst Community Strategic Plan 2022 (CSP)
- Policy – Urban Design Excellence – R3 Medium Density and E1 Local Centre Zones
- Bathurst 2040 Open Space Strategy
- Bathurst CBD & Bulky Goods Business Development Strategy 2011 (Retail Strategy)

Regional Plan:

- Central West and Orana Regional Plan 2041

State Strategies:

- Housing 2041
- Regional Housing Taskforce

Vision Bathurst 2040: Bathurst Regional Local Strategic Planning Statement

Vision Bathurst 2040 - the Bathurst Regional Local Strategic Planning Statement (LSPS), sets out a 20-year plan to achieve forecast, desired and sustainable growth for the Bathurst Region.

The key planning priorities relevant to the Planning Proposal (PP) are addressed as follows.

Planning Priority	Council assessment
2 – Align Development, growth and infrastructure	<p>The PP is supported by a Services Strategy Report (see <u>Attachment 5</u>) which outlines how services, including water, sewer and stormwater drainage may function.</p> <p>No major issues have been identified. Council Engineering section noted that further investigation is required in relation to stormwater drainage and that on-site detention appears feasible in the south-eastern corner of the site. It is recommended that modelling of the stormwater system for both lots 225 and 226 be investigated now through an appropriate condition of the Gateway Determination.</p> <p>Council's Engineers have also advised that the proponent needs to quantify the loading on the water and sewer network, inclusive of fire protection loadings, to enable Council to model implications of the potential full development of both lots 225 and 226. It is recommended that an appropriate condition be included on the Gateway Determination.</p>
3 – Connect the Bathurst Region	<p>A Traffic and Parking Assessment Report (see <u>Attachment 6</u>) has been lodged with the PP. The report comprehensively assesses multiple nearby intersections that are likely to be used, and also includes an analysis of the Traffic Impact Assessment that was submitted for the Planning Proposal at the adjacent site, 50 Busby Street which can be found at <u>Attachment 9</u> in item no. 9.2.4. To ensure that the assessment of the cumulative traffic impacts that might result from both planning proposals are sufficiently reviewed, it is recommended that Council seek a peer review of both traffic reports prior to public exhibition, as discussed in more detail below.</p>
6 – Protect Mount Panorama (Wahluu) as a motor sport and event precinct	<p>An Acoustic Impact Assessment (see <u>Attachment 7</u>) has been lodged with the PP. The report comprehensively assesses noise impacts using an appropriate methodology. There would be potential noise impacts between this site, its heritage item and 50 Busby St as well as the potential for all uses to be impacted by noise from Mount Panorama. It is recommended that Council seek a peer review of both noise reports prior to public exhibition as discussed in more detail below.</p>
7 – Leverage new Opportunities	<p>Action 7.7 of Planning Priority 7 echoes the need to protect the Mount Panorama Racing circuit from potential landuse conflict as addressed above for planning priority 6.</p>
8 – Become a Smart City	<p>As part of a site-specific DCP chapter, Council may require that EV charging stations are provided at a particular rate to ensure that the resultant development involves smart technologies that can provide everyday living solutions. Planning Priority 8 also encourages the support of Charles Sturt University's presence within the Bathurst region. Located in close proximity to CSU, the site offers new residential opportunities that may be used by students and/or staff in support of CSU's operations.</p>
9 – Protect indigenous cultural heritage	<p>The subject site is not a place of Aboriginal significance and there are no Aboriginal objects registered on the site. Due to past extensive land disturbance it is not expected that any</p>

Planning Priority	Council assessment
	Aboriginal archaeology is present on the surface of the land. There are however areas and other objects of Aboriginal heritage significance on the land which will be discussed in more detail below. Relevant provisions should be included in the future DCP that relate to the site to protect any unexpected finds.
10 – Protect European and non-Indigenous heritage	A Heritage Impact Statement has been submitted with the PP (see Attachment 8) as discussed in more detail below.
12 – Enhance environmentally sensitive land and biodiversity	The implementation of the Master Plan requires the removal of only a few trees which have already been identified as suitable for removal in the submitted VMP. The existing trees on site will largely remain, and new plantings are proposed for screening and open space purposes. See further comments below.
14 – Create a sustainable Bathurst Region	The Planning Proposal seeks to significantly increase living density in reasonable proximity to the Bathurst CBD. It therefore supports action 14.6 which encourages Council to review its planning instrument provisions to reduce urban sprawl.
15 – Improve resilience to natural hazards and extreme weather events	The land is not identified by any mapped hazards such as flooding or bushfire. However, it is acknowledged that extreme weather events are on the rise and that planning controls must enable community preparedness and resilience. With the proposed increase in density, Council must consider whether the expected population on the site will be able to orderly move through the city during and following a disaster event. This consideration goes hand in hand with whether the existing roadways can support the normal expected traffic to and from the site. See discussion below in relation to Planning Priority 3.
16 – Provide new homes	The PP is supported by a Social Impact Assessment (see Attachment 9) which is discussed in more detail below.
18 – Deliver public spaces and recreation	Relevant provision of landscaping and private and communal open space needs to be considered as part of the subsequent DCP provisions.
19 – Deliver social, community and cultural infrastructure.	The PP is supported by a Social Impact Assessment (see Attachment 9). The Master Plan and Planning Proposal does not propose any social housing quotas. Wider community infrastructure provision would be supported through developer contributions at the DA stage.

Planning Priority 3 – Connect the Bathurst Region

The proponent has submitted a Traffic and Parking Assessment Report available at **Attachment 6**. It was prepared by CJP Consulting Engineers. Upon advice from Council and TfNSW, the report assessed the following intersections:

- Havannah St & Prospect St
- Havannah St & Spencer St
- Havannah St & Brilliant St
- Havannah St & Rocket St
- Prospect St & Busby St

- Busby St & Spencer St
- Busby St & Bant St
- Brilliant St & Torch St
- Rocket St & Torch St
- Rocket St & Bant St
- Rocket St, Alpha St & Vale Rd

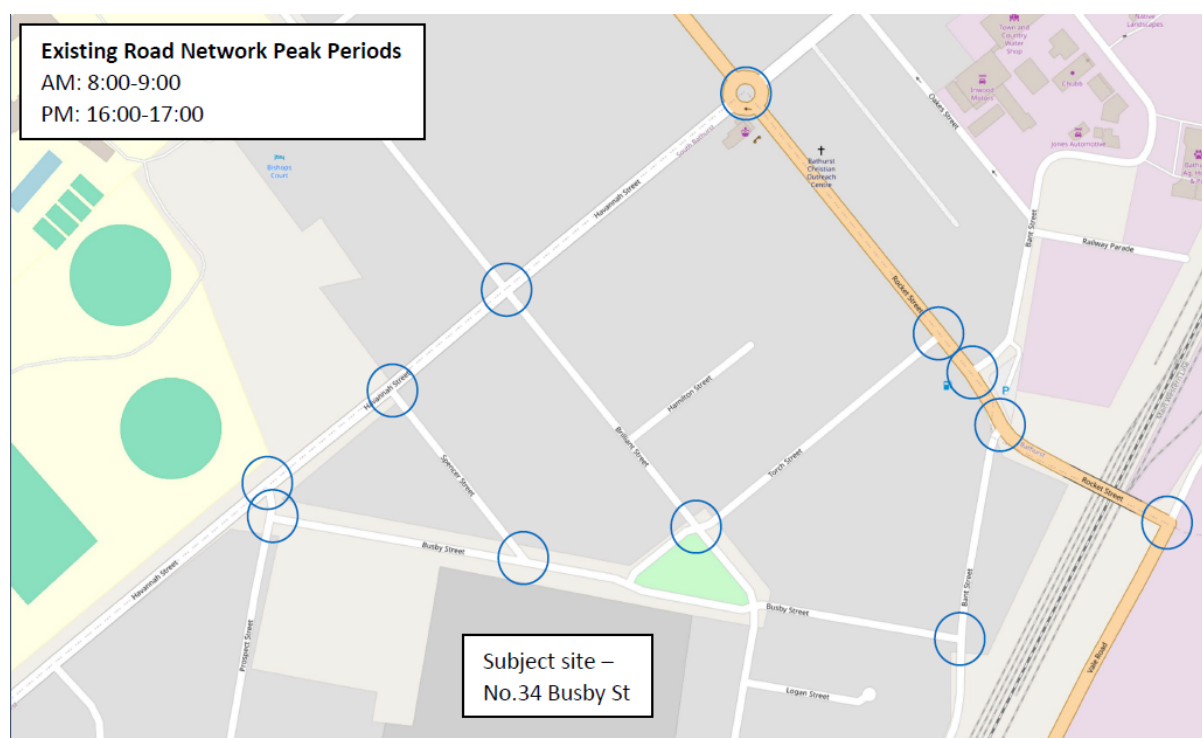


Figure 16 – Extent of road network surveyed (CJP 2024)

The traffic surveys were undertaken on Thursday 15th February 2024 between 7am-9am and 4pm-6pm, with the full detail of results available in Appendix C of the report.

Based on a number of “worst case” parameters, the report has determined that the proposed development on 34 Busby Street is expected to generate in the order of 219 and 239 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times. Based on information provided in the Allera PP report for the adjoining site, the proposed development on 50 Busby Street is expected to generate in the order of 69 and 75 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times.

The report determines that the cumulative increase in traffic as a consequence of development on both 34 and 50 Busby Street will not result in any unacceptable traffic implications to the surrounding road network, nor will any road upgrades be required. With respect to the proposed residential development, it was determined that in order to comply with the current DCP car parking requirements, 273 spaces would be required to be provided on site, comprising of 226 residential spaces and 47 visitor spaces. The Master Plan demonstrates that the majority of car parking spaces are to be provided in basement parking and some above ground parking. All other matters such as loading and servicing can be dealt with at DA stage.

The submitted Traffic Impact Assessment includes an assessment of the proposed development in the Master Plan, and the future adaptive use of St Joseph’s Mount as a function centre with on-site accommodation and ancillary uses such as restaurants and

bars. It also includes a minor assessment of the expected traffic that might result from the Planning Proposal that relates to the adjacent site at 50 Busby Street, South Bathurst. A key recommendation of item no. 9.2.4 (the Planning Proposal that relates to 50 Busby Street) seeks a peer review of that the Traffic Impact Assessment (TIA) because Council is not satisfied that the TIA has fully addressed the cumulative impacts of the envisaged development at 34 Busby Street. The assessment of the TIA in the submitted Traffic and Parking Assessment Report for 34 Busby St must not be considered a suitable replacement for a peer review of the report for 50 Busby Street. The reasons for this are multiple, not limited to that different consultants have been used for each report, different intersections have been surveyed, and that the conclusion that the Traffic and Parking Assessment Report has arrived at may have been influenced by incomplete data as presented in the TIA for 50 Busby Street and vice versa.

As such the full impacts of traffic that might result from both proposals is best reviewed by a consultant independent of both sites as a condition of the gateway determination. A peer review will dispel any concerns that there might be discrepancies between the two reports and to ascertain the true impact of traffic as a result of both Planning Proposals as well as the future adaptive reuse of the heritage item.

The peer review needs to be completed prior to public exhibition of the draft Planning Proposal.

The cost of the peer review would be at full cost to the applicant, in accordance with Council's revenue policy, and that cost could be equally shared between the proponents of 34 and 50 Busby Street.

Related to traffic and the movement of people, the planning proposal states that the existing bus services to and from the site are suitably located. Whether the service frequency needs to be improved is not assessed, however it is noted that there are no existing footpaths between the site and nearby bus stops. The submitted Social Impact Assessment at **Attachment 9** suggests that there is a potential for contributions from the applicant to contribute to local foot and bike paths around the site to facilitate linkages to the CBD. The Planning Proposal does not provide any details how the improvement of active transport in and around the site might be achieved.

A new site-specific DCP would consider the need for footpaths along both street frontages, and might include foot/cycleway connections between the site and 50 Busby Street (given they were historically linked), Havannah Street (main thoroughfare to the CBD), two nearby bus stops on Prospect Street, and to nearby public open spaces, schools, and so on.

Planning Priority 6 – Protect Mount Panorama (Wahluu) as a motor sport and event precinct

The LSPS identifies the significance of Mount Panorama as a major economic and cultural precinct. Council's long-term goal is to protect Mount Panorama as an international motor racing venue and to foster further economic growth through the delivery of a motor sport precinct inclusive of a second world class circuit and associated research and development business park.

Action 6.6 of the LSPS states that as an ongoing action, *Council should minimise or reduce, where possible, the permitted residential density in South Bathurst over those existing residential lands within the 50 dBA noise contour and other identified land that may be affected by noise exposure from the Mount Panorama racing precinct.*

The subject site is **not** located within the Mount Panorama racing precinct, nor is it within the 50 dBA Mount Panorama Environs map as per Clause 7.6 of the LEP. The subject site is, however, marked as a 'No Change' area in the *Bathurst 2036 Housing Strategy* due to its proximity to lands within the 50dBA contour.

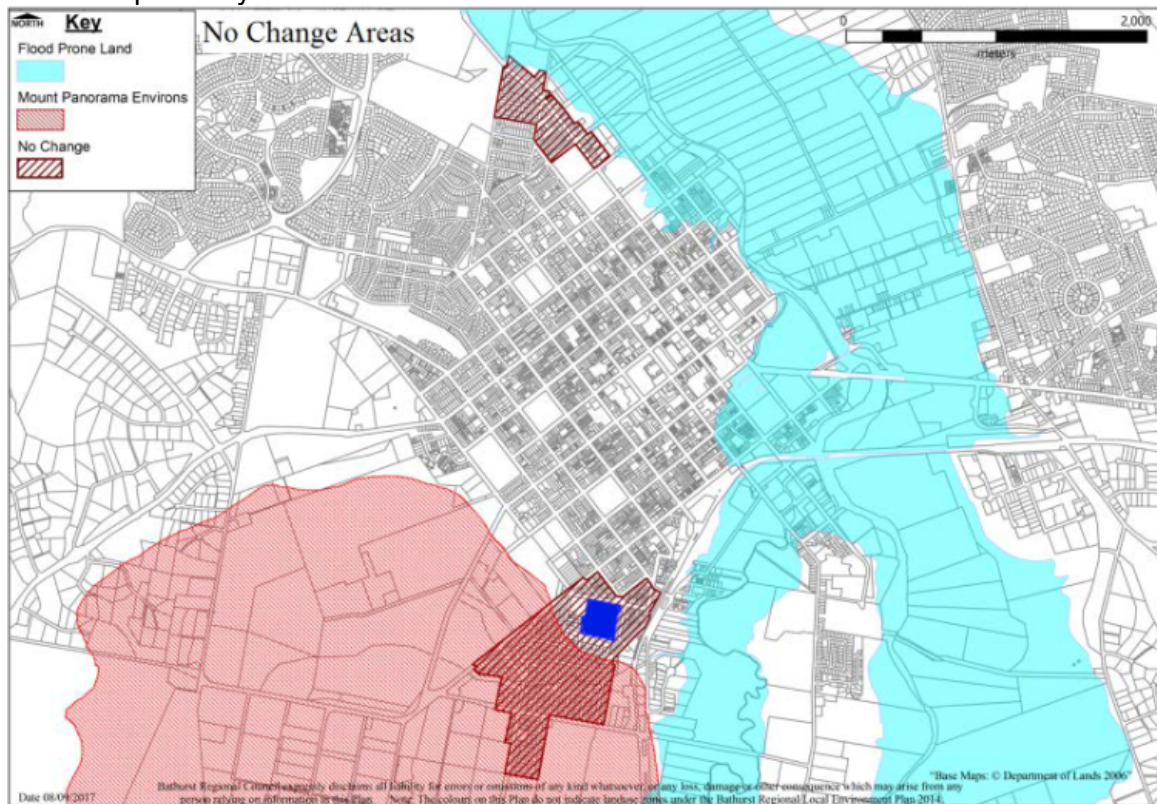


Figure 17 – 'No Change Area' precincts in the *Bathurst 2036 Housing Strategy*. Subject site identified in navy blue.

The Bathurst 2036 Housing Strategy recommended 'No Change' areas to prevent new residential living opportunities, including increased living densities, on environmentally sensitive lands. The area in which the subject site is located was nominated as a 'No Change' area because of its proximity to the potential for noise impacts from the Mount Panorama racing precinct, whether or not the circuit expands or a second circuit proceeds.

The proponent has argued two reasons for why the site is suitable for increased urban density despite the 'No Change' area designation. The first is that the second racing circuit is no longer proceeding, and the second reason is that the development of the site is 'beyond the resources of Council to investigate' due to the site being listed as an item of local significance.

Whether or not the second racing circuit proceeds, action 6.6 of the LSPS remains relevant to ensure existing activities at Mount Panorama are not jeopardised by increased living densities within proximity of the adopted 50dBA noise contour. The discontinuation of the second racing circuit at this time does not preclude the planning proposal from considering noise impacts in that regard.

In relation to the site having been listed as an item of local significance and the assertion that Council does not have the resources to investigate the development potential of a site with such a listing, this is of little relevance because the site has never been in Council's ownership. In addition, the listing of any site for its heritage significance has no correlation to whether the site is affected by or has the potential to be affected by noise

impacts from the Mount Panorama Racing Circuit activities. The site containing an item of local heritage significance does not necessarily prevent the site from being developed for the purposes of medium density residential development and was not the motivation behind the 'No Change' area designation.

Rather, the 'No Change' area designation is solely because of unknown potential noise impacts for locations close to those areas within the 50 dBA Mount Panorama Environs map as per Clause 7.6 of the LEP.

Council has, therefore, requested that a Noise Impact Assessment be included as part of the Planning Proposal. It is important that Council is satisfied that the development is capable of complying with relevant standards and be protected from noise that may be generated from existing activities that occur at the Mount Panorama racing circuit such that that level of noise will not unreasonably disturb a higher number of residents to an unacceptable level.

The proponent has submitted an Acoustic Impact Assessment, available at **Attachment 7**. In addition to assessing the potential noise impacts from racing activities on the capacity of the site to provide medium density residential development, it has also taken into consideration the future use of the land as a function centre with restaurant and accommodation facilities. The methodology used to assess noise emissions were the NSW EPA Noise Policy for Industry and the Noise emission requirements for liquor Licensed Venues (for the future Function Centre).

The report made the following conclusions:

- Compliance with the relevant acoustic requirements for residential dwellings can be achieved.
- To control noise impacts at external receivers, recommended indicative treatments of building services have been provided in section 4 of the report.
- Noise associated with additional traffic on Public Roads has been reviewed and determined to not exceed the existing conditions by 2dBA, therefore compliance with the NSW Road Noise Policy is achieved resulting from the proposed planning proposal.
- An assessment of the potential function facility which may be included to the west of the proposed general residential use included as part this planning proposal will be acoustically acceptable, including the required acoustic design of the function facility and management controls to be included has part of any events which may occur.

Overall it was found that the development that might result from the planning proposal and the future use of the heritage item (function centre with ancillary uses) will be acoustically acceptable.

Notwithstanding the above, Council must be assured that the resultant medium density development can be reasonably protected from noise impacts created by the development that might result from the planning proposal that relates to 50 Busby Street and the adaptive reuse of the heritage item and vice versa. The adjacent rezoning proposal has been considered by the Acoustic Impact Assessment insofar as that 50 Busby Street would be a noise receiver. It is not clear as to whether the submitted Acoustic Impact Assessment has assessed all potential noise impacts that might result from both sites and the adaptive reuse of the heritage item.

Most importantly Council **MUST** be satisfied that the Planning Proposal will not jeopardise the Mount Panorama racing circuit.

It is therefore recommended that Council seek a peer review of the Noise Impact Assessment by an independent external consultant appointed by Council to provide certainty as to the impacts that noise from the Mount Panorama racing circuit might have on the future residents of the site. The peer review can be consolidated to include a peer review of the requested noise assessment on the adjoining lands at 50 Busby Street which is also seeking a R3 rezoning. The peer review needs to be completed prior to public exhibition of the draft Planning Proposal and it will be recommended that the Department of Planning, Housing and Infrastructure (DPHI) require the peer review as part of its Gateway Determination.

The cost of the peer review would be at full cost to the applicant, in accordance with Council's revenue policy, and that cost could be equally shared between the proponents of 50 and 34 Busby Street.

Planning Priority 9 – Protect indigenous cultural heritage

The Wiradjuri people are the Traditional Owners and Custodians of the Bathurst Plains. Their occupation of the area extends thousands of years to the time of Gudyiin ('the beginning', time immemorial).

The Wiradjuri people continue to have a spiritual and cultural connection to the land. This connection long pre-dates European settlement, and despite modification of the land through urban development, many places of significance remain.

Council has completed extensive studies and investigations about the Region's Aboriginal Cultural Heritage. The Bathurst Region Aboriginal Heritage Study was completed in 2015 and includes Aboriginal cultural heritage sensitivity mapping which is being used to inform development decisions. Extensive Aboriginal Cultural Heritage investigations have also been completed at Mount Panorama (Wahluu).

The site is close to the Charles Sturt University campus through which, as it is understood through oral history, a significant songline traverses as it merges with Mount Panorama Wahluu. Parts of the site may have significance to Aboriginal people, including a terraced area located east of the Novitiate Wing that was dedicated to the Wiradjuri people by the Sisters of Mercy when they were active on the site. On site this dedication is embodied by a sandstone plinth that originated from the Bathurst Gaol. On it a plaque dedicates the People's Garden to the Wiradjuri People, representing "the desire of the Sisters of Mercy to promote justice and reconciliation in relationships with Aboriginal people".

In addition a small eucalyptus tree was planted for Bill Allen Senior as a memorial to the Wiradjuri elder's life. This tree is identified as tree 129 in the VMP (**Attachment 2**).



Figure 18 – Diagram from the VMP identifying the tree planted in memory of Bill Allen Senior, significant Wiradjuri elder (Western Project Services 2022)

The Master Plan diagrams suggest that this tree will not be disturbed, however the area dedicated to reconciliation with Wiradjuri people will be the location of the future function centre building. That said the siting of such a building is not the subject of this planning proposal.

The proponent was encouraged to discuss the Planning Proposal with the Bathurst Local Aboriginal Land Council and the Wiradjuri Traditional Owners Central West Aboriginal Corporation (WTOCWAC) prior to lodgement. The proposal does not demonstrate such consultation occurred however it must be noted that consultation with Aboriginal groups is not required by the *National Parks and Wildlife Act 1974* unless an Aboriginal Cultural Heritage Assessment (ACHA) is required to be prepared because of impact to a registered Aboriginal object. There are no registered objects on the subject site.

As part of the exhibition process, Council will seek to consult with the Bathurst Local Aboriginal Land Council and the WTOCWAC to comment on the impacts of the proposal on tangible and intangible Aboriginal heritage. The feedback received may form part of design excellence guidelines and/or site interpretation controls that would be applied through the subsequent DCP provisions.

Planning Priority 10 – Protect European and non-Indigenous heritage

The site is within the Bathurst Heritage Conservation Area and contains local heritage item St Joseph's Mount (Logan Brae). The submitted Heritage Impact Assessment (**Attachment 8**) describes that the former St Joseph's Mount Convent & Novitiate was

originally constructed in 1877 for John Busby and his family. In 1908 the property was purchased for the use of the order of the Sisters of Mercy and remained in their stewardship until 2021. The site comprises the former Logan Brae Victorian era villa and its extensions. A chapel was constructed adjacent to Logan Brae in 1916 and a Science Room, identified as MacAuley Cottage was constructed in 1959. Various outbuildings include gardener's sheds and a number of buildings constructed north of the convent to support a community garden. The site also includes the Gatekeeper's Cottage which does not form part of the local heritage item curtilage.

Actions 10.6, 10.8 and 10.12 of the LSPS are relevant to this Planning Proposal, being:

10.6 Undertake a review of the heritage and urban design provisions within Council's planning instruments.

10.8 Ensure that impacts on heritage are given significant consideration in the development assessment process through Council's heritage advisory service and pre-Development Application processes.

10.12 To promote the importance of the Region's unique heritage and minimise the future loss of heritage assets.

The submitted Heritage Impact Assessment was prepared by the same heritage consultant who prepared the Conservation Management Plan for the site's subdivision in 2020, consequently the knowledge of the heritage significance of the site has been demonstrably high. The assessment focuses primarily on the significance and conservation recommendations for the St Joseph's Mount complex in consideration of the future use of lot 225 (mistakenly written as 224 in the report) as a function centre with ancillary uses.

However the Planning Proposal does not relate to this part of the land, it relates to the residual allotment Lot 226 and as such the assessment should be whether the proposed amendments to the LEP are appropriate for the site in its context of being in a heritage conservation area and containing a significant local heritage item. Little regard is given toward whether the increase in density and height are appropriate, simply noting that Bathurst 'has a need for medium density development' and that 'the site is considered very suitable for such a development' despite providing no heritage justification for such a statement. It should be noted that the same statements were made in the Heritage Impact Assessment submitted for the Planning Proposal at the adjacent site, 50 Busby Street. Both Heritage Impact Assessments were prepared by the same consultant.

The Heritage Impact Assessment for the subject site includes matters for consideration however it is unclear whether these recommendations are in relation to the future proposed buildings on Lot 225 or the master plan proposed on Lot 226. In addition, no attention has been given toward the master plan proposing a zero front boundary setback, or discussing what might be an appropriate side and rear boundary setback.

Overall the report is limited on assessing the proposed LEP amendments from a heritage perspective. The increase in density and increase in height limit *will* have an impact on the heritage character of the area. The ways in which the proposal could mitigate those effects could have been better articulated, and the report could have included discreet, numerical setbacks and other methods of managing impacts to heritage.

The insertion of a new provision in Council's LEP will require that development consent cannot be granted for development to which the clause applies (being the subject land) until such time as the development controls for relevant matters (DCP provisions) have been prepared for the land. This will enable Council to ensure that development on the site is assessed against a rigorous design excellence clause which would enable an in-

depth analysis of the final development design and how heritage impact can be mitigated. As such it is expected that the designs/building envelopes proposed in the Master Plan would not be the final presentation.

Design excellence guidelines within the subsequent DCP will also be needed to address potential impacts from 18m tall apartment buildings in a conservation area that has not before seen buildings of that height in this location.

Planning Priority 12 – Enhance environmentally sensitive land and biodiversity

The subject site is within the Bathurst Heritage Conservation Area and therefore Council's Tree Preservation Policy applies to the protection of prescribed trees on the site.

Prescribed trees are any tree that is:

- a) greater than nine (9) metres in height; or
- b) has a stem diameter of one (1) metre or more at a height of one (1) metre from the ground; or
- c) has a branch spread of fifteen (15) metres or more; or
- d) is not an exempt tree (i.e. not a species listed in the list of exempt trees in the policy).

The concept Master Plan indicates that the footprint of the apartment building/s may overlap with the location of some trees identified in the VMP as being appropriate to remove. The Master Plan also includes vegetated and open space area proposals, including a corridor of landscaping on the eastern side of the lot which would form part of a vehicular and pedestrian accessway.

Appropriate setbacks to enable planting to occur and survive, along with compliant vehicular and pedestrian movements, efficient privacy screening, and appropriate landscaping species are matters that will be important aspects of the subsequent DCP provisions that will need to apply to the site.

Planning Priority 16 – Provide new homes

Planning Priority 16 addresses the growing population of the Bathurst Region and the need to accommodate this growth. The LSPS notes that population is expected to grow to 55,250 by 2036 representing an increase of 12,600 people requiring 5,245 new dwellings to accommodate this growth. The LSPS identifies some key demographic trends that will affect future housing provision including:

- a reduction in household size from 2.5 persons to 2.32 persons by 2036;
- an increase of over 42% in the population of retirement age;
- an increase of over 22% in the population under working age;
- an increase of over 19% in the population of working age; and
- lone person households becoming more common.

The majority of the current housing stock comprises detached dwellings with up to 4 or more bedrooms. The dominance of large detached dwellings does not correlate with the key demographic trends that are identified above. The LSPS calls to improve housing choice and diversity to address these trends and also as a means to contribute to housing affordability. The key challenge identified is the markets acceptance of lower cost housing and smaller lot sizes in suburban locations.

The Planning Proposal represents a unique opportunity for the physical realisation of providing housing diversity and choice in the market at a location that is relatively close to the CBD.

Summary

It is considered that the Planning Proposal is consistent with the objectives of the Bathurst Region LSPS subject to completion of the Peer Reviews of the Noise and Traffic Impact Assessments prior to public exhibition and subject to those reviews providing for favourable outcomes where any possible impacts might be appropriately mitigated. It is recommended that DPHI condition these reviews as part of their Gateway determination.

Bathurst 2036 Housing Strategy

The Bathurst 2036 Housing Strategy (Housing Strategy) is a strategic document which assists Council to encourage a range of housing that meets the existing and future housing needs of the Bathurst LGA. The Housing Strategy details the expected growth of Bathurst and the changing demographic trends and identifies potential locations for new or intensified housing.

The goals of the Housing Strategy are to:

- 1) Balance the housing supply between new areas and increase housing densities in existing areas close to services.
- 2) Improve housing diversity/choice and affordability.
- 3) Deliver a better-built environment, urban design and housing design.
- 4) Improve connectivity, especially walkability.

The proponent has submitted a Social Impact Assessment, available at **Attachment 9** which examined the existing housing stock and whether the proposal would meet the future demand of housing in Bathurst.

The report states that because the proposal will enable the development of residential dwellings of smaller typologies, that the availability of smaller dwellings will result in more affordable housing for the community. However, the actual cost of the dwellings may be influenced by other factors such as acoustic treatments, access to high quality amenities, proximity to a function centre, and so on, such that it cannot be said for certain that the proposal will contribute to affordable housing provision. Rather, the proposal will contribute to greater housing supply, which in turn might influence property prices.

The report also states that as the proposal includes a number of three-bedroom dwellings, able to accommodate families, there is the potential for increased demand for childcare, schools and public transport. It is possible that any increased demand can be accommodated by existing services and providers, and that the proposal may generate enough desire for additional services to be provided by others.

The report does not assess the proposal against the Housing Strategy in any great detail, lacking an argument as to how the proposal meets the objectives of the Strategy. Unlike the Planning Proposal at 50 Busby Street, the report assesses demographic information in relation to the South Bathurst suburban area. As suggested in Council Report no. 9.2.4, a more appropriate dataset might be to look at those that are most in line with 'inner fringe neighbourhoods'. 'Inner fringe neighbourhoods' are those more likely to comprise of smaller dwelling typologies rather than suburban and rural areas that would be more likely to represent a marked deficiency in smaller dwelling types. It would therefore be more appropriate to look at the locality of 'Bathurst', being the residential area more

concentrated around the CBD. This area is more representative of the medium density dwelling housing stock whereas the South Bathurst area includes suburban and rural dwelling formats where the dwelling character is more likely to be larger formats.



Figure 19 – Bathurst Area (ABS Statistics)

	Number of bedrooms in housing market		
	Bathurst LGA (mix of medium density, suburban and rural)	South Bathurst (suburban area)	Bathurst (Inner fringe area)
1-Bedroom Dwellings	3.4%	2.3%	7%
2-Bedroom Dwellings	13.8%	16%	39%
3-Bedroom Dwellings	36.5%	59%	36.6%
4-Bedroom Dwellings	44.5%	21.9%	14.9%

The Social Impact Assessment notes that the census suburbs of South Bathurst and the Bathurst LGA have an increasing number of lone and couple households, while the predominant form of housing is separate dwellings with three or more bedrooms. This trend is recognised in the LSPS identifying the need for smaller dwellings to accommodate a range of household types.

The Master Plan proposes 30 x 1-Bedroom units, 159 x 2-Bedroom units and 29 x 3-Bedroom units, introducing a large supply of the 2-Bedroom dwelling typology that is less common in the South Bathurst suburban area and most commonly found in the more densely populated areas of the Bathurst CBD.

Of note, the Housing Strategy identifies the site as a 'No Change' area as shown earlier in [Figure 17](#). As discussed previously, the Strategy recommended 'No Change Areas' to prevent new residential living opportunities, including increased living densities, on environmentally sensitive lands. The area in which the subject site is located was nominated as a 'No Change' area because of the potential noise impacts of the Mount Panorama racing precinct, including a possible second circuit if it were to be constructed.

Council needs to be satisfied that the development is capable of complying with relevant standards and be protected from noise that is generated from the Mount Panorama racing circuit such that that level of noise will not disturb a higher number of residents to an unacceptable level.

The Acoustic Impact Assessment, available at **Attachment 7**, gives Council only a degree of certainty that the resultant medium density site can be reasonably protected from potential noise impacts insofar as that the individual sites (being 34 and 50 Busby Street PPs) have been assessed by separate consultants. It is recommended to Council that it seeks a peer review of the Noise Impact Assessment to provide certainty as to the impacts that noise from the Mount Panorama racing circuit might have on the future residents of the site.

Depending upon the outcomes of the Peer Review, Council may need to undertake a review of the Housing Strategy and its LEP where the noise levels from the Mount Panorama racing precinct necessitate the Mount Panorama Environs Map to be modified.

Should the Peer Review report demonstrate that the subject site is suitable for rezoning, the site might be better classified under the Housing Strategy as an 'Inner Fringe' area.

The Housing Strategy nominates Inner Fringe neighbourhoods close to the CBD's amenities and facilities for appropriate urban renewal with increases in residential density. It supports owner-initiated planning proposals to support the urban renewal of land in the 'Inner Fringe' areas to be rezoned or redeveloped to allow for an increase in density. It stipulates that for this to occur, the site must achieve a design outcome that will achieve affordability, sustainability, and accessibility beyond those outcomes that might otherwise occur.

The Housing Strategy calls for agreed development principles for these sites to be formulated. The subsequent DCP provisions will therefore be important in finalising appropriate residential density standards that will be permitted on the site taking into account a wide range of matters including design, siting, landscaping and to achieve design-excellence.

It is considered that the Planning Proposal is consistent with the objectives of the Bathurst Housing Strategy subject to completion of the Peer Review of the Noise Impact Assessment and subject to that review providing favourable outcomes where any possible impacts might be appropriately mitigated. The site can then appropriately be considered under the Housing Strategy recommendations as an 'Inner Fringe' area instead of a 'No Change' area.

Bathurst Community Strategic Plan 2022

Our Region Our Future, the Bathurst region's Community Strategic Plan (CSP) is a Plan for the Bathurst community that describes how we can achieve the region's vision over the next 20 years.

Objective 4 Sustainable and Balanced Growth, Strategy 4.1 Facilitate development in the region that considers the current and future needs of our community identifies Bathurst's proximity to Sydney as a key indicator of growth. The population of Bathurst is expected to grow to 58,622 by 2041. To accommodate the population growth, the CSP notes Council will work with developers to improve the utilisation of our land resources more effectively, which may include higher density living.

The site represents a unique opportunity for Council to consider higher densities within close proximity to the Bathurst CBD. The Planning Proposal supports the vision and objectives of the CSP.

Policy – Urban Design Excellence – R3 Medium Density and E1 Local Centre Zones

The R3 Medium Density Housing zone was introduced for the first time in 2023 and applied to lands within the Laffing Waters Master Plan precinct. Council recognised that other lands within the Bathurst built up areas may be zoned R3 Medium Density as part of future developments to increase living densities, as supported by the recommendations of the Bathurst 2036 Housing Strategy.

As a consequence, Council recently adopted a new policy to encourage design excellence for new developments in the R3 Medium Density zone, along with the E1 Local Centre Zone.

The policy sets the guiding principles to ensure impacts on the public realm respond to changing community values and economic and environmental influences in those localities zoned, or proposed to be zoned, R3 Medium Density and E1 Local Centre, encouraging design excellence for new developments.

The following Guiding Principles are to be considered:

1. Sense of Place: How does change engage the street, neighbourhood and surrounding locality.
2. Heritage and Streetscape: How does change integrate with the street, neighbourhood, parklands and surrounding locality.
3. Landscape and Environment: How does change respond to and integrate with the environment and landscape.
4. Economic vitality: How does change revitalise an existing Neighbourhood Activity Centre and activate new and existing Main Streets.
5. Connection: How does change prioritise connectivity and walkability.
6. Traffic and Parking: How does change manage disruptions to traffic and parking and enhance opportunities for public and active transport.
7. Climate and Resilience: How does change respond to climate conditions and their impacts.
8. Liveability: How does change encourage new employees to work and new residents to live.

As discussed earlier, it is recommended that Council insert a new clause within the LEP that requires DCP provisions to be in place to guide development on the site before any development consent can be issued. That clause should provide a link to this policy in a manner similar to the clause inserted in relation to the proposed Bathurst Integrated Medical Centre which links to the CBD design excellence policy.

No design guidelines have been submitted with the Planning Proposal. Regardless, it is envisaged that Council will develop the future DCP provisions informed by urban design principles and with respect to the Master Plan.

Bathurst 2040 Open Space Strategy

The Open Space Strategy outlines principles to guide how open space and public recreation areas might be developed, upgraded, expanded and delivered to the Bathurst city and regional communities. The Planning Proposal does not reduce the land available for public purposes. The Master Plan proposes vegetation and open space areas ancillary to the development, the details of which would be best provided at DA stage. No land on the site is proposed to be zoned as RE1 Public Recreation land.

The site is otherwise well connected to nearby parks and regionally significant recreational spaces. Development Contributions may be required at DA stage to help facilitate the Strategy's broader open space objectives.

Bathurst CBD & Bulky Goods Business Development Strategy 2011 (Retail Strategy)

The Retail Strategy assesses the commercial activity of Bathurst and demonstrates the importance of the Bathurst CBD as the commercial core. The Planning Proposal includes a proposed Additional Permitted Use (APU) to allow retail premises to occur on the site which would otherwise be prohibited in the R3 Medium Density zone. The intention of this use is to allow for Food and Drink Premises to occur on site if needed.

The Planning Proposal should include, at a minimum, an assessment of Council's Retail Strategy to determine if Retail Premises and the subsequent use of Food and Drink Premises is not only *needed* but compatible with the objectives of the Retail Strategy which elevates the Bathurst CBD as the primary retail district. However, the Planning Proposal has not justified why Council should permit retail premises, providing no assessment against relevant planning strategies, or providing any assessment of the impacts such a use might have via any of the supporting reports.

As previously discussed, if the all types of 'retail premises' were permitted in the R3 Medium Density zone, it could permit large-scale development such as the likes of hardware stores, car sales yards, and other uses that could create undesirable traffic, noise, waste and amenity impacts. It could also permit medium scale shops such as supermarkets, and small scale retail premises other than food and drink premises which could significantly impact the primacy of the Bathurst CBD.

Given that the understood intent behind inserting retail premises as a site-specific APU is to enable food and drink premises, an APU could be accepted if it were specifically limited to food and drink premises and be restricted to a floor area of 150m² per tenancy, for a total area of 300m² for all food and drink premises on the site. Though the proponent has not provided any justification for why the specific use would be compatible on the site and in the surrounding area, should Council restrict the floor area for small scale premises as proposed, such a restriction would be deemed appropriate because it would minimise conflict with the commercial activity of the Bathurst CBD, and is similarly recommended for the adjacent site at 50 Busby Street.

Should Council support the APU as proposed, the Planning Proposal would be consistent with the objectives and recommendations of the Bathurst CBD & Bulky Goods Business Development Strategy 2011.

Central West and Orana Regional Plan 2041

The Central West and Orana Regional Plan 2041 (Plan) is a 20-year plan for the region, helping to guide planning priorities and decision making. It provides an overarching framework to guide subsequent and more detailed land use plans, development proposals and infrastructure funding decisions.

The region's projected population growth will be greatest in the regional cities, with a combined growth of 30,062 people (in the regional cities and surrounding LGAs) over the next 20 years. Bathurst is identified as one of the regional cities where the greatest population growth and housing demand is expected to occur. It is anticipated the growth will require regional centres to provide a mixture of housing that meets the regions changing needs and reflects the unique local character and needs of each community.

The housing supply and demand is shaped by the older population, an increase in single person households and a decrease in the average household size. The plan recognises

that the existing housing stock mainly comprise large, detached housing and that the existing typology will not complement the forecast population growth and composition.

The Planning Proposal provides for a diverse range of housing typologies which seeks to meet the needs of the changing demographic and household composition.

The following objectives of the Regional Plan are relevant to the Planning Proposal and in most cases Council's assessment against the Regional Plan correlates with the assessment made above in relation to Vision Bathurst – Bathurst Regional Local Strategic Planning Statement (LSPS).

Central West and Orana Regional Plan 2041 Objectives	Council Assessment
6 – Support connected and healthy communities	The Social Impact Assessment available at Attachment 9 assesses the existing provision of recreation and open space in the area surrounding the site. Generally the site is well located to access current and future open space and recreation areas, however the active transport routes need improvement. The Planning Proposal also does not propose any pedestrian links between proposed lot 226 and lot 225 (which will contain St Joseph's Mount), or with the adjacent site at 50 Busby Street. Site-specific DCP provisions may encourage pedestrian linkages between the three sites to enable walking and cycling routes.
7 – Plan for resilient places and communities	The land is not affected by any mapped hazards such as flooding or bushfire, however it is acknowledged that extreme weather events are on the rise and that planning controls must enable community preparedness and resilience.
9 – Ensure site selection and design embraces and respects the region's landscapes, character and cultural heritage	As part of the exhibition process, Council will seek to consult with the Bathurst Local Aboriginal Land Council and the WTOCWAC to comment on the impacts of the proposal on tangible and intangible Aboriginal heritage.
11 – Strengthen Bathurst, Dubbo and Orange as innovative and progressive regional cities	The Planning Proposal will provide a diverse mix of housing in a medium density format that is relatively uncommon in the Bathurst region's current housing stock market.
12 – Sustain a network of healthy and prosperous centres	The Planning Proposal will provide a range of housing typologies that will diversify the Bathurst housing market. As previously discussed, it proposes to insert an APU for retail premises, with the intent of permitting food and drink premises as needed. Given that the inclusion of the broader term for retail premises will allow uses that may highly conflict with the primacy of the Bathurst CBD, it is recommended that Council refines the use to food and drink premises only and restrict the tenancies to be limited to 150m ² for a total maximum floor area of 300m ² , consistent with the recommendations for 50 Busby Street in item no. 9.2.4.
13 – Provide well located housing options to meet the demand	The proposal is supported by a Master Plan which seeks to cater for the identified need for housing in the Bathurst LGA. The proposal is capable of utilising existing

Central West and Orana Regional Plan 2041 Objectives	Council Assessment
	<p>services to cater for the development, providing a greater density that is close to shops and services and is absent significant hazards that may otherwise restrict future use.</p> <p>Subject to the peer reviews recommended for the noise impact assessment and traffic impact assessment, the site is considered appropriate for future residential development and the proposal will contribute significantly to the supply of housing in the Bathurst LGA in response to forecasted population growth and projection. The proposal will also improve housing choice and diversity.</p>
14 – Plan for diverse, affordable, resilient and inclusive housing	<p>The proposal seeks to provide a diverse range of lots and housing typologies at varying price points to cater for varying demographics. Through the supply and diversity of new housing, the proposal will provide greater housing choice and may contribute to affordability, whilst catering specifically to the forecasted population growth and changing demographic. Furthermore, the proposal will create significant employment opportunities throughout the construction phase, thereby contributing significantly to the local economy.</p>
16 – Provide accommodation options for seasonal, temporary and key workers	<p>Development of the land as proposed by the Master Plan would be of a scale not seen before in Bathurst. This will place a premium on the demand for short term accommodation for the construction of the project. The completed project may provide housing options for seasonal, temporary, and key workers, particularly those working out of Charles Sturt University given its close proximity to the site.</p>
17 – Coordinate smart and resilient utility infrastructure	<p>A Servies Strategy Report available at <u>Attachment 5</u> demonstrates that the envisaged Master Plan development is capable of being serviced. Council's Engineering staff have noted that adequate stormwater conveying may need to be investigated though it would not prohibit the resultant development from proceeding.</p>
20 – Protect and leverage the existing and future road, rail and air transport networks and infrastructure	<p>See comments above in relation to the LSPS priorities recommending a peer review of the traffic impact assessment prior to public exhibition.</p>
21 – Implement a precinct-based approach to planning for higher education and health facilities	<p>The subject site presents an opportunity to provide medium density housing options close to existing educational hubs and so create housing opportunities for workers to live near their employment centres and could also generate activity on the nearby campuses. This opportunity is afforded by making use of a large site that can be spot developed into a higher density location.</p>
23 – Supporting Aboriginal aspirations through land use planning	<p>As part of the exhibition process, Council will seek to consult with the Bathurst Local Aboriginal Land Council and the WTOCWAC to comment on the impacts of the proposal on tangible and intangible Aboriginal heritage.</p>

It is considered that the Planning Proposal is consistent with the objectives of the Central West and Orana Regional Plan subject to completion of the Peer Reviews of the Noise and Traffic Impact Assessments prior to public exhibition and subject to those reviews providing for favourable outcomes where any possible impacts might be appropriately mitigated.

Housing 2041

Housing 2041 is a 20-year vision for housing in NSW. It embodies the State Government's goals and ambitions to deliver better housing outcomes by 2041 - housing in the right locations, housing that suits diverse needs and housing that feels like home.

The 20-year vision for Housing 2041 is set out below.

Peoples and communities have:

- access to housing security, diversity and support, irrespective of whether they live in metropolitan or regional areas.
- choices that enable them to afford a home without compromising on basic needs.
- support and opportunity in differing circumstances, including people in crisis, social housing residents, private rental tenants and those who aspire to home ownership.

Homes in NSW are:

- accessible and suitable for different stages of life or changing circumstances.
- connected to local facilities, jobs and social networks, with infrastructure, services and spaces that people need to live sustainably.
- designed to support human wellbeing and respond to the environment, maximise technology and support local character and place.

The Master Plan seeks to provide high quality housing to meet the demands for dwellings within the Central West. The proposal provides housing that would be connected to local facilities, jobs and social networks. The proposal provides housing diversity through an additional supply and provision of a range of dwelling typologies and sizes.

Housing 2041 aims to meet this vision through the following aspirations:

1. Enhanced partnerships and cross-sector collaboration.
2. Increased support for those most in need.
3. More investment and support for housing that is adaptable to changing needs and environments.
4. Improved alignment of housing with infrastructure and community services for NSW communities.
5. Additional support for first homebuyers.
6. Continued support for people in the private rental market.

The provision of a range of residential typologies may contribute to affordability. Additional supply of housing may have a wider flow on affect such as lowering rents in the private rental market and regulating short term accommodation options. Whether the dwellings will be affordable, however, is a matter that has not yet been determined given that the noise attenuation that may be required and other amenity and market factors may influence the price point above acceptable affordability levels. It should be noted that the Planning Proposal and associated documents do not include opportunities for social housing.

Regional Housing Taskforce

As a direct consequence of the significant increases of demand and the resultant shortfall of supply for housing throughout Regional NSW, the Regional Housing Taskforce was formed in June 2021 to investigate challenges and barriers to housing supply in the NSW planning system. The Taskforce also sought to develop recommendations on how the planning system and other NSW State Government levers could be used to achieve better housing outcomes for regional NSW. The recommendations of the Taskforce were adopted by the State Government in August 2022.

Key findings of the report are summarised below:

- Greenfield sites present barriers through site specific constraints such as environmental and biodiversity issues, cost, and complexity of required technical studies, the funding and delivery of critical enabling infrastructure, and development feasibility and market factors. This can lead to land banking or slow release of housing.
- Certain planning processes should be consolidated and streamlined to enable more efficient assessment. Effort and resources should be deployed to address place-based barriers and to resolve complex issues that exist within the planning system.
- There is a need for greater upfront strategic planning including investment in technical studies to resolve issues earlier in the planning process. Further, infrastructure planning, delivery and coordination need to be improved to unlock regional housing supply.

The Regional Housing Taskforce recommended:

1. Support measures that bring forward a supply of “development ready” land.
2. Increase the availability of affordable and diverse housing across regional NSW.
3. Provide more certainty about where, when and what types of homes will be built.
4. Investigate planning levers to facilitate the delivery of housing that meets short term needs.
5. Improve monitoring of housing and policy outcomes and demand indicators.

The Planning Proposal relates to a residual allotment of a subdivision yet to be released but is nevertheless an infill opportunity. The site has existing links to services and as such, the site is considered ‘development ready’.

The proposal would provide a diverse range of housing responding to the market demand and demographic changes in the Bathurst population.

The proposal is consistent with the aims and objectives of the Regional Housing Taskforce.

SUMMARY - Is the planning proposal consistent with Council’s LSPS and other endorsed local, regional or State strategy or strategic plan?

Evaluation criteria	Y/N	Comment
Does the proposal have strategic merit and: ◇ Is consistent with a relevant local strategy endorsed by the Director General; or	Yes	See discussion above. The planning proposal is consistent with the Central West and Orana Regional Plan. The Planning Proposal supports Direction 25 to support the

<ul style="list-style-type: none"> ◇ Is consistent with the relevant regional strategy or Metropolitan Plan; or ◇ Can it demonstrate strategic merit, giving consideration to the relevant section 117 directions applying to the site and other strategic considerations (e.g., proximity to existing urban areas, public transport and infrastructure accessibility, providing jobs closer to home etc.) 		<p>region's growth and change and Direction 29 to deliver healthy built environments and better urban design. The Planning Proposal is consistent with Council's Bathurst Regional Local Strategic Planning Statement and is capable of addressing or achieving actions 6.5, 6.5, 6.7, 7.7, 8.2, 8.10, 9.4, 10.8, 10.12, 12.7, 12.8, 12.11, 14.6, 14.7, 15.6, 15.7, 15.8, 16.6, 16.7, 16.8, 16.9, 16.10, 18.4, 18.8, 18.9, 18.13, 19.15, and 19.16.</p> <p>The Planning Proposal is consistent with the relevant Section 9.1 directions of the Minister (see section 4.3.2.5 below).</p>
<p>Does the proposal have site specific merit and is it compatible with the surrounding land uses, having regard to the following:</p> <ul style="list-style-type: none"> ◇ The natural environment (including known significant environmental values, resources or hazards) and ◇ The existing uses, approved uses and likely future uses of the land in the vicinity of the proposal; and ◇ The services and infrastructure that are or will be available to meet the demands arising from the proposal and any proposed financial arrangements for infrastructure provision. 	Yes	<p>See discussion above and further discussion in section 4.4 of this report below.</p> <p>The planning proposal is supported by a Master Plan prepared for the subject land that examined site specific details to determine an appropriate development outcome for the site.</p>

It is considered that the Planning Proposal is consistent with the objectives of the Bathurst Region LSPS subject to completion of the Peer Reviews of the Noise and Traffic Impact Assessments prior to public exhibition and subject to those reviews providing for favourable outcomes where any possible impacts might be appropriately mitigated.

It should be noted that the noise assessment must take into consideration the adjoining future development of 50 Busby Street which is proposed to be partially rezoned to R3 Medium Density. The submitted Acoustic Impact Assessment for the Planning Proposal at 34 Busby Street has considered the adjacent rezoning proposal insofar as that 50 Busby Street would be a noise receiver. It does not consider the noise generation that the Planning Proposal might have on 34 Busby Street, thus there is little assurance that the cumulative noise impacts have been fully assessed.

Where Council is satisfied that residents of the subject site will not be unreasonably burdened by noise impacts and that traffic generation can be accommodated within the existing road network, the proposal would be considered consistent with the LSPS. It is recommended that DPHI condition the two peer reviews as part of their Gateway Determination.

4.3.2 Is the planning proposal consistent with applicable State Environmental Planning Policies?

Council has undertaken a review to determine whether the Planning Proposal is consistent with the State Environmental Planning Policies (SEPPs).

State Environmental Planning Policy (SEPP)	Compliance (Yes/No or Not Relevant)
SEPP (Aboriginal Land) 2019	Not Relevant
SEPP (Activation Precincts) 2020	Not Relevant
SEPP (Affordable Rental Housing) 2009	Not Relevant
SEPP (Building Sustainability Index: BASIX) 2004	The Planning Proposal will continue to require BASIX affected buildings to meet BASIX commitments.
SEPP (Coastal Management) 2018	Not Relevant
SEPP (Concurrences and Consents) 2018	Not Relevant
SEPP (Educational Establishment Child Care Facilities) 2017	Not Relevant
SEPP (Exempt and Complying Development Codes) 2008	The Planning Proposal will continue to allow Exempt and Complying Development to apply.
SEPP (Gosford City Centre) 2018	Not Relevant
SEPP (Housing for Seniors or People with a Disability) 2004	The Planning Proposal will continue to allow seniors living housing and housing for people with a disability.
SEPP (Infrastructure) 2007	Not Relevant
SEPP (Koala Habitat Protection) 2020	Not Relevant The Planning Proposal does not include RU1, RU2 or RU3 zoned land.
SEPP (Koala Habitat Protection) 2021	Yes Whilst the site contains some native vegetation, the site does not contain a koala population.
SEPP (Kosciuszko National Park – Alpine Resorts) 2007	Not Relevant
SEPP (Kurnell Peninsula) 1989	Not Relevant

State Environmental Planning Policy (SEPP)	Compliance (Yes/No or Not Relevant)
SEPP (Major Infrastructure Corridors) 2020	Not Relevant
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	Not Relevant
SEPP (Miscellaneous Consent Provisions) 2007	Not Relevant
SEPP No 19 – Bushland in Urban Areas	Not Relevant
SEPP No 21 – Caravan Parks	Not Relevant
SEPP No 33 – Hazardous and Offensive Development	Not Relevant
SEPP No 36 – Manufactured Home Estates	Not Relevant
SEPP No 50 – Canal Estate Development	Not Relevant
SEPP No 55 – Remediation of Land	Not Relevant
SEPP No 64 – Advertising and Signage	Not Relevant
SEPP No 65 – Design Quality of Residential Flat Development	Not Relevant SEPP 65 applies to development for the purpose of a residential flat building, shop-top housing or mixed-use development with a residential accommodation component if it includes a new building of at least three storeys and more than four dwellings. The Planning Proposal states that there is sufficient opportunity for compliance with the Apartment Design Guide (ADG) requirements notwithstanding that demonstrating compliance would be a DA matter. The Planning Proposal does not involve the construction of any buildings and therefore this SEPP is not relevant at this stage.
SEPP No 70 – Affordable Housing (Revised Schemes)	Not Relevant
SEPP (Penrith Lakes Scheme) 1989	Not Relevant
SEPP (Primary Production and Rural Development) 2019	Not Relevant The land is already zoned for urban purposes.

State Environmental Planning Policy (SEPP)	Compliance (Yes/No or Not Relevant)
SEPP (State and Regional Development) 2011	Not Relevant
SEPP (State Significant Precincts) 2005	Not Relevant
SEPP (Sydney Water Drinking Catchment) 2011	Not Relevant
SEPP (Sydney Region Growth Centres) 2006	Not Relevant
SEPP (Three Ports) 2013	Not Relevant
SEPP (Urban Renewal) 2010	Not Relevant
SEPP (Vegetation in Non-Rural Areas) 2017	<p>Yes</p> <p>The proposed development in the master plan is unlikely to impact critical habitat or threatened species, population or ecological communities, or their habitats. A VMP has been submitted as part of this PP and relates to the subdivision approved under DA 2020/50. The VMP identifies trees which are suitable for removal, what appropriate replacement species might be and which trees must remain because of their heritage significance or relative health.</p> <p>Prior to the site being developed, a site-specific DCP should be in place that includes appropriate landscaping controls that relate to the VMP and could include the protection of the existing substantial trees on site.</p>
State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	Not Relevant
SEPP (Western Sydney Employment Area) 2009	Not Relevant
SEPP (Western Sydney Parklands) 2009	Not Relevant

4.3.3 Is the planning proposal consistent with applicable Ministerial Directions (section 9.1 Directions) or key government priority?

Council has undertaken a review to ensure the Planning Proposal is consistent with all relevant Section 9.1 Ministerial Directions issued by the Minister for Planning to relevant planning authorities under section 9.1(2) of the *Environmental Planning and Assessment Act 1979*.

All relevant Section 9.1 Ministerial Directions are considered in the following table.

Section 9.1 Ministerial Direction	Consistency
1. Employment and resources	
1.1 Business and Industrial Zones	<p>Not applicable. The land is zoned for residential purposes and will continue to be zoned for residential purposes. An Additional Permitted Use will apply only for food and drink premises limited to a floor area of 150m² with a maximum total floor plate of 300m². As previously discussed, the APU is recommended to be refined to food and drink premises with restricted floor area because such a use is otherwise prohibited in the R3 Medium Density zone and its unbridled expansion on the site could impact the primacy of the Bathurst CBD.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction, is of minor significance (Clause 5(d)) and should be supported.</p>
1.2 Rural Zones	<p>Not applicable. The land is zoned for residential purposes and will continue to be zoned for residential purposes.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
1.3 Mining, Petroleum Production and Extractive Industries	<p>Not applicable.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
1.4 Oyster Aquaculture	<p>Not applicable.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
1.5 Rural Lands	<p>Not applicable. The land is already zoned for urban purposes.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
2. Environment and Heritage	
2.1 Environment Protection Zones	<p>Not applicable.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
2.2 Coastal Protection	<p>Not applicable.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
2.3 Heritage Conservation	<p>The land is located in the Bathurst Heritage Conservation Area and currently contains local heritage item i247 St Joseph's Mount (Logan Brae).</p> <p>Increasing the density to the height proposed will have an impact on the heritage conservation area which is currently characterised by low-density single dwelling housing. The siting of taller buildings will also need to be carefully considered in relation to visual impacts to and from the heritage item.</p> <p>The impacts that this planning proposal will create is best managed by design excellence guidelines and a site-specific DCP chapter</p>

Section 9.1 Ministerial Direction	Consistency
	<p>which would deliver development that is consistent and complementary to the heritage streetscape and heritage item.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
2.4 Recreation Vehicle Areas	<p>Not applicable.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
2.5 Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs	<p>Not applicable.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
2.6 Remediation of Contaminated Land	<p>Complies.</p> <p>The subject land has not been identified on Council's contaminated land register. Additionally, the land is already zoned for urban purposes.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
3. Housing, Infrastructure and Urban Development	
3.1 Residential Zones	<p>The direction applies due to the amendments to the R1 zone and the introduction of the R3 Medium Density zone.</p> <p>The Planning Proposal seeks to rezone the existing R1 General Residential zone as it applies to proposed lot 226 to the R3 Medium Density zone. The minimum lot size for subdivision will be increased to 1300m² consistent with the residential flat buildings minimum lot size.</p> <p>The proposed amendments will encourage new medium density housing and improve the housing choice that is provided within established areas of Bathurst and provide certainty for the residents of the types of development that may occur within the subdivision.</p> <p>The Bathurst 2036 Housing Strategy identified the subject site as a 'No Change' area due to the potential impacts of noise from the Mount Panorama Racing Circuit current and future operations. Further details are required as to the full extent of noise impacts and possible noise attenuation methods as a gateway condition.</p> <p>The Planning Proposal is consistent with Council's Bathurst Regional Local Strategic Planning Statement and is capable of addressing or achieving actions 6.5, 6.5, 6.7, 7.7, 8.2, 8.10, 9.4, 10.8, 10.12, 12.7, 12.8, 12.11, 14.6, 14.7, 15.6, 15.7, 15.8, 16.6, 16.7, 16.8, 16.9, 16.10, 18.4, 18.8, 18.9, 18.13, 19.15, and 19.16.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction (Clause 6(a), (b), and (c)) and should be supported by the Department, provided that gateway conditions are imposed as recommended.</p>
3.2 Caravan Parks and Manufactured Home Estates	<p>Not applicable.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>

Section 9.1 Ministerial Direction	Consistency
3.3 Home Occupations	Repealed.
3.4 Integrating Land Use and Transport	<p>The direction applies due to the amendments to the R1 zone.</p> <p>A Traffic and Parking Assessment Report has been submitted with the Planning Proposal. It is considered that the report includes a comprehensive assessment of existing and potential traffic patterns at identified intersections and demonstrates that the required parking triggered by the Master Plan is capable of being provided fully off-street.</p> <p>Whilst the report refers to the Traffic Impact Assessment that was submitted for the Planning Proposal at the adjacent site, being 50 Busby Street, Council is not satisfied that the data in that report has considered the full extent of potential traffic impacts. Consequently the reference to it in the submitted Traffic and Parking Assessment Report is moot.</p> <p>Council will seek to have the Traffic Impact Assessments for both sites peer reviewed to provide surety as to the extent to which roads, parking and other upgrades may be required to support both proposals. The peer review is requested to be a condition of gateway.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction, is of minor significance (Clause 5(d)) and should be supported, provided that gateway conditions are imposed as recommended.</p>
3.5 Development Near Regulated Airports and Defence Airfields	<p>Not applicable.</p> <p>The subject site is over 7km from the Bathurst Airport and is not within the Obstacle Limitation Surface area.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
3.6 Shooting Ranges	<p>The proposal does not affect land adjacent or adjoining an existing shooting range.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
3.7 Reduction in non-hosted short term rental accommodation period	<p>The proposal does not reduce non-hosted short term rental accommodation because such a use will still be permissible provided that the dwelling in which it occurs is approved.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
4. Hazard and Risk	
4.1 Acid Sulfate Soils	<p>The Bathurst Region does not include any land identified on Acid Sulfate Soils Planning maps held by the Department.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
4.2 Mine Subsidence and Unstable Land	<p>The Bathurst Region does not include any land identified as within a Mine Subsidence District proclaimed under the Mine Subsidence Compensation Act 1961.</p>

Section 9.1 Ministerial Direction	Consistency
	Council is satisfied that the planning proposal is consistent with the requirements of the direction.
4.3 Flood Prone Land	<p>The subject land is not identified as flood prone. The resultant development will be required to be designed with water sensitive urban design considerations, which would form part of a site-specific DCP chapter for the site.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction, provided that an LEP clause requiring a DCP to be in place is inserted as recommended.</p>
4.4 Planning for Bushfire Protection	<p>The Planning Proposal does not include any land which is identified as being Bushfire Prone Land.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction.</p>
5. Regional Planning	
5.1 Implementation of Regional Strategies	Repealed.
5.2 Sydney Drinking Water Catchments	Does not apply to the Bathurst Region.
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	Does not apply to the Bathurst Region.
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	Does not apply to the Bathurst Region.
5.8 Second Sydney Airport: Badgerys Creek	Repealed.
5.9 North West Rail Link Corridor Strategy	Does not apply to the Bathurst Region.
5.10 Implementation of Regional Plans	<p>The Central West and Orana Regional Plan applies to the Bathurst Region. The Planning Proposal aims to amend existing urban land zones that apply to the land. The intent of the proposal is to provide greater housing choice and to better utilize the existing urban zoned land.</p> <p>The proposed changes are consistent with Council's Local Strategic Planning Statement, local Land Use Strategies and with the overall intent of the Regional Plan, provided that additional information is provided in relation to noise and traffic impacts as a condition of gateway.</p> <p>Council is satisfied that the planning proposal is consistent with the requirements of the direction, is consistent with the overall intent of the Regional Plan (Clause 5(b)) and should be supported, provided that gateway conditions are imposed as recommended.</p>

Section 9.1 Ministerial Direction	Consistency
5.11 Development of Aboriginal Land Council Land	Not Applicable. Council is satisfied that the planning proposal is consistent with the requirements of the direction.
6. Local Plan Making	
6.1 Approval and referral Requirements	The Planning Proposal does not affect development application provisions and does not propose any additional referral provisions relating to this land. Council is satisfied that the planning proposal is consistent with the requirements of the direction.
6.2 Reserving land for Public Purposes	The Planning Proposal does not reduce the land available for public purposes. The Master Plan proposes vegetation and open space areas ancillary to the development, the details of which would be best provided at DA stage. No land on the site is proposed to be zoned as RE1 Public Recreation land. The planning proposal is not inconsistent with the recommendations of the Bathurst 2040 Open Space Strategy. Council is satisfied that the planning proposal is consistent with the requirements of the direction.
6.3 Site Specific Provisions	The planning proposal is for the rezoning of a specific site, 34 Busby Street, Bathurst. Whilst the land is already zoned for urban purposes, the proposal will increase the allowable density on the lot through its rezoning from R1 General Residential to R3 Medium Density so as to affect the proposed master plan as it relates to the site. The planning proposal will deliver greater housing diversity with the amended zones and provisions in the LEP. The intended use of the site for urban purposes will not change as a result of the planning proposal. Council is satisfied that the planning proposal is consistent with the requirements of the direction.
7. Metropolitan Planning	
7.1 Implementation of A Plan for Growing Sydney	Repealed.
7.2 Implementation of Greater Macarthur Land Release Investigation	Repealed.
7.3 Parramatta Road Corridor Urban Transformation Strategy	Does not apply to the Bathurst Region.
7.4 Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	Does not apply to the Bathurst Region.
7.5 Implementation of Greater Parramatta Priority Growth Area	Does not apply to the Bathurst Region.

Section 9.1 Ministerial Direction	Consistency
Interim Land Use and Infrastructure Implementation Plan	
7.6 Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Does not apply to the Bathurst Region.
7.7 Implementation of Glenfield to Macarthur Urban Renewal Corridor	Does not apply to the Bathurst Region.
7.8 Implementation of Western Sydney Aerotropolis Interim Land Use and Infrastructure Implementation Plan of Western Sydney A	Does not apply to the Bathurst Region.
7.9 Implementation of Bayside West Precincts 2036 Plan	Does not apply to the Bathurst Region.
7.10 Implementation of Planning Principles for the Cooks Cove Precinct	Does not apply to the Bathurst Region.
7.11 Implementation of St Leonards and Crows Nest 2036 Plan	Does not apply to the Bathurst Region.
7.12 Implementation of Greater Macarthur 2040	Does not apply to the Bathurst Region.
7.13 Implementation of the Pyrmont Peninsula Place Strategy	Does not apply to the Bathurst Region.

Refer to the discussion earlier in terms of the State Government priorities under Housing 2041 and the recommendations of the Regional Housing Task Force.

4.4 Assessment of Site-Specific Merit

4.4.1 – Environmental, Social and Economic Impact

Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The proposed redevelopment of the site is unlikely to impact critical habitat or threatened species, population or ecological communities, or their habitats noting however that there are some significant trees on site.

A VMP has been submitted as part of this PP and relates to the subdivision approved under DA 2020/50. The VMP identifies trees which are suitable for removal, what appropriate replacement species might be and which trees must remain because of their heritage significance or relative health.

Prior to the site being developed, a site-specific DCP should be in place that includes appropriate landscaping controls that relate to the VMP and could include the protection of the existing substantial trees on site.

Are there any other likely environmental effects as a result of the Planning Proposal and how are they proposed to be managed?

The proponent has considered the potential environmental impacts on the site in **Attachment 1** including acoustic, heritage, visual, services, social, traffic and parking impacts.

A detailed assessment of impacts on the following environmental factors are provided below (or have been addressed earlier in this report):

- a) Flooding
- b) Bushfire
- c) Waterways and Groundwater
- d) Contamination
- e) Compatibility with surrounding land uses
- f) Traffic
- g) Heritage
- h) Views/visual impact
- i) Privacy
- j) Noise
- k) Safety, security and crime
- l) Waste
- m) Overshadowing

a) Flooding

The site is not located in a Flood Planning Area and is not affected by a watercourse.

b) Bushfire

The land is not identified as Bushfire Prone Land.

c) Waterways and Groundwater

The land is not affected by a watercourse. No geotechnical investigation has been made at this stage.

d) Contamination

The site is not identified on Council's contaminated land register and is not listed on the Loose-fill Asbestos Insulation Register. The site is considered suitable for residential purposes. However it should be noted that should any existing building be demolished for the purpose of infill development, that the demolition and waste of materials are handled appropriately.

e) Compatibility with surrounding land uses

The Planning Proposal seeks a rezoning from R1 General Residential land to R3 Medium Density for the residual allotment, proposed Lot 226, only. An Additional Permitted Use (APU) is sought for the purposes of permitting retail premises. The intention being this APU is to enable food and drink premises to occur on site, as needed.

As previously discussed, retail premises and food and drink premises are currently prohibited in the R3 Medium Density Residential zone and that enabling all types of retail premises on the site will enable highly conflictual land uses. The Planning Proposal has not provided any justification as to how those conflicts might be mitigated. As such, it is recommended that Council refine the APU to food and drink premises only, and to restrict the floor area of each premise to no more than 150m² and that the maximum floor area for all food and drink premises on site is no greater than 300m². This recommendation is consistent with that made for the Planning Proposal at the adjacent site; 50 Busby Street in item no. 9.2.4.

In relation to the proposed medium density residential use, it is compatible with the existing residential character of the area insofar as that it is also residential development. However, the density will be unlike anything the area has seen before, requiring design excellence guidelines to manage the bulk and scale as it is distributed across the site, setbacks, and the colours, materials and design articulation as it relates to the heritage conservation area and the local heritage item.

In relation to the proposed height, the existing height control is 9m. The proposal involves introducing a maximum height of buildings of 18m for the residual allotment, proposed lot 226, only. To manage the potential impact that such a height will have on the heritage conservation area and local heritage item, a site-specific chapter must be inserted in the DCP which includes appropriate controls as to how the development of the site might best be managed. It is recommended that the Planning Proposal include a new LEP clause requiring the DCP to be in place before development is considered.

f) Traffic

Refer to the assessment of the Planning Proposal against the LSPS and Housing Strategy earlier in this report.

It is considered that the Planning Proposal is consistent with the objectives of the LSPS and Housing Strategy subject to completion of a Peer Review of the Traffic and Parking Assessment Report prior to public exhibition and subject to that review providing for favourable outcomes where any possible impacts might be appropriately mitigated.

g) Heritage

Refer to the assessment of the Planning Proposal against the LSPS and Housing Strategy earlier in this report.

Detailed provisions need to be provided for in the subsequent DCP to ensure rigorous in-depth analysis can be afforded the final design at development application stage so that the development is consistent with the objectives of the Bathurst Heritage Conservation area and can minimise impacts on the local heritage item.

h) Views/visual impact

Given that the proposal includes an increase to the height limit from 9m to a maximum of 18m, the impacts to views to and from the site must be considered, particularly in relation to the local heritage item, St Joseph's Mount (Logan Brae).

The proponent has not submitted a detailed visual assessment of the proposed LEP amendments, rather a Heritage Impact Statement at **Attachment 8** has been submitted. This report focuses on the proposed Master Plan building design and siting in relation to the local heritage item. It notably does not assess the proposed LEP amendments or make recommendations about how the height or building envelopes might be managed. Nevertheless, it identifies that principal visual links to and from St Joseph's Mount must be conserved, including:

- View of the eastern façade of St Joseph's Mount from the driveway leading to the front of the buildings.
- Views from the buildings to the drive and gardens and views over the garden and surrounding properties to the countryside around Bathurst.
- Views along the front of the complex of buildings.

It goes on to note that the proposed designs in the Master Plan are sited on the residual allotment such that they do not compromise the integrity or curtilage of the original convent buildings and landscape.

To best understand the visual impacts of the Planning Proposal via the available information, it might be best to view the proposed height control plane diagram in **Attachment 3B**, also available in the below figure 20.

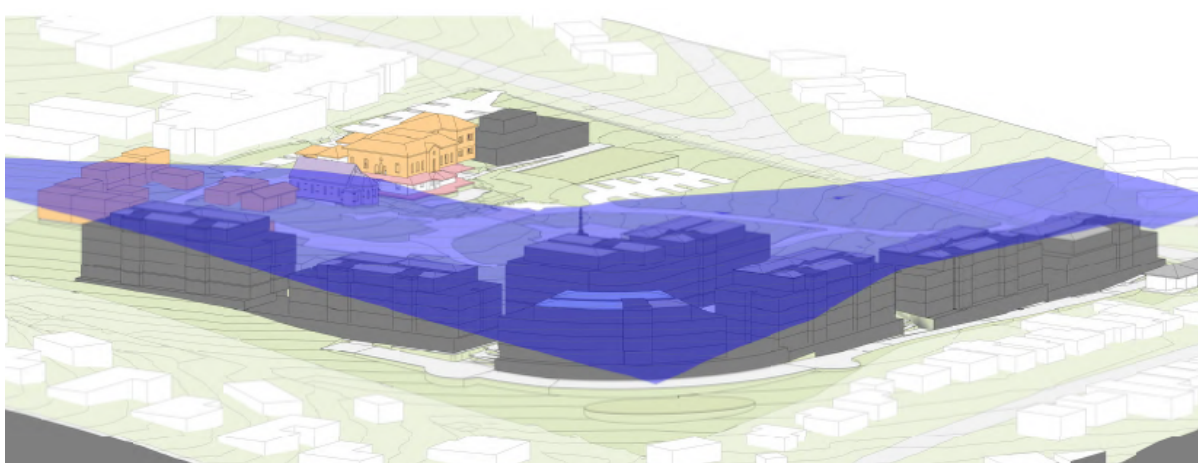
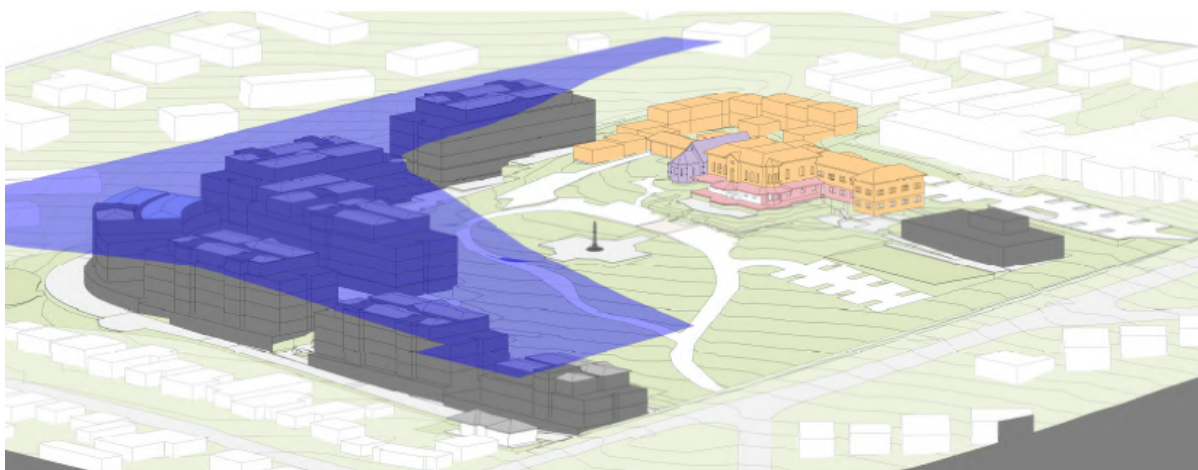


Figure 20 – 18m height plane diagram. South-western view above, north-western view below. (Marchese Partners | Life^{3A}, 2024).

The blue layer in the above figure demonstrates the maximum building height of 18m as it traverses the site, following the natural ground level. The siting of the buildings allows for good separation between the heritage item and allows the conservation of the significant landscaping forward of St Joseph's Mount, complying with the recommendation of the Heritage Impact Assessment.

The diagram also does well to represent the visual impacts that the low-density single storey dwellings neighbouring the site might experience, albeit the angle potentially presents more favourable views. The visual impacts will be undeniably significant for the neighbouring properties. Landscaping and privacy screening will become critical at DA stage, requiring robust site-specific DCP provisions.

The view to and from St Joseph's Mount is preserved from the street and also through the siting of buildings B and C on the residual lot 226. The Master Plan proposes a large 12m gap in between the two buildings allowing a pedestrian thoroughfare to be created, thereby maintaining the view corridor.

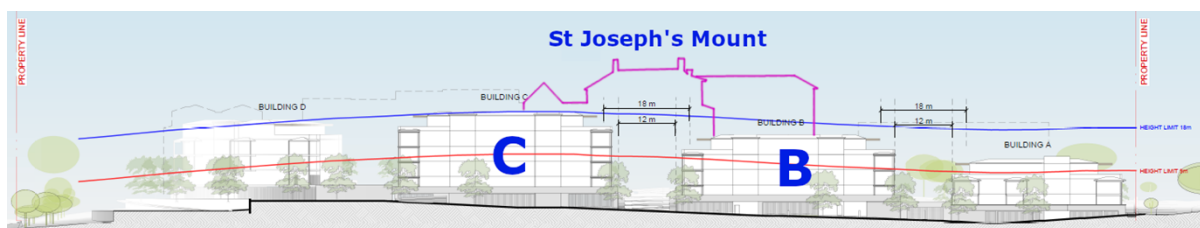


Figure 21 – View from the East shows a large 12m gap in between buildings B and C, allowing a continued view corridor from St Joseph's Mount (roughly outlined in magenta) to prevail.

The distribution of buildings across the site follows the topography of the land, best seen in the above [figure 21](#) whereby St Joseph's Mount will be visible above the roof line of the proposed apartment buildings. In that respect, the envisaged height of the apartment buildings take some account of views to and from St Joseph's Mount.

In relation to visual impacts to the heritage conservation area, it is again stated that the neighbouring area is predominantly characterised by low-density suburban residential development such that a double in the current maximum building height will have significant visual impacts on the area. In addition to this, the Master Plan proposes 2-3 storeys on the front boundary with a zero setback. Due to the slope of the land, they are proposing the ground floor to be below the natural ground level, presenting from the street as only two-storeys, then stepping the height back deeper into the block.

The setbacks of the southern side of Busby Street vary, with deeper setbacks on the subject site and the adjacent 50 Busby Street, and shallower setbacks on the three dwellings on the north-eastern corner of the block.



Figure 22 – Existing setbacks on Busby Street.

It is uncharacteristic of the area to have a zero front building setback. This will create a significant visual impact which must be managed with site-specific DCP provisions.

In addition, the Master Plan proposes a 12m setback from the side boundary which is shared with those dwellings that front Lewins Street. This setback is significantly reduced to the Gatekeeper's Cottage boundary, to as small as 3m. Having a zero front setback and three-storeys just 3m away from the boundary of a single-storey dwelling will have a significant visual impact that is not well represented in the submitted documentation.

A 6m setback is proposed from the rear boundary. The siting of the proposed buildings in the Master Plan indicates a much deeper setback from the rear boundary such that the visual impact on the dwellings that front Rose Street may be less than those experienced by those fronting Lewins Street. This visual impact is also somewhat mitigated by the deep battle-axe allotments that access Rose Street, and the drainage reserve that sits between those battle-axe allotments and the subject site.

Nevertheless, due to the limited diagrams and angles presented, it is difficult to ascertain the full visual impact that the planning proposal might have on neighbouring properties and views. It is recommended that a Visual Impact Assessment is submitted prior to the public exhibition of the PP as follows.

The Visual Impact Assessment is to consider the full extent of the proposed building envelopes at their full height using the LEP definition of Height of Buildings. The visual impact is to consider the full height building envelopes proposed for the development, the cumulative impacts of those building envelopes and the cumulative impact of building envelopes proposed on the adjoining development site at 50 Busby Street.

The assessment must be in to-scale representations and should show the relationship of the proposal to the ground plane, adjacent buildings, streets and open spaces.

The visual analysis must provide 360° views to and from the site, to at least 100m from the site's boundaries, and should include analysis of, at a minimum, the following viewpoints:

- a) From the street frontage of lot 226 with Busby Street
- b) From Lewins Street
- c) From Rose Street
- d) From Prospect Street
- e) Between the site and 50 Busby Street (i.e. within the sites)
- f) From the front and side of the Gatekeeper's Cottage
- g) From the Busby Street frontage of 6 Brilliant Street
- h) From the intersection at Torch and Brilliant Streets
- i) From Ben Chifley House (state heritage item)
- j) From St Stanislaus College (local heritage item)
- k) From the viewing platform at Mount Panorama Wahluu
- l) From the approach into Bathurst on Sydney Road (eastern side of the bridge)

The analysis should present conclusions as to how the building height envelop configurations may need to be modified by way of appropriate DCP provisions (e.g. upper floor setbacks, boundary setbacks), to mitigate impacts on view corridors, streetscapes, and the site's setting within the Bathurst Heritage Conservation Area.

The recommendations made in the Visual Impact Assessment will help inform the site-specific DCP provisions that will guide how development on the site is carried out in respect of views and visual impacts. It is expected that the DCP amendment will cover a much broader range of issues and design principles. **At this stage,**

Council is not endorsing the design/building envelopes proposed in the planning proposal.

Public exhibition of the proposal may benefit from a 3D model of the building envelopes being inserted in the Bathurst Digital Twin, if the model extent allows it. Certainly this would assist assessment of the development application at DA stage.

In the absence of the availability of the Bathurst Digital Twin at the Planning Proposal stage, all viewpoints should be provided to be as close to accurate as possible and should include the maximum building envelopes proposed, not the building design. The building envelopes should be placed in consideration of the definition of Height of Buildings as provided in the LEP, whereby it is measured from ground level (existing). It is recommended that Council seek this additional information prior to public exhibition through a relevant condition of the DPHI's Gateway Determination.

i) Privacy

Given the proposed increase in height, density, potential building setbacks and the distribution of bulk and scale, Council must consider the impacts of privacy resulting from the planning proposal on surrounding development. The height will create opportunities for overlooking neighbouring low density residential development. Any future development application will need to consider how the medium density development can mitigate privacy impacts through design such as via the introduction of privacy screens and glazing; deeper setbacks; building orientation; and so on. Such considerations can be inserted into a site-specific DCP chapter.

j) Noise

Refer to the assessment of the Planning Proposal against the LSPS and Housing Strategy earlier in this report.

It is considered that the Planning Proposal is consistent with the objectives of the LSPS and Housing Strategy subject to completion of a Peer Review of the Noise Impact Assessment prior to public exhibition and subject to that review providing for favourable outcomes where any possible impacts from noise generated at the Mount Panorama racing circuit might be appropriately mitigated.

k) Safety, security and crime

Given that the residential density will increase significantly, the resultant development must be capable of demonstrating that the residential buildings will not result in adverse safety, security and crime impacts. Where 8 or more multi-dwelling housing units are proposed the DCP requires a Crime Prevention Through Environmental Design (CPTED) assessment to be submitted with a Development Application. The LEP amendments proposed would not prevent the proposal from being capable of addressing safety, security and crime impacts.

l) Waste

Given that the residential density will increase significantly, the resultant development must be capable of demonstrating that the residential units and townhouses will not result in adverse waste generation and disposal impacts. As part of a future Development Application, Council would require demonstration that waste disposal can occur on site with efficiency and little amenity impacts. These parameters could be managed in a site-

specific DCP amendment.

m) Overshadowing

A Shadow Study is included in the Place Analysis and Urban Design Report available on pages 50-51 of **Attachment 3B**. The DCP requires that where development is two or more storeys high, that shadow diagrams be provided that assess overshadowing on the site and all adjoining properties on the winter solstice in June, from the period of 9am to 3pm. The submitted shadow diagrams present the shadow cast by the buildings envisaged in the master plan rather than the ultimate building envelope. The diagrams are presented for each hourly interval. It is assumed that these diagrams are presenting the winter solstice shadows, though that is not stated.

Whilst the diagrams show general compliance with the current DCP provisions it is considered that more detailed analysis would better illustrate the potential impact and further analysis identify how impacts can be mitigated through site specific DCP provisions. To this end it is recommended that an updated overshadowing analysis be submitted, prior to public exhibition. The assessment should consider the full extent of the proposed building envelopes at their potential full height (not the proposed building designs) on all adjoining and adjacent properties. The shadow diagrams are to be presented for each hourly interval for the winter solstice. The analysis should present conclusions as to how the building height envelope configurations may need to be modified by way of appropriate DCP provisions (e.g. upper floor setbacks, boundary setbacks) to achieve compliance with or exceed compliance with Council's current DCP requirements. The analysis should also consider any internal site implications of overshadowing.

Ways to mitigate overshadowing impacts, inclusive of within the site, could then be managed in a site-specific DCP amendment.

Has the planning proposal adequately addressed any social and economic effects?

Social Impacts

The submitted Social Impact Assessment at **Attachment 9** demonstrates the social impacts that might occur, finding that:

- The change (increase) in population is unlikely to alter the socio-economic or demographic character of South Bathurst, thus will not increase demand for new services not already available.
- The availability of smaller dwellings will improve housing affordability close to the town centre and with access to employment.
- There will be no adverse health impacts.
- Increased opportunities for surveillance will be available with the use of the site
- There will be no adverse impact in terms of social cohesion with residents having access to the same opportunities for participation in the local community.
- The design and use of the site will not alter the values and beliefs of the community as there will unlikely be any change to community structure, values and beliefs.
- There will be no adverse outcomes in creating a sense of place or community, particularly with the continuity of use of St Joseph's Mount (subject to a separate DA).
- There is sufficient availability of community facilities and services to cater for the population increase of this Planning Proposal.
- The Planning Proposal and future use of the land will not result in a heightened risk of social harm, nor negative social impacts, to vulnerable community groups.

- The diversity of dwelling mix, that is more affordable, will represent a positive community outcome.
- Social displacement will not be a consequence of this proposal as the site is currently vacant.

The Assessment includes a statement in relation to there being two R3 Medium Density Residential proposals side by side suggesting that because the two sites are physically separated from each other, that it would be unlikely to result in cumulative impacts should both proposals proceed to gateway. An assertion is made that works would commence concurrently, and that the cumulative impacts that may arise from both proposals include:

- Cumulative impacts generated by concurrent site works and construction including noise, dust, truck movements and demand for on-street parking for workers. These impacts are short term in nature and are able to be managed through best practice construction management practices.
- On occupation of future dwellings, there will be an increase in population in the SAL1. This increase in population will most likely be noticeable in terms of increased traffic on local roads.
- Traffic generation related to the subject site has been considered in detail in the Traffic and Parking Assessment Report prepared by CJP Consulting Engineers.
- The subject proposal is contemplating an indicative population on the site of 305 and the Planning Proposal for the site at 50 Busby Street estimates an increased population of 118 people, bringing the total estimated population of both sites to 423 people. This increase is likely to comprise, in part, existing residents of South Bathurst and other areas of Bathurst who are seeking to downsize while retaining links to the community. The increased population on the two sites is unlikely to result in any material social impacts in the area.

The Planning Proposal states that despite the above, the proposal is in the public interest because it will provide for housing diversity and choice in an area close to shops, facilities, education, employment and public transport, and will provide employment opportunities during the construction phase.

The Planning Proposal does not well establish how active transport and healthy communities might be improved by the resultant development. Further, no pedestrian links between lot 226 (residual allotment) and lot 225 (which will contain St Joseph's Mount) are proposed, nor with the adjacent site at 50 Busby Street. Site-specific DCP provisions may encourage pedestrian linkages between the three sites to enable walking and cycling routes.

The alteration to the residential zoning as proposed in this planning proposal will allow for greater housing choice and diversity as compared to other piece-meal small subdivision and housing development that is currently occurring within the city of Bathurst. These outcomes are supported by the Bathurst 2036 Housing Strategy. The subject site is indeed well placed to access existing community facilities, recreation and open space, education and childcare, and healthcare facilities.

In relation to housing affordability, it must be noted that medium density housing does not necessarily equal affordable housing (they could be luxury apartments, for example). The proposal will provide housing diversity (housing choice), but not necessarily affordable housing. Absent any demonstration of affordability, it can be predicted that the proposal will contribute in some way toward housing affordability, and it will certainly contribute to making the site's dwellings or the housing market in general more affordable.

Economic Impacts

An Additional Permitted Use (APU) is proposed to be inserted into the LEP to facilitate the development of retail premises on the site. As discussed extensively in this report, the insertion of all types of retail premises is not supported. It is recommended to Council that the APU be refined to a specific use; food and drink premises, as is the understood intention behind the proponent inserting the APU. Absent any supporting documentation to justify otherwise, the floor area of individual tenancies should be restricted to 150m² with a total maximum floor area of 300m², consistent with the recommendations made for the Planning Proposal at the adjacent site in item no. 9.2.4.

These specific restrictions are recommended in order to protect the primacy of the Bathurst CBD, and to remain consistent with Council's Retail Strategy.

4.4.2 – Infrastructure (Local, State and Commonwealth)

Is there adequate public infrastructure for the planning proposal?

A Services Strategy Report has been provided at **Attachment 5**. The report demonstrates that the site is capable of servicing the envisaged development in the Master Plan. Generally the report demonstrates that the initial stages of the Master Plan could be serviced by existing infrastructure subject to detailed design.

Council Engineering section noted that further investigation is required in relation to stormwater drainage and that on-site detention appears feasible in the south-eastern corner of the site. It is recommended that modelling of the stormwater system for both lots 225 and 226 be investigated now through an appropriate condition of the Gateway Determination.

Council's Engineers have also advised that the proponent needs to quantify the loading on the water and sewer network, inclusive of fire protection loadings, to enable Council to model implications of the potential full development of both lots 225 and 226. It is recommended that an appropriate condition be included on the Gateway Determination. In relation to social infrastructure, the subject site is well placed to access existing community facilities, recreation and open space, education and childcare, and healthcare facilities. The developed site has the potential to provide housing to students and/or staff at the nearby education and health precinct, largely occupied by the CSU campus.

In relation to the nearby state road (Rocket Street), the cumulative impacts that the proposal might have on road infrastructure need to be further qualified. As discussed throughout this report, Council will request that as a condition of gateway, that the Traffic and Parking Assessment Report prepared by the proponent and the TIA for the Planning Proposal at the adjacent site is peer reviewed. After the peer review, the proposal could be referred to Transport for NSW for further comment.

4.4.3 – State and Commonwealth Interests

What are the views of state and federal public authorities and government agencies consulted in order to inform the Gateway determination?

Council has undertaken a Pre-Planning Proposal meeting with the Department of Planning, Housing and Infrastructure. General support has been expressed for the Planning Proposal, subject to Council's assessment.

Council anticipates referral of the Planning Proposal to the following agencies as part of the Gateway conditions:

- Transport for NSW
- NSW Department of Education
- NSW Heritage
- Emergency service organisations
- Essential Energy
- Jemena
- Telstra
- NBN

The Planning Proposal should not be referred to Transport for NSW until the traffic impact assessments have been peer reviewed. It is noted that the proponent has had some contact with TfNSW and that there is general support for the proposal from the agency.

4.5 Community Consultation

Schedule 1 of the EP&A Act requires Council to consult with the community in accordance with the Gateway Determination. It is expected that consultation will be for a minimum of 28 days and will not occur until after the Traffic Impact Assessment and Noise Impact Assessment has been peer reviewed and the amended view analysis is provided.

It is recommended that the Planning Proposals for 34 Busby Street and 50 Busby Street are exhibited concurrently, if reasonably achievable.

During the exhibition period, a notice will be placed on Council's website and all adjoining and adjacent residents will be notified of the Planning Proposal. Details of the Planning Proposal will be made available via the Bathurst Yoursay website.

A public submission hearing is anticipated given that the proposal includes rezoning land and a significant height increase in a heritage conservation area. If required, the submission hearing will be held at the conclusion of the normal exhibition period in accordance with the Bathurst Regional Community Participation Plan 2019.

Council will seek to consult relevant community interest groups and with the Bathurst Local Aboriginal Land Council and the WTOCWAC to comment on the impacts of the proposal on tangible and intangible Aboriginal heritage.

4.6 Future Development Control Plan Provisions

4.6.1 – LEP provision to require DCP Provisions

It is recommended that the Planning Proposal include the insertion of a specific clause into the LEP to require the preparation of a development control plan, similar to provisions in other LEPs, such as clause 7.11 of the Albury LEP or 6.23 of the Parramatta LEP. The site-specific clause would relate to both 34 and 50 Busby Street, Bathurst, given that the sites are adjacent, and that Council is concurrently considering Planning Proposals for both sites.

Wording for the provision will be developed after the public exhibition process and prior to this matter being reported to Council for consideration of its adoption. Note also that the Parliamentary Counsel would provide relevant legal advice to the wording of this clause. Council staff will also discuss with DPHI staff the need to protect the process if at any time future development is considered State Significant where compliance with DCP provisions would not be required.

4.6.2 – Recommended DCP Amendment

It is anticipated that Council staff would commence preparation of DCP provisions once the public exhibition of the Planning Proposal was completed. The relevant DCP amendment would be subject to its own public exhibition process.

The range of likely matters that would need to be considered in the DCP chapter would include design guidelines that relate to the following matters. This list should not be viewed as exhaustive.

- a) Building height, setbacks, lot frontages.
- b) Building envelopes, separation and building depth.
- c) Gross floor area.
- d) Ceiling heights.
- e) Site analysis, orientation, overshadowing, solar access, privacy.
- f) Public domain interface.
- g) Passive surveillance.
- h) Private and communal open space.
- i) Landscaping and vegetation, deep soil zones.
- j) Natural ventilation.
- k) Noise attenuation.
- l) Land use management, mixed use.
- m) Site or Precinct mapping.
- n) Active transport infrastructure, vehicular access, bicycle and carparking.
- o) Built form including: facades, colours and materials, bulk and scale.
- p) Heritage conservation and interpretation.
- q) Waste management.
- r) Sustainable development.
- s) Water sensitive urban design.

5.0 Project Timeline

The following table outlines Council's anticipated timetable for the completion of the Planning Proposal. Council anticipates that the process will take approximately 12 to 13 months from the date of the Gateway Determination.

Step	Criteria	Project timeline
1	Anticipated commencement date (date of Gateway Determination)	July/August 2024
2	Anticipated timeframe for the completion of required technical information, including peer reviews of the Traffic and Noise Impact Assessments	January 2025
3	Timeframe for government agency consultation (pre and post exhibition as required by Gateway determination)	February/March 2025
4	Commencement and completion dates for public exhibition period	March/April 2025
5	Dates for submission hearing (if required)	June 2025
6	Timeframe for consideration of submissions	July 2025

7	Timeframe for the consideration of a proposal post exhibition	August 2025
8	Date of submission to the Department to finalise the LEP	September 2025

The timeframe is subject to change as the Planning Proposal progresses. It is anticipated that Council staff will commence the drafting the DCP provisions upon completion of the public exhibition of the Planning Proposal noting that further public exhibition of those provisions would be required.

CONCLUSION:

The purpose of this report is to provide Council's initial assessment of the Planning Proposal lodged in relation to 34 Busby St, South Bathurst to determine if Council supports progression of the Planning Proposal to the NSW Department of Planning, Housing and Infrastructure (DPHI) for a Gateway Determination to enable public exhibition of the planning proposal.

The table below summarises the LEP amendments for which support is recommended. The table includes those LEP amendments recommended to Council in this report as the Planning Proposal package to be presented to DPHI for Gateway Determination.

Planning control	<i>Existing development controls</i>	<i>Proposed development controls</i>
Zoning	R1 General Residential	R3 Medium Density Residential
Minimum Subdivision Lot Size	550m ²	1300m ²
Minimum Subdivision Lot Size – Dual Occupancy, manor houses, multi dwelling housing and residential flat buildings	850m ²	Remove site from dual occupancy map (because dual occupancies are prohibited in the R3 zone)
Height of Buildings (HOB)	9m	18m
Additional Permitted Use – Schedule 1	N/A	Food and Drink Premises restricted to a floor area of 150m ² for each individual tenancy on the site and to a total maximum floor area of 300m ² .
Additional Local Clause – ensure that development on land occurs in accordance with a	N/A	Development consent must not be granted for development on land to which this clause applies unless a development control plan that provides for the range of matters

site-specific development control plan		required to achieve design excellence has been prepared for the land.
Amendments to the relevant mapping layers	<ul style="list-style-type: none"> • Land Zoning Map • Height of Buildings Map • Lot Size Map • Additional Permitted Uses Map • Minimum Lot Size – Dual Occupancy Map 	

Recommended Gateway conditions

It is recommended that, at a minimum, the following conditions are imposed by DPHI as conditions of their Gateway Determination:

- 1) Draft LEP maps are to be provided in a manner consistent with the Department's *Standard Technical Requirements for Spatial Datasets and Maps* guidelines accurately identifying the boundaries of proposed lot 226 to which the LEP amendments will apply.
- 2) The Noise Impact Assessment for 34 Busby Street is to be peer reviewed by a Council appointed external consultant in conjunction with the Noise Impact Assessment for 50 Busby Street, prior to public exhibition.
- 3) The Traffic Impact Assessment for 34 Busby Street is to be peer reviewed by a Council appointed external consultant in conjunction with the Traffic Impact Assessment for 50 Busby Street, prior to public exhibition.
- 4) A Visual Impact Assessment is to be submitted, prior to public exhibition. The assessment is to consider the full extent of the proposed building envelopes at their full height using the LEP definition of Height of Buildings. The visual impact is to consider the full height building envelopes proposed for the development, the cumulative impacts of those building envelopes and the cumulative impact of building envelopes proposed on the adjoining development site at 50 Busby Street.

The assessment must be in to-scale representations and should show the relationship of the proposal to the ground plane, adjacent buildings, streets and open spaces.

The visual analysis must provide 360° views to and from the site, to at least 100m from the site's boundaries, and should include analysis of, at a minimum, the following viewpoints:

- a. From the street frontage of lot 226 with Busby Street
- b. From Lewins Street
- c. From Rose Street
- d. From Prospect Street
- e. Between the site and 50 Busby Street (i.e. within the sites)
- f. From the front and side of the Gatekeeper's Cottage
- g. From the Busby Street frontage of 6 Brilliant Street
- h. From the intersection at Torch and Brilliant Streets
- i. From Ben Chifley House (state heritage item)
- j. From St Stanislaus College (local heritage item)
- k. From the viewing platform at Mount Panorama Wahluu

I. From the approach into Bathurst on Sydney Road (eastern side of the bridge)

The analysis should present conclusions as to how the building height envelop configurations may need to be modified by way of appropriate DCP provisions (e.g. upper floor setbacks, boundary setbacks), to mitigate impacts on view corridors, streetscapes, and the site's setting within the Bathurst Heritage Conservation Area. The Visual Impact Assessment should be in the form of a 3D computer model. That model can be inserted into the Bathurst Digital Twin if the extent of the digital twin can include the subject site and its immediate surrounds.

Preparation of the Visual Impact Assessment in conjunction with the proposed development on the adjoining site at 50 Busby Street is encouraged.

- 5) An updated overshadowing analysis is to be submitted, prior to public exhibition. The assessment is to consider the full extent of the proposed building envelops at their potential full height (not the proposed building designs) on all adjoining and adjacent properties. The shadow diagrams are to be presented for each hourly interval for the winter solstice.

The analysis should present conclusions as to how the building height envelop configurations may need to be modified by way of appropriate DCP provisions (e.g. upper floor setbacks, boundary setbacks) to achieve compliance with or exceed compliance with Council's current DCP requirements. The analysis should also consider internal implications of overshadowing within the development site.

- 6) The servicing strategy is to be updated to quantify the loading to the water and sewer networks, inclusive of fire protection needs, to enable Council to model implications of the potential full development for both proposed lots 225 and 226 on its network.
- 7) The servicing strategy is to be updated to model the proposed stormwater system for the potential full development of both proposed lots 225 and 226 and in particular to identify if on-site detention will be required and can be accommodated on site.

It is recommended that Council withdraws its support for the Planning Proposal if the necessary conditions listed above are not included in DPHI's Gateway Determination.

Further, it is recommended that this matter be referred to Council for **reconsideration** if the outcomes of the peer reviews for the Traffic Impact Assessment and Noise Impact Assessment are such that any adverse impacts are not able to be appropriately mitigated. Council must be assured that existing and future activities at the Mount Panorama Racing Circuit are not jeopardised by increased living densities in proximity to the Mount Panorama 50dBA noise contour. Council must also be satisfied that the local road network can support the traffic generated from the future development. The Planning Proposal should not proceed if either of these issues remain unresolved.

FINANCIAL IMPLICATIONS:

Nil

BATHURST COMMUNITY STRATEGIC PLAN – OBJECTIVES AND STRATEGIES:

Objective 4: Sustainable and balanced growth.

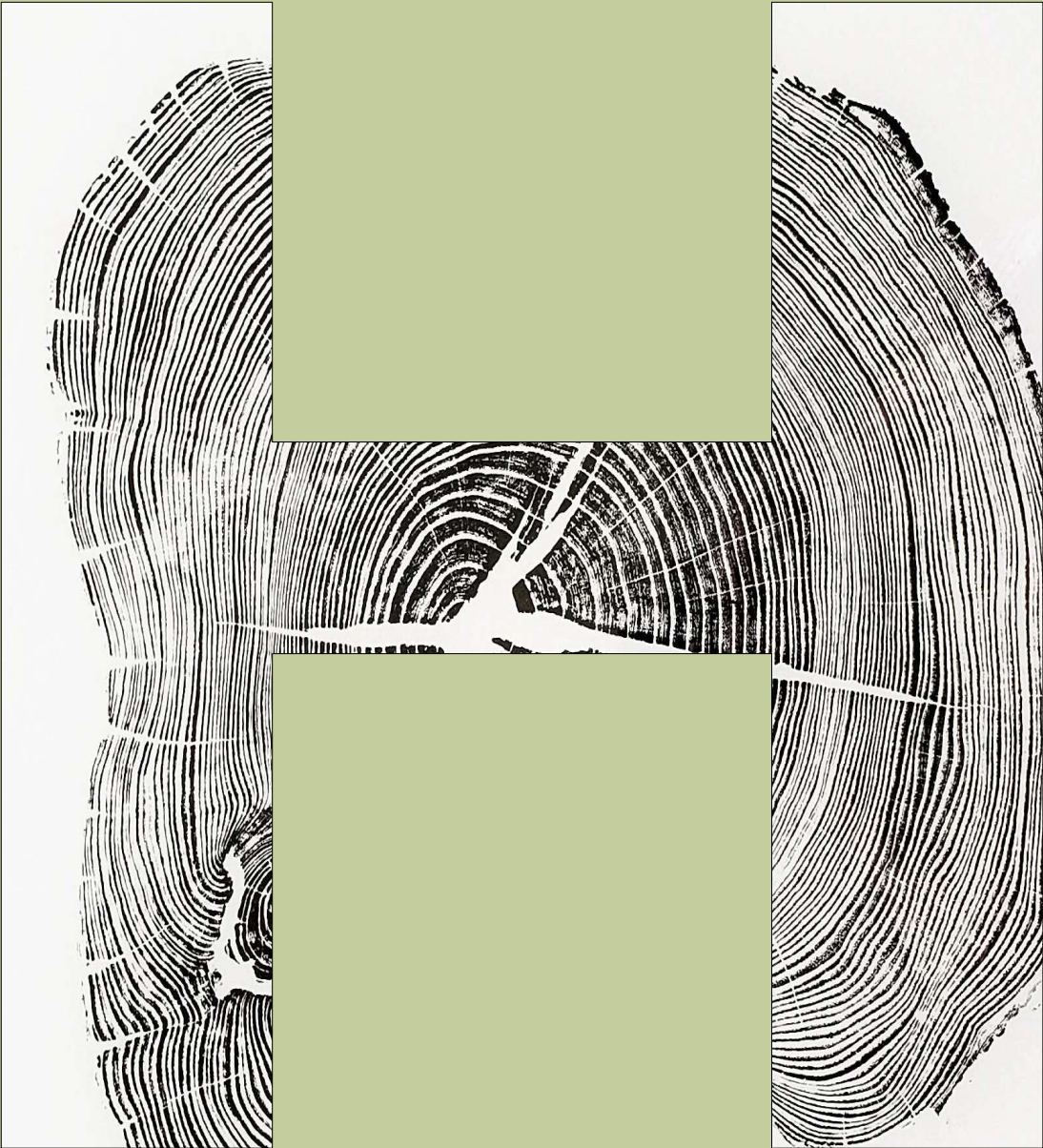
Strategy 4.1 Facilitate development in the region that considers the current and future needs of our community.

COMMUNITY ENGAGEMENT:

01 **Inform** - to provide the public with balanced and objective information to help them understand the problem, alternatives, opportunities and/or solutions.

ATTACHMENTS:

1. Attachment 1 - Planning Proposal [9.1.8.1 - 54 pages]
2. Attachment 2 - Vegetation Management Plan [9.1.8.2 - 72 pages]
3. Attachment 3A - Place Analysis and Urban Design Report [9.1.8.3 - 26 pages]
4. Attachment 3B - Place Analysis and Urban Design Report [9.1.8.4 - 36 pages]
5. Attachment 4 - Conservation Management Plan [9.1.8.5 - 140 pages]
6. Attachment 5 - Services Strategy Report [9.1.8.6 - 14 pages]
7. Attachment 6 - Traffic and Parking Assessment Report [9.1.8.7 - 206 pages]
8. Attachment 7 - Acoustic Impact Assessment [9.1.8.8 - 42 pages]
9. Attachment 8 - Heritage Impact Statement [9.1.8.9 - 36 pages]
10. Attachment 9 - Social Impact Assessment [9.1.8.10 - 45 pages]
11. Attachment 10 - Pre-lodgement advice [9.1.8.11 - 12 pages]



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PROJECT PARTICULARS

Project No.	2023013
Client	ANAT Investments Pty Ltd
Site Address	34 Busby Street, South Bathurst
Document Name	Planning Proposal

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INTRODUCTION

Hamptons Property Services (Hamptons) has been engaged by ANAT Investments Pty Limited (the owner) to prepare a Planning Proposal (PP), for the land located at 34 Busby Street, Bathurst (the site), legally described as Lot 22 in Deposited Plan 1033481.

SITE HISTORY

Development consent 2020/50, was granted on 3 June 2021, for a three-lot subdivision of the land. This resulted in three allotments being provided for, namely:

- Lot 223, being 550m² in area, and containing an existing heritage listed cottage,
- Lot 225, being 2.3 hectares in area, which retains St Joseph's Mount and the associated heritage curtilage and vegetation buffer within that allotment, and
- Lot 226, which is the residual part of the land and is 2.28 hectares.

A subdivision certificate is currently being prepared to enact this development consent.

OWNERSHIP

The site was purchased by ANAT Investments Pty Ltd in July 2022.

LAND TO WHICH THIS PLANNING PROPOSAL APPLIES

It is future Lot 226 that is the subject of this PP (the site).

PLANNING PROPOSAL APPLICATION

This PP application is made in response to cl. 3.33 of the Environmental Planning and Assessment Act 1979 (EP and A Act), and provides an explanation of the intended effect of the proposed amending instrument and the justification for making the instrument.

PURPOSE OF THIS PLANNING PROPOSAL

The purpose of this PP is to amend the planning controls to enable the site to be developed for residential purposes, in the form of residential flat buildings, comprising approximately 218 dwellings, across several stages, suited to market conditions. The proposal can provide a mix of one, two and three-bedroom dwellings.

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While the detailed design of residential accommodation would be subject to a future development application(s) (DA), variety in building typology and configuration is capable of being provided that would contribute to the provision of additional housing, that responds to increased population growth identified in the Housing 2041 Strategy for the local government area (LGA). The site is highly accessible in terms of road and public transport access and is close to facilities and services, accessible to the community.

It is relevant that the Council will consider a concurrent planning proposal for the adjoining land at 50 Busby Street, to the west of the site. Based on the Council's Housing 2041 Strategy, population projections and increasing demand for regional housing, the supply of housing across the adjoining site and this site will respond to market demand, without creating oversupply to the housing market.

Zoning

It is proposed to rezone the site from the R1 General Residential zone under the Bathurst Regional Local Environmental Plan (LEP) 2014 to R3 Medium Density Residential zone; future Lot 223 and 225 will remain as R1 General Residential.

By rezoning the site, this will enable a diverse form of residential accommodation to be provided on the site, including:

- Attached dwellings
- Multi-dwelling housing
- Residential flat buildings.

Minimum lot sizes for dual occupancies, manor houses, multi-dwelling housing and residential flat buildings (Clause 4.1B)

It is proposed to remove the minimum dual occupancy map as it applies to the site as dual occupancy development is prohibited in the R3 Medium Density Residential zone.

It is proposed that the Minimum Lot Size – Multi Dwelling Housing and Residential Flat Buildings Map – Sheet LSM_011B applies to the site, with the minimum allotment size of 1,300m². This would assist future development on a staged basis, if required.

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Height of Buildings (Clause 4.3)

It is proposed to amend the height of building standard from 9m to 18m.

Additional Permitted Use

It is proposed to expressly permit retail premises on the site at Schedule 1, with the intent of a food a drink premises, or similar, to serve a local community need, if required.

CONTENT OF THIS PP

In accordance with s.3.33(2) of the EP and A Act, this PP provides the following:

- (a) a statement of the objectives or intended outcomes of the proposed instrument,
- (b) an explanation of the provisions that are to be included in the proposed instrument,
- (c) the justification for those objectives, outcomes and provisions and the process for their implementation (including whether the proposed instrument will give effect to the local strategic planning statement of the council of the area and will comply with relevant directions under section 9.1),
- (d) if maps are to be adopted by the proposed instrument, such as maps for proposed land use zones; heritage areas; flood prone land—a version of the maps containing sufficient detail to indicate the substantive effect of the proposed instrument,
- (e) details of the community consultation that is to be undertaken before consideration is given to the making of the proposed instrument.

PREPARATION OF THIS PP

This PP has been prepared with the assistance of the consultant team set out below.

Discipline	Consultant	Consultant Report
Architecture	Marchese Partners Architects	Place Analysis and Urban Design Report
Acoustics	Pulse White Acoustic Noise	Noise Impact Assessment
Heritage	Highground Consulting	Heritage Impact Statement
Social Impact	Sarah George Consulting Pty Ltd	Social Impact Assessment
Survey	Intrax Consulting Group	Plan of Levels, Features and Contours

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Traffic and Parking	CJP Consulting Engineers	Traffic and Parking Assessment Report
Vegetation Management	Applied Ecology Pty Ltd	Vegetation Management Plan

CONTENT OF THIS PLANNING PROPOSAL

This PP is constructed as follows:

- a detailed description of the site, the land, its opportunities and constraints, approvals to date and an analysis of the locality in which it is located at a state, district and local context
- a statement of objectives/intended outcomes of the proposed instrument
- an explanation of the provisions that are to be included in the proposed instrument
- justification for those objectives, outcomes and provisions and the process for their implementation, including whether the proposed provisions will give effect to the local strategic planning statement of Bathurst Regional Council and will comply with the relevant directions under section 9.1 of the EP and A Act
- mapping changes required to give effect to the proposed instrument, and
- details of community consultation that is to be undertaken before conditions is given to the making of the proposed instrument.

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THE SITE & ITS LOCALITY

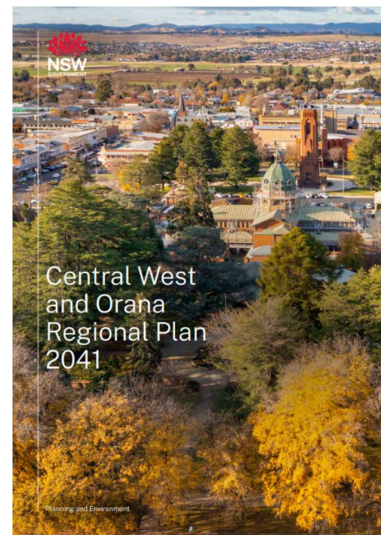
The purpose of this section is to set out the details of the site and its broader context within the locality.

DISTRICT POLICY CONTEXT

Central West and Orana Regional Plan

The Central West and Orana Regional Plan was implemented by the NSW State Government in December 2022 introduced several principles for consideration in future development, including:

- energy efficient and resilient housing
- ensuring that site selection and design embraces and respects the region's landscapes, character and cultural heritage, including prioritising connectivity, walkability and cycling
- balancing urban design with a view to consolidating development
- focusing on diverse and healthy living taking account of the changing needs of people, and the importance of being close to essential services and well-designed public areas.



Specific to the matter of housing is Part 3: People, centres, housing and communities with the importance of creating housing connections that respond to commuting worker catchments, along with sufficient capacity to meet housing and employment needs.

The key priorities for Bathurst are set in the figure below.

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Figure 1: Planning priorities for Bathurst, Page 60



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LOCAL POLICY CONTEXT

Bathurst Regional Local Strategic Planning Statement: Vision Bathurst 2040

The Bathurst Regional Local Strategic Planning Statement (LSPS) establishes 19 planning priorities, under the broader categories of:

- Infrastructure and transport
- Diverse and strong economy
- Heritage and sustainable environment, and
- Dynamic and healthy communities.

The LSPS has also developed a series of structure plan maps to assist in forming land use decisions.

The focus of this PP is Planning Priority No. 16 which endeavours to provide new homes. Demographic trends identified in this regard include the following:

- a reduction in household size down to 2.32 persons per household
- increased retirement age by 42%
- an increase in younger families with 22% of the population under the working age
- an increase in the number of people of working age, by 19%, and
- lone person households increasing.

The LSPS identifies that the construct of dwellings, generally containing four or more bedrooms, does not align with population trends, where household sizes are reducing.

The focus of the LSPS has therefore been to:

- increase living densities and lot yields proximate to the Bathurst CBD

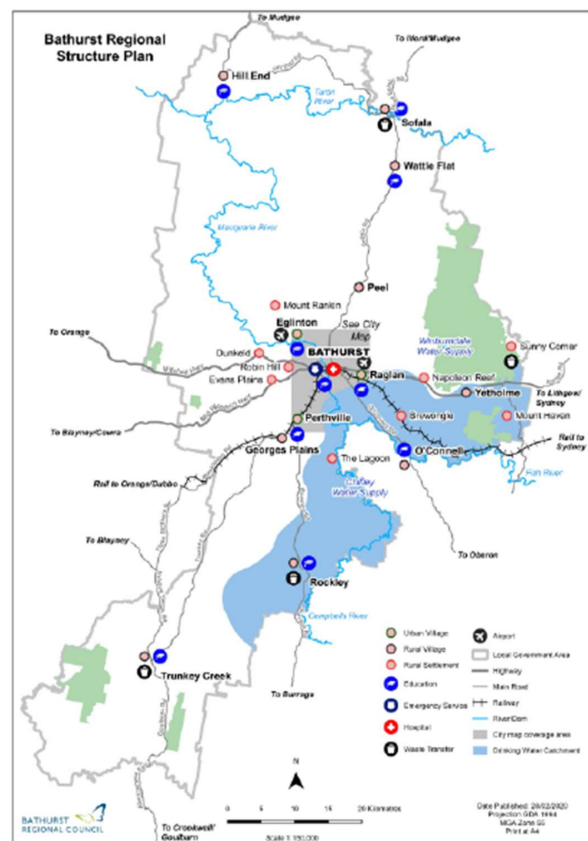


Figure 2: Bathurst Region Structure Plan

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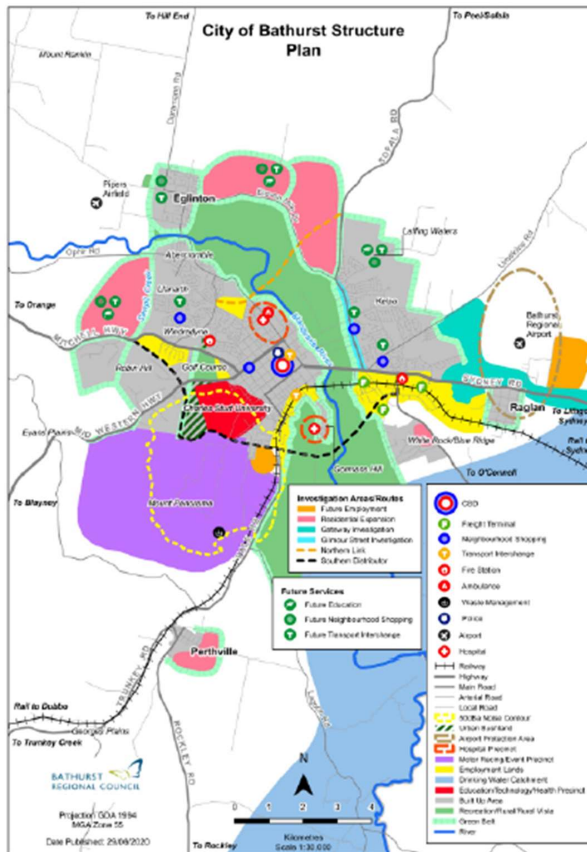


Figure 3: City of Bathurst Structure Plan

- encourage higher lot yields in certain locations
- encourage the adaptive reuse of heritage listed sites
- enable urban renewal proximate to the CBD
- ensure that development has quality access to walking and public transport
- ensure high quality urban design outcomes focused on:
 - o managing increased living densities
 - o managing change between old and new housing stock
 - o maintaining and improving neighbourhood character, and
 - o improving sustainability, accessibility, affordability and opportunities for ageing in place.

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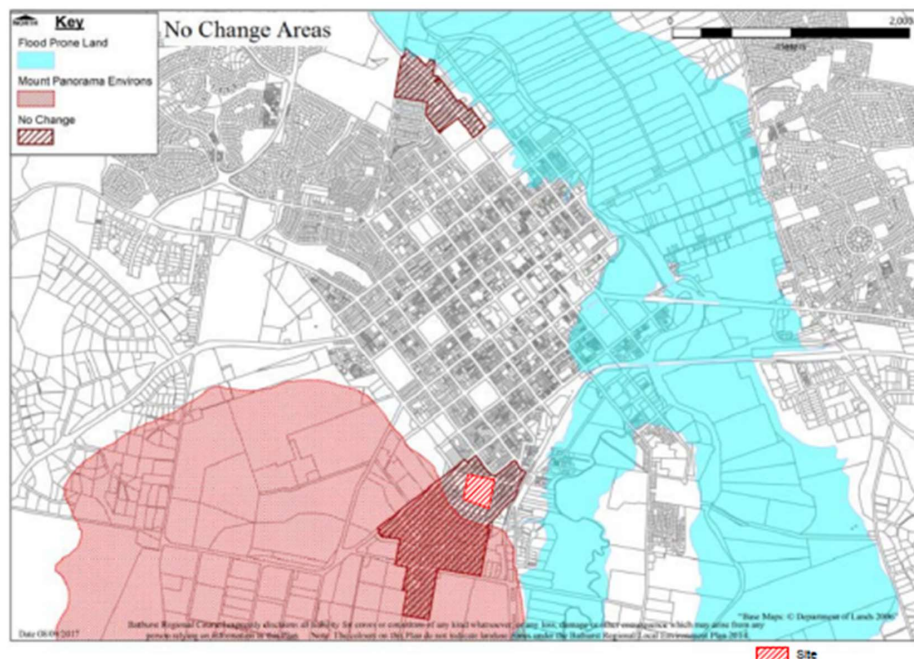
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Bathurst 2036 Housing Strategy

The Bathurst Housing Strategy identifies several locations where potential change to density may be available. The site is in a 'No change' area.



Figure 2: 'No change' area identified in the Bathurst 2036, Housing Strategy



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THE SITE

The site is located at 34 Busby Street, South Bathurst and is legally described as Lot 22, in Deposited Plan 1033481. The site is located on the southern side of Busby Street, which is its only road frontage and from which there are two driveway locations to the principal lot.

Site Area and Dimensions

The site has a frontage to Busby Street of 212.895m and a total area of 4.67 hectares.

The eastern boundary measures 202.795m; the southern boundary, 225.16m and the western boundary 204.435m.

Services and Easements

There is an overhead power pole aligning the edge of the land, along Busby Street and a supply running in a north-south direction towards the western end of the allotment.

There is an underground sewer main running north south, at the eastern end of the land, before turning-east west, towards the south-western side of the allotment. This then returns in a northerly direction, along the western boundary (C).

There is also an easement for sewer, running north-south, which is 3.05m wide (E).

There is a right of carriageway along the western boundary, from Busby Street, which is 5m and 11.435m wide.

There is also an easement to drain water of variable width (A).

Further details are on the Plan of Levels, Features and Contours.

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Figure 3: Site location at 34 Busby Street, Bathurst (Source: NSW Planning Portal)



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NOTE: PHOTO ASPECT NUMBERING ON THE PLAN IS NOT FULLY SEQUENTIAL. SEE ACCOMPANYING PHOTO DOCUMENT FOR ALL PHOTOS (P-25)

STREET
ROSE
STREET
BUSBY
STREET
LEWINS

212
DP 1289285

10
DP 620857

21
DP 6208265

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DP 803849

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DP 803849

21
DP 803849

22
DP 803849

23
DP 803849

22
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4.67m

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DP 978992

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The highest point of the site is in the north-western corner, where it then falls away in towards the south and east, with an overall cross fall of approximately 24m (Plan of Levels, Features and Contours).

The vegetation has a blend of natives and exotics which may already be in existence in home gardens, the streetscape, parks and open spaces. The native vegetation, in some instances are remnants of the Box-Gum Woodlands. The exotics include a wide spectrum of ornamental deciduous and evergreen

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trees, shrubs and groundcover species. The ratio of exotics to natives is variable, and the streetscapes, home gardens and parks tend to be informal in layout¹.

It goes on to say that:

No natural areas have been retained on the site. Almost all of the mature trees are introduced species, and the few mature native trees present has been planted. In recent years, there has been some planting of native trees and shrubs in clusters around the midslope section of the property, and in a very narrow band along the eastern and southern boundaries.²

The Conservation Management Plan also describes the landscape as follows:

The site generally slopes towards the south and the east, affording views across the township of Bathurst to the distant horizon. Three boundaries have residential development and an aged care facility on land that previously formed part of the property. The northern boundary fronts Busby Street and has mature plantings along it, obscuring views into the site from the street. Within the site there are distinct areas, contrasting the continuous bands of substantial vegetation creating shade with the broad open swathes. Ornamental and utility garden areas contribute to the landscape that wraps full around three sides of the building complex. The main landscape features are identified in Figure 4.

Existing Built Form

There are a series of buildings constructed on the land, the most prominent, St Joseph's Mount (formerly Logan Brae), designed by Bathurst architect, Edward Gell. The house was described as a villa and design commenced in the early 1870s. The villa became home to John Busby and his family in 1878. The house is described in the Conservation Management Plan as follows:

The very 'roomy' house contained eight bedrooms (three with dressing rooms attached), a nursery, drawing room, dining room (with nearby pantry, and an extensive cellar below), breakfast room, library, schoolroom, two bathrooms as well as kitchen, scullery, larder, storeroom, a room for "boots and knives", laundry and wash-house. The two servants' bedrooms above the kitchen and the man's room

¹ Vegetation Management Plan, Applied Ecology, 28th June 2022, Page 9

² Vegetation Management Plan, Applied Ecology, 28th June 2022, Page 11

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above the laundry had their own staircases, and servants stairs were also provided in the main part of the house.³

Figure 5: Extract of vegetation characteristics of the site (Source: Vegetation Management Plan, Page 12)

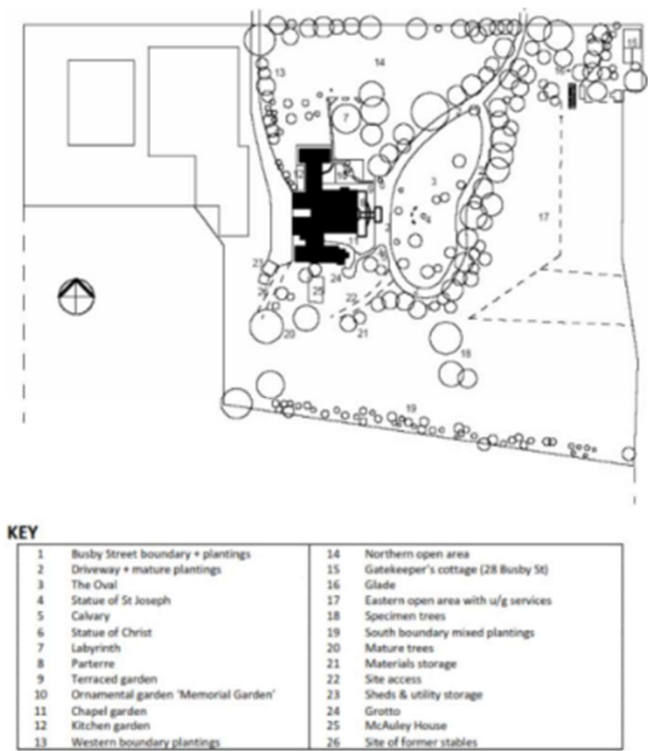


Figure 4 Extract from CMP: Figure 3.5: Plan of the grounds with a list of plants and features (Roseanne Poskin 2007), p. 87

³ Conservation Management Plan, Highground Consulting, Page 9

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Figure 6: Logan Brae photographed from the drive in 1880 (Sisters of Mercy Bathurst Congregation) (Source: Conservation Management Plan)



Logan Brae was renamed St Josephs Mount in 1909 and in 1916, a Chapel was constructed beside the main building, with a science room and classroom constructed beyond that (1959).⁴

Additional accommodation was added to the main building in 1962 on the northern side.⁵

⁴ Conservation Management Plan, Highground Consulting, Page 11

⁵ Conservation Management Plan, Highground Consulting, Page 11

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Figure 7: St Joseph's Mount on the day it was blessed in 1909, converting this from what was known as Logan Brae (Source: Conservation Management Plan)



Plate 2.2: St Joseph's Mount on the day it was blessed in 1909.

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SECTION 10.7 CERTIFICATE

The Section 10.7 Certificate provides the following relevant information, set out in the table below.

Table 2: Details from s. 10.7 certificate (Ref: PL2022/1328), dated 11 April 2022

Property Address	2 Bayview Hill Road, Rose Bay
Legal Description	Lot 22, Deposited Plan 1033481
Critical Habitat	No
Land Reservation Acquisition	No
Heritage Conservation Area	Yes
Environmental Heritage Item	Yes
Coastal Protection	No
Mine Subsidence	No
Road Widening or Realignment	No
Hazard Risk Restriction (other than Acid Sulfate Soils)	No
Acid Sulfate Soils	No
Flood Planning	No
ANEF Contour Zone	No
Biodiversity Certified Land	No
Threatened Species	No
Bushfire Prone Land	No
Property Vegetation Plan	No
Native Vegetation	No
Contamination	No
Orders Under Trees	No
Loose-Fill Asbestos	No

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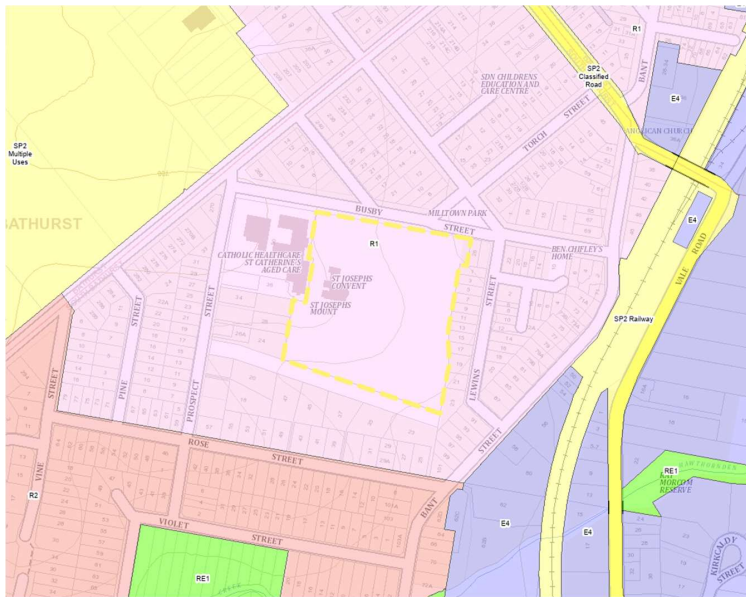
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PLANNING CONTEXT

The relevant planning controls established in the LEP, which is the prevailing statutory instrument for the site, are set out below and summarised in the accompanying maps:

- R1 General Residential
- Height of building – 9m
- Floor space ratio – Not applicable
- Minimum lot size 550m²

Figure 8: Land zoning map (R1 General Residential) (Source: NSW Planning Portal)



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Figure 9: Minimum lot size map (Source: NSW Planning Portal)

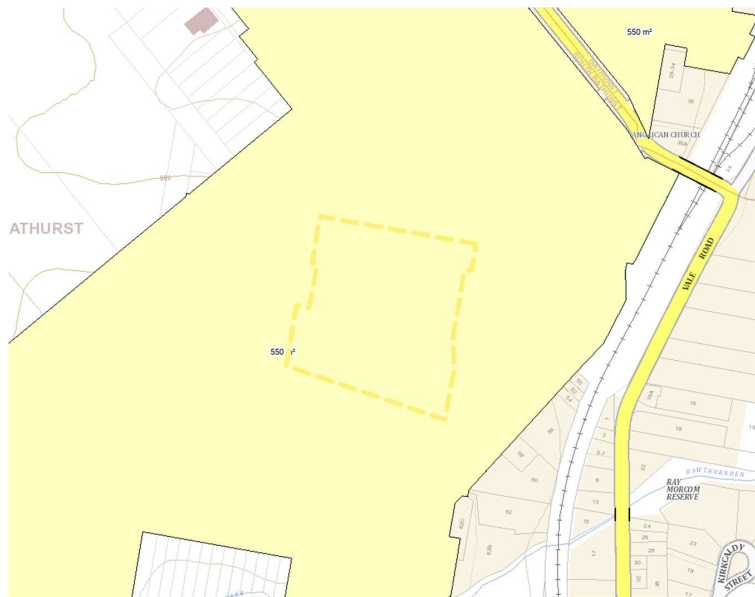


Figure 10: Height of buildings – 9m (Source: NSW Planning Portal)



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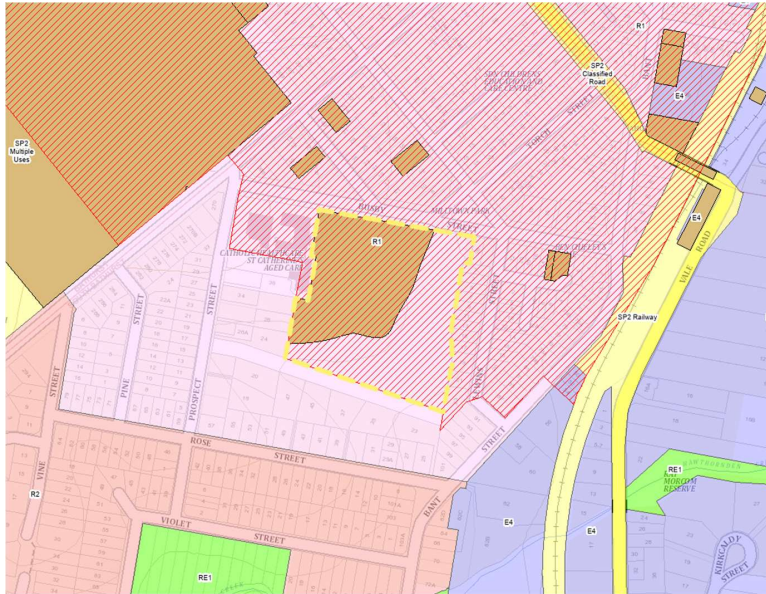
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Figure 11: Heritage conservation map (Source: NSW Planning Portal)



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THE MASTERPLAN

To establish appropriate planning objectives that support this PP, a site masterplan has been prepared by the consultant team which takes account of the physical and environmental constraints of the land, while celebrating the heritage attributes that attach to both the site and the heritage conservation area. These elements have been combined to establish a master plan that will attribute a higher level of residential density to South Bathurst to support much needed housing supply, that is a form, scale, mix and design that responds to changing demographics and market trends for dwelling type.

The plan has been developed in consultation with the Council.

The masterplan comprises 218 dwellings, across seven (7) separate buildings, which vary in height and respond to both the streetscape and topography on which they are proposed to be located.

DESIGN PHILOSOPHY

Several design envelopes were considered culminating in four potential built form options.

Option 1 proposed a series of traditional rectangular building forms through the site, that followed the alignment of St Joseph's Mount with a vehicular and pedestrian circulation space between the buildings, from Busby Street. The separation distances between buildings allowed for adequate separation but were somewhat limiting in terms of views towards the western side of the site.

Option 2 provided a series of more angular buildings following the topography of the site. Due to their awkward shape, some of these were longer in form and provided disjointed view corridors across the site.

Option 3 combined rectangular and curvilinear building forms, with the larger buildings, at the lower part of the site, longer in dimension, on a north-south axis. This scheme was similar to Option 1, being consistent with the heritage axis and vehicular access through the centre of the proposal. This scheme was problematic in the ability to achieve sufficient cross ventilation and solar access due to the longer building forms.

Option 4, which forms the basis for the masterplan, follows the north-south heritage access, but is provided in a series of smaller building footprints to enable a higher proportion of view corridors to be enjoyed across the site

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and to the surrounds. The proposed form also ensures that there are sufficient views to, and across, the site to respect St Joseph's Mount and the associated landscape corridor. The position of the internal roadway on the lower part of the site also ensures that there is a distinct expression between active and passive areas for residential and recreational enjoyment, without interference, while also providing a further separation buffer with existing residential accommodation to the east and south.

The smaller footprints also allow for a highly permeable pedestrian network through the site which will maximise opportunities for internal access and connectivity with St Joseph's Mount.

DEVELOPMENT DENSITY

As previously indicated, the masterplan provides seven separate buildings, with a maximum building height of eighteen (18) metres proposed.

It is, however, intended that the buildings closer to Busby Street, particularly Building A and B, will be of a lower scale, to respond to the traditional streetscape character of Busby Street more closely.

The masterplan would allow for 218 dwellings, comprising 30 x 1-bedroom (14%); 159 x 2-bedroom (73%) and 29 x 3-bedroom dwellings (13%). This would be subject to detailed refinement at the DA stage.

To support this would be 226 car parking spaces and 47 visitor spaces.

Of the potential dwelling yield, 159 dwellings (73%) will achieve adequate cross ventilation and 152 dwellings (70%) will achieve solar access. The composition of dwelling mix will provide the opportunity for diverse housing types.

While the dwelling yield, mix and car parking spaces would be subject to detailed design at the DA stage, this demonstrates within the envelope of the buildings suggested, that there is sufficient opportunity for compliance to be achieved with the Apartment Design Guide (ADG) requirements.

POPULATION DENSITY

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In terms of population density this may be considered on Census data, which would result in approximately 305 people, or based on anticipated growth under Council's Local Strategic Planning Statement, at 2.32 persons per household, resulting in approximately 505 people.

MINIMUM LOT SIZE

Should it be proposed, at a later stage, to undertake subdivision of the land to facilitate development on an individual allotment for a singular building, all building forms have been designed with appropriate setbacks to the adjoining building, while achieving a an allotment size that would comply with the minimum standard of 1,300m².

DESIGN GUIDELINES

Design guidelines for the proposal will be developed in conjunction with Council, relying primarily upon the existing development control plan and the NSW ADG.

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S.3.33 OF THE EP AND A ACT

Section 3.33 of the EP and A Act provides direction for a *Planning proposal authority to prepare explanation of and justification for proposed instrument – the planning proposal*, which is designed to explain the intended effect of the proposed instrument. These matters are addressed below.

STATEMENT OF OBJECTIVES OR INTENDED OUTCOMES

The objectives of this proposal are:

- to increase the diversity in housing choice available in the South Bathurst precinct, on land that is suited for residential development
- to provide a range of dwelling product, with the opportunity for a higher proportion of smaller dwellings to service the anticipated future housing market, seeking more affordable options in a regional location, which are adaptable in design
- to create an *in situ* community that is able to benefit from the heritage character and attributes of the site and locality, by exposing the future development, in design and access terms, to St Joseph's Mount and its future facilities
- to provide a design outcome, through suitable development controls, that maintains the curtilage and view corridors towards St Joseph's Mount,
- to ensure that the density of development does not result in adverse cumulative impacts on the local road network
- to ensure that future development is designed so that it does not restrict the future operation of the Mount Panorama precinct, from an acoustic perspective
- to ensure that high quality urban design outcomes are achieved and responsive to the physical characteristics and topography of the site.

The intended outcomes are:

- to rezone the site to facilitate a higher density of development consistent with the above outcomes, in alignment with the masterplan
- to allow for sufficient areas for infrastructure within the site to support the development
- to accommodate a diversity of dwelling type to align with future market conditions and population growth

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- to ensure that the future scale of development responds to the existing character of the area, while establishing design principles that are appropriate to the desired future character
- to ensure that the design response is appropriate in the context of the heritage listing of the land, specifically St Joseph's Mount, and its curtilage
- to facilitate a strong network of open space and pedestrian pathways across the land that encourage integration of uses and connection with the surrounding community.

This PP achieves both the objectives and intended outcomes, as set out above.

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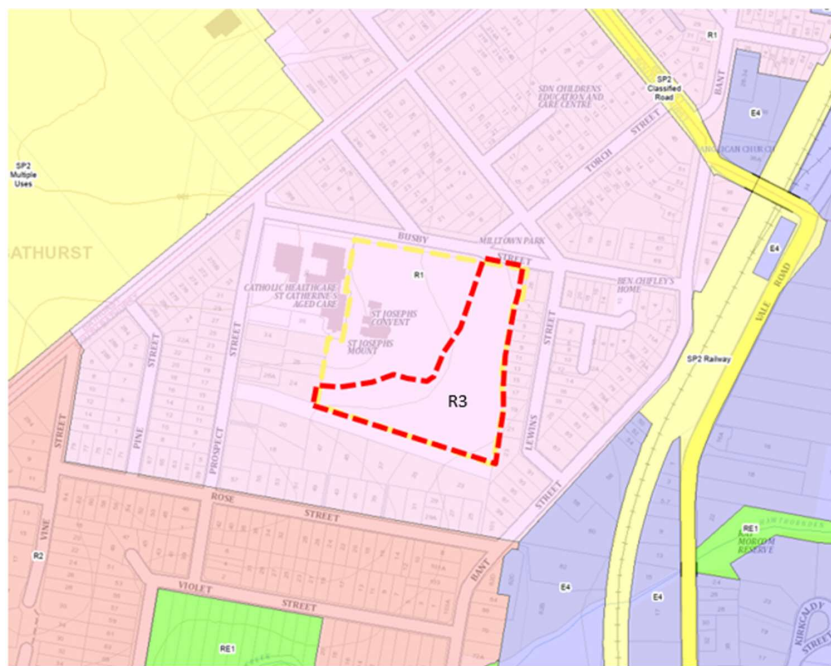
EXPLANATION OF THE PROVISIONS

To enable implementation of the objectives and intended outcomes, the following amendments will be required to the LEP.

Zoning

It is proposed to rezone the PP site from the R1 General Residential zone to R3 Medium Density Residential zone; future Lot 223 and 225 will remain as R1 General Residential.

Figure 12: Proposed amendment to zoning map



Minimum subdivision lot size (Clause 4.1)

It is proposed to increase the minimum lot size resulting from subdivision from 550m² to 1,300m² to ensure consistency with the required minimum lot size for residential flat buildings.

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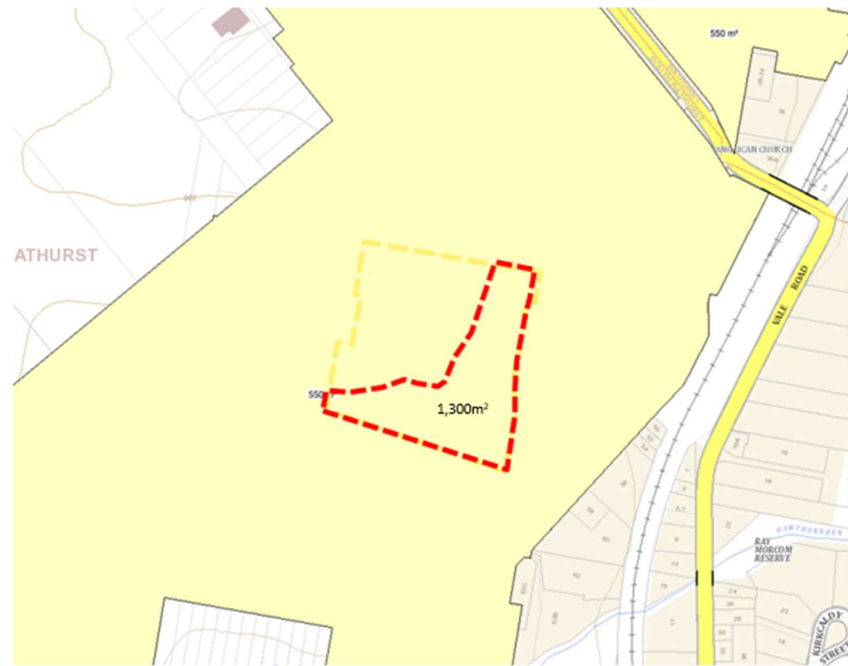
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Minimum lot sizes for dual occupancies, manor houses, multi-dwelling housing and residential flat buildings (Clause 4.1B)

It is proposed to remove the minimum dual occupancy map as it applies to the site as dual occupancy development is prohibited in the R3 Medium Density Residential zone.

It is proposed that the Minimum Lot Size – Multi Dwelling Housing and Residential Flat Buildings Map – Sheet LSM_011B would be amended to show the minimum allotment size as 1,300m².

Figure 13: Proposed amendment to minimum lot size map for dual occupancies, manor housing, multi-dwelling housing and residential flat buildings



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Height of Buildings (Clause 4.3)

It is proposed to amend the height of building standard from 9m to 18m.

Figure 14: Proposed amendment to height of buildings map



Additional permitted uses (Schedule 1)

It is proposed to permit retail premises on the site to the effect of the following:

Use of certain land at Lot 226, 34 Busby Street, South Bathurst

- (1) This clause applies to land at Lot 226, 34 Busby Street, South Bathurst.
- (2) Development for the purpose of residential premises is permitted with development consent.

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JUSTIFICATION OF THE PROPOSAL FOR STRATEGIC AND SITE-SPECIFIC MERIT

The Local Plan Making Directions provided by the Department of Planning, Infrastructure and Housing provide a series of criteria which must be considered in implementing a planning proposal. These matters are addressed below.

Need for the planning proposal

Is the planning proposal a result of an endorsed Local Strategic Planning Statement, strategic study or report?

This PP is not a direct result of the endorsed LSPS as it does not specifically identify the site (nor the land) as a location for increased urban density.

However, this exclusion is likely driven by two factors. The first is the existing Mount Panorama Precinct, which provides a fundamental plank to the tourism industry of Bathurst and of which several Council's policies require that express consideration is given to ensuring that future land uses do not restrict the operation of the Precinct. To that end, the planning controls also identify areas where specific noise controls apply. The subject site is located outside of these.

The previously mooted expansion of Mount Panorama would also have potentially impacted residential expansion in this location. With that not now proceeding, expansion opportunity is available.

Further, there are specific noise controls in place and the Noise Impact Assessment demonstrates that residential development can proceed on this site, with suitably mitigation measures to ensure that the two uses can exist without adversely impacting the other.

The second reason relates to the heritage listing of the site, including St Joseph's Mount. The Mount itself, in conjunction within the broader landholding, requires a detailed investigative approach to enable future development that would likely be beyond the resources of Council to investigate. The now, owner, has taken the opportunity to work collaboratively with Council to examine the adaptive reuse of the existing heritage-listed buildings on the land (which do not form part of this PP) and consider alternative land use for the balance of the site which has emulated in a denser form of residential development being suited to the land. This has been considered in the context of potential impacts in relation to heritage, traffic, design, built form relationship, solar access and acoustics and the concept masterplan in the PP can be comfortably accommodated on the site without adverse impact to neighbouring properties, nor to St Joseph's Mount. Most importantly the concept

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masterplan, the heritage controls by way of the Conservation Management Plan and Heritage Impact Statement, the NSW ADG and any future controls contained in the development control plan will ensure the protection of the heritage item.

Based on the analysis undertaken, the opportunity has therefore arisen for this site to be utilised, despite being outside of that mooted under the LSPS, but with adequate consideration undertaken to determine this site as being acceptable for a more intense proportion of residential land use. This will assist to support the anticipated housing density required to service future population, while being of a design and composition that is more suited to market conditions, specifically for smaller dwellings.

Further, the density of development would not adversely impact on infrastructure provision or capacity and will not place pressure on the fringes of the local government area, where infrastructure is less readily available.

Therefore, despite being outside of the LSPS, the site provides a suitable and viable location for increased residential land use without adverse impact.

Is the planning proposal the best means of achieving the intended objectives or outcomes, or is there a better way?

The planning proposal does represent the most appropriate method for achieving the intended objectives or outcomes.

While the land has previously been realised in the Bathurst 2036 Housing Strategy as being within an area of 'No change' due to the, then, mooted expansion of Mount Panorama into a second track, that proposal has subsequently been relinquished. In doing so, and for the reasons set out above, the land has been identified as suitable for a more intense form of residential development that is best achieved through implementation of this PP.

This PP is also being considered in conjunction with a PP at 50 Busby Street, to the west of the site. The cumulative impacts of that proposal, in conjunction with this PP proceeding, have been evaluated in the consultant reports the subject of this application. These demonstrate that the capacity of the land is suited to the density of development that is demonstrated on the concept masterplan and collectively, the two proposals will not place an unnecessary strain, nor adversely impact on, existing infrastructure.

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Both individually and cumulatively, the planning proposals are best facilitated in the manner proposed.

Relationship to the strategic planning framework

Will the planning proposal give effect to the objectives and actions of the applicable regional or district plan or strategy (including any exhibited draft plans or strategies)?

This PP responds directly to the Central West and Orana Regional Plan 2041 in relation to housing need.

Objective 13 requires that development provides housing options that are well located to meet demand. This will be achieved by this PP in understanding the changing dynamics of population growth, while responding to housing opportunities, particularly where existing infrastructure can be utilised. Most importantly, housing supply needs to meet community needs and provide opportunities for growth.

This PP responds to one of the fundamental planks of this policy, being to provide a diversity of housing, with a greater density that is close to shops and services and is absent hazard that may otherwise restrict future use.

Is the planning proposal consistent with the Council's LSPS that has been endorsed by the Planning Secretary or GCC, or another endorsed local strategy or strategic plan?

This planning proposal specifically responds to the LSPS, by ensuring that future residential development is suitably designed having regard to noise exposure from Mount Panorama.

This PP provides an opportunity to increase housing density within the local government area, proximate to the CBD. Its location ensures that it does not result in urban sprawl and thus is conducive in social terms to establish connections within the existing community. Sufficient infrastructure capacity is also currently available with augmentation of services on site being the only precursor to development taking place, such that there are not broader impacts on existing infrastructure capacity.

The diversity of accommodation provision which will have sufficient capacity to provide a high proportion of one- and two-bedroom dwellings, in favour of three/four-bedrooms, will cater to the identified market, given the lower household size increasing in the locality, along with lone-person households.

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In terms of Planning Priority 19, while not the subject of this PP, the broader land will provide significant opportunities for cultural and social engagement with the restoration and adaptive reuse of St Joesphs Mount.

Planning Priority 2 and 3 relating to infrastructure and transport, require that development, growth, and infrastructure are aligned, while enabling connectivity through the Bathurst Region. The studies accompanying this PP demonstrate that the proposal will not adversely impact on the existing provision of infrastructure and the surrounding transport network, including that of the cumulative impact of this PP and that at 50 Busby Street, which can occur without adverse impact, to the extent that it is consistent with these planning priorities.

Planning Priority 6 is also specifically relevant in ensuring that the future use of the land does not compromise the utility of Mount Panorama by resulting in development that would cause the tourist benefits of this existing land use to be diminished. The Acoustic Report demonstrates that future residential development may be accommodated on the land, with sufficient mitigation measures in design, to ensure that this will not compromise the on-going use of Mount Panorama which forms a fundamental plank of tourism for the region.

In terms of the Bathurst 2036 Housing Strategy, the studies accompanying this PP demonstrate that, while the site is in a 'No change' area, it would be suited to residential use and future development can be designed taking account of the noise limitations associated with the use of Mount Panorama, with the site being located in the environs of this.

The Social Impact Assessment also demonstrates that, with the provision of 218 dwellings, as set out in the PP, this would provide a range of housing options for both the existing and future population, attributable, as follows:

In respect of how the proposal will support and achieve housing choice, diversity and affordability, the proposed rezoning seeks to permit medium density housing, which by its nature is likely to result in future residential developments of a smaller size than is most common in the area (3 or more-bedroom separate dwellings). The concept for the site includes the construction of a number of residential buildings over basement parking, and proposes a future mix of one-, two- and three-bedroom units. At the 2021 Census, units comprised 3.2% of dwellings in the SAL1 and 1.8% of dwellings in the suburb of South Bathurst.

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The availability of smaller dwellings will result in more affordable housing for the community.

As noted in Chapter 3.1 the suburb of South Bathurst and the Bathurst LGA have an increasing number of lone and couple households, while the predominant form of housing is separate dwellings with three or more bedrooms. Council has also recognised this trend in its LSPS identifying the need for smaller dwellings to accommodate a range of household types.

The proposed subdivision of the site will provide an opportunity for the introduction of housing choice, diversity, and affordability in a location close to the town centre, and to employment areas.⁶

The Objectives for the 'No Change Area', under the Implementation Plan requires that the existing neighbourhood character be maintained. However, a detailed opportunities and constraints analysis has been undertaken to consider, in both design and heritage terms, how the site could be developed without compromising this character.

The density proposed under the PP will provide a higher level of density on land that is close to the CBD, thus making this accessible. This makes strategic planning sense to create development in a location where access to facilities and services is readily available for the community in which it is creating, without imposing on the urban fringe where access to available infrastructure is more limited.

Connective City 2036 endeavours to create opportunities for living, working, access and movement, while protecting environmental qualities, celebrating waterway and combining cultural fabric.

The proposal will be consistent with Evolution 6 which seeks to provide a diversity in housing, as proposed on a low-density basis that is suited to the immediate character and as intended by the zoning of the land.

Is the planning proposal consistent with any other applicable State and regional studies or strategies?

This PP is consistent with the relevant strategic policy considerations, including Housing 2041, the Regional Housing Taskforce and the Central West and Orana Regional Plan 2041.

⁶ Social Impact Assessment, Sarah George Consulting, Page 25

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Is the planning proposal consistent with the applicable SEPPs?

The proposal is consistent with the relevant SEPPs as set out in the table below.

Table 1: Compliance with the relevant State Environmental Planning Policies

State Environmental Planning Policy	Applicable	Consistent	Response
State Environmental Planning Policy (Biodiversity and Conservation 2021)			
Chapter 2 – Vegetation in non-rural areas	Yes	Yes	Tree removal will be addressed as part of any future DA.
Chapter 3 – Koala Habitat Protection	No		
State Environmental Planning Policy (Exempt and Complying Development)			
	No		
State Environmental Planning Policy (Housing) 2021			
Chapter 2 – Affordable Housing	No	Yes	If affordable housing forms part of a future DA, the provisions proposed in the PP do not prevent implementation of such housing.
Chapter 3 – Diverse Housing	No	Yes	If diverse housing (as permitted) forms part of a future DA, the provisions proposed in the PP do not prevent implementation of such housing.
Chapter 4 – Design of residential apartment development	Yes	Yes	The PP has been designed with this Chapter in mind; detailed consideration is required at the DA stage, including that any application for a residential flat building will be referred to the relevant design review panel for consideration of its design intent and merit. Schedule 9 will also need to be satisfied as part of any future application, as well as the

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			<p>requirements of the NSW ADG, noting that certain provisions contained therein, prevail over the relevant sections of the development control plan.</p> <p>The concept masterplan does, however, demonstrate that the requirements of this Chapter can be achieved.</p>
State Environmental Planning Policy (Industry and Employment) 2021			
	No		
State Environmental Planning Policy (Planning Systems) 2021			
Chapter 2 – State and regional development	Yes	Yes	<p>Future development on the land the subject of this PP is not likely to be classified as State significant development and therefore subject to Schedule 6 Regionally significant development, or otherwise as local development under the Bathurst LEP.</p> <p>There are no proposed provisions in the PP that impact on the determination role of any future DA.</p>
State Environmental Planning Policy (Precincts – Regional) 2021			
	No		
State Environmental Planning Policy (Primary Production) 2021			
	No		
State Environmental Planning Policy (Resilience and Hazards) 2021			
Chapter 2 – Coastal management	No		
Chapter 3 – Hazardous and offensive development	No		

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Chapter 4 – Remediation of land	Yes	Yes	Matters relating to remediation will be addressed at the DA stage; however, the historical uses of the land would not preclude future residential development should remediation be required. This could be accommodated under a Remedial Action Plan.
State Environmental Planning Policy (Resources and Energy) 2021			
	No		
State Environmental Planning Policy (Sustainable Buildings) 2022			
	No		
State Environmental Planning Policy (Transport and Infrastructure) 2021			
Chapter 2 – Infrastructure	Yes	Yes	<p><u>Electricity</u></p> <p>Should any works be undertaken proximate to electricity distribution networks as prescribed by s.2.48, this will be referred and addressed at the DA stage. There are no provisions in the PP that preclude compliance with this clause.</p> <p><u>Traffic Generation</u></p> <p>Any future DA will likely result in car parking facilities on site that generate more than 200 car parking spaces; at the DA stage, the proposal would be referred in accordance with s.2.122. There are no proposed provisions in the PP that preclude compliance with this clause.</p>

The proposal is therefore compliant with the requirements of the relevant SEPPs.

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Is the planning proposal consistent with the applicable Ministerial Directions (section 9.1 Directions) or key government priorities?

The relevant local planning directions are addressed below.

Table 2: Local planning directions in accordance with s.9.1 of the EP and A Act

Local Planning Direction	Applicable	Consistent	Response
Local Planning Directions			
Focus area 1: Planning Systems			
1.1 Implementation of Regional Plans	Yes	Yes	The proposal is consistent with the Central West and Orana Regional Plan as detailed above.
1.2 Development of Aboriginal Land Council land	No		
1.3 Approval and Referral Requirements	Yes	Yes	No additional approval or referral requirements are instigated by this PP.
1.4 Site Specific Provisions	Yes	Yes	The proposed rezoning is to an existing zone (R3 Medium Density Residential) and no additional development standards are imposed. The PP provides drawings for reference purposes only.
1.4A Exclusion of Development Standards from Variation	No		
Focus area 1: Planning Systems – Place-based			
1.5 Parramatta Road Corridor Urban Transformation Strategy	No		
1.6 Implementation of North West Priority Growth Area Land Use Infrastructure Implementation Plan	No		

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1.7 Implementation of Greater Parramatta Priority Growth Area In Land Use and Infrastructure Implementation Plan	No		
1.8 Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	No		
1.9 Implementation of Glenfield to Macarthur Renewal Corridor	No		
1.10 Implementation of Western Sydney Aerotropolis Plan	No		
1.11 Implementation of Bayside West Precincts 2036 Plan	No		
1.12 Implementation of Planning Principles for the Cooks Cove Precinct	No		
1.13 Implementation of St Leonards and Crows Nest 2036 Plan	No		
1.14 Implementation of Greater Macarthur 2040	No		
1.15 Implementation of the Pyrmont Peninsula Place Strategy	No		
1.16 North West Rail Link Corridor Strategy	No		
1.17 Implementation of the Bays West Place Strategy	No		
1.18 Implementation of the Macquarie Bank Innovation Precinct	No		
1.19 Implementation of the Westmead Place Strategy	No		
1.20 Implementation of the Camellia-Rosehill Place Strategy	No		

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1.21 Implementation of South West Growth Area Structure Plan	No		
1.22 Implementation of the Cherrybrook Station Place Strategy	No		
Focus Area 2: Design and Place			
Focus Area 3: Biodiversity and Conservation			
3.1 Conservation Zones	No		
3.2 Heritage Conservation	Yes	Yes	This PP is accompanied by a Heritage Impact Statement and confirms that sufficient consideration would be given to the heritage status of the site, without the need to amend cl.5.10 of the LEP, noting that a conservation management plan is in place.
3.3 Sydney Drink Water Catchments	No		
3.4 Application of C2 and C3 Zones and Environmental Overlays in Far North Coast LEPs	No		
3.5 Recreation Vehicle Areas	No		
3.6 Strategic Conservation Planning	No		
3.7 Public Bushland	No		
3.8 Willandra Lakes Region	No		
3.9 Sydney Harbour Foreshores and Waterways Area	No		
3.10 Water Catchment Protection	No		
Focus Area 4: Resilience and Hazards			
4.1 Flooding	No		
4.2 Coastal Management	No		
4.3 Planning for Bushfire Protection	No		
4.4 Remediation of Contaminated Land	Yes	TBC	A preliminary contamination assessment will be undertaken as part

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			of any future DA. However, based on the historical uses of the site, there are no known uses that would result in an inability for the land to be made suitable for its intended purpose.
4.5 Acid Sulfate Soils	No		
4.6 Mine Subsidence and Unstable Land	No		
Focus Area 5: Transport and Infrastructure			
5.1 Integrating Land Use and Transport	Yes	Yes	As demonstrated in the Traffic and Parking Report, the PP is consistent with Improving Transport Choice and The Right Place for Business and Services and will not result in adverse, cumulative impacts on the surrounding road network.
5.2 Reserving Land for Public Purposes	No		
5.3 Development Near Regulated Airports and Defence Airfields	No		
5.4 Shooting Ranges	No		
Focus Area 6: Housing			
6.1 Residential Zones	Yes	Yes	<p>The proposed rezoning of the land to accommodate a higher density of development will encourage the provision of housing:</p> <ul style="list-style-type: none"> - that will increase the choice of building type across the site to broaden what is available to the housing market, particularly the evident demand for increased smaller dwellings, as opposed to larger family homes

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			<ul style="list-style-type: none"> - that will enable the utilisation of existing infrastructure and/or on-site augmentation, without placing undue pressure on the broader network of facilities and services - is located on an underutilised parcel of urban land and will not impose unnecessary pressure on a fringe area - that will result in a high-quality urban design outcome that will be facilitated through both planning controls and detailed design at the DA stage. <p>Clause 7.5 of the LEP applies to cure Direction 6.1(2)(a).</p> <p>The PP increases the permissible residential density of the land (not reduces it).</p> <p>The PP is therefore consistent with this Direction.</p>
6.2 Caravan Parks and Manufactured Home Estates	No		
Focus Area 7: Industry and Employment			
7.1 Employment Zones	No		
7.2 Reduction in non-hosted short-term rental accommodation period	No		
7.3 Commercial and Retail Development along the Pacific Highway, North Coast	No		
Focus Area 8: Resources and Energy			

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8.1 Mining, Petroleum Production and Extractive Industries	No		
Focus Area 9: Primary Production			
9.1 Rural Zones	No		
9.2 Rural Lands	No		
9.3 Oyster Aquaculture	No		
9.4 Farmland of State and Regional Significance on the NSW Far North Coast	No		

The PP is therefore consistent with the relevant Section 9.1 Directions.

MAPPING

The amended maps required to facilitate this PP are provided previously for indicative purposes. The final documentation will be consistent with the Departments Standard Technical Requirements for Spatial Databases and Maps.

These will be prepared in conjunction with the Council and finalised prior to any future gazettal, as required.

COMMUNITY CONSULTATION

The approach to community consultation for this PP will be in accordance with the EP and A Requirements, as set out at Schedule 1. Subclause 4 of Division 1 requires the exhibition period to be either as specified in the gateway determination, or otherwise for a period of 28 days.

The standard requirements for community consultation would be undertaken, including notice in public media (newspaper) and Council's website and liaison with surrounding landowners, noting the PP.

To ensure that the community is also well informed, the Application will likely hold a community information session to enable interested members of the community to attend and ask questions on an informal basis, given the historic nature of the property to provide comfort that this asset will be maintained for its value attributes.

PROJECT TIMELINE

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The project timeline is anticipated as set out below.

Table 3: Anticipated project timeline

Project Task	Timeframe
Preliminary briefing with Council	November 2023 – March 2024
Briefing of Councillors	13 March 2024
Further liaison with Council	13 March 2024 – 7 May 2024
Preliminary Assessment of PP by Council	May-June 2024
Consideration of PP by Councillors	June 2024
Gateway Determination	September 2024
Additional assessment reports/studies and liaison with government agencies	October-November 2024
Public Exhibition	October – November 2024
Assessment of PP by Council	December – February 2024
Consideration of PP by Councillors	March 2024
Finalisation and Gazettal of PP	April 2024

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ENVIRONMENTAL ASSESSMENT

In assessing this PP, and while a more detailed consideration will be required at the future DA stage, it is relevant to consider the potential impacts of the proposal, being positive, negative and cumulative, as set out below. It is relevant to note that the technical studies have been prepared having regard to the cumulative impact of development on the site, the land and considering the proposed density under the concept masterplan for the adjoining land to the west, at 50 Busby Street, to ensure that a holistic consideration of the PPs has been undertaken.

Acoustic impacts

An Acoustic Impact Assessment has been undertaken to accompany this PP and specifically takes account of events at Mount Panorama on the weekends of 16-18 February 2024 and 23-25 February 2024, to ensure that noise generated from the use of that facility is factored into the potential impact on residential use of the site.

The Assessment has also taken account of the future use of the land as a function/restaurant facility in assessing potential impacts.

To ensure that the residential use of the site can be occupied with a sufficient level of amenity (albeit to be considered in greater detail at the DA stage), the Assessment provides a series of recommendations for glazing to all buildings, as well as to the window frame and frame seal.

Noise levels are also set, as part of the Assessment for elements such as toilet exhaust fans, air conditioning condensers and basement ventilation systems.

The Assessment also provides a series of recommendations for the future function space on the land to ensure that adequate measures will be in place to protect residential amenity both on the site and to neighbouring properties. These control mechanisms will form part of the consideration of any future DA for that use; however, the Assessment forming part of this proposal demonstrates that, with suitable construction techniques, the residential use of the site will be acceptable in an acoustic context.

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Contextual considerations

For the reasons set out in this PP, the use of the site for residential purposes is acceptable as:

- there is an identified need for increased housing supply on land within the urban centre, to avoid pressure on urban fringe locations, where infrastructure is not as readily available
- there is the ability to supply dwelling density and form that complies with the relevant design requirements, including acoustic requirements, to ensure that it does not compromise the amenity of adjoining dwellings, nor the operation of Mount Panorama
- there is a significant opportunity to celebrate the historical characteristics of this land and create an integrated development that will enable adaptive reuse in a controlled environment
- the design of future development, having regard to the site area, ensures that appropriate setbacks can be provided to ensure that an acceptable development outcome is achieved without adversely impacting neighbouring properties
- there are significant opportunities to create high quality urban design outcomes that will complement the heritage character of the site and the conservation area, while providing contemporary design solutions that are complementary to the broader context
- the site is accessible to urban facilities and services and will not place undue pressure on these with the population increase that may accrue from use of the site.

The proposal is therefore acceptable in terms of the context of the site.

Heritage and visual impacts

A Heritage Impact Statement has been undertaken that examines the significance of the land and defines how the visual linkages of the key features of the former Convent and Novitiate are to be conserved as part of any future development. The principal visual links to be conserved are:

- View of the eastern façade of St Joseph's Mount from the driveway leading to the front of the buildings.
- Views from the buildings to the drive and gardens and views over the garden and surrounding properties to the countryside around Bathurst
- Views along the front of the complex of buildings.

The Heritage Impact Statement provides the following in relation to the concept masterplan:

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The proposed location of the proposed residential units is consistent with the analysis of Curtilage of the former Convent & Novitiate included in the CMP. Retention of the tree line along the eastern and southern boundaries of Lot 223 will assist in managing site lines.

The proposed design of new works on this property has been considered and it is recommended that it meets the requirements of Article 22 of the Burra Charter in the following ways:

- *The assessed significance of the St Joseph's Mount Convent & Novitiate. The development proposal has been crafted to conserve the integrity of the former Convent & Novitiate and support the use of the place in a new role in the 21st century.*
- *Proposed new construction has been carefully designed to ensure that it does not compromise the integrity or curtilage of the original convent buildings and landscape.*
- *The setting of St Joseph's Mount has been maintained by ensuring its continuing dominant presentation in the landscape and protecting views to and from the significant buildings.*
- *New buildings will be designed to make them readily identifiable as new work.*

The form, scale, design and colours of the proposed new buildings and alterations will represent a sincere exercise in harmonising the needs of the owners with the significance of the property. The placement of new buildings will conserve the curtilage of the historic site.

The PP is therefore considered acceptable in heritage terms.

Services Impacts

The Services Strategy Report indicates that there is sufficient supply to service the site in relation to water, sewer, stormwater, gas, electrical and communications, essential energy, telephone and NBN services. While only limited information is available at this time in relation to power supply, should augmentation be required, and new substation equipment necessary, this will be addressed at the DA stage and located in accordance with the agency requirements.

Social impacts

The Social Impact Assessment accompanying this PP provides the following key findings:

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- the change (increase) in population is unlikely to alter the socio-economic or demographic character of South Bathurst, thus resulting in increased demand for new services not already available
- the availability of smaller dwellings will improve housing affordability close to the town centre and with access to employment
- there will be no adverse health impacts
- increased opportunities for surveillance will be available with the use of the site
- there will be no adverse impact in terms of social cohesion with residents having access to the same opportunities for participation in the local community
- the design and use of the site will not alter the values and beliefs of the community as there will unlikely be any change to community structure, values and beliefs
- there will be no adverse outcomes in creating a sense of place or community, particularly with the continuity of use of St Joseph's Mount (subject to a separate DA)
- there is sufficient availability of community facilities and services to cater for the population increase of this PP
- the PP and future use of the land will not result in a heightened risk of social harm, nor negative social impacts, to vulnerable community groups
- the diversity of dwelling mix, that is more affordable, will represent a positive community outcome
- social displacement will not be a consequence of this proposal as the site is currently vacant.

In terms of the cumulative impacts if both this PP and that at 50 Busby Street proceed, the following is provided:

Council noted that the adjoining property at 50 Busby Street was earmarked for future medium density residential development and it is understood that a planning proposal for the site has for the development of 97 dwellings (apartments and townhouses) has been submitted to Council.

Two proposals for rezoning and subdivisions are unlikely to result in any cumulative impacts.

In a practical sense, the subject site is separated from the site at 50 Busby Street due to the site topography, and St Joseph's Mount with its position above the subject site and as such, should there be two medium density sites on adjoining properties, they will be physically separated from each other.

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Cumulative impacts may arise should both applications be approved, and future construction related works commence concurrently.

The most likely cumulative impacts that may arise if both proposals are approved include:

- *cumulative impacts generated by concurrent site works and construction including noise, dust, truck movements and demand for on-street parking for workers. These impacts are short term in nature and are able to be managed through best practice construction management practices*
- *on occupation of future dwellings, there will be an increase in population in the SAL1. This increase in population will most likely be noticeable in terms of increased traffic on local roads. Traffic generation related to the subject site has been considered in detail in the Traffic and Parking Assessment Report prepared by CJP Consulting Engineers and discussed in Chapter 4.13.*
- *increased population in the area. The subject proposal is contemplating an indicative population on the site of 305 and the Planning Proposal for the site at 50 Busby Street estimates an increased population of 118 people, bringing the total estimated population of both sites to 423 people. This increase is likely to comprise, in part, existing residents of South Bathurst and other areas of Bathurst who are seeking to downsize while retaining links to the community. The increased population on the two sites is unlikely to result in any material social impacts in the area.⁷*

From a social impact perspective, the following public interest elements will result from this PP:

- *provision of land for new housing, in a centrally located area, close to shops, facilities, education, employment and public transport;*
- *provision of land for future housing for the anticipated growth in population in the area;*
- *provision of diversity in respect of the size and type, and affordability of housing;*
- *a proposal that supports and contributes to Council's plans and strategies for the future of the Bathurst; and*
- *employment generation in undertaking site works, and in future construction.*

⁷ Social Impact Assessment, Sarah George Consulting, Page 29

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The PP is therefore considered positive from a social impact perspective and without adverse cumulative impact on the broader community of Bathurst.

Traffic and parking impacts

The Traffic and Parking Assessment Report has considered the PP, in conjunction with the future use of St Joseph's Mount and the concurrent PP at 50 Busby Street, South Bathurst and provides the following conclusions:

- *based on a number of "worst case" parameters, the proposed development on 34 Busby Street is expected to generate in the order of 219 and 239 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times*
- *based on information provided in the Allera PP report for the adjoining site, the proposed development on 50 Busby Street is expected to generate in the order of 69 and 75 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times*
- *the proposed cumulative increase in traffic as a consequence of both developments will not result in any unacceptable traffic implications to the surrounding road network, nor will any road upgrades be required*
- *the proposed vehicular access, parking and loading area design will ultimately be designed to comply with the relevant requirements of the AS2890 series, Austroads and the NSW RFS's Planning for Bush Fire Protection .*

In light of the foregoing assessment, it is therefore concluded that the Planning Proposal is supportable on vehicular access, traffic, parking and servicing grounds and will not result in any unacceptable implications. Notwithstanding, it is expected that a new TPAR will be prepared at DA stage, should the PP be approved, which will further analyse the above as the detail in the project increases.⁸

The proposal is therefore acceptable on traffic and parking grounds.

⁸ Traffic and Parking Assessment Report, CJP Consulting Engineers, Page 32

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CONCLUSIONS

This PP application is made in response to cl. 3.33 of the EP and A Act, and provides an explanation of the intended effect of the proposed amending instrument and the justification for making the instrument for the site at 34 Busby Street, South Bathurst. The changes to the planning controls are limited to future Lot 226 and seek changes to the zoning, minimum allotment size and height standards to control future development.

By enabling this PP, the planning controls will be amended to enable the site to be developed for residential purposes, in the form of residential flat buildings, comprising approximately 218 dwellings, across several stages, suited to market conditions. The proposal can provide a mix of one, two and three-bedroom dwellings.

While the detailed design of residential accommodation would be subject to a future development application(s) (DA), variety in building typology and configuration is capable of being provided that would contribute to the provision of additional housing, that responds to increased population growth identified in the Housing 2041 Strategy for the LGA. The site is highly accessible in terms of road and public transport access and is close to facilities and services, accessible to the community, without placing undue pressure on the urban fringe.

This PP has also taken into account the potential cumulative impacts of a concurrent PP at 50 Busby Street, to the west of the site. Based on the Council's Housing 2041 Strategy, population projections and increasing demand for regional housing, the supply of housing across the adjoining site and this site will respond to market demand, without creating oversupply to the housing market.

The proposed planning changes are as follows:

Zoning

It is proposed to rezone the site from the R1 General Residential zone under the Bathurst Regional Local Environmental Plan (LEP) 2014 to R3 Medium Density Residential zone; future Lot 223 and 225 will remain as R1 General Residential.

By rezoning the site, this will enable a diverse form of residential accommodation to be provided on the site, including:

- Attached dwellings

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- Multi-dwelling housing
- Residential flat buildings.

Minimum lot sizes for dual occupancies, manor houses, multi-dwelling housing and residential flat buildings (Clause 4.1B)

It is proposed to remove the minimum dual occupancy map as it applies to the site as dual occupancy development is prohibited in the R3 Medium Density Residential zone.

It is proposed that the Minimum Lot Size – Multi Dwelling Housing and Residential Flat Buildings Map – Sheet LSM_011B applies to the site, with the minimum allotment size of 1,300m². This would assist future development on a staged basis, if required.

Height of Buildings (Clause 4.3)

It is proposed to amend the height of building standard from 9m to 18m.

Additional permitted uses (Schedule 1)

It is proposed to permit retail premises on the site..

The conclusions of this PP are that the proposed planning changes to the LEP are supportable and future development on the site through high quality design outcomes and adequate mitigation measures will allow for urban growth within an existing residential context to be implemented without placing undue pressure on peripheral areas of Bathurst. As such this PP should be supported by Council and proceed accordingly.

**VEGETATION MANAGEMENT PLAN
'ST JOSEPHS MOUNT'
34 BUSBY ST,
SOUTH BATHURST**

PREPARED FOR INTERNATIONAL ORDER OF
SISTERS OF MERCY

C/- WESTERN PROJECT SERVICES

28TH JUNE 2022



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DOCUMENT VERIFICATION

Document Title	VEGETATION MANAGEMENT PLAN
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1 SUMMARY

The purpose of this Vegetation Management Plan (VMP) is to provide direction for the management of vegetation on the grounds surrounding St Josephs Mount and located within the Heritage Conservation Area. This VMP applies to the area included in the original Lot 22 DP 1033481, at 34 Busby Street, South Bathurst, and forming the proposed Lots 23, 24, and 25 in DP 1033481.

This VMP has been informed by the St Josephs Mount Conservation Management Plan (CMP) (High Ground Consulting, 2021), Bathurst Regional Council's Vegetation Management Plan draft report (Molino Stewart, 2018), Bathurst Development Control Plan 2015 for requirements for the preparation of a 'vegetation screen', and *AS4970-2009 Protection of trees on development sites*. As such, it endorses the CMP and aims to comply with the recommendations in it. The VMP should be read in conjunction with the CMP.

The aim of this report is to provide a VMP that has flexibility for implementation. Guiding principles for the development included:

- Retain as much of the existing vegetation as possible
- Provide simple, cost effective management actions and recommendations
- Identify areas where there is a number of management options
- Identify trees that need to be removed because they are dangerous
- Identify trees and shrubs that are weed species and need to be removed
- Provide recommended species lists for replacement planting
- Identify areas for supplementary planting and provide recommended species lists
- Identify areas or species with low/medium/high heritage conservation value
- Identify areas or species with low/medium/high ecological conservation value
- Provide management recommendations for these areas
- Provide recommendations for exclusion areas for excavation for utilities (tree protection zones)
- Provide recommendations for construction of fencing to separate the two lots

2.1 Project context

The Institute of Sisters of Mercy, Australia and Papua New Guinea engage in a wide range of apostolic works, including education, the care of the sick in their homes and in hospitals, the care of the aged and of orphans, and other forms of social service. The Sisters have operated in Australia since 1846.

The original homestead was built in 1878 by John Busby, son of George Busby, who was a surgeon. In 1909, it was purchased by the Hon John Meagher and gifted to the Sisters to be used as a Novitiate. Its name was changed to St Josephs Mount. It operated as an orphanage for girls from 1915 until 1975. The building has operated as a guest house since 2019 and is now known as Holmshurst.

The Institute of Sisters of Mercy (SoM) have engaged Western Project Services to bring the land at Lot 22, DP 1033481 (Attachment 1) into a 3 lot subdivision as per the approved Bathurst Regional Council DA/2020/50 (Attachment 2). The works will not include internal development of the lots. Lot 3 of this subdivision will then be divested by the property managers for the SOM, for future development by parties external to this package of works.

The main components of this project will be provisioning water and sewer to each newly created lot, minor kerb and gutter works, confirmation of existing suitable electricity and telecommunications provisioning or improvement to achieve the requirements of the DA for three lots, all of which is planned for execution over the next 6 to 12 months.

2.2 Requirements of the Vegetation Management Plan

This VMP has been prepared in accordance with specific direction given by Bathurst Regional Council in their letter to the client dated 15th June 2021. Condition 9 makes specific directions for the VMP as follows:

“A Vegetation Management Plan is to be prepared for the retention and preservation of “mature trees” on Lots 224 and 225. For the purpose of this condition, mature trees shall be taken to be:

- i) Trees located within the identified vegetation buffer zone between Lots 224 and 225; and*
- ii) Any other tree on Lots 224 and 225 that is greater than nine (9) metres in height.*

The Vegetation Management Plan should include:

- a) The identification of all existing mature trees within proposed lots 224 and 225 for the purposes of this condition;*
- b) A condition assessment of each of the trees identified in (a) by a suitably qualified arborist;*
- c) Recommendations for the retention or removal of each tree depending upon its condition assessment;*
- d) Recommendations for replacement plantings for those trees recommended to be removed;*
- e) A landscape plan for the maintenance and improvement of plantings within the vegetation buffer zone on proposed lot 224; and*
- f) Recommendations for the future protection of all retained and newly planted trees from subdivision and future building works within both lots 224 and 225.*

The Vegetation Management Plan is to be approved by Council and landscaping in accordance with part (e) of the Vegetation Management Plan is to be planted to the satisfaction of Council before the release of the subdivision certificate."

Additional requirements from the client include:

The VMP will consist of a written report with an annotated site plan / aerial photograph at a sufficient scale to show the entire property including all development and environmental features covered by the conditions.

The VMP must relate to other onsite works (including earthworks), address the submission requirements of Bathurst Development Control Plan 2015 Part I2.1.5 and must include:

- a) A species inventory, identifying all species present within the restoration area, and whether native or exotic
- b) Assessment of condition of trees, using SULE (Safe Useful Life Expectancy)
- c) Assessment of condition of shrubs, including expected lifespan
- d) A detailed list of species suitable for replacing as plants become senescent or need to be removed for safety reasons, in keeping with the Heritage Conservation Plan for the site
- e) Other actions to maintain the integrity of the vegetated corridor, including management of the area immediately surrounding the plants

2.3 Bathurst Development Control Plan 2015

Under clause 13.3.2 (a) a Landscape Plan is required to be lodged with Council as part of the Development Application for the following types of development:

- iv) Subdivision of land which incorporates Agricultural Interfaces, Land Use buffers, Major Road buffers, Open Space, Environmental Protection Areas and/or **Vegetation Screens** as identified on any relevant DCP Map.

Clause 13.3.3 specifies the requirements of a vegetation screen, and this needs to be incorporated into the existing heritage landscape at St Josephs Mount (Table 1).

Table 1 Bathurst Regional DCP 2014 requirements for Vegetation Screens used in subdivisions

Bathurst Regional Development Control Plan 2014					
Landuse Control shown on the DCP Map	Applicable Development Control Plan Map	Dimensions and characteristics	Species Type/ Planting Characteristics	Planting Density	Timing of Planting
Vegetation screen	<ul style="list-style-type: none"> Map No. 8 – Gateway Enterprise Park. 	<ul style="list-style-type: none"> Screen width: minimum 20 metres. Width of plantings: minimum 15m. 	<ul style="list-style-type: none"> Native trees. Mature height of trees is to exceed 15m. Existing mature trees to be retained where possible. Planting is within the Vegetation Screen should include a mix of shrubs, medium and large trees. The vegetation screen is to contain randomly placed plantings of tree, shrub and groundcover species with different growth habits and a maximum spacing of 5 metres. 	<ul style="list-style-type: none"> Trees to be planted in minimum of 3 rows. Trees to be placed 4 - 5m apart. 	<ul style="list-style-type: none"> Prior to issue of subdivision certificate.

The DCP further specifies referral to the Bathurst Vegetation Management Plan. Part B of the Bathurst VMP provides vegetation themes and management categories. Section 5.4 lists Theme Types, starting with 5.4.1 Heritage Conservation Areas. Also potentially relevant is 5.4.4 Exotic/Native mix.

Characteristics of the Heritage Conservation Area theme are as follows:

The vegetation in the Heritage Conservation Areas (HCAs) complements the cultural history of the area and is of an era that typifies early settlement in the Bathurst regional LGA. It is essentially exotic with autumn colours being a feature in the valley bound city, most notably in the main streets of Bathurst and the historic villages of Rockley, Perthville and Hill End.

Characteristics of the Exotic/Native Mix theme are as follows:

The vegetation has a blend of natives and exotics which may already be in existence in home gardens, the streetscape, parks and open space areas. The native vegetation in some instances are remnants of the Box-Gum Woodlands. The exotics include a wide spectrum of ornamental deciduous and evergreen trees, shrubs and groundcover species. The ratio of exotics to natives is variable, and the streetscapes, home gardens and parks tend to be informal in layout.

Appendix D of the Bathurst VMP provides a list of species suitable for planting, and also indicates species that are unsuitable, or unsuitable in some situations.

3 SITE CONTEXT

The subject site at 34 Busby St South Bathurst falls within the Bathurst & West Bathurst Heritage Conservation Area (Figure 2).

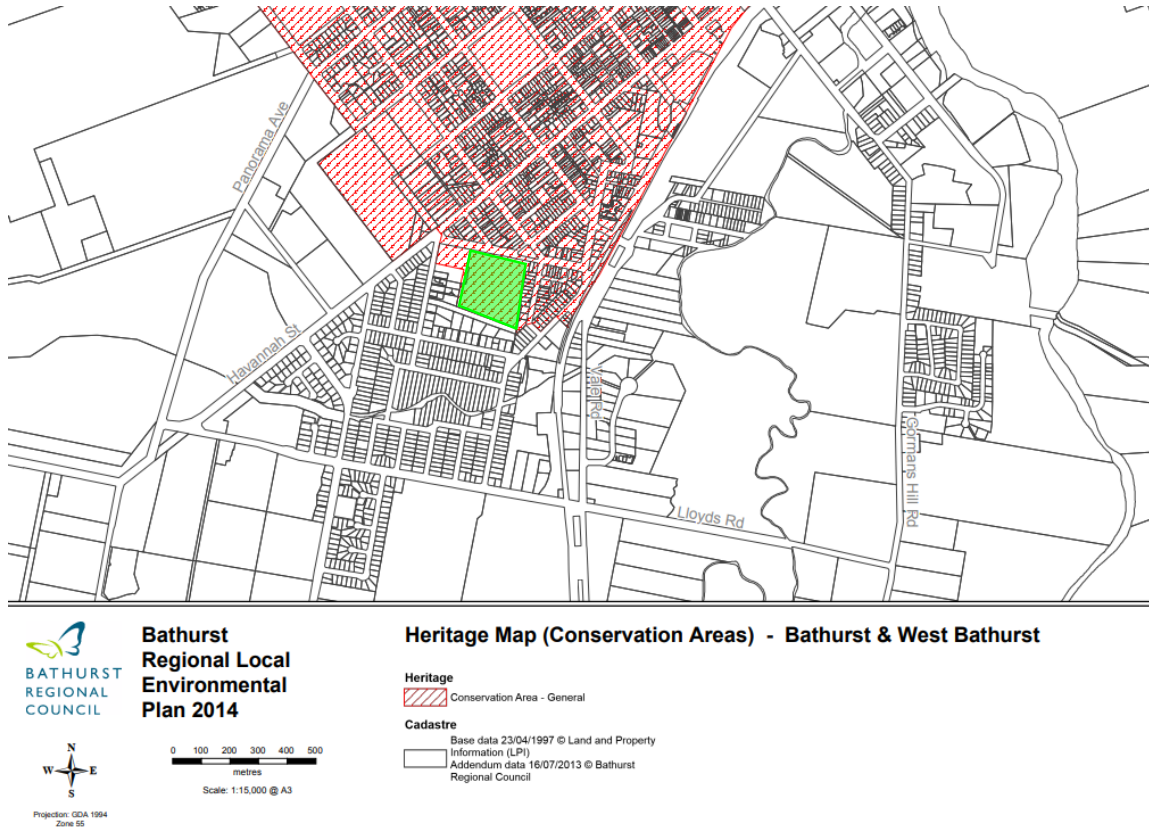


Figure 2 Extract from Heritage Map (Conservation Areas) Bathurst & West Bathurst (Bathurst Regional LEP 2014)

Ecologically, the area is highly disturbed through long term and ongoing urbanisation. The subject has a long history of disturbance associated with the various uses the property, including a family home/property, then the experimental farm, and more recently the home of the Bathurst congregation of the Sisters of Mercy. Over time the original holding has been reduced as subdivisions were created along Lewins St, Rose St and Prospect St, and the St Catherine's Aged Care Facility was constructed on the corner of Busby St and Prospect St (Figure 3).



Figure 3 Site context for St Josephs Mount showing areas of urbanisation adjoining the property (sixmaps)

No natural areas have been retained on the site. Almost all of the mature trees are introduced species, and the few mature native trees present have been planted. In recent years there has been some planting of native trees and shrubs in clusters around the midslope section of the property, and in a very narrow band along the eastern and southern boundaries.

A drainage easement runs along the southern boundary and consists of a formalised grassed swale with a series of rock gabion berms to moderate the flow of stormwater through the area. This is not a mapped drainage line and does not normally have baseflow or standing water in ponds along the channel.

3.1 Conservation Management Plan

A Conservation Management Plan (CMP) was prepared for the site by Ray Christison from High Ground Consulting, dated 15.3.2021. This includes several sections that are relevant to the preparation of the VMP for the site. These are reviewed in sections 3.2 and 3.3 of this VMP.

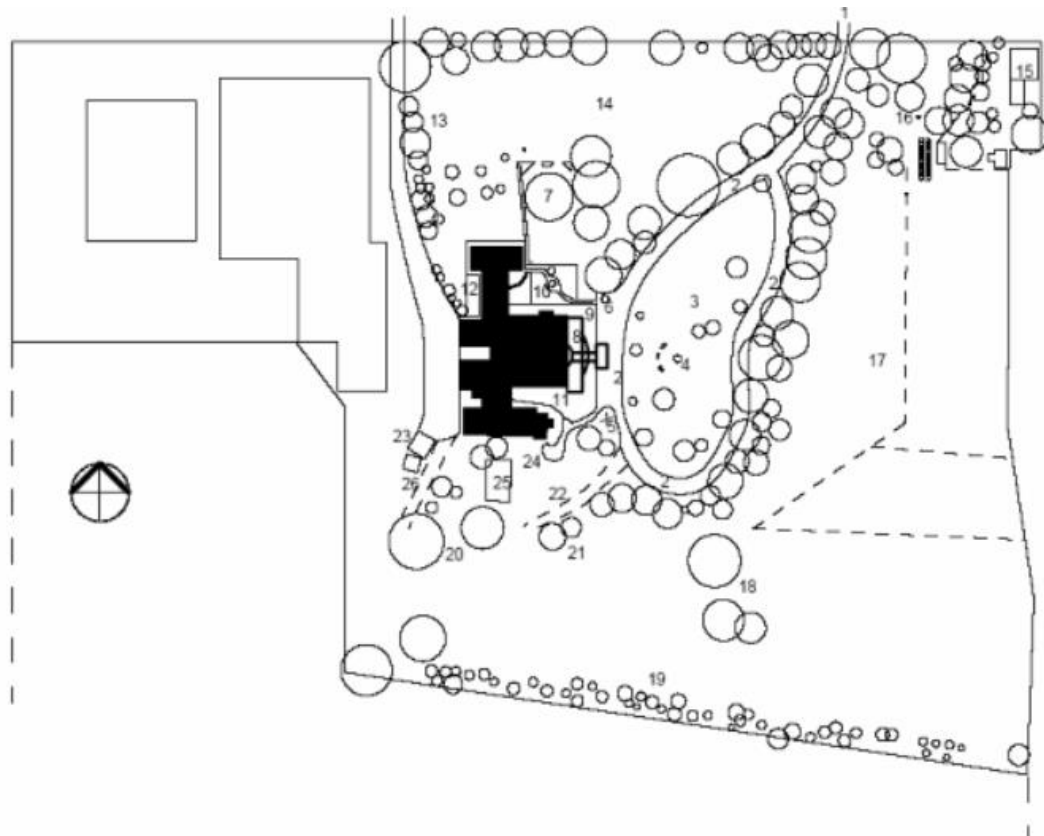
3.2 Physical evidence - Landscape

Section 3 of the CMP describes the existing condition of the site, based on physical evidence. Subsection 3.1.7 describes aspects of the exterior landscape within a heritage conservation context. The property landscape is described as follows:

The site generally slopes towards the south and the east, affording views across the township of Bathurst to the distant horizon. Three boundaries have residential development and an aged care

facility on land that previously formed part of the property. The northern boundary fronts Busby Street and has mature plantings along it, obscuring views into the site from the street. Within the site there are distinct areas, contrasting the continuous bands of substantial vegetation creating shade with the broad open swathes. Ornamental and utility garden areas contribute to the landscape that wraps full around three sides of the building complex. The main landscape features are identified in Figure 4.

Many of the landscape features described in this section are built features and formal gardens, utilitarian areas and commemorative religious items which are largely outside the scope of this VMP. Many of these contribute to the heritage values of the site and need to be managed in a manner that promotes their ongoing conservation.



KEY

1	Busby Street boundary + plantings	14	Northern open area
2	Driveway + mature plantings	15	Gatekeeper's cottage (28 Busby St)
3	The Oval	16	Glade
4	Statue of St Joseph	17	Eastern open area with u/g services
5	Calvary	18	Specimen trees
6	Statue of Christ	19	South boundary mixed plantings
7	Labyrinth	20	Mature trees
8	Parterre	21	Materials storage
9	Terraced garden	22	Site access
10	Ornamental garden 'Memorial Garden'	23	Sheds & utility storage
11	Chapel garden	24	Grotto
12	Kitchen garden	25	McAuley House
13	Western boundary plantings	26	Site of former stables

Figure 4 Extract from CMP: Figure 3.5: Plan of the grounds with a list of plants and features (Roseanne Paskin 2007), p. 87

Tree groupings and open areas are the most relevant for this VMP (Figure 5).

3.1.7.8 Tree groupings and open areas

Other than the distinctive row plantings along the driveways and the northern street boundary, there are other notable tree plantings. A large Elm tree (*Ulmus glabra*) and two Canary Island Pines (*Pinus canariensis*) form an imposing group in an otherwise unplanted section of the property. Other large pine tree specimens dominate a well-spaced group planting to the south west of the Chapel and McAuley House, adjacent to the garage shed. The southern boundary, adjacent to a fenced easement has been more recently planted with a double row of mixed, mostly native, species. This planting and easement provide a buffer to the adjoining residential development that has been built on land that previously formed part of the property.

Figure 5 Extract from Conservation Management Plan, p. 95

One of the Canary Island Pines has since died, and the Elms are an ongoing potential reservoirs for infection with the Elm Beetle which has been causing considerable damage to planted heritage Elms around Bathurst. These will be located on the separable Lot 224. Other features of the lower part of the original lot are described below (Figure 6). Disturbance associated with installation of utilities will be focused in this area.

Nearly one-half of the area of the property is composed of broad open areas. From the rear boundary of the gatekeeper's cottage in the north eastern corner the remainder of the eastern third of the property is open. It has a moderate even slope to the eastern boundary, generally draining towards the north east with the southern part draining towards the south eastern corner. It is traversed by a network of sewer drainage pipes that connect to the properties to the east and south of the property; several inspection points are also installed.

Figure 6 Extract from Conservation Management Plan, p. 95

The CMP identifies the age of the landscape elements as around 1880s, or about 140 years old (Figure 7). Many of the trees are much younger than that but help to define the character of the site today (Figure 8).

The fabric of the landscape elements mostly dates from the establishment of the property as a grand home in the later part of the nineteenth century. An early photo of Logan Brae taken about 1880 shows the two storey mansion with a sweeping kerbed gravel carriageway leading to its front entry; some substantial shrub planting lines the edge of the driveway.

Figure 7 Extract from Conservation Management Plan, p. 95

The now-mature coniferous plantings that edge the outer perimeter of the driveway superseded these shrubs and are in a mature to over-mature state with some showing loss of vigour; they are a major component of the landscape within the site.

Other main plantings include the mature plantings along the north and western boundaries. Most of them are showing signs of deterioration likely due to poor soil conditions and to the prolonged period of continuous dry seasons. These boundary plantings, together, with the driveway avenue trees, create a wide encircling embrace around the main building complex and its adjacent gardens and graded open swathe.

Figure 8 Extract from Conservation Management Plan, p. 96

3.3 Conservation Policies for a Sustainable Landscape

Section 7 describes conservation policies and guidelines that apply to the proposed subdivision site, with section 7.3 providing Policies for a Sustainable Landscape, including design rules and landscape practices. Central to this is the following (section 7.3.1.1, p.126):

- A 20 metre buffer zone must be established within Lot 224 along its boundary with Lot 225. This zone must be reserved for planting of large trees and understorey to reinforce existing plantings within Lots 224 and 225 and create a visual barrier between St Joseph's Mount and the adjoining property.
- Establish a vegetation management plan to ensure the ongoing sustainability of large tree plantings within Lot 224 (this plan).
- Boundary fencing must reflect the rural character of the existing boundary fences of St Joseph's Mount. Fencing may be post and rail or post and wire. Wire mesh may be used to contain animals.

Other key policies relate to:

- **Minimise disruption to the landform and existing drainage patterns** (section 7.3.1.2). This has been achieved by retaining trees and other vegetation as a priority, unless there are safety reasons for removal, or the species are considered weedy in the region.
- **Minimise disruption to the existing vegetation** (section 7.3.1.3). Potential disturbance may occur during the removal of unsafe trees or weedy shrubs/trees. As long as the removal is conducted in a manner that minimises impacts on surrounding vegetation, any impacts will be minimised.
- **Minimise effects on neighbouring areas** (section 7.3.1.4). Retention of trees and vegetation, and replacement or supplementing where appropriate, will help minimise impacts on surrounding areas and visual amenity of these.
- **Maximising the role of plants in the landscape** (section 7.3.1.5). This policy includes recommendations for using plantings to reduce impacts of the ambient climatic conditions, selecting species suitable for a range of microclimate conditions and creating the vegetation screen. This plan aims to minimise changes to the overall character of St Josephs Mount following subdivision, including retaining the circular driveway at the front of the Mount, retaining the open space areas, while establishing the required vegetation 'green' screen along the subdivision boundary. Species selection is guided by species that are on site – to retain the existing character, and supplemented with species that are typical of heritage properties and locations and/or suitable for public access spaces. The recommended species list is further informed by Bathurst Regional Council's Vegetation Management Plan (Molino Stewart 2018)
- **Minimise lawn** (section 7.3.1.6). This is a generalised recommendation based on the maintenance requirements, however, consultation with representatives from Sisters of Mercy and the new tenants for St Josephs Mount revealed the preference to retain as much of the existing lawn open space as possible.
- **Detaining and reusing stormwater** (section 7.3.1.7). The CMP recommends to "Slow down flow rates where possible to reduce possible erosion and to utilise the water. This means less reliance on supplementary watering and irrigation". Mechanisms recommended to manage stormwater on site include vegetated filter strips, drainage swales and filter strips, and soak areas. There are established drainage systems on the existing Mount property and these will continue to function following subdivision. The existing drainage swales and

vegetated strips will be located on the newly created lot and were designed to be fed by the rainwater tanks which collected water from the main house, with another swale fed by grey water from the laundry. Neither of these systems appear to have been properly designed and sized, and neither are currently functioning because of changes to the availability of source water. Supplementary water can be channelled into the main set of drainage swales from the mains water system, however, this is costly and negates the purpose of the swales.

- **Efficient irrigation** (section 7.3.1.8). The CMP recommends “Only install irrigation systems if it is needed.” New plantings will need establishment phase watering but should not be reliant on ongoing irrigation, therefore an irrigation system is unlikely to be required
- **Repair or prevent ongoing problems** (section 7.3.1.9). In the context of this VMP this involves removal of unsafe trees and inappropriate (weedy) species
- **Lifestyle of the occupants** (section 7.3.1.10). The property owners and the new tenants for Lot 224 (the Mount) were consulted during the preparation of the VMP.

Section 7.3.2 provides recommendations for Landscape Practices, including:

- Soil preparation
- Pre-planting
- Planting, including stock selection and planting techniques
- Ongoing plant care, including maintenance period, watering, weed removal, moderating plant growth, removing tree stakes
- Mulching
- Long term maintenance regimes
- Other items

Appendix Two of this VMP provides information about best practice actions for weed control and Appendix Three provides information about best practice actions for revegetation planting and maintenance.

4 METHODOLOGY

4.1 Site surveys

The site was assessed from two viewpoints. An arborist assessed the condition of all of the trees (as per the definition provided by Bathurst Regional Council, see Section 3.2). An ecologist assessed the vegetation structure and composition of the remaining vegetated areas. Site visits were undertaken on 20th October and 5th, 8th, 12th, 15th November 2021. This included meeting with Sister Patricia from the Sisters of Mercy to gain an understanding of the development of various components of the vegetation on site, and with the new tenant of property that is now called 'Logan Brae'. A caretaker lives on site and he was consulted during the process.

4.2 Strategies for vegetation management

Consultation with representatives from the Sisters of Mercy provided background to the development of the various formalised sections of the property. Gaining an understanding of the intent for each section helped to inform the direction for management of vegetation into the future. Consultation with the new tenant provided information about the general capacity to manage the site and preferences for outcomes for the future. Consultation with the caretaker/groundskeeper helped to identify problem areas or potential problem areas that would need management in the future. From this, a set of strategic approaches were developed, in keeping with stakeholder preferences and directions provided by Bathurst Regional Council:

- Retain all vegetation as a preference
- Remove all invasive species (predominantly woody weeds)
- Remove all dangerous trees (includes trees likely to become dangerous during the lifetime of this VMP)
- Reduce the presence of high maintenance trees, such as Elms which require annual treatment for the prevention of Elm Beetle infestation
- Supplement existing plantings in the area designated as the 'green screen/green corridor'
- Continue to manage vegetable gardens, orchard areas and open spaces
- Continue to manage formal gardens around the buildings

Site surveys were used to underpin the development of a species list for revegetation, and includes a mix of native species and exotic species that are already present on the site

5 SITE MANAGEMENT – MANAGEMENT SECTIONS

The subject site is quite large and has had a number of different vegetation strategies applied over the years. Each of these contribute to the existing character of the property. These have been identified through consultation with the Sisters of Mercy (Sister Patricia) and the new leaseholders for Logan Brae, and management actions have been developed individually for each section.

5.1 Lot 224 (St Josephs Mount)

The following management areas are identified for the proposed Lot 224 (Figure 9):

- 1) Western boundary tree plantings (arborist)
- 2) Vegetable gardens, nursery, labyrinth, orchard plantings, grassed open space

- 3) Lower entrance trees (arborist)
- 4) Lower entrance screening plantings (ecologist)
- 5) Driveway screening trees (upper section; arborist)
- 6) Driveway screening trees (lower section; arborist)
- 7) Driveway screening plantings (lower section, ecologist)
- 8) Southern screening plantings (Christ on the Cross garden)
- 9) Southern screening plantings (grey water wetland)
- 10) Oval trees (arborist)
- 11) McAuley Cottage trees (arborist)
- 12) Southern boundary trees (arborist)
- 13) Western boundary trees near tanks and sheds (arborist)



Figure 9 Vegetation management areas for Lot 224

Management actions for each of the identified management areas are provided in Section 6.2 of this plan.

5.2 Lot 225 (Separable lot for development)

The following management areas are identified for the proposed Lot 225 (Figure 10):

- 1) Northeast corner trees (arborist)

- 2) Northeast corner general ecology (ecologist)
- 3) Planted native gardens on contours (ecologist)
- 4) Wetland gardens (ecologist)
- 5) Southern boundary tree plantings (arborist/ecologist)
- 6) Mature trees (arborist)



Figure 10 Vegetation management areas for Lot 225

Management actions for each of the identified management areas are provided in Section 7.2 of this plan.

6 MANAGEMENT ACTIONS (THE VMP)

All the trees within the lots were numbered during surveys. Where appropriate these were grouped, and management actions prepared for the group as a whole. Individual trees requiring specific actions (eg. removal, pruning etc) were treated separately but within the group.

Revegetation is recommended for a number of management areas. Species lists additional screening and for replacement plantings in various locations are provided in section 6.5 of this VMP.

6.1 GENERAL MANAGEMENT OF TREES

Most issues affecting tree health can be avoided with the protection of the tree’s Structural Root Zone (SRZ) and consideration of other activities within the Tree Protection Zone (TPZ).

If the TPZ has been encroached, then compensational areas can be allowed, and the tree will maintain its vitality and vigor. Where the SRZ has been encroached then additional actions may need to be undertaken to ensure the stability of the tree, such as monitoring on a regular basis.

This VMP has recorded trees that may be of concern and therefore require monitoring as a minimum.

Standard tree management can be largely done with the use of arborist mulch and an appropriate water regime. Arborist mulch must be from a known source to limit the possibility of introducing diseases or pests. Hardwood mulch is preferred and laid to a depth of 150mm with the area near the trunk free from mulch. This should cover the SRZ which is determined from the tree diameter 1.2m from ground. This diameter is then put into the following formular to determine the radius of the SRZ.

$$(d \times 50)^{.42} \times 64 = SRZ$$

Over watering is as harmful as under watering and the soil moisture at the root zone should determine the amount and timing of watering.

Most damage to trees and reduced life is attributed to long term inappropriate pruning. Canopy lifting to accommodate mechanized mowing is a management action that should be part of the formative stage of a tree’s development, not in later life.

6.1.1 Elms and management of Elm leaf beetles

Many of the mature Elms on site show dieback or death of the mature stems, with regrowth sprouting from the base. As well, the wetland ponds have become weed beds for elm saplings. All elms should be removed unless they are deemed worthy of treatment for elm leaf beetle. Management of Elm leaf beetle reservoirs is vital to preventing further loss of mature/heritage listed Elm trees across the City of Bathurst

Arborist mulch

What is arborist mulch? Arborist wood chips are the best for mulching trees and shrubs. Arborist wood chips are ground up when older trees are pruned or removed. They include both green parts (leaves) and brown (woody) parts. They have some large and some small pieces.

In areas where trees are a dominant feature of the landscape, arborist woodchip is one of the better mulch choices for trees and shrubs. Studies have found arborist woodchip to be one of the best performers in terms of water infiltration, moisture retention, temperature moderation, inhibiting weed growth and stimulating microorganism activity, to name just a few.



Early treatment is essential and can include trunk injection with Imidacloprid® which is the most effective and environmentally sound option. The insecticide is injected directly into the trunk of the tree. Cost for a single tree can range from \$150 – \$280 +GST and is required every three years if other elms are removed. The removal of other elm saplings should precede any treatment for elms remaining. Trunk injection is safe around children, pets and riparian situations.

6.2 LOT 224 (St Josephs Mount/Logan Brae)

Key management principles:

- Retain and maintain all trees within this lot, unless otherwise directed by arborist
- Retain and maintain all formal gardens within this lot in current or better condition
- Maintain all vegetable gardens and fruit trees within this lot as appropriate for future use

6.2.1 Western boundary tree plantings (includes Arborist Group 6)

This group consists of seven trees, of which one tree (tree 134) will require removal. This tree has numerous trunk wounds possibly from wood borers and the almost nonexistent canopy cannot sustain the tree through this insect attack.

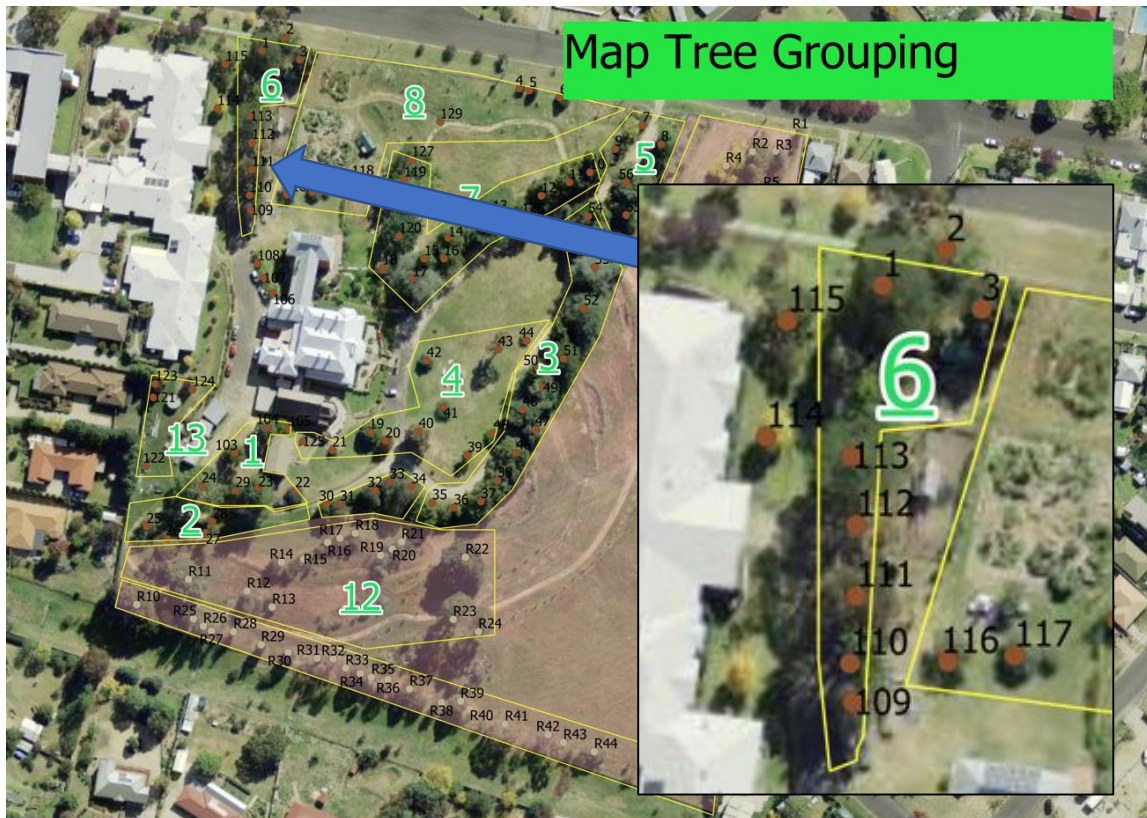


Figure 11 Location of Arborist tree grouping #6 on the western boundary entrance

The Chinese Elm (tree 3) also is showing signs of stress. This area would greatly benefit from a mulch layer and removal of lawn. The changed hydrology due to recent water redirection may have also affected the trees.



Figure 12 Tree 134 has numerous trunk wounds possibly from wood borers, while Tree 3 is also showing signs of stress

Southern Blue Gums (*Eucalyptus bicostata*) were a common choice for ‘native revegetation’ in the past, mainly due to their fast growth. However, they can be problematic in urban areas. They have not been pruned to prevent multiple stems and will require risk assessment and potentially should have exclusion zones in high winds. Although tall they are still showing a young sapling form that is prone to branch drop in winds. They are a valuable habitat tree and worth the effort to retain.



Figure 13 *Eucalyptus bicostata* trees along the western entrance need to be pruned and monitored

Table 2 Management actions for Western boundary tree plantings

TREE #	ACTIONS
Tree 1	Remove
Tree 3	Remove lawn from around base and apply arborist mulch; monitor
Trees 109-113	Selective pruning to reduce potential for branch drop, monitor

6.2.2 Vegetable gardens, nursery, labyrinth, orchard plantings, grassed open space (includes Arborist Group 8)

From the CMP:

"A large gardening complex has been developed between the Novitiate Wing and Busby Street frontage. This complex includes a potting shed, green houses, an outdoor shelter with wood fired pizza oven and extensive vegetable beds."

Generally, these areas should continue to be managed as they have been in the past. Vegetable gardens and nursery areas were established as community/permaculture gardens, with the orchard plantings aiming to supplement the gardens as a source of seasonal fruit and vegetables. Ongoing community involvement is considered an integral part of the management of this section.

"A contemplative labyrinth is located on a terrace to the east of this complex. The labyrinth, recorded in its original form in 2007, has been reconstructed with white bricks. The labyrinth is based on the design of one on the floor at Chartres Cathedral and is another element within the grounds that allows for personal contemplation and insight"

Ongoing maintenance for the labyrinth includes mowing the lawns and maintaining the brickwork.



Figure 14 Location of Arborist tree grouping #8 on the western boundary entrance

General maintenance of the trees 4-6 lining the Busby St fence is required. The remainder of the trees noted for this area do not meet Council's definition (9m minimum height).

Consultation with Sister Patricia flagged a couple of items:

- Some grape vines were planted by Sister Kathleen Williams from her grandfather's property in Wellington.
- A small Eucalypt (tree 129) with a pink tree guard was planted for Bill Allen Snr by the Wiradjuri elders as a memorial to his life.



Figure 15 Location of commemorative planting for Bill Allen Snr, Wiradjuri elder

Table 3 Management actions for vegetable gardens, nursery, labyrinth, orchard plantings, grassed open space

LOCATION	ACTIONS
Vegetable gardens	Continue to manage as community based permaculture gardens
Nursery	Continue to manage as part of the community vegetable gardens
Orchard	Continue to manage fruit trees, including monitoring for diseases, pests etc and treat accordingly
Labyrinth	Continue to manage lawns and brickwork
Between gardens and orchard	Remove Cotoneaster shrubs

6.2.3 Lower entrance trees (includes Arborist group 5)

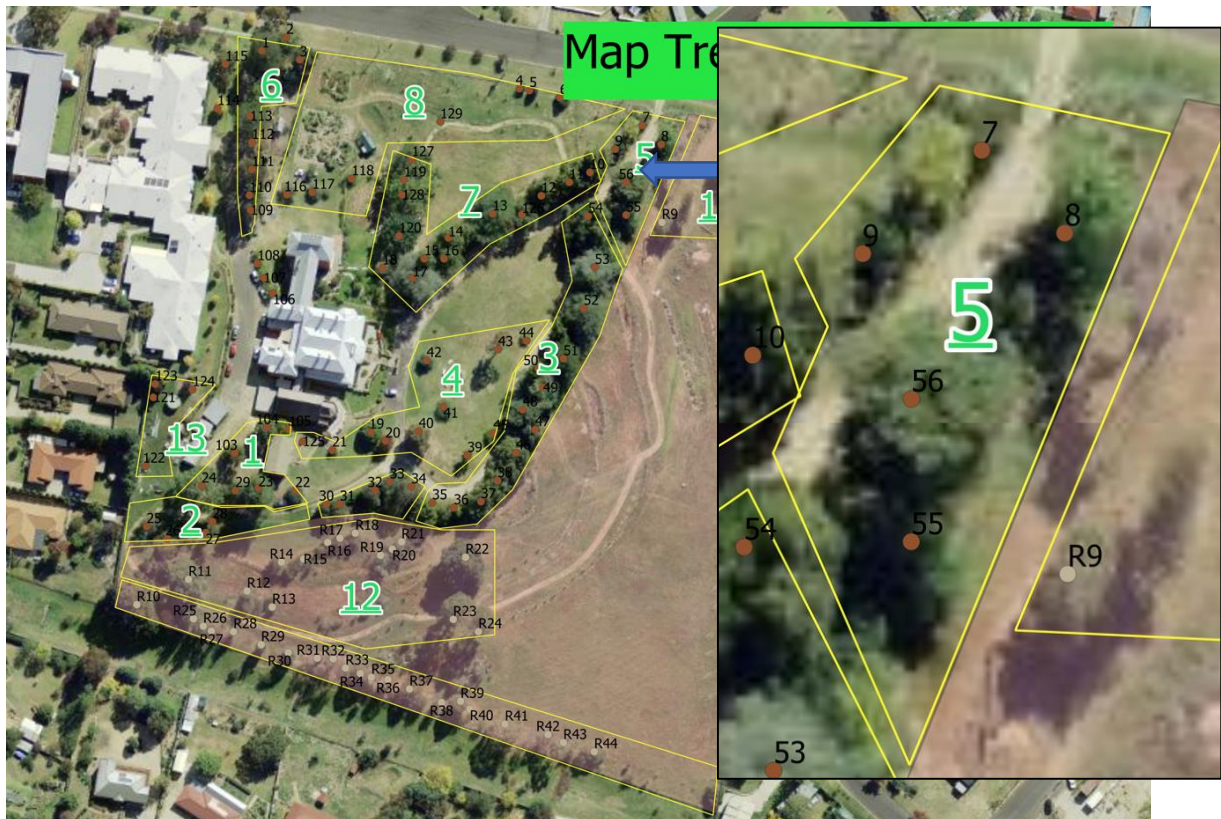


Figure 16 Location of Arborist tree grouping #5 on the eastern driveway entrance

These trees line the original entrance to the property. The trees are exotics and in poor health. The replacement of these trees in the short-term is recommended. They have many faults largely due to inappropriate pruning. There are numerous basal epicormic growths and evidence of root rot.



Figure 17 Trees at the entrance to the lower driveway have many faults including poor canopy and significant basal epicormic growth



Figure 18 Scarring by lawn mowers has resulted in root rot

Tree 56 was over pruned as a low branching large tree and has since died. This needs to be removed.

Table 4 Management actions for lower entrance trees (arborist)

TREE/LOCATION	ACTIONS
Trees 7-9, 56	Remove existing trees, replace with appropriate species from planting list as per revegetation diagram
Tree 55	Application of adequate water and arborist mulch

6.2.4 Lower entrance screening plantings (ecologist advice)

Removal of trees 7, 8 and 9 will create space for planting screening plants.

- Plant using large shrubs/small trees with dense foliage according to revegetation planting diagram
- Create mulch beds using arborist mulch to reduce maintenance over time
- Undertake regular maintenance of plantings including weed removal from planting beds
- Mow around planting beds on a regular basis to reduce the presence of seeding grasses and weeds

6.2.5 Driveway screening trees (upper section; includes Arborist group 7)

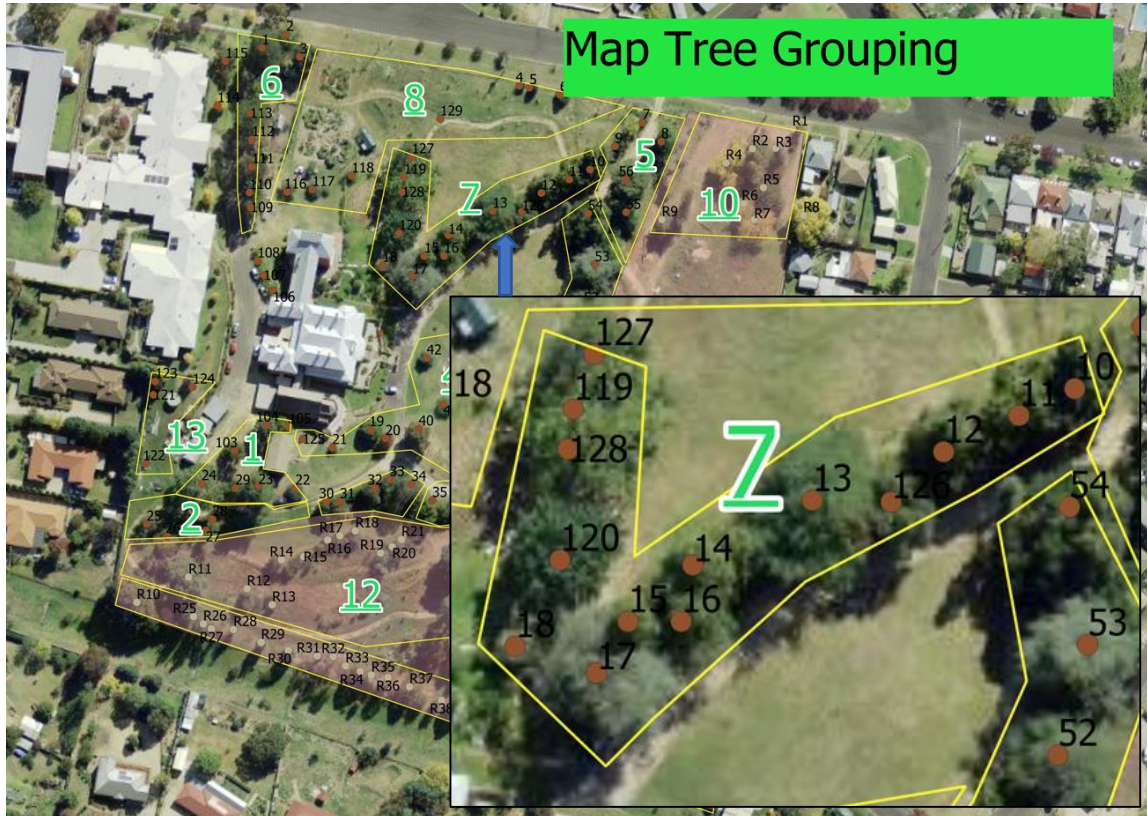


Figure 19 Location of Arborist group #7, on the upper (western) side of the formal sweeping drive to the front entrance

This part of the property contains some of the more spectacular trees for the Bathurst area. An avenue of four Oaks is planted in a north south direction (trees 127, 119, 128, 120; Figure 20).



Figure 20 An avenue of four oak trees has been planted to separate the formal front area from the vegetable gardens and informal communal areas

The selection of exotic trees planted on the north side of the sweeping driveway to the formal front entrance form an avenue (Figure 21). Again, crown lifting by inappropriate pruning has caused extensive trunk damage. This will need to be assessed for effect on tree stability.



Figure 21 Cedars form an avenue of trees along the sweeping driveway to the formal front entrance

A self-sown olive tree (tree 126) is in poor health and should be removed.



Figure 22 A self-sown olive tree is in poor health and should be removed

Table 5 Management actions for driveway screening trees, upper section

TREES	ACTIONS
Tree 126	Remove (Olive tree)
Trees 10-17	Monitor for disease and structural damage following inappropriate pruning
Throughout	Infill driveway planting should be undertaken from the list of species provided in section 7.4

6.2.6 Driveway screening trees (lower section; includes Arborist group 3)

This includes trees 35-38, and trees 46-54.



Figure 23 Location of Arborist group #3 on the lower side of the formal front driveway

Thirteen mixed conifer species on the south side of main driveway currently provide most of the vegetative screening between Lots 224 and 225. They are the main feature to be observed from the surrounding area and form an important part of the heritage value for the property's green space.



Figure 24 Thirteen trees on the south side of the driveway currently provide most of the vegetative screening between Lots 224 and 225

All trees are exotic and were planted by the novices when they resided at the grounds from 1907. In 1906 Mr John Meagher MLC bought Logan Brae and donated it to the sisters of Mercy for use as a formation house and teacher training facility for young Mercy novices. Some trees have their own stories and as such are an intimate link to the people who lived there.

The Christmas of 1961 was a year the nuns requested to remove the top of a tall spruce tree (tree 53). Sister novice’s mistress rightly denied them permission. However, God himself wanted that top removed. The tree was struck by lightning and the top fell out of the tree within a few days of the denied request. When comparing the two spruce trees (Tree 52 and 53) side by side the missing top is obvious (Figure 25).



Figure 25 (left) the two spruces – one without its top; (right) novitiates outside the chapel building



A Cork oak tree (Tree 54) at the beginning of the driveway is a particularly good specimen and deserves attention to preserve it (Figure 26). Cork oak trees (*Quercus suber*) are native to the Western Mediterranean region, and are still cultivated there for their bark. It is the primary source of cork for wine bottle stoppers and other uses, such as cork flooring and as the cores of cricket balls. These trees are slow-growing giants, eventually maturing to 70 feet (21 m.) or taller and equally wide.

Figure 26 The Cork oak tree (Tree 54) at the beginning of the driveway is a particularly good specimen

Table 6 Management actions for driveway screening trees, lower section

TREES	ACTIONS
Trees 35-38, 46-54	Water and apply arborist mulch, reduce lawn bulk around base of trees; monitor for signs of disease or major trunk damage following inappropriate pruning
	Remove dead stump from corridor Infill driveway planting should be undertaken from the list of species provided in section 7.4

6.2.7 Driveway screening plantings (lower section, ecologist advice)

Screening plantings need to be undertaken on the eastern side of the avenue of trees along the lower side of the front driveway. BRC's requirements are for a 20m wide strip, with minimum 15m planted trees and shrubs (Figure 27).

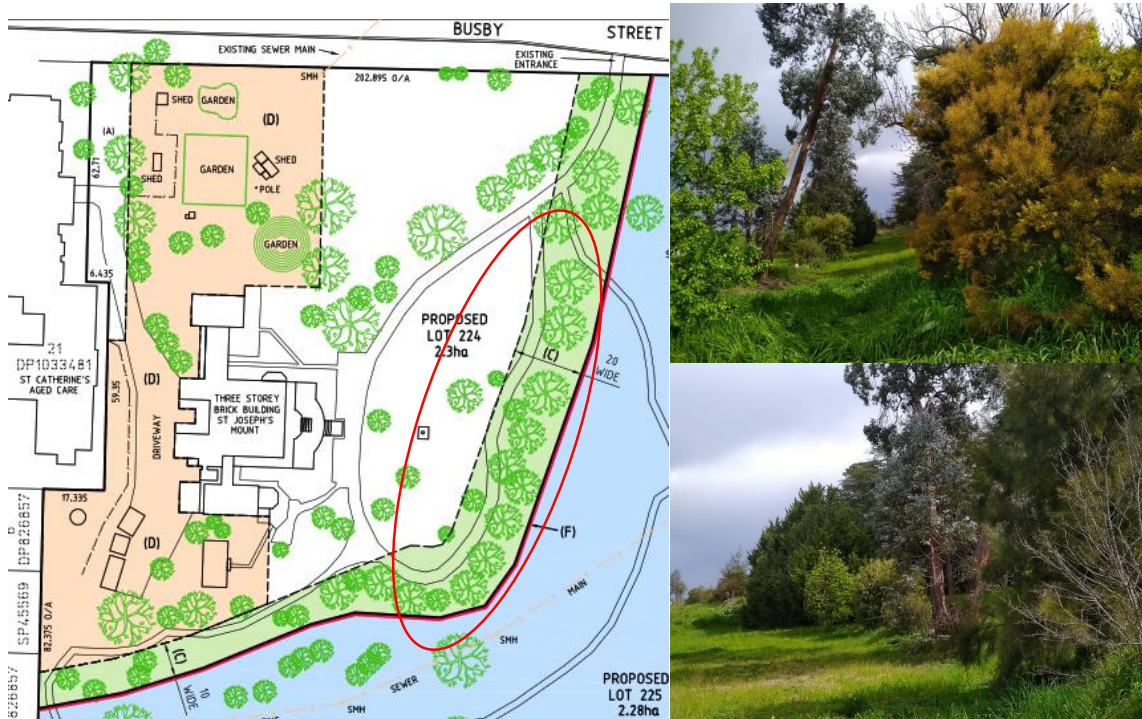


Figure 27 The vegetation screen needs to be about 20m wide in total through this area

In reality, the area indicated for the vegetated screen includes the driveway, reducing the available area for planting by 3 to 4m. Plantings should not be positioned within 2m of the boundary fence. Fencing should be completed before undertaking planting. Trees should be planted away from the fence to reduce impacts from branch fall. Dense shrub plantings need to be planted along the edge of the boundary fence.

Best species for planting are evergreen trees, although deciduous trees can provide better light penetration during winter months. Small trees and large shrubs should include predominantly evergreen species and preferably local native shrubs. Using a mix of predominantly local shrubs and small trees with a canopy of exotics dominated by conifers best suits the existing palette of plants on site. The challenge will be to establish plants under the shadow of the existing canopy trees.

6.2.8 Southern screening plantings (Christ on the Cross garden, includes trees #30-34)

This garden includes an overgrown rockery around the base of Christ on the Cross (Figure 28). Original vegetation included several Holly Oaks providing some shelter to the statue. Over time, woody weeds have become established, and are now smothering the statue. Weeds present include African Boxthorn, Cherry Laurel, Small-leaved Privet, Large-leaved Privet, Oleander, Blackberry, Vinca and others.

The rear section of this garden bed has been used as a stockpile area for green waste and other debris for considerable time. This may have provided a local source of weed seeds, and is definitely causing an impact by smothering the TPZs of the Holly Oaks.



Figure 28 (left) The original garden has become overgrown with woody weeds, (right) green wastes are stockpiled in the root zones of trees behind the garden

Table 7 Management actions for Southern screening plantings (Christ on the Cross garden)

TREE/SHRUB	ACTIONS
Rear of garden	Remove all stockpiled green waste and dispose of offsite
Throughout garden	Remove woody weeds by cut stump and paint, spot spray blackberry and Vinca
Holly Oaks	Apply arborist mulch and water as required
Vegetation screen	Infill plant using large shrubs/small trees Connect with screening vegetation plantings in the lower section of the driveway Establish garden bed using arborist mulch around the new plantings

6.2.9 Southern screening plantings (grey water wetland, ecologist advice)

As part of a transition to a more sustainable environment, the Sisters of Mercy installed a Greywater treatment reed bed around 10 years ago (Figure 29). This was designed to capture greywater from the laundry and treat it by passing it through a Cumbungi wetland, before piping it to the planted native gardens below (Figure 30). This is no longer functioning properly for several reasons. The inflow of water has been greatly reduced since the Sisters moved from the property, leaving the wetland reliant on rainwater to sustain its reeds. The pipe outlet structure is damaged, so that treated flows are no longer conveyed to the trees and shrubs below. Water that does reach the wetland is evaporated or infiltrated as subsurface flows. Low levels of input meant that there can only be low levels of output.

Woody weeds are present in the wetland, including Willows, Prunus sp and Poplar seedlings. These need to be removed, and some hydraulic processing reinstated.



Figure 29 A greywater treatment reed bed was installed around 2010 to treat laundry water



Figure 30 (left) greywater is treated in a Cumbungi wetland; (right) the pipe infrastructure needs maintenance if it is to function properly

Table 8 Management actions for Southern screening plantings around the Greywater Reed Bed

ACTIONS	RATIONALE
Reinstate inflows to the wetland	The wetland needs adequate inflows to sustain it through dry periods and prevent death of macrophytes
Remove woody weeds	Includes Willows, Prunus sp, and Poplar seedlings
Repair/replace outlet structure	This is necessary to ensure proper hydraulic functioning of the wetland, and to provide irrigation water to trees and shrubs nearby (note: these will be on a different lot)
Monitor water quality	This is to determine whether the wetland is functioning properly
Install fence	Ensures that fencing doesn't disturb roots of new plants
Vegetation screen	Infill plant using large shrubs/small trees Connect with adjoining screening plantings Establish garden bed using arborist mulch around the new plantings

6.2.10 Oval trees (includes Arborist group #4)

Includes trees #19-20, 39-44, and 125 located in front of Logan Brae house and the adjoining chapel (Figure 31). All except one tree are exotic species, and most do not meet the minimum 9m height criterion.

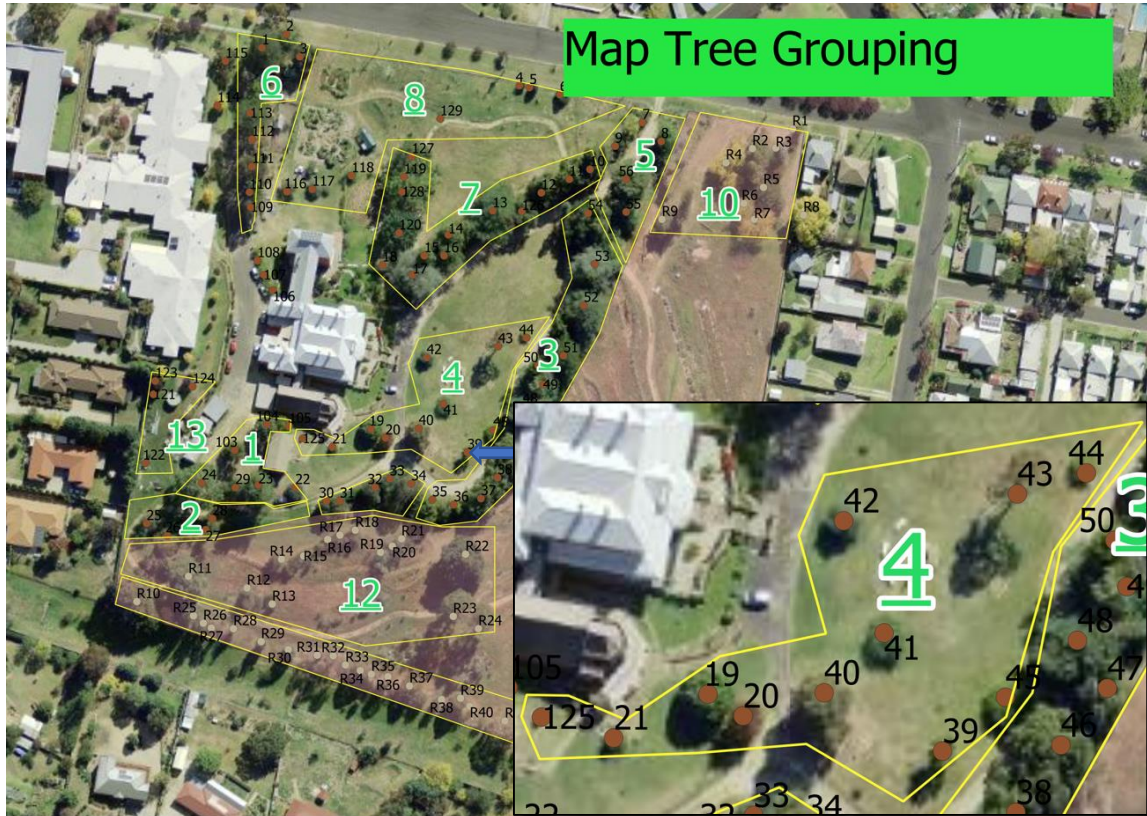


Figure 31 Location of Arborist group #4, on the oval outside the main house and the adjoining chapel

Tree 43 is a Eucalypt and has a name given to it by the nuns. A very large double-barreled Eucalypt stood where tree 43 stands. The original tree was struck by lightning. The caretaker at the time (Mr Van Borstenbosch) kept saplings that had sprouted when the original tree was eventually removed. He replanted the descendants of the original tree in its place. The nuns consequently called the tree Isaac after Abraham's son whose life was spared by God when Abraham was asked to sacrifice his son.



Figure 32 'Isaac' was planted after the original tree was struck by lightning

Tree 125 is a weeping spruce and is a tree worth preserving due to its unusual form. The nuns referred to it as the “upside down pine”.



Figure 33 The ‘Upside Down Pine’ outside the chapel

6.2.11 McAuley Cottage trees (includes Arborist group #1)

Includes trees #22-24, 29 and 103.

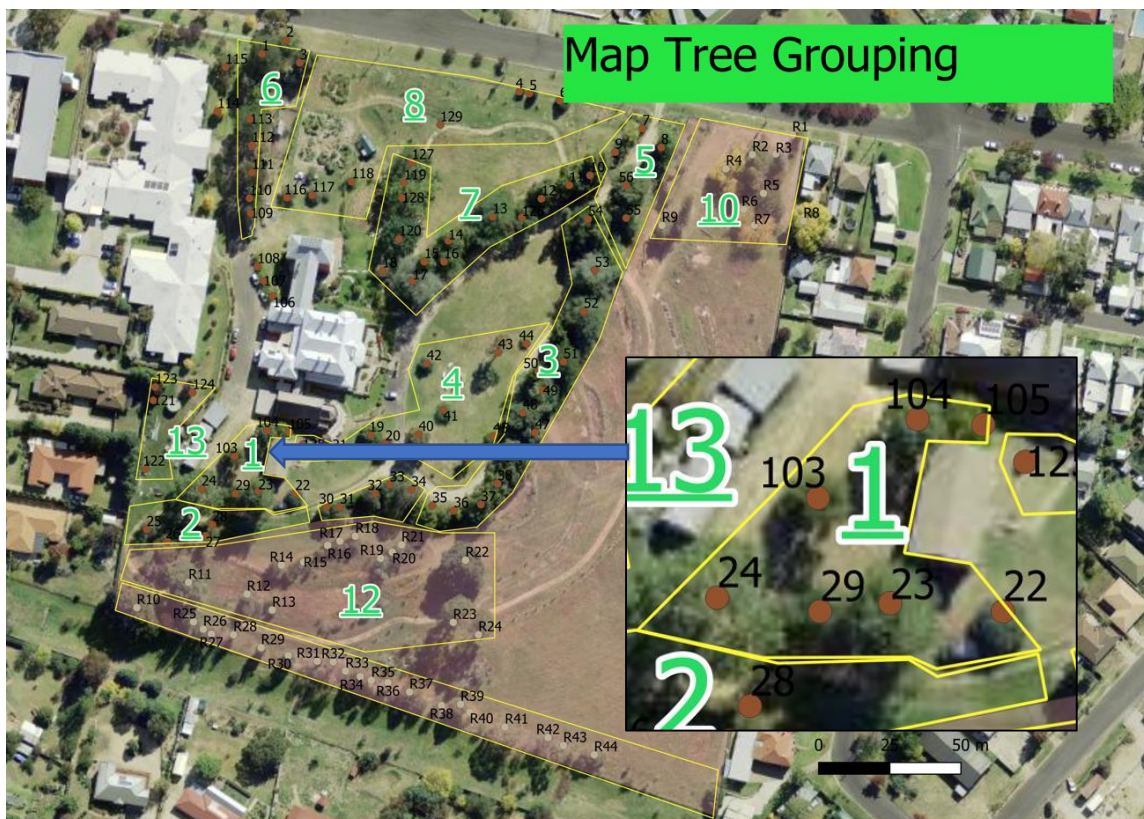


Figure 34 Location of Arborist group #1, located around the sides of McAuley Cottage

A mix of exotic trees and two Kurrajong trees with a total of 6 trees, and one cotoneaster (Tree 22). It is recommended that the cotoneaster be removed. One Kurrajong (Tree 104) has codominant trunks which show signs of separation. A large pine tree (Tree 24) is showing signs of deterioration possibly from altered drainage and digging for pipe laying undertaken within the SRZ. These two

trees should be monitored, and a full tree risk assessment done to determine the level of risk and the possible targets it would hit should it fail.



Figure 35 trees 24 (left) and 104 (right)



Figure 36 Cotoneasters need to be removed, and Tree 24 needs to be monitored as it is leaning

Table 9 Management actions for Group 1 trees and shrubs, around McAuley Cottage

TREE #	ACTIONS
Trees #24 and 104	Monitor for failure, undertake a full risk assessment
Tree 104	Consider pruning to lighten the load on the second trunk
Remove shrubbery	Remove Cotoneaster plant to prevent further invasion and establishment

6.2.12 Southern boundary trees (includes Arborist group 2)

Includes trees #25-28, located on the southern boundary of the new lot (Figure 37).

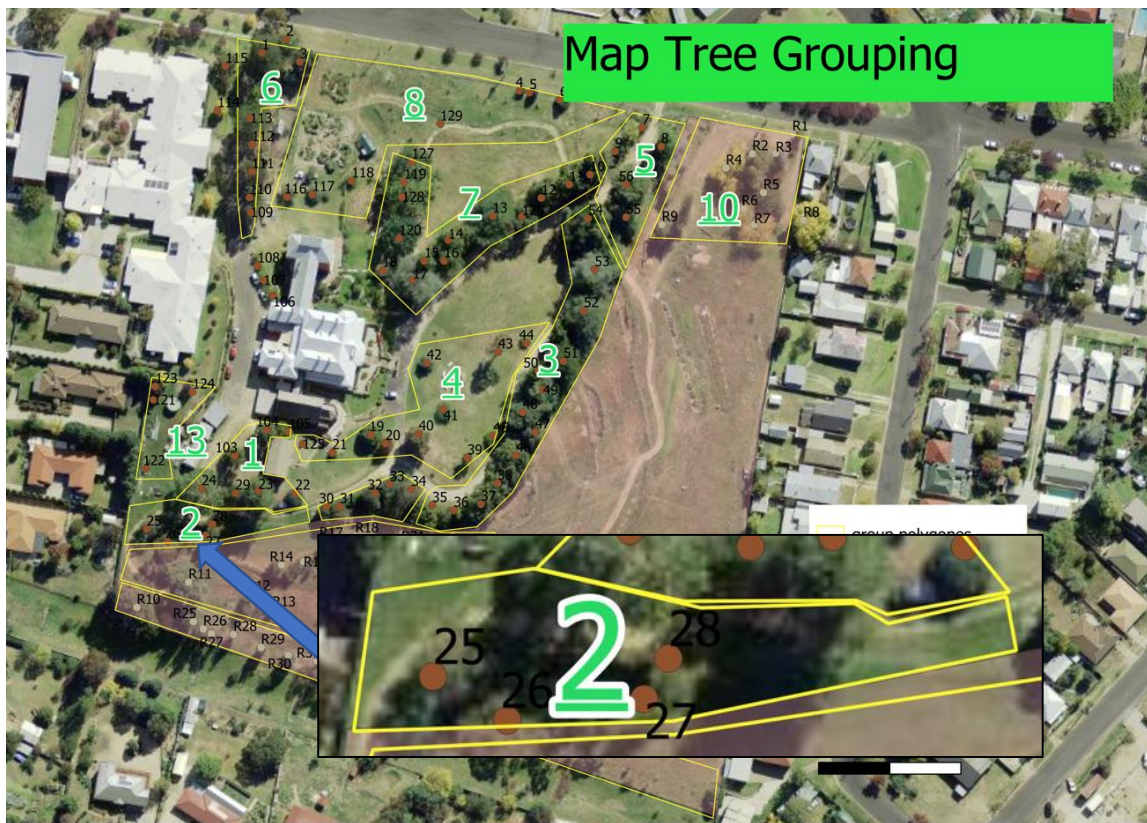


Figure 37 Location of Arborist group #2, located on the southern boundary of the new lot

Four planted eucalyptus small trees are part of 6 trees planted recently. The other two trees are in the area to be sectioned off from the original lot. In general, these four small trees are not in good health.



Figure 38 Trees #25 – 28 are Eucalyptus species that are generally of poor form

Table 10 Management actions for Southern boundary trees

TREE/SHRUB	ACTIONS
Trees #25-28	Monitor to verify ongoing health; apply arborist mulch and water as required
Vegetation screen	Infill plant using large shrubs/small trees Connect with screening plantings in adjoining areas on the southern boundary fence Establish garden bed using arborist mulch around the new plantings

6.2.13 Western boundary trees near tanks and sheds (includes Arborist group 13)
Includes trees # 121 to 124, located behind the water tanks and sheds (Figure 39). This group of four trees is at the rear of the site below St Catherine’s Aged Care Facility. The three Fraxinus shrubs/trees and one Cotoneaster are of low value.



Figure 39 Includes trees # 121 to 124, located behind the water tanks and sheds



Figure 40 Tree 122 has trunk damage (left) and root damage, evidenced by the epicormic growth at the base of the tree

The Cotoneaster (tree 122) should be removed. The other three trees (123,124,121) have had inappropriate crown lifting and damage to exposed roots from lawn mowing activities. They will develop into dangerous trees and should be monitored as a minimum requirement now. Preferably these will be replaced too.

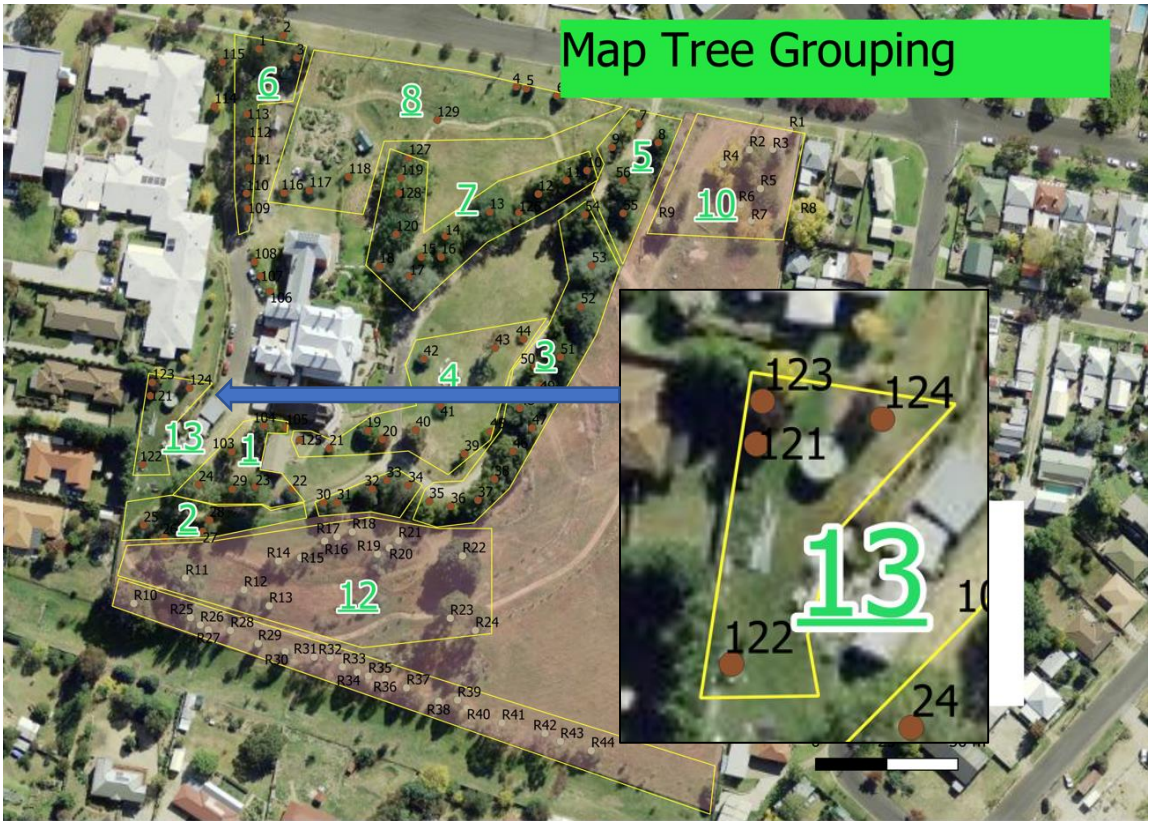


Figure 41 Location of Arborist group #13, located near the water tanks below St Catherines

Table 11 Management actions for small trees on the western boundary fence

TREE	ACTION
Cotoneaster (tree 122)	Remove immediately
Fraxinus (trees 123-125)	Monitor, consider removing immediately, and replace with large shrub/small trees from the list provided in Section 6.5

6.3 Lot 225 (Separable lot for development)

The following table summarises requirements for tree management:

Table 12 Summary of arborist recommendations for management of trees and saplings on Lot 225

TREE #	SPECIES	HEIGHT	ARBORIST GROUP	ACTIONS
R1	exotic	6m	10	poor form, remove
R2	exotic	4m	10	poor form, remove
R3	exotic	9m	10	poor form, remove
R4	argyle apple	15m	10	consider removal to facilitate development
R5	exotic	11m	10	retain
R6	exotic	7m	10	poor form, remove
R7	exotic	8m	10	poor form, remove
R9	exotic	7m	10	consider removal to facilitate development
R10	dead		11	remove
R11	elm	15m	12	treat for elm leaf beetle annually
R12	eucalypt sapling	6m	12	Immature planting with low retention value, consider removal to facilitate development
R13	casuarina	5m	12	Immature planting with low retention value, consider removal to facilitate development
R14	Blakely's Red Gum	8m	12	Immature planting with low retention value, consider removal to facilitate development
R15	Yellow Box	8m	12	Immature planting with low retention value, consider removal to facilitate development
R16	Long-leaved Box	9m	12	Immature planting with low retention value, consider removal to facilitate development
R17	casuarina	6m	12	Immature planting with low retention value, consider removal to facilitate development
R18	Black Wattle	6m	12	Immature planting with low retention value, consider removal to facilitate development
R19	eucalypt species	6m	12	Immature planting with low retention value, consider removal to facilitate development
R20	eucalypt species	7m	12	Immature planting with low retention value, consider removal to facilitate development
R21	eucalypt species	8m	12	Immature planting with low retention value, consider removal to facilitate development
R22	dead			remove
R23	sugar pine	15m	12	consider removal to facilitate development

TREE #	SPECIES	HEIGHT	ARBORIST GROUP	ACTIONS
R24	dead			remove
R25	exotic	9m	11	retain as boundary plantings
R26	exotic	9m	11	retain as boundary plantings
R27	exotic	7m	11	retain as boundary plantings
R28	conifer	6m	11	retain as boundary plantings
R29	white poplar x2	12m	11	retain as boundary plantings
R29a	white poplar x10 young stems on fenceline	8-9m	11	retain as boundary plantings
R30	eucalypt sapling	5m	11	retain as boundary plantings
R31	Blakely's Red Gum	10m	11	retain as boundary plantings
R32	white poplar	9m	11	retain as boundary plantings
R33	white poplar	9m	11	retain as boundary plantings
R34	conifer	9m	11	retain as boundary plantings
R35	conifer	9m	11	retain as boundary plantings
R36	eucalypt species	12m	11	retain as boundary plantings
R37	eucalypt species	12m	11	retain as boundary plantings
R38	eucalypt species	12m	11	retain as boundary plantings
R39	eucalypt species	12m	11	retain as boundary plantings
R40	eucalypt species	10m	11	retain as boundary plantings
R41	eucalypt species	10m	11	retain as boundary plantings
R42	eucalypt species	8m	11	retain as boundary plantings
R43	eucalypt species	8m	11	retain as boundary plantings
R44	eucalypt species	8m	11	retain as boundary plantings

6.3.1 Northeast corner trees (Arborist group 10)

Includes trees # R1-R7, R9 (Figure 42). This area will be the main entrance to the block from Busby St. These are a group of conifers that have limited heritage value, and are surrounded by woody weed species that do not warrant any consideration for retention.

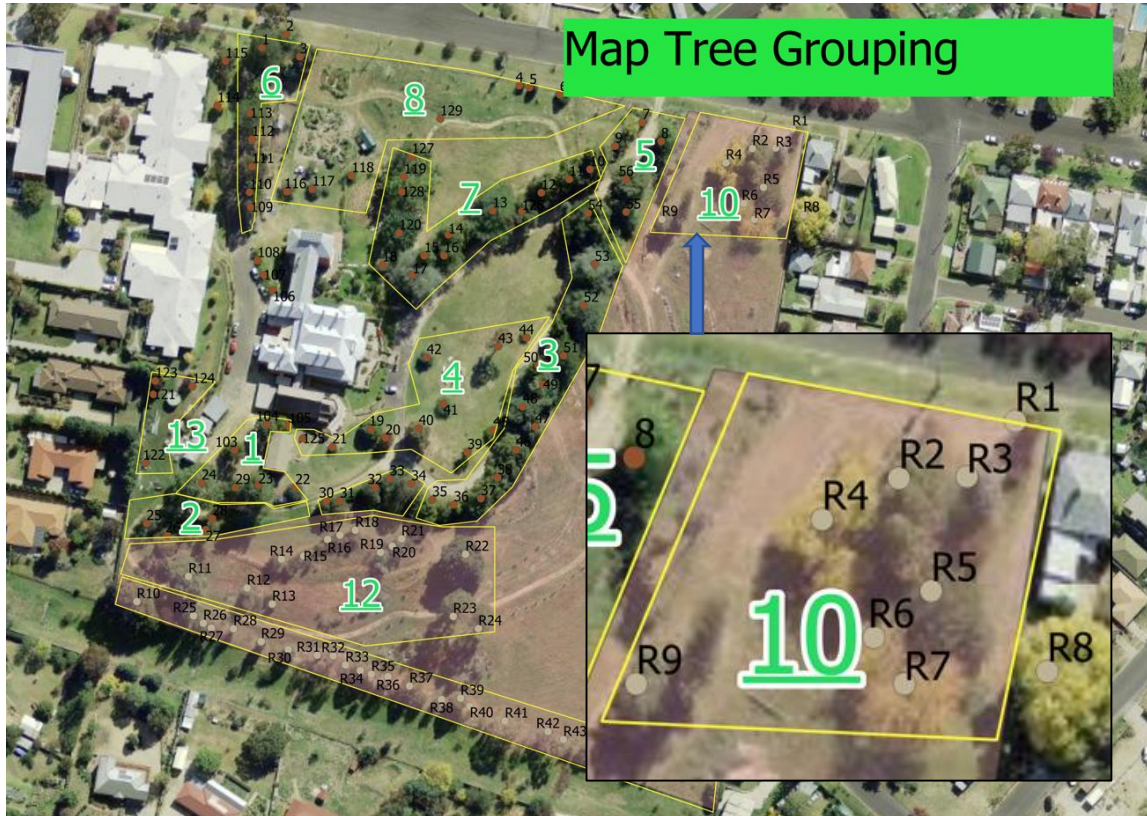


Figure 42 Location of management group 10 at the Busby St access for Lot 225

At some point there would have been mature Elms in this location, but these appear to have been infested with Elm leaf beetles, and the main trunks have died back, and now the trees are coppicing from the trunk base (Figure 43).

Tree R4 is a local native species, Argyle Apple (*Eucalyptus cinerea*) approaching maturity (Figure 44). Unfortunately, it developed multiple stems in early life, some with poor attachment, and there is evidence of loss of at least one trunk with ongoing branch drop. This tree normally forms a dense crown with good spread and is common in local parks and streetscapes. Tree R4 is likely to be very close to the boundary fence and subdivision access, and on this basis may warrant removal as it is in poor condition and could fall.



Figure 43 Mature Elms have died back, and now the trees are resprouting from the trunk base



Figure 44 Tree R4 is an Argyle Apple (Eucalyptus cinerea) with multiple trunks and evidence of branch and trunk drop

Table 13 Management actions for trees in the northeast corner

TREE #	ACTION
Tree R1 – R7	Remove trees as required to provide site access
Tree R4	Consider early removal to prevent damage to the subdivision boundary fence and blocking of site access
Tree R9	Remove compost bins from base of group of trees



Tree R9 is actually a group of 6 young conifers. These are in good condition, although may be affected by the compost bins located at the base of the tree at the southern end of the row. If the group is to be retained the bins should be removed and no further materials stored within the TPZ of the group. The trees have no heritage value due to their young age, and may need to be removed to provide good access to the proposed subdivision. The subdivision boundary is immediately west of this group of trees.

Figure 45 Tree R9 is actually a group of 6 young conifers with a row of compost bins located at the base

6.3.2 Northeast corner general ecology (ecologist advice)

There are numerous woody weeds in this area, including Large-leaved Privet, Common Hawthorn, Vinca, Golden Locust, Prunus sp, etc. These and other trees in poor health or with poor form should be removed as part of the creation of site access.

Consider screening planting on the western boundary as part of the vegetation screen to increase the width of the overall vegetation screening.

Table 14 Management actions for general ecology in the northeastern corner

ACTION	RATIONALE
Remove woody weeds	Comply with management requirements for priority control species; reduce seed sources on site
Plant trees and shrubs	Allocate space along the western boundary for additional vegetation screening plantings

6.3.3 Planted native gardens on contours (ecologist)

These consist of mixed local native plantings, including eucalyptus species and acacia species (Figure 46). Retain these if they can be integrated into the proposed subdivision development on the newly created lot. They have no heritage value and have limited ecological value. However, in 20 to 30 years they will provide stepping stone habitat within the urban environment. If these are located near the lot boundary they will provide good supplementary vegetation for the necessary green screen. On this basis they are worthy of retention.



Figure 46 Examples of the mixed local native plantings in garden beds on contours, with immature eucalypts and maturing acacias

Table 15 Management actions for general ecology in the planted native gardens on contours

ACTION	RATIONALE
Remove woody weeds	Comply with management requirements for priority control species; reduce seed sources on site
Remove Elm saplings	Consider retaining for additional vegetation screening

6.3.4 Wetland gardens (ecologist)

Several wetlands have been constructed in the area to become Lot 225. These are roughly aligned on the contour, and were designed as shallow detention basins that were filled via a piped network from rainwater tanks fed from the roof of Logan Brae, and then released via a pumped and piped network to water the then newly planted trees and shrubs along the eastern and southern boundaries and in garden beds in between.

While the wetlands were fed at least partially by gravity, they predominantly relied on a pump to ensure that adequate water was provided to the wetlands. Over time, the piped network has alternately been overused or not used to feed the wetlands. As a result, they are in poor condition. Woody weeds have invaded and the water levels are greatly reduced. Some of the wetlands have become places to dump unwanted materials, including cards from beehives (Figure 48).

The wetlands have limited ecological value, especially in their current condition. Given the aim is to develop Lot 225 for housing they are likely to be decommissioned. Their best ecological potential is likely to be reached if the water level is maintained. This can provide water for frogs, for birds and animals to drink and bathe, and continue to be available for watering through infiltration. It is not feasible, however, that they continue to be fed via the piped network from water tanks on Lot 224.



Figure 47 Location of shallow wetlands on the proposed Lot 225



Figure 48 The shallow wetlands on contour banks are in poor condition with weeds and dumped material from beehives etc

Table 16 Management actions for general ecology in the wetland gardens

ACTION	RATIONALE
Remove woody weeds	Comply with management requirements for priority control species; reduce seed sources on site
Remove dumped rubbish	Improve wetland condition
Reinstate water level management	Maintain suitable conditions for wetlands to survive and provide habitat resources

6.3.5 Southern boundary tree plantings (Arborist group 11/ecologist)

Includes trees # R10, R25-44. Trees in this area are predominantly immature eucalypts, with a mix of shrubs interspersed throughout. Towards the southwestern corner there are several Elms and Poplars in a group. Many of these have died, or died down, and are resprouting from the base of the trunk. Unmanaged Elms are likely to become reservoirs for Elm leaf beetles and are best removed if they are not able to be managed properly.

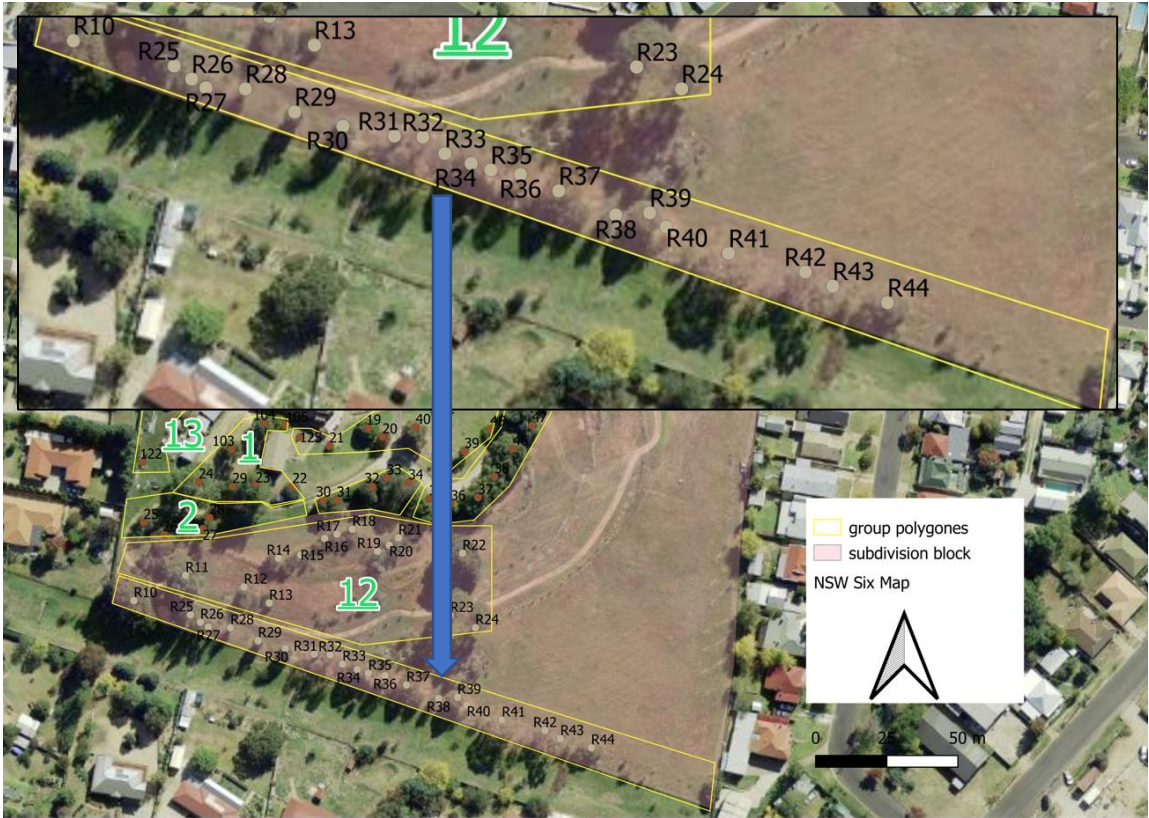


Figure 49 Location of trees in group 11 along the southern boundary fence

Table 17 Management actions for general ecology on the southern boundary

ACTION	RATIONALE
Remove woody weeds	Comply with management requirements for priority control species; reduce seed sources on site
Plant trees and shrubs	Allocate space along the space boundary for additional vegetation screening plantings to maintain the existing habitat corridor resources along the drainage reserve adjoining the property and maintain privacy screening for adjoining landholders nearby



Figure 50 A series of plantings along the southern boundary appear to be close to 10 years old

6.3.6 New plantings (Arborist group 12)

Includes immature trees R11-R24. These have no heritage value and limited ecological value at their current level of development. Consider removal to facilitate developing the new Lot 225. If they are to be retained, or until the site is developed, these garden beds should be weeded to remove woody weeds and Elm seedlings.



Figure 51 Location of trees and garden beds included in group 12



Figure 52 Group 12 includes new plantings arranged predominantly in garden beds

Table 18 Management actions for general ecology on the southern boundary

ACTION	RATIONALE
Remove woody weeds, Elm seedlings	Comply with management requirements for priority control species; reduce seed sources on site, remove potential reservoirs for Elm leaf beetles

6.4 SUMMARY OF SULE RATINGS

Figure 53 shows the SULE rating for all relevant trees on site. The supporting data is provided in Appendix One.

Ratings used range from LOW to VHIGH (very high) for ULE (Useful Life Expectancy). LSV (Landscape Value) ratings summarise values in one of three categories:

- Heritage value
- Ecological value
- Aesthetic value

Within each of these categories the tree can have low/medium/high retention value, for example, AHIGH has high aesthetic value, HMEDIUM has medium heritage value, etc. Several trees have value in more than one of the relevant categories.

The final SULE rating therefore takes into account the tree's ULE and its Landscape Value, and is categorised as LOW/MEDIUM/HIGH or REMOVE. Trees (and some shrubs) to be removed include dead/dangerous trees or trees that are priority control weeds or problem environmental weeds.

Some trees are recommended for removal, generally because they are diseased or dying, or because they are considered weed species (Figure 54). Others have a low SULE rating and can be removed with minimal impact on site values (Figure 55).

Of the trees to be retained, some will require additional attention to ensure ongoing good health into the future (Figure 56). These include low levels of infestation by Syrex wasps, or minor damage from lawnmowing, or with limbs that are damaged or dying, etc.

Figure 57 shows the Tree Protection Zones for all the relevant trees on site. This identifies areas where excavation should be avoided. If excavation in these areas is required then an arborist should be consulted to determine the most suitable method, and any remedial works that may be required.

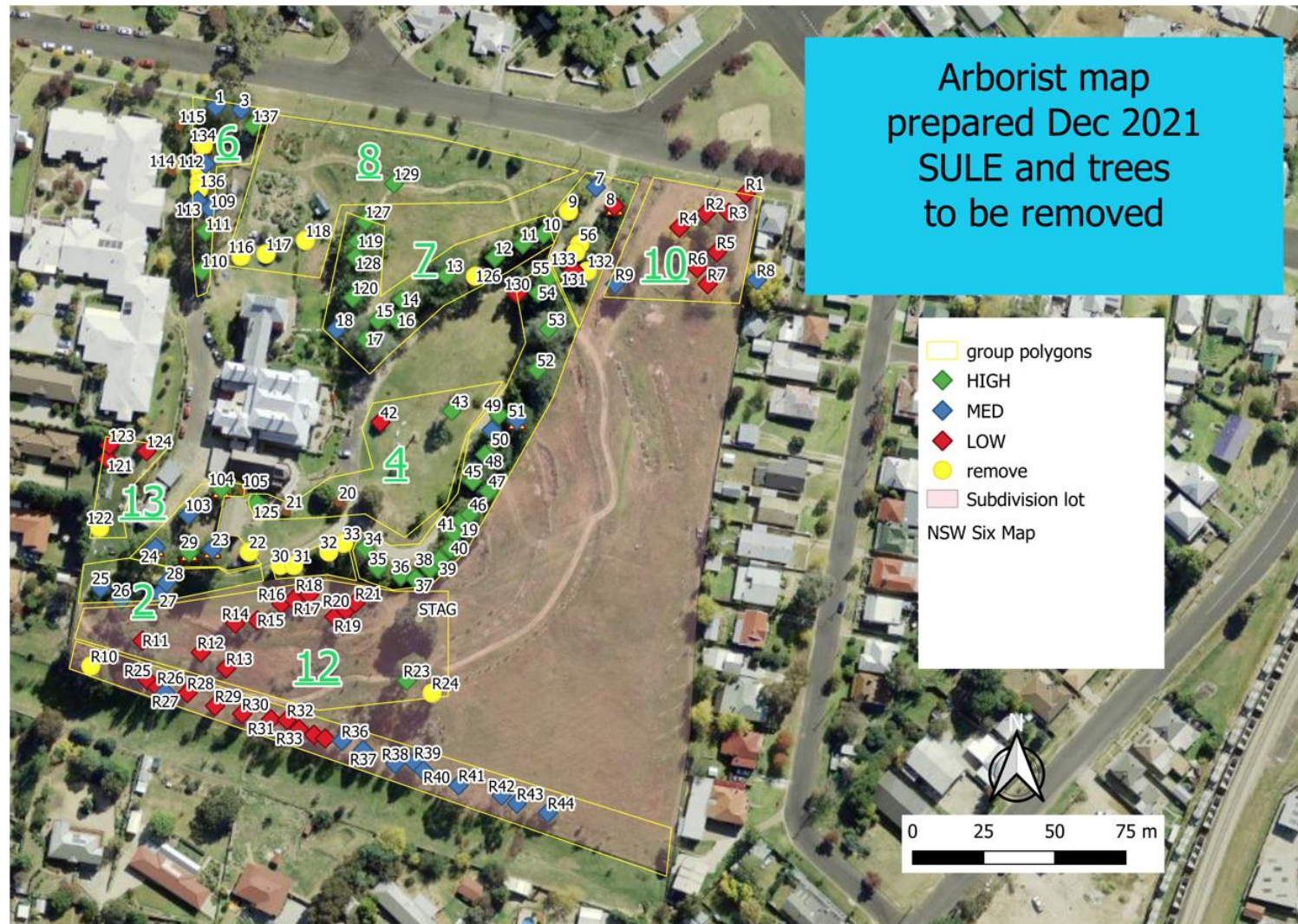


Figure 53 SULE ratings for trees with retention value, and trees to be removed

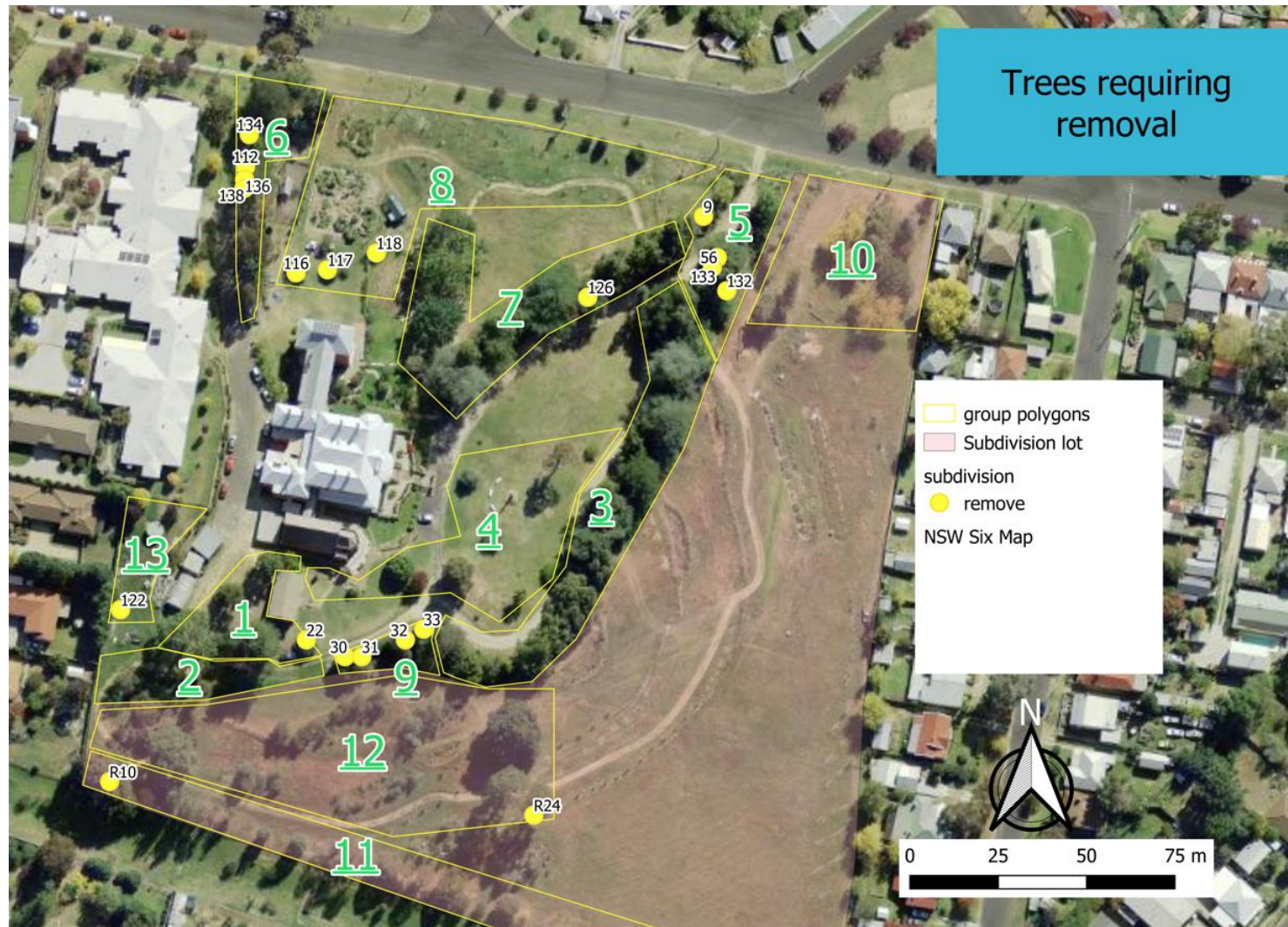


Figure 54 Trees that are recommended for removal

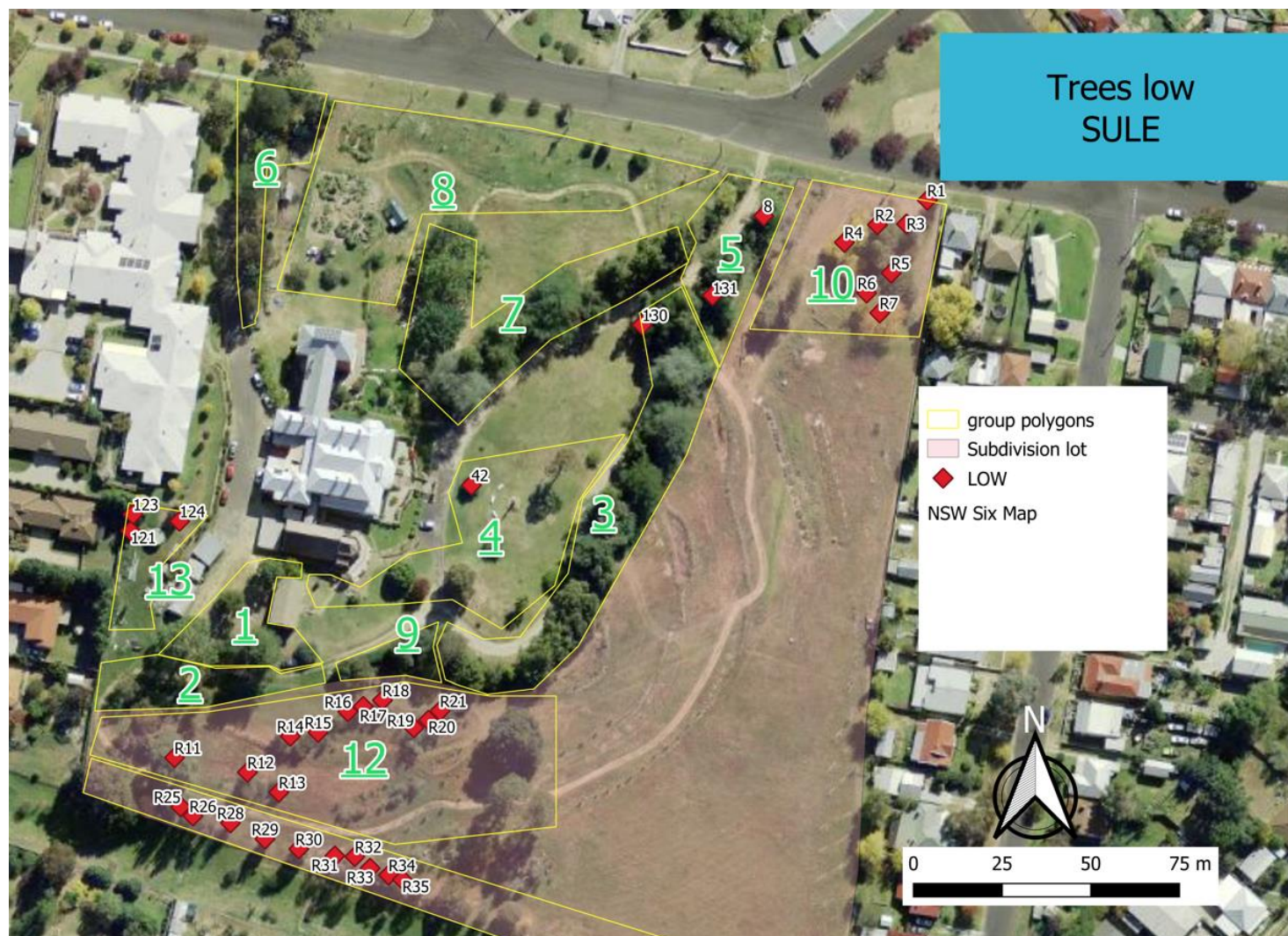


Figure 55 Trees with a low SULE rating that can be removed with minimal impact

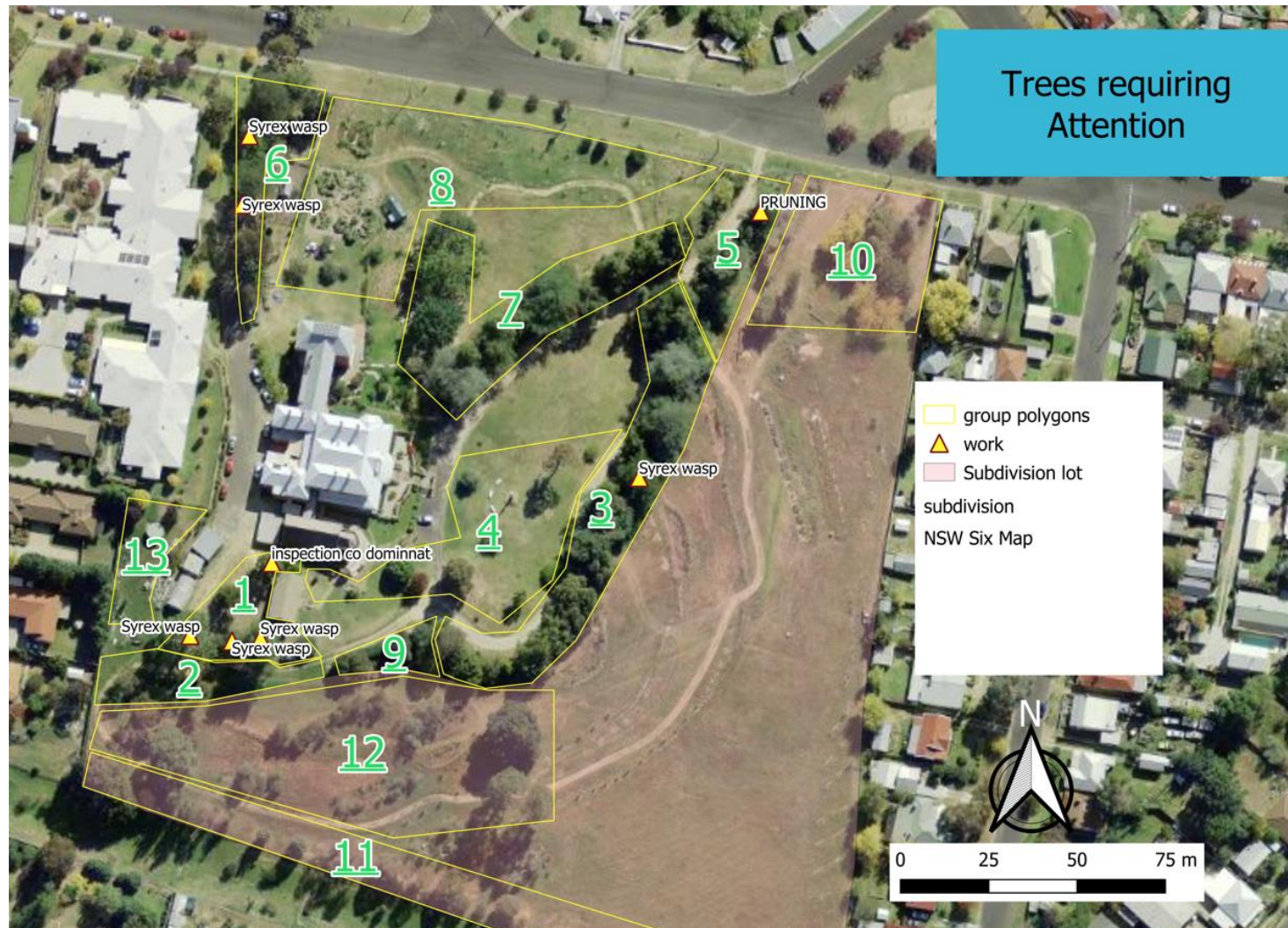


Figure 56 Trees that need attention to ensure ongoing good health

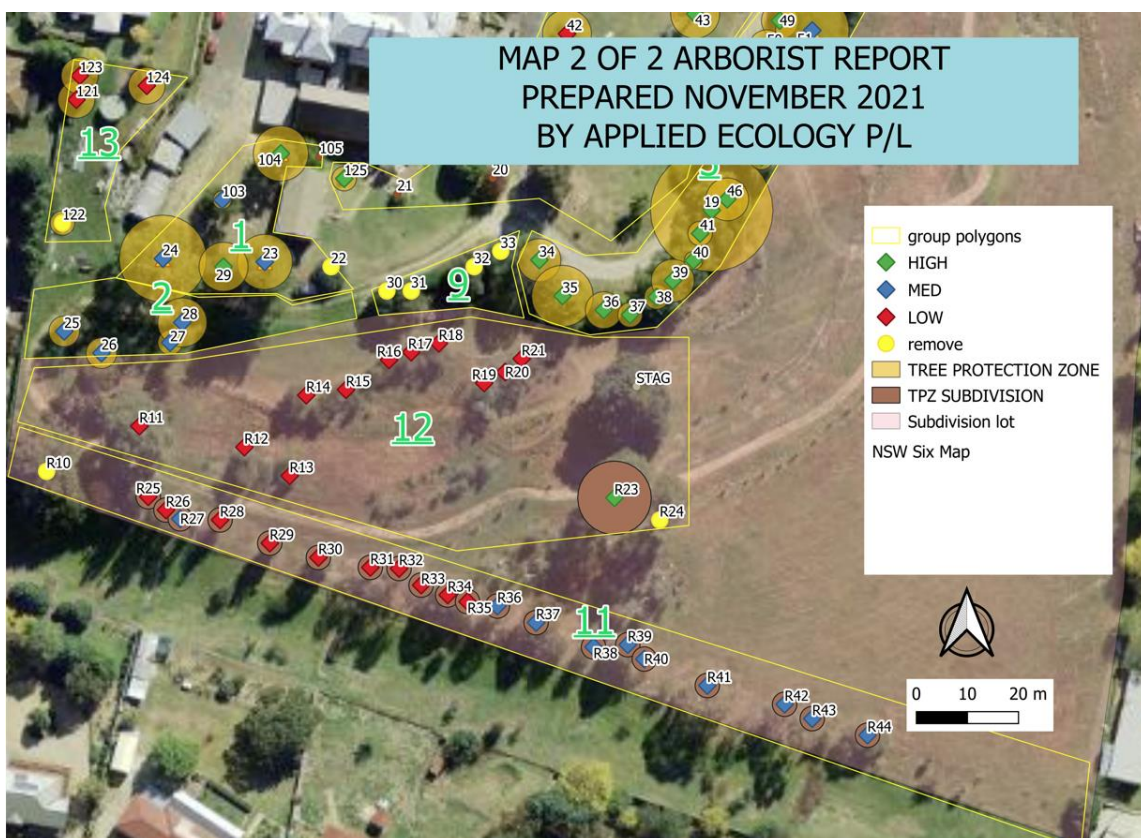
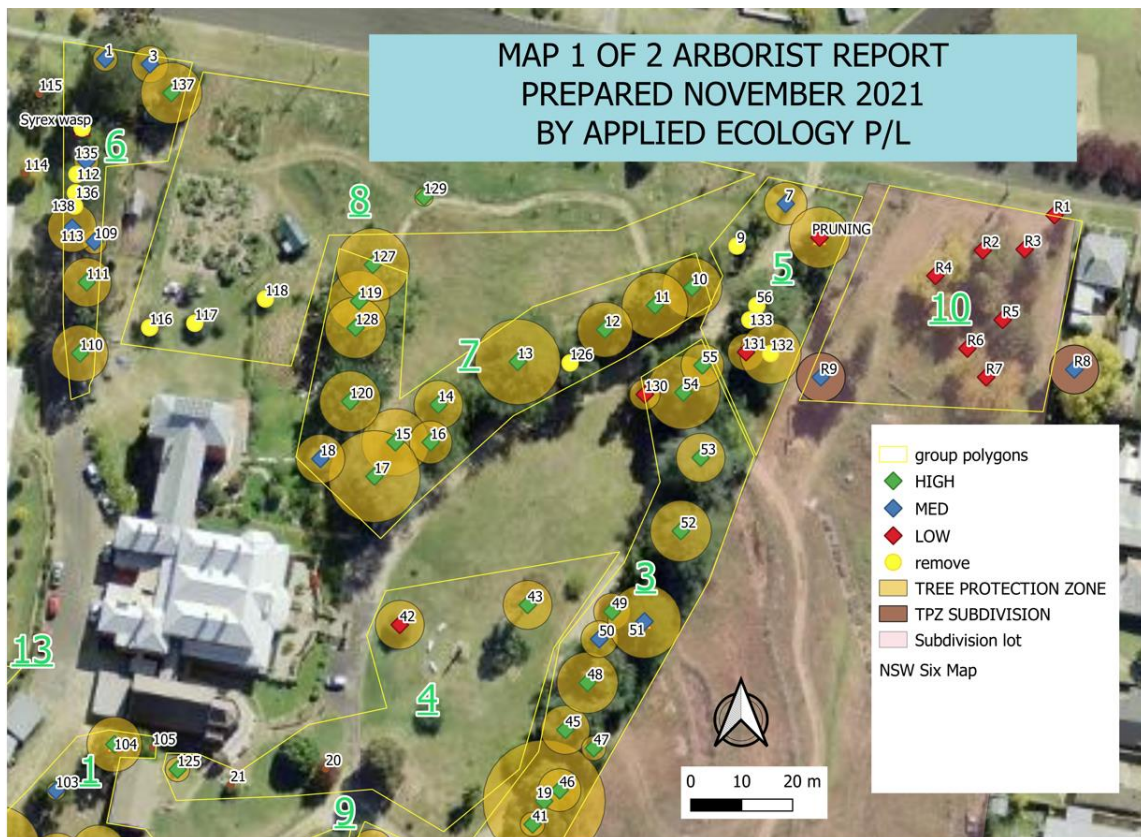


Figure 57 Tree Protection Zones for trees on Lots 224 and 225

6.5 SPECIES FOR SCREENING AND REPLACEMENT PLANTING

The following species list is extracted from Bathurst Regional Council's Vegetation Management Plan (draft report prepared by Molino Stewart, 2018).

Table 19 Species recommended for screening and replacement planting

SPECIES NAME	COMMON NAME	FEATURES/ REQUIREMENTS	SUGGESTED PLANTING LOCATIONS
Many genera including <i>Cedrus</i> , <i>Picea</i> , <i>Larix</i> , <i>Abies</i> , <i>Pinus</i> , <i>Pseudotsuga</i>	Cedars, Spruce, Larch, Fir, pines	Evergreen. Many colours and forms.	Parks, windbreaks, Heritage Conservation Area
<i>Alnus incana</i>	Grey Alder (15-20 m) Cold wet areas and poor soils. Recreational parks and street trees on floodplain soils.	(15-20 m) Cold wet areas and poor soils.	Recreational parks and street trees on floodplain soils.
<i>Castanea sativa</i>	Spanish Chestnut (15-25 m) Yellow autumn colouring, edible fruits. Parks, street tree, Conservation Area	(15-25 m) Yellow autumn colouring, edible fruits.	Parks, street tree, Conservation Area
<i>Liriodendron tulipifera</i>	Tulip Tree	(50 m) Fertile, well drained soil.	Parks, street tree
<i>Plantanus orientalis</i>	Oriental Plane	(20-30 m) Yellow brown autumn foliage.	Can be directionally pruned around wires. Parks, tree for wide streets, Conservation Area
<i>Quercus ilex</i>	Holly Oak/Holm Oak	(25 m) Slow growth in early stages, dense shade. Can be directionally pruned around wires. Parks, canopy too dense for street tree planting.	(25 m) Slow growth in early stages, dense shade. Can be directionally pruned around wires. Parks, canopy too dense for street tree planting.
<i>Acer buergeranum</i>	Trident Maple	(6-10 m) Keep wind protected to avoid leaf damage.	Fertile and friable soil. Street tree
<i>Acer campestre</i>	English Maple	(6-10 m) Yellow autumn colouring	Parks, street tree, Conservation Area
<i>Acer saccharum</i>	Sugar Maple	(12-15 m) yellow/orange/scarlet autumn colouring.	Street tree, Conservation Area
<i>Alnus cordata</i>	Italian Alder	(12 m) Moist soil, yellow autumn colouring.	Suburban street tree where nature strip watered, Conservation Area
<i>Celtis australis</i>	Nettle Tree	(12-15 m) Pale yellow autumn foliage.	Parks, street tree and Conservation Area

SPECIES NAME	COMMON NAME	FEATURES/ REQUIREMENTS	SUGGESTED PLANTING LOCATIONS
<i>Cercis siliquastrum</i>	Judas Tree	(5-10 m) Prune to central leader if multi-branching.	Street tree, parks
<i>Quercus robur</i>	'Fastigiata'	(12 m) Upright, columnar form of dense habit. Yellow brown autumn foliage.	Parks, large scale street trees on more fertile soils, floodplain, Conservation Area.
<i>Sorbus domestica</i>	Service Tree	(10-15 m) Yellow to orange autumn foliage.	Street tree, Conservation Area
<i>Sophora japonica</i>	Japanese Pagoda Tree	(10 m) Tolerant of temperature extremes. Can be directionally pruned around wires.	Parks, street tree, carparks
<i>Laurus nobilis</i>	Bay Laurel	(6-7 m). Evergreen, lateral branches low on trunk	Street tree, screening plant (shrub or tree form), parks and gardens.
<i>Malus spp</i>	Crab Apple	(4-8 m) Small tree, directionally prune to central leader.	Street tree, suitable for under power lines or small scale plantings.
<i>Angophora floribunda</i>	Rough-barked Apple	(12-22 m) Fibrous bark, twisting branches with dense crown	Parks, open spaces. Grows best on alluvial soils.
<i>Eucalyptus leucoxylon var macrocarpa</i>	Large Podded Yellow Gum	(8 m) Smooth barked gum	Street tree
<i>Eucalyptus scoparia</i>	Wallangarra White Gum	(12 m) Smoothed barked gum, cream bark, open canopy.	
<i>Acacia buxifolia</i>	Box-leaf Wattle		
<i>Acacia dealbata</i>	Silver Wattle		
<i>Acacia implexa</i>	Hickory Wattle		
<i>Acacia mearnsii</i>	Black Wattle		
<i>Acacia melanoxylon</i>	Blackwood		
<i>Allocasuarina littoralis</i>	Black She-oak		
<i>Allocasuarina verticillata</i>	Drooping She-oak		
<i>Brachychiton populneus</i>	Kurrajong		
<i>Callitris glaucophylla</i>	White Cypress pine		

7 OTHER WORKS – WORKING NEAR TREES

If development is proposed that will impact on any tree protection zones (TPZ), as shown on the site plan prepared by Applied Ecology's arborecologist (see), then a tree protection plan will be required as per *AS4970-2009 Protection of trees on development sites*. This must be prepared by a level 5 arborist as per 1.4.4. of that standard.

Refer to *AS4970-2009* for information about the impacts of development on trees (section 1.2):

This Standard provides guidance for arborists, architects, builders, engineers, land managers, landscape architects and contractors, planners, building surveyors, those concerned with the care and protection of trees, and all others interested in integration between trees and construction.

Particular attention should be given to Appendix B which discusses potential damage to trees on development sites. If any of the following activities are likely to occur within the TPZ, as shown on the arborist map, then a level 5 arborist will be required to complete a Preliminary Tree Assessment or Arboricultural Impact statement (as per section 2.3.5 of *AS4970-2009*)

Activities generally excluded from the TPZ include but are not limited to—

- (a) machine excavation including trenching;
- (b) excavation for silt fencing;
- (c) cultivation;
- (d) storage;
- (e) preparation of chemicals, including preparation of cement products;
- (f) parking of vehicles and plant;
- (g) refuelling;
- (h) dumping of waste;
- (i) wash down and cleaning of equipment;
- (j) placement of fill;
- (k) lighting of fires;
- (l) soil level changes;
- (m) temporary or permanent installation of utilities and signs, and
- (n) physical damage to the tree.

Barrell Tree Consultancy has produced several site guidance notes for developers. Information on the following is free online [Technical Guidance » Barrell Tree Consultancy | UK Consultants and Expert Witness Services \(barrelltreecare.co.uk\)](https://www.barrelltreecare.co.uk/technical-guidance).

Information from relevant site guidance notes is provided in the following sections. Before implementing these actions it is strongly recommended that a Tree Protection Plan is prepared for the site.

7.1 EXCAVATION FOR WATER AND SEWER PIPES, UTILITIES

Excavation can adversely affect retained trees through direct damage to roots and destructively disturbing the rooting environment. However, some trees can tolerate limited amounts of

excavation if the work is carried out carefully and the disturbance is kept to a minimum. The amount of disturbance that an individual tree can tolerate depends on factors such as tree species, health, age, and the growing conditions. These are all matters that need to be assessed by an experienced and qualified arboriculturist.

7.1.1 Excavation in Tree Protection Zones

The following steps are to be undertaken when excavating in Tree Protection Zones:

- Cut exposed roots to be removed cleanly 10–20cm behind the final face of the excavation.
- Protect roots temporarily exposed, but to be retained, from direct sunlight, drying out, and extremes of temperature, by appropriate covering such as dampened hessian sacking and/or boards over the hole.
- If necessary, individual roots and clumps of less than 2.5cm width will be cut cleanly without consulting the supervising arboriculturist.
- Retain individual roots and clumps greater than 2.5cm in width where possible and only cut if agreed with the supervising arboriculturist.
- When back-filling, place an inert granular material mixed with topsoil or sharp sand around retained roots greater than 2.5cm in width before light compaction.

7.1.2 Installing services in Tree Protection Zones

Excavation to upgrade existing services or install new services in TPZs may damage retained trees. Where possible, all services will be outside TPZs and installation in TPZs will only be chosen as a last resort. If installation within TPZs is being considered, the decision must be made in consultation with the supervising arboriculturist before any work is carried out. If service installation is agreed within TPZs, the acceptable techniques in order of preference are:

- a) trenchless (eg horizontal bore)
- b) Broken trench – hand dug
- c) Continuous trench – hand dug

If trenchless methods are to be used, the starting and finishing pits dug at each end of the service run will be outside TPZs. Where a hand-digging option is agreed, any roots discovered during the excavations will be dealt with as described above. Backfilled material around excavated services must not be heavily compacted.

7.2 FENCE CONSTRUCTION

The CMP recommends that the boundary fencing is to reflect the rural character of the existing boundary fences of St Joseph's Mount. Fencing may be post and rail or post and wire. Wire mesh may be used to contain animals.

There is potential for trees throughout the area to be affected by the proposed fence. The type of fence to be constructed must allow for actual and final positional placement of posts to be flexible. Where possible construction impacts should be limited to the hole for the strainer post, and this should be positioned outside of the SRZ at a minimum, and preferably outside the TPZ of any tree. Where a post needs to be positioned in a TPZ the recommendations for excavation in a TPZ should be followed. Exploratory excavation would assist with determining the best locations for post holes within the TPZ.

8 WEED MANAGEMENT

8.1 CONTROL TECHNIQUES

Control techniques can be broadly grouped into several categories: manual control and herbicide control (**Error! Reference source not found.**). It is important to use the most suitable control method for your situation. For example, hand pulling of woody weed seedlings is fast, effective, and uses no herbicide. As such it should be the first option for weed management. However, for some woody weed seedlings it is difficult to get enough of the root when hand pulling, for example, Holly, which often breaks off and leaves enough root for it to reshoot.

Table 20 Weeds recorded on site and their best practice control methods

COMMON NAME	MANUAL CONTROL	HERBICIDE CONTROL	OTHER COMMENTS
Large-leaved Privet	hand pull seedlings	cut and paint larger stems with glyphosate	bag and remove any seeds
Small-leaved Privet	hand pull seedlings	cut and paint larger stems with glyphosate	bag and remove any seeds
Blackberry		cut and paint larger seedlings and stems with glyphosate diluted to around 70%, or stem inject very large stems	bag and remove any fruit
Cotoneaster	hand pull seedlings	cut and paint larger stems with glyphosate	bag and remove any seeds
Holly	carefully hand pull small seedlings	cut and paint larger seedlings and stems with glyphosate diluted to around 70%, or stem inject very large stems	bag and remove any seeds
Cherry Laurel	hand pull seedlings	cut and paint larger stems with glyphosate	bag and remove any seeds
Common Hawthorn			
Blue Periwinkle (Vinca)	hand pull runners, bundle and raft, take care not to drag runners off trees	scrape and paint larger stems and stems climbing on native vegetation	raft stems so they cannot regrow
Oleander	crown through roots	spot spray larger infestations with glyphosate	bag and remove any seeds
Willow	crown through roots	spot spray larger infestations with glyphosate	bag and remove any seeds
Prunus sp	crown through roots	spot spray larger infestations with glyphosate	bag and remove any seeds
Tree Lucerne	crown through roots	spot spray larger infestations with glyphosate	bag and remove any seeds
	crown through roots using a mattock or large knife	not suitable for spraying	bag and remove any seeds
	crown through roots	spot spray larger infestations with glyphosate	bag and remove any seeds

9 MONITORING AND REPORTING

The condition of bushland in the restoration area should be monitored following woody weed control, following herbaceous groundcover weed removal, and following any significant rainfall event. Monitoring should also record the numbers of plantings that have died. Replanting may need to be undertaken if large numbers of plants are lost. Council should be consulted to determine appropriate triggers for replanting as this may be offset by establishment of native species from seeds in the soil or from seeded brush matting.

Monitoring should record the following:

- Weed growth
- Slope stability
- Formation of any erosion gullies
- Regeneration of native plant species
- Plant density and the need for supplementary seeding or planting
- Establishment and health of any planted material
- Condition and effectiveness of erosion control measures

This information would form the basis of a site condition report suitable for submission to council.

Consult Council to determine reporting requirements, which should be following completion of each of the first three stages outlined in **Error! Reference source not found.**, and at six monthly intervals for Stage 4 Ongoing maintenance for a minimum period of two years, or as directed by BMCC.

9.1 PERFORMANCE TARGETS

Performance criteria for weed management and site restoration activities are provided in **Error! Reference source not found.**

Table 21 Performance criteria for weed management at 40 Wilson St, Wentworth Falls

MANAGEMENT ACTIONS	PERFORMANCE CRITERIA
STAGE ONE – RADIATA PINE CONTROL	
Boundary between restoration area and managed residential section of the subject lot and adjoining lots delineated using durable markers, eg logs, rocks etc If fencing must be installed use only plain wire fencing with a maximum of five strands Council should liaise with neighbouring landholders to control weeds on their side of the boundary (including community land)	Property boundary clearly marked Council and neighbours encouraged to control weeds in adjoining areas
Radiata Pines killed Radiata Pines felled in areas where there is potential for dead trees to become dangerous to lives or property. Preferably all pines will be felled, which will kill them	Radiata Pines dead Safety requirements met as a minimum for removal of trees Pine needles reduced/removed

MANAGEMENT ACTIONS	PERFORMANCE CRITERIA
Pine needles reduced on site by burning or disposal off site	
STAGE TWO – OTHER WEED CONTROL	
Woody weeds and climbers treated using best practice control methods	All woody weeds and climbers removed or killed in situ, weed propagules (seeds, fruit, corms etc) disposed of off site
Soil stability assessed, soft engineering solution used to stabilise soils in key erosion points	Soils stabilised
Native plant cover assessed and supplemented using direct seeding and/or planting as required	Native plant cover re-established
Groundcover herbaceous weeds treated using best practice control methods	All groundcover weeds removed or killed in situ, weed propagules (seeds, fruit, corms etc) disposed of off site
STAGE THREE - REVEGETATION	
Follow up woody weed control	All woody weeds and climbers continue to be controlled using best practice methods
Native plant cover assessed and supplemented using direct seeding and/or planting as required	Native plant cover re-established
Planted tubestock are maintained, eg. watered, weed control to prevent smothering, etc	Native plantings achieve survival rate >95%
Soil stability assessed, soft engineering solution used to stabilise soils in key erosion points	Soils stabilised
STAGE FOUR – ONGOING MAINTENANCE	
Ongoing weed control	Weeds controlled
Ongoing erosion control	Erosion prevented and/or mitigated
Native plant cover assessed and supplemented as required	Native plant cover maintained

10 APPENDIX ONE: SULE TABLE

Table 22 ULE, LSV and SULE ratings for trees in Lot 224

GROUP	NUMBER	SPECIES	DIAMETER	ULE	LSV	SULE	TPZ
1	22	COTONEASTER				REMOVE	0
1	23	PINE	0.45	HIGH	AMEDIUM	MEDIUM	5.4
1	24	PINE	0.71	MEDIUM	AMEDIUM	MEDIUM	8.52
1	29	PINE	0.4	HIGH	AMEDIUM	MEDIUM	4.8
1	103	KURRAJONG	0.15	MEDIUM	HHIGH	MEDIUM	1.8
1	104	KURRAJONG	0.45	HIGH	EHIGH	HIGH	5.4
2	25	EUCALYPT	0.25	MEDIUM	LOW	MEDIUM	3
2	26	EUCALYPT	0.25	MEDIUM	LOW	MEDIUM	3
2	27	EUCALYPT	0.25	MEDIUM	LOW	MEDIUM	3
2	28	EUCALYPT	0.4	HIGH	EMEDIUM	MEDIUM	4.8
3	19	CONIFER	1	HIGH	HHIGH	HIGH	12
3	35	IRONBARK	0.5	HIGH	HHIGH	HIGH	6
3	36	CONIFER	0.3	HIGH	HHIGH	HIGH	3.6
3	37	CONIFER	0.2	HIGH	HHIGH	HIGH	2.4
3	38	CONIFER	0.2	HIGH	HHIGH	HIGH	2.4
3	39	WEeping CONIFER	0.35	HIGH	HHIGH	HIGH	4.2
3	40	CONIFER	0.15	HIGH	HHIGH	HIGH	1.8
3	41	WEeping CONIFER	0.2	HIGH	HHIGH	HIGH	2.4
3	45	CEDAR	0.4	HIGH	HHIGH	HIGH	4.8
3	46	WEeping CONIFER	0.35	HIGH	HHIGH	HIGH	4.2
3	47	WEeping CONIFER	0.2	HIGH	HHIGH	HIGH	2.4
3	48	CEDAR	0.5	HIGH	HHIGH	HIGH	6
3	49	CONIFER	0.3	HIGH	HHIGH	HIGH	3.6
3	50	CONIFER	0.3	HIGH	HHIGH	HIGH	3.6
3	51	PINE	0.6	HIGH	HHIGH	HIGH	7.2
3	52	CEDAR	0.5	HIGH	HHIGH	HIGH	6
3	53	CEDAR	0.4	HIGH	HHIGH	HIGH	4.8
3	54	CORK OAK	0.6	HIGH	HHIGH	HIGH	7.2
3	55	CONIFER	0.35	HIGH	HHIGH	HIGH	4.2
3	130	CUPRESSUS	0.25	MEDIUM	LOW	LOW	3
4	20	SHRUB					0
4	21	SHRUB					0
4	42	OLIVE	0.4	HIGH	HVHIGH	HIGH	4.8
4	43	EUCALYPT	0.4	HIGH	HVHIGH	HIGH	4.8
4	125	WEeping CONIFER	0.2	HIGH	HVHIGH	HIGH	2.4
5	7	WHITE CEDAR	0.35	MEDIUM	LOW	MEDIUM	4.2
5	8	FRAXINUS	0.5	MEDIUM	LOW	LOW	6
5	9	SHRUB			LOW	REMOVE	0
5	56	OVER PRUNED DEAD STUMP				REMOVE	0
5	131	CONIFER	0.3	MEDIUM	LOW	LOW	3.6
5	132	CONIFER	0.5	LOW		REMOVE	

Attachment 9.1.8.2

GROUP	NUMBER	SPECIES	DIAMETER	ULE	LSV	SULE	TPZ
5	133	CONIFER				REMOVE	
6	1	CHINESE ELM	0.2	MEDIUM	HMED	MEDIUM	2.4
6	3	CHINESE ELM	0.3	MEDIUM	HMED	MEDIUM	3.6
6	109	SHRUB					0
6	110	EUCALYPT	0.46	HIGH	AVHIGH	HIGH	5.52
6	111	EUCALYPT	0.4	HIGH	AVHIGH	HIGH	4.8
6	112	DYING ELM				REMOVE	0
6	113	PINE	0.4	HIGH	HVHIGH	HIGH	4.80
6	134	PINE				REMOVE	
6	135	PENCIL PINE	0.2	HIGH	HMEDIUM	MEDIUM	2.4
6	136	CHINESE ELM		MEDIUM	HHIGH	MEDIUM	0.25
7	10	CUPRESSUS	0.49	HIGH	AHIGH	HIGH	5.88
7	11	CUPRESSUS	0.54	HIGH	AHIGH	HIGH	6.48
7	12	CUPRESSUS	0.45	HIGH	AHIGH	HIGH	5.4
7	13	CEDAR	0.7	HIGH	AHIGH	HIGH	8.4
7	14	CONIFER	0.4	HIGH	AHIGH	HIGH	4.8
7	15	CONIFER	0.55	HIGH	AHIGH	HIGH	6.6
7	16	CEDAR	0.35	HIGH	AHIGH	HIGH	4.2
7	17	CEDAR	0.75	HIGH	AHIGH	HIGH	9
7	18	CONIFER	0.4	HIGH	AHIGH	HIGH	4.8
7	119	OAK	0.5	HIGH	AHIGH	HIGH	6
7	120	OAK	0.5	HIGH	AHIGH	HIGH	6
7	126	AFRICAN OLIVE				REMOVE	0
7	127	OAK	0.6	HIGH	AHIGH	HIGH	7.2
7	128	OAK	0.5	HIGH	AHIGH	HIGH	6
8	4	SHRUB					0
8	5	SHRUB					0
8	6	SHRUB					0
8	129	EUCALYPTUS PULVERULENTA	0.01	HIGH	HHIGH	HIGH	0.12
9	30	WEED				REMOVE	0
9	31	WEED				REMOVE	0
9	32	WEED				REMOVE	0
9	33	WEED				REMOVE	0
9	34	CONIFER	0.35	HIGH	HHIGH	HIGH	4.2
13	121	FRAXINUS	0.3	LOW	LOW	LOW	3.6
13	122	COTONEASTER	0.2	MEDIUM	LOW	REMOVE	2.4
13	123	FRAXINUS	0.3	MEDIUM	LOW	LOW	3.6
13	124	FRAXINUS	0.3	LOW	LOW	LOW	3.6
N/A	105	SHRUB					0
N/A	106	SHRUB					0
N/A	107	SHRUB					0
N/A	108	SHRUB					0
N/A	114	SHRUB					0
N/A	115	SHRUB					0

Attachment 9.1.8.2

GROUP	NUMBER	SPECIES	DIAMETER	ULE	LSV	SULE	TPZ
N/A	116	COTONEASTER				REMOVE	0
N/A	117	COTONEASTER				REMOVE	0
N/A	118	GLEDTISIA				REMOVE	0

Table 23 ULE, LSV and SULE ratings for trees in Lot 225

GROUP	NUMBER	SPECIES	DIAMETER	ULE	LSV	SULE	TPZ
10	R1	EXOTIC		LOW	HMEDIUM	LOW	0
10	R2	EXOTIC		LOW	HMEDIUM	LOW	0
10	R3	EXOTIC		LOW	HMEDIUM	LOW	0
10	R4	BOX ELDER		LOW	HMEDIUM	LOW	0
10	R5	EXOTIC		LOW	HMEDIUM	LOW	0
10	R6	EXOTIC		LOW	HMEDIUM	LOW	0
10	R7	EXOTIC		LOW	HMEDIUM	LOW	0
10	R9	EUCALYPT	0.4	MEDIUM	EMEDIUM	MEDIUM	4.8
11	R25	EXOTIC		MEDIUM	LOW	LOW	0
11	R26	EXOTIC		MEDIUM	LOW	LOW	0
11	R27	EXOTIC		MEDIUM	LOW	LOW	0
11	R28	EXOTIC		MEDIUM	LOW	REMOVE	0
11	R29	POPLAR		MEDIUM	LOW	REMOVE	0
11	R30	EXOTIC		MEDIUM	LOW	LOW	0
11	R31	CUPRESSUS		MEDIUM	LOW	REMOVE	0
11	R32	CUPRESSUS		MEDIUM	LOW	REMOVE	0
11	R33	CUPRESSUS		MEDIUM	LOW	REMOVE	0
11	R34	EXOTIC		MEDIUM	LOW	LOW	0
11	R35	EXOTIC		MEDIUM	LOW	LOW	0
11	R36	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R37	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R38	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R39	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R40	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R41	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R42	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R43	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
11	R44	EUCALYPT	0.2	VHIGH	EHIGH	HIGH	2.4
12	R11	ELM		LOW	LOW	LOW	0
12	R11	ELM		LOW	LOW	LOW	0
12	R12	ELM		LOW	LOW	LOW	0
12	R13	ELM		LOW	LOW	LOW	0
12	R14	RECENT PLANTINGS		MEDIUM	LOW	LOW	0
12	R15	RECENT PLANTINGS		MEDIUM	LOW	LOW	0
12	R16	RECENT PLANTINGS		MEDIUM	LOW	LOW	0
12	R17	RECENT PLANTINGS		MEDIUM	LOW	LOW	0
12	R18	RECENT PLANTINGS		MEDIUM	LOW	LOW	0
12	R19	RECENT PLANTINGS		MEDIUM	LOW	LOW	0

Attachment 9.1.8.2

GROUP	NUMBER	SPECIES	DIAMETER	ULE	LSV	SULE	TPZ
12	R20	RECENT PLANTINGS		MEDIUM	LOW	LOW	0
12	R21	RECENT PLANTINGS		MEDIUM	LOW	LOW	0
12	R22	DEAD		DEAD	HEHIGH	MEDIUM	0
12	R23	PINE	0.6	MEDIUM	HHIGH	MEDIUM	7.2
12	R24	DEAD				REMOVE	0

11 APPENDIX TWO: BEST PRACTICE GUIDELINES FOR WEED CONTROL

The following techniques are considered current best practice for weed management. Use of a local restoration contractor is strongly recommended, and must have experience in working in this type of environment.

WEED CONTROL TECHNIQUES

Cut and paint

This is suitable for coppicing and suckering weeds such as Camphor and Privet, or any weeds which are too large for hand-pulling or have long taproots such as Ochna. This method provides for no soil disturbance and weed eradication is successful.

1. Cut the stem/s 1-2 cm above (a cut stump or stem protruding above the ground can be dangerous to work around and the seed's ability to re-shoot is reduced), ground level using either secateurs, loppers, a pruning saw or a chainsaw, depending on the thickness and toughness of the stem.
2. Immediately apply glyphosate™ (generally 1:1 or 1:1.5 or 100%) to the cut surface of the stem or, with medium and large trees, to the outside edges of the cut surface. (Herbicides need to be applied immediately after the cut is made because the ability of the plant to transport fluids ceases as soon as the tissues are severed.)
3. Search through the leaf litter to locate any exposed stem or root surface. Scrape the exposed stem or root surface slightly with a knife until you can see a light green coloured layer. (Do not scrape too deeply.) Apply the herbicide to the scraped sections, either with a brush, injector or spray bottle.
4. Follow up as required.

Stem injection – Drill & frill

Drilling

A rechargeable drill with a 5mm drill bit, is used to drill holes in the tree. The battery life of the drill will not last very long, so make sure you have charged them up properly. 100mm deep holes are drilled into the sapwood at a downward sloping angle, drilling 1 to 2 holes at a time, then immediately (within 10 seconds) filling the holes with a glyphosate mix dependent on tree type. The holes are drilled approx. 15cm apart in a circular pattern around each and every multi-branch. The holes are easily filled using a drench gun. These are available from the Rural Co-op and Farmcare for approx. \$110.00, and are easy to use. The drill method is good in difficult to get to spots (eg. multi-stemmed tree).

Frilling

Use a small axe to cut into the sapwood at a downward angle. Three rows of cuts are made in a brick pattern around all multi-branches, low to the ground. 1 to 3 cuts are made before immediately filling the cuts with a glyphosate mix dependent on tree type. The cuts need to be filled slowly to avoid chemical spills. The axe is easy to use in readily accessible spots. Note: The cordless drill and the axe could be used together: the axe for the easily accessible trunks and the drill for the hard to get at multi-stems. This way the battery lasts a lot longer. An alternate method is to use a hammer and

chisel, which have the advantage of being able to get to awkward spots, and they never go flat or stop working after being dropped in the creek/river. A hone stone is handy to touch up the edge on the chisel or axe.

Scrape and paint

This is a variation of the cut, scrape and paint technique described above, the difference being the plant is not cut but left intact and scraped. This technique is suitable for Madeira Vine, saplings of Camphor Laurel and Privet as it ensures the translocation of the herbicide throughout the entire plant.

1. Scrape several sections of the stem along one side only, in lengths of at least 30 cm. The stem needs to be scraped firmly, exposing the fibres and/or light green coloured layer. Be careful not to sever the stem completely.
2. Each scraped section is immediately painted, prior to scraping the next section, with the recommended diluted glyphosate for the particular weed.

Crown grasses and herbs

Crowning: This technique is useful for weeds such as grasses and asparagus fern, which have their growing points below the surface of the soil. (corms, rhizomes or tufted fibrous root systems).

1. Grasp the leaves or stems of the plant and hold them firmly so that the base of the plant is visible. Any weeds with sharp leaves or stems should be cut back first.
2. Insert a knife close to the base of the plant at an angle, with the tip well under the root system.
3. Cut through the roots close to the base of the plant. Make sure that the hard crown or base of the plant where the roots begin is completely removed. It may require several cuts.
4. Hang the crowned plant matter up off the ground.
5. Follow up on a regular basis.

Manual removal (hand pulling)

Hand pulling: This requires holding the plant stem as close as possible to the base of the plant. Gently tug the plant. This will loosen the soil and allow the plant to come free. The plant may be hung up off the ground or piled in a heap.

Winding up: This process is suitable for plants with surface or climbing runners such as Morning glory.

1. You need to locate a runner, gently pull it along the ground towards you. Roll the runners up for easy removal. Continue doing this until all the runners have been rolled up. Small fibrous roots growing from the runners can be cut with a knife.
2. You should locate the main root system whilst removing the runners. When you do, remove it manually.
3. Do not leave any bits of stem or large roots, as these may reshoot.
4. Bag or compost the runners/roots.

5. Follow up on a regular basis.

Spray

Foliar spraying is a complementary or alternative method to some hand removal techniques. It is used in large areas of weed infestations that have a small native component or small dense areas of weeds with no natives. There are three different spraying techniques.

Spot spray

Spot spraying: is useful in areas with native seedlings present. In circumstances where solitary natives are scattered throughout a weed infestation, the individual trees may be covered or marked with a piece of bright coloured flagging tape. An area of about 10- 50 cm around the base of each native or clump of natives should be hand weeded. Spray units with adjustable nozzles should be set to produce a fine spray, at low to medium pressure. The weed clumps are sprayed with appropriate herbicide at the recommended strength plus a tracer dye. If a native is inadvertently sprayed, remove the affected leaves or immediately rinse off the herbicide with water.

HERBICIDE USE AND REQUIREMENTS

11.1.1 Safety Gear

When using herbicides, it is essential to equip yourself with appropriate safety clothing.

Key items are rubber gloves, overalls, shoes or boots, eye goggles and a hat. An agricultural respirator is required for moderately and highly toxic herbicides. Avoid any parts of your skin being in contact with any herbicide. Immediately wash any parts of your body which come into contact with any herbicide, particularly your hands before eating.

11.1.2 Training, Certification

Weed control should be undertaken by appropriately qualified and experienced professional bush regenerators, or by volunteers under the direct supervision of a appropriately qualified and experienced professional bush regenerator. Selecting the appropriate technique can be a matter of experience, both with local conditions, and the weed species being targeted.

11.1.3 Labels, Permits, MSDS

When using herbicides it is essential that you read the label on the container and follow the manufacturers' instructions. The label describes how the herbicide should be used (method and concentration, plus additives) for best results to control particular weeds. The permit describes the conditions under which the herbicide can be used in NSW. The MSDS describes a range of information about the chemical constituents in the herbicide, the most important of which is the safety measures required for use and first aid/medical treatment required following exposure.

11.1.4 Commonly used herbicides and additives

Glyphosate

Glyphosate is a systemic chemical which is inactivated upon contact with the soil. Roundup Bioactive™ and Weedmaster 360™ are products with improved surfactants, making them safer to use near waterways. Do not use Glyphosate within 6 hours of rainfall and where there is likelihood of rain within 24 hours.

LI 700®

LI 700® is a penetrant, which facilitates the transfer of the herbicide through the surface tissue and is often used for plants with waxy leaves, such as Madeira Vine and Wandering Jew. (Oils are also used for this purpose.) Manufacturer's instructions should be followed when using any penetrant.

This will help the chemical stick to the leaves, is rain-fast within minutes and helps spread the chemical evenly over the plant.

Tracer Dyes

Tracer Dyes are used with herbicides to improve efficiency and safety. The tracer allows areas/plants that have been treated to be identified. The tracer alerts anyone entering the treated area that a herbicide has been used for a short period of time. It also helps to ensure that the target plants are treated and non-target plants avoided.

Commonly used tracer is a red fluorescent dye such as Spraymate Marker Dye®. Manufacturer's instructions should be followed.

Metsulphuron Methyl

Metsulfuron is a non-residual herbicide, which is the active ingredient in Brushkiller® and Brushoff®.

11.2 WEED CONTROL – ALTERNATIVE METHODS

Repeated sprays with a knockdown herbicide (such as glyphosate) are effective in that they exhaust the soil weed seedbank, resulting in less weeds germinating after the planting. Residual herbicides prevent the weed seeds in the soil from germinating until the effect of the herbicide diminishes over time. Care should be used in the selection of herbicides: consider factors such as the development of herbicide resistance, residue in the soil, impacts on native plants and waterways. Alternatives to herbicides should always be considered.

Scalping (removing some of the surface soil) removes the majority of weed seeds and is very effective in a range of soils, although it may expose subsoils that are prone to cracking as they dry. Non-chemical methods include mulching with newspaper, straw, sawdust or similar; flaming; repeated cultivation and hand-chipping. Mowing reduces the vigour of the competing plants but is not as effective as complete removal. Many direct seeding machines have a built in scalping blade or disc to do weed control in a single pass. Most sites will still benefit from two-years of weed control prior to direct seeding.

Great care should be taken before exposing highly-erodible soils. Weed control should be in strips approximately one metre wide with a grassy strip retained between rows, or in spots one metre in diameter around each planting location.

12 APPENDIX THREE: BEST PRACTICE REVEGETATION GUIDELINES

12.1 Revegetation methods

In most situations direct seeding is far more cost effective than planting seedlings for broadscale vegetation establishment. Some broad direct seeding principles are:

- use seed with high genetic and physical quality
- treat seed to break dormancy where necessary
- the single most important factor in site preparation is weed control. Methods vary according to soil type, climate, weeds species present (both standing and in the soil seed bank), the scale of the project, equipment available and other site constraints
- use knockdown herbicides such as glyphosate, residual herbicides such as simazine or a combination of both. If knock-down only is used the more than one application is usually necessary to kill of successive flushes of germinating weeds from the weed seed bank.

Suitable methods for revegetation on this site include:

- Planting of tubestock and small pots

12.2 Direct seeding using brush matting

Branches of trees and shrubs such as hakeas or casuarinas laden with woody fruits can be lopped from another site and laid directly on the revegetation site. The seed-laden brush not only introduces seeds for regeneration, but can also act as a soil protection layer. By slowing overland water flow, water can infiltrate the soil and provide ideal conditions for germination. Wind blown seed from other species can also collect in the brush and germinate. It may also deter unwanted visitors from trampling or degrading the site in high use areas.

12.3 Before you start planting

Before commencing planting, ensure the following have been completed in order:

- Biodiversity Conservation licence has been approved to work in EECs on site
- Native flora has been retained
- Comprehensive weed control, including depleting the soil seedbank
- All necessary earthworks including soil stabilisation has been completed using appropriate geotechnical solutions
- Local native tubestock has been sourced for the site

12.4 Plant Establishment Phase

It is important to protect juvenile plants until they become tolerant of local conditions. Applied Ecology recommends watering for the initial 3 months of plant establishment. Watering regimes are in part dictated by prevailing climatic conditions and an appropriate watering regime must be established by the contractor to ensure adequate and acceptable plant survival. The most important activities necessary to maintain terrestrial plant growth during the establishment phase include:

- Watering
- weed control
- replanting
- plant protection

- restriction of public access
- monitoring plant establishment

12.4.1 Watering

Planted areas require high (but not excessive) soil moisture levels for plant survival. The first month after planting is a critical time for watering:

- if the soil is not waterlogged, sowed areas and young plant stock will require watering every 1-2 times per week, using manual or sprinkler irrigation. This should continue for a period of 1 month.
- if hot or windy conditions are encountered soon after planting then additional watering will be required
- a minimum of 500 mL of water per plant per week should be adopted as a general guide

After the first month of maintenance, planted areas should be watered as required to maintain a healthy condition and free of water stress. Progressively harden the plant to natural climatic conditions.

12.4.2 Weed Control

Weed growth should be monitored every month and controlled until plants are established. It may be necessary to remove weeds more frequently in the warmer, summer months when weed growth is rapid. Woody and vine weeds will require ongoing treatment of seedlings as they germinate.

12.4.3 Plant Replacement

Replanted terrestrial zones should be monitored monthly to ensure 90% plant establishment. Damaged or failed plants should be replaced with native plants endemic to the region. Provide plants with the following characteristics:

- large healthy root systems, with no evidence of root curl, or damage
- vigorous, well established and free from disease and pests
- hardened off and suitable for planting in the climatic conditions at the site

12.4.4 Monitoring Plant Establishment

The following activities are required for the duration of the project:

- set up fixed monitoring points to photograph and document the progress of plant establishment each month
- carry out plant counts to ensure at least 90% plant establishment
- monitor weed densities and record the control measures that appear to be most effective
- review the maintenance program and adjust the management of the terrestrial habitats according to these monitoring results



St Joseph's Mount, Bathurst

19th April 2024

Planning Proposal - Place Analysis & Urban Design

marchesepartners | Life^{3A}

PLANNING PROPOSAL - PLACE ANALYSIS & URBAN DESIGN REPORT - CONTENTS

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PROJECT OVERVIEW

This document has been prepared by Marchese Partners Life3a Pty Ltd on behalf of ANAT Investments Pty Ltd as part of a submission to Bathurst Regional Council in support of a planning proposal for a mixed-use development at 34 Busby Street, South Bathurst.

The site benefits from a development consent for a three-lot subdivision, which ensures that the existing heritage item, known as Logan Brae, is satisfactorily retained and conserved, while allowing for redevelopment of the southern and eastern section of the site. Logan Brae will undergo restoration in alignment with the Conservation Management Plan and will be repurposed as a hotel and function centre to serve the community of Bathurst. The hotel accommodation and its services are proposed within the existing buildings and some additional cabins on the chapel side. The proposal also includes an adjacent pavilion which will extend to the western side of the existing convent.

To the south and east, it is proposed that the residual lot would be used for a residential apartment development across seven buildings, up to eighteen metres in height.

The document aims to showcase a desirable urban design response that would enable the extent of residential development to a height and density that requires amendment to the Bathurst Regional Local Environmental Plan 2014. This design strives to align with the guidelines set forth in the 2040 Bathurst Region Local Strategic Planning Statement, as well as in the Bathurst 2036 Housing Strategy and Bathurst Region Heritage Plan documents.

A meticulous urban design analysis of the strategic and local context, site specifics, and desired future character will determine appropriate site-specific development principles and controls. These efforts are directed towards ensuring the optimal contribution to the neighbourhood character of the specific area while aligning with the strategic planning outcomes for the region. Additionally, the design proposal responds to the Heritage Conservation Management Plan crafted for the site, with a commitment to honouring its guidelines and strengthening the overall concept.

DEVELOPMENT SUMMARY

The proposed development entails a mixed-use project situated in an area with heritage architecture and local landscape elements of significance. The site benefits from a subdivision comprising three lots, the first including the heritage-listed convent and its curtilage (Lot 224), the second a heritage listed cottage, facing Busby Street (Lot 223) and the third being the residual parcel of land along the eastern and southern side of the allotment (Lot 225). The planning proposal relates to the approved Lot 225 of the proposed development.

The key components of the proposed development, across the 3 lots, include:

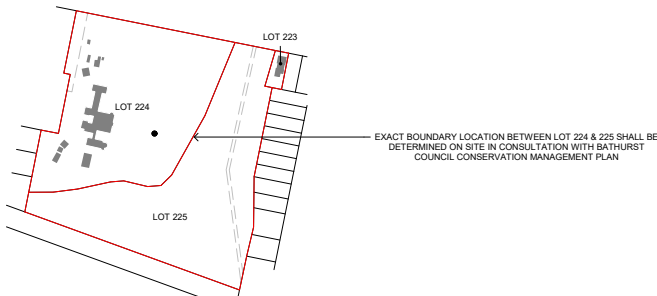
Approved Lot 223 - Gatekeeper's Cottage-
Proposed retention/refurbishment of the existing cottage.

Approved Lot 224 - St Joseph's Mount.
Proposed conversion of heritage buildings into boutique hotel & construction of new function centre & additional accommodation, including:

- Conservation of the 'Logan Brae' building and its existing extension for conversion into a boutique hotel, which may feature (subject to feasibility) a signature restaurant, cellar, and other complementary facilities. Interventions to the built fabric are limited with the most significant elements proposed to be contemporary additions to enable accessibility throughout the common spaces.
- Conservation and restoration of the chapel to enhance its use.
- Construction of additional accommodation options in the form of cabins. Conservation and conversion of the existing cottage to make it part of the external temporary accommodation options.
- Construction of a new pavilion designated as a function centre.
- Removal of agricultural shelters and other non-significant structures.
- Adjustment of the existing road and landscaping to optimize the functionality of the new uses.

Approved Lot 225 - Open ground located east and south of St Joseph's Mount.
Proposed new residential development, including:

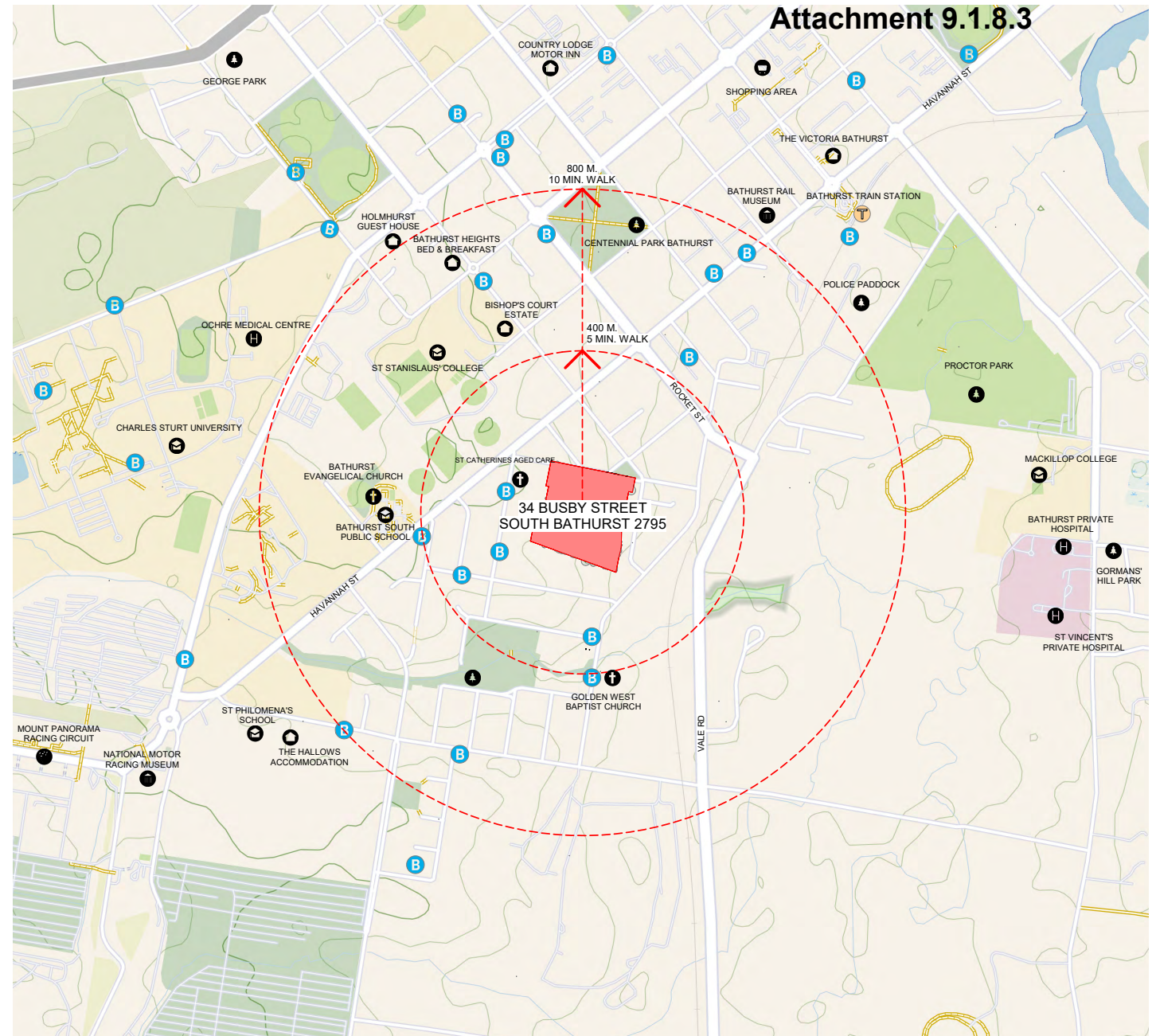
- 7 residential buildings, capable of accommodating a total of 218 apartments.
- Construction of these buildings to a maximum height of 18 metres.
- Visual separation of the residential project from the heritage portion of the site through the preservation of existing vegetation along the lot boundary line and building separation to ensure that views to and from Logan Brae are retained.



VIEW FROM NORTH WEST - PROPOSED DEVELOPMENT

SITE LOCATION

- Situated atop St Joseph's Mount in Bathurst, this site is strategically positioned within a robust regional growth zone, experiencing significant development in both business and population.
- It is approximately 1.5 km southwest of the Bathurst Train Station, 1 km east of Charles Sturt University, and 2 km Northeast of the Mount Panorama Motor Racing Precinct.
- Occupying 46,700 sqm of land, the site faces Busby Street with an approximate frontage of 213 meters.
- St. Joseph's Mount is a site of historical significance, encompassing several heritage buildings and landscaped gardens and grounds. The complex of buildings, situated on the highest section of the site, comprises:
 - 'Logan Brae,' the 1870s 'villa' designed by Edward Gell, subsequently transformed into a novitiates.
 - A chapel constructed in 1916.
 - An accommodation block, built as a posterior extension to the villa in 1962.
 - McAuley Cottage, originally built as a science room and classroom in 1959.
 - A garden shed/outbuilding located to the west of the chapel.
 - A cottage at 28 Busby Street, formerly the gatekeeper's cottage.
- Containing elements of landscape heritage and adorned with mature vegetation, the site holds both heritage and environmental value.
- The surrounding context is characterized by a low to medium-density residential area (R1), featuring a mix of single and double storey pitched roof houses.
- The site is proximate to an arterial road, as well as future community purposes and public infrastructure land (SP2).
- The site is in close proximity to a recreational network, comprising green areas (RE1).



STRATEGIC PLANNING CONTEXT

Planning documents that may affect the area include Bathurst Region Urban Strategy, the Bathurst 2040 Community Strategic Plan, Bathurst 2036 Housing Strategy, Bathurst Regional Heritage Plan 2021-2025 and the Bathurst CBD & Bulky Goods Business Development Strategy 2011.

1. BATHURST REGION URBAN STRATEGY

STRATEGIC RESPONSE

The main land use purposes in proximity to the site are residential, mixed with industrial, services and business parks:

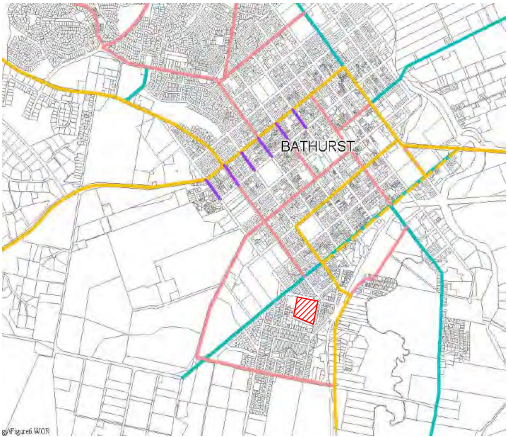
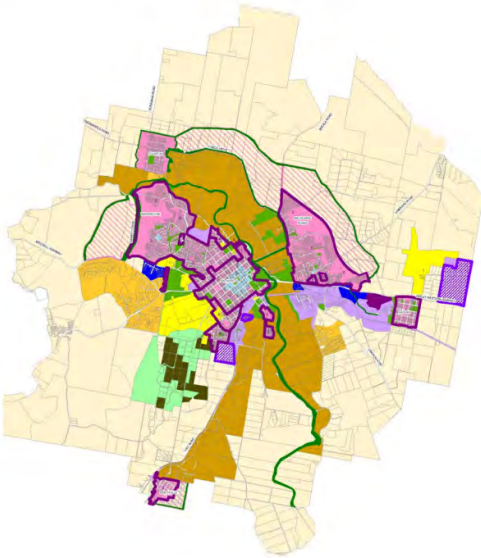
TRANSPORT - BATHURST ROAD HIERARCHY

The site is located between an arterial, sub-arterial and collector road:

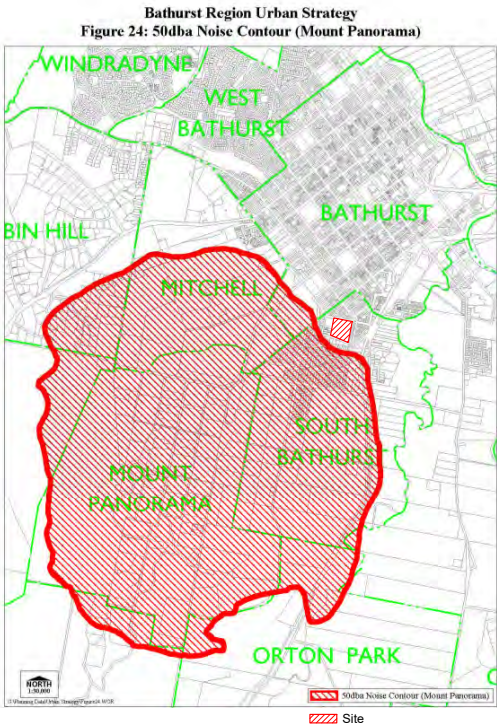
MOUNT PANORAMA NOISE EFFECTS

Opportunities for limited medium density development (dual occupancy) exist within South Bathurst on lands within the 50dBA noise contour and affected by Council Policy discussed earlier. The intent of this policy is to limit new development and residential densities. It is therefore appropriate that future development within the 50dBA noise contour (Mount Panorama) should be restricted to special low density (detached dwellings and granny flats only) to provide consistency with Council's Policy and reduce subdivision potential, supported by noise issues associated with the Mount Panorama environs. It is therefore recommended that land in South Bathurst within the 50 dBA noise contour be reclassified to Precinct 4. Whilst this would result in a minor loss of medium density opportunities it would ensure consistency with existing Council policy.

The site is however, located outside of this precinct.



- ARTERIAL ROAD
- SUB-ARTERIAL ROAD
- COLLECTOR ROAD
- LOAD LIMITED ROUTE
- SITE



2. VISION BATHURST 2040
Bathurst Region Local Strategic Planning Statement

Bathurst is the oldest European inland settlement on mainland Australia and one of the fastest growing inland centres in NSW. Council's Local Strategic Planning Statement, known as Vision Bathurst 2040, proposes a future focussed planning approach to achieve forecast, desired and sustainable growth for the Bathurst Region. The Bathurst 2036 Housing Strategy is a strategic document which will assist Bathurst Regional Council encourage a range of housing that meets the existing and future housing needs of the city of Bathurst.

The purpose of the LSPS is to guide how land is used in the Bathurst Region to achieve desirable economic, social and environmental outcomes. Vision Bathurst 2040 outlines how Council will manage land-use change as the region moves towards a population of approximately 55,000 over the next 20 years.

The 4 main topics contemplated are infrastructure and transport, diverse and strong economy, heritage and sustainable environment, and dynamic and healthy communities. Within those, the relevant ones for this Planning Proposal would be:

1. Infrastructure and transport

Planning Priority 2 - Align development, growth and infrastructure
Planning Priority 3 - Connect the Bathurst Region

2. Diverse and strong economy

Planning Priority 5 - Ensure a suitable supply of employment and urban services land
Planning Priority 6 - Protect Mount Panorama (Wahluu) as a motor sport and event precinct
Planning Priority 7 - Leverage new opportunities

3. Heritage and sustainable environment

Planning Priority 10 - Protect European and non-Indigenous heritage
Planning Priority 11 - Maximise the Region's tourism opportunities
Planning Priority 12 - Enhance environmentally sensitive land and biodiversity
Planning Priority 14 - Create a sustainable Bathurst Region

4. Dynamic and healthy communities

Planning Priority 16 - Provide new homes
Planning Priority 17 - Create vibrant and sustainable local villages and rural settlements

INRASTRUCTURE AND TRANSPORT - BATHURST REGION STRUCTURE PLAN

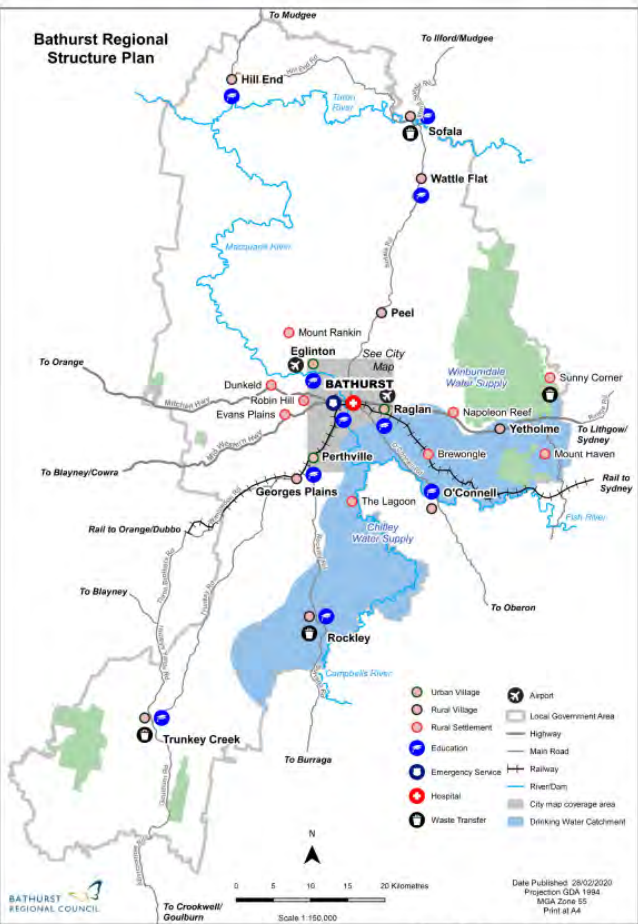


Figure 2: Bathurst Region Structure Plan

CITY OF BATHURST STRUCTURE PLAN

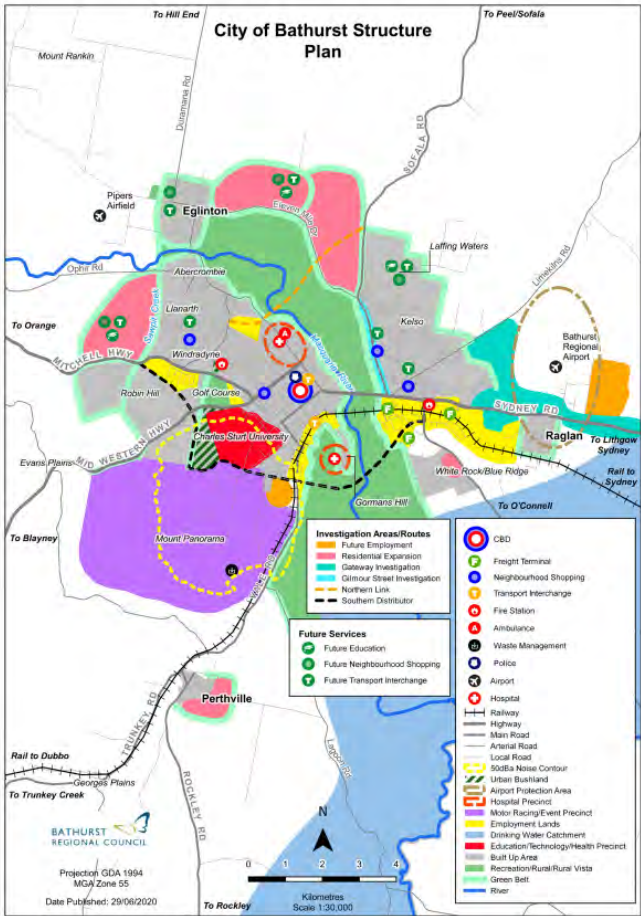


Figure 3: City of Bathurst Structure Plan

3. BATHURST 2036 HOUSING STRATEGY

The Bathurst 2036 Housing Strategy is a strategic document which will assist Council to encourage a range of housing that meets the existing and future housing needs of the City of Bathurst. The Strategy only considers the urban areas of the city zoned R1 General Residential, R2 Low Density Residential, B1 Neighbourhood Centre and B3 Commercial Core. Investigations relating to rural residential development (zone R5 Large Lot Residential) will be completed as part of a future review of the Bathurst Region Rural Strategy. The Housing Strategy will guide how residential development in Bathurst will be planned and managed until 2036 and identify the demand and likely supply of residential land to and beyond 2036.

The Housing Strategy will enable Council to proactively manage how and where future housing and residential development will be provided within Bathurst until 2036. It will also consider how the associated impacts will be managed, therefore providing certainty to both residents and developers alike.

Volume 1 of the Housing Strategy has identified the following key priorities:

- The opportunities that are available to extend the life of the existing vacant land stocks, particularly through increased living densities, both medium density housing and smaller lot size.
- That the population of the City will age and household size will continue to decline. As a result housing diversity and choice will become increasingly important.
- The key messages from the community for its vision for housing include amenity and liveability, housing choice and density and sustainability. Importantly the people of Bathurst want to limit urban sprawl but at the same time maintain the rural feel of Bathurst and ensure Bathurst does not become 'just like Sydney'.

Volume 2 of the Strategy addresses these priorities through an examination of:

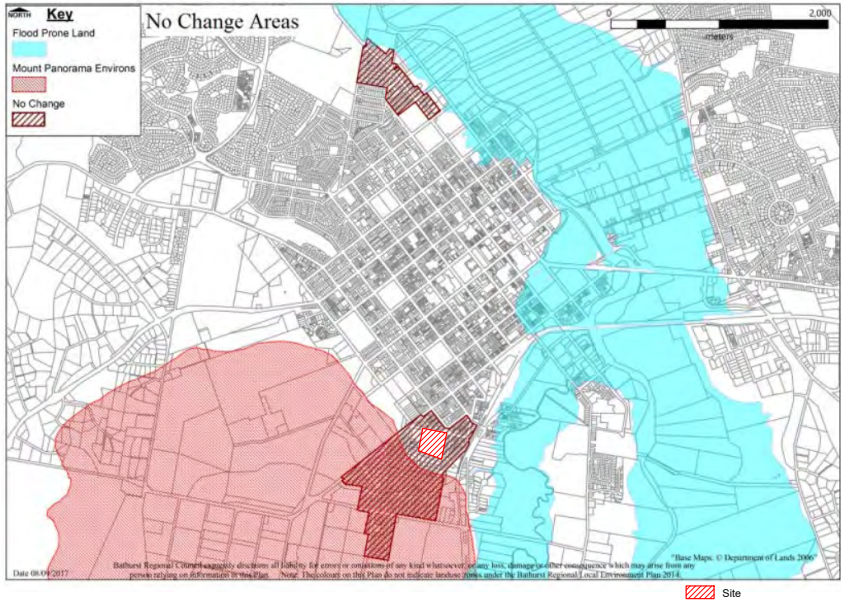
- The strategic context for growth
- Impacts for infrastructure provision
- Opportunities for growth and change.

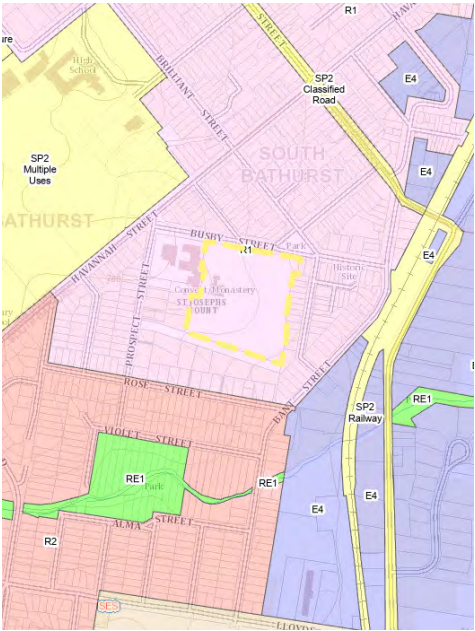
HERITAGE CONSERVATION AREAS IN BATHURST MAP

COMMENT: This document's reference concept design considers and adheres to the guidelines outlined in the Bathurst Region Heritage Plan 2021-2025, along with the Conservation Management Plan for the site.



NO CHANGE AREAS IN BATHURST MAP



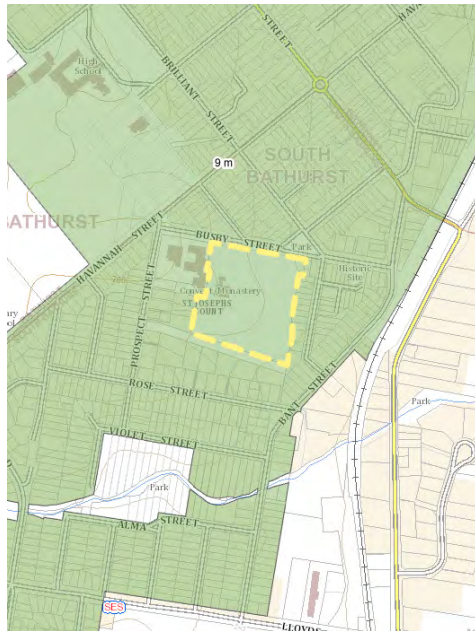


- R1 GENERAL RESIDENTIAL
- R2 LOW DENSITY RESIDENTIAL
- RE1 PUBLIC RECREATION
- RU1 PRIMARY PRODUCTION
- SP2 INFRASTRUCTURE - MULTIPLE USES
- E4 GENERAL INDUSTRIAL

Land Zoning Map

Subject site is within a R1 General Residential Zone

COMMENT: The present document aims to change the zoning to R3 - Medium Density Residential.

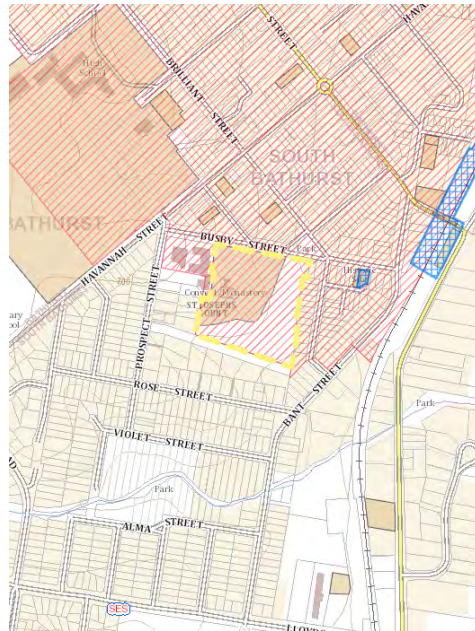


9 - 9.9 m

Height of Buildings

There is a 9 meters maximum building height control for the subject site. Surrounding land is affected by a height control of 9 metres.

COMMENT: The proposed concept design deviates from the current maximum building height control. As elaborated later, a justification is provided for introducing a new maximum building height control of 18m. for this site.

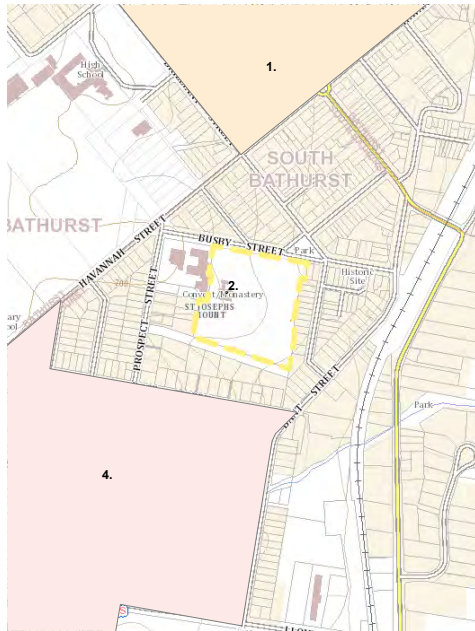


- CONSERVATION AREA - GENERAL
- STATE HERITAGE REGISTER CURTILAGE (NON-EPI)
- ITEM - GENERAL

Heritage

The site is comprised in the general conservation area. The Bathurst Region Urban Strategy 2007 and the Bathurst Region Heritage Study 2007 establish the key priorities and objectives relevant to urban design and heritage conservation.

COMMENT: The proposed concept design carefully considers the Bathurst Region Heritage Plan. The intervention proposed for the existing buildings and their integration with the proposal is guided by a specific Conservation Management Plan prepared by Ray Christison (High Ground Consulting).



- 1. PRECINCT 1: MEDIUM DENSITY
- 2. PRECINCT 2: LOW TO MEDIUM DENSITY
- 4. PRECINCT 4: LOW DENSITY - SPECIAL

Density Plan

According to the Bathurst Regional Development Control Plan 2014, the residential density permitted in Precinct 2, and consequently on the subject site, should not exceed 60 persons per hectare.

COMMENT: The present document aims to raise the density control from 60 persons per hectare to 105 persons per hectare, if encompassing the entire surface area of the site (Lots 223, 224, and 225). If the density is calculated solely for Lot 225, the density control should be increased to 215 persons per hectare.

- The site currently features the following buildings:
 - A convent consisting of 21 rooms, which includes the original structure, Logan Brae, along with the annex extension.
 - A chapel.
 - A self-contained cottage.
 - A 3-bedroom residence or cottage.
 - Small structures designated for planting and farming with low heritage importance.
- The site is divided into three lots, designed to align with the natural topography contours and existing vegetation. These two lots are intended for distinct uses.
- Adjacent commercial and residential buildings:
 1. An aged care building, which has ceased operation.
 2. A nursing home and church.
 3. One-story residential buildings.



CURRENT ACCESS TO PUBLIC TRANSPORT

The site is located in close proximity to the following existing public transport services:

- Bathurst Train Station at Keppel St., 1.5 km from the site.
- A bus stop in Prospect St (approximately 100 m. from the site), for bus route 528 - West & South Bathurst.
- A bus stop in Lewins St (approximately 30 m. from the site), for bus route 526 - South - West Bathurst Town Loop.








CURRENT VEHICULAR ACCESS TO SITE

The site is accessible via Busby St., featuring three different access points, two of which are for the adjacent Lot 224 and one for the adjacent Lot 223 :

- When approaching from the East (likely accessed from Vale Rd or Sydney Rd), the first access point leads to a private access for the cottage on the Northeast corner of the adjacent Lot 223.
- The middle access serves as the main entrance of the adjacent Lot 224, leading to a drop-off path loop with direct views of the heritage buildings.
- The access on the northwestern corner provides entry to the rear of the complex and existing parking out the rear of Lot 224.
- There is no vehicular access for the Lot 225, subject to this Planning Proposal. A new vehicular access point will need to be provided for the proposed development .

CURRENT PEDESTRIAN ACCESS TO SITE

There is no pedestrian pathway along the southern side of Busby St.

-  VEHICULAR ACCESS
-  EXISTING PARKING AREA
-  RAILWAY LINE
-  SECONDARY ROAD
-  EXISTING PEDESTRIAN CIRCULATION PATHS
-  EXISTING VEHICLE CIRCULATION PATHS
-  BUS STOP



TOPOGRAPHY AND DRAINAGE

- The site slopes from west to east with a fall of 19 m. The existing buildings are located on the higher part of the site except, for the Gatekeeper's Cottage.
- On the southern boundary, extending beyond the site, there is a drainage reserve approximately 20 meters wide, as outlined in the Stormwater Management Plan, which descends from west to east. Following the Vegetation Management Plan, it features a formalized grassed swale with a series of rock gabion berms to regulate the flow of stormwater through the area. This drainage line is not mapped and typically does not have baseflow or standing water in ponds along the channel.

SOLAR ORIENTATION

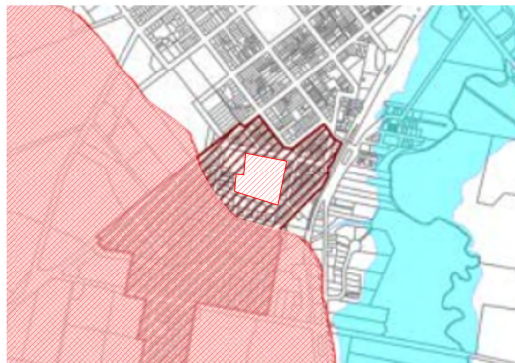
- The site will be exposed to high levels of sunlight from the north throughout the year.

FLOOD-PRONE LAND

- The site is more than 350m away from the flood-prone area.

NOISE IMPACT FROM MOUNT PANORAMA

- The 50 dBA noise impact area from the Mount Panorama racing circuit does not extend to the subject site.



50 dBA NOISE CONTOUR
(MOUNT PANORAMA ENVIRONS)

FLOOD PRONE LAND

EXISTING BUILDINGS

TREE MASSES

DRAINAGE RESERVE

DIRECTION OF FALL

MAIN VIEWS

50 dBA NOISE CONTOUR
(MOUNT PANORAMA ENVIRONS)

HIGHEST POINT ON SITE - 695m

LOWEST POINT ON SITE - 670m

RL 693m

RL 690m

RL 687m

RL 684m

RL 681m

RL 678m







RL 675m

RL 672m



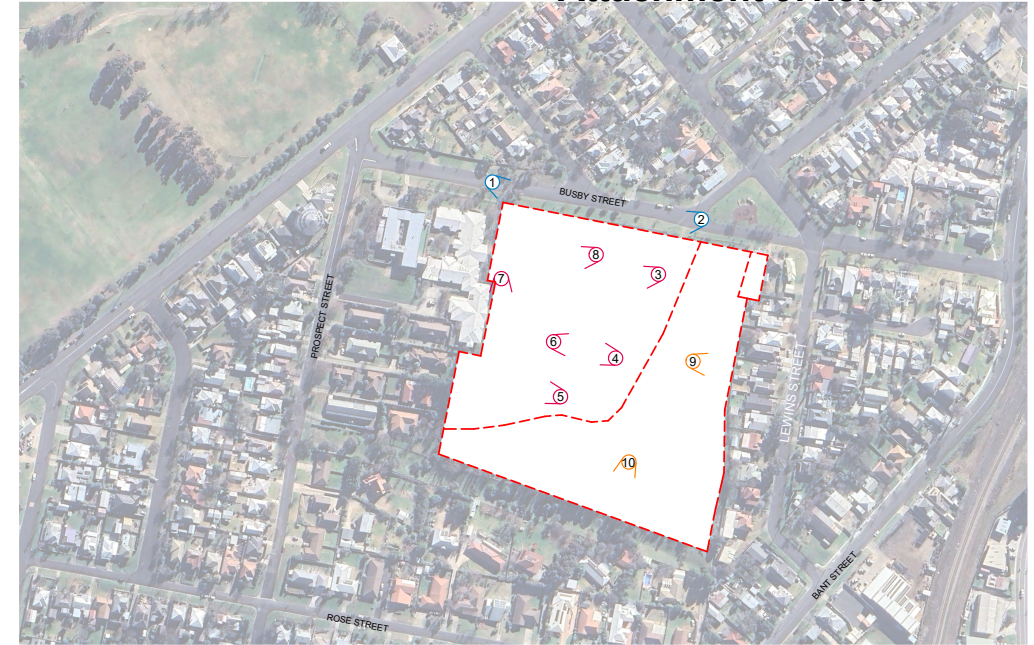
EXISTING VEGETATION

- Existing vegetation within the site is predominantly mass-planted trees and grassed areas. Dense planting along the northern and southern boundaries eases the relationship with neighbouring uses and buildings. Within the site there are various zones where dense patches of vegetation offering shade contrast with wide open spaces. Some ornamental elements and gardens contribute to the landscape that wraps around three sides of the building complex.
- The Conservation Management Plan (CMP) for the site, prepared by High Ground Consulting, encompasses several sections relevant to vegetation. These sections have been reviewed in the Vegetation Management Plan by Applied Ecology Pty Limited. Some of the vegetation identified in the Conservation Management Plan as worth preserving has since been damaged or has caused damage. The Vegetation Management Plan will serve as the primary document dictating conservation policies for existing trees.
- The CMP advocates for the establishment of a 20-meter buffer zone within Lot 224 along its boundary with Lot 225. This zone is intended for the planting of large trees and understorey to strengthen existing planting within Lots 224 and 225 and to create a visual screen between St Joseph's Mount and the adjacent property.
- The Vegetation Management Plan includes a site management policy for the two main lots (224 and 225), outlining management actions for various identified areas such as wetlands, vegetation management, and the arborist component. All trees have been evaluated based on their heritage, ecological, and aesthetic value, assigning them a low, medium, or high retention value.
- The CMP also categorizes tree groupings into three types: boundary tree planting, specimen trees in groups, and tree planting along the driveway.

-  BOUNDARY TREE PLANTING WITH LANDSCAPE HERITAGE VALUE
-  SPECIMEN TREES IN GROUPS WITH LANDSCAPE HERITAGE VALUE
-  TREE PLANTING ALONG THE DRIVEWAY WITH LANDSCAPE HERITAGE VALUE
-  EXISTING TREES WITH NO SIGNIFICANT VALUE WITHIN SITE
-  EXISTING TREES ADJOINING SITE
-  MASS GRASSED AREA



Attachment 9.1.8.3



EXISTING VIEWS TOWARDS THE SITE

- Side views of the heritage building from Busby St.
- Views towards the heritage landscape elements, such as the carriage loop, gardens and protected trees, from Busby Street (views 6, 7).
- Views characterized by trees acting as green buffers from the adjacent residential buildings.

EXISTING VIEWS WITHIN THE SITE

- Views between the two main lots (224 & 225) dominated by masses of trees along the driveway. The Vegetation Management Plan aims to potentiate this visual barrier between Lot 224 and Lot 225, through the establishment of a 20-meter buffer zone which will be reserved for planting large trees and understorey vegetation.
- Views from the heritage buildings to the gardens, as well as from the gardens back to the heritage buildings on Lot 224 (views 1, 3, 4).

EXISTING VIEWS FROM THE SITE

- Views to the eastern dwellings (view 2)
- Views to Busby St.
- Views to the drainage reserve and residential surrounding dwellings on the South (view 9)

EXISTING VIEWS TO BE MAINTAINED

- The principal visual links that must be retained, after the Conservation Management Plan, are:
 1. Views of the eastern façade of St Joseph's Mount from the driveway leading to the front of the buildings.
 2. Views from the buildings to the drive and gardens and views over the garden and surrounding properties to the countryside around Bathurst.
 3. Views along the front of the complex of buildings.



01. ACCESS ROAD (BUSBY ST) FROM THE NORTH EAST



02. ACCESS ROAD (BUSBY ST) FROM THE NORTH WEST



03. EXISTING GRAVEL DRIVEWAY IN SITE



04. VIEW FROM GARDENS TOWARDS MAIN ELEVATION OF LOGAN BRAE



05. VIEW OF MCAULEY COTTAGE FROM NORTH



06. VIEW FROM LOGAN BRAE TERRACE TO CARRIAGE LOOP AND GARDENS



07. EXISTING ROAD IN THE BACK OF THE BUILDING



08. FORMER VEGETABLE GARDEN AND EXISTING LIGHT FARMING STRUCTURES



09. SOUTH EAST VIEW FROM RESIDENTIAL LOT



10. VIEW FROM RESIDENTIAL AREA INTO SOUTHERN SURROUNDING DWELLINGS



EXISTING SITE PLAN

- St. Joseph's Mount is situated on a plot of land bordered by Busby Street, Prospect Street, Rose Street, and Lewins Street in Bathurst. Over time, the boundaries of this parcel have undergone subdivision, with Busby Street emerging as the primary street frontage.
- The significant heritage features in the site, as identified within the Conservation Management Plan, are Logan Brae House, St Joseph's Mount Chapel, the Novitiate Wing, McAuley Cottage, the Gatekeeper's Cottage and the gardens (including the eastern driveway and its planting, the labyrinth and the garden statues).
- Logan Brae is a late Victorian mansion designed by the local architect Edward Gell. Under the custodianship of the Sisters of Mercy, the property has been maintained, preserving the original style and architectural features. The original building has been subject to modifications and extensions, which have been integrated into the structure, aligning with the original building's form. The use of building materials, fenestration, and roof lines is intended to foster a sense of harmony. The Conservation Plan states that design, style and taste should be preserved through the retention of the form of existing buildings and the conservation of existing colour schemes.
- The interrelationships between existing buildings comprising St Joseph's Mount should be retained. It is considered that the functions of individual segments of the complex could be altered in accordance with clearly defined conservation policies.
- The scale of the existing buildings and garden should be retained.
- The principal visual links that must be retained are:
 1. Views of the eastern façade of St Joseph's Mount from the driveway leading to the front of the buildings.
 2. Views from the buildings to the driveway and gardens and views over the garden and surrounding properties to the countryside around Bathurst.
 3. Views along the front of the complex of buildings.



DEVELOPMENT OPPORTUNITIES

- Vehicular access points on Busby Street are proposed to be maintained. In terms of vehicular paths, the carriage loop facing the main heritage building is proposed to be maintained and linked to the rear vehicular access, to generate a vehicular path across the site in lot 224, linking different parking opportunities and generating a vehicular network within the site, instead of two separate ones.
- Heritage buildings constitute a great opportunity for adaptive reuse while conserving the important characteristics of these. The structures of these buildings are an opportunity to inform the rest of the development, responding to their main axis, composition and planning order.
- Buildings with small or no heritage value (such as gardening sheds) present a demolition opportunity to develop these areas with a more coherent built fabric.
- Big trees along the driveway accompany the road and act as a green buffer, limiting the views and providing a separation between the two different future uses (residential and hospitality).
- Big canopy trees are present and constitute an opportunity for the conservation of the heritage landscape.
- The required separation of a minimum of 6 m. with the residential buildings to the east of the site provides an opportunity for the placement of an access lane for the residential development, following the site boundary and adapting to the topography.

- POTENTIAL RESIDENTIAL ACCESS
- EXISTING VEHICLE ACCESS
- ↑ ↑ ↑ NORTH ORIENTATION
- - - EXISTING VEHICLE ACCESS
- - - CONNECTION VEHICLE ACCESS
- ⇒ VIEWS
- EXISTING BUILDING WITH SIGNIFICANT HERITAGE VALUE
- GREEN BUFFER - CONSERVATION OPPORTUNITY
- BIG CANOPY TREES - CONSERVATION OPPORTUNITY
- BUILDINGS WITH SMALL/NO HERITAGE VALUE - DEMOLITION OPPORTUNITY
- STORMWATER OVERLAND FLOW PATH - GREEN FRONTAGE & NEIGHBOURS SEPARATION
- ACCESS LANE OPPORTUNITY
- GREEN FRONTAGE OPPORTUNITY TO STREET
- MAIN EXISTING AXIS
- * HIGHEST POINT ON SITE - 695m
- * LOWEST POINT ON SITE - 670m



DEVELOPMENT CONSTRAINTS

- Setbacks to neighbouring lots.
- Overshading control on the neighbouring buildings.
- Potential new construction on the neighbouring 50 Busby St. will mean different shadowing on the subject site, different typologies, footprints and relationships between the built form, which will need to be designed to accordingly.
- Constraints when complying with solar access, due to the desired building orientation in relation to the heritage fabric, topography and the geometry of the site boundaries rather than the optimal solar orientation.
- Limited possibilities of intervention within the heritage buildings.
- Aesthetics and architectural approach need to consider and respect the character of the existing heritage buildings within the site.
- The significant slopes and irregular topography pose challenges for the overall design, affecting matters such as vehicular circulation, pedestrian access solutions, and increasing the incidence of building cast-shadows.
- Pedestrian footpaths and connections not currently provided.

- SITE BOUNDARY
- - - EXISTING VEHICLE ACCESS
- > LIMITED DISABILITY ACCESS
- ADJACENT SINGLE DWELLING
- EXISTING BUILDINGS TO BE CONSERVED
- POSSIBLE OVERSHADOWING
- EXISTING TREES ON SITE
- EXISTING TREES ADJACENT TO SITE





PLATE 1 - St Joseph's Mount on the day it was blessed (1909)



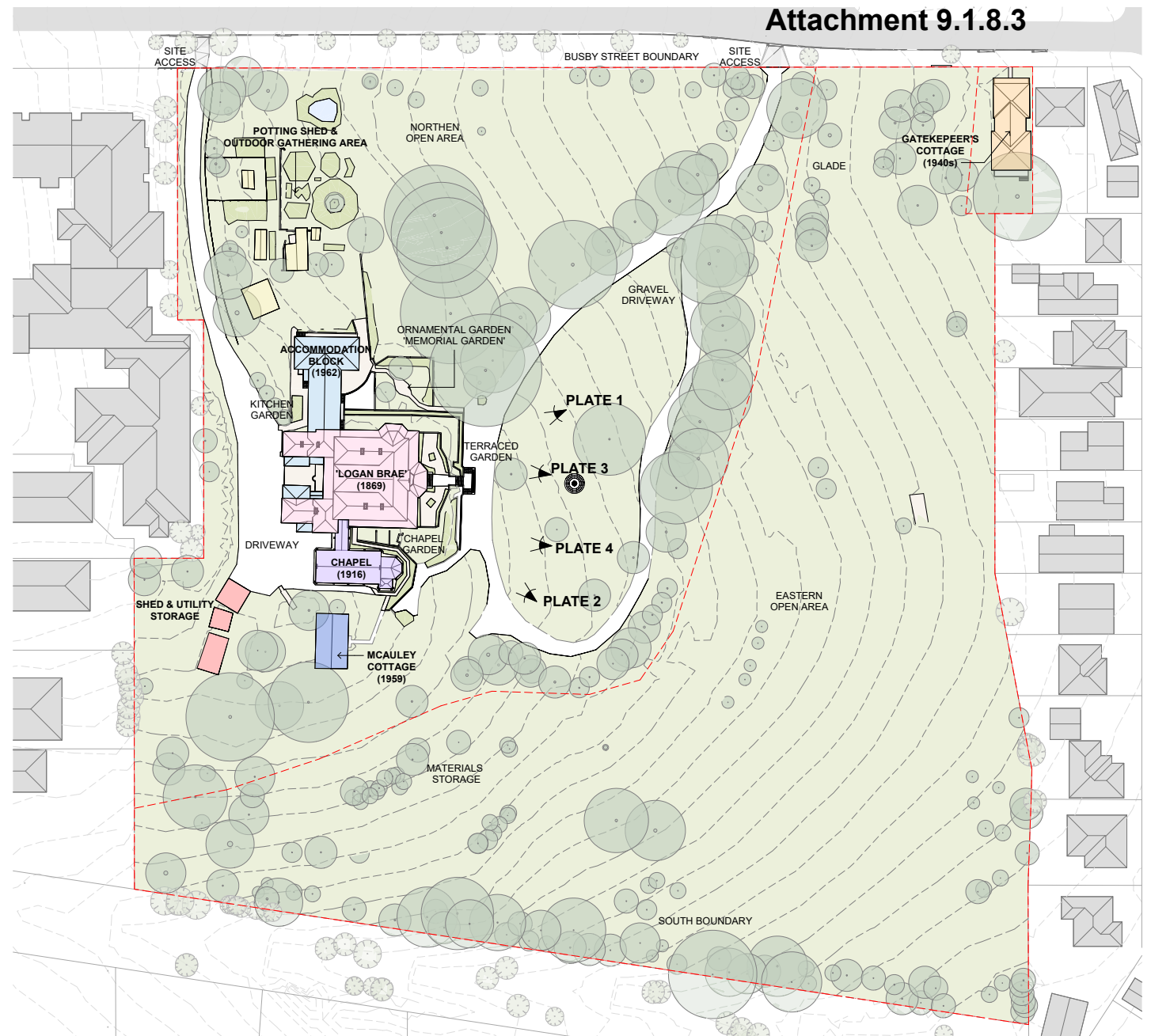
PLATE 2 - St Joseph's Mount not long after the construction of the chapel (1916)



PLATE 3 - Southern section of a panorama printed in Sisters of Mercy, Bathurst Centenary booklet (1966)



PLATE 4 - Northern section of a panorama printed in Sisters of Mercy, Bathurst Centenary booklet (1966)



GENERAL HERITAGE SITE PLAN - CONSTRUCTION PHASES

- | | |
|--|---|
| 'LOGAN BRAE' VILLA (1869) | ACCOMMODATION BLOCK (1962) |
| CHAPEL (1916) | GARDEN SHED / OUTBUILDING |
| GATEKEEPER'S COTTAGE (1940) | POTTING SHED & OUTDOOR GATHERING AREA |
| FORMER SCIENCE ROOM & CLASSROOM (1959) | |

0 25 50

1:500 @A1
1:1000 @A3

SITE PLAN - HERITAGE
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
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PP
1.14



PLATE 1 - Terraced gardens on the eastern side of Logan Brae & a statue of Christ



PLATE 2 - Driveway gates



PLATE 3 - Potting shed & outdoor area



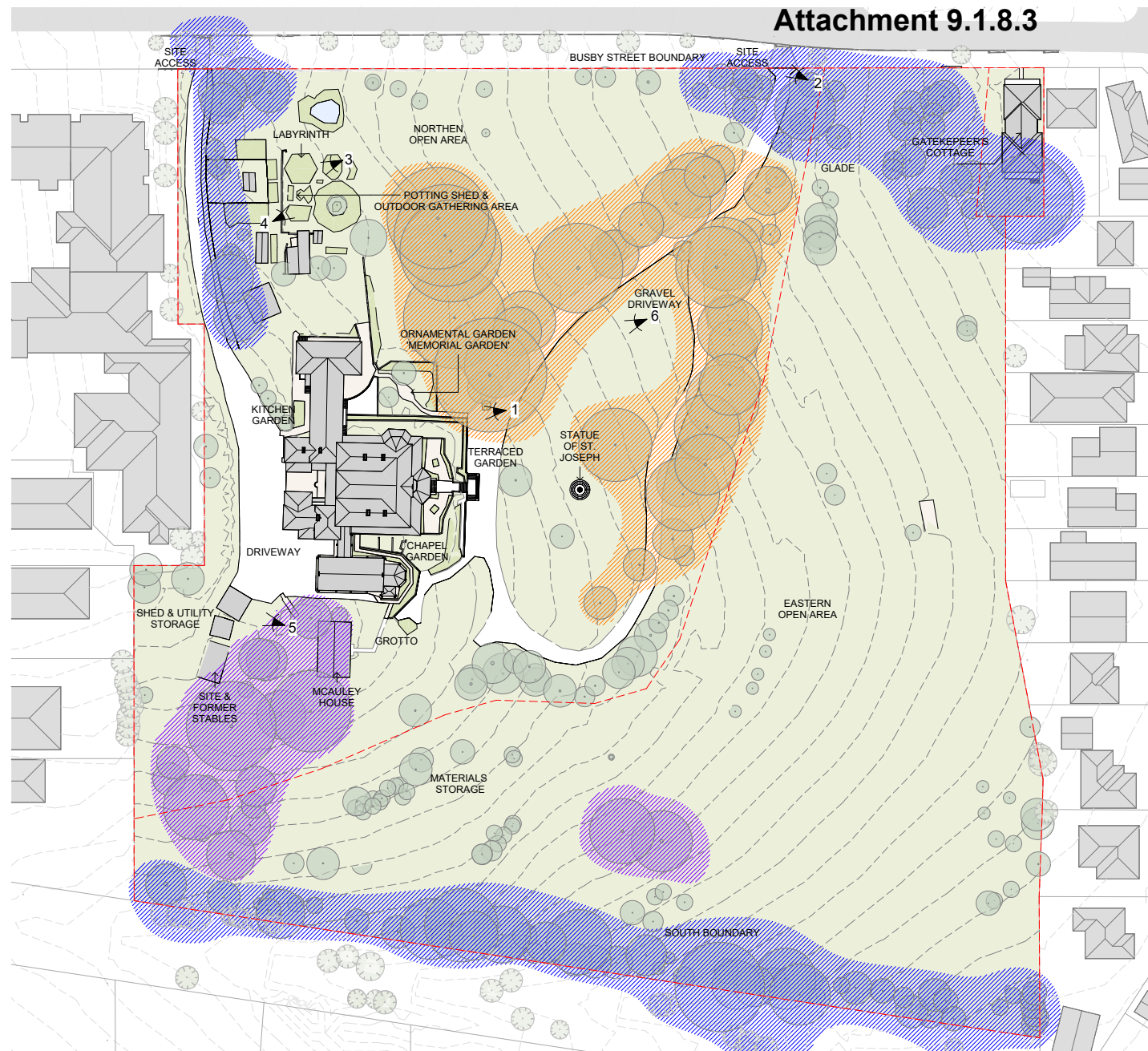
PLATE 4 - Reconstructed labyrinth



PLATE 5 - Shed & utility storage











PLATE 6 - Tree plantings lining the driveway

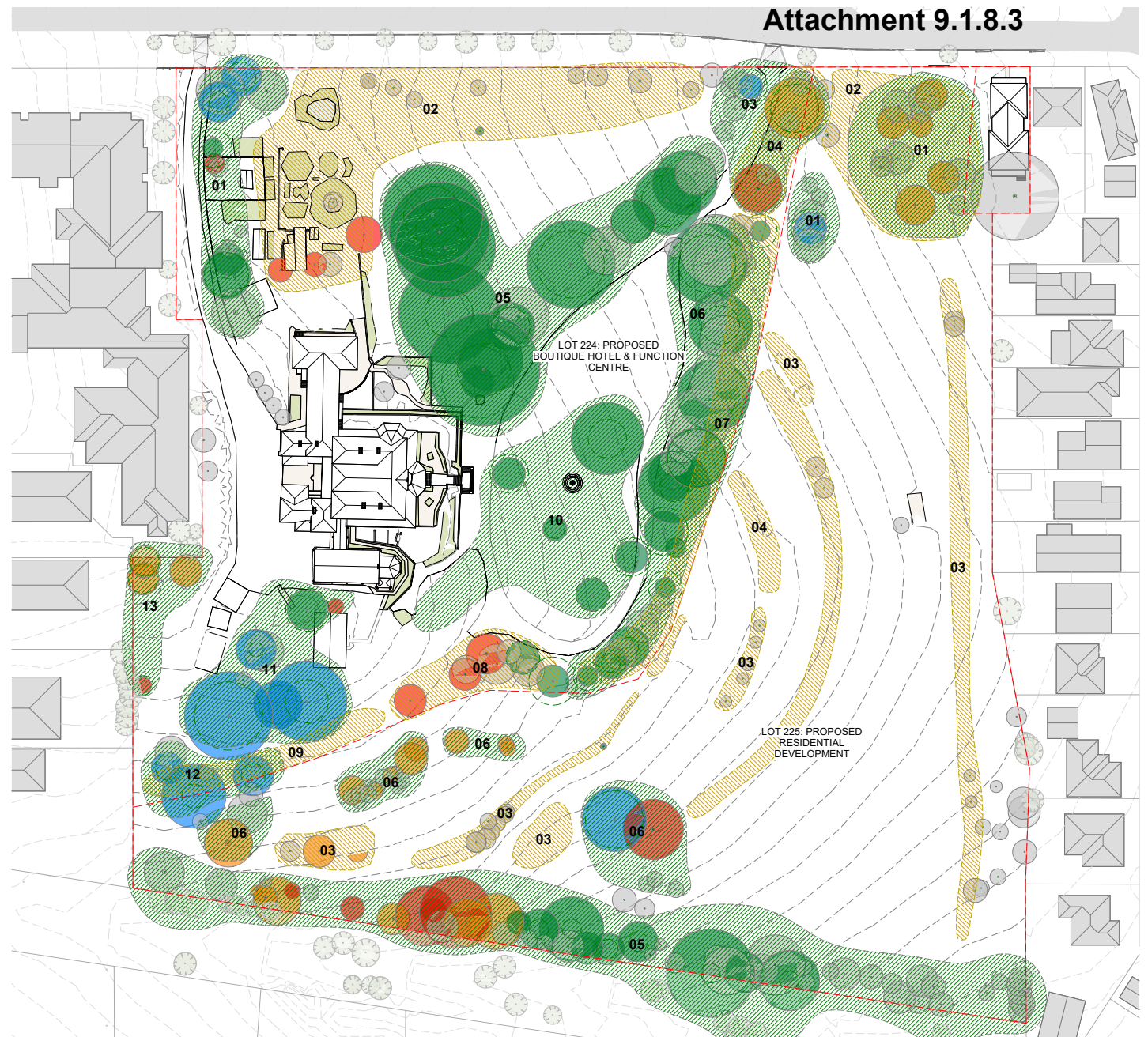


0 25 50

1:500 @A1
1:1000 @A3



- XX** N° ARBORIST & VEGETATION GROUP
-  ARBORIST COMPONENT
-  VEGETATION MANAGEMENT
-  TREE VALUE HIGH
-  TREE VALUE MEDIUM
-  TREE VALUE LOW
-  TREE TO BE REMOVED
-  NO INF.
-  TPZ - TREE PROTECTION ZONE



0 50 100

1:1000 @A1
1:2000 @A3





EXISTING BUILDINGS & ELEMENTS
PROPOSED TO BE DEMOLISHED

0 25 50

1:500 @A1
1:1000 @A3

EXISTING CONDITION
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
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2.01

1. CONSERVATION & DEMOLITION OF EXISTING STRUCTURES

- The proposal includes the conservation of the main buildings, such as Logan Brae and its extensions, the chapel, and both cottages.
- The existing farming buildings, deemed to have low heritage importance within the Conservation Management Plan, are proposed to be demolished.

2. MAIN AXIS & SETBACKS

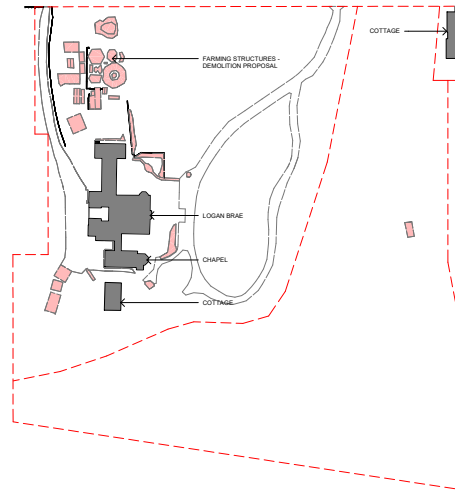
- The maintained buildings define clear axes and orientations that are parallel to the frontage of the site on Busby Street.
- While there are currently no setbacks applicable to the proposed development, the below setbacks are proposed:
 - 6m to the southern boundary, where the lot borders a green corridor serving as stormwater overland flow path.
 - 12m to the eastern boundary adjoining the rear gardens of residential dwellings. The proposal includes an articulation zone of 1.5 m. that allows the detailed resolution of the final bulk and shape of the buildings.

3. SUBDIVISION OF THE SITE

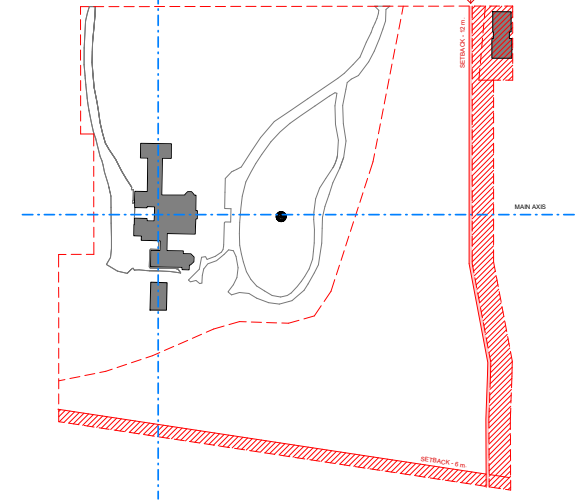
- The approved subdivision of the site into three lots caters to the potential for two distinct uses: the first lot accommodating an existing cottage (Lot 223), the second intended for a boutique hotel featuring additional accommodation options and a function center (Lot 224), and the third lot designated for residential use (Lot 225).

4. SITE ACCESS & POTENTIAL DEVELOPMENT AREAS

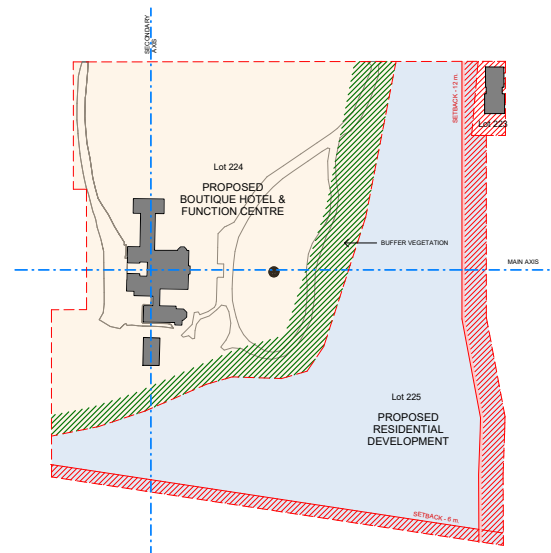
- The maintained buildings define clear axes and orientations that are parallel to the frontage of the site on Busby Street. The intention of the proposal is to respect the orientation of the main heritage buildings and establish a bulk and scale that engages harmoniously with them.
- Due to the dimensions and shape of the lot, the two aforementioned directions are appropriate. Considering the logical distribution, blocks will be located along the longer East side and the South side.
- The proposal will include a new pedestrian and vehicular access for residential purposes.



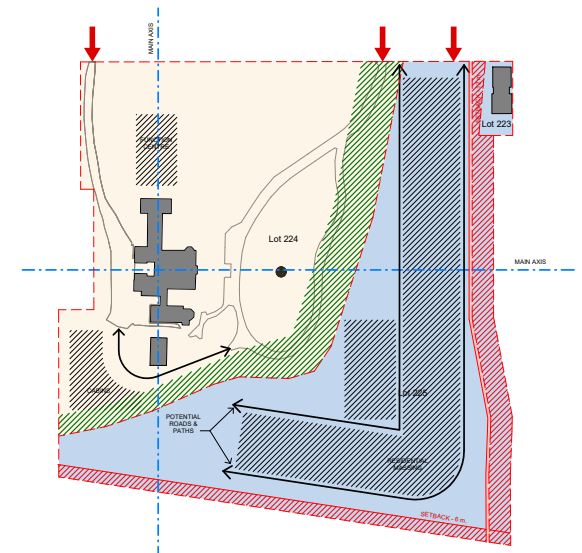
1. CONSERVATION & DEMOLITION OF EXISTING STRUCTURES



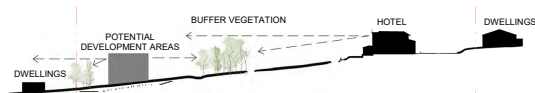
2. MAIN AXIS & SETBACKS



3. SUBDIVISION OF THE SITE



4. SITE ACCESS & POTENTIAL DEVELOPMENT AREAS



ALTERNATIVE PROPOSED RESIDENTIAL SCHEMES

- Different massing alternatives have been proposed, with a specific unit mix and block design developed for each of them. Conversations with Council have led to Option 4, which comprises higher density and orthogonal medium-length blocks.

OPTION 1 - ORTHOGONAL MEDIUM-SIZED BLOCKS

- Exploration of a smaller footprint, allowing greater setbacks to surrounding buildings, but a lower density.
- Blocks aligned with the heritage building axis.
- Vehicular & pedestrian circulation through the centre of the proposal.

OPTION 2 - ROTATED MEDIUM-SIZED BLOCKS

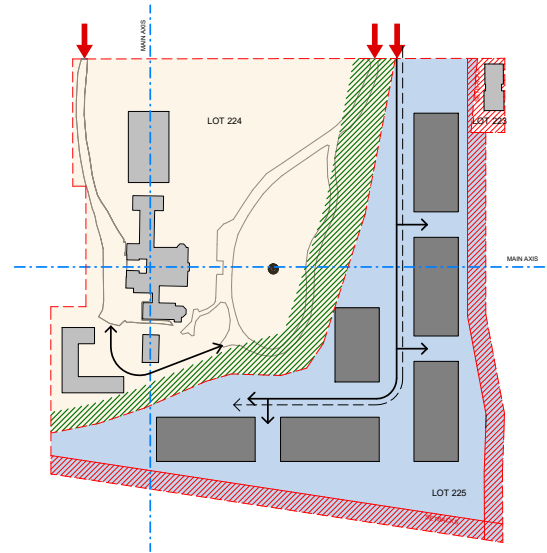
- Exploration of the alignment of the residential blocks following the topography, for a more dynamic articulation of the general shape.
- Slightly larger footprint than the previous option.
- Vehicular & pedestrian circulation through the centre of the proposal.

OPTION 3 - LARGE FOOTPRINTS N-S

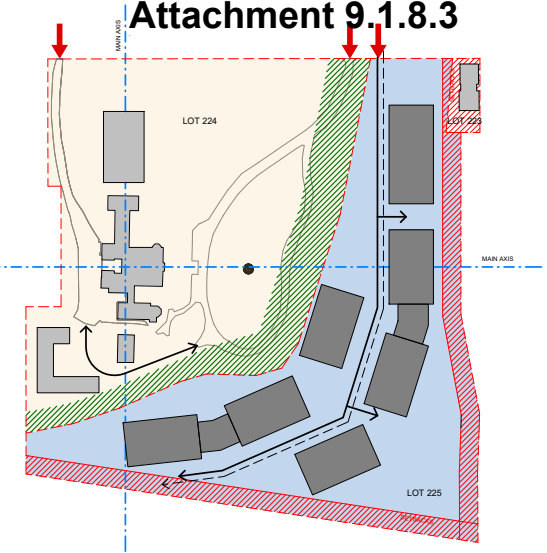
- Exploration of longer blocks aligned with the existing heritage buildings' axis. Introduction of a curving volume on the corner.
- Vehicular & pedestrian circulation through the centre of the proposal.

OPTION 4 - EXTERNAL LANE & REDUCED BLOCKS

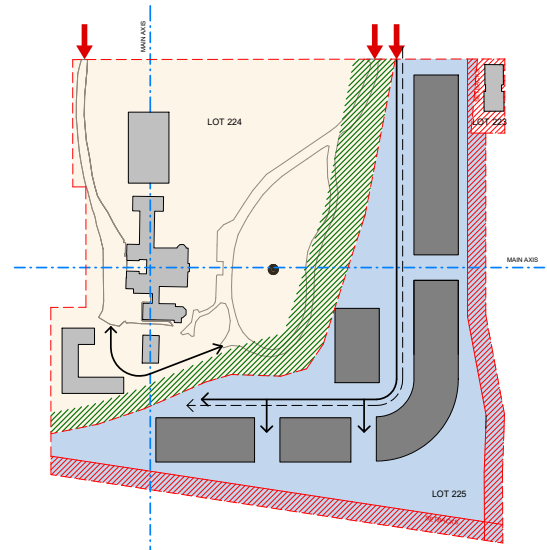
- Maximizing density while maintaining good separation from the surroundings and allowing a medium-block length.
- Increased number of openings to maximise solar access, cross-ventilation and passive surveillance.
- Separation of vehicular & pedestrian circulation into two parallel lanes, generating the opportunity for better communal areas on the higher lane.
- Internal roadway along the site boundaries to increase building separation and maximize visual privacy between allotments external to the site.



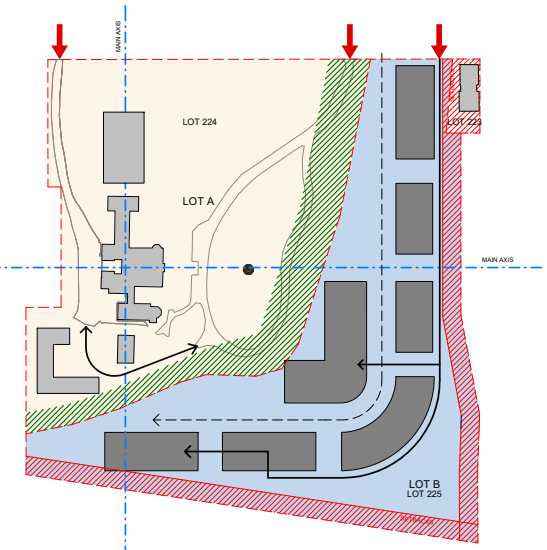
OPTION 1 - ORTHOGONAL MEDIUM-SIZED BLOCKS
1 : 1250



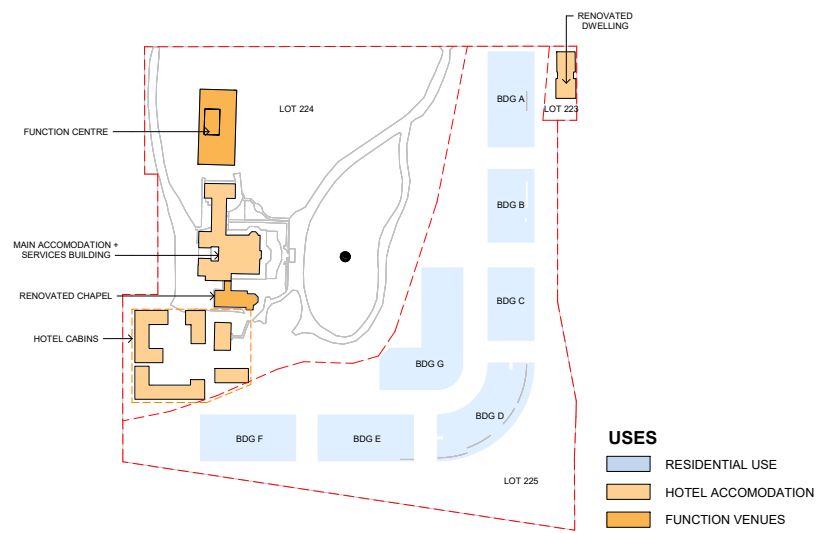
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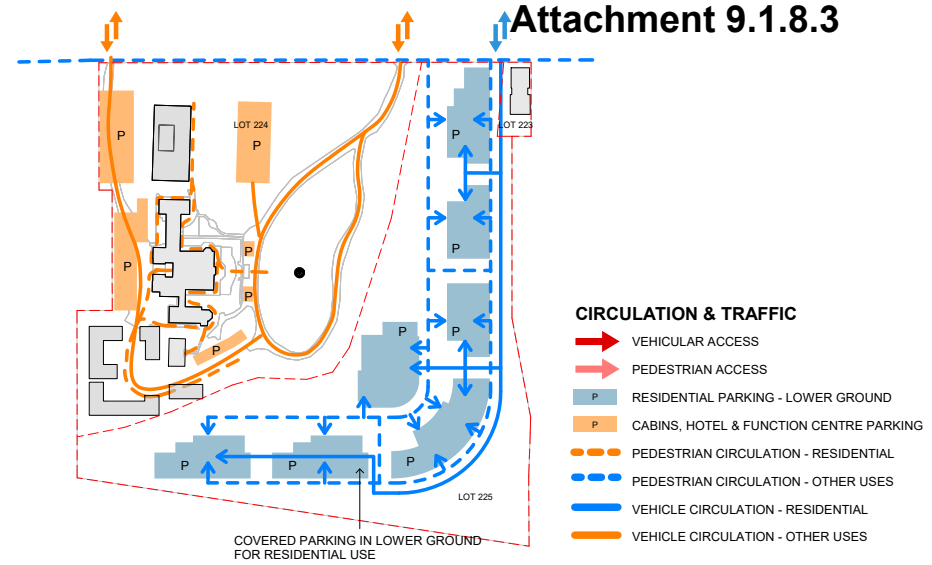
OPTION 3 - LARGE FOOTPRINTS NORTH-SOUTH
1 : 1250



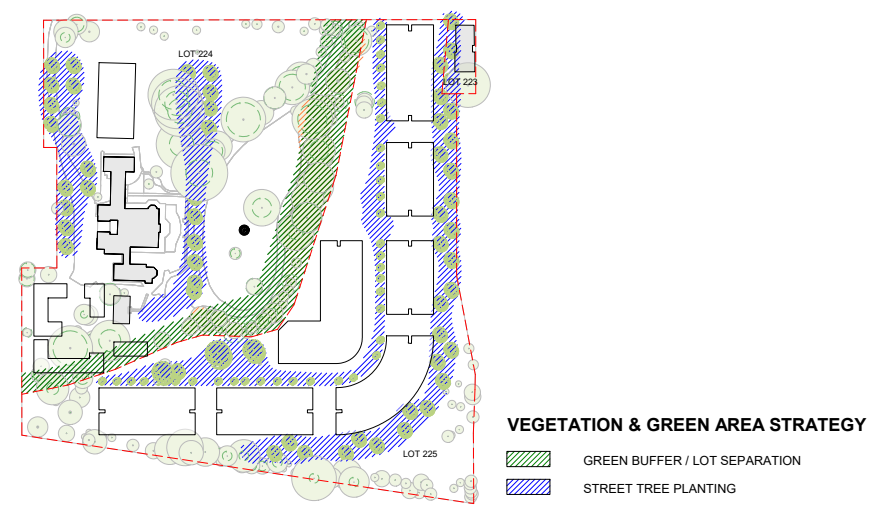
OPTION 4 - EXTERNAL LANE & REDUCED BLOCKS
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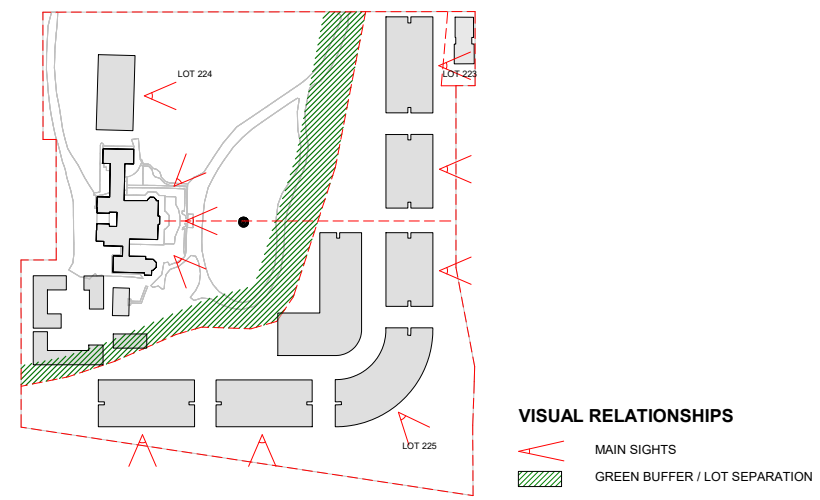
PROPOSED USES
1 : 1250



PROPOSED CIRCULATION & TRAFFIC
1 : 1250



PROPOSED VEGETATION & GREEN AREA STRATEGY
1 : 1250



PROPOSED VISUAL RELATIONSHIPS
1 : 1250

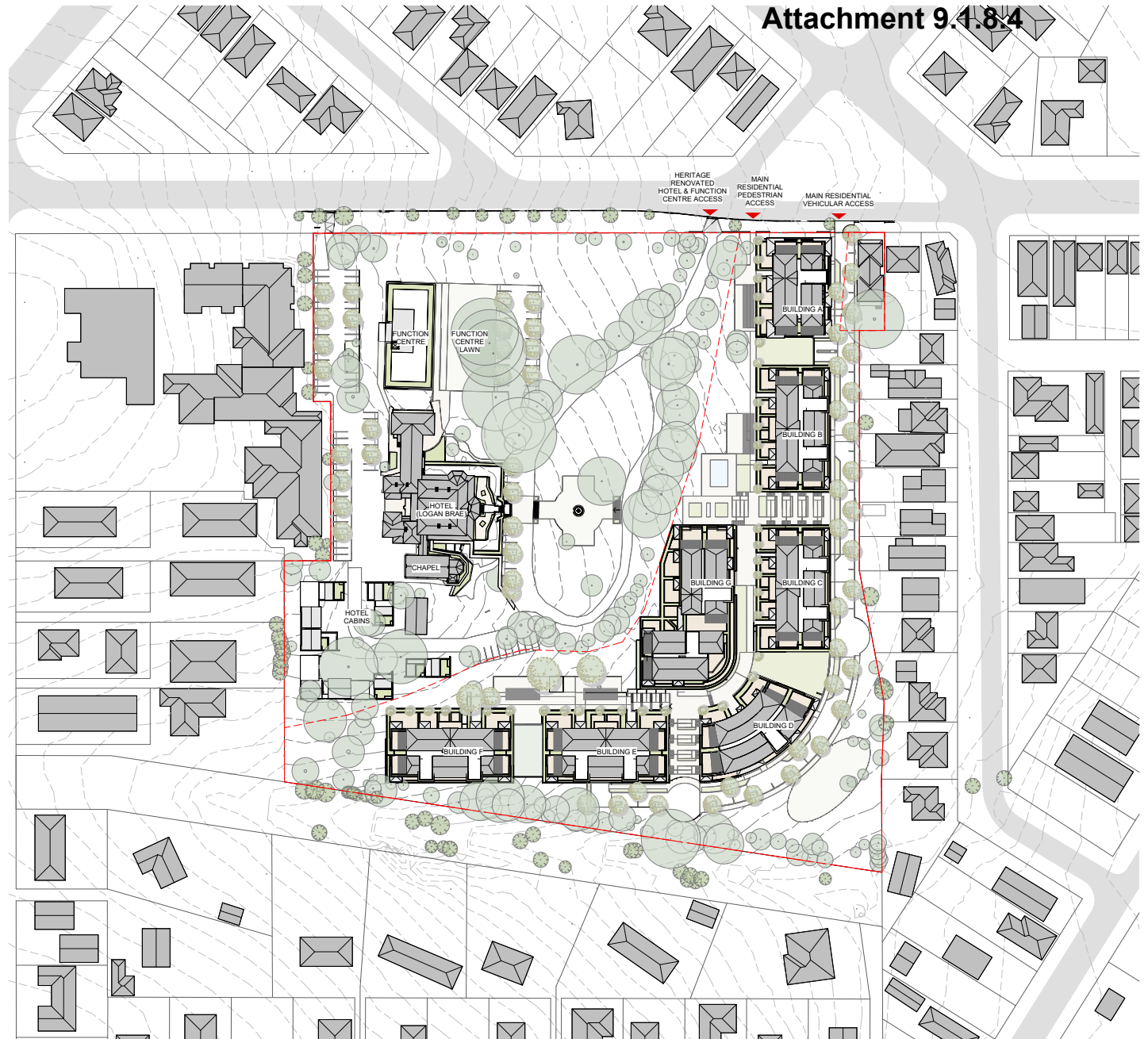


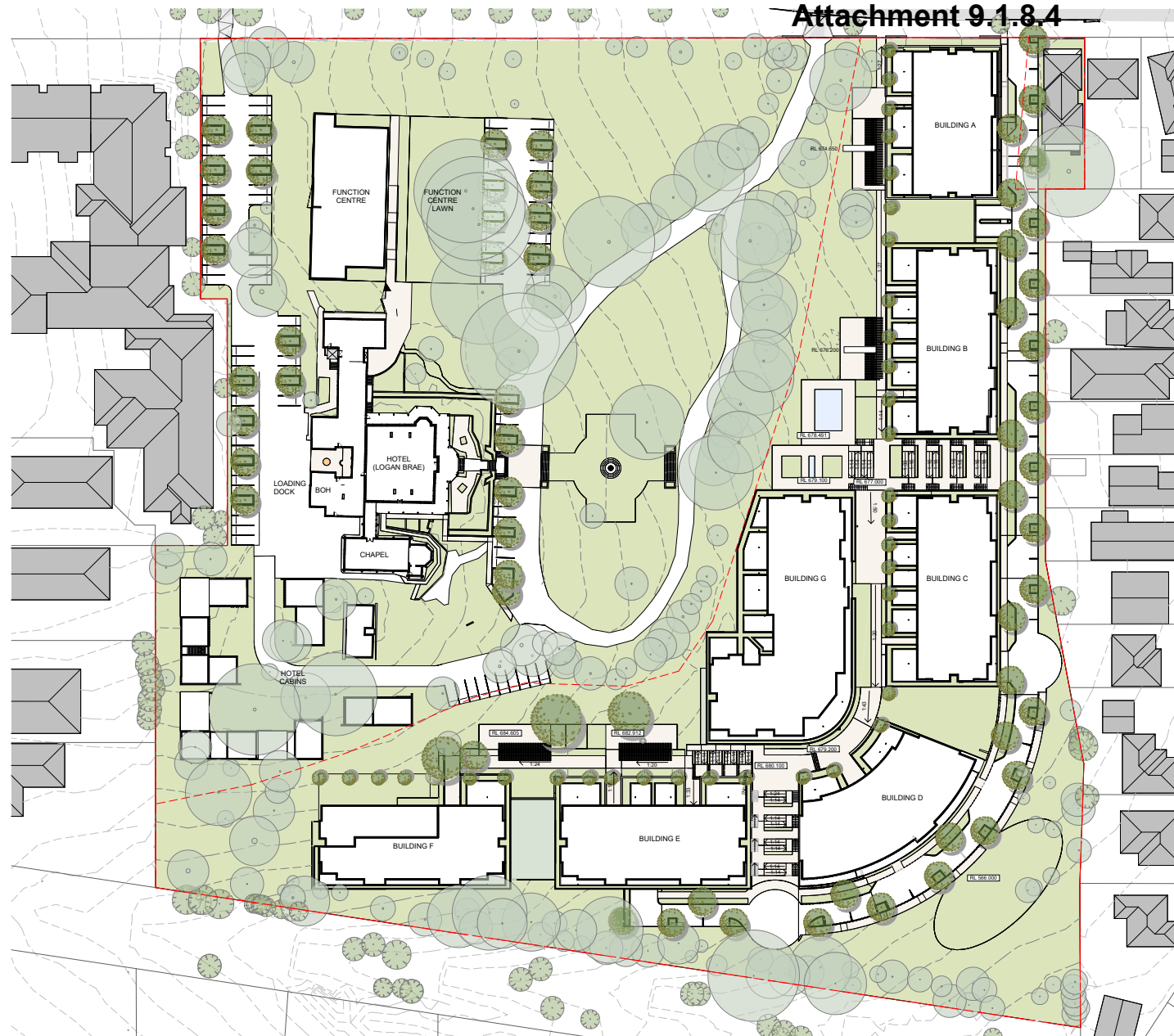




GENERAL USES

- | | |
|--|--|
| ■ RESIDENTIAL USE | ■ RESTAURANT / CAFE |
| ■ PARKING FOR RESIDENTIAL USE | ■ FUNCTION CENTRE / CHAPEL |
| ■ CABINS / HOTEL ROOMS | |







COMMERCIAL USES

- RESTAURANT / CAFE
- FUNCTION CENTRE / CHAPEL
- HOTEL / CABIN ROOMS
- BOH
- RECEPTION / ADMIN.

RESIDENTIAL USES

- 1B UNIT
- 2B UNIT
- 3B UNIT
- BALCONY / COURTYARD

0 25 50

GROUND LEVEL PLAN
BATHURST | 34 BUSBY STREET,
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1:500 @A1
1:1000 @A3

PP
3.03



- COMMERCIAL USES**
- RESTAURANT / CAFE
 - FUNCTION CENTRE / CHAPEL
 - HOTEL / CABIN ROOMS
 - BOH
 - RECEPTION / ADMIN.

- RESIDENTIAL USES**
- 1B UNIT
 - 2B UNIT
 - 3B UNIT
 - BALCONY / COURTYARD



- | COMMERCIAL USES | | RESIDENTIAL USES | |
|--------------------------|--------------------|---------------------|--|
| RESTAURANT / CAFE | BOH | 1B UNIT | |
| FUNCTION CENTRE / CHAPEL | RECEPTION / ADMIN. | 2B UNIT | |
| HOTEL / CABIN ROOMS | | 3B UNIT | |
| | | BALCONY / COURTYARD | |

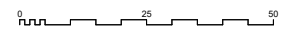


COMMERCIAL USES

- RESTAURANT / CAFE
- FUNCTION CENTRE / CHAPEL
- HOTEL / CABIN ROOMS
- BOH
- RECEPTION / ADMIN.

RESIDENTIAL USES

- 1B UNIT
- 2B UNIT
- 3B UNIT
- BALCONY / COURTYARD



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LEVEL 03 PLAN
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
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3.06



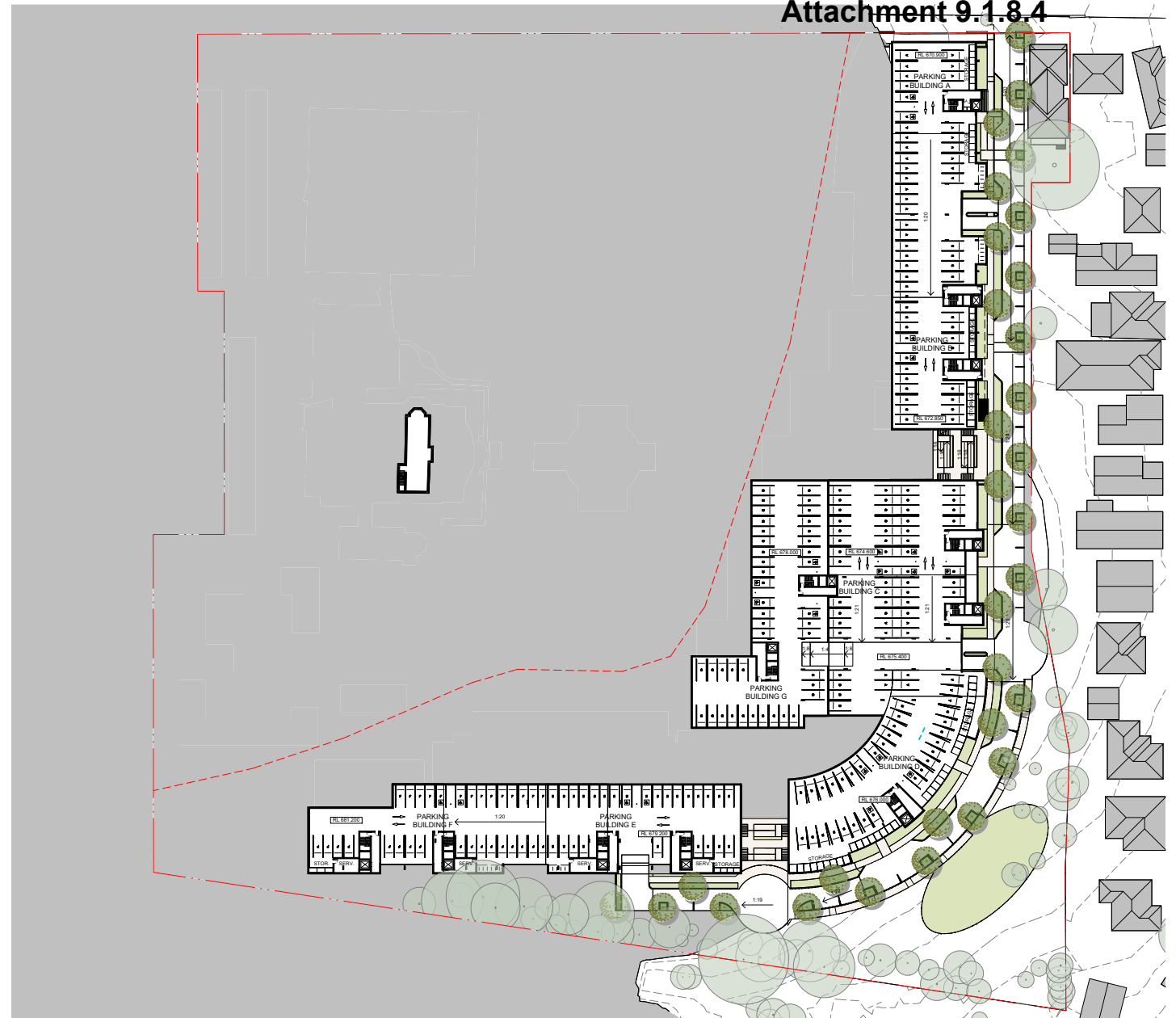


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ROOFTOP PLAN
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
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3.08

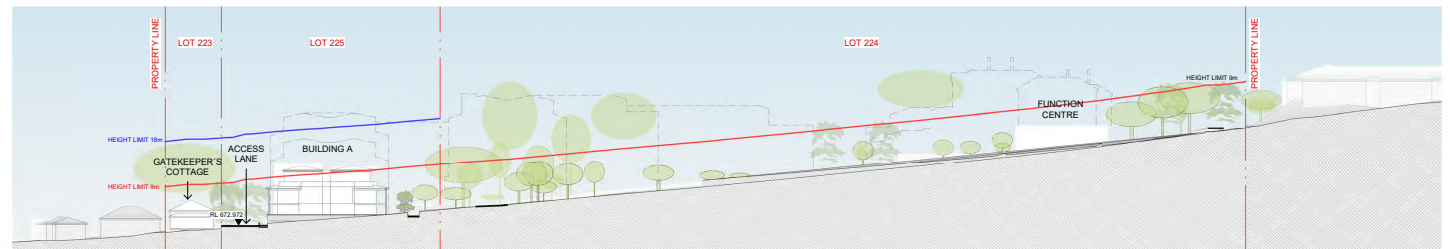


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LOWER GROUND PLAN
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
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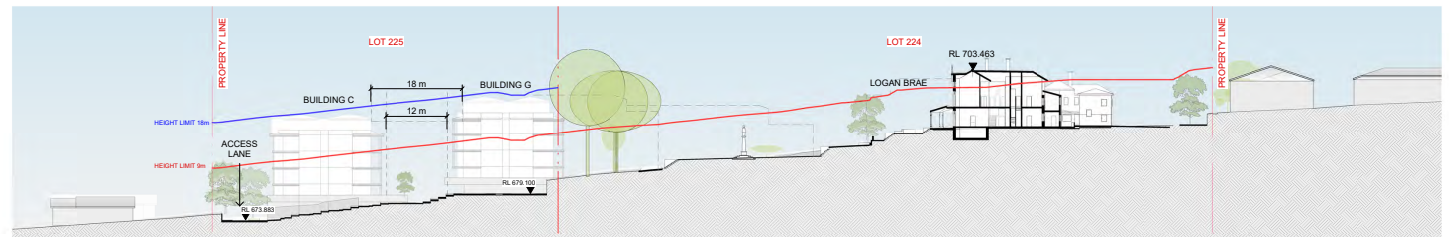
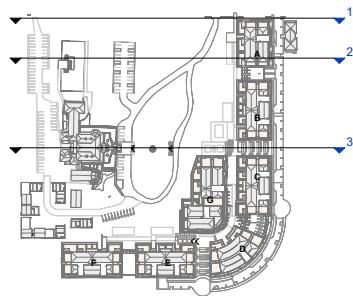
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SECTION 1
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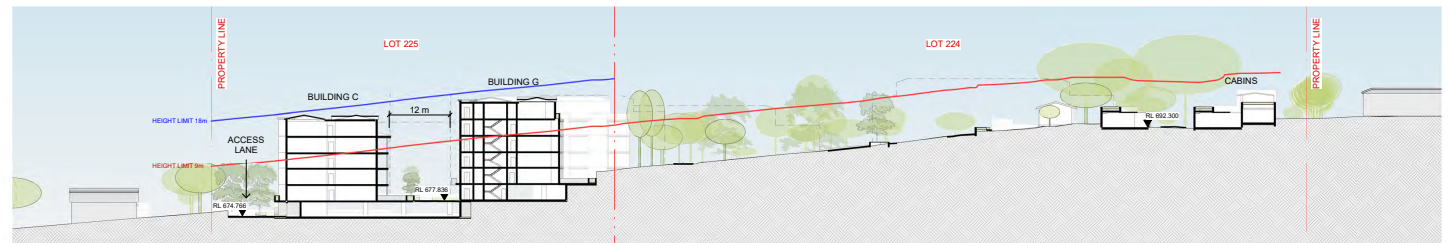


SECTION 2
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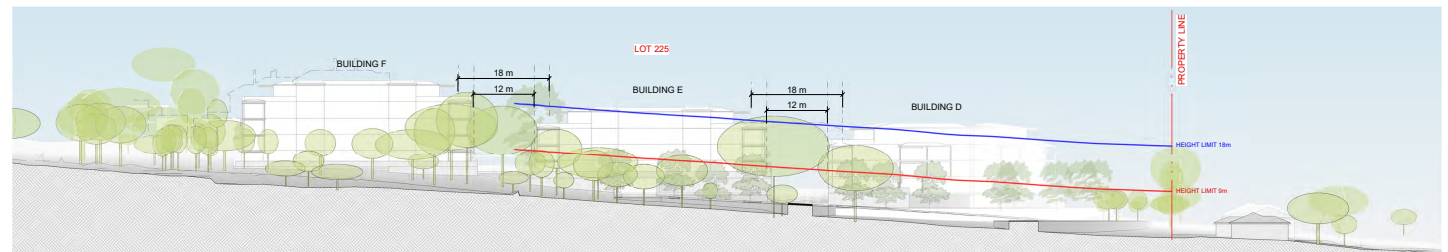
SECTION 3
1 : 500

Attachment 9.1.8.4



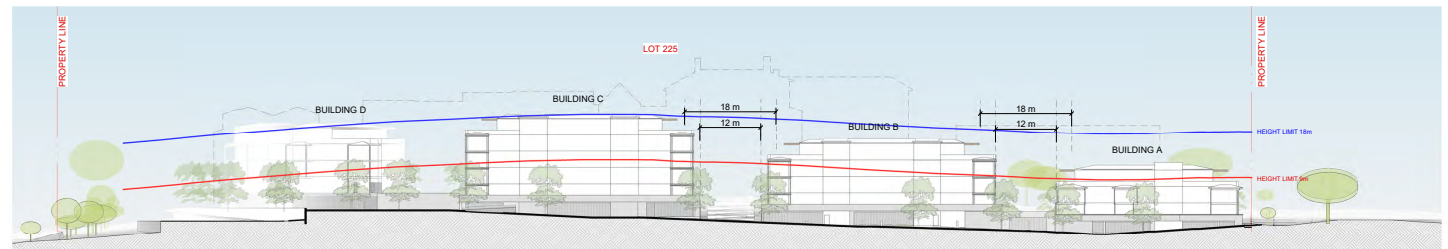
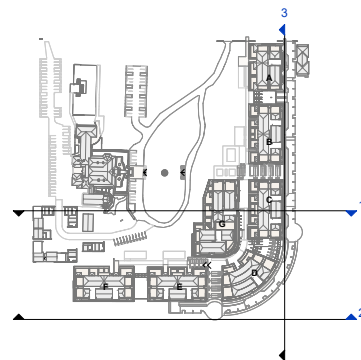
SECTION 1

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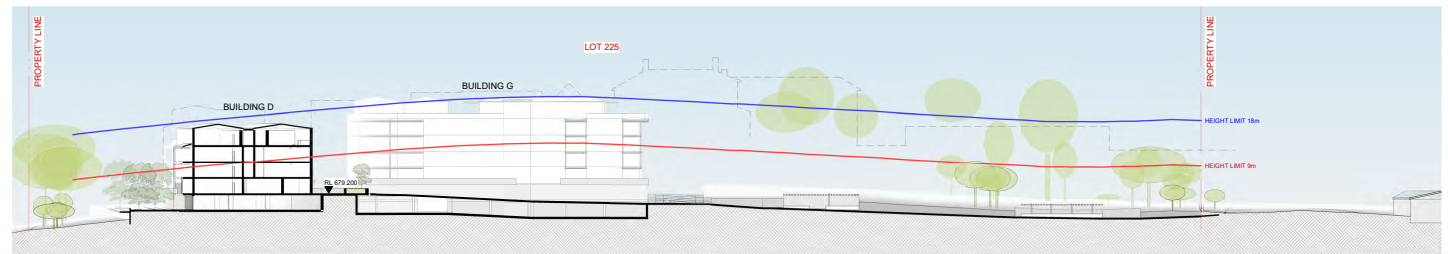
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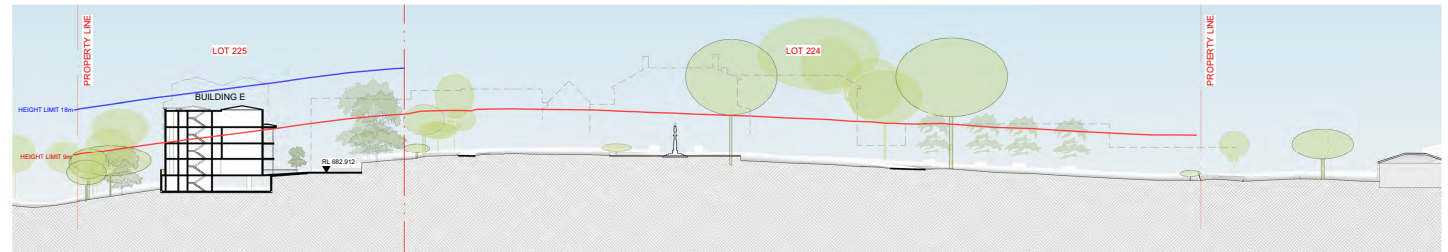


SECTION 3

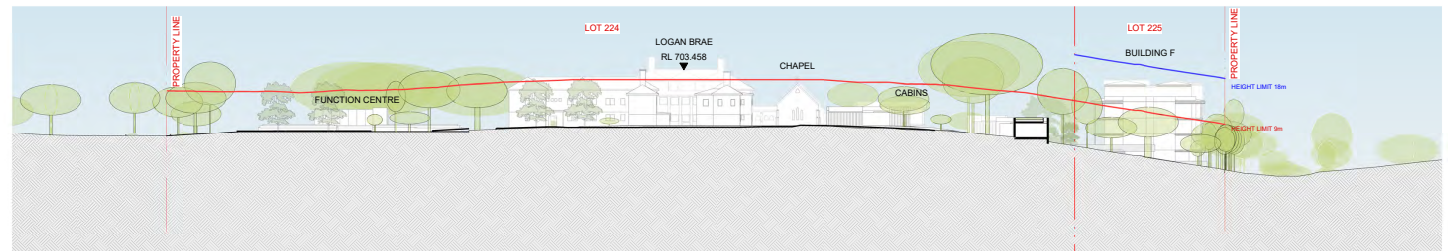
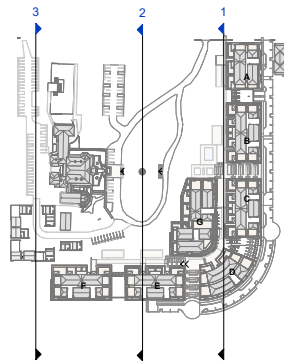
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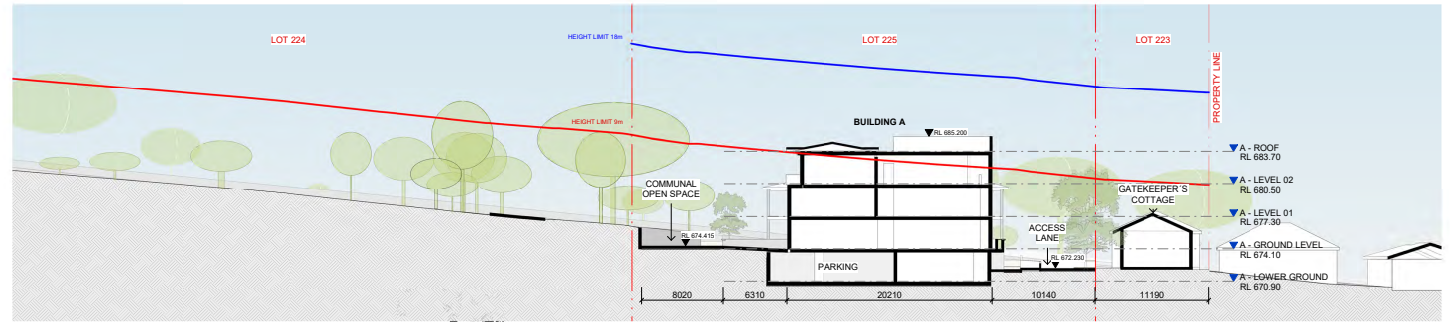
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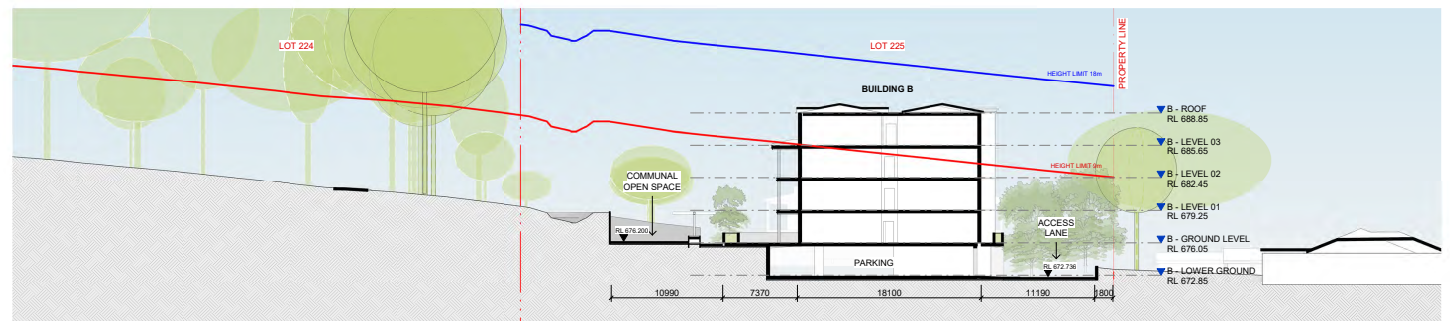
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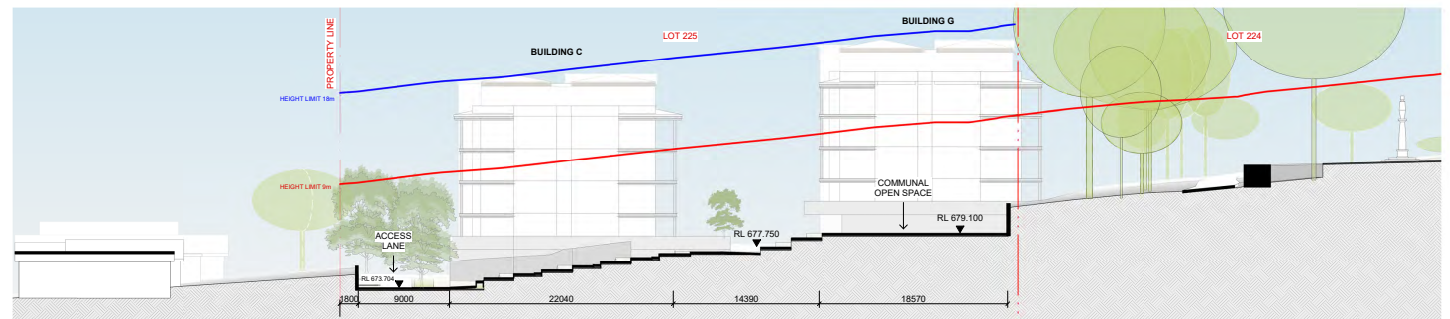
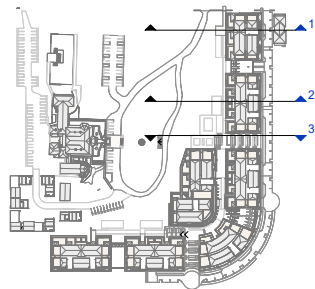
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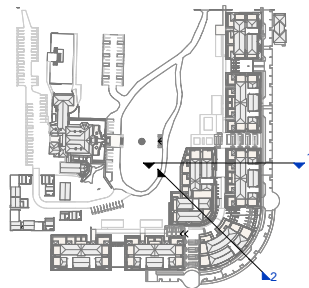
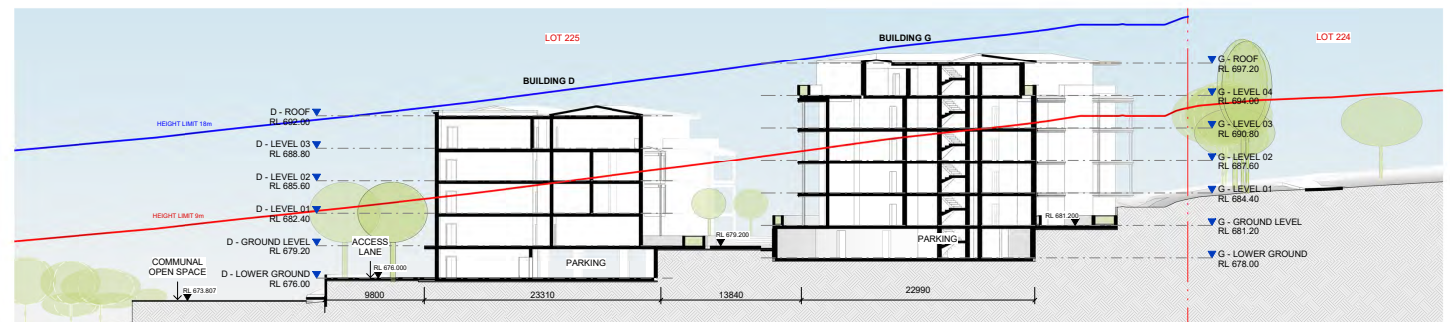
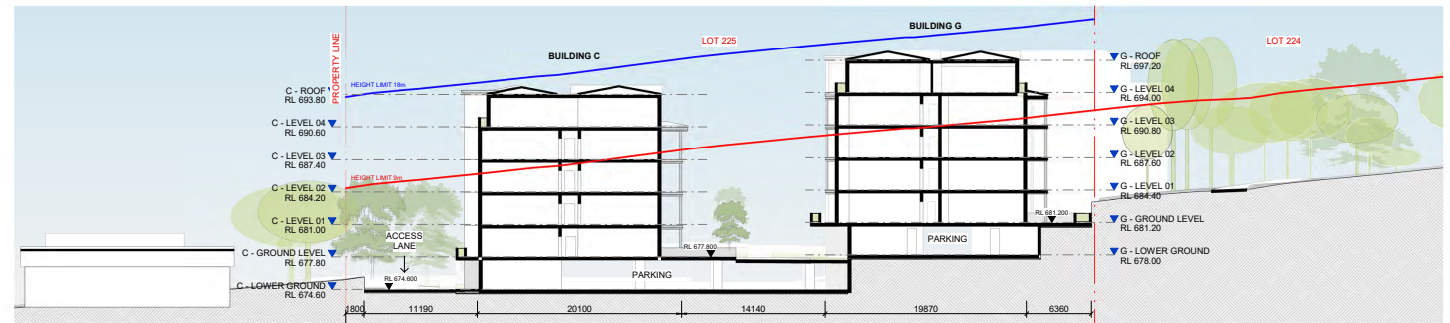
SECTION 1 - BUILDING A
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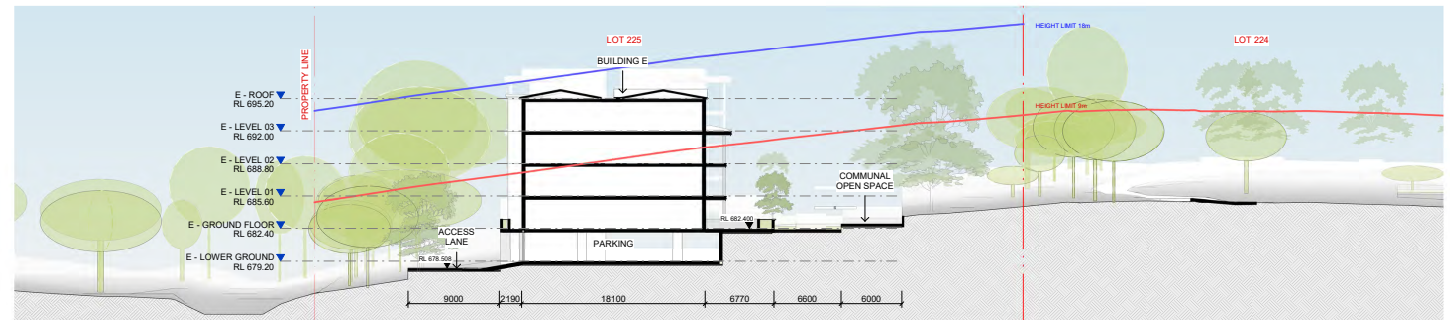


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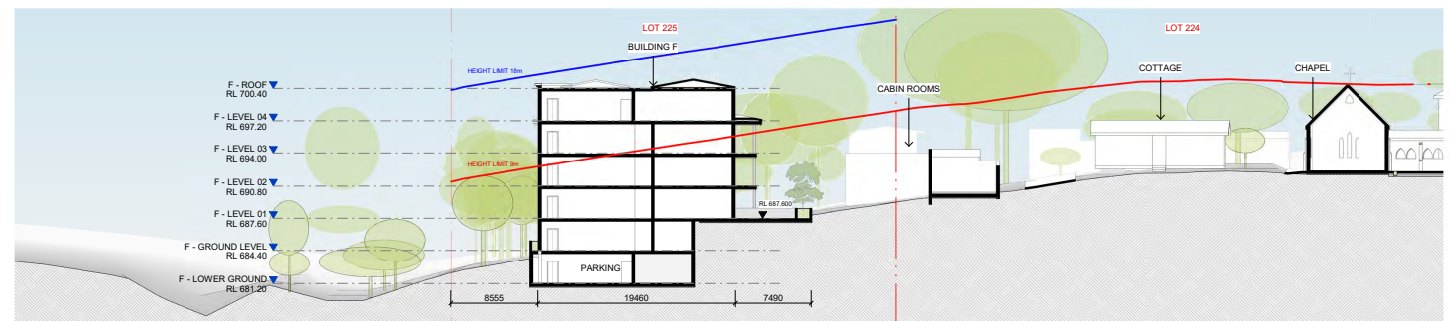


SECTION 3 - PEDESTRIAN CONNECTION
1 : 250





SECTION 1 - BUILDING E
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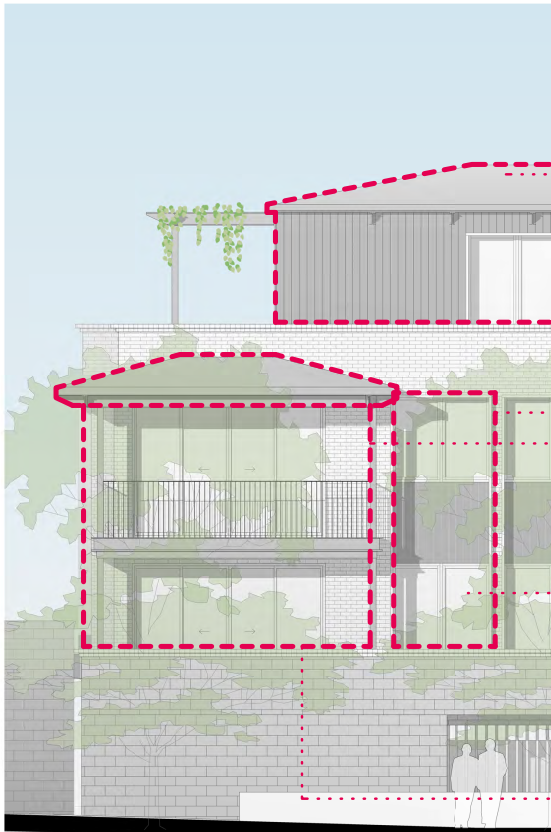


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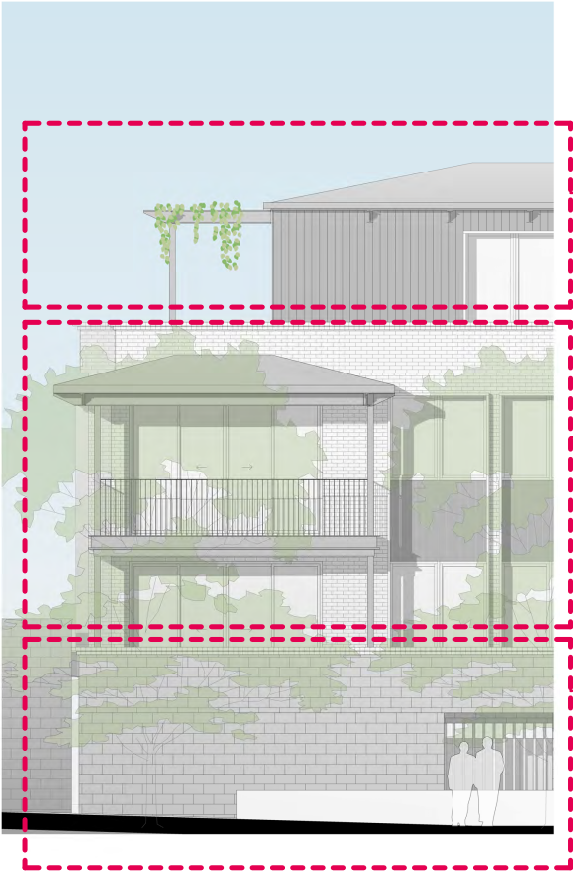
REFERENCE TO THE HERITAGE BUILDINGS

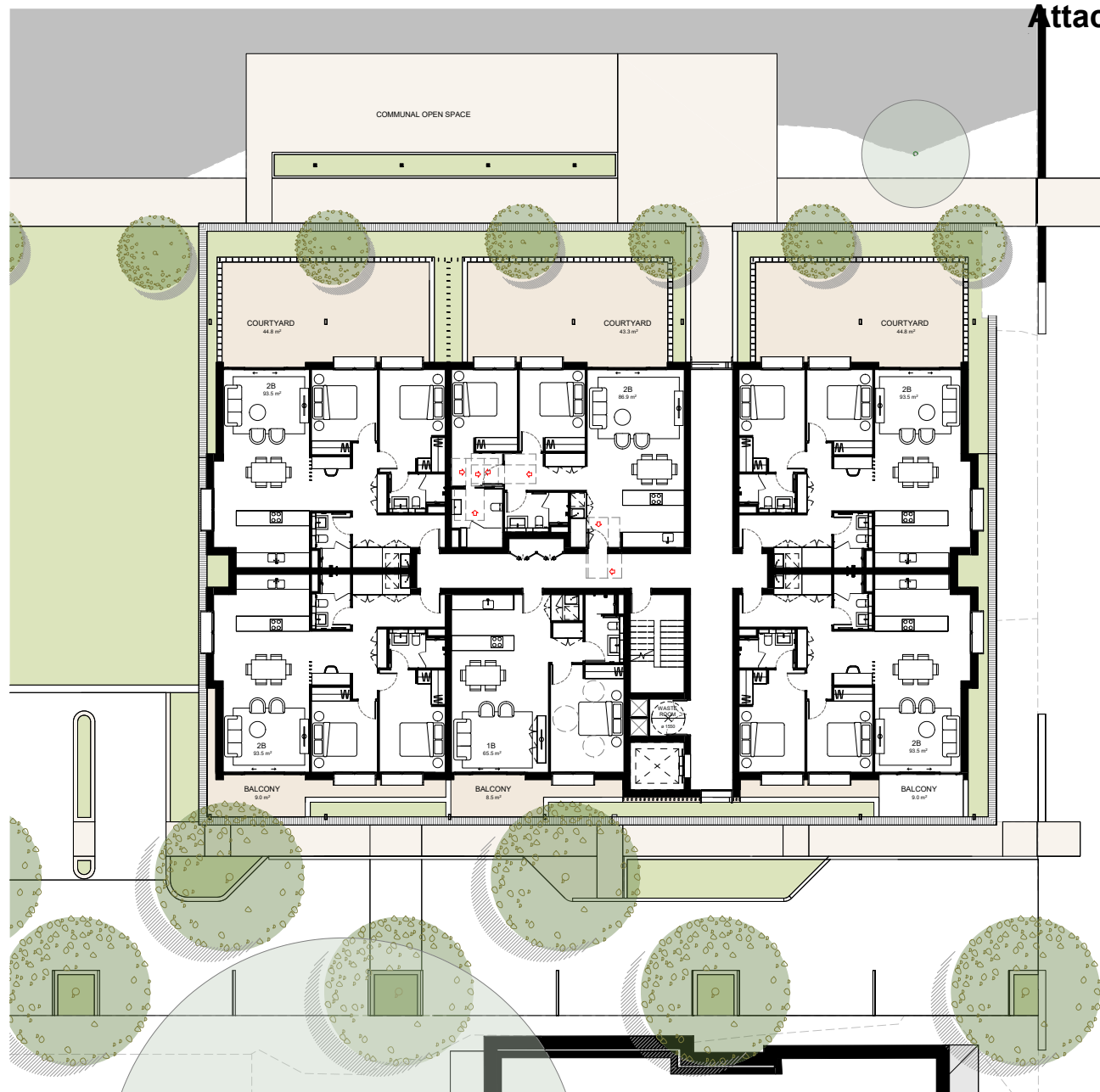
- The proposed aesthetics for the residential component have been directly inspired by the heritage buildings on the site, with special attention given to Logan Brae.
- The various building elements of the existing buildings have been studied and re-interpreted in a contemporary manner in the new development. The materials, shapes of roofs, and orders have been translated into an architectural style that responds to the site and the immediate surroundings.
- The balconies are conceived as add-ons that reinterpret the heritage veranda in a contemporary language.
- The introduction of pitched roofs engages in a dialogue with the existing building.

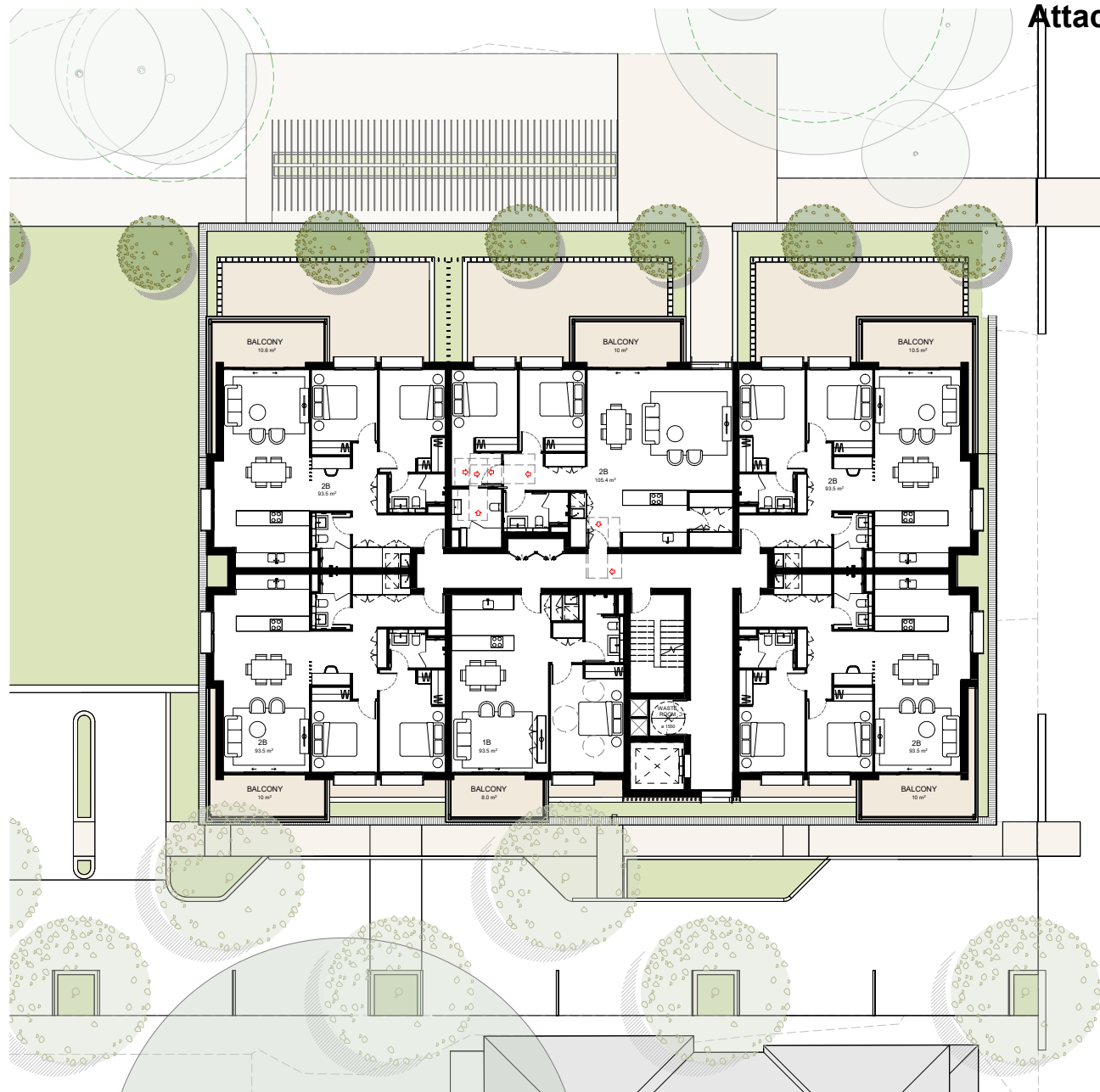


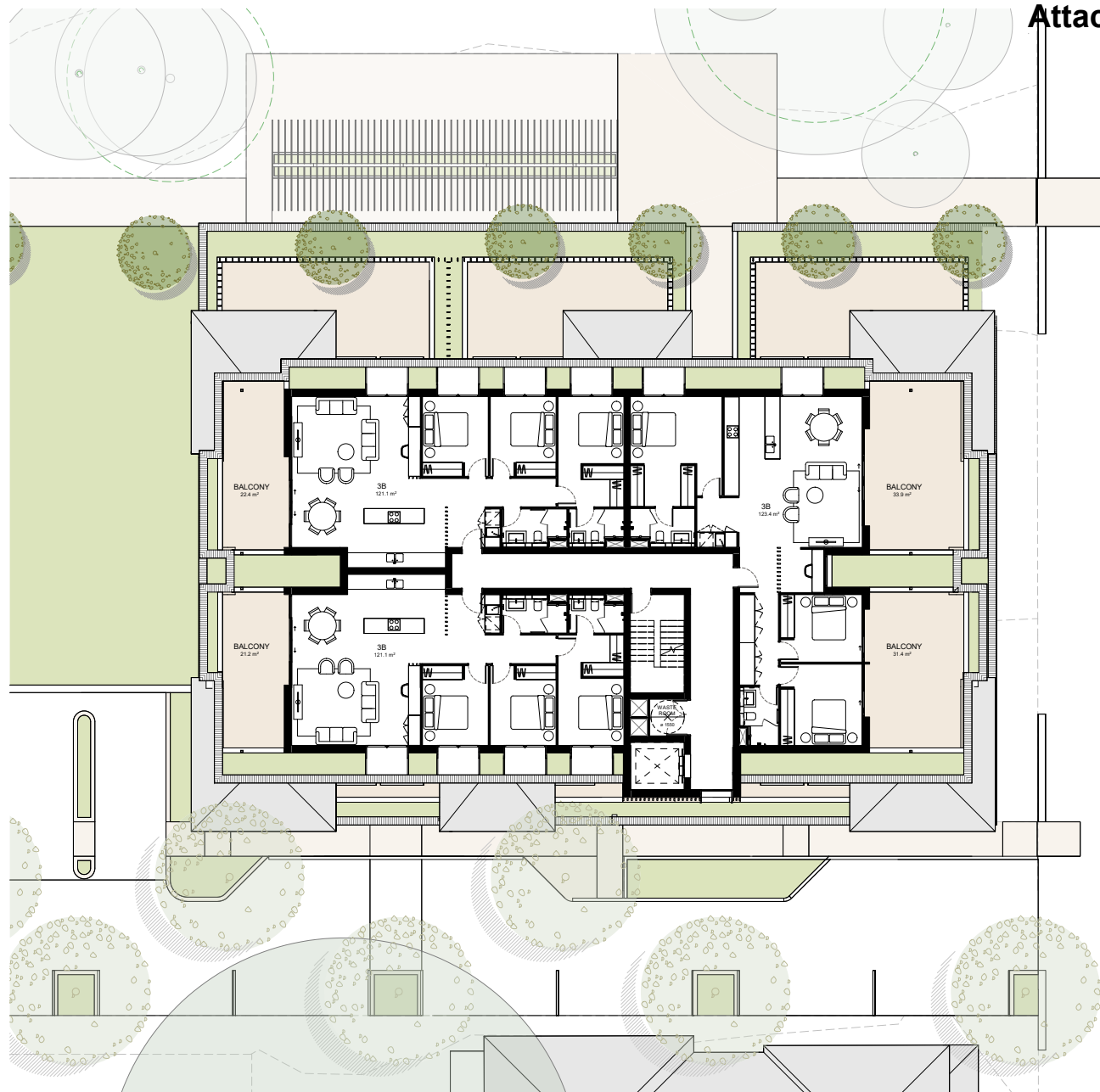
AESTHETICS

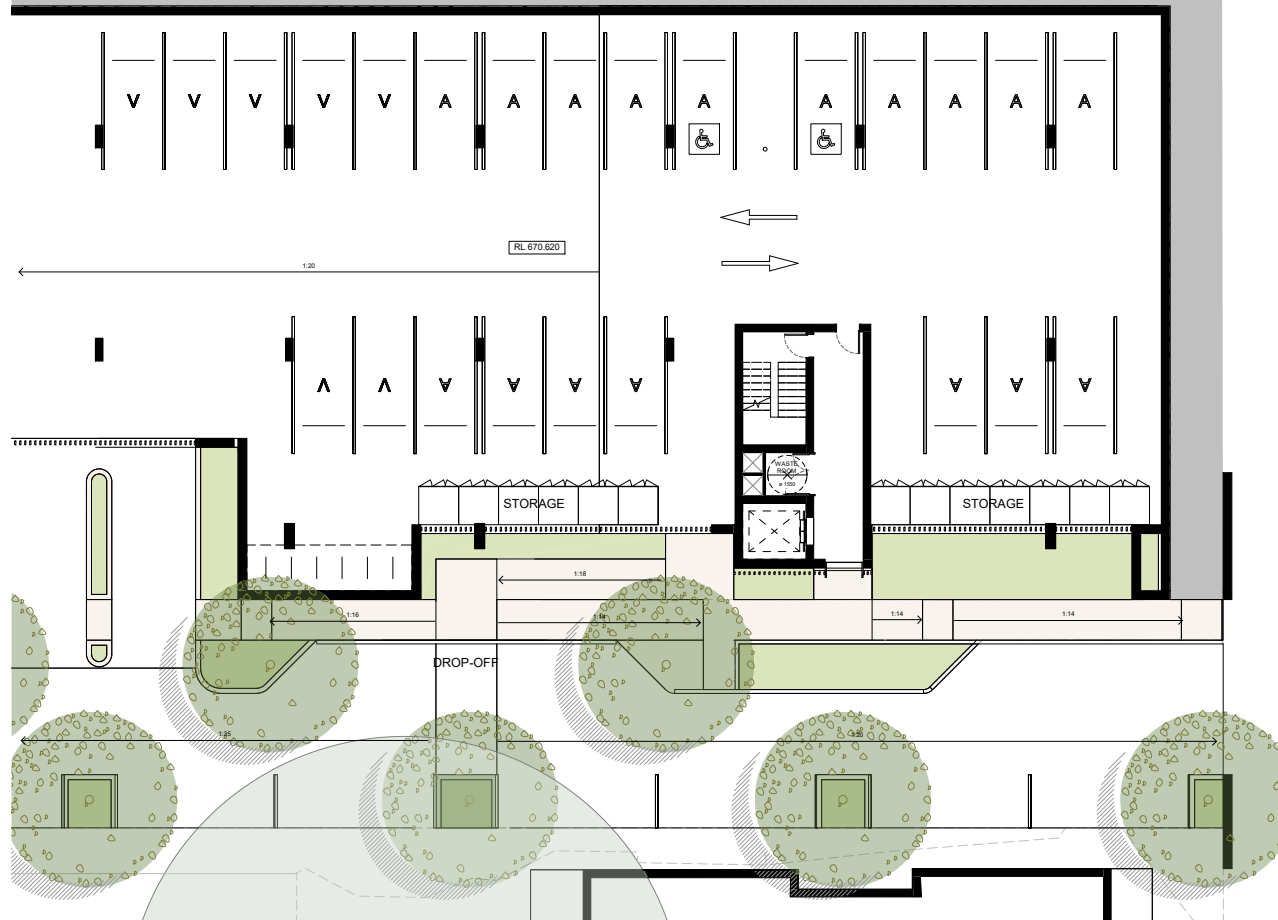
- The proposed residential buildings have been designed to harmonise well with the environments bulk, scale and building articulation, creating a new language that responds to a coherent rhythm within the development and surrounding heritage buildings.
- The proposed design is horizontally divided into three clear elements: base, body, and rooftop, which create a distinct separation and articulate the volumes within the buildings. The base will be constructed using a heavier material, containing the residential parking, while the body will house most of the apartments.
- In terms of volume, the proposal seeks an outstanding, hermetic base, only perceptible from the vehicular access lane. The body will feature two floors read as a joined element, and the rooftop level for larger dwellings will be set back and, therefore, visually less obtrusive from the street.
- The balconies on the first and second floors are conceived to function as a continuous element, as well as the windows on these two levels.
- The volumes will be articulated on the shorter sides by a vertical void, allowing a break in the volumes that introduces a smaller rhythm and reduces the perceived bulk of the buildings.













FRONT ELEVATION
1 : 100



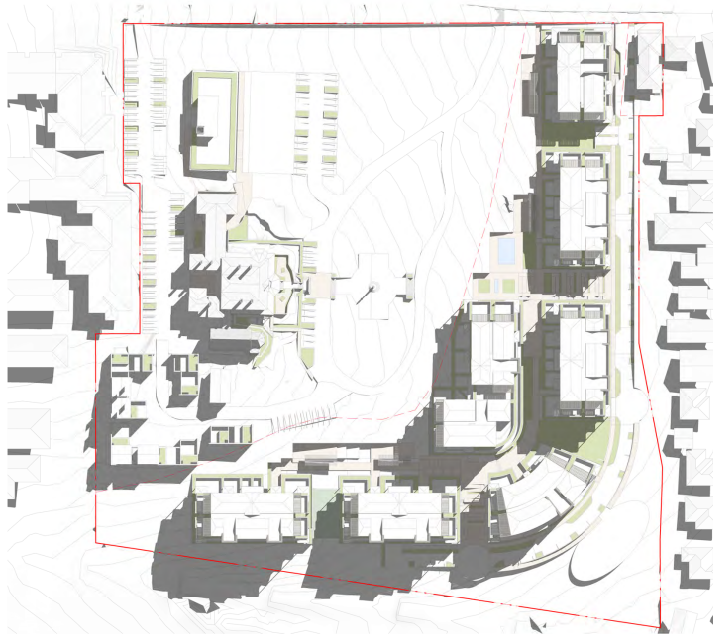
SIDE ELEVATION
1 : 100



BACK ELEVATION
1 : 100



SECTION
1 : 100



PP SHADOWS - 9.00AM JUN
1 : 1000



PP SHADOWS - 10.00AM JUN
1 : 1000



PP SHADOWS - 11.00AM JUN
1 : 1000



PP SHADOWS - 12.00AM JUN
1 : 1000

0 50 100



PP SHADOWS - 13.00AM JUN
1 : 1000

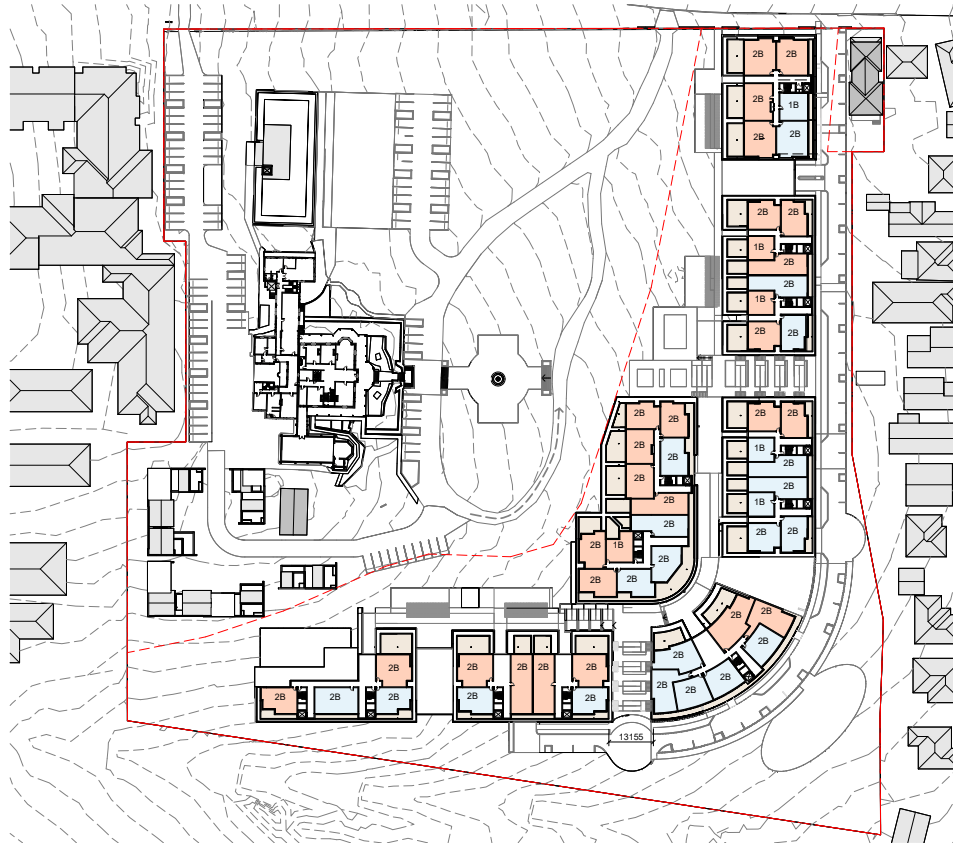


PP SHADOWS - 15.00AM JUN
1 : 1000



PP SHADOWS - 14.00AM JUN
1 : 1000

Attachment 9.1.8.4



SOLAR COMPLIANCE DIAGRAM - GF
1 : 750

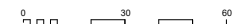


SOLAR COMPLIANCE DIAGRAM - L01
1 : 750

SOLAR COMPLIANCE LEGEND

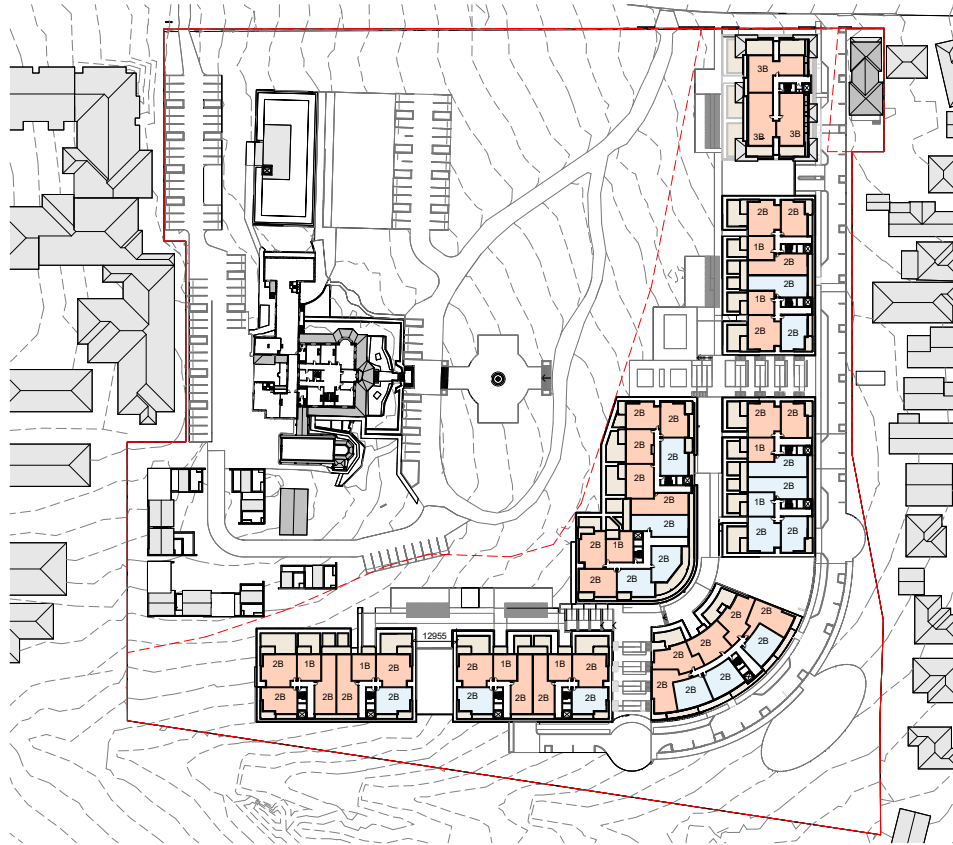
- APARTMENTS ACHIEVING MIN. 3H SOLAR ACCESS
- APARTMENTS NOT ACHIEVING MIN. 3H SOLAR ACCESS

TOTAL SOLAR ACCESS - MIN. 3H		
TOTAL UNITS	UNITS ACHIEVING SOLAR ACCESS	%
218	152	70%



1:750 @A1
1:1500 @A3





SOLAR COMPLIANCE DIAGRAM - L02
1:750



SOLAR COMPLIANCE DIAGRAM - L03
1:750

SOLAR COMPLIANCE LEGEND

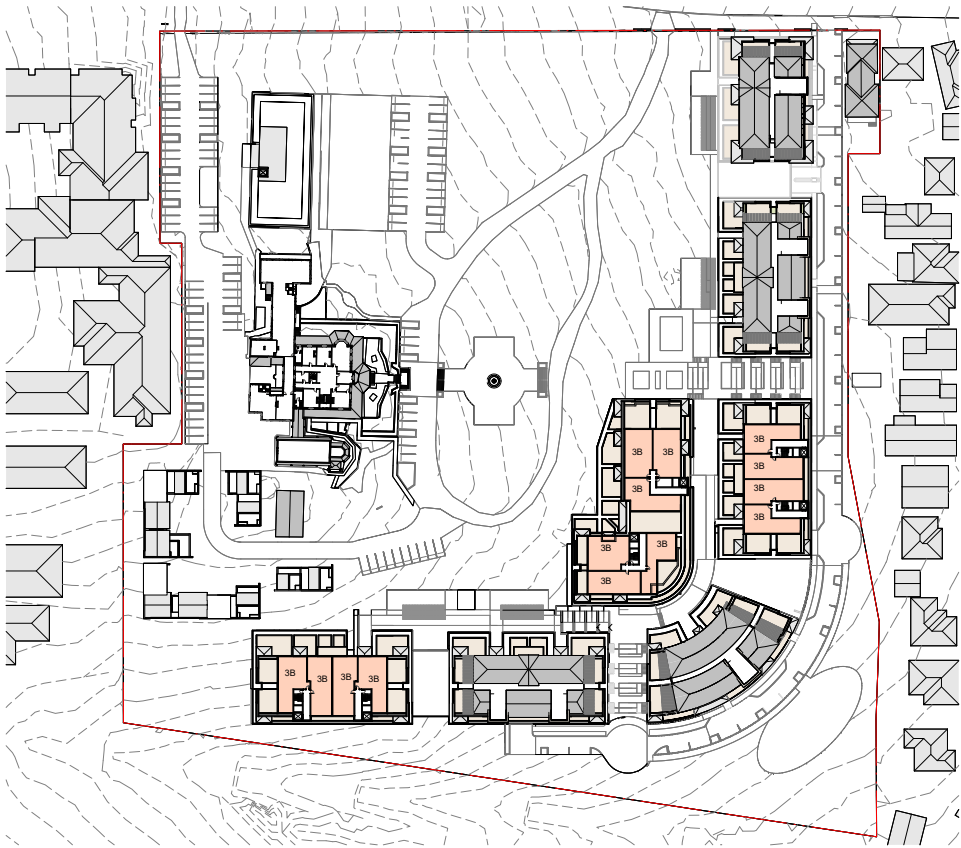
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TOTAL SOLAR ACCESS - MIN. 3H		
TOTAL UNITS	UNITS ACHIEVING SOLAR ACCESS	%
218	152	70%

0 30 60

1:750 @A1
1:1500 @A3



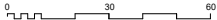


SOLAR COMPLIANCE DIAGRAM - L04
1 : 750

SOLAR COMPLIANCE LEGEND

- APARTMENTS ACHIEVING MIN. 3H SOLAR ACCESS
- APARTMENTS NOT ACHIEVING MIN. 3H SOLAR ACCESS

TOTAL SOLAR ACCESS - MIN. 3H		
TOTAL UNITS	UNITS ACHIEVING SOLAR ACCESS	%
218	152	70%



1:750 @A1
1:1500 @A3



SOLAR COMPLIANCE DIAGRAMS - SHEET 3
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
253 of 756

PP
6.03



CROSS VENTILATION COMPLIANCE DIAGRAM - GF

1:750



CROSS VENTILATION COMPLIANCE DIAGRAM - L01

1:750

CROSS VENTILATION COMPLIANCE LEGEND

- APARTMENTS ACHIEVING CROSS VENTILATION
- APARTMENTS NOT ACHIEVING CROSS VENTILATION
- CROSS VENTILATION DIRECTION

TOTAL CROSS VENTILATION		
TOTAL UNITS	UNITS ACHIEVING CROSS VENT	%
218	159	73%

0 30 60

1:750 @A1
1:1500 @A3





CROSS VENTILATION COMPLIANCE DIAGRAM - L02

1:750



CROSS VENTILATION COMPLIANCE DIAGRAM - L03

1:750

CROSS VENTILATION COMPLIANCE LEGEND

- APARTMENTS ACHIEVING CROSS VENTILATION
- APARTMENTS NOT ACHIEVING CROSS VENTILATION
- CROSS VENTILATION DIRECTION

TOTAL CROSS VENTILATION		
TOTAL UNITS	UNITS ACHIEVING CROSS VENT	%
218	159	73%

0 30 60

1:750 @A1
1:1500 @A3



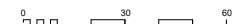


CROSS VENTILATION COMPLIANCE DIAGRAM - L04
1:750

CROSS VENTILATION COMPLIANCE LEGEND

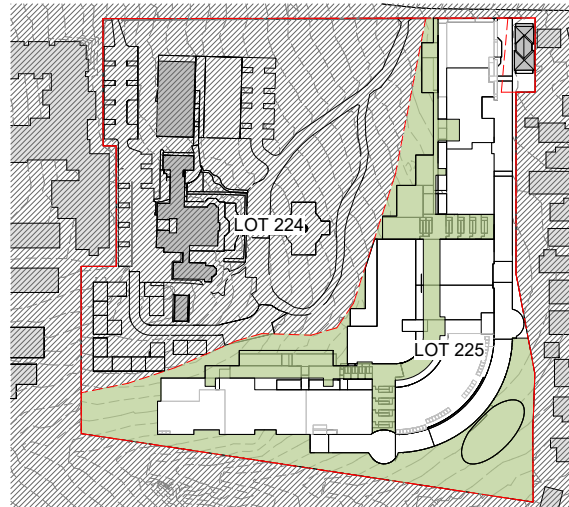
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- APARTMENTS NOT ACHIEVING CROSS VENTILATION
- CROSS VENTILATION DIRECTION

TOTAL CROSS VENTILATION		
TOTAL UNITS	UNITS ACHIEVING CROSS VENT	%
218	159	73%

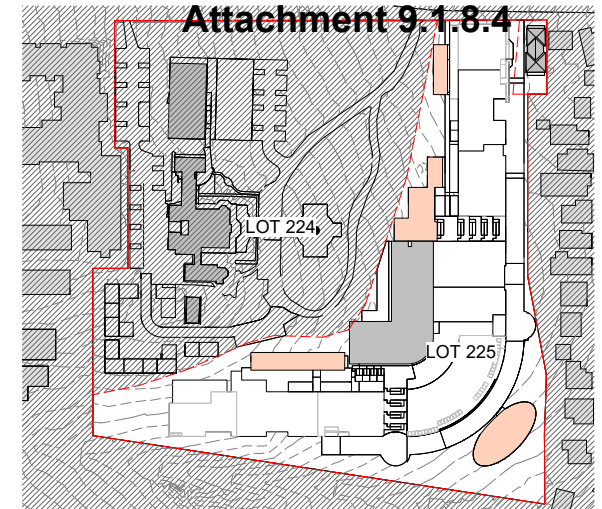


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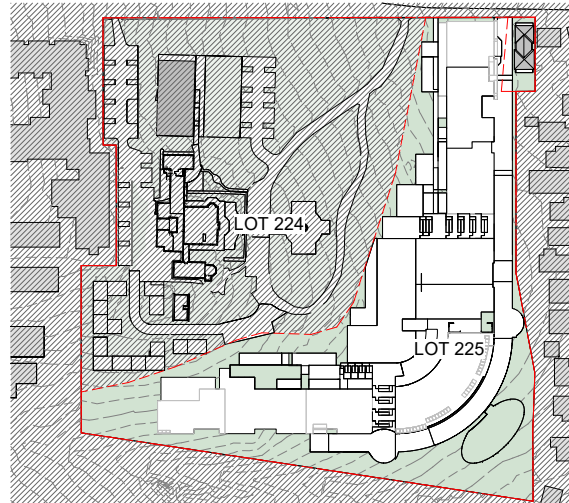




COMMUNAL OPEN SPACE
1 : 1250



Attachment 9.1.8.4
COMMUNAL OPEN SPACE - SOLAR ACCESS
1 : 1250



DEEP SOIL
1 : 1250

COMMUNAL OPEN SPACE AREA - LOT 225		
TOTAL AREA LOT B	COS TOTAL AREA	%
23426	10045	43%

DEEP SOIL AREAS - LOT 225		
TOTAL AREA LOT B	DEEP SOIL AREA	%
23426	8661.3 m ²	37%

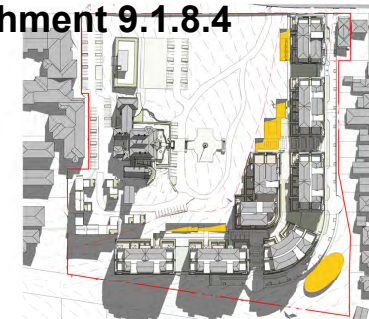
Attachment 9.1.8.4



MAIN COMMUNAL OPEN SPACE



9:00 AM



10:00 AM



11:00 AM



12:00 AM



13:00 PM

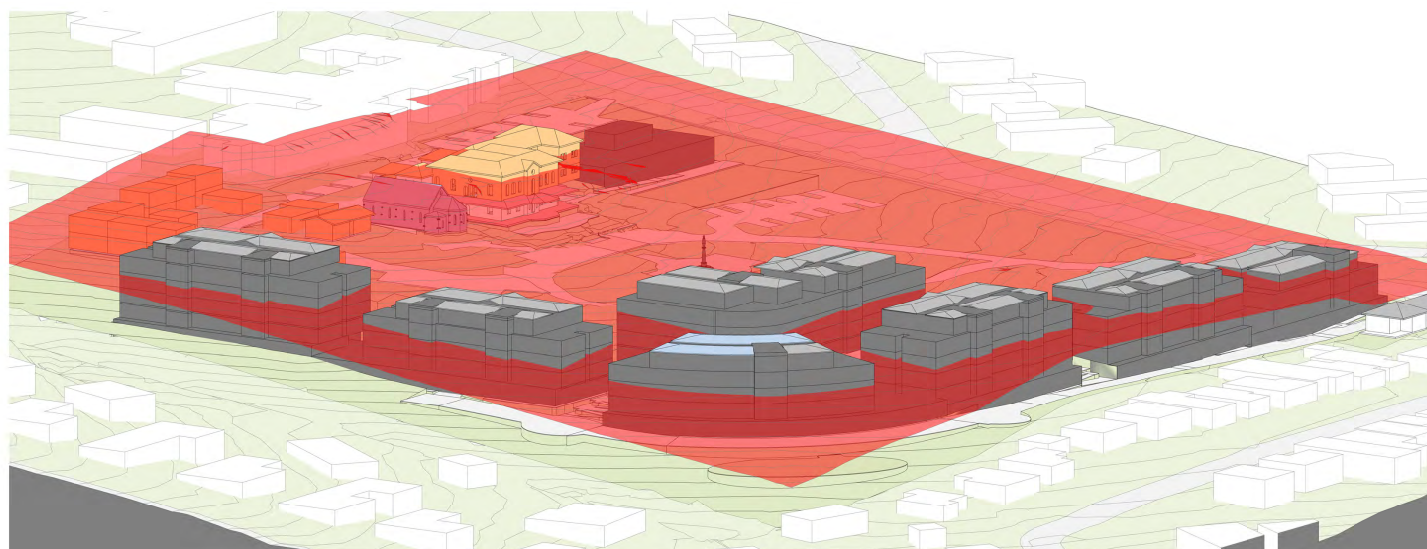
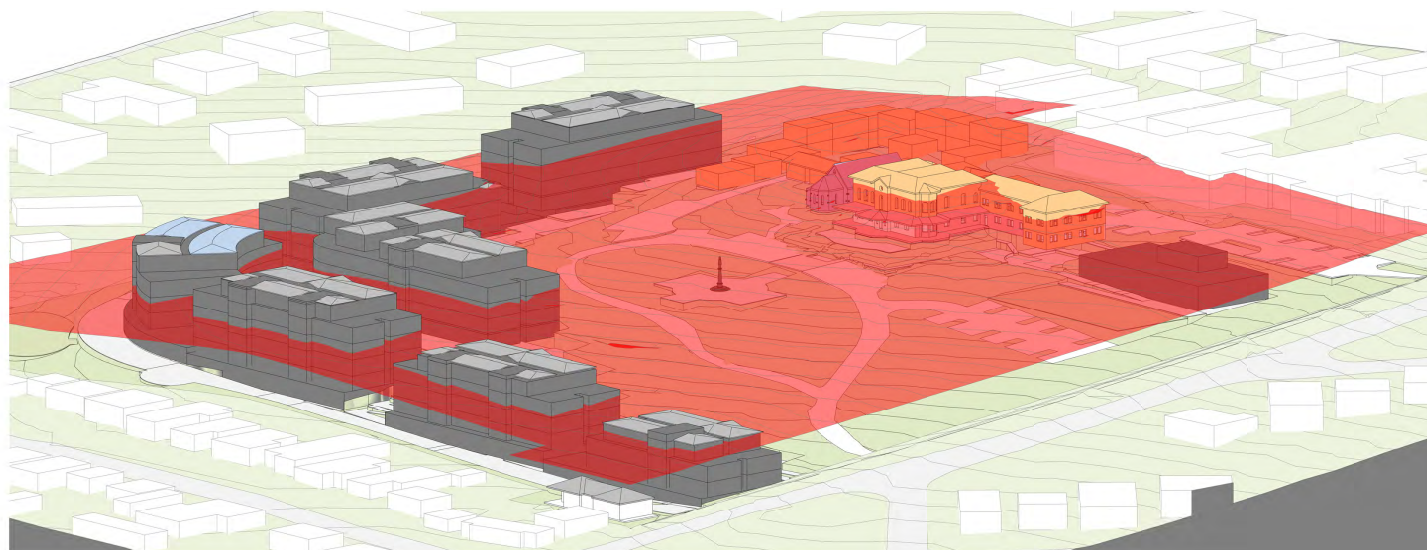


14:00 PM

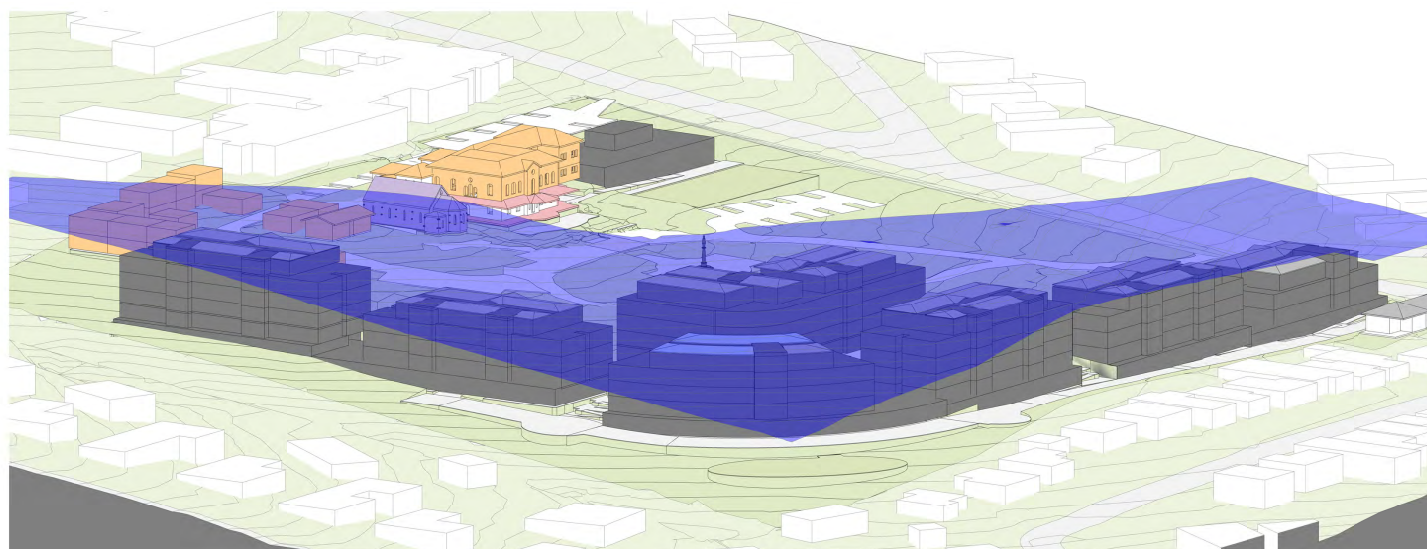
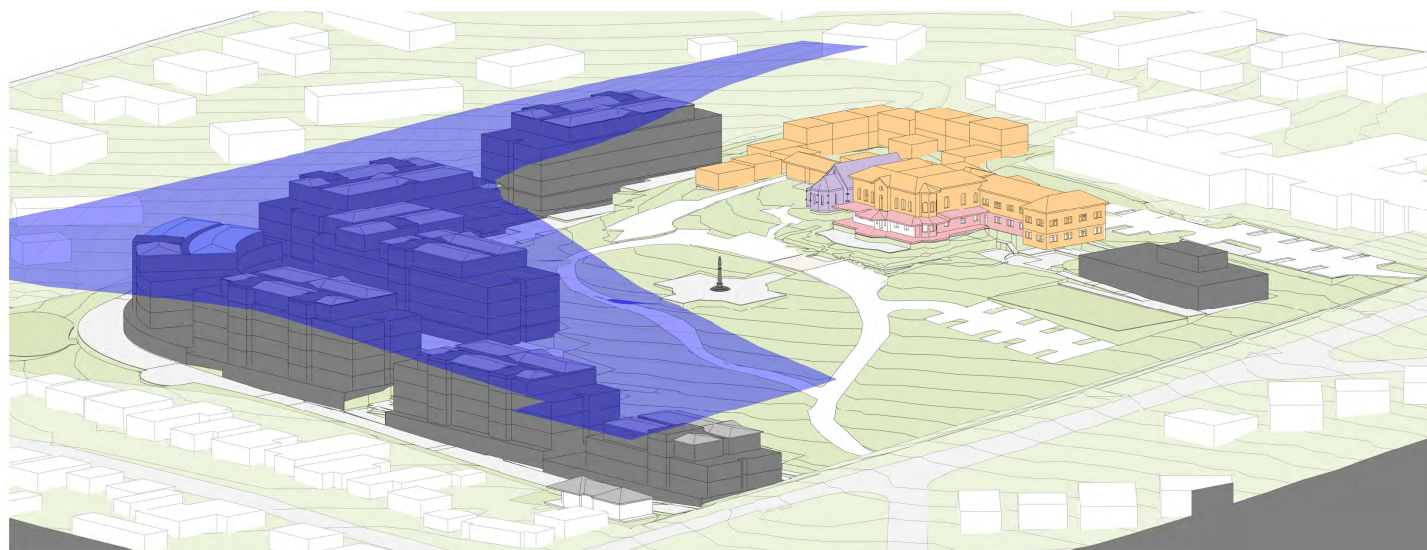


15:00 PM

COMMUNAL OPEN SPACE - SUN AREA			
TIME	TOTAL AREA	SUN AREA	%
9:00	1470	1030.5 m ²	70%
10:00	1470	1286.7 m ²	88%
11:00	1470	1250.3 m ²	85%
12:00	1470	1103.7 m ²	75%
13:00	1470	862.4 m ²	59%
14:00	1470	625.0 m ²	43%
15:00	1470	414.1 m ²	28%



Attachment 9.1.8.4



UNIT MIX		
UNIT TYPE	No	UNIT MIX
1B	30	14%
2B	159	73%
3B	29	13%
	218	100%

PROPOSED CAR PARKING		
ZONE	REQUIRED	PROPOSED
HOTEL / FUNCTION CENTRE / REST	90	93
RESIDENT	220	226
VISITORS	44	47

TOTAL CROSS VENTILATION		
TOTAL UNITS	UNITS ACHIEVING CROSS VENT	%
218	159	73%

UNIT MIX PER BUILDING	
UNIT TYPE	TOTAL
BUILDING A	
1B	2
2B	10
3B	3
BUILDING A: 15	
BUILDING B	
1B	6
2B	18
3B	4
BUILDING B: 28	
BUILDING C	
1B	8
2B	24
3B	4
BUILDING C: 36	
BUILDING D	
2B	23
3B	4
BUILDING D: 27	
BUILDING E	
1B	4
2B	18
3B	4
BUILDING E: 26	
BUILDING F	
1B	6
2B	22
3B	4
BUILDING F: 32	
BUILDING G	
1B	4
2B	44
3B	6
BUILDING G: 54	
Grand total: 218	

TOTAL SOLAR ACCESS - MIN. 3H		
TOTAL UNITS	UNITS ACHIEVING SOLAR ACCESS	%
218	152	70%

Institute of Sisters of Mercy of Australia & Papua New Guinea

Conservation Management Plan

St Joseph's Mount, Bathurst



Address: Busby Street, Bathurst NSW 2795

Property Description: Lot 22 DP 1033481

State Heritage Inventory: 1080343

Prepared by:

Ray Christison



PO Box 3020, Bowenfels NSW 2790

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1. Introduction

1.1 Outline of tasks required to be undertaken in the brief

In 2007 High Ground Consulting was engaged by The Trustees of the Sisters of Mercy, Diocese of Bathurst to prepare a Conservation Management Plan (CMP) for St Joseph's Mount, Bathurst. This CMP was required to:

1. Detail why St Joseph's Mount, Bathurst is considered to be of heritage significance, and;
2. Outline policies to retain this significance that allow for economic re-use, possible future development, interpretation and ongoing management and maintenance.

The objectives of the CMP as defined by the Sisters of Mercy, Bathurst Congregation were to:

- Understand the heritage item through investigation of its historical and geographical context, its history, fabric, research potential and importance to the community.
- Prepare a statement of significance indicating the nature, extent and degree of significance of the place.
- Develop conservation policies, arising out of the statement of significance, to guide current and future owners of the place on its development potential and ongoing maintenance.
- Consider current proposals for re-use or development and how they can best be achieved in accordance with the conservation policy. Where proposals may have an adverse impact on the heritage significance of the place, the need for such work must be justified. Where development proposals have not been finalised, several likely options are to be discussed.
- Recommend how the place can best be managed bearing in mind those responsible and interested in ongoing conservation. It is to include proposals to review the conservation management plan and the item's maintenance.
- Define an appropriate curtilage for the collection of buildings on the site and significant landscaping and provide recommendations relating to;
 - Subdivision and access,
 - Possible appropriate uses for any residual land in accordance with the 2(G) Residential Zone, as defined by the Bathurst Regional (Interim) Local Environment Plan, 2005.

As of April 2020 the Sisters of Mercy were proposing a three (3) lot subdivision of the property. This subdivision was planned to:

- Separate the caretaker's cottage from the main property,
- Separate the part of the grounds outside the heritage curtilage of the former convent.

The subdivision plan, including a heritage curtilage is included in **Figure 1.1** below.

As part of the development application to Bathurst Council the Institute of the Sisters of Mercy were required to prepare an updated CMP and some commentary on possible development controls for the subdivided portions of the property. Such controls were required to identify whether height restrictions should apply to any part of the land outside the curtilage.

The former Gatekeeper's Cottage assessed in the 2007 CMP has been excluded from this document. It has been considered in the assessment of curtilage.

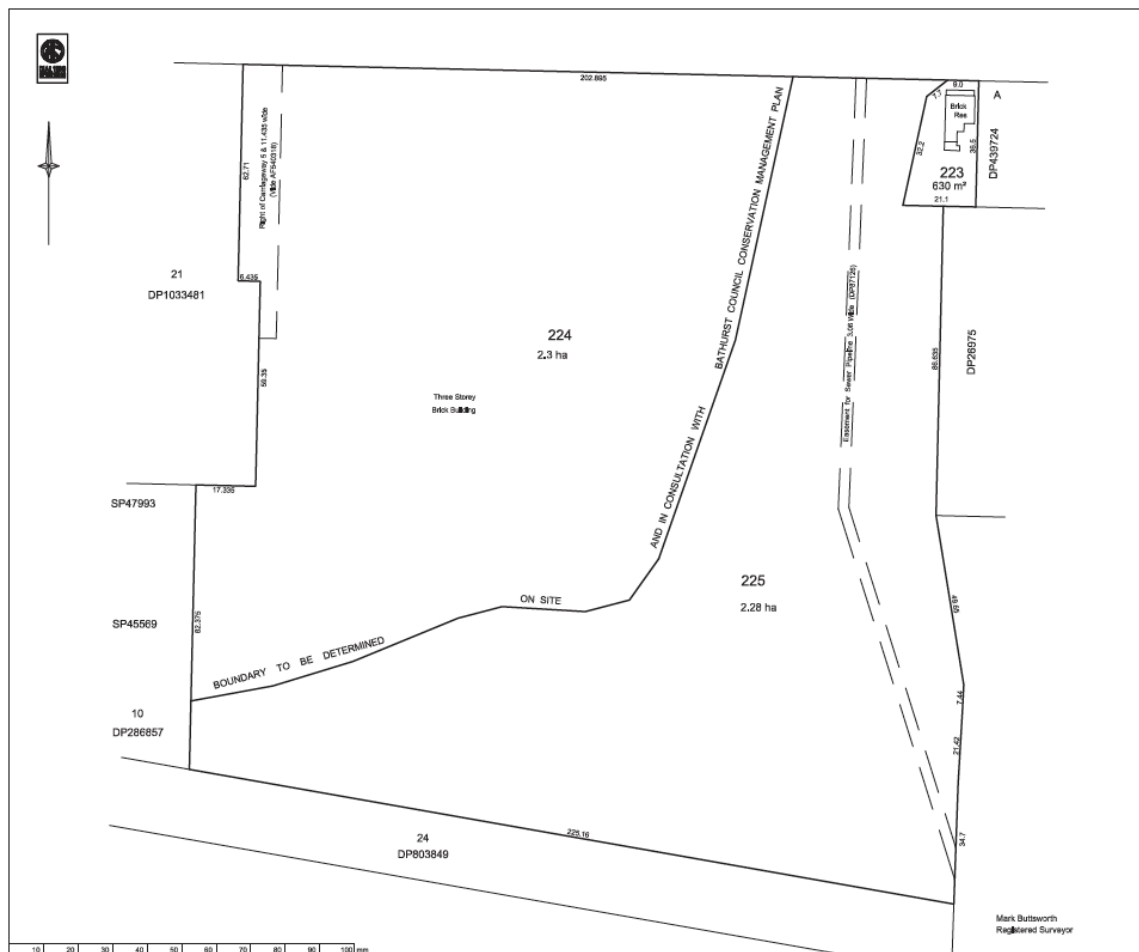


Figure 1.1: Plan of proposed subdivision of St Joseph's Mount. (Tablelands & Buttsworth Surveyors)

1.2 Definition of study area

St Joseph's Mount, Bathurst is located at Lot 22 DP 1033481, Busby Street, Bathurst. The GPS reference of the property is S33°25.991' E149°34.491'.

A satellite image showing the location of the property has been included on Page 6 as **Figure 1.2**.

1.3 Methodology

This CMP review has been undertaken in consultation with Blake Kempthorne, Development Manager Mercy Centre Melbourne. Site inspections were undertaken with the assistance of Rebecca Mathie, Club Manager The Greens on William, Bathurst.

The process has been guided by:

- NSW Heritage Manual, 1999
- The Burra Charter, 1999
- Assessing Heritage Significance, 2000
- Model Brief for the Preparation of a Conservation Management Plan
- A Suggested Table of Contents for a Conservation Management Plan that can be endorsed by the NSW Heritage Council

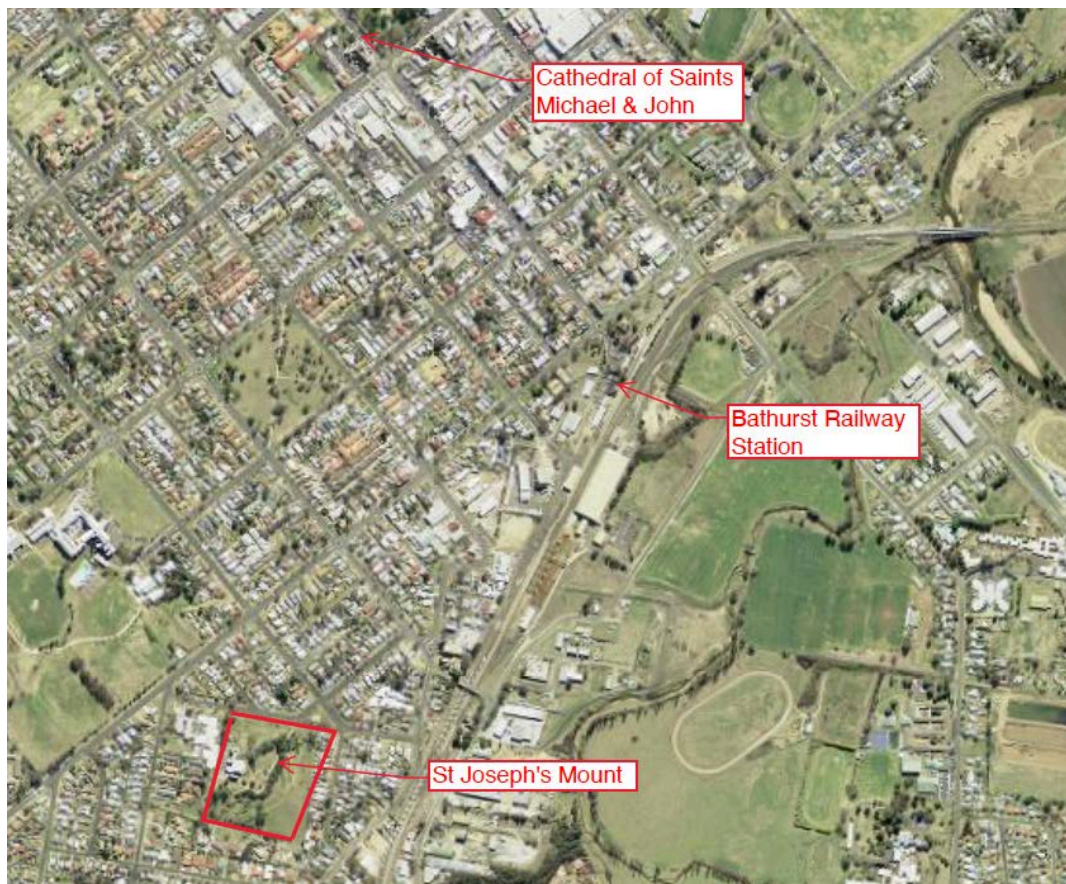


Figure 1.2: The location of St Joseph's Mount within the City of Bathurst. (Source Six Maps)

1.4 Limitations

The review was conducted over a period of four weeks in May and June 2020.

1.5 Identification of authors

This report was written by Ray Christison BA (Hons.) MAICD MPHA, heritage consultant of High Ground Consulting, Lithgow with assistance from Jennifer Christison of High Ground Consulting. Landscape management sections were written by Roseanne Paskin of Rose Deco Planning and Design.

2. Documentary evidence

2.1 Thematic History

This Thematic History was prepared by High Ground Consulting in 2007.

2.1.1 National, state and local historic themes

St Joseph's Mount, Bathurst has associations with a number of national and state historic themes, including:

National theme	New South Wales theme	Regional (Central West NSW) theme	Local (Bathurst Regional) theme
Building Settlements, Towns and Cities	Accommodation (Housing)	Housing the prosperous – mansions in town and country	Late Victorian house
		Housing the clergy and religious	Convent
Educating	Education	Public (tertiary education)	Experimental farm
		Private (independent schooling)	Teacher training school
Developing Australia's Cultural Life	Religion	Practising Catholicism	Convent
Marking the Phases of Life	Persons	Associations with Edward Gell, architect	Architect Edward Gell

2.1.2 Accommodation – Late Victorian house

2.1.2.1 The Busby family and Logan Brae

Dr George Busby came to Sydney from Scotland in 1824, and, after serving in Norfolk Island, Newcastle and Moreton Bay as Assistant Colonial Surgeon, he was appointed in 1828 to succeed Dr Richardson as Colonial Surgeon at Bathurst. His future wife, Agnes Thomson, arrived in Bathurst from Scotland in 1832 as housekeeper to her brother, who had come to Bathurst as its first Presbyterian Minister. George Busby and Agnes Thomson married in January 1833. Mrs Busby, in her recollections entitled, "Bathurst in the Thirties", writes: "Bathurst at that time consisted of six brick cottages and two mud houses, occupied by the military and police, and Government officials, the hospital and convict establishment...There were then five ladies in the city of Bathurst".

In this "city" George and Agnes brought up a large family. In 1838 they moved from the surgeon's quarters into the first private home in Bathurst. Mrs Busby lived there until her death, at the age of 96, in 1906. (This house was beside Clancy Motors in Howick Street. It was demolished in 1974).

The Busby's eldest child was John, born in September, 1833. His mother recalls that once as a toddler he was missing from the nursery. He was eventually found dealing his bread and butter to an unfortunate drunkard in the stocks, who – young John said – had no breakfast. John kept his reputation for kindness throughout his life, as his father had done before him.

When John Busby grew up, he went to Sydney to take up a career in banking. Later, he was Manager of the Union Bank of Australia in Orange, but moved from that position in 1862 to take over as Manager of the Commercial Banking Company of Sydney Ltd in Bathurst. Newspaper cuttings of the

time indicate the very high esteem in which he was held in both towns. John Busby married Harriet Kelman from the Hunter Valley in 1858. They had eleven children, six girls and five boys. Two of the children died young, a boy and the youngest, a girl. Of this family, none of the girls married, and only three of the boys.

Being a bank manager was evidently a lucrative business, as John Busby was able to commission the Bathurst architect, Edward Gell, to design what John Busby called a “villa” for him in the early 1870s. The builder was David Jones, who constructed, among other things, the Bathurst Court House.

The villa Logan Brae was set on a hill in South Bathurst, commanding extensive views of the countryside and distant hills, and having about 25 acres of land around it. Despite the statement in the specifications that the building must be “yielded and delivered up fully complete and perfect: by 11 April, 1877, the family did not move in until 15 March, 1878 as a letter of John Busby to his cousin testifies. The letter is addressed from Logan Brae, Bathurst, and is dated 7 June, 1878. It says in part, “In domestic matters we are in a tolerably satisfactory state. We moved into the new house on March 15, and find the change very beneficial...The workmen are still engaged about the outside premises, but with the exception of the planting I think we shall be rid of them in a week or two. The house is very comfortable, and roomy as you know.”

The very “roomy” house contained eight bedrooms, (three with dressing rooms attached), a nursery, drawing room, dining room (with nearby pantry, and an extensive cellar below), breakfast room, library, schoolroom, two bathrooms as well as kitchen, scullery, larder, storeroom, a room for “boots and knives”, laundry and wash-house. The two servants' bedrooms above the kitchen and the man's room above the laundry had their own staircases, and servants' stairs were also provided in the main part of the house.

The main rooms on the ground floor were ornately decorated, and legend has it that the craftsman who produced these beautiful mouldings around the ceilings later broke at least some of the moulds so that no other home would have quite the same ornamentation. John Busby went on a nine months trip to England and Europe about 1883.



Plate 2.1: Logan Brae photographed from the drive in 1880. (Sisters of Mercy, Bathurst Congregation)

John Busby died at *Logan Brae* on 17 February, 1891, at the age of 58. His obituary read as follows:

Mr John Busby, manager of the Commercial Bank died this evening at his residence, Logan Brae, after little more than a week's illness. The deceased belonged to a family whose name is associated with the history of Bathurst and the district. His father, Dr. George Busby, was Government surgeon in the early days of the colony, and died 20 years since, respected by all. His son John commenced the banking pursuit over 40 years ago, being then in the employ of the Union Bank. He left that to take service with the Commercial Bank, whose branch he managed in

Bathurst for about 30 years. In that position he became known as a wise counsellor, a trusted friend, and an esteemed citizen, whose death has brought grief to numerous relatives, and has caused widespread sorrow amongst all creeds. Besides being connected with several public institutions, he was an elder, and for many years treasurer, of the Presbyterian church of which his father was one of the first founders. The deceased was a nephew of the Hon. William Busby, and had many relatives in Sydney and other parts of the colony, including two brothers, both bank managers. He is survived by his mother, who is nearly 90 years of age, and by a widow and family of five daughters and four sons.¹

He was buried from St Stephen's Presbyterian Church.

Mrs Busby lived on at *Logan Brae* for some time, before moving to Sydney to live.

PRESENTATION TO MRS BUSBY.

OUR readers are aware that Mrs. John Busby, after a long residence in this city has removed with her family to Sydney. Having in view the valuable work she had at various periods performed in connection with St. Stephen's Church, the congregation felt that she should not be allowed to depart without taking with her some memento of their affectionate esteem. Accordingly several friends took the matter up, with the result that a suitably worded address was prepared and duly presented. It reads as follows: -

Dear Madam, - As you are about to leave Bathurst for a time, we, the minister, elders, and members of the committee of management wish to express, on behalf of the congregation of St. Stephen's Church, our sympathy with you in all your trials, and an earnest hope that your visit to Sydney many prove a comfort to yourself and your greatly esteemed family. We feel that the Disposer of our lot has laid on you many sorrows, but we rejoice to believe that He who sent these has sustained you under them. While we trust that the same grace may keep you and all dear to you, and may yet shed sunshine on your path in the days to come, we recognise your many and much valued services and influences in this congregation and its Sabbath Schools, and it will be a matter of heartfelt satisfaction to everyone when you can resume your place amongst us. Be assured, dear madam, that you have the sincerest esteem and the earnest prayers of us all, with whom you have so long served in the work of our church in Bathurst for the great cause of our Lord and Saviour.

We remain, dear madam,

Yours in every Christian regard

(here follow the signatures of the members of Session and committee of management.)

The address was handsomely illuminated by Miss Wilson, of Dubbo, and was bound in morocco, with inscription on the cover.

In addition to the address an album was presented by the children and teachers of St. Stephen's Sabbath school to Mrs. Busby and her daughters, thus recognising in a becoming manner the long-continued and faithful work done by them here. The album was bound in green morocco, with a silver shield suitably engraved. It was accompanied with a framed photograph showing the children attending the Milltown school, the superintendent, and teachers, and the building in the background. The arrangements in connection with the album and photograph were carried out by Miss J. Smith, one of the oldest teachers of the school.

After Mrs Busby's departure the house was used for a time as the students' residence for the Bathurst Experimental Farm. At that time it had been bought or rented from a Mrs Joseph Smith.

¹ Bathurst Advocate 17 February 1891

2.1.2.2 David Jones – Builder 1819-1899

David Jones was a builder and alderman on Bathurst Council. He was listed as living in Bentinck Street in 1878, the year that Logan Brae was completed. The original drawings of Logan Brae bear Jones' signature. An interesting and prolific man with natural architectural design sense, he was responsible for the construction of many of the towns finest buildings, several of them with the architect of Logan Brae, Edward Gell. These include the Bathurst Courthouse, Bathurst Railway Station, Cambria Terrace in Havannah Street, School of Arts Hall (Gell, demolished), St Peters Anglican Church, Rockley, (Gell), Abercrombie House, 227 Williams Street, (part Gell), 282 William Street and Bathampton to name a few.²

2.1.3 Accommodation – Convent**2.1.3.1 Housing the clergy and religious**

On arrival in Bathurst in 1866 the Sisters of Mercy resided for a few weeks “a five roomed cottage” in George Street³. This building appears to have been the old Fitzroy Hotel⁴.

After classes, and at the weekends, they visited the homes of the children, sought out the sick and the needy, and gave help where they could. They instructed adults; they visited the hospital, the gaol (situated, until 1888, just across the street – the present beautiful Machattie Park site); they walked the ‘highways and the byways’, bringing back many a soul to God. Cramped for space as they were in their little cottage, they did not complain.⁵

The Bishop initially made the former Deanery in Keppel Street his residence. In 1867 he turned this building over to the Sisters of Mercy ‘for a convent and orphanage’⁶. In 1868 Bishop Quinn launched an appeal for funds to erect a convent ‘and scholastic buildings, to enable the Sisters properly to carry out the objects of their vocation ...’. The convent was completed in 1869. ‘This was the beginning of St Mary’s College’⁷ which, with St Stanislaus’ College helped to establish Bathurst as a major centre for Catholic education in country NSW.

In 1908 the Sisters of Mercy of the Bathurst Diocese had amalgamated into a single group, and were looking for a house suitable for a central training Convent for their Novices. The Mother General at the time, Mother M Gertrude Sheehy, asked the Hon. John Meagher, a member of the Legislative Council of New South Wales, and a generous benefactor of the Catholic Church in Bathurst, to “keep an eye out” for a suitable residence.

His letters to Mother Gertrude indicate that Logan Brae was then on the market at the sum of £3,000 – which he described as a “gift”, considering that it had originally cost £14,000. With his typical generosity, John Meagher bought Logan Brae and its surrounding acres, and presented it to Mother Gertrude as a gift. His friend, Thomas O’Laughlin, of Ballarat, wished to help pay for the building. He completely furnished the new Convent. Mr James Dalton of Duntry League in Orange was another generous benefactor.

On December 8, 1909, Logan Brae was blessed by Cardinal Moran, and re-named St Joseph's Mount. The sisters moved in on December 12. In 1916 a Chapel was built beside the Convent, and in 1959 a science room and classroom were built beyond the Chapel. In 1962, a large wing was added to the

²From original research by Graham Lupp

³ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

⁴ Barker, T., 1998. A History of Bathurst Vol.2. p.252

⁵ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

⁶ Barker, T., 1998. A History of Bathurst Vol.2. p.252

⁷ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

northern sections of the house to provide more accommodation. Very little structural alteration has been carried out on the main part of the house, and if John Busby were here today, there is no doubt that he would still recognise the Logan Brae into which he moved his family in 1878.⁸

2.1.4 Education

2.1.4.1 Agricultural Experiment Farm

The Bathurst Agricultural Experiment Farm began in 1895. On July 15 1896 Logan Brae was leased to the New South Wales Department of Agriculture from a Mrs Joseph Smith, to become its headquarters. In 1897 the first students, who came from Hawkesbury Agricultural College, moved in. Logan Brae remained the headquarters of the Experiment Farm until around 1908. However, as early as 1901, it had been noted that the Farm would need greater accommodation facilities if it was to remain viable (the house could only accommodate around 13 students). Logan Brae was subsequently sold to John Meagher for the Sisters of Mercy in 1908.⁹

The People's Federal Convention 1896

Logan Brae was the setting of the major social event of the Federation Convention which was held at Bathurst in 1896 – during its time as headquarters of the Agricultural Experiment Farm. The garden party on 21 November, the last day of the convention, was reported to have had such lavish entertainment as to be a distraction to the delegates.

The National Advocate, dated Saturday November 21, 1896 ran a two column article which consisted, in the main, of descriptions of the ladies dresses. The visitors were welcomed by leading citizens of Bathurst and included the ladies committee president, Mrs Marriott (wearing black silk) and secretary, Mrs T.A. Machattie, (white silk) and other committee members, and also the president of the Convention Dr T.A. Machattie and the Mayor Dr W.P. Bassett. Among those present were Cardinal Moran, the Premier, Mr George Reid, Bishop Camidge, Bishop Byrne, Mr Sydney Smith, Minister for Mines and Agriculture Dr John See, MLA, Mr John Kidd and Hon E.W. Webb, MLC.

2.1.4.2 Teacher training school

The Sisters of Mercy have conducted education and training since the inception of the order in 1831. On arrival in Bathurst in 1866 the Sisters 'took charge of the Infant's School for very young boys and girls, and of the Girls' Certified Denominational School, which catered for girls of primary level and older'¹⁰. The Sisters also established a 'select' or 'high' school for young ladies to establish a source on income for the order. They also established music tuition for 'the townspeople – regardless of religion, gender or age'.¹¹

Theo Barker noted that Bishop of Bathurst Dr Quinn "is remembered not only for his pioneering work in establishing the diocese but also for his services to education." In this period the colonial government's Council of Education sought to obtain increasing control over textbooks and certification and support of teachers. Quinn, convinced that 'state aid for church schools would not last, ... set about creating in his diocese an independent system run by religious orders'.¹²

The Sisters of Mercy in Bathurst brought from Ireland the systems of teacher training established by the Order's founder Mother Catherine McAuley¹³. With sound teacher training methods in place the

⁸ Sr Mary Ryan, Archivist, Bathurst Mercy Congregation, October 1986, "The Busby Family and Logan Brae"

⁹ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

¹⁰ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.21

¹¹ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.23

¹² Barker, T., 1998. A History of Bathurst Vol.2. p.251

¹³ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.55

Sisters were able to expand the delivery of a high standard of education across the diocese. After the removal of state funding for Catholic schools in 1882 the Bishop of Bathurst appointed a Schools Inspector to maintain standards of education within the Diocese¹⁴.

From 1902 the Inspector began to press for 'more systematic teacher training for the Sisters'. Sister Novices were examined at 'the end of year of their Novitiate training, and the results were published in the Schools Report'.¹⁵ The strong reputation of the Sisters as teachers was seen in the popularity of Catholic Primary Schools¹⁶.

In 1909 the Hon. John Meagher KCSG MLC of Bathurst bought Logan Brae for the Sisters of Mercy, who had been looking for a suitable property to become their central noviate and teacher training facility. By the end of 1909, the novices, with their Mistress, Mother Mary Brendan, moved from the old novitiate at St. Mary's and took up residence with the novices from the Branch Houses at Logan Brae. It was blessed on 8 December by Cardinal Moran and renamed St Joseph's Mount.

The Bathurst Convent Annual of 1909 described the building as containing:

... 35 rooms, and will provide accommodation for at least 30 novices – at present there are 14. It is thoroughly equipped as a modern training college for teachers, and has one of the finest study halls in Australia. The best in the science of education will be availed of, and professors will lecture on special subjects. The convent is, as we have said, delightfully situated, and is surrounded by 25 acres of beautiful grounds and gardens. Hitherto the Mother house of the Sisters of Mercy has been St. Mary's College, but the Mother-General will henceforward administer the eight other communities in the diocese, in which there are over 120 nuns, from Mount St. Joseph.

In 1916 the Chapel was added. The architect was William Dryden of Bathurst. The Chapel's blessing was reported in the Bathurst National Advocate on September 10, 1917.

During the first half of the twentieth century, membership grew to almost two hundred Sisters, mostly drawn from the local rural area. St Joseph's Mount Training School for young teachers was one of the first to be registered under the new Catholic Board of Education in 1931. The training and supervision of Sisters in the schools was a priority for the Bathurst Mercies, who set up their own Primary Teacher Training Centre at St Joseph's Mount, Bathurst. It functioned until the 1960s when Sisters began attending tertiary institutions in Australia and overseas. In 1961 a science block was added, together with a combined lecture and study room. In 1962 the new large northern wing was completed, providing more accommodation.

The parish schools founded and administered by the Sisters of Mercy became an integral part of the Diocesan Education systems in the 1970s.

2.1.5 Religion – Practising Roman Catholicism

The Order of Mercy was established in Ireland by 'a remarkable Irish woman, Catherine McAuley'¹⁷. Catherine McAuley is noted as having a passion to care for others:

¹⁴ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.60

¹⁵ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.62

¹⁶ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.63

¹⁷ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.5

She saw a particular need for the education of women, for employment training, for shelter for the unemployed and for servant girls to escape sexual harassment in their workplaces.¹⁸

Catherine established the 'House of Mercy' in Dublin in 1827. From this base she commenced training programmes for women and, with the help of other women, continued a ministry of working with the sick and poor. In 1830 the Archbishop of Dublin encouraged her to 'assure the permanence of' this work by establishing a Religious Order. 'The Sisters of Mercy were formed in 1831'.¹⁹

In November 1865 Dr. Matthew Quinn was consecrated in Ireland as first Bishop of Bathurst. He subsequently met with the order's Mother Superior to discuss the possibility of a group of Sisters of Mercy accompanying him to Bathurst. Mother M. Ignatius Croke was presented to him as the leader of such a group. A group of seven Sisters left Ireland on 21 July 1866 and arrived in Sydney on 31 October that year²⁰. These women came from the convent at Charleville in Ireland where they had 'first-hand experience not only of the professions of teaching and nursing, but of many practical ways of dealing with poverty and distress'²¹.

They arrived in Bathurst on 29 October, 1866²². The establishment of charitable and educational works by a group of Sisters of Mercy in Bathurst in this era was consistent with a range of contemporary movements of small groups of sisters into all parts of the Australian colonies in the late nineteenth century.

At the time of the arrival of the Sisters of Mercy in Bathurst the activity of the Catholic Church was centred on property fronting George and Keppel Streets. The Cathedral of St Michael and St John was situated on the corner of Keppel and William Streets. A deanery faced Keppel Street and a primary school occupied part of the block facing George Street.

Between 1868 and 1875 38 Sisters came from Ireland to Bathurst²³. Australian girls also began to join the order, with Sister M. de Paul Drinan being the first to profess in January 1874²⁴. As additional Sisters arrived and new postulants were recruited Mother M. Ignatius Croke made arrangements to extend the work of the order across the Bathurst Diocese. Between 1875 and 1890 new convents were established in towns and settlements across the Diocese as follows:

- Carcoar, Mount St. Joseph's – 1875
- Mudgee, St Matthew's – 1875
- Orange, Sacred Heart Convent – 1878
- Dubbo, St Patrick's – 1880
- Forbes, St. Joseph's – 1881
- Wellington, St. Ignatius' – 1883
- Parkes, Convent of Mercy – 1884 (relinquished after a short time)
- Cobar, Convent of Mercy – 1884 (later affiliated with Bourke)
- Bourke, Convent of Mercy – 1890 (later included in the Diocese of Wilcannia-Forbes)²⁵

¹⁸ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.6

¹⁹ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. pp.7-8

²⁰ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.18

²¹ Ryan, M. RSM, 1996. Women & Mission in Australia . A Case Study. p.14

²² Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. p.19

²³ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. pp.20-22

²⁴ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. p.22

²⁵ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

In 1890 the branch convents at Mudgee, Forbes, Dubbo and Bourke were made independent by Mother M. Ignatius. Each had its own Novitiate and Reverend Mother.²⁶

Mother M. Ignatius Croke died on 2 March 1905²⁷. She was succeeded on 7 January 1908 by Mother M. Gertrude Sheehy who had accompanied Sister M. Ignatius Croke from Ireland in 1866. Mother M. Gertrude Sheehy was the first Mother General of the order in the Bathurst Diocese²⁸. In 1908 she amalgamated all Convents in the Bathurst Diocese. This amalgamation created a need for the establishment of a central Novitiate.²⁹

Bathurst businessman John Meagher, who is remembered as a great benefactor of the Catholic Church, purchased Logan Brae and presented it to the order on 8 December 1909³⁰. According to his son Michael:

For fifty-three years he had observed the wonderful work performed by the devoted Sisters in Bathurst ... It was a simple Irishman's testimony of love and esteem.³¹

Meagher, born in County Clare, Ireland, was married in Sydney in 1864 and moved with his wife, Mary, to Bathurst. He opened a store in Bathurst in 1867 and later opened branches at Hill End, Trunkley, Locksley and Dirty Swamp.

Large stores were later established at Temora, West Wyalong, Barmedman, Forbes, Cootamundra, Parkes and Yass. He imported drapery, grocery, ironmongery, wines and spirits, and furniture.³²

Active in community affairs and politics he sponsored the 1888 centenary celebrations in Bathurst. He was also 'vice-president of the committee that sponsored the People's Federal Convention at Bathurst' held in 1896 and 'entertained in his home (Sir) Edmund Barton, Cardinal Moran and many leading Federationists'³³.

Meagher was a devout Catholic, a daily communicant throughout his life, a generous donor to Catholic Orders and organisations, notably the Sisters of Mercy, ... and to St Stanislaus' College. In December 1903 he was appointed knight commander in the papal Order of St Gregory the Great. A 'sterling, big-hearted Irishman', he continued to champion Irish Catholic causes through years when sectarianism was a familiar tension.³⁴

In writing a foreword to the centenary history of the order published in Bathurst in 1931 John Meagher made observations about the Sisters of Mercy that reflect his admiration for this dedicated group of women:

Catholics are proud to point to the lives and work of these noble ladies who have done and are doing so much for the Kingdom of Christ. From them thousands of our children learn from their religion and from their letters. They care for the orphans. They nurse the sick. ... Their work in hospitals is important. So too is their work for the orphans. Above all their

²⁶ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. p.22

²⁷ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. p.19

²⁸ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. p.24

²⁹ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

³⁰ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. pp.43-44

³¹ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. pp.43-44

³² Meagher, John (1836-1920) Biographical Entry – Australian Dictionary of Biography Online.

³³ Meagher, John (1836-1920) Biographical Entry – Australian Dictionary of Biography Online.

³⁴ Meagher, John (1836-1920) Biographical Entry – Australian Dictionary of Biography Online.

work in the schools is important. There they are playing a large part in keeping our children, and so our people, true to their faith....³⁵



Plate 2.2: St Joseph's Mount on the day it was blessed in 1909.

The centenary history of the Sisters of Mercy in Bathurst, published in 1966, acknowledged John Meagher's legacy to the order as:

... a munificent gift, from a great-hearted Catholic layman, whose deep faith made him know instinctively that 'to love God is to be interested in the things in which God is interested'.³⁶

By the end of 1909 Novices from all over the Diocese had moved into Logan Brae. The name of the building was changed to St Joseph's Mount. The Mistress of Novices was Mother Mary Brendan.³⁷

A chapel was constructed on the southern side of the original building in 1916 and in 1931 a training school for teachers was established at St Joseph's Mount. This training school was one of the first to be registered under the new Catholic Board of Education in 1931. Further additions to St Joseph's Mount included the following:

- A science block with combined lecture and study room in 1961.
- The northern accommodation wing erected in 1962.
- St Catherine's Convent for infirm and aged Sisters erected in 1966.

The Bathurst National Advocate reported the opening of the chapel in 1916 as follows:

³⁵ Meagher, M., 1931. The Advent of the Sisters of Mercy Bathurst, 1866. p.11

³⁶ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

³⁷ Sisters of Mercy, 1966. Sisters of Mercy – Bathurst 100 Years – 1866-1966.

The Chapel, carried out in the early English style of architecture, is a pleasing composition, beautifully situated on the slope of a hill on the western side of the mansion, lately presented to the Sisters of Mercy for a Novitiate, by the Hon. John Meagher, M.L.C., and set in the midst of winding paths and grassy slopes, it forms a charming picture, so charming, that one feels sorry that it had not been built on the eastern side of the house, where it might have been seen and its beauties enjoyed by lovers of the beautiful. It will certainly become one of the all too few places of interest, where visitors to our city will wend their way. The architect is to be commended for his highly successful blending of the modern mansion with the medieval ecclesiastical; this he has achieved by means of the cloister which connects the chapel with the house: one passes from the hall through a lobby with elliptical arches forming the entrance to the arches and on to two four centered cloisters which soften the transition from the domestic to the ecclesiastical. One passes from one to the other without that jarring of the artistic sense which is so often felt in like circumstances. Passing along the cloister with simple yet characteristic roof and pointed arcade, we come to the entrance door of the chapel, richly moulded and flanked on either side by holy water; the doors are of oak with suitable fittings. We now enter the chapel, the dimensions of which are: length of nave 50 feet; width 24 feet; height to apex of roof 28 feet; Sanctuary 17 feet by 15 feet 6 ins; the nave is lighted by 7 lancet windows and a triple light window; the Sanctuary is lighted by 4 lancet windows, one of which picturing the Sacred Heart of Jesus. The work of Messrs. Carter and Tarrant, of Sydney and presented by Mrs. L. Mockler and family in memory of the late Mr. Lafrence Mockler, is placed on the "epistle" side. As we enter the chapel, we feel that we have passed from the modern to the medieval, from fuss and phrensy to an atmosphere where one may pray without distraction; where every architectural feature tends to assist us to raise our hearts and minds to God. It has been said "the general appearance of the early English style of building is magnificent and rich rather from the number parts than from the details" this one appreciates on entering the chapel at St. Josephs' Mount, with its elegant open timbered roof, the graceful sweeping curves of the framed and moulded trusses; the delicacy and lightness of the traced spandrels; the sanctuary nestling in the niches; the pretty white altar which seems to have grown to fit the situation, and to have risen from its crimson carpet-bed, like a pure and delicate flower.³⁸



Plate 2.3: St Joseph's Mount photographed late in the afternoon not long after the construction of the chapel. (Sisters of Mercy Bathurst Congregation).

³⁸ Bathurst National Advocate, 10 September 1917.



Plate 2.4: Southern section of a panorama printed in the 1966 Sisters of Mercy, Bathurst Centenary booklet (Sisters of Mercy Bathurst Congregation).



Plate 2.5: Northern section of a panorama printed in the 1966 Sisters of Mercy, Bathurst Centenary booklet (Sisters of Mercy Bathurst Congregation).

2.1.6 Persons - Associations with Edward Gell, architect

Edward Gell, the architect of Logan Brae, was English born and trained. His career after migration to Australia included a wide range of domestic and ecclesiastic work in the Bathurst district that led to a role in the eventual establishment and management of the Lithgow potteries and the development of Lithgow as a major industrial centre.

Born in Yorkshire in 1818, Gell practiced as an architect until he migrated to Australia in 1858. Although he reputedly trained under the influential Gothic Revival architect Augustus Welby Pugin there is no evidence of this although it is clear in his work that he was influenced by Pugin and had absorbed his principles and approach to ecclesiastical architecture.

Within a month of his arrival in Australia he was employed supervising the building of the Church of St. Michael and St. John in Bathurst. He quickly built up a practice in the district based initially on work for the Catholic Church, designing a Catholic presbytery at Orange and churches at Cowra and Peel. He later also designed St Stanislaus College and the Bathurst Convent, and until 1880 was involved with almost every significant building in the Diocese. Further afield he also designed a Dominican Convent in Maitland, churches in Tamworth and Kempsey and a convent in Armidale. He was also employed by other denominations, designing a Presbyterian school in Bathurst, alterations to the Bathurst Anglican Manse, the Bathurst Denominational School, and churches at Georges Plains, Rockley, Guyong, Blayney, and Hill End. Other work included a steam flour mill at Cowra and the Carcoar Hospital.

During a depression in the building industry from 1863 to 1866 he was employed by the inaugural Bathurst Council as town surveyor. In 1867 he was elected to the Council and appointed Mayor for a year, remaining on the Council for several more years. Following the Bathurst gold rushes he became involved in a number of mining ventures, the most important being the Lithgow Valley Colliery Company, formed in 1871 with Patrick Higgins, the contractor for the construction of the Zig Zag railway, Edward Combes a landowner, engineer and noted amateur artist from Glanmire near Bathurst, Thomas Talbot Wilton, co-proprietor of the Bathurst Times and John Busby, a Bathurst solicitor and grandson of the builder of Sydney's first regular water supply. The company grew rapidly, soon obtaining substantial contracts to supply the Great Western Railway. It also reached an agreement with a brick maker named Aston who commenced business on an area of the mining company's land making use of clay deposits and otherwise unsaleable small coal. By 1876 the Examiner of Coal Fields reported that the colliery's brickworks were manufacturing fire, common and other bricks for terracotta and ornamental work.

At the same time Gell received the first of several commissions for large country mansions in the Bathurst district. This was for Leeholme, built 1871-72 for a prominent local farming family, the Lees. Leeholme is a two storey villa built in a classical style with a symmetrical floor plan and a single storey verandah painted in alternating strips.

This was followed by Logan Brae in 1876 for Gell's friend and fellow mining company director John Busby. This stood on a 25 acre property with views east over Bathurst to the Blue Mountains and not far from St Stanislaus College that Gell had earlier designed for the Catholic Church. The two storey villa with 35 rooms was completed in 1877 at a cost of £14,000 and made extensive use of ornamental white bricks from the Lithgow brickworks. Like Leeholme it is also surrounded by a single storey verandah with contoured corrugated iron roof painted in alternating colours. The brickwork, with expressed white brick quoins and recessed white brick window surrounds is complemented by extensive patterned stucco weather mouldings. There is cast iron detailing along the verandahs and elaborate cast iron ventilation grates in the soffit lining. This building, again like Leeholme, has a formal symmetrical floor plan.

After Busby's death in 1894 Logan Brae passed into the hands of Mrs Joseph Smith who leased it to the Government as the headquarters of the Bathurst Agricultural Experimental Farm. In 1896 it was the site of official celebrations during Bathurst Federation Convention. Later, in 1909, it was purchased by John Meagher, a wealthy Catholic member of the Legislative Council, who donated it to the Sisters of Mercy. It became a novitiate and teacher training centre for the order.



Plate 2.6: Edward Gell's front elevation of Logan Brae.
(Sisters of Mercy Bathurst Congregation).

Gell's next mansion was Bradwardine, a similar mansion for Sir Francis Bathurst Suttor commenced in 1876. The formal grand floor plans of these mansions is relaxed considerably in Hatherly, Gell's own residence commenced in 1878. Until this time Gell's architecture is more than competent but impersonal and unoriginal. In his own house Gell created a relaxed and comfortable domesticity in an asymmetrical and easily manageable house that avoids the formulaic approach of much of his architecture. He was to live there for only three years, however.



Plate 2.7: Logan Brae in 1900. (Sisters of Mercy, Bathurst Congregation)

In 1880 work began in Bathurst on Hereford Court for James Rutherford, the American founder of Cobb and Co. This sophisticated mansion has the white detailed brickwork of Logan Brae sheltering behind a delicate two storey verandah of cast iron. Like Hatherly it has a more relaxed air of domesticity than the imposing piles of the earlier mansions but it was to be his last mansion, from this time on the majority of his architecture consists of buildings for the pottery and colliery in Lithgow.

The continuing expansion of Gell's Lithgow business interests meant that it had become necessary for one of the partners to live in the town. Gell was the obvious choice to oversee the building works required at the two mines and the pottery that had begun to produce the glazed tableware for which it is now famous. In 1881 he made the move and managed the business until well into the 1890s. Among the many utilitarian buildings of this decade there is also the delightful small rustic Gothic villa built as the manager's residence and where Gell himself lived. Slowly failing health meant he took regular holidays in healthier parts of the colony and even returned to England for a short time. When two of the partners died in the mid 1890s and Gell was too ill to continue the Company was sold, although Gell and Wilton both retained some shares.

Gell died in the last of his buildings, a residence known as Ebor at Bayswater Road, Kings Cross in October 1899.

2.2 Ability to demonstrate

This section of the Conservation Management Plan identifies which elements of the fabric of St Joseph's Mount demonstrate particular aspects of the story of the place.

Logan Brae exterior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Triple-hipped corrugated iron roof & roof structure	X	X	X	X
Hipped roof over laundry wing	X	X	X	X
Hipped roofs over novitiate kitchen	X	X	X	X
Skillion roof over rear verandah		X	X	
Front verandah roof	X	X	X	X
Guttering & downpipes		X	X	
Chimneys	X	X	X	X
Decorative chimney tops	X	X	X	X
Front verandah – cast pillars & lacework	X	X	X	X
Verandah floor & structure	X	X	X	X
Wooden access ramp – southern verandah			X	
Front steps	X	X	X	X
Decorative brick retaining walls & balustrades	X	X	X	X
Balcony above front entrance	X	X	X	X
Cast balcony railing	X	X	X	X
Cast drainage pipes (Metters brand) – northern side	X	X	X	X
Eaves	X	X	X	X
Cast vents in eaves	X	X	X	X
Carved eave brackets.	X	X	X	X
English Bond face brickwork	X	X	X	X
Quoins	X	X	X	X
Contrasting brickwork	X	X	X	X
Decorative stone hood mouldings	X	X	X	X
Double-hung windows	X	X	X	X
Leadlight windows	X	X	X	X
Front door	X	X	X	X
Etched glass door light & sidelights		X	X	
Wrought iron panel – front door		X	X	
Front door bell	X	X	X	X
Entry door & sidelight – southern side	X	X	X	X
Door to dining room (refectory)		X	X	

Logan Brae exterior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Screen door – dining room (refectory)		X	X	
Concrete access ramp			X	
Rear verandah infill structure		X	X	
Rear verandah infill windows		X	X	
Ground floor extension – northern side of courtyard		X	X	
Doors & windows – ground floor extension		X	X	
Extensions – southwest wing		X	X	
Doors & windows – southwest extensions		X	X	
Rear courtyard		X	X	
Rear courtyard paving				
Plumbing ventilation flues		X	X	
Electrical services		X	X	
Television aerial		X	X	

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Logan Brae front hall				
Plaster ceiling	X	X	X	X
Plaster wall surfaces, decorative arcading, cornices & ceiling rose	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Art deco light fitting		X	X	
Madonna & child statue		X	X	
Tessellated tile floor	X	X	X	X
Cedar front door & rim lock	X	X	X	X
Front door night latch		X	X	
St Joseph's Mount presentation plaque		X	X	
Electrical services & switches		X	X	
Fire extinguisher			X	
John Meagher Room				
Plaster ceiling	X	X	X	X
Plaster wall surfaces, cornices & ceiling rose	X	X	X	X
Marble fireplace surround & mantelpiece	X	X	X	X
Cast iron fire grate	X	X	X	X
Fireplace infill			X	

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Cedar joinery & skirting boards	X	X	X	X
Cedar double hung windows & window joinery	X	X	X	X
Cedar panelled doors	X	X	X	X
Door lock mechanisms, door knobs & fingerplates	X	X	X	X
Chandeliers		X	X	
St Joseph the worker statue		X	X	
Floor	X	X	X	X
Carpet			X	
Portrait of John Meagher		X	X	
Electrical services & switches (pull switches)		X	X	
Gas heater and services			X	
Front parlour				
Plaster ceiling	X	X	X	X
Plaster wall surfaces, cornices & ceiling rose	X	X	X	X
Marble fireplace surround & mantelpiece	X	X	X	X
Cast iron fire grate	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Cedar double hung windows & window joinery	X	X	X	X
Cedar panelled doors	X	X	X	X
Door lock mechanisms, door knobs & fingerplates	X	X	X	X
Light fitting		X	X	
Floor	X	X	X	
Carpet		X	X	X
Electrical services & switches (pull switches)		X	X	
Gas heater and services			X	
Telephone room				
Cedar panelled ceiling & walls	X	X	X	X
Plaster wall surfaces	X	X	X	X
Cedar panelled doors	X	X	X	X
Door lock mechanisms, door knobs & fingerplates	X	X	X	X
Light fitting		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services & switches		X	X	
Cellar				
English bond brickwork	X	X	X	X

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Drainage pipes	X	X	X	X
Vaulted area beneath front hall	X	X	X	X
Shelving in vaulted area	X	X	X	X
Staircase & timber landing	X	X	X	X
Drainage trenches (beneath front parlour)		X	X	
Repairs to front parlour floor		X	X	
Gas services		X	X	
Electrical services & fittings		X	X	
Central Hall & Main Staircase				
Plaster ceiling	X	X	X	X
Plaster wall surfaces, decorative arcading, cornices & ceiling rose	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Art deco light fitting		X	X	
Statue of St Joseph		X	X	
Tessellated tile floor	X	X	X	X
Cedar archway beneath staircase	X	X	X	X
Side door & lock	X	X	X	X
Grandfather clock & plinth		X	X	
Staircase	X	X	X	X
Cedar panelling	X	X	X	X
Balustrades, posts & cedar panelling	X	X	X	X
Staircase windows	X	X	X	X
Decorative friezes	X	X	X	
Madonna		X	X	
Hall to breakfast room	X	X	X	X
Service bell & mounting	X	X	X	
Northern hall	X	X	X	X
Electrical services & switches		X	X	
Breakfast room				
Plaster ceiling	X	X	X	X
Plaster wall surfaces, cornices & ceiling rose	X	X	X	X
Marble fireplace surround & mantelpiece	X	X	X	X
Cast iron fire grate	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Cedar double hung window & window joinery	X	X	X	X
Cedar panelled door	X	X	X	X

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Door lock mechanisms, door knobs & fingerplates	X	X	X	X
Light fitting		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services & switches (pull switches)		X	X	
Gas heater and services			X	
Service hall & maid's stairs				
Plaster ceiling & wall surfaces	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Cedar panelled door to central hall & frosted glass panels	X	X	X	X
Crown light above door	X	X	X	X
Floor	X	X	X	X
Carpet		X	X	
Archway to maid's stairs	X	X	X	X
Maids' stairs railing	X	X	X	X
Maids' stairs	X	X	X	X
Maids' stairs linoleum		X	X	
Art deco era cupboard at top of stairs		X	X	
Cedar panelled door to rear verandah	X	X	X	X
Cedar panelled door to larder	X	X	X	X
Door to store room	X	X	X	X
Light fittings		X	X	
Electrical services & switches		X	X	
Larder				
Plaster ceiling & wall surfaces	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Cedar window joinery & window glazing	X	X	X	X
Cedar panelled door to service hall	X	X	X	X
Door to rear verandah		X	X	
Screen door on rear verandah		X	X	
Floor	X	X	X	X
Linoleum		X	X	
Slate shelving	X	X	X	X
Wooden shelving brackets	X	X	X	X
White backing tiles	X	X	X	X
High wooden shelving	X	X	X	X

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Light fitting & electrical services		X	X	
Store room				
Planked ceiling	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Cedar window joinery & window glazing	X	X	X	X
Cedar panelled door to service hall	X	X	X	X
Cedar dresser	X	X	X	X
Pine hutch		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services & fittings	X	X	X	X
Housemaid's closet				
Plaster wall & ceiling linings	X	X	X	X
Panelled stair linings	X	X	X	X
Cedar joinery	X	X	X	X
Shelving		X	X	
Floor	X	X	X	X
Carpet		X	X	
Cedar door & joinery	X	X	X	X
Electrical services & fittings		X	X	
Prayer room				
Plaster ceiling	X	X	X	X
Plaster wall surfaces, cornices & ceiling rose	X	X	X	X
Marble fireplace surround & mantelpiece	X	X	X	X
Fireplace infill		X	X	
Cedar joinery & skirting boards	X	X	X	X
Cedar double hung window & window joinery	X	X	X	X
Cedar panelled door	X	X	X	X
Door lock mechanisms, door knobs & fingerplates	X	X	X	X
Light fitting		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services & switches		X	X	
Gas heater and services		X	X	
Bedroom & dressing room				
Plaster ceiling	X	X	X	X

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Marble fireplace surround & mantelpiece	X	X	X	X
Cast iron fire grate	X	X	X	X
Cedar joinery & skirting boards	X	X	X	X
Cedar double hung window & window joinery	X	X	X	X
Cedar panelled door to hall	X	X	X	X
Door lock mechanisms, door knobs & fingerplates		X	X	
Light fitting		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services & switches (pull switches)		X	X	
Gas heater and services		X	X	
Downstairs bathroom				
Plaster ceiling	X	X	X	X
Cedar double hung window & window joinery	X	X	X	X
Cedar panelled doors	X	X	X	X
Door lock mechanisms, door knobs & fingerplates		X	X	
Toilet & bath		X	X	
Floor and wall tiling		X	X	
Shower			X	
Light fitting		X	X	
Electrical services & switches		X	X	
Laundry (former kitchen)				
Gyprock ceiling		X	X	
Windows & window joinery	X	X	X	X
Cedar panelled doors	X	X	X	X
Plaster wall finishes	X	X	X	X
Floor & wall tiling		X	X	
Former oven alcove	X	X	X	X
Cupboards & benches		X	X	
Broom cupboard (former cook's stairs)	X	X	X	X
Plumbing services & fittings		X	X	
Electrical services & fittings		X	X	
Boiler room (former)				
Plaster wall & ceiling linings	X	X	X	X
Concrete floor	X	X	X	X
Window & window joinery	X	X	X	X
Ledged & braced door	X	X	X	X

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Hollow core sliding door & frame		X	X	
Boarded lining of former cook's stairs	X	X	X	X
Wash tubs		X	X	
Plumbing & plumbing fittings		X	X	
Hot water service		X	X	
Former central heating pipes		X	X	
Electrical services, fittings & switchboard		X	X	
Port room				
Plaster wall & ceiling linings	X	X	X	X
Concrete floor	X	X	X	X
Window & window joinery	X	X	X	X
Ledged door & rim lock	X	X	X	X
Hollow core door & frame			X	
Shadows of former cupboards	X	X	X	X
Electrical services & fittings.		X	X	
Ground floor rear verandah				
1870s English bond brick walls	X	X	X	X
1960s stretcher bond brick walls		X	X	
Timber-framed external windows		X	X	
Polished concrete paving & repairs		X	X	
Terrazzo paving			X	
Cast iron downpipes	X	X	X	X
Electrical services & fittings.		X	X	
Kitchen & breakfast room				
1870s English bond brick walls	X	X	X	X
1960s stretcher bond brick walls		X	X	
1960s windows		X	X	
Kitchen benches, cupboards & fittings			X	
Floor coverings		X	X	
Cool room		X	X	
Central heating		X	X	
Plumbing services & fixtures		X	X	
Electrical services & fittings		X	X	
Scullery				
Benches, cupboards & fittings		X	X	
Floor coverings		X	X	
Central heating		X	X	
Plumbing services & fixtures		X	X	

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Electrical services & fittings		X	X	
Upstairs landing & hallways				
Plaster ceiling	X	X	X	X
Plaster wall surfaces, skirting, cornices & ceiling rose	X	X	X	X
Cedar joinery, including cupboard doors	X	X	X	X
Light fitting		X	X	
Madonna & child statue & stand			X	
Floor	X	X	X	X
Linoleum floor coverings		X	X	
Balustrades, posts & cedar panelling	X	X	X	X
Bedroom (Museum)				
Plaster ceiling, wall finishes, cornice & skirting	X	X	X	X
Marble fireplace surround & mantlepiece	X	X	X	X
Cast iron fire grate	X	X	X	X
Cedar double hung windows & window joinery	X	X	X	X
Cedar panelled doors & joinery	X	X	X	X
Door lock mechanisms		X	X	
Light fitting		X	X	
Floor	X	X	X	X
Electrical services & switches		X	X	
Dressing Room (Bursar's office)				
Plaster ceiling, wall finishes & skirting	X	X	X	X
Cedar double hung window & window joinery	X	X	X	X
Cedar panelled doors & joinery	X	X	X	X
Door lock mechanisms		X	X	
Light fitting		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services & switches		X	X	
Gas services & heater		X	X	
Eastern office				
Plaster ceiling, wall finishes, cornices & skirting	X	X	X	X
Cedar french windows & window joinery	X	X	X	X

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Cedar panelled door & joinery	X	X	X	X
Door lock mechanisms		X	X	
Floor	X	X	X	X
Carpet		X	X	
Art deco cupboards & shelving		X	X	
Light fitting		X	X	
Electrical services & switches		X	X	
Gas services & heater		X	X	
Congregational Leader's office				
Plaster ceiling, wall finishes, ceiling rose, cornice & skirting	X	X	X	X
Cedar double hung windows & window joinery	X	X	X	X
Cedar panelled doors & joinery	X	X	X	X
Door lock mechanisms		X	X	
Light fittings		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services, lights & switches		X	X	
Gas services & heater		X	X	
Plaster ceiling, wall finishes, cornice & skirting	X	X	X	X
Marble fireplace surround & mantlepiece	X	X	X	X
Cedar double hung windows & window joinery	X	X	X	X
Cedar panelled doors & joinery	X	X	X	X
Door lock mechanisms		X	X	
Floor	X	X	X	X
Carpet		X	X	
Electrical services, lights & switches		X	X	
Gas services & heater		X	X	
Secretary's office				
Plaster ceiling, wall finishes, cornice & skirting	X	X	X	X
Marble fireplace surround & mantlepiece	X	X	X	X
Cedar double hung windows & window joinery	X	X	X	X
Cedar panelled door & joinery	X	X	X	X
Door lock mechanisms		X	X	
Floor	X	X	X	X
Carpet		X	X	

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Electrical services, lights & switches		X	X	
Gas services & heater		X	X	
Toilet				
Plaster ceiling& wall finishes	X	X	X	X
Cedar double hung window & window joinery	X	X	X	X
Cedar panelled door & joinery	X	X	X	X
Door lock mechanism				
Floor				
Plumbing services & fixtures				
Electrical services & fittings				
Kitchenette				
Ceiling & wall finishes			X	
Floor & floor tiling			X	
Kitchen bench & cupboards			X	
Cedar panelled door			X	
Door lock mechanism			X	
Cedar window & window joinery			X	
Plumbing services & fixtures			X	
Electrical services & fittings			X	
Archive				
Plaster ceiling, wall finishes, cornice & skirting	X	X	X	X
Marble fireplace surround & mantelpiece	X	X	X	X
Cedar double hung window & window joinery	X	X	X	X
Cedar panelled door & joinery	X	X	X	X
Door lock mechanisms		X	X	
Floor	X	X	X	X
Carpet		X	X	
Compactus			X	
Art deco era cupboard		X	X	
Electrical services, lights & switches		X	X	
Gas services & heater		X	X	
Bathroom				
Ceiling & wall finishes & tiling		X	X	
Floor & floor tiling		X	X	
Cedar panelled door, cedar window & joinery	X	X	X	X
Door lock mechanism		X	X	
Plumbing services & fixtures		X	X	
Electrical services & fittings		X	X	

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Kitchen				
Ceiling & wall finishes & skirting		X	X	
1960s cupboards		X	X	
Cedar double hung windows & window joinery	X	X	X	X
Cedar panelled doors & joinery	X	X	X	X
Door lock mechanisms		X	X	
Floor	X	X	X	X
Floor coverings		X	X	
Plinth for sink & kitchen cupboards		X	X	
Kitchen benches & cupboards		X	X	
Plumbing services & fixtures		X	X	
Electrical services, lights, switches & stove		X	X	
Gas services & heater		X	X	
Upstairs rear verandah				
Roof lining		X	X	
English bond brickwork	X	X	X	X
Arched door openings	X	X	X	X
Stretcher bond brickwork – western wall		X	X	
Window frames & glazing – western wall		X	X	
1960s cupboards		X	X	
Arts & crafts style doors		X	X	
Floor		X	X	
Electrical services		X	X	
Cells and infirmary – northern wing				
Halls & steps		X	X	
Cells		X	X	
Internal doors, cupboards & other fixtures		X	X	
Central heating system		X	X	
Plumbing services & fixtures		X	X	
Electrical services & fittings		X	X	
Cells and bursary – southern wing				
Halls & steps		X	X	
Walkway to first floor rear verandah		X	X	
Cook's staircase space	X	X	X	
Cells and bursary		X	X	
Bathroom & toilet		X	X	

Logan Brae interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Internal doors, cupboards & other fixtures		X	X	
Central heating system		X	X	
Plumbing services & fixtures		X	X	
Electrical services & fittings		X	X	

St Joseph's Mount Novitiate wing	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Novitiate wing exterior				
Hipped corrugated iron clad roof & roof structure		X	X	
Guttering & downpipes		X	X	
Eastern landing				
Western landing, steps & awning		X	X	
Stretcher Bond face brickwork		X	X	
Quoins & string courses		X	X	
Fenestration & window surrounds		X	X	
Aluminium-framed doors		X	X	
Timber-framed doors		X	X	
Aluminium-framed windows				
Roof mounted collar panels				
Electronic sign – northern wall		X	X	
Novitiate wing: Ground floor interior				
Hall		X	X	
Terrazzo floor tiling		X	X	
Dining room		X	X	
Vinyl-tiled floor		X	X	
Scullery		X	X	
Scullery benches & cabinets		X	X	
Stair well & stairs		X	X	
Balustrades		X	X	
Bathroom		X	X	
Reading room		X	X	
Reading room display cabinets		X	X	
Library		X	X	
Internal doors, cupboards & other fixtures		X	X	
Central heating system		X	X	
Plumbing services & fixtures		X	X	
Electrical services & fittings		X	X	

St Joseph's Mount Novitiate wing	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Basement interior				
Stair well & stairs		X	X	
Balustrades		X	X	
Kitchenette		X	X	
Toilet		X	X	
Meeting room		X	X	
Office		X	X	
Internal doors, cupboards & other fixtures		X	X	
Central heating system		X	X	
Plumbing services & fixtures		X	X	
Electrical services & fittings		X	X	
First floor interior				
Entrance hall		X	X	
Stair well & stairs		X	X	
Balustrades		X	X	
Bathrooms		X	X	
Cells		X	X	
Internal doors, cupboards & other fixtures		X	X	
Central heating system		X	X	
Plumbing services & fixtures		X	X	
Electrical services & fittings		X	X	

St Joseph's Mount Chapel exterior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Asbestos cement shingle roof over chapel			X	
Terracotta ridge capping			X	
Asbestos cement shingle and terracotta roof over apse and vestry			X	
Corrugated iron clad roof over portico			X	
Guttering & downpipes			X	
Stone crenellated battlements & gutters			X	
English Bond face brickwork			X	
Rendered gable coping & bolections			X	
Finials & lightning rods			X	
Terracotta vents			X	
Stone string courses			X	
Cement rendered footings			X	

St Joseph's Mount Chapel exterior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Crazy paved retaining wall			X	
External concrete paving			X	
Statue & plinth – northern side			X	
Stone window sills & reveals			X	
Window hood mouldings			X	
Window frames, mullions & glazing – southern side			X	
Stained glass window infills – apse			X	
Stained glass window infills – northern side			X	
Lance window – eastern gable			X	
Lance window infill – eastern gable			X	
Lance window – western gable			X	
Lance window infill – western gable			X	
Windows – western end			X	
Stained glass window infills – western end			X	
Stucco finish – western end			X	
Portico colonnade			X	
Portico trusses & lining boards			X	
Portico stucco detailing			X	
Portico tessellated paving			X	
Calvary in portico			X	
Portico cement paving			X	
Memorial panels in portico			X	
Chapel doors – lancet arched & ledged			X	
Vestry door – ledged & braced			X	

St Joseph's Mount Chapel interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Chapel ceiling lining & king post trusses			X	
Apse ceiling lining, bracing & king post			X	
Vestry ceiling			X	
Plaster wall linings			X	
Waratah wall vents			X	
Wall niches			X	
Floors			X	

St Joseph's Mount Chapel interior	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Carpet floor coverings			X	
Memorial stained glass windows & plaques			X	
Door joinery & skirting boards			X	
Light fittings – chapel & apse			X	
Light fittings – vestry			X	
Electrical services			X	
Plumbing & hand basin - vestry			X	
Chapel pews			X	
Statuary			X	
Liturgical items			X	
McAuley Cottage				
Tile roof & roof structure		X	X	
Gable end barge boards		X	X	
Guttering & downpipes		X	X	
Stretcher bond face brickwork		X	X	
Raft floor		X	X	
Front steps		X	X	
Front door		X	X	
Windows & concrete window framing		X	X	
Plumbing & gas services & fixtures		X	X	
Electrical services & fittings		X	X	

St Joseph's Mount Landscape	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Driveway & site access				
Eastern driveway (carriageway)	X	X	X	
Driveway gutter		X	X	
Gate pillars		X	X	
Wrought iron gates		X	X	
Western driveway		X	X	
Concrete paths & steps	X	X	X	X
Gardens				
Parterre	X	X	X	X
Terraced garden		X	X	
Ornamental garden		X	X	
Chapel garden		X	X	
Kitchen garden		X	X	
Landscape structures				

St Joseph's Mount Landscape	New South Wales Historic Theme			
	Accommodation Late Victorian house	Education	Religion Practising Catholicism	Persons – Edward Gell
Potting shed				
Greenhouses				
Storage shed				
Outdoor shelter				
Wood fired oven				
Vegetable gardens				
Labyrinth				
Garage				
Gardener's Shed		X	X	
Nissen Hut				
Religious & commemorative items				
Plinth from Bathurst Gaol		X	X	
Post with peace messages				
Bird bath		X	X	
Statue of St Joseph		X	X	
Calvary		X	X	
Statue of Christ		X	X	
Stone Grotto		X	X	
Tree plantings				
Driveway plantings	X	X	X	
Northern boundary		X	X	
Western boundary		X	X	
Southern boundary		X	X	
Specimen trees in groups		X	X	

3. Physical Evidence

3.1 Identification of existing fabric

In its current configuration St Joseph's Mount consists of two major elements:

- A complex of buildings situated on the highest section of the site. This complex comprises:
 - 'Logan Brae', the 1870s 'villa' designed by Edward Gell,
 - A chapel constructed in 1916,
 - A former science room and classroom constructed in 1959,
 - An accommodation block constructed in 1962,
 - A garden shed/outbuilding located to the west of the chapel,
 - Cottage at 28 Busby Street, formerly the gatekeeper's cottage.
- Landscaped gardens and grounds.

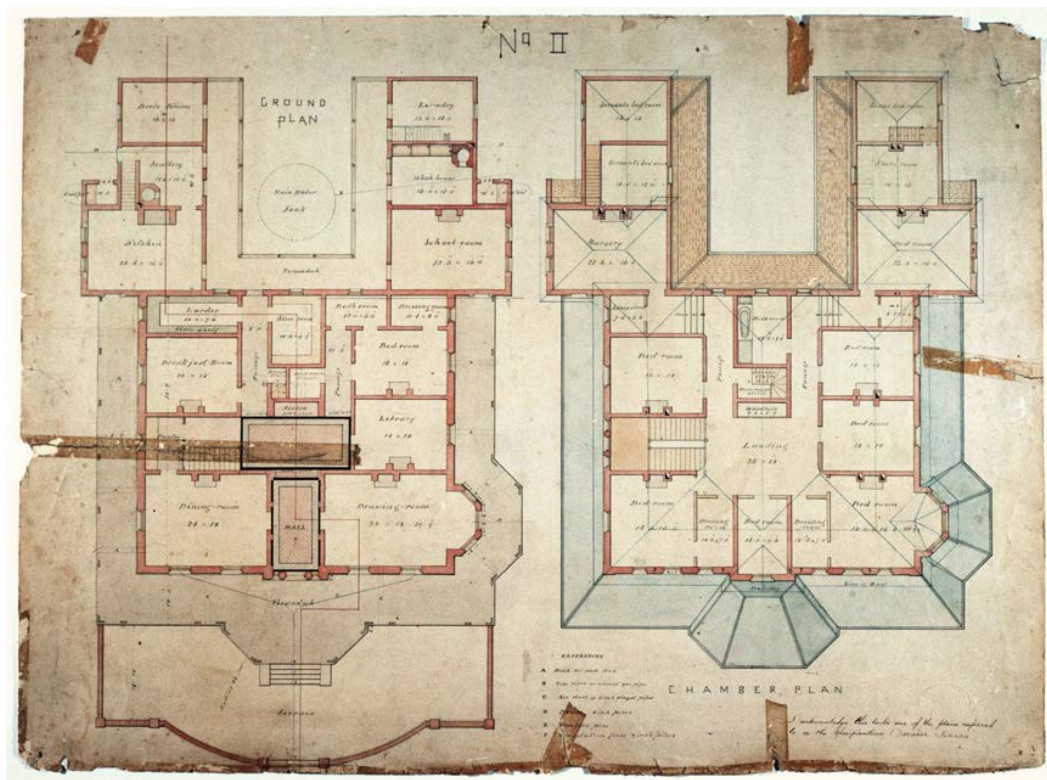


Figure 3.1: Logan Brae floor plan by Edward Gell, architect.
(Sisters of Mercy, Bathurst Congregation)

3.1.1 Logan Brae exterior

Logan Brae is a substantial two-storey brick villa constructed in Victorian Free Classical style³⁹. Some Romanesque influence is also visible in the style of the building. It appears to have been completed in 1878⁴⁰. The rear of the building has undergone substantial alteration but the northern, eastern and southern sides are almost identical to the house as built. Face brickwork is laid in English bond.

³⁹ Apperly, R., Irving, R. & Reynolds, P., 1995. Identifying Australian Architecture. pp.56-59

⁴⁰ Sisters of Mercy. Logan Brae – its history and background.



Plate 3.1.1: Eastern façade of Logan Brae. The classical order and proportions of the villa, including symmetry and order of three are quite evident in this view. (21.5.2020)

Plate 3.1.2: Northern façade of Logan Brae. The 1962 Novitiate Wing is on the right. (21.5.2020)



Plate 3.1.3: Southern façade of Logan Brae. Note the prominent quoins on the corner. (21.5.2020)



Plate 3.1.4: The eastern façade & front verandah viewed from the front of the chapel.
(21.5.2020)



Plate 3.1.5: Underside of the ogee pattern verandah. (24.5.2020)



Plate 3.1.6: Entry and verandah details. (2007)



Plate 3.1.7: Decorative arch and keystone hood moulding above window over first floor window. The decorative mouldings were made at the Lithgow Pottery Works. (2007)



Plate 3.1.8: Romanesque style staircase windows on the southern façade of Logan Brae. (2007)



Plate 3.1.9: Southwest corner of Logan brae with the rear of St Joseph's Chapel on the right. (21.5.2020)



Plate 3.1.10: Western side of Logan Brae showing substantial modifications to this side of the original building.

Condition of building elements	
Logan Brae exterior	Condition
Triple-hipped corrugated iron roof & roof structure	Appears generally sound. Corrugated iron should be checked for stability & holes. Sheets should be checked regularly to ensure they are properly fixed.
Hipped roof over laundry wing	Appears generally sound. Corrugated iron should be checked for stability & holes. Sheets should be checked regularly to ensure they are properly fixed.
Hipped roofs over novitiate kitchen	Appears generally sound. Corrugated iron should be checked for stability & holes. Sheets should be checked regularly to ensure they are properly fixed.
Skillion roof over rear verandah	Appears generally sound. Corrugated iron should be checked for stability & holes. Sheets should be checked regularly to ensure they are properly fixed.
Front verandah roof.	Appears generally sound. Corrugated iron should be checked for stability & holes. Sheets should be checked regularly to ensure they are properly fixed.
Guttering & downpipes	Gutters & downpipes appear to be in good condition.
Chimneys	Appear complete.
Decorative chimney tops	Appear complete.
Front verandah – cast pillars & lacework	Appear complete & in good condition.
Verandah floor & structure	Appears to be sound.
Wooden access ramp – southern verandah	Appears to be sound
Front steps	Appear sound.
Decorative brick retaining walls & balustrades	Appear sound.
Balcony above front entrance	Unstable – repairs required.
Cast balcony railing	Appears complete
Cast drainage pipes (Metters brand) – northern side	Appear functional.
Eaves	Appear sound.
Cast vents in eaves	Appear sound & functional.
Carved eave brackets.	Appear sound & functional.
English Bond face brickwork	Appears to be in good condition.
Quoins	Complete & sound.
Contrasting brickwork	Appears to be in good condition.
Decorative stone hood mouldings	Appear to be in good condition.
Double-hung windows	Appear complete. Operation should be tested.
Leadlight windows	Appear to be in good condition.
Front door	Appears generally sound.
Etched glass door light & sidelights	Appear complete.
Wrought iron panel – front door	Appears sound.
Front door bell	Not functional.
Entry door & sidelight – southern side	Appears sound & functional.
Door to dining room (refectory)	Appears sound & functional.
Screen door – dining room (refectory)	Functional.
Rear verandah infill structure	Appears sound.
Rear verandah infill windows	Appear sound.
Ground floor extension – northern side of courtyard	Appears sound.

Condition of building elements	
Logan Brae exterior	Condition
Doors & windows – ground floor extension	Appear complete
Extensions – southwest wing	Appear sound.
Doors & windows – southwest extensions	Appear sound.
Rear courtyard	Appears sound.
Rear courtyard paving	Appears sound. Drainage from this paving should be tested.
Plumbing ventilation flues	Appear complete
Electrical services	To be tested by a licenced electrician for safe operation.
Television aerial	Appears to be complete.

3.1.2 Logan Brae interior - downstairs

The front of Logan Brae has been preserved in almost identical format to that shown by original architect's plans. The two rear wings and courtyard have been heavily modified to incorporate changes required for development of the new Novitiate in the early 1960s. The interior of the building is described room by room.

3.1.2.1 Front hall

Located between the original drawing and dining rooms this space is the formal entrance to Logan Brae.



Plate 3.2.1: The front hall of Logan Brae looking towards the front door. The door to the original drawing room is on the left and dining room on the right. (21.5.2020)



Plate 3.2.2: Tesselated tile floor – front hall.
(21.5.2020)



Plate 3.1.3: Detail of plasterwork – front hall.
(2007)



Plate 3.2.4: Victorian ceiling rose & inter-war light fitting – front hall. (2007)

Plate 3.2.5: Original rim lock & inter-war night latch – front door. (2007)



Condition of building elements	
Logan Brae front hall	Condition
Plaster ceiling	In excellent condition.
Plaster wall surfaces, decorative arcading, cornices & ceiling rose	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Art deco light fitting	Functional. To be tested for safe operation.
Madonna & child statue	All statuary has been stored
Tesselated tile floor	Appears sound. Re-coating required.
Cedar front door & rim lock	Appears functional.
Front door night latch	Appears functional.
St Joseph's Mount presentation plaque	In excellent condition.
Electrical services & switches	Functional. To be tested for safe operation.
Fire extinguisher	To be tested regularly.

3.1.2.2 John Meagher Room (original drawing room)

The John Meagher Room is the largest room in the house. As the pre-eminent room of the original villa it features the most lavish decoration. Deep and elaborate plaster cornices mark the transition from wall to ceiling and an ornate ceiling rose marks the centre of the room. Bases of the walls are marked by high skirting boards and the large entry doorway is closed with wooden doors. A large bay window is located at the northern end of the room and a marble fireplace is a significant feature of the western wall.



Plate 3.2.6: The John Meagher Room looking north. (21.5.2020)



Plate 3.2.7: Marble fireplace in the John Meagher Room. (2007)



Plate 3.2.8: Panelled door to the John Meagher Room. looking north from the hall. (2007)



Plate 3.2.9: Cornice detail in the John Meagher Room. (2007)



Plate 3.2.10: Ceiling rose in the John Meagher Room. (2007)

Condition of building elements	
John Meagher Room	Condition
Plaster ceiling	In excellent condition.
Plaster wall surfaces, cornices & ceiling rose	In excellent condition.
Marble fireplace surround & mantelpiece	In excellent condition.
Cast iron fire grate	Not visible.
Fireplace infill	Sound.
Cedar joinery & skirting boards	In excellent condition.
Cedar double hung windows & window joinery	In excellent condition.
Cedar panelled doors	In excellent condition.
Door lock mechanisms, door knobs & fingerplates	In excellent condition.
Chandeliers	Functional. To be tested for safe operation.
St Joseph the worker statue	All statuary has been stored.
Floor	Appears sound.
Carpet	Appears to be in good condition.
Portrait of John Meagher	In excellent condition.
Electrical services & switches	Functional. To be tested for safe operation.
Gas heater and services	To be tested regularly for safe operation.

3.1.2.3 Front parlour (original dining room)

Like the John Meagher Room the front parlour is one of the most formal rooms in Logan Brae and shares a similar level of opulence. The room features detailing similar to that in the John Meagher, although it is slightly less ornate. Large plaster cornices and deep cedar skirting boards are prominent features of the room's décor.

Condition of building elements	
Front parlour	Condition
Plaster ceiling	In excellent condition.
Plaster wall surfaces, cornices & ceiling rose	In excellent condition.

Condition of building elements	
Front parlour	Condition
Marble fireplace surround & mantelpiece	In excellent condition.
Cast iron fire grate	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Cedar double hung windows & window joinery	In excellent condition.
Cedar panelled doors	In excellent condition.
Door lock mechanisms, door knobs & fingerplates	In good condition.
Light fitting	Functional. To be tested for safe operation.
Floor	Appears sound.
Carpet	Appears to be in good condition.
Electrical services & switches	Functional. To be tested for safe operation.
Gas heater and services	To be tested regularly for safe operation.



Plate 3.2.11: View south within the Front Parlour. The door to the Butler's Pantry is on the far right. (21.5.2020)



Plate 3.2.12: Cornice detail, front parlour. (2007)



Plate 3.2.13: Plaster ceiling rose, front parlour. (2007)

3.1.2.4 Telephone room (original butler's pantry)

This room was originally a serving area for meals prepared in the kitchen. It is accessed from the front parlour and the central hall. It is almost completely lined in cedar and features a wooden shelf. The cellar is accessed from this room.

Condition of building elements	
Telephone room	Condition
Cedar panelled ceiling & walls	In very good condition.
Plaster wall surfaces	In very good condition.
Cedar panelled doors	In excellent condition.
Door lock mechanisms, door knobs & fingerplates	In good condition.
Light fitting	Functional. To be tested for safe operation.
Floor	Appears sound.
Carpet	Appears to be in good condition.
Electrical services & switches	Functional. To be tested for safe operation.

3.1.2.5 Cellar

The cellar has been created around the substantial masonry structures required to support the tessellated tile floors of the front and central halls. It consists of three rooms located directly beneath the three front rooms of the house. Brickwork is laid in English Bond pattern and a brick vaulted area in the centre of the cellar supports the front hall. This area contains shelving and may have originally been used as a cool storage or wine cellar.



Plate 3.2.14: View north within the cellar. (21.5.2020)



Plate 3.2.15: View south within the cellar. (21.5.2020)

Condition of building elements	
Cellar	Condition
English bond brickwork	Appears sound.
Drainage pipes	Appear functional.
Vaulted area beneath front hall	Appears sound.
Shelving within cellar	Appears sound.
Staircase & timber landing	Appear sound.
Drainage trenches (beneath front parlour)	Appear functional.

Condition of building elements	
Cellar	Condition
Repairs to front parlour floor	Appear sound.
Gas services	To be tested for safe operation.
Electrical services & fittings	Functional. To be tested for safe operation.

3.1.2.6 Central hall and main staircase

This hallway connects the rooms at the front of Logan Brae with the rear of the house. It is set at a right angle to the front hall and provides access to the side door of the house. It also contains the main staircase. Two smaller halls located either side of the alcove provide access to the rear of the house from this hall.



Plate 3.2.17: Central hall looking south towards the main staircase and side door. The front hall is on the left and the hallway to the breakfast room and original kitchen is located on the right. (2007)



Plate 3.2.18: The central hall looking north from the foot of the main staircase. (21.5.2020)



Plate 3.2.19: View looking north along the central hall through the cedar archway outside the telephone room. (2007)



Plate 3.2.20: Cedar panelling on the side of the main staircase. (2007)



Plate 3.2.21: Looking south towards the side door. (2007)

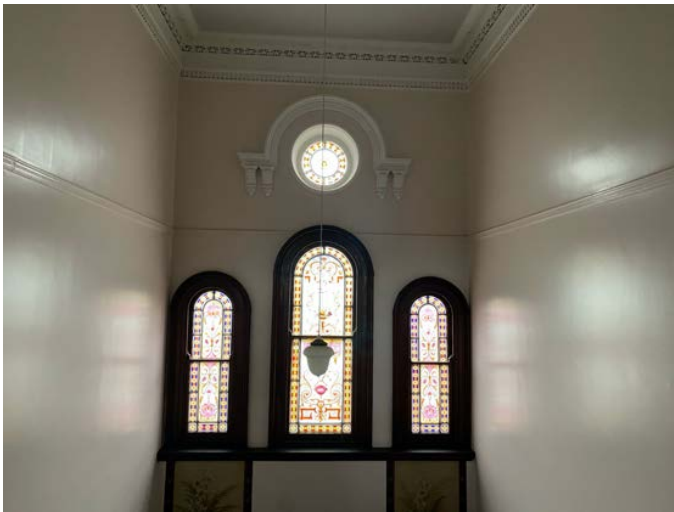


Plate 3.2.22: Decorative glass windows above the landing of the main staircase. (21.5.2020)

Condition of building elements	
Central hall and main staircase	Condition
Plaster ceiling	In excellent condition.
Plaster wall surfaces, decorative arcading, cornices & ceiling rose in central hall	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Art deco light fitting	Functional. To be tested for safe operation.
Tessellated tile floor	Appears sound. Re-coating required.
Cedar archway beneath staircase	In excellent condition.
Side door & lock	Appears functional.
Grandfather clock & plinth	In excellent condition.
Staircase	In excellent condition.
Cedar panelling	In excellent condition.
Balustrades, posts & cedar panelling	In excellent condition.
Staircase windows	In excellent condition.
Decorative friezes	In excellent condition.
Madonna	In excellent condition.
Hall to breakfast room	In excellent condition.
Service bell & mounting	Appears sound

Condition of building elements	
Central hall and main staircase	Condition
Northern hall	In excellent condition.
Electrical services & switches	Functional. To be tested for safe operation.

3.1.2.7 Breakfast room

The breakfast room is located on the southern side of the house and is accessed from the hallway leading from the central hall to the former service wing.



Plate 3.2.23: Breakfast room. (2007)



Plate 3.2.24: Cornice detail in breakfast room. (2007)



Plate 3.2.25: Marble fireplace in breakfast room. (2007)

Condition of building elements	
Breakfast Room	Condition
Plaster ceiling	In excellent condition.
Plaster wall surfaces, cornices & ceiling rose	In excellent condition.
Marble fireplace surround & mantelpiece	In excellent condition.
Cast iron fire grate	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Cedar double hung window & window joinery	In excellent condition.
Cedar panelled door	In excellent condition.

Condition of building elements	
Breakfast Room	Condition
Door lock mechanisms, door knobs & fingerplates	In good condition.
Light fitting	Functional. To be tested for safe operation.
Floor	Appears sound.
Carpet	Appears to be in good condition.
Electrical services & switches (pull switches)	Functional. To be tested for safe operation.
Gas heater and services	To be tested regularly for safe operation.

3.1.2.8 Service hall and maids' stairs

A hall extends west from the rear of the hall leading to the breakfast room. This can be closed off from the front of the house by a door. This hall represents the beginning of the service wing of the original building. The hall leads directly to the rear verandah of the villa and was the route between the original kitchen and dining room.

Three doorways lead off this hall to the following spaces:

- Maids' stairs,
- Storeroom,
- Larder.

The Maids' stairs do not comply with the Building Code of Australia and are considered to be dangerous. It is proposed to remove these stairs and install a lift into the stairwell. This would require the removal of significant fabric. It is considered that a less significant location be sought to locate a lift.



Plate 3.2.26: View from the bottom of the Maid's Stairs. (21.5.2020)



Plate 3.2.27: View from the top of the Maid's Stairs. (21.5.2020)

Condition of building elements	
Service hall & maid's stairs	Condition
Plaster ceiling & wall surfaces	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Cedar panelled door to central hall & frosted glass panels	In excellent condition.
Crown light above door	Appears to be in good condition.
Floor	Appears to be in good condition.
Carpet	In good condition.
Archway to maid's stairs	In excellent condition.
Maids' stairs railing	Appears to be in good condition.
Maids' stairs	Appear to be in good condition.
Maids' stairs linoleum	Appears to be in good condition.
Art deco era cupboard at top of stairs	Appears sound
Cedar panelled door to rear verandah	Appears to be in good condition.
Cedar panelled door to larder	Fixed in closed position.
Door to store room	Appears to be in good condition.
Light fittings	To be tested for safe operation.
Electrical services & switches	To be tested for safe operation.

3.1.2.9 Larder

The larder is located in the southwest corner of the main part of the original villa. It was originally accessed from the service hall. A doorway now opens to the rear verandah. The larder has a south facing window and the remnants of a number of slate shelves that provided cool storage for perishable items. The room is now used as a store.



Plates 3.2.28 & 3.2.29: Views south & north within the Larder. (21.5.2020)

Condition of building elements	
Larder	Condition
Plaster ceiling & wall surfaces	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Cedar window joinery & window glazing	In excellent condition.
Cedar panelled door to service hall	In excellent condition.
Door to rear verandah	In good condition.
Screen door on rear verandah	In good condition.
Floor	Appears to be in good condition.
Linoleum	Appears sound.
Slate shelving	Some shelving removed. Remaining shelves are in excellent condition.
Wooden shelving brackets	Appear to be in good condition.
White backing tiles	Appear to be in good condition.
High wooden shelving	Appears sound.
Light fitting & electrical services	To be tested for safe operation

3.1.2.10 Store room

Originally designed and used as a store room for domestic cutlery, crockery and linen, this room was used by the Sisters of Mercy as a retreat for postulants and for candidates for profession.



Plate 3.2.30: View within the Store Room.
(21.5.2020)

Condition of building elements	
Store room	Condition
Planked ceiling	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Cedar window joinery & window glazing	In excellent condition.
Cedar panelled door to service hall	In excellent condition.
Cedar dresser	In good condition.
Pine hutch	In good condition.
Floor	In good condition.
Carpet	In good condition.

Condition of building elements	
Store room	Condition
Electrical services & fittings	To be tested for safe operation.

3.1.2.11 Housemaid's closet (The caboose)

This small space is located under the maids' stairs and is accessed off the northern hall. It is used as a store for cleaning products.



Plate 3.2.31: View into the caboose. (2007)

Condition of building elements	
Housemaid's closet	Condition
Plaster wall & ceiling linings	In good condition.
Panelled stair linings	In good condition.
Cedar joinery	In good condition.
Shelving	In excellent condition.
Floor	In good condition.
Carpet	In good condition.
Cedar door & joinery	In excellent condition.
Electrical services & fittings	To be tested for safe operation

3.1.2.12 Prayer room (library)

Originally used as a library the prayer room is located on the northern side of the villa. It is accessed from the central hall.

Condition of building elements	
Prayer room	Condition
Plaster ceiling	In excellent condition.
Plaster wall surfaces, cornices & ceiling rose	In excellent condition.

Condition of building elements	
Prayer room	Condition
Marble fireplace surround & mantelpiece	The fireplace has been painted but is otherwise in very good condition.
Fireplace infill	In good condition.
Cedar joinery & skirting boards	In excellent condition.
Cedar double hung window & window joinery	In excellent condition.
Cedar panelled door	In excellent condition.
Door lock mechanisms, door knobs & fingerplates	In good condition.
Light fitting	Functional. To be tested for safe operation.
Floor	Appears sound.
Carpet	Appears to be in good condition.
Electrical services & switches	Functional. To be tested for safe operation.
Gas heater and services	To be tested regularly for safe operation.



Plate 3.2.32: View north within the Prayer Room (Library). (21.5.2020)

3.1.2.13 Bedroom and dressing room

Located immediately behind the library this bedroom appears relatively unchanged since the house was built.

Condition of building elements	
Bedroom & dressing room	Condition
Plaster ceiling & wall finishes	In good condition.
Marble fireplace surround & mantelpiece	In excellent condition.
Cast iron fire grate	In excellent condition.
Cedar joinery & skirting boards	In excellent condition.
Cedar double hung window & window joinery	In excellent condition.
Cedar panelled door to hall	In excellent condition.
Door lock mechanisms, door knobs & fingerplates	In good condition.
Light fitting	Functional. To be tested for safe operation.

Condition of building elements	
Bedroom & dressing room	Condition
Floor	Appears sound.
Carpet	Appears to be in good condition.
Electrical services & switches	Functional. To be tested for safe operation.
Gas heater and services	To be tested regularly for safe operation.



Plate 3.2.33: View within the Bedroom & Dressing Room. (21.5.2020)

3.1.2.14 Downstairs bathroom

This space, located to the west of the downstairs bedroom, was created by the closure of the hall that originally led from the central hall to the school room. The original school room became the refectory when the Sisters moved in and was incorporated into the novitiate dining room in the early 1960s. This hallway also led to a water closet that was located directly below the upstairs water closet. The tiling and fixtures in the bathroom suggest that it was created in the late 1940s or 1950s. The shower was installed in the 1990s.

Condition of building elements	
Downstairs bathroom	Condition
Plaster ceiling	In good condition.
Cedar double hung window & window joinery	In good condition.
Cedar panelled doors	In excellent condition.
Door lock mechanisms, door knobs & fingerplates	In good condition.
Toilet & bath	Functional.
Floor and wall tiling	In sound condition.
Shower	Appears to be functional.
Light fitting	Functional. To be tested for safe operation.
Electrical services & switches	Functional. To be tested for safe operation.

3.1.2.15 Laundry (former kitchen)

When Logan Brae was built the south-west wing of the house contained a kitchen, boiler room and a room noted on plans as being for boots and knives. These room have undergone a number of changes in use and have been modified extensively.



Plate 3.2.34: View south within the original Logan Brae Kitchen. (21.5.2020)

Plate 3.2.34: Interior of the laundry. (21.5.2020)



Condition of building elements	
Laundry (former kitchen)	Condition
Gyprock ceiling	In good condition.
Windows & window joinery	In good condition.
Cedar panelled doors	In good condition. Doors have been painted.
Plaster wall finishes	In good condition.
Floor & wall tiling	In excellent condition.
Former oven alcove	Stable.
Cupboards & benches	In good condition.
Broom cupboard (former cook's stairs)	In good condition.
Plumbing services & fittings	Functional. To be tested for safe operation.
Electrical services & fittings	Functional. To be tested for safe operation.

3.1.2.16 Boiler room (former)

The former boiler room is located directly behind the laundry. It contains large wash tubs and a hot water service. It is used as a drying room.

Condition of building elements	
Boiler room (former)	Condition
Plaster wall & ceiling linings	In good condition.
Concrete floor	In good condition.
Window & window joinery	In good condition.
Ledged & braced door	In good condition. Doors have been painted.
Hollow core sliding door & frame	In good condition.
Boarded lining of former cook's stairs	In good condition.
Wash tubs	Appear to be in good condition.
Plumbing & plumbing fittings	To be tested for safe operation.
Hot water service	To be tested for safe operation.
Former central heating pipes	Appear complete.
Electrical services, fittings & switchboard	To be tested for safe operation.

3.1.2.17 Port room (former boots and knives room)

This room, at the western end of the southern service wing, was originally intended as the space for cleaning boots and sharpening knives. During the ownership of the Sisters of Mercy it has been used as a storage space for luggage, hence the name port room. This room was locked and inaccessible when the property was inspected in May 2020. The 2007 assessment has been retained.

Condition of building elements	
Port room	Condition
Plaster wall & ceiling linings	In good condition.
Concrete floor	In good condition.
Window & window joinery	In good condition.
Ledged door & rim lock	In good condition.
Hollow core door & frame	In good condition.
Shadows of former cupboards	Visible.
Electrical services & fittings.	To be tested for safe operation.

3.1.2.18 Ground floor rear verandah

The ground floor rear verandah and courtyard were extensively reconstructed during the early 1960s as part of an expansion of the novitiate. The existing verandah appears to follow the lines of the original but is fully enclosed. A concrete access ramp has been constructed at the northern end of the verandah. This verandah may provide a suitable location for a lift.

Condition of building elements	
Ground floor rear verandah	Condition
1870s English bond brick walls	In good condition.
1960s stretcher bond brick walls	In good condition.
Timber-framed external windows	In good condition.

Condition of building elements	
Ground floor rear verandah	Condition
Polished concrete paving & repairs	In good condition.
Concrete access ramp	In good condition.
Terrazzo paving	In good condition.
Cast iron downpipes	Appear functional.
Electrical services & fittings	To be tested for safe operation.



Plate 3.2.35: View south along the Ground Floor Rear Verandah. (21.5.2020)

3.1.2.19 Novitiate kitchen and breakfast room (former laundry)

The former laundry wing of Logan Brae was modified in 1962 and 1963 during the construction of the Novitiate wing. The original 1870s structure was modified by the removal of a staircase that originally led to the butler's bedroom and the creation of a hallway to the Novitiate wing. At this time a single storey extension was added to the southern side of the wing and a short courtyard wall constructed. The kitchen recorded in 2007 appears to have been fully upgraded to comply with current food safety standards.



Plate 3.2.36: Interior of the Breakfast Room. (21.5.2020)



Plate 3.2.37: Interior of the kitchen. (21.5.2020)



Plate 3.2.37: The northern wall of the kitchen wing. (21.5.2020)

Condition of building elements	
Kitchen & breakfast room	Condition
1870s English bond brick walls	In good condition.
1960s stretcher bond brick walls	In good condition.
1960s windows	In good condition.
Kitchen benches, cupboards & fittings	In good condition.
Floor coverings	In good condition.
Cool room	In good condition.
Central heating	Disconnected
Gas water heater	To be tested for safe operation.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.2.20 Scullery (former school room)

When Logan Brae was built this area was designated as a school room. In 1961 it was converted into a scullery to act as a serving area for the refectory.



Plate 3.2.38: Interior of the Scullery looking east. (21.5.2020)

Condition of building elements	
Scullery	Condition
Benches, cupboards & fittings	In good condition.
Floor coverings	In good condition.
Central heating	Disconnected
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.3 Logan Brae interior - upstairs

The plan of the upstairs area of Logan Brae mirrors that of the downstairs. Initially planned to contain bedrooms and a nursery it is now used as offices for the Sisters of Mercy. Unlike the downstairs areas the skirtings upstairs are made from moulded plaster.

3.1.3.1 Upstairs landing and hallways

This rather modestly named space at the top of the main staircase provides access to the original bedrooms. Two halls lead from here towards the western wings of the house.



Plate 3.3.1: Cedar fronted cupboards on the western side of the upstairs landing. These are located directly above the alcove in the downstairs central hall. (21.5.2020)

Condition of building elements	
Upstairs landing	Condition
Plaster ceiling	In excellent condition.
Plaster wall surfaces, skirting, cornices & ceiling rose	In excellent condition.
Cedar joinery, including cupboard doors	In excellent condition.
Light fitting	Functional. To be tested for safe operation.
Madonna & child statue & stand	All statuary has been stored.
Floor	Appears sound.
Linoleum floor coverings	In very good condition.
Balustrades, posts & cedar panelling	In excellent condition.

3.1.3.2 Bedroom (Museum)

This room, located in the southeast corner of the house, was originally a bedroom and dressing room. The Sisters of Mercy converted it to function as a museum. The room, which is painted to reflect its original colour scheme has been emptied and all former museum items relocated to another space.



Plate 3.3.2: Interior of the Bedroom looking east. (21.5.2020)



Plate 3.3.3: Interior of the Bedroom looking west. (21.5.2020)

Condition of building elements	
Bedroom (Museum)	Condition
Plaster ceiling, wall finishes, cornice & skirting	In good condition.
Marble fireplace surround & mantelpiece	In excellent condition.
Cast iron fire grate	In excellent condition.
Cedar double hung windows & window joinery	In excellent condition.
Cedar panelled doors & joinery	In excellent condition.
Door lock mechanisms	In good condition.
Light fitting	Functional. To be tested for safe operation.
Floor	Appears sound.
Electrical services & switches	Functional. To be tested for safe operation.

3.1.3.3 Bursar's office (former southern dressing room)

This room is located next to the south-eastern bedroom and is accessed from that room and from the upstairs landing.

Condition of building elements	
Southern Dressing Room (Bursar's office)	Condition
Plaster ceiling, wall finishes & skirting	In good condition.
Cedar double hung window & window joinery	In excellent condition.
Cedar panelled doors & joinery	In excellent condition.
Door lock mechanisms	In good condition.
Light fitting	Functional. To be tested for safe operation.
Floor	Appears sound.
Carpet	In good condition.

Condition of building elements	
Southern Dressing Room (Bursar's office)	Condition
Electrical services & switches	Functional. To be tested for safe operation.



Plate 3.3.4: Interior of the southern dressing room. This was formerly the Bursar's Office. (21.5.2020)

3.1.3.4 Eastern office (former bedroom)

Located in the centre of the eastern side of the house immediately above the front hall this room provides access to the small upstairs balcony. It functions as an office.



Plates 3.3.5 & 3.3.6: Views within the Eastern Office. (21.5.2020)

Condition of building elements	
Eastern office	Condition
Plaster ceiling, wall finishes, cornices & skirting	In good condition.

Condition of building elements	
Eastern office	Condition
Cedar French windows & window joinery	In excellent condition.
Cedar panelled door & joinery	In excellent condition.
Door lock mechanisms	In good condition.
Floor	Appears sound.
Carpet	In good condition.
Art deco cupboards & shelving	In very good condition.
Light fitting	Functional. To be tested for safe operation.
Electrical services & switches	Functional. To be tested for safe operation.

3.1.3.5 Congregational Leader's office (former main bedroom)

The largest of the upstairs rooms, this room reflects the size of the John Meagher Room. The northern wall of a former dressing room has been demolished to increase the size of the main room. When inspected in 2007 this room was the Sisters of Mercy Congregational Leader's office.



Plate 3.3.7: Interior of the Congregational Leader's office looking north. (21.5.2020)

Condition of building elements	
Congregational Leader's office	Condition
Plaster ceiling, wall finishes, ceiling rose, cornice & skirting	In good condition.
Cedar double hung windows & window joinery	In excellent condition.
Cedar panelled doors & joinery	In excellent condition.
Door lock mechanisms	In good condition.
Light fittings	Functional. To be tested for safe operation.
Floor	Appears sound.
Carpet	In good condition.
Electrical services & switches	Functional. To be tested for safe operation.

3.1.3.6 Utility office (former bedroom)

This north facing room originally served as a bedroom and now functions as an office. Like other upstairs rooms it features relatively subdued decoration.



Plate 3.3.8: Interior of the Utility Office looking north. (21.5.2020)

Condition of building elements	
Utility office	Condition
Plaster ceiling, wall finishes, cornice & skirting	In good condition.
Marble fireplace surround & mantelpiece	In excellent condition.
Cedar double hung window & window joinery	In excellent condition.
Cedar panelled door & joinery	In excellent condition.
Door lock mechanisms	In good condition.
Floor	Appears sound.
Carpet	In good condition.
Electrical services, lights & switches	Functional. To be tested for safe operation.
Gas services & heater	Functional. To be tested for safe operation.

3.1.3.7 Secretary's office (former bedroom)

This north facing room originally served as a bedroom. It was the Secretary's office for the Bathurst Congregation of the Sisters of Mercy. One interesting feature of the room is the initials carved into the window mullions by agricultural college students.

Condition of building elements	
Secretary's office	Condition
Plaster ceiling, wall finishes, cornice & skirting	In good condition.
Marble fireplace surround & mantelpiece	In excellent condition.
Cedar double hung window & window joinery	In excellent condition.
Cedar panelled door & joinery	In excellent condition.
Door lock mechanisms	In good condition.

Condition of building elements	
Secretary's office	Condition
Floor	Appears sound.
Carpet	In good condition.
Electrical services, lights & switches	Functional. To be tested for safe operation.
Gas services & heater	Functional. To be tested for safe operation.



Plate 3.3.9: Interior of the former Secretary's Office looking south. (21.5.2020)

3.1.3.8 Toilet

This toilet was included on the original architect's plans as a water closet. It has been heavily modified over time and was modernised between 2007 and 2020, losing its skirtings.

Condition of building elements	
Toilet	Condition
Plaster ceiling & wall finishes	In good condition.
Cedar double hung window & window joinery	In good condition.
Cedar panelled door & joinery	In good condition.
Door lock mechanism	In good condition.
Floor	Appears sound.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.3.9 Kitchenette

This room was originally constructed as a bathroom. It was modernised in the 1960s to incorporate two shower cubicles and toilet and hand basins. In the last ten years it has been converted into a kitchenette.



Plate 3.3.10: Kitchenette.
(21.5.2020)

Condition of building elements	
Kitchenette	Condition
Ceiling & wall finishes	In very good condition.
Floor & floor tiling	In very good condition.
Kitchen bench & cupboards	In very good condition.
Cedar panelled door	In good condition.
Door lock mechanism	Appears sound.
Cedar window & window joinery	In good condition.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.3.10 Archive

This room is located on the southern side of the house. It was noted on the architect's plans as a servant's room and was converted to serve as an archive for the Sisters of Mercy. It is now empty.

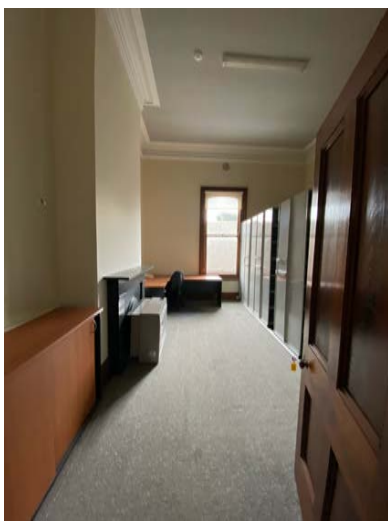


Plate 3.3.11: View from the hall into the archive room.



Plate 3.3.12: Compactus in the archive room looking south.

Condition of building elements	
Archive	Condition
Plaster ceiling, wall finishes, cornice & skirting	In good condition.
Marble fireplace surround & mantelpiece	In excellent condition.
Cedar double hung window & window joinery	In excellent condition.
Cedar panelled door & joinery	In excellent condition.
Door lock mechanisms	In good condition.
Floor	Appears sound.
Carpet	In good condition.
Compactus	Functional.
Art deco era cupboard	In good condition.
Electrical services, lights & switches	Functional. To be tested for safe operation.
Gas services & heater	Functional. To be tested for safe operation.

3.1.3.11 Bathroom

This room is located on the southern side of the house.

Condition of building elements	
Bathroom	Condition
Ceiling & wall finishes & tiling	In good condition.
Floor & floor tiling	In good condition.
Cedar panelled door, cedar window & joinery	In good condition.
Door lock mechanism	Appears sound.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.



Plate 3.3.13: Interior of the bathroom.
(21.5.2020)

3.1.3.12 Kitchen (former maid's room)

This room in the south-western wing was located above the original house kitchen. It was heavily modified in the 1960s and is now used as a staff kitchen and meal room.



Plate 3.3.14: View west within the Kitchen.
(21.5.2020)



Plate 3.3.15: View north within the Kitchen.
(21.5.2020)

Condition of building elements	
Kitchen	Condition
Ceiling & wall finishes & skirting	In good condition.
1960s cupboards	In good condition.
Cedar double hung windows & window joinery	In good condition.
Cedar panelled doors & joinery	In excellent condition.
Door lock mechanisms	In good condition.
Floor	Appears sound.
Floor coverings	In good condition.
Plinth for sink & kitchen cupboards	Functional.
Kitchen benches & cupboards	In good condition.
Plumbing services & fixtures	Functional. To be tested for safe operation.
Electrical services, lights, switches & stove	Functional. To be tested for safe operation.
Gas services & heater	Functional. To be tested for safe operation.

3.1.3.13 Upstairs rear verandah

The first floor verandah across the rear of the house connects the two halls leading from the upstairs landing. It has been enclosed and shows evidence of a number of modifications. Shadows on the brickwork at either end of the verandah indicate that the skillion roof over the verandah was originally at the height of the doorway arches.

Condition of building elements	
Upstairs rear verandah	Condition
Roof lining	In good condition.
English bond brickwork	In good condition.
Arched door openings	In good condition.
Stretcher bond brickwork – western wall	In good condition.
Window frames & glazing – western wall	In good condition.
1960s cupboards	In good condition.

Arts & crafts style doors	In good condition.
Floor	In good condition.
Electrical services, lights & switches	Functional. To be tested for safe operation.



Plate 3.3.16: View south along the upstairs rear verandah. (21.5.2020)

3.1.3.14 Cells and infirmary – northern wing

The first floor of the western wing of Logan Brae originally contained accommodation for servants of the house, including the butler. A staircase led from this section to the laundry below. This area was modified in 1962 as part of the construction of the Novitiate wing. The wing now contains two large cells, a room originally designated as an infirmary and the southern end of the Novitiate first floor hallway.



Plate 3.3.17: Interior of cell (Cell 14 on architect's plans.



Plate 3.3.18: Interior of cell (Cell 15 on architect's plans.

Condition of building elements	
Cells and infirmary – northern wing	Condition
Halls & steps	Appear sound.
Cells	Appear sound.
Internal doors, cupboards & other fixtures	Appear sound.

Condition of building elements	
Cells and infirmary – northern wing	Condition
Central heating system	Disconnected.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.3.15 Cells and bursary – southern wing

The first floor of the western wing of Logan Brae originally contained accommodation for a female servant and the cook. In 1963 the western end of this wing was converted to provide three cells, a bathroom and toilet. The top of the cook's stairway to the ground floor was closed off. Access to these cells was provided via a staircase from the ground floor rear verandah and a ramp connecting to the first floor rear verandah. The new staircase and a bursary were accommodated in a two-storey extension to the Logan Brae southern wing.

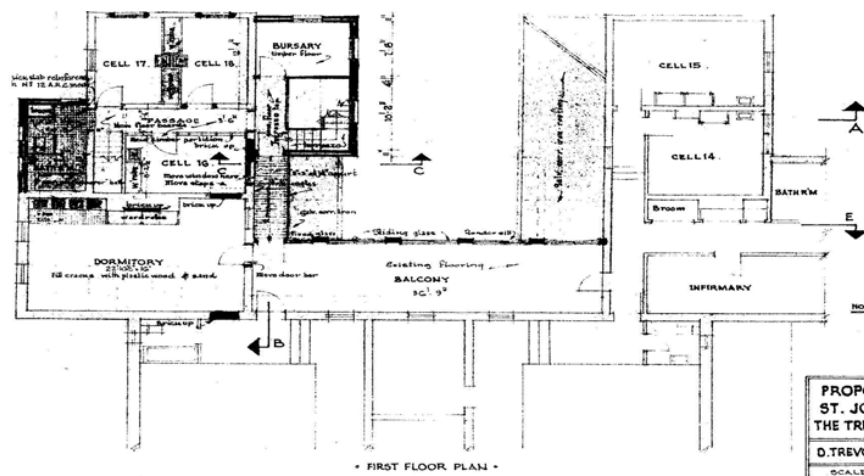
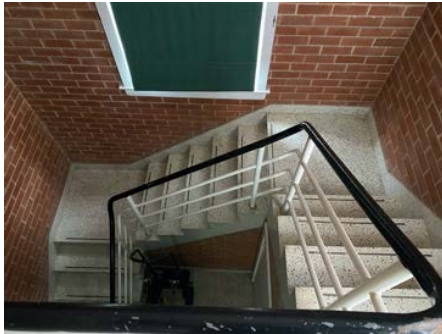


Figure 3.2: Architect's 1963 plan of the cells and bursary on the first floor south-western wing of Logan Brae. (Sisters of Mercy, Bathurst Congregation)



Plate 3.3.19: The rear of St Joseph's Mount showing (from left to right) the western side of the Novitiate, the northern wing of Logan Brae and the extension of the southern wing to accommodate the bursary & a stairway. (21.5.2020)



Plates 3.3.20 & 3.3.21: The staircase leading from the ground floor rear verandah to the bursary & cells. (21.5.2020)

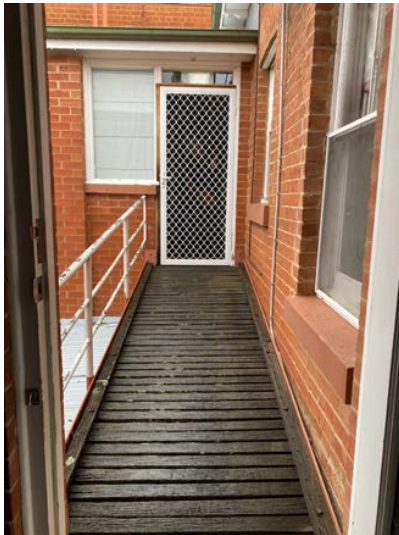
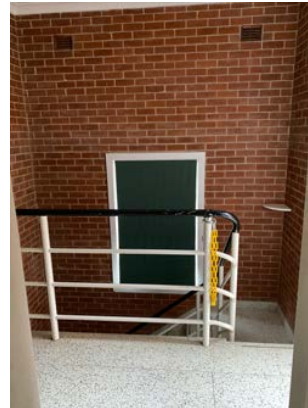


Plate 3.3.22: Walkway leading to the first floor rear verandah. (21.5.2020)



Plate 3.3.23: The bursary. (21.5.2020)

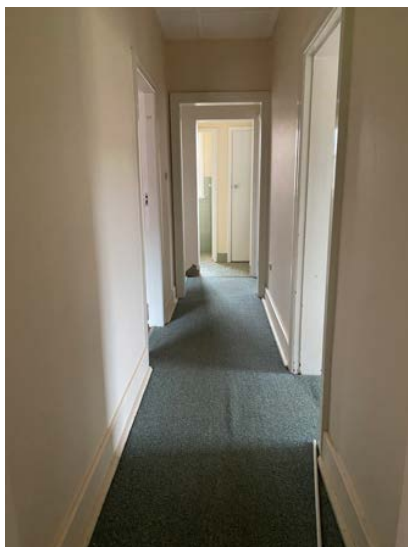


Plate 3.3.24: Looking south from the staircase towards the bathroom & toilet. (21.5.2020)



Plate 3.3.25: View into the bathroom & toilet. (21.5.2020)

Condition of building elements	
Cells and bursary – southern wing	Condition
Halls & steps	Appear sound.
Walkway to first floor rear verandah	Appears functional.
Cook's staircase space	Appears sound
Cells and bursary	Appear sound.
Bathroom & toilet	Appear sound.
Internal doors, cupboards & other fixtures	Appear sound.
Central heating system	Disconnected.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.4 St Joseph's Mount Novitiate

3.1.4.1 Novitiate wing exterior

This wing of St Joseph's Mount was designed by D. Trevor Jones & Associates of Bathurst in 1961 and constructed in 1962. It is constructed with face brick walls and reinforced concrete slab floors. The floors of halls and passageways are paved with terrazzo tiles and the floors of other rooms covered in tallowwood.⁴¹ This structure was designed to harmonise with the style of Logan Brae by the inclusion of the following design elements:

- Face brickwork of similar colour to Logan Brae. This brickwork is laid in stretcher bond pattern, which differentiates it from the original English bond brickwork of the villa.
- Quoins and string courses in a colour similar to the quoins and contrasting brickwork of Logan Brae.



Plate 3.4.1: Eastern side of the Novitiate wing. (2007)

⁴¹ D. Trevor Jones & Associates, Architects, Bathurst. 1961. Additions & Alterations to St. Joseph Mount Training School for The Sisters of Mercy, Bathurst.



Plate 3.4.2: Eastern side of the Novitiate wing viewed from the northern verandah of Logan Brae. (21.5.2020)



Plate 3.4.3: Northern end of the Novitiate wing with Logan Brae in the background. (21.5.2020)



Plate 3.4.4: Western side of the Novitiate wing with Logan Brae on the right.

Condition of building elements	
Novitiate wing exterior	Condition
Hipped corrugated iron clad roof & roof structure	Appears generally sound. Corrugated iron should be checked for stability & holes. Sheets should be checked regularly to ensure they are properly fixed.
Guttering & downpipes	Appear to be in good condition.
Eastern landing	Appears sound.
Western landing, steps & awning	Appear sound.
Stretcher Bond face brickwork	Appears sound.
Quoins & string courses	Appear sound.
Fenestration & window surrounds	Appear sound.
Aluminium-framed doors	Appear sound.
Timber-framed doors	Appear sound.
Aluminium-framed windows	Appear sound.
Roof mounted collar panels	Appear functional.
Electronic sign – northern wall	Appears to be complete.

3.1.4.2 Novitiate wing ground floor interior

The ground floor of the Novitiate wing contains the following spaces:

- An entry hall featuring a staircase,
- A hallway along the western side of the building,
- A dining room (formerly the Refectory),
- A library, originally designed as a common room,
- A reading room, originally designated as the Bursary.

The dining room extends from the original school room in the northwest wing of Logan Brae into the newer building.

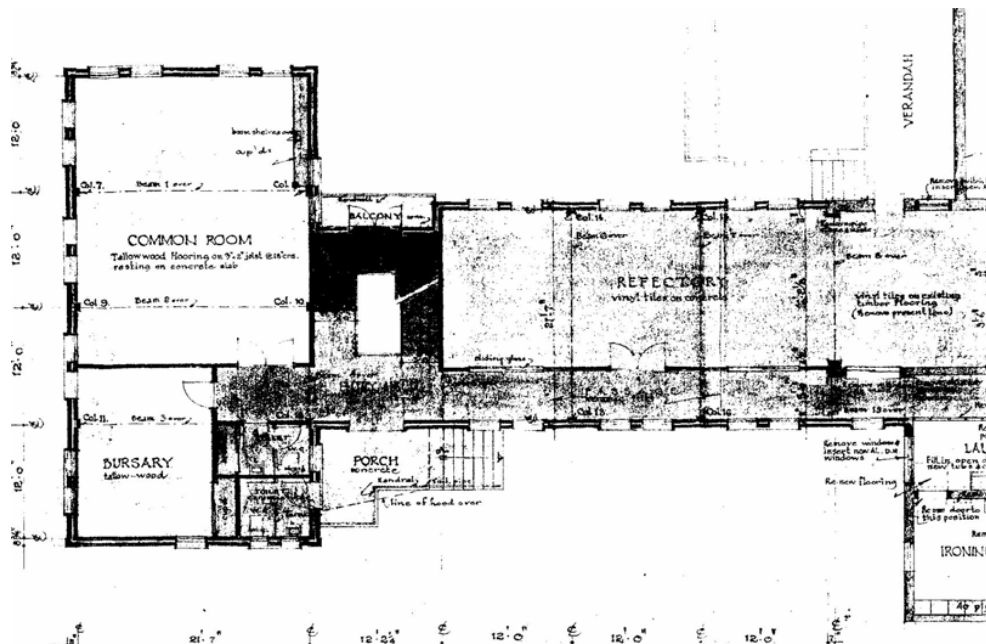


Figure 3.3: Architect's 1961 plan of the ground floor of the St Joseph's Mount Novitiate. (Sisters of Mercy, Bathurst Congregation)



Plate 3.4.5: Entry hall looking north towards the library & reading room. (2007)



Plate 3.4.7: A window from the hall to the dining room showing the rendered external walls of the original Logan Brae school room. (2007)

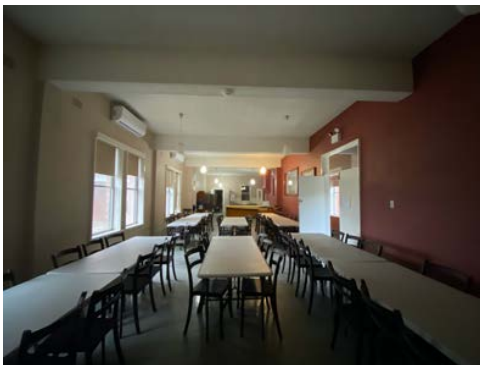


Plate 3.4.6: Looking south in the dining room. (21.5.2020)



Plate 3.4.8: Looking north from the scullery into the dining room. (21.5.2020)



Plate 3.4.9: Looking north in the reading room. (2007)



Plate 3.4.10: Looking east in the library. (2007)

Condition of building elements	
Novitiate wing - ground floor interior	Condition
Hall	Appears sound.
Terrazzo floor tiling	Appears sound.
Dining room	Appears sound.
Vinyl-tiled floor	Appears to be in good condition.
Scullery	Appears sound.
Scullery benches & cabinets	Appear sound.
Stair well & stairs	Appear sound
Balustrades	Appear sound. May not conform to current building codes.
Bathroom	Appears functional.
Reading room	Appears sound.
Reading room display cabinets	Appear sound.
Library	Appears sound.
Internal doors, cupboards & other fixtures	Appear generally sound.
Central heating system	Disconnected.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.4.3 Novitiate wing basement

The basement of the Novitiate wing contains the following spaces:

- An entry hall and staircase,
- An auditorium,
- An office,
- Toilet.

The office is currently serving as a store room.

Condition of building elements	
Novitiate wing - basement interior	Condition
Stair well & stairs	Appear sound.
Balustrades	Appear sound. May not conform to current building codes.
Kitchenette	Appears sound.
Toilet	Appears to be in good condition.
Meeting room	Appears sound.
Office (store room)	Appears sound.
Internal doors, cupboards & other fixtures	Appear sound.
Central heating system	Disconnected.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.



Plate 3.4.11: View east within the basement foyer. (21.5.2020)



Plate 3.4.12: View east within the former office within the basement. (21.5.2020)



Plates 3.4.13 & 3.4.13: The basement Meeting Room. (21.5.2020)

3.1.4.4 Novitiate wing first floor

The first floor of the Novitiate wing is an accommodation area containing:

- A stairway foyer and hallway,
- Thirteen cells,
- A toilet,
- A bathroom,
- A lavatory containing two toilets and two showers.

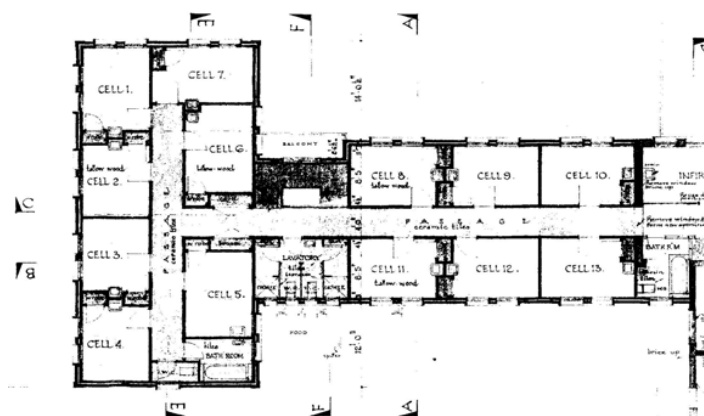


Figure 3.4: Architect's 1961 plan of the first floor of the Novitiate wing. (Sisters of Mercy, Bathurst Congregation)



Plate 3.4.14: View into the stair well from the first floor. (2007)

Plate 3.4.15: Looking north along the first floor hallway. (21.5.2020)



Plate 3.4.16: Looking west along the northern hall.



Plate 3.4.17: Bathroom located off the foyer.



Plate 3.4.18: View within a typical cell. (21.5.2020)



Plates 3.4.19 : View within a typical cell. (21.5.2020)

Condition of building elements	
Novitiate wing – first floor interior	Condition
Entrance hall	Appear sound.
Stair well & stairs	Appear sound.
Balustrades	Appear sound. May not conform to current building codes.
Bathrooms	Appear to be in good condition.
Cells	Appear sound.
Internal doors, cupboards & other fixtures	Appear sound.
Central heating system	Disconnected.
Plumbing services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.5 St Joseph's Mount Chapel

The chapel was completed in 1916. It is constructed in a Federation Gothic style with lancet arched windows and crenellated parapets. Features of the gothic style evident in the building are:

- Steeply pitched roof,
- Parapeted roof sections,
- Brick masonry,
- Crenellations,
- Wall buttresses,
- Lancet arched windows.⁴²

Like Logan Brae it is constructed with face brickwork laid in English Bond pattern. The roof is clad in asbestos fibre sheet shingles with terracotta ridge capping. The chapel is connected to the verandah of Logan Brae by a portico featuring lancet-arched openings. The portico has a Zincalume clad roof.



Plate 3.5.1: The eastern end of the Chapel showing the exterior of the apse and finial. The foundation stone is set at the base of the apse wall and a vestry is located to the left. The portico on the right connects to Logan Brae. The crazy pattern stone retaining wall was erected in memory of John, Mary and Dorothy Symms. (21.5.2020)

⁴² Apperly, R., Irving, R. & Reynolds, P., 1995. *Identifying Australian Architecture*. p.122



Plate 3.5.2: The northern side of the chapel. (21.5.2020)



Plate 3.5.3: Southern side of the chapel and apse. (21.5.2020)



Plate 3.5.4: View south along the portico towards the chapel. (21.5.2020)



Plate 3.5.5: The western side of the chapel. (21.5.2020)

Condition of building elements	
St Joseph's Mount Chapel exterior	Condition
Asbestos cement shingle roof over chapel	Appears generally sound. Shingles should be checked regularly to ensure they are properly fixed. Strict asbestos handling procedures to be applied.
Terracotta ridge capping	Appears sound. Ridge capping should be checked regularly to ensure it is properly fixed.
Asbestos cement shingle and terracotta roof over apse and vestry	Appears generally sound. Shingles and ridge capping should be checked regularly to ensure they are properly fixed. Strict asbestos handling procedures to be applied.
Corrugated iron cladding roof over portico	Appears generally sound. Corrugated iron should be checked for stability & holes. Sheets should be checked regularly to ensure they are properly fixed.
Guttering & downpipes	Gutters & downpipes appear to be in good condition.
Stone crenellated battlements & gutters	Appear sound.
English Bond face brickwork	Appears to be sound.
Foundation stone	Complete & sound.
Rendered gable coping & bolections	Appear sound.
Finials & lightning rods	Appear sound.
Terracotta vents	Appear sound.
Stone string courses	Appear sound.
Cement rendered footings	Appear sound.
Crazy paved retaining wall	Appears sound.

Condition of building elements	
St Joseph's Mount Chapel exterior	Condition
External concrete paving	Appears sound.
Statue & plinth – northern side	Appears sound.
Stone window sills & reveals	Appear sound. Sills on southern side are stained with evidence of moss growth.
Window hood mouldings	Appear sound.
Window frames, mullions & glazing – southern side	Appear complete & functional.
Stained glass window infills – apse	Appear complete.
Stained glass window infills – northern side	Appear complete
Lance window – eastern gable	Appears sound.
Lance window infill – eastern gable	Appears sound.
Lance window – western gable	Appears sound.
Lance window infill – western gable	Appears sound.
Windows – western end	The sills, reveals and hood mouldings of the western windows have been painted.
Stained glass window infills – western end	Appear complete
Stucco finish – western end	The stucco finish appears sound. It has been painted.
Portico colonnade	Appears sound.
Portico trusses & lining boards	Appear sound.
Portico stucco detailing	Appears sound.
Portico cement paving	Appears sound.
Calvary in portico	Appears sound.
Memorial panels in portico	Appear sound.
Chapel doors – lancet arched & ledged	Appear sound & functional.
Vestry door – ledged & braced	Appears to be complete.

The interior of the Chapel consists of three rooms, the chapel, apse and vestry. The apse is located at the eastern end of the chapel and the vestry is on the southern side of the apse. A lancet arched doorway connects the apse to the vestry. The ceilings of the chapel and apse are lined with milled boards set above the roof frame. All internal walls are finished with plaster.



Plate 3.5.6: Interior of the chapel looking towards the apse. (21.5.2020)



Plate 3.5.7: Ceiling of the chapel looking towards the apse. (21.5.2020)



Plate 3.5.8: View towards the back wall of the chapel. (21.5.2020)



Plate 3.5.9: Stained glass window within the vestry. (21.5.2020)

Condition of building elements	
St Joseph's Mount Chapel interior	Condition
Chapel ceiling lining & king post trusses	Appear to be in very good condition.
Apse ceiling lining, bracing & king post	Appear to be in very good condition.
Vestry ceiling	Appears sound.
Plaster wall linings	Appear generally sound. Evidence of water entry in vestry.
Waratah wall vents	Appear sound.
Wall niches	In good condition.
Floors	Appear sound.
Carpet floor coverings	In good condition.
Memorial stained glass windows & plaques	In good condition.
Door joinery & skirting boards	In good condition.
Light fittings – chapel & apse	To be tested for safe operation.
Light fittings – vestry	To be tested for safe operation.
Electrical services	To be tested for safe operation.
Plumbing & hand basin – vestry	Operation to be tested.
Chapel pews	Appear to be in good condition.

Condition of building elements	
St Joseph's Mount Chapel interior	Condition
Statuary	Appears to be in good condition.
Liturgical items	Appear to be in good condition.

3.1.6 McAuley Cottage

McAuley Cottage was originally constructed in 1959 in a post-war modernist style. It was built with a science laboratory and classroom to support teacher training on site. It now has a self-contained flat and office set up for the Retreat Director. The project team was unable to obtain access to the interior of McAuley Cottage.



Plate 3.6.1: McAuley Cottage and St Joseph's Chapel viewed from the east. (21.5.2020)



Plate 3.6.2: Eastern side of McAuley Cottage. (21.5.2020)



Plate 3.6.2: Western side of McAuley Cottage. (21.5.2020)



Plate 3.6.3: Northern end of McAuley Cottage. (21.5.2020)

Condition of building elements	
McAuley Cottage	Condition
Tile roof & roof structure	Appears sound.
Gable end barge boards	Appear sound.
Guttering & downpipes	Gutters & downpipes appear to be in good condition.
Stretcher bond face brickwork	Appears to be sound.
Raft floor	Appears sound.
Front steps	Appear sound.
Front door	Appears sound.
Windows & concrete window framing	Appear sound.
Plumbing & gas services & fixtures	To be tested for safe operation.
Electrical services & fittings	To be tested for safe operation.

3.1.7 Landscape

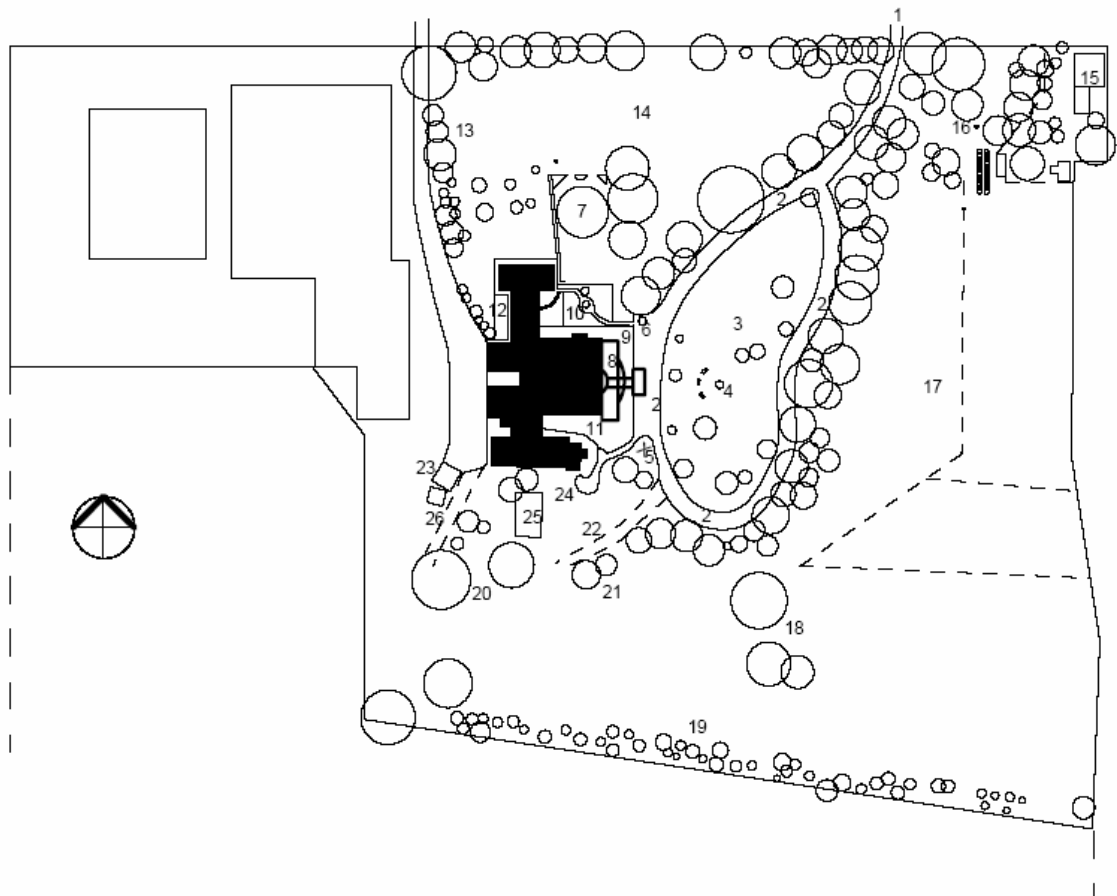
The site generally slopes towards the south and the east, affording views across the township of Bathurst to the distant horizon. Three boundaries have residential development and an aged care facility on land that previously formed part of the property. The northern boundary fronts Busby Street and has mature plantings along it, obscuring views into the site from the street. Within the site there are distinct areas, contrasting the continuous bands of substantial vegetation creating shade with the broad open swathes. Ornamental and utility garden areas contribute to the landscape that wraps full around three sides of the building complex. The main landscape features are identified in **Figure 3.5**.

3.1.7.1 Street boundary

The streetscape is dominated by mature evergreen conifer boundary plantings of cypress and pine trees. There are gaps between the two sets of row plantings with other planting subsets. Large deciduous elm trees are between the main entry gateway and the north eastern corner. A timber paling fence marks this northern boundary. Near the nursing home end there is a wire mesh gate allowing pedestrian access as well as a secondary vehicular access.



Plate 3.7.1: Busby Street alignment looking east. (2007)



KEY

1	Busby Street boundary + plantings	14	Northern open area
2	Driveway + mature plantings	15	Gatekeeper's cottage (28 Busby St)
3	The Oval	16	Glade
4	Statue of St Joseph	17	Eastern open area with u/g services
5	Calvary	18	Specimen trees
6	Statue of Christ	19	South boundary mixed plantings
7	Labyrinth	20	Mature trees
8	Parterre	21	Materials storage
9	Terraced garden	22	Site access
10	Ornamental garden 'Memorial Garden'	23	Sheds & utility storage
11	Chapel garden	24	Grotto
12	Kitchen garden	25	McAuley House
13	Western boundary plantings	26	Site of former stables

Figure 3.5: Plan of the grounds with a list of plants & features. (Roseanne Paskin 2007)

3.1.7.2 Driveway

A gravel driveway forms a loop from the main gateway to the terrace gardens and front entry of the main building and circles back around an open area known as The Oval. The outer circumference of the driveway is lined with a single row planting of matured conifers of mixed species. The driveway is predominantly surfaced with a fine gravel; sections adjacent to the buildings are finished with a bituminous seal. It is edged on both sides with a gutter that is made from various materials: half rounds in ceramic and in concrete, bricks on edge and in some sections, bricks laid as a dish drain. Decorative double gates of bent metalwork and wire mesh with masonry pillars form the entrance from Busby Street.



Plate 3.7.2: the main driveway viewed from the front terraces of Logan Brae. (21.5.2020)



Plate 3.7.3: Driveway gates. (2007)

Condition of landscape elements	
Driveway	Condition
Driveway	Moderate condition in parts, requiring regrading/reformation of carriageway profile in sections to prevent erosion of surface.
Driveway gutter	Condition varies along the length of the driveway.
Gate pillars	Appear to be sound.
Wrought iron gates	Appear to be sound.

3.1.7.3 Site access

A network of access roads and tracks links between the main driveway, the secondary Busby Street driveway, the Chapel, McAuley House and the sheds. Those adjacent to the buildings

are spray sealed and the rear accesses are informal tracks. A system of concrete pathways joins the main buildings and provides all-weather pedestrian access to entry doors.

Condition of landscape elements	
Driveway	Condition
Busby Street driveway	Appears to be generally sound.
Concrete paths & steps	Appear to be sound & complete.

3.1.7.4 Terraced and decorative gardens

Terraced garden areas form a podium, creating an interface between the surrounding ground levels and the main buildings. At the main entry a stylised parterre has been constructed using rose bushes, lavender and other hardy species with a bright white gravel defining the garden beds.



Plate 3.7.4: Terraced gardens on the eastern side of Logan Brae. (21.5.2020)



Plates 3.7.5 & 3.7.6: The parterre viewed from the verandah of Logan Brae. (2007)

In 1963, a new wing to the northern end of the main building and wrap around terracing were constructed. These newly formed garden beds were constructed with the assistance of the 16 novices living in the convent at that time, carrying loads of bricks and soil. They were under the instruction of Mr Vostenbosch who lived with his family in the property's gatekeeper's house at 28 Busby Street, from the 1940s.⁴³

These decorative gardens create respite areas and places for contemplation, adjacent to the main buildings and the Chapel. They are composed of more detailed planting compositions with perennials, shrubs and small trees and, in the People's Garden, a water feature and a path network. The terraced area located east of the Novitiate Wing has been dedicated to the Wiradjuri people, symbolising "the desire of the Sisters of Mercy to promote justice and reconciliation in relationships with Aboriginal people".



Plate 3.7.7: View east over the terraced gardens from the Novitiate Wing. (21.5.2020)



Plate 3.7.8: The terraced gardens looking south. (21.5.2020)



Plate 3.7.9: Dedication to the Wiradjuri people. (21.5.2020)

3.1.7.5 Nursery, Vegetable Gardens and Labyrinth

A large gardening complex has been developed between the Novitiate Wing and Busby Street frontage. This complex includes a potting shed, green houses, an outdoor shelter with wood fired pizza oven and extensive vegetable beds.

⁴³ Sister Carmel, personal communication on site, 15 January 2007 - she was one of the novices. They also were responsible for churning butter from the cows milked from the herd that was kept on the property.



Plate 3.7.10: Potting shed & outdoor gathering area. (21.5.2020)



Plate 3.7.11: Nursery area. (21.5.2020)



Plate 3.7.12: Outdoor shelter & wood fired oven. (21.5.2020)



Plate 3.7.13: The reconstructed labyrinth. (21.5.2020)

A contemplative labyrinth is located on a terrace to the east of this complex. The labyrinth, recorded in its original form in 2007, has been reconstructed with white bricks.

The labyrinth is based on the design of one on the floor at Chartres Cathedral and is another element within the grounds that allows for personal contemplation and insight:

*A labyrinth is an ancient symbol that represents wholeness. It combines the imagery of the circle and the spiral into a meandering and purposeful path. It looks like a maze but isn't. Unlike a maze, a labyrinth has no dead-ends ... The labyrinth symbolises a transformative journey to your own centre and back out into the world. Each person's walk is a personal journey ...*⁴⁴

Condition of landscape elements	
Structure	Condition
Potting shed	Appears to be sound.
Greenhouses	Appear to be sound.
Storage shed	Appears to be sound.
Outdoor shelter	Appears to be sound.
Wood fired oven	Appears to be sound.
Vegetable gardens	Appear to be sound.
Labyrinth	Appears to be sound.

3.1.7.6 Utilitarian areas

A complex of buildings is located at the southern end of the alternative driveway that gives access the western side of the main buildings of the property. These buildings appear to be a store for equipment, hardware and other items used in property maintenance within the complex.



Plate 3.7.14: Vegetable & herb gardens are located near the western side of the Novitiate Wing. (21.5.2020)

⁴⁴ An extract from a brochure about the labyrinth at St Joseph's Mount.



Plate 3.7.15: Nissen hut located at the western end of the utility buildings. This was constructed between 2007 & 2019. (21.5.2020)



Plate 3.7.16: Garage (right) & gardener's shed (left). (21.5.2020)

Condition of utility structures	
Building	Condition
Garage	Appears to be sound.
Gardener's shed	Appear to be sound.
Nissen hut	Appears to be sound.

3.1.7.7 Commemorative and religious items

Within the People's Garden, the decorative garden area adjacent to the main building, are several commemorative items. These include a sandstone plinth, from the Old Bathurst Gaol, marks the entry to the People's garden and acknowledges the Wiradjuri people. This is complemented by a post containing messages of peace in Wiradjuri and English. Next to this post is a sandstone and brass sundial.



Plate 3.7.17: Plinth from the original Bathurst Gaol dedicating the People's Garden to the Wiradjuri people. (21.5.2020)



Plate 3.7.18: Post with peace messages & sundial. (21.5.2020)

Statuary and Christian iconography is located throughout the upper parts of the grounds. The principal item is a statue of St Joseph and the young Jesus is set on a tall pillar on The Oval, across from the central axis of the main door entry. This was erected in 1918 to commemorate the Golden Jubilee of Rev. Mother Gertrude Sheehy's first profession.



Plate 3.7.19: Statue of St Joseph & a young Jesus on The Oval. (21.5.2020)



Plate 3.7.20: A Calvary, a symbolic cross on a stone cairn, located at the southern end of the driveway loop. (21.5.2020)



Plate 3.7.21: A statue of Christ on the driveway near the entrance to the People's Garden. (21.5.2020)



Plate 3.7.20: A stone grotto, representing the grotto at Loudres in France, contains a statue of Our Lady and a smaller statue of St Bernardette. This is set in the grounds between McAuley Cottage and St Joseph's Chapel. (21.5.2020)

Condition of commemorative & religious items	
Item	Condition
Plinth from Bathurst Gaol	Appears to be in sound condition.
Post with peace messages	Appears to be quite sound.
Bird bath	Appears to be quite sound.
Statue of St Joseph	Appears to be quite sound.
Calvary	Appears to be quite sound.
Statue of Christ	Appears to be quite sound.
Stone Grotto	Appears to be quite sound.

3.1.7.8 Tree groupings and open areas

Other than the distinctive row plantings along the driveways and the northern street boundary, there are other notable tree plantings. A large Elm tree (*Ulmus glabra*) and two Canary Island Pines (*Pinus canariensis*) form an imposing group in an otherwise unplanted section of the property. Other large pine tree specimens dominate a well-spaced group planting to the south west of the Chapel and McAuley House, adjacent to the garage shed. The southern boundary, adjacent to a fenced easement has been more recently planted with a double row of mixed, mostly native, species. This planting and easement provide a buffer to the adjoining residential development that has been built on land that previously formed part of the property.

Nearly one-half of the area of the property is composed of broad open areas. From the rear boundary of the gatekeeper's cottage in the north eastern corner the remainder of the eastern third of the property is open. It has a moderate even slope to the eastern boundary, generally draining towards the north east with the southern part draining towards the south eastern corner. It is traversed by a network of sewer drainage pipes that connect to the properties to the east and south of the property; several inspection points are also installed.



Plate 3.7.21: Tree plantings lining the driveway.
(21.5.2020)

The fabric of the landscape elements mostly dates from the establishment of the property as a grand home in the later part of the nineteenth century. An early photo of Logan Brae taken about 1880 shows the two storey mansion with a sweeping kerbed gravel carriageway leading to its front entry; some substantial shrub planting lines the edge of the driveway.

The present alignment of the gutter forms a distinct edging and is most likely to be an early configuration of the carriageway.

The now-mature coniferous plantings that edge the outer perimeter of the driveway superseded these shrubs and are in a mature to over-mature state with some showing loss of vigour; they are a major component of the landscape within the site.

Other main plantings include the mature plantings along the north and western boundaries. Most of them are showing signs of deterioration likely due to poor soil conditions and to the prolonged period of continuous dry seasons. These boundary plantings, together, with the driveway avenue trees, create a wide encircling embrace around the main building complex and its adjacent gardens and graded open swathe.



Plate 3.7.22: Open plantings located north of the driveway.
(21.5.2020)

The following table lists the condition of the fabric of the landscape elements:

St Joseph's Mount Landscape	Condition
Tree plantings	
Driveway	Mature to over-mature. Some storm/wind damage to NE section. S section less vigorous on thinner soil.
Northern boundary	Mature to over-mature. Pines show loss of vigour from dry conditions.
Western boundary	Mature to over-mature. Some severely stressed, most show loss of vigour from dry conditions.
Southern boundary	Young and semi-mature. Moderate vigour.
Specimen trees in groups	Good form, mature trees, require protection of canopy and root zones for optimum growing conditions.

4. Assessment of cultural significance

4.1 Comparative analysis

St Joseph's Mount is one of many properties associated with the Roman Catholic Church in Bathurst. A number of these buildings, including the Cathedral of St Michael and St John and St Stanislaus College were designed for the Catholic Church by local architect Edward Gell. St Joseph's Mount is unique amongst existing church properties in being designed originally by Gell as a residence for Dr George Busby.

The property also has a multi-faceted history, having served as a private residence, agricultural college and as the headquarters of the Sisters of Mercy in the Diocese of Bathurst and Wilcannia-Forbes Diocese.

The property also combines a number of structures built in different eras of style and design that are blended into a pleasing whole. The buildings on the property have been sympathetically maintained over an extended period of time and each element of the property has a high level of integrity.

Currently three convent complexes are listed on the NSW State Heritage Register. These are:

- Dominican Roman Catholic Convent, Tamworth,
- St Ignatius Roman Catholic Church, Convent and Site, Bourke,
- St Joseph's Convent, Chapel and Site (former), Broken Hill.

The story of St Joseph's Mount makes it unique amongst these properties. Its excellent state of management and preservation, including the retention of large amounts of fabric of exceptional significance that reflect all phases of the use of the place, are also attributes that enhance its cultural heritage significance.

4.2 Definition of curtilage

The brief for this Conservation Management Plan specifically requested a definition of curtilage to assist in managing landscaping and provide guidance on decisions regarding a proposed subdivision of the property. In defining curtilage the following issues must be addressed:

- Historical allotments
- Design, style and taste
- Function, uses and interrelationships
- Visual links
- Scale
- Significant features
- Archaeological features

Each of these is discussed in relation to St Joseph's Mount.

4.2.1 Historical allotments

St Joseph's Mount sits on a parcel of land defined by Busby Street, Prospect Street, Rose Street and Lewins Street, Bathurst. The perimeters of this allotment have been subdivided on a number of occasions leaving Busby Street as the major street frontage of the property. The original allotment of Logan Brae is still reasonably discernible.

The steep fall of the land away from St Joseph's Mount on the eastern and southern sides of the property creates a sense of space and commanding presence that limits the effects of earlier subdivisions. The presence of rows of trees along the drive to the front of the buildings also defines the landscape presence of the convent. None of the trees or plantings in the lower sections of the property are considered to have any cultural heritage significance.

The most important remaining aspects of the historical allotment of St Joseph's Mount can be protected by retaining a frontage to Busby Street and retaining the scale of plantings currently lining the lower drive. These could be supplemented by additional plantings.

4.2.2 Design, style and taste

Logan Brae, the former gentleman's villa is a landmark building reflecting the work of local architect Edward Gell. The presence and style of this building have been preserved through the judicious placement of extensions and ancillary structures behind the alignment of Logan Brae along the slope of the hill on which it is located. During their custodianship of the property the Sisters of Mercy have maintained the style and architectural features of the building to ensure it retains an exemplary level of integrity in relation to design and style.

Extensions have been sympathetically keyed into the structure and lines of the original building and have been designed to complement its form. Building materials, fenestration and roof lines have also been employed to create a sense of harmony.

Design, style and taste should be retained through the retention of the form of existing buildings and the conservation of existing colour schemes.

4.2.3 Function, uses and interrelationships

The interrelationships between existing buildings comprising St Joseph's Mount should be retained. It is considered that the functions of individual segments of the complex could be altered in accordance with clearly defined conservation policies.

4.2.4 Visual links

The principal visual links that must be retained are:

- Views of the eastern façade of St Joseph's Mount from the driveway leading to the front of the buildings.
- Views from the buildings to the drive and gardens and views over the garden and surrounding properties to the countryside around Bathurst.
- Views along the front of the complex of buildings.

4.2.5 Scale

The scale of the existing buildings and garden should be retained. The boundaries of the garden are considered to extend as follows:

- Northern boundary – along the Busby Street boundary from the western driveway entrance to the eastern driveway entrance,
- Eastern boundary – defined by the eastern side of the trees lining the lower side of the eastern driveway,

- Southern boundary – From the southern side of the trees lining the southern side of the eastern driveway to the southern end of McAuley Cottage.
- Western boundary – The western side of the buildings from the southern end of McAuley Cottage to the northern end of the Novitiate wing.



Plate 4.1: Curtilage of St Joseph's Mount proposed in 2007 indicated by the yellow line.
(Aerial photograph courtesy of the Sisters of Mercy, Bathurst Congregation.)

4.2.6 Significant features

Significant features of St Joseph's Mount are considered to include the following:

- Logan Brae,
- St Joseph's Mount Chapel,
- The Novitiate wing,
- McAuley Cottage,
- Gardens, including;
 - The eastern driveway and its plantings,
 - The labyrinth
 - Garden statuary.

4.2.7 Archaeological features

The following areas of St Joseph's Mount are considered to be of high to moderate archaeological potential:

- Logan Brae, particularly sub-floor areas and gardens immediately surrounding the house,
- Sub-floor areas of St Joseph's Mount Chapel,

4.3 Statement of significance

A statement of significance for St Joseph's Mount has been prepared in accordance with guidelines established by the NSW Heritage Office to comply with the requirements of the Burra Charter.

NSW Heritage Assessment Criteria

Criterion (a)	An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).
Criterion (b)	An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area).
Criterion (c)	An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).
Criterion (d)	An item has a strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.
Criterion (e)	An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).
Criterion (f)	An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).
Criterion (g)	An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments (or a class of the local area's cultural or natural places; or cultural or natural environments.)

Statement of significance

NSW Heritage Assessment Criterion	Significance	Reasons
Historical significance Criterion (a)	State	St Joseph's Mount has a multi-faceted history that reflects aspects of the development of Bathurst since 1877. Logan Brae is a grand Victorian mansion that retains a high level of integrity. The place has also served as an agricultural college and as the headquarters and novitiate of the Sisters of Mercy in the Bathurst Diocese. It was also one of the first non-government teacher training facilities accredited in New South Wales. The place was involved in celebrations surrounding the Bathurst People's Federal Convention of 1896.
Historical association significance Criterion (b)	State	St Joseph's Mount has direct associations with the outstanding educational and social work of the Sisters of Mercy in Western NSW. It also has direct associations with Bathurst architect Edward Gell, physician George Busby and with the works of entrepreneur John Meagher.
Aesthetic significance Criterion (c)	Local	Logan Brae is a fine example of the work of architect Edward Gell. The original mansion is generally intact. Extensions and renovations have largely respected the original form and fabric of the building and maintained a high level of aesthetic integrity. The house retains the form of its original gardens and landscaping.
Social significance Criterion (d)	Local	St Joseph's Mount and Logan Brae are important elements of the social and spiritual fabric of Bathurst. The place is directly associated with the works of the Sisters of Mercy. The charitable and visionary mission of this organisation is still being developed and implemented around the fabric and the place.

Technical/ Research significance Criterion (e)	Local	Logan Brae was used as part of the first Experimental Farm in Bathurst and served as an agricultural college for some years. It has also been a place of teacher training and learning. The intact 19 th and early 20 th century buildings of St Joseph's Mount provide opportunities to explore the construction methods and social customs of these eras.
Rarity Criterion (f)	Local	St Joseph's Mount is the only convent and novitiate of its kind in the Catholic Diocese of Bathurst.
Representat- iveness Criterion (g)	Local	St Joseph's Mount is representative of the successful adaptive re-use and effective management of large 19 th century mansions.

4.4 Statement of archaeological significance

St Joseph's Mount consists of a complex of buildings constructed between 1875 and 1962. These buildings are grouped on the slope of a hill with landscaped gardens situated along their eastern side. The core of the complex is the 1877 Victorian mansion Logan Brae. The area beneath Logan Brae and within three metres of its northern, eastern and southern facades is considered to have high archaeological significance. The area beneath the adjoining chapel is considered to have moderate archaeological significance.

4.5 Gradings of significance

The grading of significance of each element of the property has been assessed in accordance with its integrity, interpretations of its relationship to the identified historic themes, and its relationship with other features. Gradings of significance have been assessed using NSW Heritage Office criteria contained in the NSW Heritage Manual update Assessing Heritage Significance. According to this publication;

Different components of a place make a different relative contribution to its heritage value. Loss of integrity or condition may diminish significance⁴⁵.

The Western Australia State Heritage Office defines integrity as follows:

Integrity is a measure of the likely long-term viability or sustainability of the values identified, or the ability of the place to restore itself or be restored, and the time frame for any restorative process.⁴⁶

Gradings of significance reflect the relative contribution of an item or its components to the significance of the whole. The NSW Heritage Manual update Assessing Heritage Significance identifies gradings of significance as follows:

Gradings of significance

Grading	Justification	Status
Exceptional	Rare or outstanding item of local or State significance. High degree of intactness. Item can be interpreted relatively easily.	Fulfil criteria for local or State listing.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfil criteria for local or State listing.

⁴⁵ NSW Heritage Office, 2001. Assessing heritage significance. p.11

⁴⁶ State Heritage Office Western Australia. The Assessment Criteria for Cultural Heritage Significance.

Grading	Justification	Status
Moderate	Altered or modified elements. Elements with little heritage value, but which will contribute to the overall significance of the item.	Fulfil criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damaging to the item's heritage significance.	Does not fulfil criteria for local or State listing.

Gradings of significance have been determined in accordance with the following criteria:

- Original elements are generally regarded to have an exceptional or high grading of significance depending on condition and integrity.
- Gradings of significance of elements that have been compromised by ongoing modifications, storm damage, weathering or vandalism have been allocated according to the condition and integrity of each element.
- More recent elements or elements that have been heavily compromised have been identified as having little significance.

Logan Brae Exterior	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
Triple-hipped corrugated iron roof & roof structure		X			
Hipped roof over laundry wing		X			
Hipped roofs over novitiate kitchen		X			
Skillion roof over rear verandah			X		
Front verandah roof	X				
Guttering & downpipes		X			
Chimneys	X				
Decorative chimney tops	X				
Front verandah – cast pillars & lacework	X				
Verandah floor & structure	X				
Front steps	X				
Balcony above front entrance	X				
Decorative brick retaining walls & balustrades	X				
Cast balcony railing	X				
Cast drainage pipes (Metters brand) – northern side	X				
Eaves	X				
Cast vents in eaves	X				
Carved eave brackets.	X				
English Bond face brickwork	X				
Quoins	X				
Contrasting brickwork	X				
Decorative stone hood mouldings	X				
Double-hung windows	X				

Logan Brae Exterior	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
Leadlight windows	X				
Front door		X			
Etched glass door light & sidelights		X			
Wrought iron panel – front door		X			
Front door bell			X		
Entry door & sidelight – southern side	X				
Door to dining room (refectory)			X		
Screen door – dining room (refectory)			X		
Rear verandah infill structure				X	
Rear verandah infill windows				X	
Ground floor extension – northern side of courtyard				X	
Doors & windows – ground floor extension				X	
Extensions – southwest wing				X	
Doors & windows – southwest extensions				X	
Rear courtyard			X		
Plumbing ventilation flues				X	
Electrical services				X	
Television aerial				X	

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Logan Brae front hall					
Plaster ceiling	X				
Plaster wall surfaces, decorative arcading, cornices & ceiling rose	X				
Cedar joinery & skirting boards	X				
Art deco light fitting		X			
Madonna & child statue		X			
Tessellated tile floor	X				
Cedar front door & rim lock	X				
Front door night latch		X			
St Joseph's Mount presentation plaque	X				
Electrical services & switches			X		
Fire extinguisher					X
John Meagher Room					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Fireplace infill				X	
Cedar joinery & skirting boards	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors	X				

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Door lock mechanisms, door knobs & fingerplates		X			
Chandeliers			X		
St Joseph the worker statue			X		
Floor	X				
Carpet				X	
Portrait of John Meagher		X			
Electrical services & switches				X	
Gas heater and services				X	
Front parlour					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar joinery & skirting boards	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet				X	
Electrical services & switches				X	
Gas heater and services				X	
Telephone room					
Cedar panelled ceiling & walls	X				
Plaster wall surfaces	X				
Cedar panelled doors	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet				X	
Electrical services & switches				X	
Cellar					
English bond brickwork	X				
Drainage pipes	X				
Vaulted area beneath front hall	X				
Shelving in vaulted area	X				
Staircase & timber landing	X				
Drainage trenches (beneath front parlour)			X		
Repairs to front parlour floor				X	
Gas services				X	
Electrical services & fittings				X	
Central hall and main staircase					
Plaster ceiling	X				

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Plaster wall surfaces, decorative arcading, cornices & ceiling rose	X				
Cedar joinery & skirting boards	X				
Art deco light fitting		X			
Statue of St Joseph	X				
Tessellated tile floor	X				
Cedar archway beneath staircase	X				
Side door & lock		X			
Grandfather clock & plinth		X			
Staircase	X				
Cedar panelling	X				
Balustrades, posts & cedar panelling	X				
Staircase windows	X				
Decorative friezes	X				
Madonna		X			
Hall to breakfast room	X				
Service bell & mounting	X				
Northern hall	X				
Electrical services & switches			X		
Breakfast room					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar joinery & skirting boards	X				
Cedar double hung window & window joinery	X				
Cedar panelled door	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet			X		
Electrical services & switches (pull switches)			X		
Gas heater and services				X	
Service hall & maid's stairs					
Plaster ceiling & wall surfaces	X				
Cedar joinery & skirting boards	X				
Cedar panelled door to central hall & frosted glass panels	X				
Crown light above door	X				
Floor	X				
Carpet			X		
Archway to maid's stairs	X				
Maids' stairs railing	X				
Maids' stairs	X				
Maids' stairs linoleum		X			
Art deco era cupboard at top of stairs		X			

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Cedar panelled door to rear verandah	X				
Cedar panelled door to larder	X				
Door to store room	X				
Light fittings			X		
Electrical services & switches				X	
Larder					
Plaster ceiling & wall surfaces	X				
Cedar joinery & skirting boards	X				
Cedar window joinery & window glazing	X				
Cedar panelled door to service hall	X				
Door to rear verandah		X			
Screen door on rear verandah		X			
Floor	X				
Linoleum		X			
Slate shelving	X				
Wooden shelving brackets	X				
White backing tiles	X				
High wooden shelving	X				
Light fitting & electrical services			X		
Store room					
Planked ceiling		X			
Cedar joinery & skirting boards		X			
Cedar window joinery & window glazing	X				
Cedar panelled door to service hall	X				
Cedar dresser		X			
Pine hutch		X			
Floor	X				
Carpet			X		
Electrical services & fittings			X		
Housemaid's closet					
Plaster wall & ceiling linings	X				
Panelled stair linings	X				
Cedar joinery	X				
Shelving			X		
Floor	X				
Carpet			X		
Cedar door & joinery	X				
Electrical services & fittings			X		
Prayer room					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				
Marble fireplace surround & mantelpiece		X			
Fireplace infill					X
Cedar joinery & skirting boards	X				
Cedar double hung window & window joinery	X				
Cedar panelled door	X				

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet			X		
Electrical services & switches			X		
Gas heater and services				X	
Bedroom & dressing room					
Plaster ceiling	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar joinery & skirting boards	X				
Cedar double hung window & window joinery	X				
Cedar panelled door to hall	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet				X	
Electrical services & switches (pull switches)			X		
Gas heater and services				X	
Downstairs bathroom					
Plaster ceiling		X			
Cedar double hung window & window joinery	X				
Cedar panelled doors	X				
Door lock mechanisms, door knobs & fingerplates		X			
Toilet & bath			X		
Floor and wall tiling			X		
Shower				X	
Light fitting				X	
Electrical services & switches				X	
Laundry (former kitchen)					
Gyprock ceiling			X		
Windows & window joinery		X			
Cedar panelled doors		X			
Plaster wall finishes		X			
Floor & wall tiling			X		
Former oven alcove		X			
Cupboards & benches			X		
Broom cupboard (former cook's stairs)		X			
Plumbing services & fittings				X	
Electrical services & fittings				X	
Boiler room (former)					
Plaster wall & ceiling linings		X			
Concrete floor		X			
Window & window joinery		X			

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Ledged & braced door		X			
Hollow core sliding door & frame				X	
Boarded lining of former cook's stairs		X			
Wash tubs			X		
Plumbing & plumbing fittings			X		
Hot water service				X	
Former central heating pipes			X		
Electrical services, fittings & switchboard			X		
Port room					
Plaster wall & ceiling linings		X			
Concrete floor		X			
Window & window joinery	X				
Ledged door & rim lock	X				
Hollow core door & frame					X
Shadows of former cupboards			X		
Electrical services & fittings.			X		
Ground floor rear verandah					
1870s English bond brick walls	X				
1960s stretcher bond brick walls		X			
Timber-framed external windows			X		
Polished concrete paving & repairs			X		
Terrazzo paving			X		
Cast iron downpipes		X			
Electrical services & fittings			X		
Kitchen & breakfast room					
1870s English bond brick walls	X				
1960s stretcher bond brick walls		X			
1960s windows			X		
Kitchen benches, cupboards & fittings				X	
Floor coverings				X	
Cool room				X	
Central heating			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Scullery					
Benches, cupboards & fittings			X		
Floor coverings				X	
Central heating			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Upstairs landing & hallways					
Plaster ceiling	X				
Plaster wall surfaces, skirting, cornices & ceiling rose	X				
Cedar joinery, including cupboard doors	X				
Light fitting			X		
Madonna & child statue & stand			X		
Floor	X				
Linoleum floor coverings		X			

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Balustrades, posts & cedar panelling	X				
Bedroom (Museum)					
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Light fitting			X		
Floor	X				
Electrical services & switches			X		
Dressing Room (Bursar's office)					
Plaster ceiling, wall finishes & skirting	X				
Cedar double hung window & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Light fitting			X		
Floor	X				
Carpet			X		
Electrical services & switches			X		
Gas services & heater			X		
Eastern office					
Plaster ceiling, wall finishes, cornices & skirting	X				
Cedar french windows & window joinery	X				
Cedar panelled door & joinery	X				
Door lock mechanisms			X		
Floor	X				
Carpet			X		
Art deco cupboards & shelving		X			
Light fitting			X		
Electrical services & switches					
Gas services & heater			X		
Congregational Leader's office					
Plaster ceiling, wall finishes, ceiling rose, cornice & skirting	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Light fittings			X		
Floor	X				
Carpet			X		
Electrical services & switches			X		
Gas services & heater			X		
Utility office					

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Floor	X				
Carpet			X		
Electrical services, lights & switches			X		
Gas services & heater			X		
Secretary's office					
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cedar double hung windows & window joinery	X				
Cedar panelled door & joinery	X				
Door lock mechanisms			X		
Floor	X				
Carpet			X		
Electrical services, lights & switches			X		
Gas services & heater			X		
Toilet					
Plaster ceiling & wall finishes				X	
Cedar double hung window & window joinery	X				
Cedar panelled door & joinery	X				
Door lock mechanism				X	
Floor			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Kitchenette					
Ceiling & wall finishes				X	
Floor & floor tiling				X	
Kitchen bench & cupboards				X	
Cedar panelled door	X				
Door lock mechanism				X	
Cedar window & window joinery	X				
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Archive					
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cedar double hung window & window joinery	X				
Cedar panelled door & joinery	X				

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Door lock mechanisms			X		
Floor	X				
Carpet			X		
Compactus			X		
Art deco era cupboard		X			
Electrical services, lights & switches			X		
Gas services & heater			X		
Bathroom					
Ceiling & wall finishes & tiling		X			
Floor & floor tiling			X		
Cedar panelled door, cedar window & joinery	X				
Door lock mechanism			X		
Plumbing services & fixtures			X		
Electrical services & fittings			X		
Kitchen					
Ceiling & wall finishes & skirting			X		
1960s cupboards			X		
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Floor	X				
Floor coverings			X		
Plinth for sink & kitchen cupboards			X		
Kitchen benches & cupboards			X		
Plumbing services & fixtures			X		
Electrical services, lights, switches & stove			X		
Gas services & heater				X	
Upstairs rear verandah					
Roof lining				X	
English bond brickwork		X			
Arched door openings		X			
Stretcher bond brickwork – western wall			X		
Window frames & glazing – western wall				X	
1960s cupboards				X	
Arts & crafts style doors			X		
Floor			X		
Electrical services, lights & switches				X	
Cells and infirmary – northern wing					
Halls & steps			X		
Cells			X		
Internal doors, cupboards & other fixtures			X		
Central heating system			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Cells and bursary – southern wing					

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Halls & steps			X		
Walkway to first floor rear verandah			X		
Cook's staircase space			X		
Cells and bursary			X		
Bathroom & toilet			X		
Internal doors, cupboards & other fixtures			X		
Central heating system			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	

Building element	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
St Joseph's Mount Novitiate wing exterior					
Hipped corrugated iron clad roof & roof structure		X			
Guttering & downpipes			X		
Eastern landing			X		
Western landing, steps & awning			X		
Stretcher Bond face brickwork	X				
Quoins & string courses	X				
Fenestration & window surrounds	X				
Aluminium-framed doors			X		
Timber-framed doors			X		
Aluminium-framed windows			X		
St Joseph's Mount Novitiate wing: Ground floor interior	Exceptional	High	Moderate	Little	Intrusive
Hall		X			
Terrazzo floor tiling		X			
Dining room		X			
Vinyl-tiled floor			X		
Scullery			X		
Scullery benches & cabinets			X		
Stair well & stairs		X			
Balustrades			X		
Bathroom			X		
Reading room		X			
Reading room display cabinets			X		
Library		X			
Internal doors, cupboards & other fixtures			X		
Central heating system				X	
Plumbing services & fixtures				X	
Electrical services & fittings				X	
St Joseph's Mount Novitiate wing: Basement interior					
Stair well & stairs		X			

Building element	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
Balustrades			X		
Kitchenette			X		
Toilet			X		
Meeting room			X		
Office (store room)			X		
Internal doors, cupboards & other fixtures			X		
Central heating system				X	
Plumbing services & fixtures				X	
Electrical services & fittings				X	
St Joseph's Mount Novitiate wing: First floor interior					
Entrance hall		X			
Stair well & stairs		X			
Balustrades			X		
Bathrooms			X		
Cells			X		
Internal doors, cupboards & other fixtures			X		
Central heating system				X	
Plumbing services & fixtures				X	
Electrical services & fittings				X	

Building element St Joseph's Chapel	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
St Joseph's Mount Chapel exterior					
Asbestos cement shingle roof over chapel		X			
Terracotta ridge capping	X				
Asbestos cement shingle and terracotta roof over apse and vestry		X			
Corrugated iron clad roof over portico			X		
Guttering & downpipes		X			
Stone crenellated battlements & gutters	X				
English Bond face brickwork	X				
Foundation stone	X				
Rendered gable coping & bolections	X				
Finials & lightning rods	X				
Terracotta vents			X		
Stone string courses	X				
Cement rendered footings	X				
Crazy paved retaining wall			X		
External concrete paving			X		
Statue & plinth – northern side		X			
Stone window sills & reveals	X				
Window hood mouldings	X				
Window frames, mullions & glazing – southern side				X	

Building element St Joseph's Chapel	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
Stained glass window infills – apse		X			
Stained glass window infills – northern side		X			
Lance window – eastern gable		X			
Lance window infill – eastern gable				X	
Lance window – western gable		X			
Lance window infill – western gable				X	
Windows – western end	X				
Stained glass window infills – western end		X			
Stucco finish – western end	X				
Portico colonnade	X				
Portico trusses & lining boards	X				
Portico stucco detailing	X				
Portico cement paving	X				
Calvary in portico		X			
Memorial panels in portico		X			
Chapel doors – lancet arched & ledged	X				
Vestry door – ledged & braced	X				
St Joseph's Chapel interior					
Chapel ceiling lining & king post trusses	X				
Apse ceiling lining, bracing & king post	X				
Vestry ceiling		X			
Plaster wall linings	X				
Waratah wall vents	X				
Wall niches	X				
Floors	X				
Carpet floor coverings				X	
Memorial stained glass windows & plaques		X			
Door joinery & skirting boards	X				
Light fittings – chapel & apse				X	
Light fittings – vestry			X		
Electrical services				X	
Plumbing & hand basin - vestry				X	
Chapel pews			X		
Statuary		X			
Liturgical items		X			

Building element	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
McAuley Cottage					
Tile roof & roof structure		X			
Gable end barge boards		X			
Guttering & downpipes			X		
Stretcher bond face brickwork		X			

Building element	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
Raft floor			X		
Front steps		X			
Front door			X		
Windows & concrete window framing		X			
Plumbing & gas services & fixtures				X	
Electrical services & fittings				X	
Property element	Grading of Significance				
Landscape	Exceptional	High	Moderate	Little	Intrusive
Driveway & site access					
Eastern driveway (carriageway)		X			
Driveway gutter				X	
Gate pillars			X		
Wrought iron gates			X		
Western driveway				X	
Concrete paths & steps			X		
Gardens					
Parterre	X				
Terraced garden	X				
Ornamental garden		X			
Chapel garden		X			
Kitchen garden			X		
Landscape structures					
Potting shed				X	
Greenhouses				X	
Storage shed				X	
Outdoor shelter				X	
Wood fired oven				X	
Vegetable gardens				X	
Labyrinth				X	
Garage				X	
Gardener's Shed			X		
Nissen Hut				X	
Religious & commemorative items					
Plinth from Bathurst Gaol			X		
Post with peace messages				X	
Bird bath			X		
Statue of St Joseph	X				
Calvary		X			
Statue of Christ		X			
Stone Grotto		X			
Tree plantings					
Driveway plantings		X			
Northern boundary			X		
Western boundary			X		
Southern boundary		X			

Building element	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
Specimen trees in groups			X		

5. Constraints and opportunities

5.1 Statement of significance

St Joseph's Mount has been assessed as having state historical and historical association significance. It also has local aesthetic, social and technical/research significance, rarity and representativeness. The property has been separately identified in the Bathurst Regional Council Heritage Study as an item of state significance.

State Heritage significance places specific obligations on the owners of the property, including the following:

Minimum standards of maintenance and repair

The NSW Heritage Act requires that items listed on the NSW Heritage Register be maintained to a reasonable standard. This is a legal obligation placed on the owners of a listed property.

5.2 Statutory and non-statutory listings

St Joseph's Mount is currently listed by Bathurst Regional Council as a heritage item.

The Bathurst Regional Local Environmental Plan 2014 contains specific provisions relating to approvals required for developments proposed on land on which a heritage item is located. LEP Section 5.10 Heritage Conservation provisions of the LEP include the requirement for assessment of the impact of proposed developments upon the heritage item, including consideration of the following matters:

Section 5.10.2 Requirement for consent

Development consent is required for any of the following;

- a. Demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance),
 - i. a heritage item,
 - ii. an Aboriginal object,
 - iii. a building, work, relic or tree within a heritage conservation area,
- b. Altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item,
- c. Disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
- d. Disturbing or excavating an Aboriginal place of heritage significance,
- e. Erecting a building on land,
 - i. on which a heritage item is located or that is within a heritage conservation area, or
 - ii. on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,
- f. Subdividing land,
 - i. on which a heritage item is located or that is within a heritage conservation area, or
 - ii. on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

5.3 Other

The Sisters of Mercy are considering options to secure the sustainability of the St Joseph's Mount complex into the future. Uses consistent with the vision and ethos of the Sisters of Mercy include

use of the place as a healing centre, place of learning and a place of care for people marginalised in our society. The 2007 CMP considered options then being explored by the Sisters of Mercy these included:

- Development of education programmes and on-site demonstrations on sustainable living, including water conservation and soil rehabilitation. Development of sustainable living demonstrations may include the construction of ecologically sustainable buildings of up to two storeys.
- Development of ecologically sustainable gardens and gardening techniques.
- Installation of water tanks to harvest roof drainage and to disperse water.

Improvements in security arrangements have also been considered.

The place is currently leased to a community group who wish to use the main buildings of St Joseph's Mount as a community medical and wellness centre. This will require some alterations to the buildings, including;

- Providing an additional level of security for individual rooms within the former Logan Brae,
- Creating equitable access to the upper floor of the building.
- Enhancing the capacity of existing accommodation facilities to cater for a wider range of conferencing options, including use by corporate clients.

The Sisters of Mercy have also long considered subdivision of the property to provide capital for support of ongoing maintenance of the buildings and grounds.

5.3.1 Subdivision

The Sisters of Mercy are proposing subdivision of the property to support the ongoing sustainability of the complex. A subdivision plan has been prepared by Tablelands & Buttsworth Surveyors. This plan is consistent with the general curtilage recommendations developed by High Ground Consulting in 2007. This curtilage recommendation is included as **Figure 4.1**. An extract from the proposed subdivision plan is included as **Figure 5.1**.

The subdivision proposes the creation of three lots in place of the two lots currently occupied by St Joseph's Mount. These are:

- Lot 223 Gatekeeper's Cottage
- Lot 224 St Joseph's Mount
- Lot 225 Open ground located east and south of St Joseph's Mount.

Bathurst Regional Council has requested that relevant development controls for Lot 225 be included in the current CMP. The recommended controls include:

- Recommendation of appropriate scale of buildings on Lot 225. These must ensure;
 - Retention of natural site features, including natural slope of the land and existing vegetation,
 - New buildings will obtain the best aspect and that views to and from St Joseph's Mount (Lot 224) can be maintained,
 - Impacts on privacy and amenity of neighbours is minimised.
- Recommendations regarding appropriate building materials, colours, detailing and forms, including new fencing and the need for front fencing to ensure that new buildings on proposed Lot 225;

- Complement the existing St Joseph’s Mount and its outbuildings on Lot 224,
- Complement the character of the wider neighbourhood and enhance the streetscape.
- Recommendations regarding appropriate landscape buffers and open spaces that should be provided in Lot 225 to;
 - Provide sufficient areas for large mature trees to grow within Lot 225 to the scale that surround the existing St Joseph’s Mount buildings,
 - Ensure the existing line of Conifers landscaping between Lots 224 and 225 can be regrown.

Conservation policies addressing each of these requirements have been included in **Section 7** of this CMP.

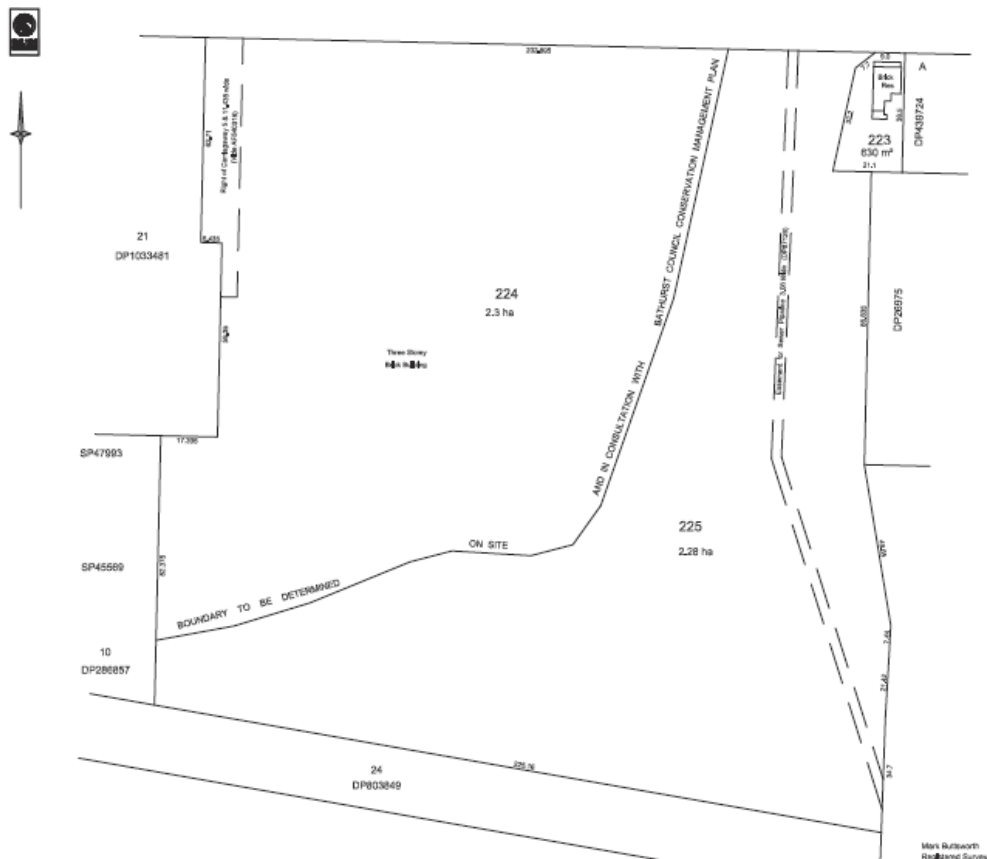


Figure 5.1: Proposed subdivision of St Joseph’s Mount. (Tablelands & Buttsworth Surveyors, 2020)

5.3.2 Enhancement of security

Adaptive re-use of the former Logan Brae to host professional consulting rooms will require the modification of doors and internal spaces to permit discrete locking and security monitoring arrangements. The general policy applying to such modifications must be that:

- All works must be reversible and ensure the ongoing integrity of existing cedar doors, architraves and cabinetry.
- New services such as cabling, plumbing, wiring and fire services must use existing service routes, cavities or voids. New installations must not result in the damage or removal of existing fabric.

5.3.3 Creation of equitable access to upper floors

Ongoing public use of the buildings at St Joseph's Mount requires installation of equitable access arrangements. A number of proposals have been considered. These include:

- Installation of a lift near the stairwell of the Novitiate Wing,
- Removal of the existing Maid's Stairs within Logan Brae and installation of a lift,

It is recommended that serious consideration be given to determining a lift location that does not involve the removal or destruction of significant fabric. It may be possible to install a lift within the rear verandah of Logan Brae. This lift could align with existing hallways and would be located close to building's access road and public entrance. Other options may be available on the western side of the building.

5.3.4 Modification of accommodation

It has been proposed that the small cells within the Novitiate Wing be modified to incorporate space for queen sized beds and ensuites. This may require demolition of walls between cells. If carefully planned with full consideration of the significance of fabric such works could enhance the ongoing sustainability of the complex.

6. Development of conservation policy

Institute of Sisters of Mercy of Australia & Papua New Guinea manages St Joseph's Mount. The property has been identified as having state heritage significance. The Sisters of Mercy require policies and guidelines to assist with planning for future uses of the site consistent with their vision and ethos. Conservation policies are required to guide the ongoing management of the cultural heritage significance of the place, including its fabric and setting.

The policies in Section 8 of this Conservation Management Plan have been developed to ensure that the cultural heritage values of the place and its fabric are managed in a way that is consistent with the significance of the place and the requirements of the Bathurst Region Local Environmental Plan 2014.

Policies were developed after review of appropriate planning documents and discussions with stakeholders.

7. Conservation policies and guidelines

7.1 Definitions

The following Burra Charter definitions apply to terms used in these conservation policies and guidelines:

- 8.1.1 *Place* means site, area land landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.
- 8.1.2 *Cultural significance* means aesthetic, historic, scientific social or spiritual value for past, present or future generations.
- 8.1.3 *Fabric* means all the physical material of the *place* including components, fixtures, contents, and objects.
- 8.1.4 *Conservation* means all the processes of looking after a *place* so as to retain its *cultural significance*
- 8.1.5 *Maintenance* means the continuous protective care of the *fabric* and *setting* of a *place*, and is to be distinguished from repair. Repair involves *restoration* or *reconstruction*.
- 8.1.6 *Preservation* means maintaining the *fabric* of a *place* in its existing state and retarding deterioration.
- 8.1.7 *Restoration* means returning the existing *fabric* of a *place* to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.
- 8.1.8 *Reconstruction* means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material into the *fabric*.
- 8.1.9 *Adaptation* means modifying a *place* to suit the existing use or proposed use.
- 8.1.10 *Use* means the functions of a place, as well as the activities and practices that may occur at the *place*.
- 8.1.11 *Compatible use* means a *use* which respects the *cultural significance* of a *place*. Such use involves no, or minimal, impact on *cultural significance*.
- 8.1.12 *Setting* means the area around a *place*, which may include the visual catchment.
- 8.1.13 *Related place* means a *place* that contributes to the *cultural significance* of another place.
- 8.1.14 *Related object* means an object that contributes to the *cultural significance* of a *place* but is not at the place.
- 8.1.15 *Associations* means the special connections that exist between people and a *place*.
- 8.1.16 *Meanings* denote what a *place* signifies, indicates, evokes or expresses.
- 8.1.17 *Interpretation* means all the ways of presenting the *cultural significance* of a *place*.

7.2 Conservation Policies

The following conservation policies provide principles for the ongoing management of the St Joseph's Mount, Bathurst.

7.2.1 Fabric

Significant fabric of the buildings and landscape should be conserved in accordance with their grading of significance. Gradings of significance are identified in **Section 4.5** of this CMP. The following policies apply to each grading of significance:

- **Fabric with exceptional or high gradings of significance** - The *fabric* of the buildings and landscape identified as having exceptional or high gradings of significance must be *conserved* and should not be damaged or interfered with.
- **Fabric with moderate grading of significance** - The *fabric* of the buildings and landscape identified as having a moderate grading of significance should be conserved but may be replaced or modified in accordance with the requirements of **Section 7.4**.
- **Fabric with little or intrusive gradings of significance** - The *fabric* of the buildings and landscape identified as having little or intrusive gradings of significance should be conserved but may be replaced.
- Any new work must not damage, or interfere with, existing *fabric* considered to have exceptional or high gradings of significance.

7.2.2 Use and development

Use of the place for purposes consistent with the vision and ethos of the Sisters of Mercy is consistent with maintaining its cultural heritage significance. Future use includes the possibility of development of the site in ways that are consistent with maintaining the cultural heritage significance and curtilage of the existing buildings and gardens.

The following developments are consistent with these objectives:

- Developments outside the heritage curtilage defined in **Section 5.2** of this Conservation Management Plan, including:
 - Establishment of a 20 metre wide buffer zone within Lot 224 to provide space for planting new rows of conifers and other plants. This will reinforce the existing landscape layout and also establish a strong visual barrier between St Joseph's Mount and any new development.
 - Construction of new buildings must be restricted to the southern section of Lot 224 and must in accordance with the requirements of the Bathurst Region Local Environmental Plan 2014.
- Developments within the heritage curtilage defined in **Section 5.2** of this Conservation Management Plan that are consistent with maintaining the cultural heritage significance of the place. These include:
 - The installation of water tanks and water distribution systems designed to harvest rainwater from the roofs of existing buildings.
 - Development of new gardens, including vegetable, community and permaculture gardens in the area north of the existing buildings and driveway.
 - Replacement of the existing stand of well-spaced trees located north of the Novitiate wing with new stock of fruiting trees to create a small orchard.
- Alteration of the interior of the 1962 Novitiate wing, consistent with the requirements of **Policy 7.2.1**, to create more viable accommodation and amenities.

7.2.3 Access and Interpretation

St Joseph's Mount is currently visited by diverse members of the public and it is likely that new programs and building uses will attract larger numbers of people. Improved ramp access has been installed to provide equitable access to the ground floor of Logan Brae, the Novitiate Wing and St Joseph's Chapel.

An assessment of the buildings should be undertaken to determine the best location for a package lift that could provide access to the upper floor of the building. This location should be determined to ensure compliance with the requirements of **Policy 7.2.1**.

Many aspects of the story of St Joseph's Mount are interpreted within the site. These and new interpretations could be incorporated within the décor of public spaces.

7.2.4 Setting

The setting of the place should be conserved in the following ways:

- Preservation of the general character of the exterior of the buildings.
- Maintenance of visual links identified in **Section 5.2.4**, including;
 - Views of the eastern façade of St Joseph's Mount from the driveway leading to the front of the buildings.
 - Views from the buildings to the drive and gardens and views over the garden and surrounding properties to the countryside around Bathurst.
 - Views along the front of the complex of buildings.
- Maintenance of the character of the grounds in accordance with the guidelines included in **Section 3.1.7** and **Section 7.3 Policies for a sustainable landscape**.

7.2.5 Management of archaeological features

Where possible all present archaeological features should be retained in situ and future works planned to ensure minimal disturbance to the site. The following general principles should apply to management of archaeological features:

- Where future works may involve the disturbance or destruction of surface or sub-surface deposits or relics, the appropriate excavation permit should be obtained under Section 60 of the NSW Heritage Act 1977 prior to the commencement of those works.
- In those areas with moderate or low archaeological potential, works involving ground disturbance should be monitored by a qualified archaeologist and resources made available for adequate recording. The monitoring program should apply during the initial stages of construction, including during bulk excavation works and the digging of service, footing and pier trenches.
- Where possible all present archaeological features should be retained in situ and future works planned to ensure minimal disturbance to the site.
- It is highly unlikely that any Aboriginal artefacts or deposits likely to contain Aboriginal artefacts will be identified during archaeological investigation or otherwise. If this occurs it must be reported to the relevant authority. Relevant relevant permits should be obtained under section 91 of the National Parks and Wildlife Service Act 1974.

7.2.6 Management of the precinct

The Sisters of Mercy, Bathurst Congregation is currently responsible for the management of St Joseph's Mount. This organisation should:

- Maintain the heritage curtilage defined in **Section 5.2** of this Conservation Management Plan.
- Develop a cyclical maintenance program for the property in consultation with all stakeholders, including ensuring ongoing inspection of the condition of all buildings and ongoing environmental management.
- Develop plans to ensure safe public access.

7.2.7 Documentation of changes

All changes to the precinct, including *restoration*, *reconstruction* or *adaptation*, are to be fully documented in accordance with the requirements of the Burra Charter.

7.2.8 Review of the Conservation Management Plan

This Conservation Management Plan must be reviewed by a heritage professional in five years. The review should include:

- Assessment of the condition of St Joseph’s Mount.
- Assessment of the adequacy of policies and guidelines for management of the place.
- Identification of the need for new management approaches in the light of changed circumstances.

7.3 Policies for a sustainable landscape

7.3.1 Design rules

Develop an integrated site plan to minimise the impact of developing the site, managing the construction activities and considering the on-going use and dynamics of the buildings and the landscape they sit in.

7.3.1.1 Management of subdivision

The following policies have been devised to minimise the impact of subdivision of the property:

- A 20 metre buffer zone must be established within Lot 224 along its boundary with Lot 225. This zone must be reserved for planting of large trees and understorey to reinforce existing plantings within Lots 224 and 225 and create a visual barrier between St Joseph’s Mount and the adjoining property.
- Establish a vegetation management plan to ensure the ongoing sustainability of large tree plantings within Lot 224.
- Establish character guidelines for new developments within Lots 224 and 225. These guidelines must include the following principles;
 - Lot 224,
 - New buildings must be no taller than six (6) metres high.
 - Walls of new buildings may be clad in face brick, steel or bonded fibrous materials.
 - Wall cladding must be finished in colours that tone with the colour of the face brick walls of St Joseph’s Mount.
 - Roofs should be clad in corrugated steel finished in colours replicating the tone of unpainted corrugated galvanised iron.
 - Lot 225,
 - New buildings must be no taller than ten (10) metres high.
 - Walls of new buildings may be clad in face brick, steel or bonded fibrous materials.
 - Wall cladding must be finished in neutral colours that complement the colour of nearby vegetation and the tones of the buildings of St Joseph’s Mount.

- Boundary fencing must reflect the rural character of the existing boundary fences of St Joseph's Mount. Fencing may be post and rail or post and wire. Wire mesh may be used to contain animals.

7.3.1.2 Minimise disruption to the landform and existing drainage patterns

The existing drainage lines must be conserved. New developments on Lots 224 and 225 must be planned to conform with drainage lines and protect the natural flow of surface water. Drainage lines can be reinforced by:

- Using natural ground levels where possible for siting structures.
- Use construction techniques to accommodate slope – pole construction, split level, pier and beam rather than slab on ground.
- Design roadways and driveways by curving around the slope, not straight up a hill. Construct them using dish drains to direct flow towards vegetated/garden areas at regular intervals (e.g. every 3 metres is preferred to 6 metres as the volume of water collected is less and requires a smaller depression in the driveway profile).

7.3.1.3 Minimise disruption to the existing vegetation

The established mature plantings on the site are unlikely to tolerate construction activity in the root zone and their health may suffer with accelerated limb loss, pest and disease attack or complete demise. This can also lead to injury or loss of life or property.

- For mature trees that are in the vicinity of any planned construction work (including houses, sheds, driveways, retaining walls) are to be protected, including existing ground levels around the base of trees and their root zones.

There are other poor environmental effects in removing existing vegetation:

- Removal of plants and their root systems immediately makes the site prone to erosion.
- Removal of the spectrum of plants across an area reduces or removes existing habitats for all sizes of fauna. For example, an incremental loss of breeding and feeding areas for insects, lizards, frogs and insectivorous birds. Their disappearance from landscapes and their natural ability to help control pests can lead to the reliance on chemical control and detrimental impacts on other natural elements such as soil ecology.
- Increased light levels on bare soil encourage weeds to propagate.

Any removal of trees requires planting replacement trees of deep-rooted species:

- to help lower the water table (assists with problems of dry land salinity and poor moisture infiltration)
- bind the soil (reduce soil erosion)
- decrease run-off velocities (acts as a physical barrier to baffle the flow, increases infiltration ability of the soil and rate of saturation)
- filter nutrients (can act as a buffer to other areas) and capture sediment.

7.3.1.4 Minimise effects on neighbouring areas

New plantings must be considered to minimise effects on neighbouring properties. This includes adjacent allotments as well as natural areas. For example, large evergreen trees create shade in summer but deep shade in winter, however, well-placed plantings can provide shelter to protect

areas from direct exposure to extremes of sun and wind; or large root systems may invade and block leaking drainage pipes or damage driveways and kerb lines.

- Site management of construction works to minimise environmental impacts on soil, water, vegetation, air, noise and other nuisances such as waste. The protection of the quality of the site's resources and the adjoining properties can be planned for prior to works starting, with resultant long-term benefits to on-going site use and management.
- The dumping of eroded sediment by stormwater can change the natural capacity of creeks to carry volumes of water, increase the level localised flooding and result in damage to property.

7.3.1.5 Maximising the role of plants in the landscape

The landscape of St Joseph's Mount (located within the proposed Lot 224) is defined by swathes of large trees that create various zones. Plantings within the property fulfil a number of roles which should be maximised.

- Providing protection from harsh climatic forces not only makes the garden areas more pleasant to be in but reduces loss of moisture from soil and plant tissue. Wind and sun exposure helps to strip moisture from leaves, requiring the plant to use greater levels of available soil moisture than in less exposed conditions - this can unnecessarily stress the whole plant physiology. Also, evaporation rates from the soil are increased.
- A multi-rowed windbreak planted in staggered heights can offer leeward protection equivalent to about seven times the height of the plantings. As there are existing clumps and rows of trees plant garden beds in the leeward side to take advantage of their protection. Do not plant directly underneath the canopy of the established vegetation as the ground disturbance is likely to compromise the health and functioning of their root zone.
- As part of the overall site planning locate trees to provide seasonal shade to garden areas with softer plants, outdoor entertaining areas and to north and western facing walls. Deciduous trees allow winter sun to penetrate whilst helping to break wind flow with their network of branches. Evergreen trees need to be more strategically placed so that they do not cast deep shade on living areas.
- If there is little room to plant a screen for protection consider erecting a lattice screen or other structure, this may double as a dividing fence. A wire fence can support climbing plants that can act as a screen for privacy as well as protection, with lower shrubs covering the lower part of the fence as the climber occupies the top. With solid walls, though, consider the effects of light reflection and heat radiation during the hotter months if they are facing north and/or west. Depending on their location, scale, construction and other specifications built structures may need Council approval.

Species choice

- Planting a variety of different species ensures that there is not a complete loss of planting in the event of, for example, prolonged drought, attack by a host-specific pest or disease or unsuitable growing conditions.
- Select plants that suit the soil and garden conditions. Local native plants have evolved to handle the local conditions. Other Australian native plants also cope with very little water. Some exotic plants from the Mediterranean region, California and Southern Africa are able to survive on limited water and a range of soil conditions.
- Place plants in the areas of the garden that suit the conditions provided e.g. moisture – loving plants in protected spots with deeper soils and hardy silvery leaved plants in full sun, all with layers of mulch on the surface.

- Some plant groups have features that make them hardier than others and can utilise low soil moisture and/or withstand exposure without affecting their health or longevity – this includes hard leaf tissue, small leaves, deep root systems, deciduous leaves, silvery or furry leaves, in combination or they may have other features.
- Group plants with similar water needs together so that watering schedules can suit different parts of the garden. Examples of different levels of water use:
 - High use:* lawns, leafy vegetables, soft-fruit trees, exotic shrubs like azaleas and camellias, flowering herbaceous annuals and many bulbs.
 - Medium use:* hardy vegetables like pumpkins and potatoes, hardy fruit trees and vines like nut trees and grapes, many herbs, some exotic shrubs, most grey-leaved or tomentous (hairy) plants, roses and daisies.
 - Low use:* most Australian natives including banksias, grevilleas, hakeas, wattles and eucalypts. Succulents and cacti and some exotics ornamentals.
- Some plants are so well adapted to severe conditions that they can colonise and dominate native bush areas. Explore the neighbourhood to find out what grows well, including street trees and other rarely watered plantings.

7.3.1.6 Minimise lawn

Turf grasses are shallow rooted groundcovers that generally require regular watering to maintain a green leaf cover. Compared to garden beds, the majority of lawn areas require greater amounts of water, supplementary nutrients and maintenance per unit area to maintain healthy growth. Other points to consider: fertiliser costs money and adds to the nutrient burden in run-off; mowing is time-consuming and motors rely on petrol or electricity, adding to environmental pollution. Rationalising the size and design of lawn areas is an easy task to save on water use in the landscape:

- Replace lawn areas with other garden and recreational uses e.g. vegetable patch, garden beds, screen planting, or shade tree and a bench.
- Site turfed areas closer to living areas for more efficient watering from collected water storage systems.
- Choose other groundcovers and low-growing shrubs for a green outlook.
- Use other pervious surfaces, e.g. mulch, gravel or permeable paving units, for trafficked areas rather than repeatedly repairing worn out tracks across turf.
- Change your routines of care with mowing frequency, blade height, frequency and depth of watering with the aim to encourage deeper root growth.
- Revamp the lawn using grass species that are slower growing and require less water to remain green.

7.3.1.7 Detaining and reusing stormwater

Slow down flow rates where possible to reduce possible erosion and to utilise the water. This means less reliance on supplementary watering and irrigation:

- Aim to create a diverse system within the landscape rather than relying on a single device to deal with stormwater collection and dispersal. This means that in the event of failure or if it exceeds its 'design capacity', there are other parts of the landscape that can be accommodating. For example, in a large allotment: a gravel lined pond to collect overflow from the water tank – this can spill over the lip as a sheet into a turfed filter strip – this gently drains to a (series of) drainage swales along the contours – the swale is progressively spot planted with plants that tolerate temporarily saturated soil – then to a broader depression that is a soak area or temporary swamp to hold excess flow – then ... and so on!

This particular interconnecting system collects flow at a point source, reduces its speed and allows it to progressively infiltrate the soil, rather than the reverse where increased volumes and velocity could cause on site erosion and quickly leave the site to cause flooding and sediment build-up elsewhere.

- Planning the landscape measures in conjunction with the other stormwater management measures means that the expected flows and discharge rates can be factored into the design criteria, layout, earth shaping and the selection of plants and other materials.
- Incorporate into the overall design permeable paving, pebble paths, infiltration trenches, drainage swales, soakwells, terraced garden walls, garden beds or other landscaping elements to break the flow, slow it down and use it.
- In minimising impervious paved areas consider the safety of users. For example, the most frequently used paths, such as the one leading to entry doors, must be laid securely on a well-prepared base. This prevents pockets of settlement and loose or uneven surfaces that can become a hazard.

Vegetated filter strips

- Vegetated filter strips are strips of grasses and shrubs placed across stormwater water discharge routes. The filter strips remove pollutants by filtering stormwater runoff, enabling limited infiltration and reducing stormwater discharge velocities.
- The strips operate most effectively when the stormwater flow entering the strip is sheet flow. Concentrated flow will scour the surface and is likely to dislodge plant roots, leading to failure of this as a feature in the system.
- Soil that is friable and with an open pore structure allows greater infiltration of water, compared to compacted and heavy soils. Using vegetation to act as a baffle to slow down storm water flow must be made in balance between this, and obstruction of the flow that may cause a backing up of waters and localised flooding. Additionally, the plant species chosen must be capable of withstanding the conditions of periodic saturation of soil and foliage or trunk.
- As with all landscape elements, filter strips need to be regularly monitored and checked after major storm events. They may require periodic repair, mowing, replanting and sediment removal to remain effective.
- Because they offer a form of garden bed and, depending on their design and intensity of use as an area of turf for casual recreation, vegetated filter strips are recommended for low and medium density urban areas as a multi-purpose landscape element.

Drainage swales and contour banks

- Contour banks are low earth mounds placed perpendicular to the direction of overland stormwater flow. They are very effective for reducing stormwater peak discharges and volumes, promoting infiltration and controlling erosion. On larger sites they can be used in series and to join between other landscaped areas in a system of stormwater control and harvesting. Combinations of contour banks, mulching and vegetated filter strips provide a very effective suite of stormwater management measures.
- Contour banks are usually quite resilient, and require little or no maintenance. Special attention may be required to establish vegetation (shrubs, turf, grass and other groundcovers) on the contour banks. If constructing a larger dimensioned bank wall, perhaps as dictated by steepness of the land or the volumes of water to contain and redirect, it is wise to avoid planting trees as their large root systems will destabilise the made earth structure.
- Sediment may need to be removed from the upstream side of the bank from time to time. It will smother low-growing vegetation as well as place an additional burden on the efficiency and the carrying capacity of the system. Provided that it is free of waste or other

contaminants, the collected sediment can be used to supplement topsoil elsewhere on the site. Once relocated make sure that it is contained and covered (e.g. with mulch or organic matting) to stabilise it and prevent it being the subject of erosion, again.

Soak areas

- The creation of an area that takes water and holds it as a temporary wetland is dependent on underlying geology, height of water table, potential or existing soil salinity, quality and quantity of water received into the soak area and the type of vegetation it contains.
- The area may have a small catchment, such as a car parking area or turning circle, to be reflected in the dimensions of the soak area. Maturing vegetation with growing trunks will displace some volumes of water as it is received but this can be taken up more quickly with a more extensive root system and transpiration rate of the larger plant structures.
- The species choice is dependent on the function of the constructed soak area. Some plants are more tolerant of contaminants e.g. runoff from a car washing area can be collected and infiltrate in a separate area that acts as a buffer to other more sensitive plantings. Select species that will withstand periods of soil saturation and anaerobic conditions.
- The biggest threat to a soak or bog area is contaminated waters, so the selection of plants is dependent on the role of the soak area. For example, if it is to collect waters directly from paved areas with car traffic, then only the hardiest and a smaller species group selection will be sustained; more filtered or cleaner waters in a less polluted situation will allow for greater diversity in plant and fauna habitat.
- Generally, fertilisers from garden and grass areas, atmospheric pollution collected from roof water and petrochemical deposits from cars add nitrogen, phosphorous, potassium and other minerals. Besides being toxic to some plant systems, especially native species, it encourages the growth of weeds and the growth of algae in ponds displacing other less vigorous plants.
- Check for excess build-up of sediment, especially after major storm events, after the flood levels have receded. Layers of silty deposit may smother smaller matting plants, which may not regenerate.
- Remove any litter or other inorganic debris.

7.3.1.8 Efficient irrigation

Only install irrigation systems if it is needed. Other landscape measures to collect and utilise stormwater by slow infiltration can replace the reliance on supplementary water. Plus, the choice of plants to suit the soil, climate, aspect and other micro-climate effects, coupled with planting and maintenance techniques can mean irrigation is not required. However, some garden areas (and gardeners) have high expectations set and do not thrive with natural rainfall. The aim in this case is to apply water in the most efficient manner. Generally, irrigate in combination with mulching of garden beds to conserve applied water, avoid over-watering to the point where the soil is saturated and excess flows away from where it is intended. Some points to consider with the choice of system, its installation and use:

- Match the system's design and specifications to the conditions on your site. For example: water source and quality, soil types and depth, moisture infiltration rates, evapotranspiration rates, frequency and intensity of rainfall, slope, plant choice and layout. Consult an irrigation specialist for a tailor-made efficient system.
- Re-fit an existing system with the most efficient low-flow fittings (jets, sprays and nozzles, etc.). Fix any leaks from joiners, hoses and pipes. Rationalise its layout. Adjust it to suit the changing requirements of plants as they mature they generally demand less water.
- Connect each garden area to separate valves to create 'hydrozones'. Plants grouped with similar water needs are precision watered to suit them. The lawn areas will require the most water.

- Water according to the weather and plant needs, not to a fixed time schedule. Install soil moisture indicators as a guide. If the sensor is coupled to an automated system it can override it.
- Reduce the frequency of watering so that plants become less reliant on irrigation. Monitor plants individually, so that it is possible to replace systematic watering with manual watering of those that are stressed.
- Install drip systems for sparsely distributed plants and underground or surface leak systems for dense garden beds as they are the most efficient irrigators – there is less vapour loss from spray or misdirected water.
- With spray systems, avoid overlapping areas or directing it onto paths and driveways.
- Ensure that the water is directed to the roots as much as possible.
- Set a timer to turn watering systems if it is not automated. Adjust according to the season and plant needs.
- Maintain the whole system routinely, inspect for blockages, repair leaks and replace worn parts.

7.3.1.9 Repair or prevent ongoing problems

Extended dry periods, disturbance to the surface and loss of topsoil is characterised by slow regeneration and continuing erosion on sloping land. These must be factored into layout and management of the site:

- Reversing particular damage and on-going management to control and/or prevent further damage, e.g. soil conditions or weed invasion.
- Avoid or minimise ground disturbance and cover as quickly as possible (e.g. with reusable organic matting) to contain topsoil.
- Use contouring techniques, dish drains and other slope modifications to break velocity and intensity of storm water flow.
- Selection and placement of pavement areas, e.g. to redirect or reduce impact of large stormwater flows.
- Reduce reliance of gardens and landscapes on supplementary watering, e.g. by plant choice and placement, grouping those of like-need together, create and utilise micro-climates to advantage, change of maintenance and watering regimes and other horticultural practices.

7.3.1.10 Lifestyle of the occupants

Having considered the environmental aspects of the opportunities and constraints of the site it is also important to create pleasant living environments for the occupants. Some are common to all residential developments from large lots through to those containing small courtyard areas:

Entertaining outdoor eating and BBQ;
Utility areas – clothes drying, storage of waste, compost, recyclables;
Access paths;
Driveway, visitor car parking (may be available on street) and turning space;
Car washing 'bay' to trap nutrients/grease or direct to a tolerant lawn or garden area.

Some aspects to include in the site plan and layout are pertinent to the lifestyle of the occupants and their ages and interests. Some special activities to consider:

Children play areas (flat grass area)
Pet dogs (dig up garden beds, fencing to separate or contain)
Disabled access (graded and sealed paths around site, benches to give respite)

However, it is best to acknowledge that over time different areas should be adapted for other uses e.g. filling in a sand pit to create a new vegetable garden bed, turning a cubby house into a pergola, providing privacy screening from recently added rooms on an adjoining residence.

7.3.2 Landscape practices

7.3.2.1 Soil preparation

Work with existing soils rather than adding a veneer of the best 'garden mix' which will not encourage the roots to seek deeply into the soil below. Instead, hardy deep rooted plants can help break up poor soils and adding organic matter will encourage microbial activity and worms to improve soil condition and moisture retention.

Where soils have been compacted, remediation can be done to open up the pore spaces and improve water infiltration and holding abilities. Also, there are additives to soil that can improve their general performance but seek specialised advice for the correct rates and situations for application:

- Wetting agents for hydrophobic soils can be mixed in with backfill at planting times, or applied later. Sandy soils can be moisture repellent, as are soils with lots of organic matter. This waxiness leads to beads of water running-off rather than soaking into the root system.
- Gypsum and sand added to clay soils helps to break up clumps; add with composted organic matter for improved results.
- Water-storing crystals can hold hundreds of times their weight in water. When mixed with water they form a soft gel and retain water. This provides a reservoir of moisture for plant roots during dry periods.

Where the construction or landscaping works cut into the subgrade of the soil, apply the saved topsoil (scraped and stockpiled prior to work beginning) to a depth of at least 150 mm for turf areas and 400 mm for garden beds. Roughen the surface up before applying the topsoil layer. This must be watered in with a fine spray to eliminate air pockets, prior to planting.

In heavy clay soils after rain, allow 2-3 days for free drainage before tilling or using mechanical means to work the ground as it is more easily compacted when wet.

If additional soil is required for landscaping works specify material to meet the Australian Standard AS 4419 *Soils for landscaping and garden use* or current standard. Select the range that suits the type of plants for the site as Australian native plants have different requirements and tolerances.

7.3.2.2 Pre-planting

- Parts of the site to be landscaped should have all weeds removed prior to landscaping work commencing. Use hand tools on smaller weeds and, as a last resort, spot application of herbicide to larger, perennial and vigorous weeds.
- Backfill retaining walls and make other garden beds after brickwork, electrical and drainage works and adjoining pavements have been completed. Water to settle the soil down and eliminate air pockets. This must be done with a fine gentle spray to prevent surface erosion.
- If planting is delayed by more than one week from backfilling or other soil preparation, then mulch should be applied to each area left unplanted.

7.3.2.3 Planting

Stock selection

The key issues in selecting trees are:

- the trunk must have adequate stem taper and be self-supporting in its container;
- there must be good root occupancy of the root ball;
- there is no girdling or kinking of any roots within the root ball;
- the roots must fill the container without being over-grown;
- the trees must be free from included bark (unless this is typical of the species and is known not to lead to structural failure); and
- there must be adequate root volume to support and sustain the above-ground sections.

Choose semi-mature seedlings as they are less needy than tiny seedlings for water.

Planting technique

To avoid damage to the trunks and root zones of retained vegetation, hand tools and barrows should be used adjacent to them. If prepared for the site, plant according to Landscape Plans and Drawings. Use the following technique:

1. Ensure that there is an adequate depth of drained soil for the stock size to be used.
2. Do not plant when the air temperature is over 35°C or if the soil is waterlogged.
3. For containerised stock up to and including 45 litres, water the plant bringing the growing medium to container capacity within one hour of planting. For stock over 45 litres ensure that the root ball is moist and that plants are not wilting.
4. Relocate existing turf or mulch. At each planting site set aside mulching materials if already applied.
5. The planting holes are to be a minimum of twice the width of the container and to the depth of the root ball. For tube stock excavate to a depth equal to the root column and, if possible, to a width of 500 mm.
6. The sides of the hole shall be rough and not smooth as this can inhibit new root growth.
7. Organic matter or modified soil high in organic matter, must not be placed in the bottom of the hole.
8. Ensure that all containers are fully removed from the root balls. No part of the plant should be damaged during this process.
9. Depending on container size, remove the outer 5-10 mm of the root ball of trees.
10. The plant should be centred in the hole and then backfilled with site soil in good tilth.
11. The top of the root ball must be level with the finished level of the soil and must remain so.
12. If fertiliser is to be added it should be placed in the upper section of the backfill. The type of fertiliser, rate of application and area should be to be to the manufacturer's instructions.
13. The backfill must be placed around the root ball to ensure good root contact without being overly compacted.
14. The remaining excavated soil should be placed as a mound around the edge of the root ball to create a watering well. This helps to retain water to let it soak into the root zone rather than letting it run off and be less effective.
15. Each plant should be watered within one hour of planting. As a rule of thumb, apply one litre of water for every litre volume of container. The water must be applied through the root ball. The application of water must not damage the plant or dislodge the root ball. Depending on soil moisture conditions, additional water may be applied to the soil surrounding the root ball.
16. Organic mulches should be applied, in general to a radius of 500 mm from the trunk and to a depth of 75 mm.
17. If tree protection measures are required such as tree guards or marker stakes, these must be installed so that no damage is done to the trees. In most situations, trees should not be tied to stakes (see Stock Selection: i.e. trees should be self-supporting when purchased). If

additional support is required, 2-3 stakes should be used. These should be driven into soil beyond the root ball and not interfere with branches or foliage. Trees should be attached with jute webbing or other material which is flexible and which will not damage the plant. The ties must be low enough to allow trunk movement but high enough to provide support for the root ball.

18. Remove all other ties and labels from the plants.

7.3.2.4 On-going plant care

Maintenance period

If the landscaping work is part of contracted works A pre-determined period for maintenance should be included. This is so the landscaping can successfully establish. The period should be, for example, two years from completion of landscaping works. Missing, dead and unhealthy plants are to be replaced. Replacement plants are to be of similar size and quality and of identical species and variety to the plant being replaced. The cost of replacement should be borne by the Contractor.

Watering

Deeply water all newly installed plants at least once a week for the first three months, then once a fortnight for the next six months and then once a month for the subsequent six months. This may be reduced in frequency in the event of heavy rainfall occurring at about the same time as the nominated watering interval.

Weed removal

Periodic weed removal at least once a month. Hand weeding around young plants is recommended as the use of hand tools will create less ground disturbance. If weeds are removed whilst still immature they will not have time to set a wide root network nor to set seed or spread by other methods.

Herbicide may be used selectively to control the re-emergence of persistent weeds by using cut-and-paint techniques or an applicator where appropriate.

Moderating plant growth

All flowering shrubs should be lightly tip-pruned at the end of their main flowering period each year to encourage bushy growth. Growth of ground-cover plants is to be kept 150 mm from tree trunks to allow for inspection of the tree trunk. Where tubestock have been planted, grasses need to be kept approximately 1m away from the stem for one to two years to prevent competition.

Removing tree stakes

Stakes to be removed from newly planted trees after the completion of their first growing season and without causing the trees any damage.

7.3.2.5 Mulching

- Applying mulch has many benefits to plant health and water conservation:
 - reduces evaporation from the soil;
 - suppresses competitive weed growth by inhibiting light on the soil surface and seed germination;
 - stabilises soil temperature which is beneficial to root development and to soil organisms;
 - organic mulches slowly break down to supply nutrients to the soil to help with plant growth.

- Apply 75 to 100 mm of organic mulch over the surface as a blanket on massed plantings. Top this up annually. Keep the mulch at least 30 mm away from trunks and stems as it will rot the bark.
- Use a mixture of textures to allow water to pass through. Combinations of chipped bark and leaf decomposes at different rates and supplies a ranges of minerals and nutrients.
- Avoid introducing pests and diseases from affected mulch imported to the site. Ask the supplier to deliver materials to the Australian Standard for mulches, AS 4454 *Composts, soil conditioners and mulches* or current standard.
- Do not use fresh organic products, such as sawdust, woodchips and pinebark, as they need nitrogen (and moisture) to help the decomposition process. This is drawn from the soil and robbing it from plant uptake – called ‘nitrogen drawdown’ – leading to sickly plants. Either add fertiliser such as manure or blood and bone to the product before applying, or heap the material in piles to let it compost (and cool) before using.
- Inorganic mulch can be used for the same purposes, however without the benefit of adding humus and nutrient to the soil. Crushed rock, gravel and brick, silicon chip, coarse river sand, scoria or river pebbles – avoid blue metal as this can alter soil pH - may be effectively used to fit in with landscape themes or where loose materials may be blown away. Use to a depth of about 50 mm to still allow water penetration.
- Sheet mulch matting can be used on slopes where other mulches may slip. Use 100% organic matting, such as jute mat, i.e. with no nylon or other inorganic netting woven through it. The plants can be pocket planted through it; the mat forms a stable surface whilst trees, shrubs and groundcovers establish.
- If using an irrigation system, install an underground or surface drip system to make sure the water reaches the soil, below the mulch.

7.3.2.6 Long-term maintenance regimes

After rain

- Heavy soils are easily compacted when wet, this reduces infiltration rates. Avoid walking or driving over wet ground.
- Similarly, avoid disturbing plant foliage greatly straight after rain as diseases are more easily transported between plants, into damaged leaf tissue, when moist.
- Check for soil erosion. Repair rills and other small eroded points before they magnify. Analyse the cause and correct, perhaps redirect drainage or diffuse the flow and velocity.
- Check for sediment build-up in vegetated filter strips, drainage swales, soak areas, ponds, etc. Collect sediment and stabilise on to areas less prone to erosion.

Weeding

- Control weed growth as they compete for soil moisture and nutrients. It is easier to hand-pull or hoe them out when young.
- Remove weeds before they set seed for the next crop.
- Avoid using broadly applied herbicide as this can wash-off into water courses and affect aquatic fauna. If persistent woody weeds do not respond to manual methods of removal cleanly cut near the base of the stem and instantly paint with herbicide on the fresh wound. Use herbicides only according to the manufacturers instructions for use and safety procedures.

Watering

- Aim for efficient and effective watering.
- Newly planted areas will require more water than established plants, this should be generally done as slow watering to encourage deep root penetration and decreased in

frequency as the plants settle in. The first growing season is the most crucial for good root establishment and new plants will need to be monitored, especially in weather extremes.

- Group plants of similar watering needs together for maximum efficiency.
- Be careful that the underlying subsoil is not saturated as that can be a cause of wilting leaves – improve subsoil drainage or change the plant to one that copes with the conditions.
- Water according to soil moisture and plant needs rather than affixed schedule. Test the soil 20 mm below the mulch to see if it is dry before applying water.
- Divide garden beds into sections and alternate between them at watering times, concentrating on one with deep soakings.
- Minimise evaporation by watering early morning or late afternoon, applying it to the roots. Some plants are susceptible to pest and fungal diseases if left with damp leaves, especially overnight.
- Avoid watering in windy conditions as much water is lost to spray drift.
- If using a handheld hose use a trigger operated nozzle to control flow whilst moving between plants.

Care for plants

- Protect young plants, especially ornamentals that have large or soft leaves by shading from strong sun or wind. Use shade cloth or a tee-pee of branches cut from pruning. This reduces moisture loss from their leaves.
- Thin out fruit on deciduous trees. Thin apples, peaches, plums to about 20-30 cm apart.
- Let cane berries and fruit trees go dry after harvest and water only if the leaves wilt. Well-established and mulched plants should be able to withstand this regime.
- Letting roses develop hips by not dead-heading flowers, suppresses leaf growth and water needs.
- Nitrogen-rich fertilisers stimulate leaf growth, which demands more water.

Pruning

- Minimise pruning by not forcing plants with lush lengthy growth that becomes wayward. This soft growth is more prone to drying out in hot winds and, if not hardened by the end of the growing season, can be damaged in the colder months.
- Pruning may be necessary for shaping, crown lifting or the removal of dead or diseased limbs on trees. There is an Australian Standard AS 4373 *Pruning of Amenity Trees* that is also a useful guide.
- Recycle any disease-free prunings back into the landscape as mulch so as to return the stored nutrients to the soil.

Grass areas

Mowing:

- Mow with the blades set higher. Aim to cut only the top third of the grass as shortening it too much weakens the grass. Longer leaf blades function better, help the plants withstand the stress of yet another clipping and susceptibility to weeds and pest damage, and shade the soil to reduce evaporation.
- Use a mulching mower that recuts the grass finely to self-mulch the lawn.
- Mow when the grass is dry to allow clippings to filter down to the soil for self-mulching, without clumping.
- Mow less often.
- Avoid fertiliser application as this stimulates leaf growth (increasing moisture loss and nutrient-enriched run-off) needing mowing more often.

Watering:

- Give lawn areas a good soaking. If there is prolonged periods of dry it may be necessary to water every third day to the equivalent of 15 mm of rain. Place a cup out to where the water is to measure how much has been applied. This area of the garden is the biggest user of water: consider reducing the size, changing it to other groundcovers or converting it to a less water dependent garden bed.
- For summer-dormant turf species, restrict foot traffic on lawns that have been left to dry and brown whilst it is dormant.

Routine tasks:

- Aeration helps water penetrate to the root zone. This can be done by inserting the prongs of a garden fork to a depth of at least 10 cm in a regular pattern over the surface of the lawn, or use a motorised roller with spikes.
- Dethatch the lawn. Lawns that grow by creeping stems sometimes form a thick layer of stems and leaves under the green parts, called thatch. Remove this layer using a special mower (available for hire) to improve water penetration. This is best done in spring to early summer and in autumn.
- Organic fertilisers, such as fishmeal, seaweed extracts and pelletised poultry manure helps stimulate microbial activity that also removes thatch naturally.

7.3.2.7 Other items

Gutters

Prune back overhanging branches and remove leaf and other debris from roofs and gutters to reduce possible contamination of water collection tanks and systems.

Car washing

- Washing cars on the lawn prevents water and detergent from entering the stormwater drainage system. Lawns, or garden beds that they drain to, have a limited ability to uptake the nutrients from detergents. Choose a different place on the lawn each time. If the lawn deteriorates or becomes water-logged, your vehicle may be compacting the soil or the nutrient levels are too high. Aerate the soil and rest it by taking the car to a car wash for a few months.
- Select a car wash that recycles water and detergent.

7.3.2.8 Routine tasks

- Sweep paths and driveways rather than using a hose.
- Maintain and repair leaking taps, hose and other fittings of watering systems.

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Services Strategy Report

34 Busby Street, Bathurst

Prepared for: Hamptons Property Services

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Revisions

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01	Issue for client review	29.04.24	E.L	G.L
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Review Panel

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1 Introduction

ACOR Consultants Pty Ltd has been engaged to provide a Services Strategy Report for the planning proposal at 34 Busby Street, South Bathurst.

The site is bound by Busby Street to the north, St Catherines Aged Care (not in use currently) and residential dwellings to the west, a landscaped drainage reserve to the south, and residential dwellings to the east.

The proposed site is subdivided into three Lots 223, 224 and 225. The purpose of this report is to determine the service requirements for the proposed development on Lot 225. This includes the assessment of capacity for reticulated water, sewer, stormwater, gas, electricity, and telecommunication services and identifying any augmentation required.

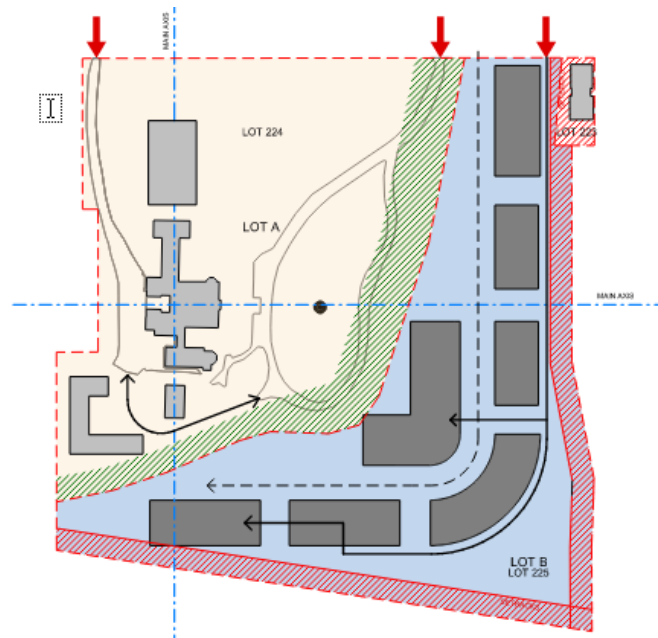
1.1 Available Data

The following available information was utilized in the preparation of this report.

- Existing service information obtained from Before You Dig Australia (BYDA) search results
- Fire Flow Water Pressure Test inquiry
- St Joseph's Mount, Bathurst Planning Proposal – Place Analysis & Urban Design prepared by Marchese Partners (dated 19.04.24)

2 Proposed Site Description

There are 4 proposed residential scheme options with a specific unit mix and block design developed for each of them. The St Joseph's Mount, Bathurst Planning Proposal stated that "Conversations with Council have led to Option 4, which comprises higher density and orthogonal medium-length blocks". (Refer to Appendix A)



OPTION 4 - EXTERNAL LANE & REDUCED BLOCKS
1:1250

Figure 1 - Option 4 - Extract from Planning Proposal

Option 4 will consist of a function center and hotel cabins which will be subject to a separate DA at a later stage, and will reserve the existing Logan Brae, McAuley Cottage, and St Joseph's Mount Chapel.

An overview of Option 4 is shown in Figure 2 below. Figure 2 - Proposed Site Plan



Figure 2 - Proposed Site Plan

3 Preliminary Engineering Assessment

ACOR has investigated via desktop review the proposed service connections based on Option 4.

The information obtained from BYDA search indicates that the subject site has access to underground water, sewer, gas, electricity and telecommunication infrastructure within close proximity of the site. There are currently existing connections shown for these services. Refer to **Appendix B** for information obtained from BYDA search.

3.1 Water Supply

There is a water pipe, a water valve and 2 x water hydrants located along Busby Street. The site is likely serviced by these existing underground water infrastructures.

The existing water connection within Lot 224 will remain and potentially extend into Lots 223 and 225 for additional connection if required/ suggested by hydraulic engineers. Final sizing and connection details will be confirmed during detailed design stage. All construction works shall be undertaken in accordance with Bathurst Regional Council and local authority guidelines and construction specifications.

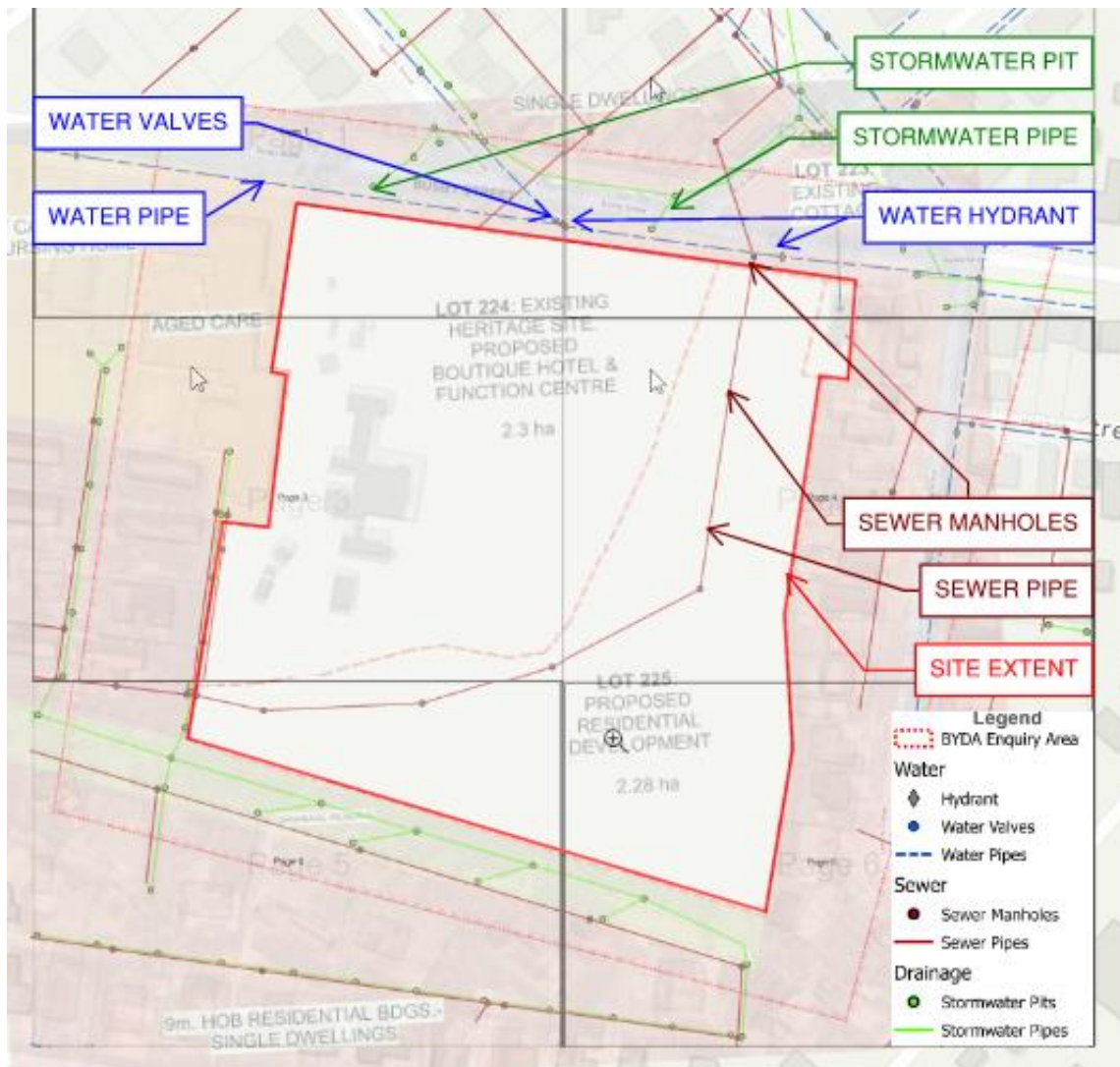


Figure 3 - BYDA Water, Sewer and Drainage networks



3.2 Sewer

Existing sewer manholes and sewer pipes are located along the lower western boundary and 1 x sewer manhole is located on Busby Street.

The site is currently serviced by existing sewer manholes and sewer pipes within Lot 225. It is anticipated that sufficient sewer connections will be available for the proposed development. Final connection details will be confirmed during the detailed design stage.

Basements on deeper foundations may intersect with the existing sewer infrastructures. Hence, sewer diversion may be required if basements on deeper foundations are proposed.

3.3 Stormwater Drainage

The site generally falls from west to east, with approximately 24.0m fall.

Existing 2 x stormwater pits are located on Busby Street and additional 5 x stormwater pits and pipes are located along the lower western boundary. The site is potentially split into 3 catchments so stormwater is to be discharged in 3 directions:

- to the North into the existing pits on Busby Street;
- to the West into the existing stormwater infrastructures; and
- to the South into the existing stormwater easement (title to be investigated).

It is anticipated that there are adequate legal points of discharge for the subject site.

On-site stormwater detention (OSD) tanks with the incorporation of Water Sensitive Urban Design (WSUD) measures will be likely required due to the increase in impervious areas. The implementation of OSD will reduce peak flow rates draining to the existing drainage infrastructures and will ensure the site discharges are limited to the capacity of the stormwater infrastructure.

The stormwater design (surface and in-ground) including OSD and WSUD will be determined in a later design stage and will be summarised in a Stormwater Management Plan if required.

3.4 Gas, Electrical and Communication Services

3.4.1 Jemena

An existing 32mm Nylon 210kPa Medium Pressure gas main connects into a 2 inch (Nominal Bore) Cast Iron pipe located along Busby Street, servicing Lot 224.

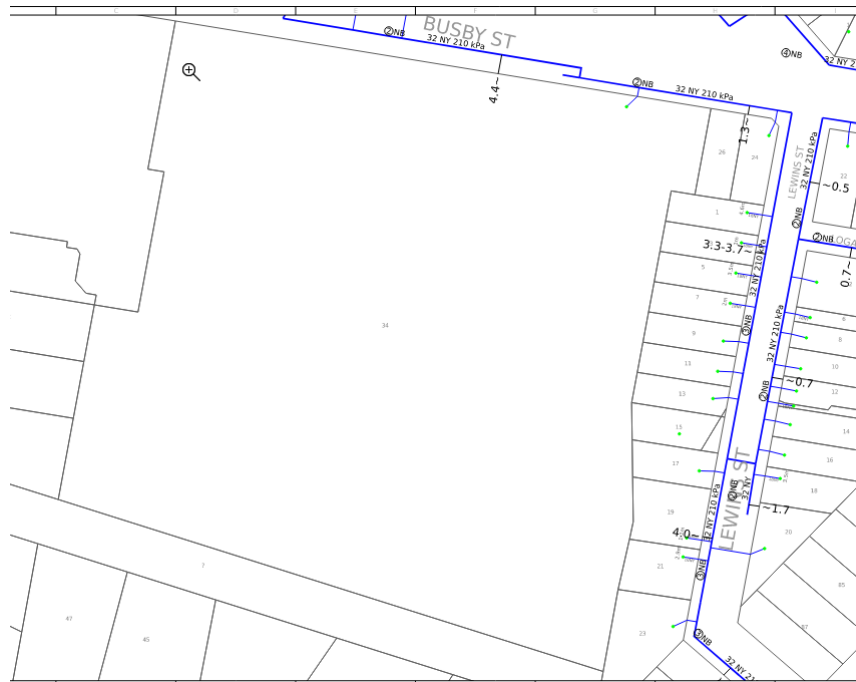


Figure 4 - Jemena Service Network

3.4.2 Essential Energy

An existing underground Essential Energy Electrical asset is provided on the subject site.

There is 1 x pole located within Lot 224 and there are 5 x poles and 1 x “underground Earth or Wires” along the frontage of the site on Busby Street.

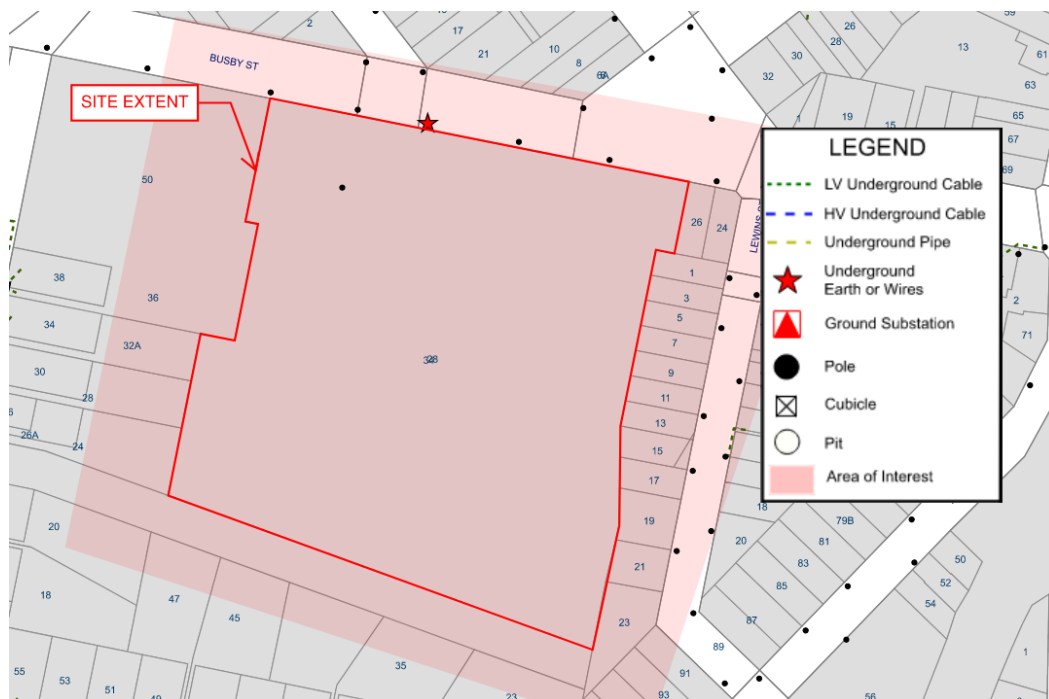


Figure 5 - Essential Energy Service Network

3.4.3 Telstra

Existing Telstra infrastructure is currently available for the subject site, which are summarised as follows:

Located in the western portion of the site

1 x 50mm PVC conduit (P50) owned by Telstra connects 2 x existing pits on site labeled as "1" and "3" as per Figure 6. The pits are located 112.2m apart.

Located in the eastern portion of the site

1 x 20mm PVC conduit (P20) owned by Telstra with a length of 100.0m connects into an existing pit on site labeled as "5".

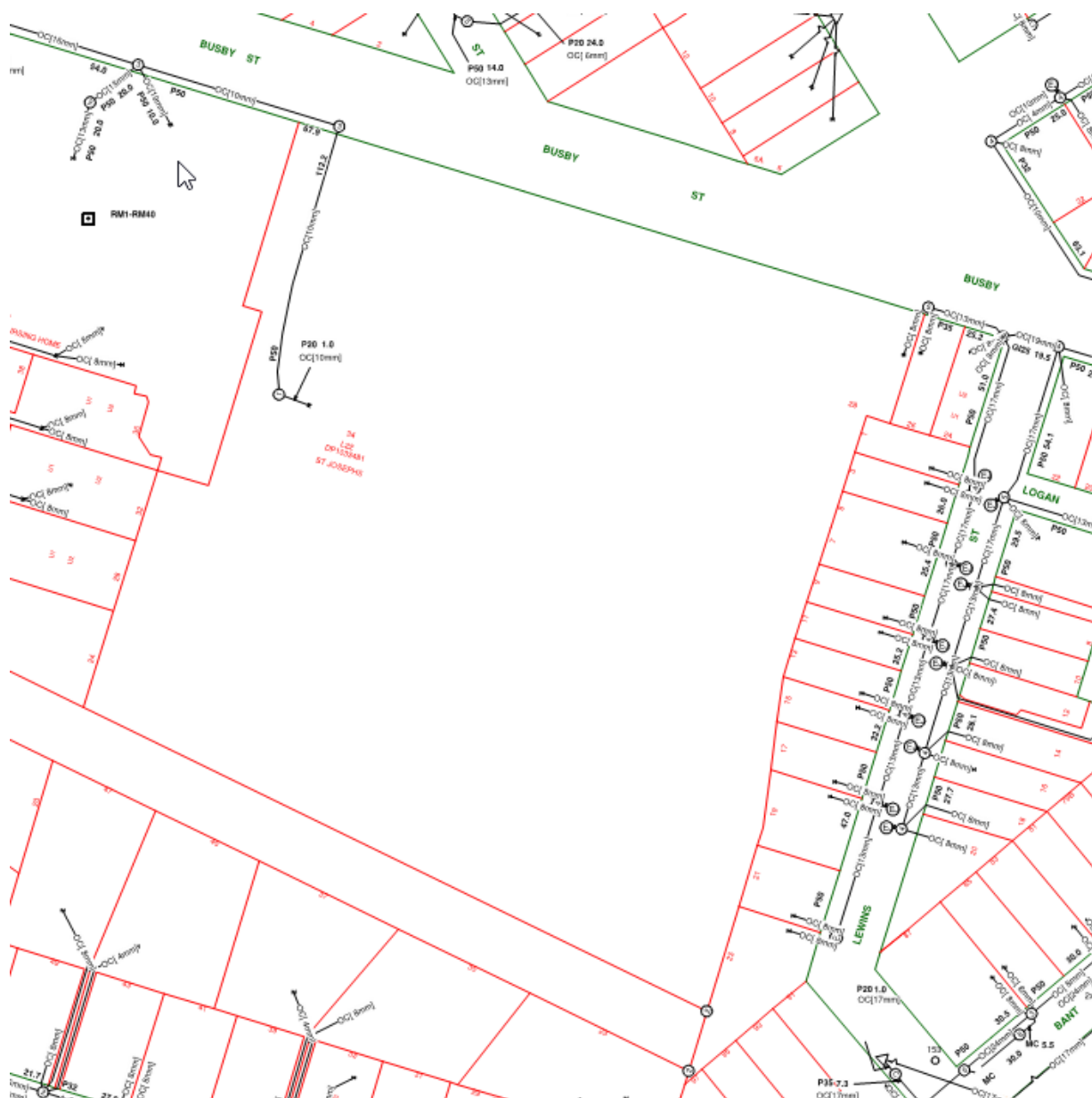


Figure 6 - Telstra Service Network

3.4.4 NBN

Existing NBN infrastructure is currently available for the subject site, which are summarised as follows:

Located in the western portion of the site

1 x 20mm PVC conduit (P20) owned by NBN with a length of 1.0m connects into 1 x existing pit on site labeled as “1”.

Located in the eastern portion of the site

1 x 20mm PVC conduit (P20) owned by NBN with a length of 13.9m connects into 1 x existing pit on site labeled as “5”.

1 x 50mm PVC conduit (P50) owned by NBN connects 2 x existing pits on site labeled as “5” pits.

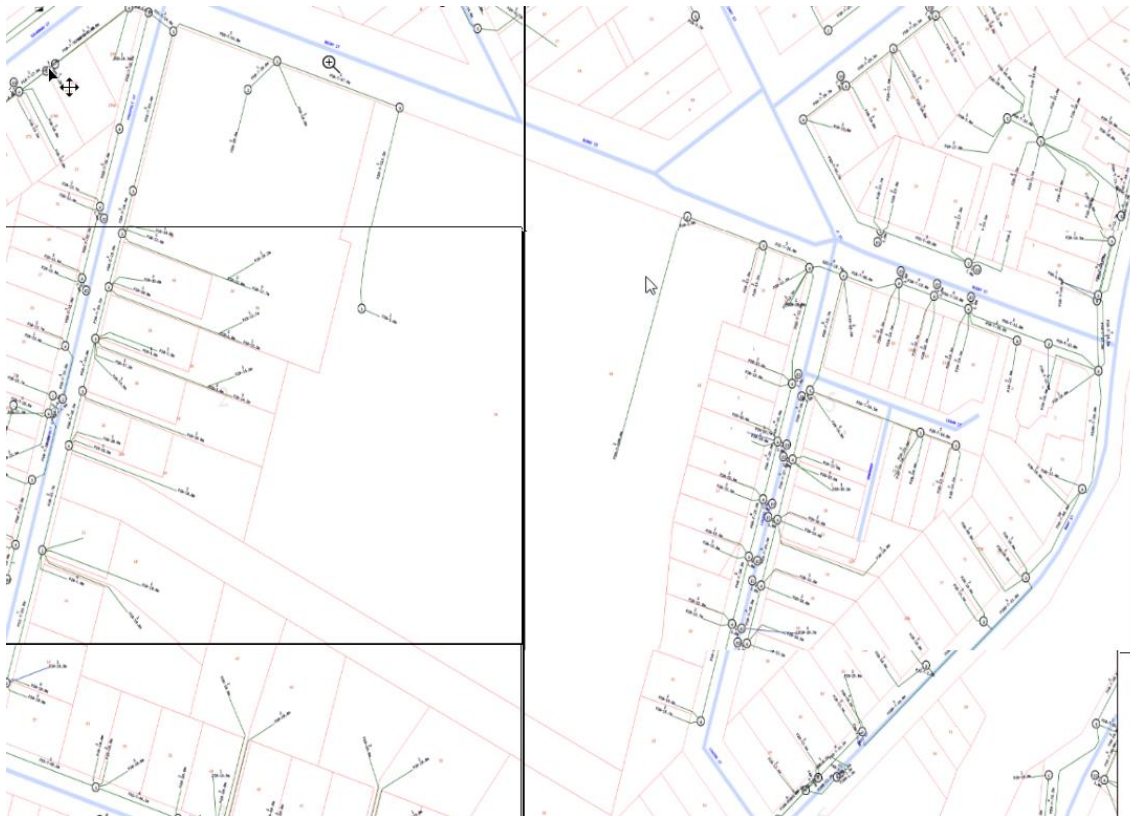


Figure 7 - NBN Service Network

3.5 Pressure and Flow Inquiry

3.6 Power Supply

There are no existing substations identified on site.

The key consideration for Electrical Services is the matter of power supply adequacy. This demand is a function of both building area and building type. In summary, ACOR has undertaken a high-level maximum demand calculation. Generally, for the site per residential building 390 kW is required which is approximately 570 A 3ph.

There is very limited information related to the infrastructure arrangement serving the site. It is uncertain whether there will be sufficient capacity within the existing infrastructure to accommodate the estimated load. If not, new substations will be required and confirmed by suitably qualified engineers.



4 Conclusion

The site is currently serviced by reticulated water, sewer, stormwater, gas, electricity, and telecommunication connections, and further advice in relation to the capacity and internal reticulation details should be confirmed with suitably qualified engineers during the detailed design stage.

This report provides high-level advice in relation to the capacity of existing reticulated water, sewer, stormwater, gas, electricity, and telecommunication services for the proposed development at 34 Busby Street,

Yours faithfully,

ACOR Consultants Pty Ltd

A handwritten signature in black ink, appearing to read 'G. Lyell'.

Gregory Lyell

Sydney Civil Lead



Appendix A St Joseph's Mount, Bathurst Planning Proposal



Appendix B BYDA Search



Appendix C Fire Flow Water Pressure Test Inquiry



Traffic & Parking Assessment Report

34 Busby Street, South Bathurst

Planning Proposal to Amend BRLEP 2014 Planning Controls

Ref 23225

6th May 2024



**CONSULTING
ENGINEERS**

Document Control

Project Number	23225			
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Revision	Date	Details	Author	Approved By
Draft	26.04.24	Initial draft	C. Palmer	C. Palmer
Final	06.05.24	Final for submission	C. Palmer	C. Palmer

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1. Introduction

1.1 Project Background and Summary

CJP has prepared this Traffic & Parking Assessment Report (TPAR) on behalf of ANAT Investments Pty Ltd, in support of a Planning Proposal (PP) to Bathurst Regional Council for a mixed use development located at 34 Busby Street, South Bathurst.

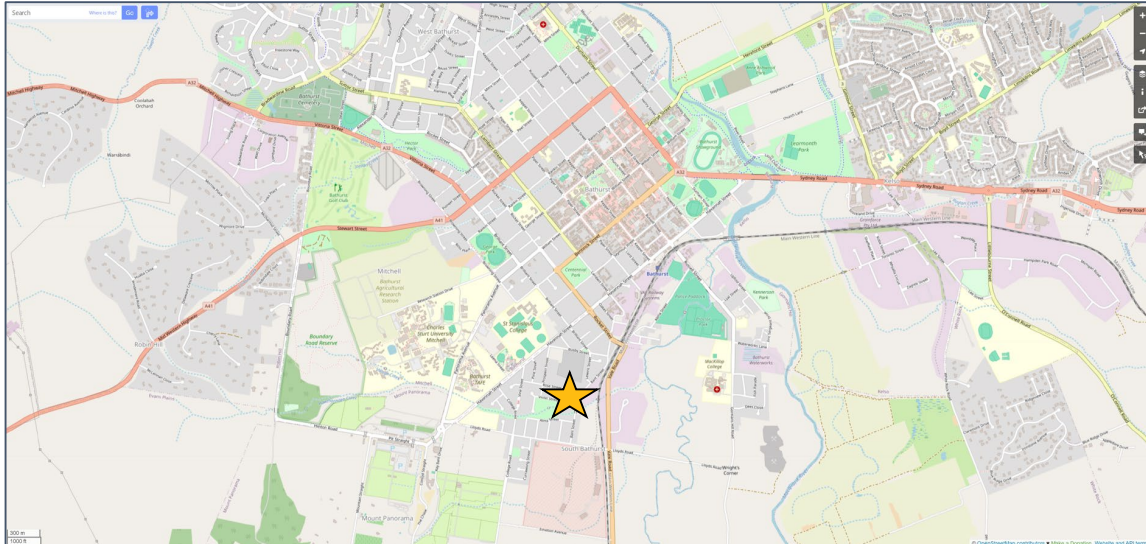


Figure 1.1 – Site Location (Source: Open Street Map)

The site benefits from a development consent for a three-lot subdivision, which ensures that the existing heritage item on Lot 224, known as Logan Brae, is satisfactorily retained and conserved, while allowing for redevelopment of the southern and eastern section of the site. Logan Brae will undergo restoration in alignment with the Conservation Management Plan and will be repurposed as a hotel and function centre to serve the community of Bathurst. The hotel accommodation and its services are proposed within the existing buildings and some additional cabins on the chapel side. The proposal also includes an adjacent pavilion which will extend to the western side of the existing convent. In terms of traffic and parking, the hotel and function centre will operate hand-in-hand – i.e. the hotel will largely be occupied by guests attending an event at the function centre – this invariably reduces the associated vehicle trips and parking demand. In any event, the hotel will be subject to a separate development application in due course.

To the south and east, the PP envisages the residual lot, Lot 225, will be used for a residential apartment development across seven buildings, up to 18m in height. The envisaged built form has the potential to accommodate a total of 218 dwellings in a mix of 1, 2 & 3 bedrooms.

Off-street parking is proposed to be provided at various locations throughout the site and for all land uses, i.e. hotel/function centre/restaurant, residents and their visitors, ultimately in accordance with Bathurst Development Control Plan 2014's rates. The existing vehicular access driveways off Busby Street which service Logan Brae on Lot 224 as well as the heritage cottage on Lot 223, are to be retained. A new vehicular access driveway is proposed off Busby Street to service the proposed residential development on Lot 225.

Concept plans of the PP have been prepared by Marchese Partners | Life^{3A} and are reproduced in Appendix A, whilst an extract of the proposed site plan is reproduced on the following page.

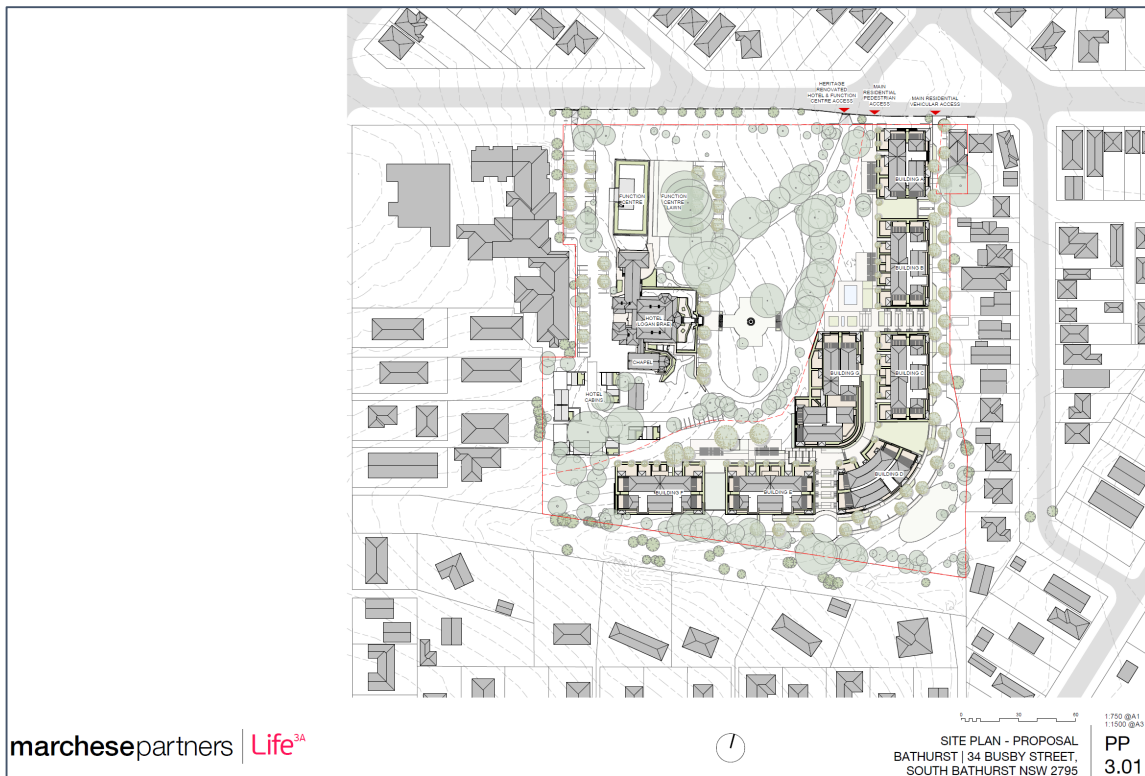


Figure 1.2 – Proposed site plan (Source: Marchese Partners | Life^{3A})

Accordingly, the Planning Proposal requires the amendment to the Bathurst Regional Local Environmental Plan (BRLEP) 2014, to permit the increased density on Lot 225. This design strives to align with the guidelines set forth in the 2040 Bathurst Region Local Strategic Planning Statement, as well as in the Bathurst 2036 Housing Strategy and Bathurst Region Heritage Plan documents.

Preliminary consultation has been undertaken with Council regarding the Planning Proposal, with Council kindly providing formal feedback with the information required in the TPAR, including specific intersections which are to be included in the analysis. In addition, an online meeting was held on the 6th February 2024 between CJP and Transport for NSW (TfNSW) to discuss the PP. It is worth noting that both Council and TfNSW were generally supportive of the PP, subject to the submission of the relevant documentation and their subsequent assessment.

In this regard, a separate but concurrent Planning Proposal has been lodged for the adjoining site located at 50 Busby Street, South Bathurst. According to the PP Report prepared by Allera, the 50 Busby Street PP also seeks to amend the BRLEP 2014 controls from R1 General Residential to R3 Medium Density Residential as well as including an Additional Permitted Use, being a small commercial component. The 50 Busby Street PP therefore envisages the potential for approximately 97 dwellings, comprising a mix of townhouses and apartments, along with a number of small-scale food & beverage tenancies such as a cafe, delicatessen and/or bakery and the like.

Accordingly, this TPAR has assessed the cumulative traffic impact of the subject Planning Proposal at 34 Busby Street as well as the adjoining Planning Proposal at 50 Busby Street. In summary, the SIDRA Network traffic model indicates that all 11 key surrounding intersections included in the model are expected to continue to operate at Level of Service A upon completion of both projects as well as in 10 years hence.

Based on State Environmental Policy (Transport & Infrastructure) 2021, Schedule 3 – Traffic Generating Development, referral to Transport for NSW is required due to the number of car parking spaces on the site exceeding 200.

1.2 Assessment Tasks

The purpose of this TPAR is to assess the traffic, parking, access, transport, pedestrian and servicing characteristics of the PP, and the associated outcomes of the proposal on the surrounding road network, parking and transport environment. This can be briefly summarised below:

- Description of the existing site and its location
- Existing traffic conditions
- Public and active transport infrastructure
- Description of the development proposal, including temporary arrangements
- Traffic generation potential of the proposal and its impacts on the surrounding road network
- Off-street parking/loading/access requirements and provisions
- Design of access driveway, parking and service area layout

1.3 Relevant Planning Controls

The site lies within the Bathurst Regional Council (Council) Local Government Area (LGA), such that the relevant Council planning controls and strategies referenced in this Revised TPAR include:

- Bathurst Regional Local Environmental Plan 2014 (BRLEP 2014)
- Bathurst Region Development Control Plan 2014 (BRDCP 2014)
- Bathurst Region Local Strategic Planning Statement – Vision Bathurst 2040
- Bathurst 2036 Housing Strategy

1.4 Traffic, Transport & Parking Guidelines & Standards

In preparing this TPAR, references are also made to the following site access, traffic and parking guidelines and documents:

- Roads & Maritime Service's Guide to Traffic Generating Developments 2002 (RMS Guide)
- Roads & Maritime Service's Technical Direction Updated Traffic Surveys 2013 (TDT)
- State Environmental Planning Policy (Transport & Infrastructure) 2021
- Australian Standards 2890.1:2004 – Off-Street Car Parking (AS2890.1)
- Australian Standards 2890.2:2018 – Off-Street Commercial Vehicle Facilities (AS2890.2)
- Australian Standards 2890.3:2015 – Bicycle Parking (AS2890.3)
- Australian Standards 2890.6:2022 – Off-Street Parking for People with Disabilities (AS2890.6)
- Australian Standards 4299:1995 – Adaptable Housing (AS4299)
- NSW Government's Planning Guidelines for Walking & Cycling (December 2004)
- Austroads Guide to Traffic Management Part 12 – Traffic Impacts of Development
- Building Code of Australia (BCA)
- National Construction Code (NCC)

It is worth noting that up until June 2023, Logan Brae was being operated as a wedding reception venue as well as a regular local market stall.

Informal off-street parking is provided at various locations throughout the existing site. Vehicular access to Lot 224, being Logan Brae, is currently provided via two separate two-way driveways; one located at the far western end of the Busby Street site frontage and one located directly opposite the Torch Street intersection. Vehicular access to Lot 223, being the heritage cottage located in the north-eastern corner of the site, is provided via a single driveway crossover directly outside the cottage. There is no existing vehicular access provided to the residual lot, Lot 225.

A recent aerial image of the site and its surroundings along with a series of Streetview images are reproduced below and on the following page.

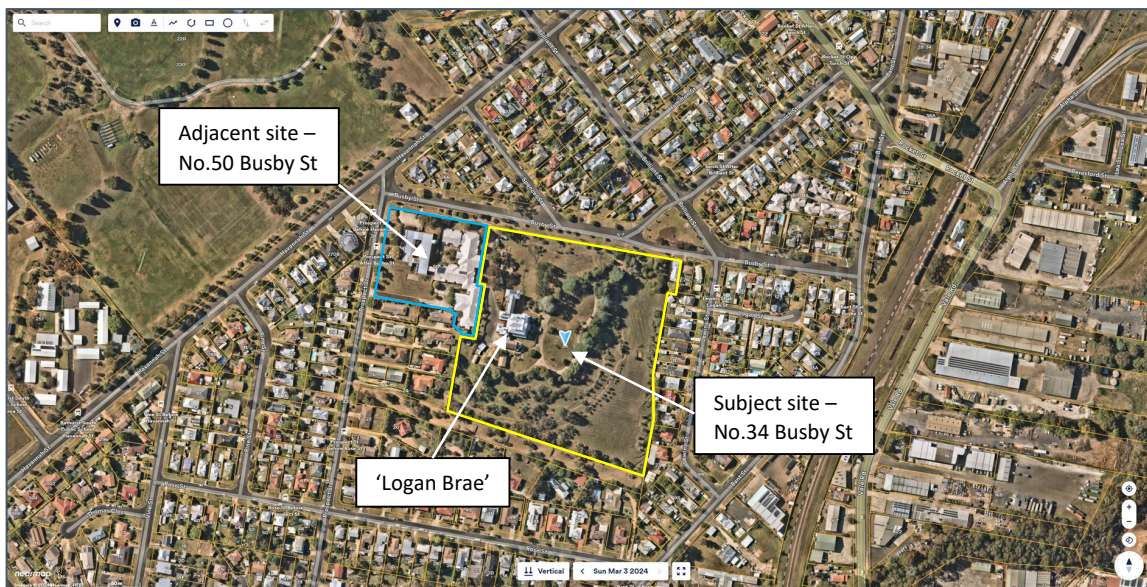


Figure 2.2 – Aerial map (Source: Nearmap)



Figure 2.3 – Streetview image of the existing cottage on Lot 223, looking west (Source: Google Maps)



Figure 2.4 – Streetview image of the existing eastern 'Logan Brae' driveway, looking east (Source: Google Maps)



Figure 2.5 – Streetview image of the existing western 'Logan Brae' driveway, looking west (Source: Google Maps)



Figure 2.6 – Streetview image of the existing western 'Logan Brae' driveway, looking east (Source: Google Maps)

2.2 Existing Planning Controls

The existing site is currently zoned R1 General Residential under BRLEP 2014, whilst the maximum height of building control is 9m, as indicated in the maps below.

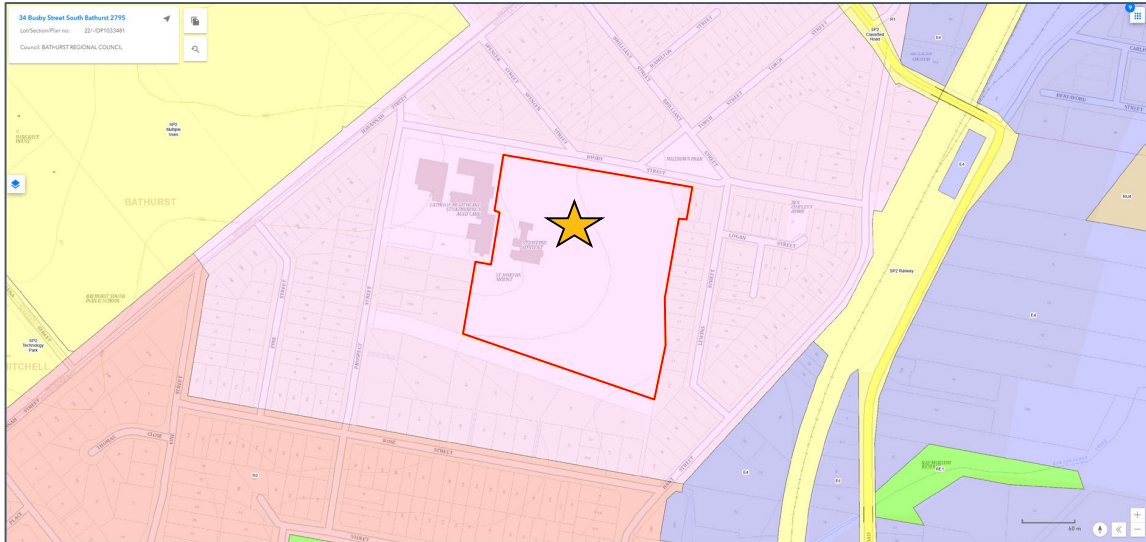


Figure 2.7 – Zoning map (Source: ePlanning Spatial Viewer)



Figure 2.8 – Height of building map (Source: ePlanning Spatial Viewer)

2.3 Bathurst Region Local Strategic Planning Statement

Bathurst is the oldest European inland settlement on mainland Australia and one of the fastest growing inland centres in NSW. Council's Local Strategic Planning Statement, known as Vision Bathurst 2040, proposes a future-focussed planning approach to achieve forecast, desired and sustainable growth for the Bathurst Region. The Bathurst 2036 Housing Strategy is a strategic document which will assist Bathurst Regional Council to encourage a range of housing that meets the existing and future housing needs of the City of Bathurst.

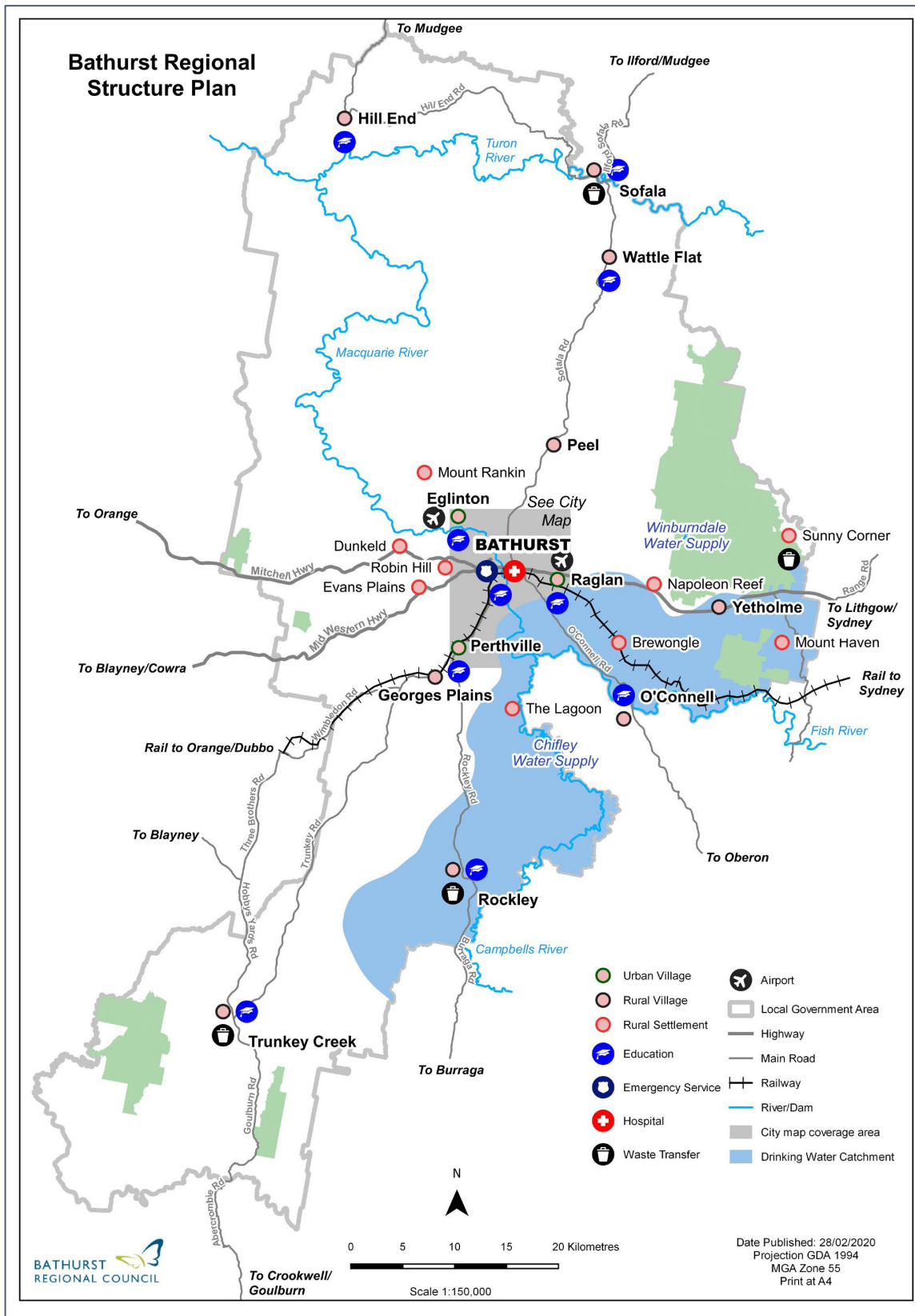


Figure 2.9 – Bathurst Region Structure Plan (Source: Bathurst Region LSPS, Figure 2)

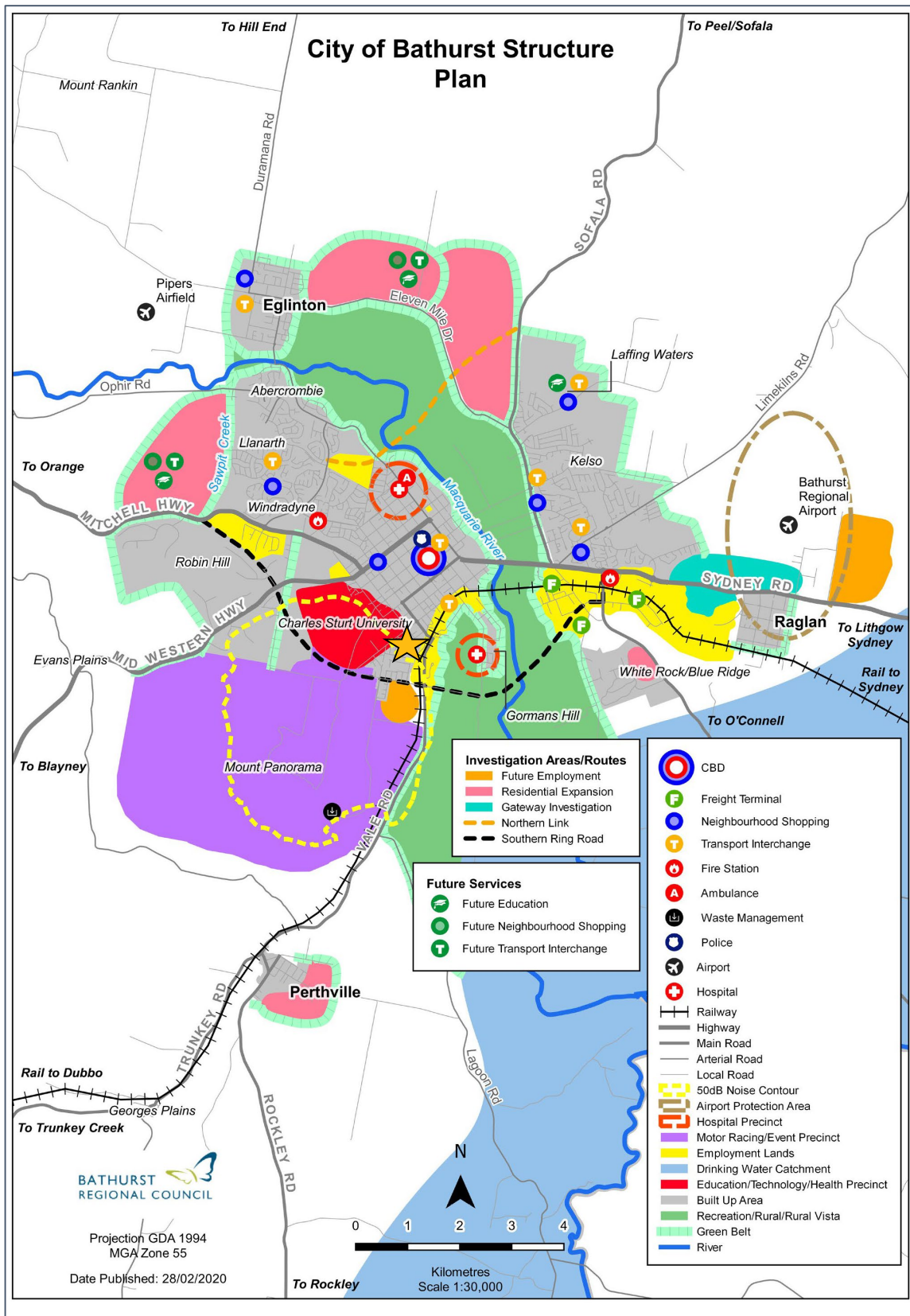


Figure 2.10 – City of Bathurst Structure Plan (Source: Bathurst Region LSPS, Figure 3)

The purpose of the LSPS is to guide how land is used in the Bathurst Region to achieve desirable economic, social and environmental outcomes. Vision Bathurst 2040 outlines how Council will manage land-use change as the region moves towards a population of approximately 55,000 over the next 20 years.

The 4 main topics contemplated are infrastructure and transport, diverse and strong economy, heritage and sustainable environment, and dynamic and healthy communities. Within those, the relevant ones for this Planning Proposal would be:

1. Infrastructure and transport

Planning Priority 2 - Align development, growth and infrastructure

Planning Priority 3 - Connect the Bathurst Region

2. Diverse and strong economy

Planning Priority 5 - Ensure a suitable supply of employment and urban services land

Planning Priority 6 - Protect Mount Panorama (Wahluu) as a motor sport and event precinct

Planning Priority 7 - Leverage new opportunities

3. Heritage and sustainable environment

Planning Priority 10 - Protect European and non-Indigenous heritage

Planning Priority 11 - Maximise the Region's tourism opportunities

Planning Priority 12 - Enhance environmentally sensitive land and biodiversity

Planning Priority 14 - Create a sustainable Bathurst Region

4. Dynamic and healthy communities

Planning Priority 16 - Provide new homes

Planning Priority 17 - Create vibrant and sustainable local villages and rural settlements

2.4 Bathurst 2036 Housing Strategy

The Bathurst 2036 Housing Strategy is a strategic document which will assist Council to encourage a range of housing that meets the existing and future housing needs of the City of Bathurst. The Strategy only considers the urban areas of the city zoned R1 General Residential, R2 Low Density Residential, B1 Neighbourhood Centre and B3 Commercial Core.

Investigations relating to rural residential development (zone R5 Large Lot Residential) will be completed as part of a future review of the Bathurst Region Rural Strategy. The Housing Strategy will guide how residential development in Bathurst will be planned and managed until 2036 and identify the demand and likely supply of residential land to and beyond 2036.

The Housing Strategy will enable Council to proactively manage how and where future housing and residential development will be provided within Bathurst until 2036. It will also consider how the associated impacts will be managed, therefore providing certainty to both residents and developers alike.

Volume 1 of the Housing Strategy has identified the following key priorities:

- The opportunities that are available to extend the life of the existing vacant land stocks, particularly through increased living densities, both medium density housing and smaller lot size.
- That the population of the City will age and household size will continue to decline. As a result housing diversity and choice will become increasingly important.
- The key messages from the community for its vision for housing include amenity and liveability, housing choice and density and sustainability. Importantly the people of Bathurst want to limit urban sprawl but at the same time maintain the rural feel of Bathurst and ensure Bathurst does not become 'just like Sydney'.

Volume 2 of the Strategy addresses these priorities through an examination of:

- The strategic context for growth
- Impacts for infrastructure provision
- Opportunities for growth and change.

The Planning Proposal therefore achieves many of the objectives of the Local Strategic Planning Statement and Housing Strategy, including providing residential housing, providing employment opportunities (during construction and once completed and occupied), and promoting a happy and healthy lifestyle.

2.5 Road Network

The Transport for NSW (TfNSW) road hierarchy comprises the following road classifications:

- State Roads: Freeways, Motorways and Primary Arterial Roads (TfNSW managed)
- Regional Roads: Secondary or Sub-Arterial (Council managed, partly funded by the State)
- Local Roads: Collector and Local Access Roads (Council managed)

The road hierarchy in the vicinity of the site is shown in the figure on the following page, whilst the key roads are summarised as follows:

- The Great Western and Mitchell Highways (A32) are classified as State Roads and provides the key east-west road link through the greater Bathurst area, comprising (in part or all of) Sydney Road, Kendall Avenue, Stewart Street, Brilliant Street and Victoria Street. Outside of built-up areas it typically comprises one to two traffic lanes in each direction, plus turning lanes at key intersections. Within built up areas it carries two traffic lanes in each direction, separated by a raised central median, plus turning lanes at key intersections.
- Bentink Street, Rocket Street & Vale Road are also classified as State Roads which provide a north-south road link in the area, linking Perthville in the south to Bathurst in the north. In the Bathurst City Centre, it carries two traffic lanes in each direction as well as turning lanes. Within the residential and rural areas, it carries one traffic lane in each direction. Kerbside parking is generally permissible, subject to signposted restrictions.
- Havannah Street is a local, unclassified road which performs the function of a collector route through the local area, linking Kendall Avenue (Great Western Highway) to Mount Panorama. It carries one traffic lane in each direction and is subject to a 60km/h signposted speed limit. Kerbside parking is generally permitted.

- Busby Street is a local road which provides pedestrian and vehicular access to frontage properties. It carries one traffic lane in each direction and is subject to a 50km/h speed limit. Kerbside parking is also generally permitted.

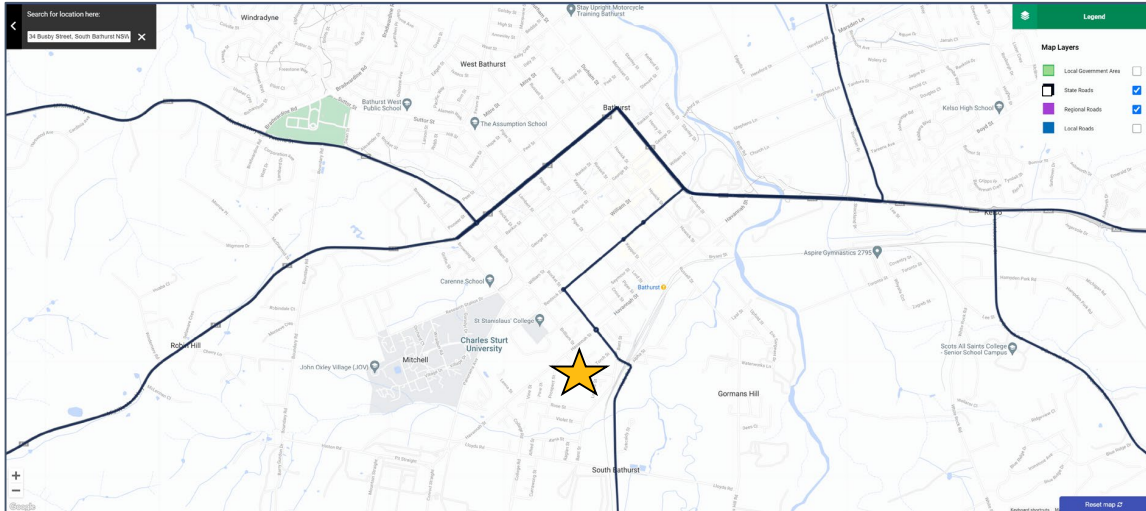
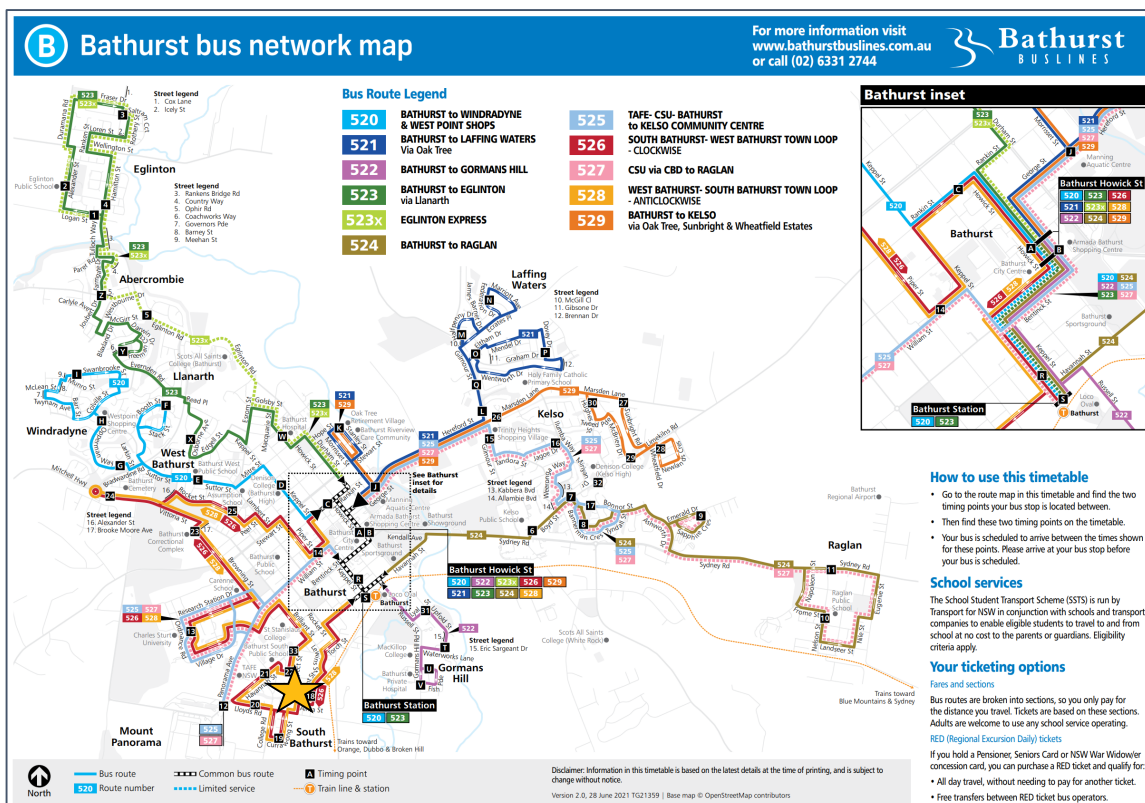


Figure 2.11 – Road Hierarchy (Source: Transport for NSW)



2.6 Public Transport, Active Transport & Essential Services

The public transport network map which covers the surrounding area is reproduced in the figure below.

Figure 2.12 – Bathurst bus network map (Source: www.buslinesgroup.com.au)

The nearest bus stops are located within a 250m radius of the site, being on Prospect Street as well as Lewins Street, which are serviced by the 526 & 528 services. The 526 service operates a clockwise loop service Monday to Saturday between South Bathurst and West Bathurst via the Bathurst City Centre. Conversely, the 528 service operates an anticlockwise loop service Monday to Saturday between South Bathurst and West Bathurst via the Bathurst City Centre.

Timetables and route maps of the 526 & 528 bus services are reproduced in Appendix B, with timetable extracts reproduced below.

SOUTH BATHURST- WEST BATHURST TOWN LOOP - CLOCKWISE														
Stop	Monday to Friday 								Saturday 					
	am	am	am	am	pm	pm	pm	pm	am	am	pm	pm	pm	
B Bathurst City- Stocklands- Howick St Stand B	7.30	8.05	9.05	10.05	12.35	2.35	4.35	6.50	8.45	10.45	12.45	2.45	4.45	
R Havannah St after Keppel Street- opp Bathurst Railway Station	7.34	8.09	9.09	10.09	12.39	2.39	4.39	6.55	8.49	10.49	12.49	2.49	4.49	
18 Bant Street after Rose Street	7.38	8.13	9.13	10.13	12.43	2.43	4.43	6.59	8.53	10.53	12.53	2.53	4.53	
18 Currawong Street near College Street	7.42	8.17	9.17	10.17	12.47	2.47	4.47	7.03	8.57	10.57	12.57	2.57	4.57	
20 Lloyds Road opposite St Philomenas Catholic School	7.44	8.19	9.19	10.19	12.49	2.49	4.49	7.05	8.59	10.59	12.59	2.59	4.59	
21 South Bathurst Public School- Havannah Street	7.46	8.21	9.21	10.21	12.51	2.51	4.51	7.07	9.01	11.01	1.01	3.01	5.01	
22 Rose Street before Prospect Street	7.48	8.23	9.23	10.23	12.53	2.53	4.53	7.09	9.03	11.03	1.03	3.03	5.03	
18 Charles Sturt University- Ordinance Road	7.54	8.29	9.29	10.29	12.59	2.59	4.59	7.15	...	...	...	...	...
23 Bathurst Correctional Centre- Browning Street Bus Stop	7.59	8.34	9.34	10.34	1.04	3.04	5.04	7.20	9.09	11.09	1.09	3.09	5.09	
23 Bathurst Industrial Centre- Mitchell Hwy before Bradwardine Rd	8.02	8.37	9.37	10.37	1.07	3.07	5.07	...	...	...	...	...	...
23 Rocket Street and Henderson Street	8.05	8.40	9.40	10.40	1.10	3.10	5.10	7.23	9.12	11.12	1.12	3.12	5.12	
12 Bathurst Panthers Club- outside in William Street	8.09	8.44	9.44	10.44	1.14	3.14	5.14	7.27	9.16	11.16	1.16	3.16	5.16	
C Bathurst RSL- Rankin Street	8.12	8.47	9.47	10.47	1.17	3.17	5.17	7.30	9.19	11.19	1.19	3.19	5.19	
B Bathurst City- Stocklands- Howick St Stand B	8.16	8.51	9.51	10.51	1.21	3.21	5.21	7.34	9.23	11.23	1.23	3.23	5.23	

Explanations

R Enters Railway Station roadway

Explanations

R Enters Railway Station roadway.

Figure 2.13 – 526 bus timetable (Source: www.buslinesgroup.com.au)


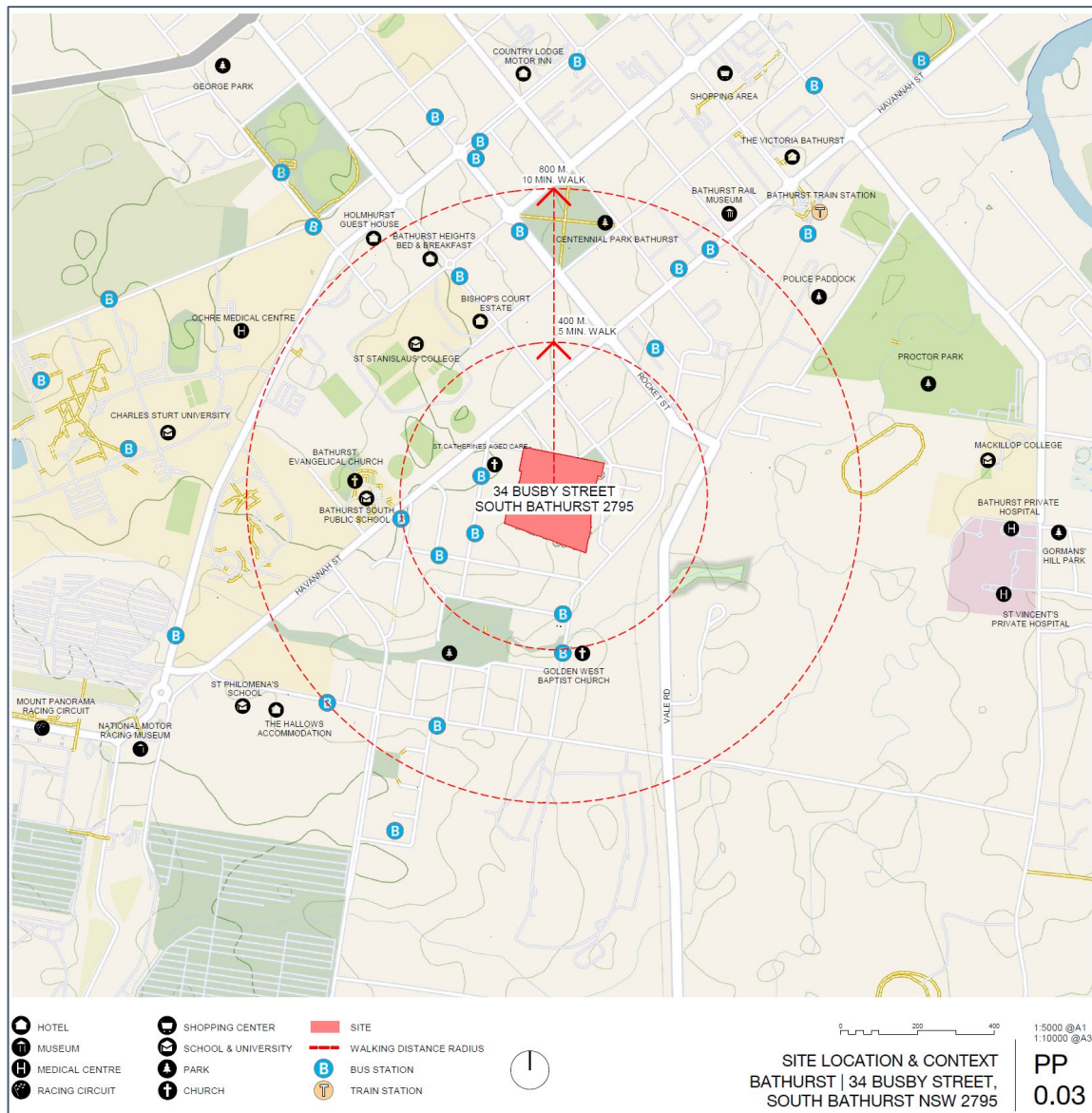
WEST BATHURST- SOUTH BATHURST TOWN LOOP - ANTICLOCKWISE													
Stop	Monday to Friday 							Saturday					
	am	am	am	am	pm	pm	pm	am	am	pm	pm	pm	pm
A Bathurst City- Acropole- Howick St Stand A	8.40	9.35	10.35	11.35	1.35	5.25	6.25	9.45	11.45	1.45	3.45	5.45	
C Bathurst RSL- Rankin Street	8.43	9.38	10.38	11.38	1.38	5.28	6.28	9.48	11.48	1.48	3.48	5.48	
12 Bathurst Panthers Club-opp in William Street	8.46	9.41	10.41	11.41	1.41	5.31	6.31	9.51	11.51	1.51	3.51	5.51	
23 Rocket Street opp Henderson Street	8.50	9.45	10.45	11.45	1.45	5.35	6.35	9.55	11.55	1.55	3.55	5.55	
23 Bathurst Industrial Centre- Mitchell Hwy before Bradwardine Rd	8.53	9.48	10.48	11.48	1.48	5.38	...	...	...	...	...	...
23 Opp Bathurst Correctional Centre- Browning Street	8.56	9.51	10.51	11.51	1.51	5.41	6.38	9.58	11.58	1.58	3.58	5.58	
18 Charles Sturt University- Ordinance Road Bus Stop	9.01	9.56	10.56	11.56	1.56	5.46	...	...	...	...	...	...
33 Prospect Street after Havannah Street	9.08	10.03	11.03	12.03	2.03	5.53	6.45	10.03	12.03	2.03	4.03	6.03	
21 Opposite South Bathurst Public School- Havannah Street	9.10	10.05	11.05	12.05	2.05	5.55	6.47	10.05	12.05	2.05	4.05	6.05	
20 Lloyds Road outside St Philomenas Catholic School	9.12	10.08	11.08	12.08	2.08	5.58	6.49	10.07	12.07	2.07	4.07	6.07	
19 Currawong Street near College Street	9.13	10.09	11.09	12.09	2.09	5.59	6.50	10.08	12.08	2.08	4.08	6.08	
18 Bant Street before Rose Street	9.16	10.12	11.12	12.12	2.12	6.02	6.53	10.11	12.11	2.11	4.11	6.11	
R Havannah St at Keppel Street-opp Bathurst Railway Station	9.20	10.16	11.16	12.16	2.16	6.06	6.57	10.15	12.15	2.15	4.15	6.15	
A Bathurst City- Acropole- Howick St Stand A	9.24	10.20	11.20	12.20	2.20	6.10	7.01	10.19	12.19	2.19	4.19	6.19	

Figure 2.14 – 528 bus timetable (Source: www.buslinesgroup.com.au)

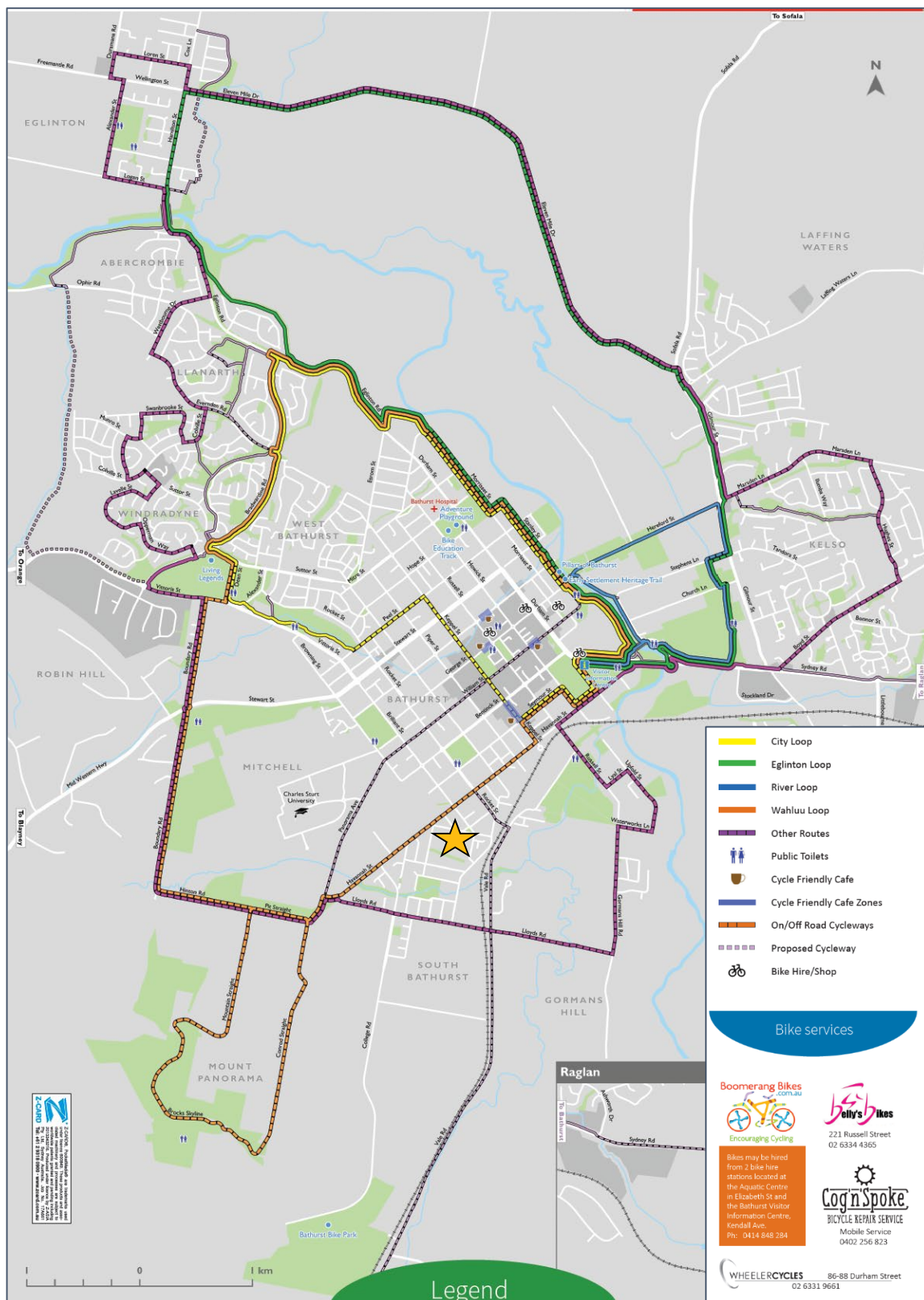
Research suggests that proximity to bus services influence the travel mode choice for areas within 400m (approximately 5 minutes' walk) of a bus stop. As such, the proposed development is ideally located for future residents, function centre/restaurant staff and guests, visitors etc, to utilise buses for their trip to/from the site, be it for recreational and/or employment.

A map of the 400m radial catchment from the centre of the subject site is provided on the following page.

There are no existing footpaths between the site and the nearby bus stops, with Council verges typically consisting of grass. The nearest existing footpaths are located along Havannah Street, providing connectivity between Mount Panorama and the Bathurst City Centre.



The bicycle network in the vicinity of the site is reproduced in the figure on the following page, which shows there are a number of existing on-road and off-road cycle routes within the surrounding area, including along Havannah Street.

Figure 2.16 – Bathurst cycle network map (Source: www.bathurst.nsw.gov.au)

Other key points of interest and essential services and their respective driving distances/times are summarised below:

• Mount Panorama Motor Racing Circuit:	3.4km (5 minutes)
• Charles Sturt University:	1.8km (3 minutes)
• TAFE Bathurst:	1.8km (3 minutes)
• Bathurst South Public School:	0.6km (1 minute)
• Bathurst Railway Station:	1.5km (3 minutes)
• Bathurst City Centre:	2.5km (5 minutes)
• Manning Aquatic Centre:	3.2km (5 minutes)
• Service NSW, Bathurst:	5.2km (8 minutes)
• Bathurst Little Learning Centre:	0.5km (1 minute)

2.7 Existing Traffic Volumes

As noted in the foregoing, preliminary discussions have been held with Council and TfNSW where it was clarified the intersections required to be surveyed in order to understand the existing traffic volumes on the surrounding road network. The locations of those intersections are listed below:

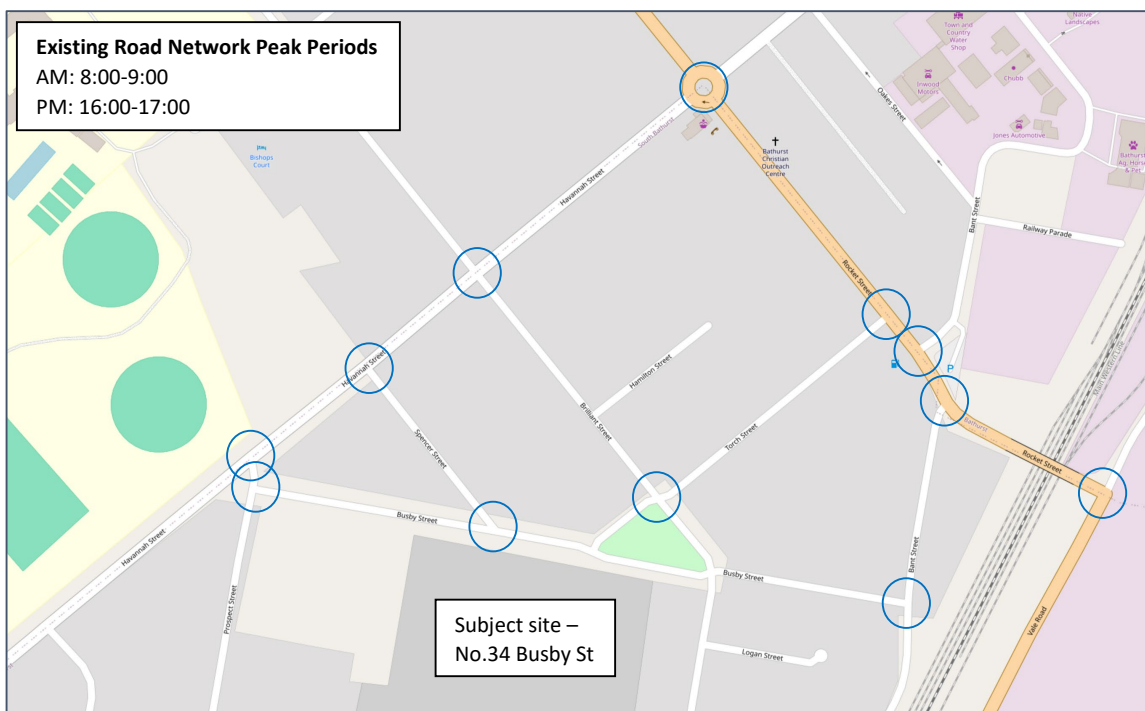


Figure 2.17 – Intersections included within study area

- Havannah St & Prospect St
- Havannah St & Spencer St
- Havannah St & Brilliant St
- Havannah St & Rocket St
- Prospect St & Busby St
- Busby St & Spencer St
- Busby St & Bant St
- Brilliant St & Torch St
- Rocket St & Torch St
- Rocket St & Bant St
- Rocket St, Alpha St & Vale Rd

The traffic surveys were undertaken on Thursday 15th February 2024 between 7am-9am and 4pm-6pm, with the results of the surveys reproduced in Appendix C.

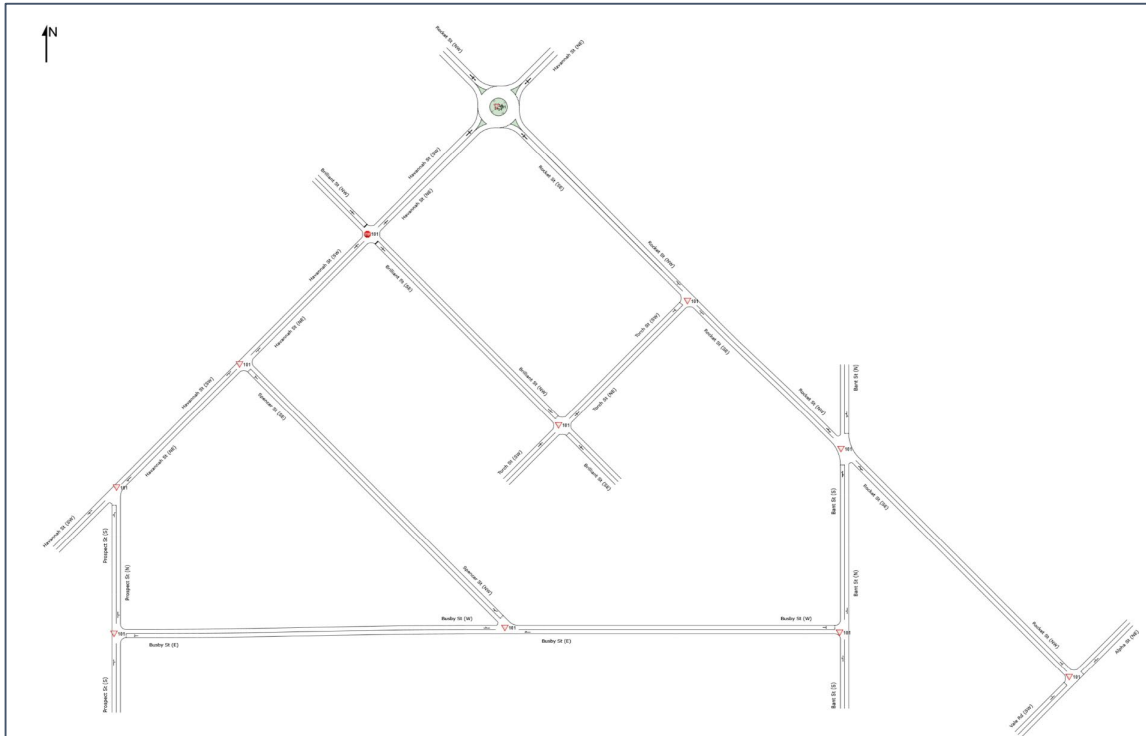


Figure 2.18 – Existing road network model

2.8 Existing Surrounding Traffic Controls

The existing traffic restrictions in the vicinity of the site comprise:

- a 60km/h speed limit which applies to Havannah Street
- a 50km/h speed limit which applies to Busby Street and other local roads in the vicinity of the township
- Traffic signals at the intersection of the Great Western Highway & Havannah Street, with all turning movements permitted
- A roundabout at the Havannah Street & Rocket Street intersection
- Stop signs in Brilliant Street where it intersects with Havannah Street
- A give way restriction in Prospect Street where it intersects with Havannah Street
- A give way restriction in Busby Street where it intersects with Prospect Street
- Give way signs in Torch Street where it intersects with Brilliant Street
- Give way signs in Bant Street where it intersects with Rocket Street
- Give way signs in Vale Road and Alpha Street where they intersect with Rocket Street.

2.9 Existing Surrounding Parking Restrictions

The existing parking restrictions in the vicinity of the site are fairly limited and comprise:

- Generally, unrestricted kerbside parking along both sides of Busby Street and all other local roads in the surrounding area
- Bus zones located on Prospect Street, Lewins Street & Torch Street.

3. Planning Proposal – 34 Busby Street

3.1 Concept Development Description

As noted in the introduction of this report, the PP seeks to amend the planning controls within the Bathurst Region Local Environmental Plan 2014 which apply to the site, as follows:

- rezone the residual lot, Lot 225, from R1 General Residential to R3 Medium Density Residential
- increase the height of buildings control from 9m up to 18m.

The above amendments to the BRLEP 2014 planning controls will ultimately allow for a mixed use project situated in an area with heritage architecture and local landscape elements of significance. The site benefits from a subdivision comprising three lots, the first including the heritage-listed convent and its curtilage (Lot 224), the second a heritage listed cottage, facing Busby Street (Lot 223) and the third being the residual parcel of land along the eastern and southern side of the allotment (Lot 225). The key components of the proposed development, across the 3 lots, include:

- Proposed retention/refurbishment of the existing Gatekeeper's Cottage located on the approved Lot 223
- Proposed conversion of existing heritage buildings located on the approved Lot 224 (St. Joseph's Mount) into a boutique hotel & construction of new function centre & additional accommodation, including:
 - Conservation of the 'Logan Brae' building and its existing extension for conversion into an 18-suite boutique hotel, which may feature (subject to feasibility) a signature restaurant, cellar, and other complementary facilities.
 - Conservation and restoration of the chapel to enhance its use.
 - Construction of additional accommodation options in the form of 22 cabins.
 - Conservation and conversion of the existing cottage to make it part of the external temporary accommodation options.
 - Construction of a new pavilion designated as a 300m² function centre.
 - Removal of agricultural shelters and other non-significant structures.
 - Adjustment of the existing road and landscaping to optimize the functionality of the new uses, noting that this will be subject to a separate development application at a later stage.
- Proposed new residential apartment development located on the open space of approved Lot 225, including:
 - 7 residential buildings, capable of accommodating a total of 218 apartments, comprising 30 x 1 bedroom, 159 x 2 bedroom & 29 x 3 bedroom
 - Construction of these buildings to a maximum height of 18m.
 - Visual separation of the residential project from the heritage portion of the site through the preservation of existing vegetation along the lot boundary line and building separation to ensure that views to and from Logan Brae are retained.
- New internal private road network, along with extensive pedestrian paths
- Housing is envisaged to be provided across 7 buildings with a mixture of 1, 2 & 3 bedroom dwellings. Open space throughout the site is intended to interweave between building clusters and provide a maximum of community usage opportunities. These linkages are intended to encourage non-car based movement, supporting greater walking, cycling and e-bikes.

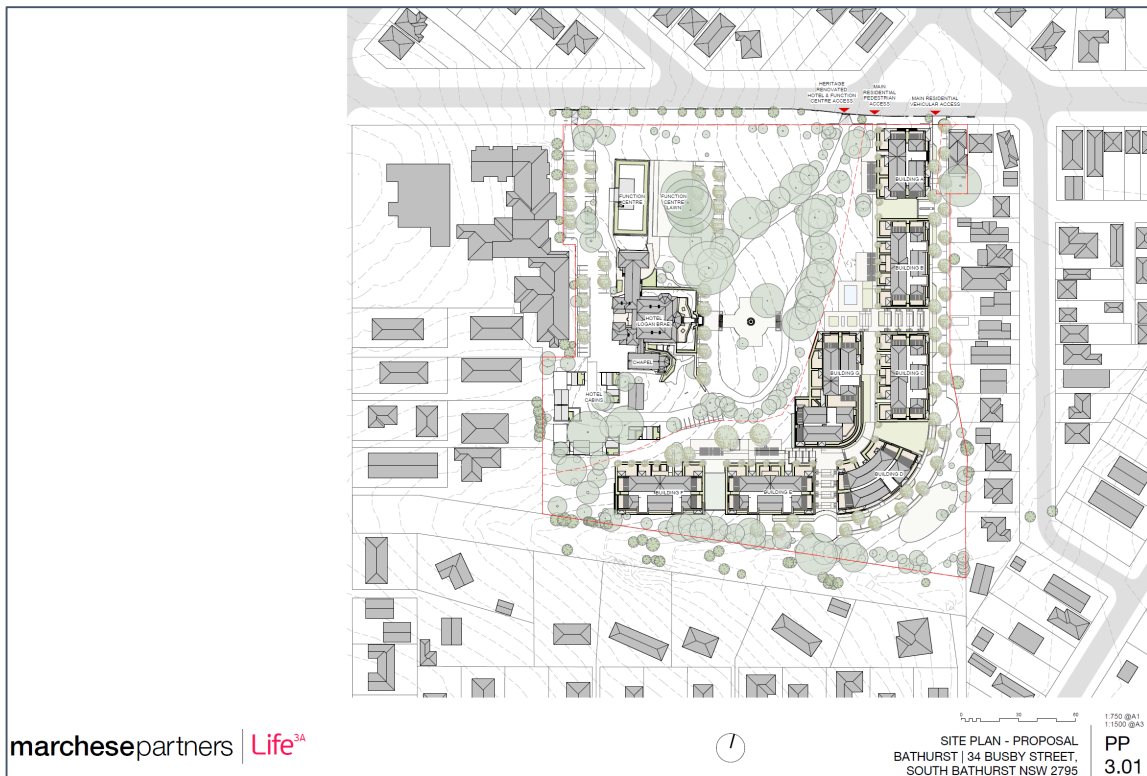


Figure 3.1 – Proposed site plan (Source: Marchese Partners | Life^{3A})

3.2 Parking Arrangements

Off-street parking for the restaurant, function centre and accommodation is proposed to be provided for a total of 93 cars at various at-grade locations throughout Lot 224, in accordance with Council's BRDCP 2014. Off-street parking for the residential development is proposed to be provided for a total of 273 spaces within a number of basement parking areas beneath the respective buildings, comprising 226 residential spaces and 47 visitor spaces.

Notwithstanding, the parking requirement will be assessed at the Development Application (DA) stage against the proposed DA unit mix, should the PP gain approval.

3.3 Loading & Servicing

The proposed development will be serviced by a range of light commercial vehicles such as vans, utilities etc, up to small and medium rigid trucks. These may include online order deliveries, tradesmen, removalists, garbage trucks and the like, all typical of a residential development and restaurant/function centre/hotel accommodation.

The internal roadway design allows all vehicles, including service vehicles, to enter and exit the site in a forward direction at all times.

3.3 Vehicular Access & Internal Movement

Vehicular access to 'Logan Brae' on Lot 224 is proposed to be retained via the two existing driveways located off the Busby Street site frontage. A new connection is however proposed which will allow vehicular movement between the western and eastern driveways and the various car parking areas, noting at present, there is no connection between the internal roadways within Lot 224.

Vehicular access to the residential development on Lot 225 is proposed to be provided via a new entry/exit driveway located off the Busby Street site frontage, in between Torch Street and Brilliant Street. The location of the proposed new driveway has been carefully considered in order to remain outside the abovementioned intersections, as well as providing a setback of the built form from the rear of the existing low density residential properties fronting Lewins Street. The proposed new driveway leads to a new internal roadway which provides vehicular and pedestrian access to the residential apartment buildings and their respective loading areas and basement car parking areas. The internal road includes two turning heads; one outside Building C and one in between Buildings D & E.

Vehicular access to the existing cottage on Lot 223 is to remain unchanged, as is its existing parking provision.

A diagram of the circulation and traffic movements is provided below.

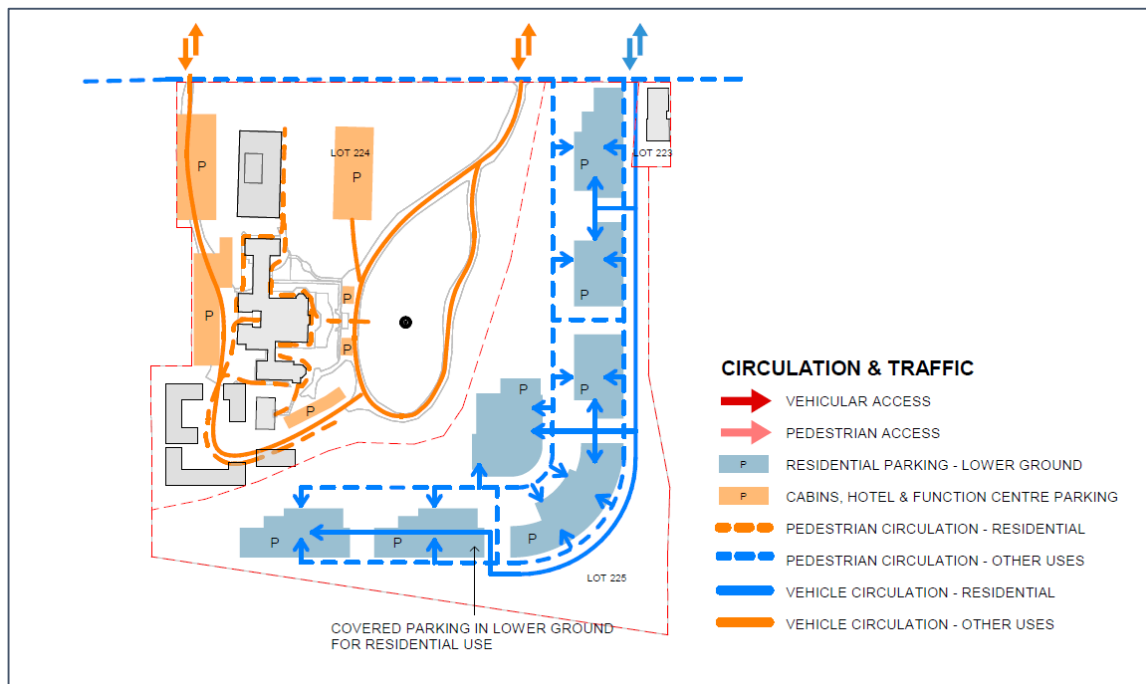


Figure 3.2 – Proposed circulation & traffic movements (Source: Marchese Partners | Life^{3A})

4. Planning Proposal – 50 Busby Street

4.1 Concept Development Description

As noted in the foregoing, a separate but concurrent Planning Proposal has been lodged for the adjoining site located at 50 Busby Street, South Bathurst, which was previously occupied by St. Catherine's 60-bed residential aged care facility (RACF) and nursing home. According to the Planning Proposal Report prepared by Allera, the 50 Busby Street PP also seeks to amend the BRLEP 2014 controls from R1 General Residential to R3 Medium Density Residential as well as including an Additional Permitted Use, being a small commercial component. The 50 Busby Street PP therefore envisages the potential for approximately 97 dwellings, comprising a mix of townhouses and apartments and ancillary private communal areas, along with a number of small-scale food & beverage tenancies open to the public such as a cafe, delicatessen and/or bakery and the like.

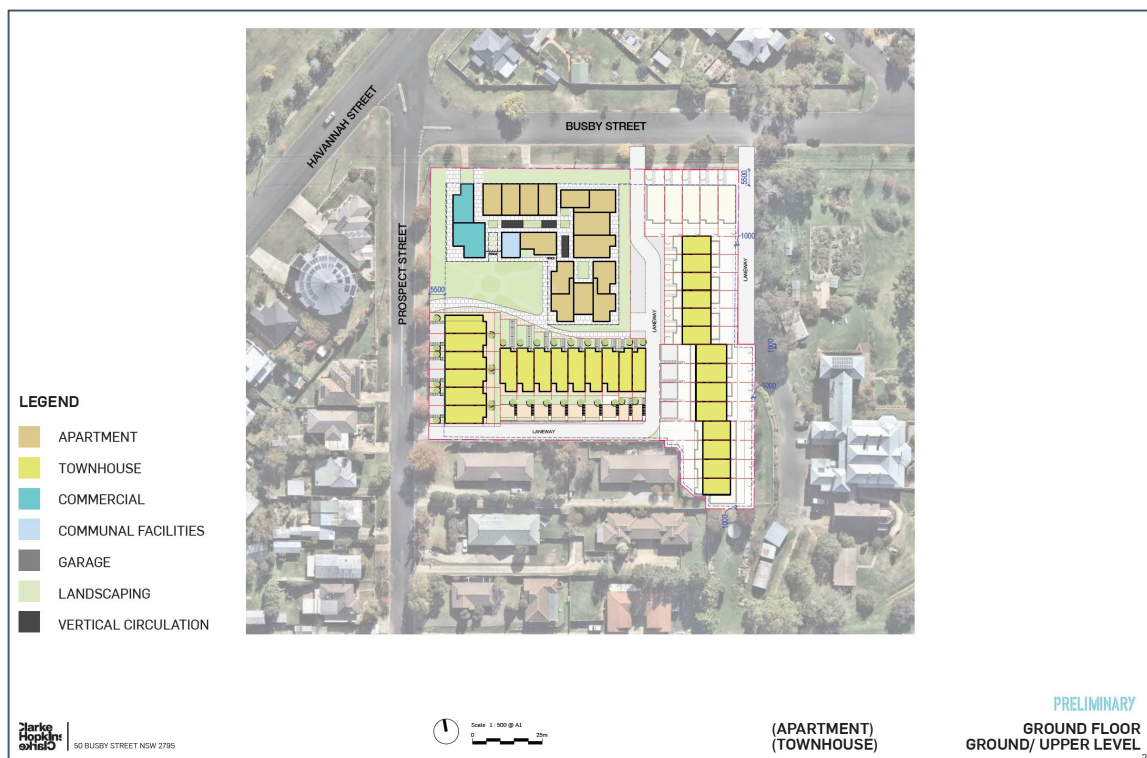


Figure 4.1 – Proposed ground/upper ground floor plan – 50 Busby Street (Source: Clarke Hopkins Clarke)

4.2 Parking Arrangements

The PP Report prepared by Allera, notes that a Transport Impact Assessment (TIA) has been prepared by SALT³, which provides the following parking characteristics with respect to the 50 Busby Street PP:

- A statutory parking requirement of 182 spaces (is required), including 56 visitor parking spaces for the townhouses and apartments.
- All townhouses are proposed to include a one or two car garage with ample space to provide on-site visitor parking, therefore meeting the DCP requirements.
- A total of 65 parking spaces are provided within the apartment precinct on site, meeting the requirements for the apartment unit residential parking and limited visitor parking.

- *Generally, apartment visitor parking and parking associated with the retail spaces and cafes will be required to be accommodated off site. Parking surveys of the surrounding area indicates there is sufficient capacity to accommodate the estimated demand.*

4.3 Vehicular Access & Internal Movement

The 50 Busby Street PP's concept plans indicate that vehicular access to the site is proposed to be provided via two separate entry/exit driveways located off the Busby Street site frontage, one of which connects to another entry/exit driveway located off the Prospect Street site frontage by way of an internal roadway.

5. Traffic Impact Assessment

5.1 Traffic Generation Guidelines

The traffic implications of development proposals primarily concern the *nett change* in the traffic generation potential of a site compared to its existing and/or approved uses, and its impact on the operational performance of the surrounding road network, particularly during the road network peak periods. An indication of the traffic generation potential of the proposed uses on the site is provided by reference to the following documents:

- RMS Guide to Traffic Generating Developments 2002 (RMS Guide)
- RMS Technical Direction 2013/04a (TDT)

In this regard, the TDT provides trip generation rates for high density residential dwellings in regional areas, as follows:

- Weekday AM road network peak: average 0.53 trips/unit
maximum 0.67 trips/unit
- Weekday PM road network peak: average 0.32 trips/unit
maximum 0.42 trips/unit

Notwithstanding the above, neither the RMS Guide nor the TDT function centres, such that a first principles approach has been adopted in this instance. For the purpose of this assessment, the following assumptions have been made:

- The 18 hotel rooms and 22 cabins will be ancillary to the proposed function centre – i.e. guests staying in the on-site accommodation will primarily be guests attending an on-site function, such that they will not generate additional vehicle trips and have therefore been excluded from the assessment,
- The ~300m² function space has the potential to accommodate ~200 seated guests,
- The car driver rate for guests is 3 people/car, therefore, for a 200-guest function there will be 67 driving guests,
- For a 200-guest function there will be 15 function staff,
- The car driver rate for staff is 1.5 people/car, therefore, for a 200-guest function there will be 10 driving staff,
- Assumed weekday morning 200-guest function (noting very unlikely), such that 77 cars arrive during the AM peak period
- At the same time, 50% of guests that stayed overnight from a function the previous evening depart during the same AM peak period, assuming 100% occupancy of the accommodation,
- A trip rate of 0.65 trips/unit during the same AM & PM road network peak periods, which is considered very conservative and sufficient for sensitivity purposes.

5.2 Proposed Concept Development Traffic Generation

The proposed concept design envisages the construction of a number of residential apartment buildings on the subject site with the potential for approximately 218 units in total. In addition, the PP envisages works to 'Logan Brae', including a new ~200-seat function centre/restaurant and 40 accommodation rooms.

As noted in the foregoing, preliminary discussions with Council and TfNSW is that a cumulative traffic impact assessment should be undertaken for both the PP on the subject site at 34 Busby Street as well as the PP on the adjoining site at 50 Busby Street.

Reference to the PP Report prepared by Allera for the 50 Busby Street proposal, notes that the SALT³ TIA estimates *the proposed development is expected to generate up to 69 and 75 vehicle movements in the AM and PM peak hours respectively*. The Allera report does not break down those vehicle movements into residential and non-residential, therefore, for the purposes of this cumulative assessment, the above figures of 69 AM trips and 75 PM trips have been adopted.

Accordingly, based on the trip rates specified in Section 5.1 of this TPAR, as well as the abovementioned total movements for the 50 Busby Street PP, both proposals have the potential to generate in the order of 308 vehicle trips during the weekday morning road network peak period and approximately 294 vehicle trips during the weekday afternoon peak period, as set out in the table below.

Table 5.1 – Envisaged Weekday Peak Trip Rates & Traffic Generation Potential				
Proposed Land Use	Period	Trip rate	Total trips	Trip split
Residential (218 units)	AM	0.65/dwelling	142 trips	28 in/114 out
Function centre (200 guests & 15 staff)	AM	*	97 trips	77 in/20 out
Sub-total – 34 Busby St	AM		239 trips	105 in/134 out
Sub-total – 50 Busby St	AM	#	69 trips	17 in/52 out
Cumulative Total	AM		308 trips	122 in/186 out
Residential (218 units)	PM	0.65/dwelling	142 trips	114 in/28 out
Function centre (200 guests & 15 staff)	PM	*	77 trips	77 in/0 out
Sub-total – 34 Busby St	PM		219 trips	191 in/28 out
Sub-total – 50 Busby St	PM	#	75 trips	56 in/19 out
Cumulative Total	PM		294 trips	247 in/47 out

* refer to assumptions in Section 5.1 of this TPAR

refer to Allera PP Report and Salt³ TIA

Again, the abovementioned vehicle movements are considered very conservative, because:

- The maximum trip rate has been applied to the residential apartments during the AM peak,
- The same AM trip rate has been applied to the PM peak, which is 0.23 trips/unit *higher* than the maximum PM trip rate, and *double* the average PM trip rate,
- full-capacity weekday morning functions whereby guests arrive during the AM road network peak period will be infrequent,
- the above assessment does not consider the traffic generation potential of the existing and former uses on both sites – i.e. the former weddings and functions held at “Logan Brae” on 34 Busby Street and the existing 60-bed RACF on 50 Busby Street

Accordingly, the actual *nett increase* in traffic generation potential of both sites is expected to be *less* than the figures indicated above and which this assessment is based upon. Notwithstanding, in the interest of sensitivity testing, the abovementioned conservative trip rates have been adopted.

5.3 Traffic Distribution

Based on the surrounding points of interest and the broader arterial road network, it is estimated that the two proposed developments' traffic will be distributed, as follows:

- 50% to/from the east via Havannah Street and the Great Western Highway (to/from Sydney)
- 25% to/from the west via Brilliant Street and the Mitchell Highway (to/from Orange)
- 10% to/from the north via Rocket Street (to/from West Bathurst, Windradyne & Llanarth)
- 10% to/from the south-west via Stewart Street and the Mid Western Highway (to/from Blayney & Cowra)
- 5% to/from the south via Vale Road (to/from Blayney & Cowra)

5.4 Future Background Traffic Growth

Traffic impact assessments, particularly planning proposals, often include a +10 year scenario. In this regard, according to the Bathurst Regional LSPS, the LGA's population is forecast to grow by 20.8% between 2019 and 2036, equating to an average annual growth of 1.2% p.a. Preliminary discussions with TfNSW have indicated that a 2% p.a. growth rate is suitable to apply to the movements along the classified State Roads within the surrounding 11-intersection study area.

5.5 Cumulative Road Network Capacity & Traffic Impact

An important consideration in determining the impact of a development proposal on the road network is to assess the effect on traffic efficiency, the objective of which is to maintain the existing level of service. Adverse effects must be identified and corrective measures designed. The level of service is used as the performance standard and is broken down into six ratings. This is a qualitative assessment of the quantitative effect of factors such as speed, volume of traffic, geometric features, traffic interruptions, delays and freedom of manoeuvres.

The traffic implications of development proposals primarily concern the effects that any *additional* traffic flows may have on the operational performance of the nearby road network. Those effects can be assessed using the SIDRA 9.1 program which is widely used by TfNSW and most LGAs for this purpose. TfNSW's criteria for evaluating the results of SIDRA analysis are summarised in the table below.

Table 5.2 – Level of Service Criteria for Intersections (Table 4.2 of RMS Guide)			
Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabouts	Give Way & Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Unsatisfactory, requires additional capacity	Unsatisfactory, requires other control mode or major treatment

For the purposes of this assessment, the following scenarios have been modelled using the SIDRA 9 program:

- Existing Base Case Network 2024 (without development)
- Proposed Network 2024 (with 34 Busby Street development)
- Proposed Network 2024 (with 34 Busby Street & 50 Busby Street developments)
- Existing Future Base Case Network 2034 (without development)
- Proposed Future Network 2034 (with 34 Busby Street development)
- Proposed Future Network 2034 (with 34 Busby Street & 50 Busby Street developments)

The individual movements summaries of each intersection are reproduced in Appendix D and summarised in Table 5.3 below.

Table 5.3 – Summary of SIDRA analysis of surrounding road network												
	Existing Network 2024 (without development)		Proposed Network 2024 (with 34 Busby St development)		Proposed Network 2024 (with 34 Busby St & 50 Busby St developments)		Existing Future Network 2034 (without development)		Proposed Future Network 2034 (with 34 Busby St development)		Proposed Future Network 2034 (with 34 Busby St & 50 Busby St developments)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Havannah St & Prospect St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.129	0.116	0.163	0.151	0.169	0.174	0.155	0.138	0.190	0.172	0.196	0.195
AVD (sec/veh)	0.3 (6.2)	0.6 (6.1)	1.2 (7.2)	1.5 (7.1)	1.5 (7.2)	1.9 (7.3)	0.3 (6.3)	0.5 (6.2)	1.1 (7.5)	1.3 (7.3)	1.4 (7.5)	1.7 (7.5)
Havannah St & Spencer St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.130	0.118	0.163	0.151	0.169	0.174	0.157	0.143	0.191	0.177	0.196	0.199
AVD (sec/veh)	0.1 (6.5)	0.1 (6.1)	0.1 (7.0)	0.1 (6.5)	0.1 (7.3)	0.1 (6.8)	0.1 (7.1)	0.1 (6.6)	0.1 (7.7)	0.1 (7.0)	0.1 (8.1)	0.1 (7.3)
Havannah St & Brilliant St												
LOS	A (A)	A (A)	A (B)	A (A)	A (B)	A (A)	A (A)	A (A)	A (B)	A (A)	A (B)	A (B)
DOS	0.203	0.189	0.311	0.286	0.331	0.328	0.247	0.227	0.371	0.342	0.396	0.391
AVD (sec/veh)	4.4 (12.4)	4.2 (11.9)	5.7 (14.9)	4.9 (13.7)	5.8 (15.7)	5.1 (14.3)	4.5 (14.3)	4.2 (13.6)	6.0 (18.0)	5.1 (15.8)	6.2 (19.1)	5.4 (16.7)
Havannah St & Rocket St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.428	0.378	0.455	0.468	0.459	0.493	0.540	0.466	0.575	0.560	0.580	0.585
AVD (sec/veh)	7.3 (11.6)	6.8 (10.9)	7.6 (11.8)	7.2 (10.9)	7.7 (11.9)	7.3 (10.9)	8.0 (12.4)	7.3 (11.5)	8.8 (13.4)	7.9 (11.8)	9.0 (14.0)	8.2 (12.4)
Prospect St & Busby St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.013	0.017	0.045	0.060	0.051	0.084	0.013	0.017	0.045	0.060	0.051	0.084
AVD (sec/veh)	1.1 (4.6)	0.7 (4.7)	2.6 (4.7)	1.8 (4.8)	1.9 (5.0)	1.4 (5.0)	1.1 (4.6)	0.7 (4.7)	2.6 (4.8)	1.8 (4.8)	1.9 (5.0)	1.4 (5.0)
Busby St & Spencer St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.005	0.004	0.011	0.008	0.012	0.009	0.005	0.004	0.011	0.008	0.011	0.009
AVD (sec/veh)	2.3 (5.4)	1.7 (5.4)	1.3 (5.4)	0.8 (5.4)	1.2 (5.4)	0.7 (5.4)	2.3 (5.4)	1.7 (5.4)	1.3 (5.4)	0.8 (5.4)	1.2 (5.4)	0.7 (5.4)
Brilliant St & Torch St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.026	0.029	0.057	0.117	0.057	0.117	0.026	0.029	0.057	0.117	0.057	0.117
AVD (sec/veh)	3.5 (4.8)	3.6 (4.7)	3.9 (4.9)	4.2 (4.7)	3.9 (4.9)	4.2 (4.7)	3.5 (4.8)	3.6 (4.7)	3.9 (4.9)	4.2 (4.7)	3.9 (4.9)	4.2 (4.7)
Bant St & Busby St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.040	0.038	0.040	0.038	0.040	0.040	0.040	0.038	0.040	0.038	0.040	0.040
AVD (sec/veh)	0.7 (4.9)	0.7 (5.0)	1.2 (4.9)	1.1 (5.0)	1.3 (5.0)	1.2 (5.0)	0.7 (4.9)	0.7 (5.0)	1.2 (4.9)	1.1 (5.0)	1.3 (5.0)	1.2 (5.0)
Rocket St & Torch St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.200	0.165	0.200	0.165	0.200	0.165	0.241	0.200	0.241	0.200	0.241	0.200
AVD (sec/veh)	0.7 (7.6)	0.7 (7.3)	0.7 (7.6)	0.7 (7.3)	0.7 (7.6)	0.7 (7.3)	0.7 (8.7)	0.6 (8.2)	0.7 (8.7)	0.6 (8.2)	0.7 (8.7)	0.6 (8.2)
Rocket St & Bant St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)
DOS	0.165	0.153	0.170	0.154	0.170	0.154	0.198	0.175	0.202	0.175	0.202	0.176
AVD (sec/veh)	1.5 (9.0)	1.9 (8.6)	1.7 (9.0)	2.0 (8.6)	1.7 (9.0)	2.0 (8.6)	1.4 (10.1)	1.7 (9.4)	1.6 (10.1)	1.9 (9.4)	1.6 (10.1)	1.9 (9.4)
Rocket St, Vale Rd & Alpha St												
LOS	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (A)	A (B)	A (A)	A (B)	A (A)
DOS	0.181	0.146	0.185	0.152	0.185	0.153	0.212	0.171	0.216	0.178	0.217	0.180
AVD (sec/veh)	6.0 (11.4)	5.6 (9.5)	6.1 (11.9)	5.7 (9.9)	6.1 (12.1)	5.7 (10.0)	6.2 (14.7)	5.8 (11.7)	6.3 (15.4)	5.9 (12.2)	6.3 (15.5)	5.9 (12.4)

LOS – Level of Service; DOS – Degree of Saturation; AVD – Average Vehicle Delays

Worst turning movements and respective delays indicated in brackets (sign-controlled intersections only)

In essence, all 11 intersections analysed in the SIDRA model remain at the same level of service between the Existing Base Case Network 2024 (without development) scenario and the Proposed Future Network 2034 (with 34 Busby Street & 50 Busby Street developments) scenario.

Furthermore, there are only a small number of instances where individual movements jump from Level of Service A to Level of Service B. Increases in average vehicle delays are absolutely minimal and range between 0-3 sec/veh as a consequence of the Planning Proposal.

Accordingly, cumulative traffic assessment on both the subject PP at 34 Busby Street and the adjoining PP at 50 Busby Street are not expected to result in any unacceptable traffic implications on the surrounding road network, nor or any road upgrades required. The proposal is therefore supportable on traffic grounds.

6. Access, Parking & Servicing Assessment

6.1 Applicable Car Parking Rates

The off-street car parking rates applicable to various land uses within the Bathurst Regional LGA are specified in Council's DCP 2014, Chapter 14 – Parking, as set out below.

Development	Minimum Standard	
Medium density housing – Precinct 2 & 3 (refer to Schedule 6 of this Plan)	<p>For 1 or 2 bedroom units: 1 covered car parking space per dwelling and 1 visitors space per 4 dwellings or part thereof.</p> <p>For 3 or more bedroom units: 1 covered car parking space per dwelling and 1 visitor's space per dwelling.</p> <p><u>Note:</u> The visitors car parking space can be located or attached to each dwelling rather than being provided as a “communal space”, where appropriate to the overall design of the development.</p>	
Entertainment facility Place of public worship Funeral chapel Crematorium Funeral home Function centre	1 space per 10 seats or 1 space per 10m ² , whichever is greater.	
Restaurant or cafe	<u>Outside CBD</u> 1 space per 10m ² or 1 space per 3 seats whichever is greater.	<u>Inside CBD or within neighbourhood centre (DCP Map No. 6)</u> 1 space per 35m ² .
Hotel or motel accommodation Serviced apartments	1 space per unit plus 1 space per 2 employees.	

6.2 Car Parking Requirements

Based on the various components of the PP, the proposed development requires the provision of 365 car parking spaces, as set out in the table below.

Table 6.1 – Off-Street Car Parking Requirement – 34 Busby Street Planning Proposal			
Type	Key Parameters	Applicable BRDCP2014 Car Parking Rates	BRDCP 2014 Car Parking Requirement
Residential	218 dwellings	1 space/unit	218 spaces
Visitors	218 dwellings	1 space/4 x 1 & 2 bedroom unit 1 space/3 bedroom unit	76 spaces
Function centre	~300m ² & ~200 seats	1 space/10m ² *	30 spaces
Accommodation	40 rooms & 2 staff	1 space/room + 1 space/2 staff	41 spaces
Total			365 spaces

* higher rate in this instance

Whilst it is noted that the “restaurant” land use has a higher parking rate than that prescribed for “function centres”, it is unlikely that when the space is used as a restaurant, it would reach more than 50% of the capacity of a large function – i.e. 100 patrons. Applying the restaurant parking rate to the ~300m² space with 100 patrons requires the provision of 33 parking spaces.

Furthermore, the proposed accommodation component is expected to be largely ancillary and go hand-in-hand with the function centre/restaurant component – i.e. the majority of guests staying overnight in the accommodation are expected to be guests of a function – e.g. a wedding.

6.3 Proposed Car Parking Provisions

The proposed concept design for the 34 Busby Street PP makes provision for a total of 366 off-street car parking spaces located throughout the site, thereby satisfying the overall numerical requirement of the BRDCP 2014, as set out in the table below.

Table 6.2 – Off-Street Car Parking Allocation – 34 Busby Street Planning Proposal		
Land Use	BRDCP 2014 Car Parking Requirement	Proposed Parking Provision
Residential	218 spaces	226 spaces
Visitors	76 spaces	47 spaces
Function centre	30 spaces	93 spaces
Accommodation	41 spaces	
Total	365 spaces	366 spaces

Notwithstanding, the parking requirement will be assessed at the Development Application (DA) stage against the proposed DA unit mix and restaurant/function centre/accommodation rooms, should the PP gain approval.

Furthermore, the required quantum of accessible and bicycle parking will also be provided in any future DA, should the PP proceed.

6.4 Loading & Servicing

The BRDCP 2014 is silent on rates for loading bays. Notwithstanding, the proposed development envisaged in the PP is expected to be serviced by a variety of light commercial vehicles, including tradesmen and delivery vans/trucks, mini-buses, removalist trucks and garbage trucks, up to and including 8.8m long medium rigid vehicles (MRV).

Suitable provision for loading bays will ultimately be provided for the various land uses in any future DA, should the PP gain approval.

Importantly, any future DA will ensure that all vehicles, including service vehicles, will be able to enter and exit the site in a forward direction at all times.

7. Design Assessment

7.1 Applicable Design Standards

The following design standards will ultimately be used as the basis for compliance with respect to the vehicular access, parking and loading requirements:

- Australian Standards 2890.1:2004 – Off-Street Car Parking (AS2890.1)
- Australian Standards 2890.2:2018 – Off-Street Commercial Vehicle Facilities (AS2890.2)
- Australian Standards 2890.3:2015 – Bicycle Parking (AS2890.3)
- Australian Standards 2890.6:2022 – Off-Street Parking for People with Disabilities (AS2890.6)

Whilst the vehicular access, parking and loading areas are conceptual at this stage, they will be designed in accordance with the above Australian Standards at DA stage. Furthermore, it is expected that a condition(s) of consent would be imposed requiring reconfirmation of compliance at the Construction Certificate stage (CC). Any minor amendments required to the DA design can therefore be addressed at the CC stage.

7.2 Vehicular Access & Circulation Design

The following key compliances are noted with respect to the future vehicular access design and circulation system:

- Retention of ‘Logan Brae’s’ two existing entry/exit driveways located off the Busby Street site frontage, including a new internal connection between the two
- Retention of the existing driveway servicing the existing cottage on Lot 223
- A new entry/exit driveway to service the residential apartment development on Lot 225, including a new internal roadway which will be sufficiently wide enough to accommodate two-way traffic flow
- The proposed new entry/exit driveway to service Lot 225 is located outside of the 6m “prohibited” tangent points of any nearby intersection
- Minimum 5.8m wide aisles throughout the various future parking areas in accordance with User Class 1/1A/2 requirements
- minimum 1m “aisle extension” at the end of any future dead-end parking aisles
- 2.5m x 2.0m pedestrian sight triangle on the exit side of the proposed new access driveway
- “desirable 5 second gap” sight distance of 69m achieved (for a 50km/h frontage road).

Further to the above, the vehicular access arrangements will ultimately be designed to accommodate the swept turning path requirements of the largest vehicle expected to service the site, as specified in AS2890.1 and AS2890.2, ensuring they will be able to circulate through the site without difficulty, and to enter and exit the site in a forward direction at all times.

7.3 Parking Design

The following key compliances are noted with respect to the future parking area design:

- minimum 5.4m long car parking spaces for all land uses
- 2.5m wide function centre/restaurant/accommodation parking spaces in accordance with User Class 2 requirements
- 2.4m wide residential and visitor parking spaces in accordance with User Class 1/1A requirements
- 2.4m wide car parking space *plus* 5.4m long x 2.4m wide “shared area” for accessible spaces, in accordance with AS2890.6
- minimum 300mm additional width for car spaces located adjacent to walls
- minimum 2.5m overhead clearance provided above the accessible parking space and adjacent shared area
- minimum 2.2m overhead clearance provided above all other parking spaces
- columns in parking areas generally located ~750mm back from the edge of the parking aisle
- no obstructions within the “design envelope” of any car parking spaces.

7.4 Service Area Design

The following key compliances are noted with respect to the amended service area design:

- 8.8m long x 3.5m wide loading bay(s) capable of accommodating a MRV truck each
- 2m loading/unloading area at the rear of the MRV loading bays
- 4.5m overhead clearance provided within the loading bay truck manoeuvring area
- all service vehicles are able to enter and exit the site in a forward direction
- all service vehicles will be able to enter and exit the site in a forward direction.

8. Conclusion

The 34 Busby Street PP seeks to amend the planning controls within the Bathurst Region Local Environmental Plan 2014 which apply to the site, as follows:

- rezone the residual Lot 225 from R1 General Residential to R3 Medium Density Residential
- increase the height of building limit from 9m to 18m

The above amendments to the BRLEP 2014 planning controls will ultimately allow for a mixed use project situated in an area with heritage architecture and local landscape elements of significance. In summary, the concept plans which are provided in Appendix A envisage the following:

- a total of 218 new apartments located on Lot 225, comprising a mix of 1, 2 & 3 bedroom units
- open space, environmental and landscape elements
- restoration and extension of 'Logan Brae' to include a function centre/restaurant as well as accommodation in the form of hotel suites and cabins
- new internal private roadways along with pedestrian paths
- off-street parking for each lane use will be provided within the respective lots, in accordance with Council's BRDCP 2014 numerical rates

Based on the findings contained within this report, the following conclusions are made:

- based on a number of "worst case" parameters, the proposed development on 34 Busby Street is expected to generate in the order of 219 and 239 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times
- based on information provided in the Allera PP report for the adjoining site, the proposed development on 50 Busby Street is expected to generate in the order of 69 and 75 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times
- the proposed cumulative increase in traffic as a consequence of both developments will not result in any unacceptable traffic implications to the surrounding road network, nor will any road upgrades be required
- the proposed vehicular access, parking and loading area design will ultimately be designed to comply with the relevant requirements of the AS2890 series, Austroads and the NSW RFS's Planning for Bush Fire Protection .

In light of the foregoing assessment, it is therefore concluded that the Planning Proposal is supportable on vehicular access, traffic, parking and servicing grounds and will not result in any unacceptable implications. Notwithstanding, it is expected that a new TPAR will be prepared at DA stage, should the PP be approved, which will further analyse the above as the detail in the project increases.

Appendix A

Concept Architectural Plans

EXISTING SITE PLAN

- St. Joseph's Mount is situated on a plot of land bordered by Busby Street, Prospect Street, Rose Street, and Lewins Street in Bathurst. Over time, the boundaries of this parcel have undergone subdivision, with Busby Street emerging as the primary street frontage.
- The significant heritage features in the site, as identified within the Conservation Management Plan, are Logan Brae House, St Joseph's Mount Chapel, the Novitiate Wing, McAuley Cottage, the Gatekeeper's Cottage and the gardens (including the eastern driveway and its planting, the labyrinth and the garden statues).
- Logan Brae is a late Victorian mansion designed by the local architect Edward Gell. Under the custodianship of the Sisters of Mercy, the property has been maintained, preserving the original style and architectural features. The original building has been subject to modifications and extensions, which have been integrated into the structure, aligning with the original building's form. The use of building materials, fenestration, and roof lines is intended to foster a sense of harmony. The Conservation Plan states that design, style and taste should be preserved through the retention of the form of existing buildings and the conservation of existing colour schemes.
- The interrelationships between existing buildings comprising St Joseph's Mount should be retained. It is considered that the functions of individual segments of the complex could be altered in accordance with clearly defined conservation policies.
- The scale of the existing buildings and garden should be retained.
- The principal visual links that must be retained are:
 1. Views of the eastern façade of St Joseph's Mount from the driveway leading to the front of the buildings.
 2. Views from the buildings to the driveway and gardens and views over the garden and surrounding properties to the countryside around Bathurst.
 3. Views along the front of the complex of buildings.





EXISTING BUILDINGS & ELEMENTS
PROPOSED TO BE DEMOLISHED

0 25 50

1:500 @A1
1:1000 @A3

EXISTING CONDITION
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
453 of 756

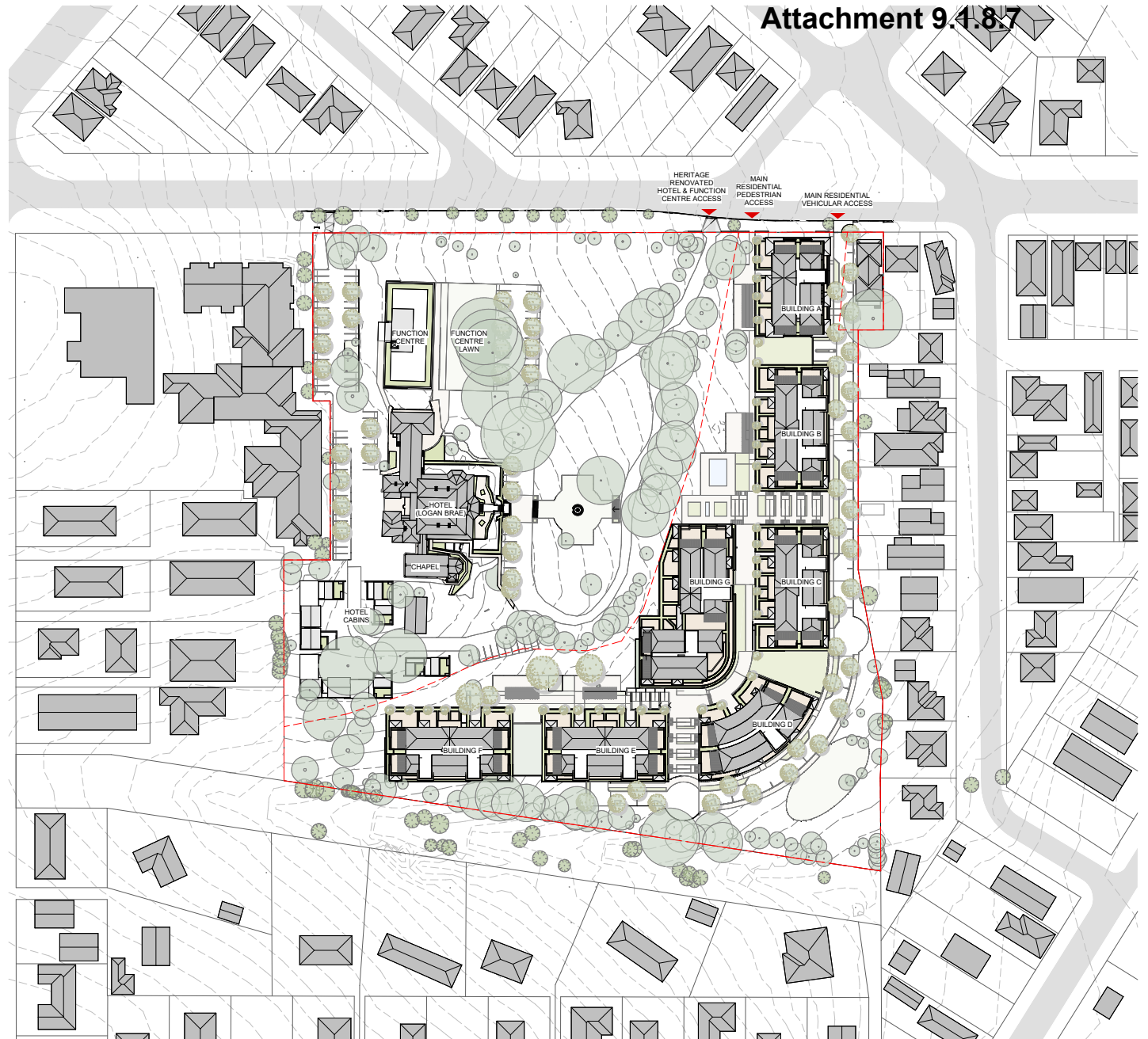
PP
2.01





GENERAL USES

- | | |
|--|--|
| ■ RESIDENTIAL USE | ■ RESTAURANT / CAFE |
| ■ PARKING FOR RESIDENTIAL USE | ■ FUNCTION CENTRE / CHAPEL |
| ■ CABINS / HOTEL ROOMS | |





0 25 50

1:500 @A1
1:1000 @A3

GROUND LEVEL PLAN - PUBLIC DOMAIN
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
457 of 756

PP
3.02



- | COMMERCIAL USES | |
|--------------------------|--------------------|
| RESTAURANT / CAFE | BOH |
| FUNCTION CENTRE / CHAPEL | RECEPTION / ADMIN. |
| HOTEL / CABIN ROOMS | |

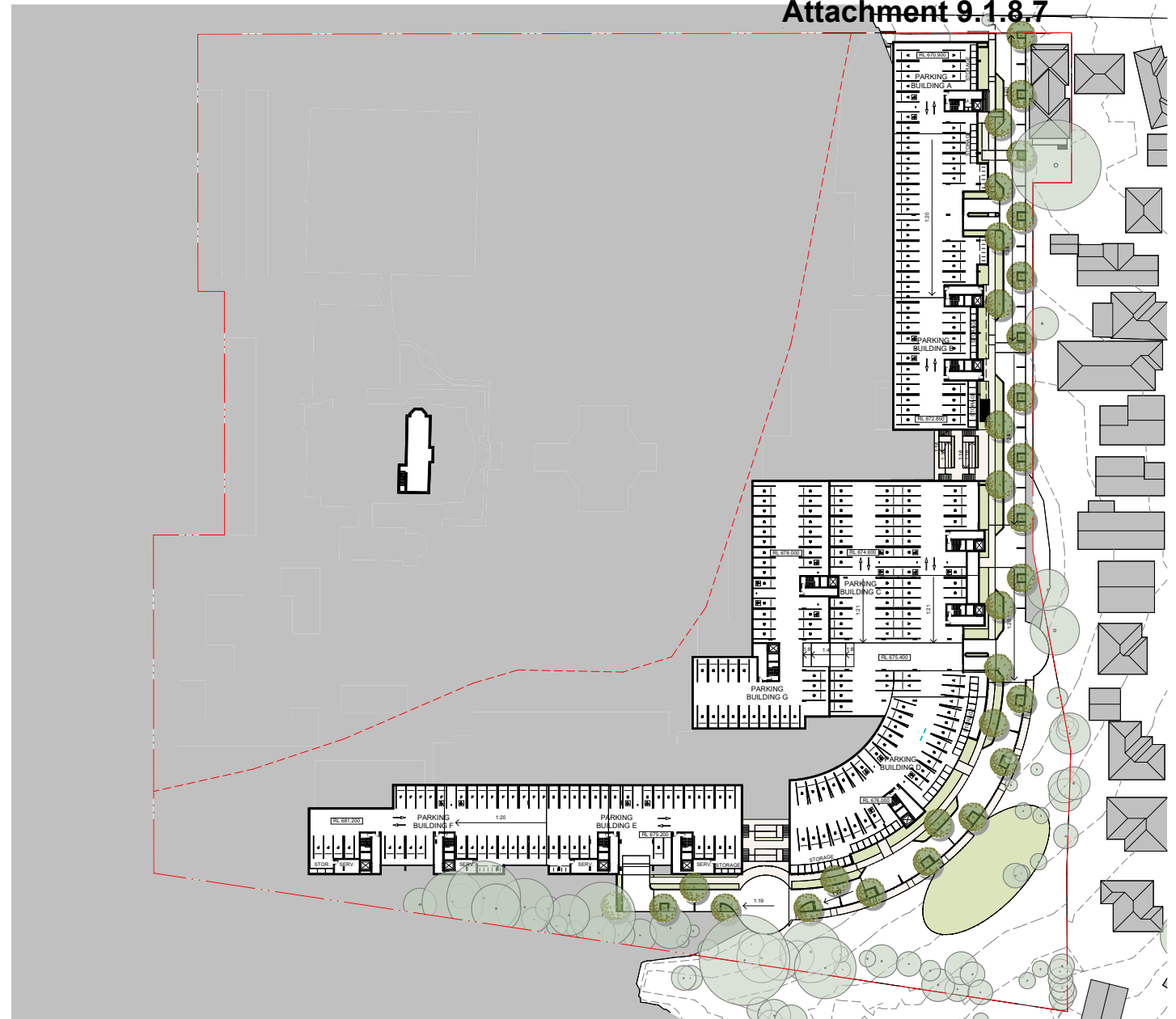
- | RESIDENTIAL USES |
|---------------------|
| 1B UNIT |
| 2B UNIT |
| 3B UNIT |
| BALCONY / COURTYARD |

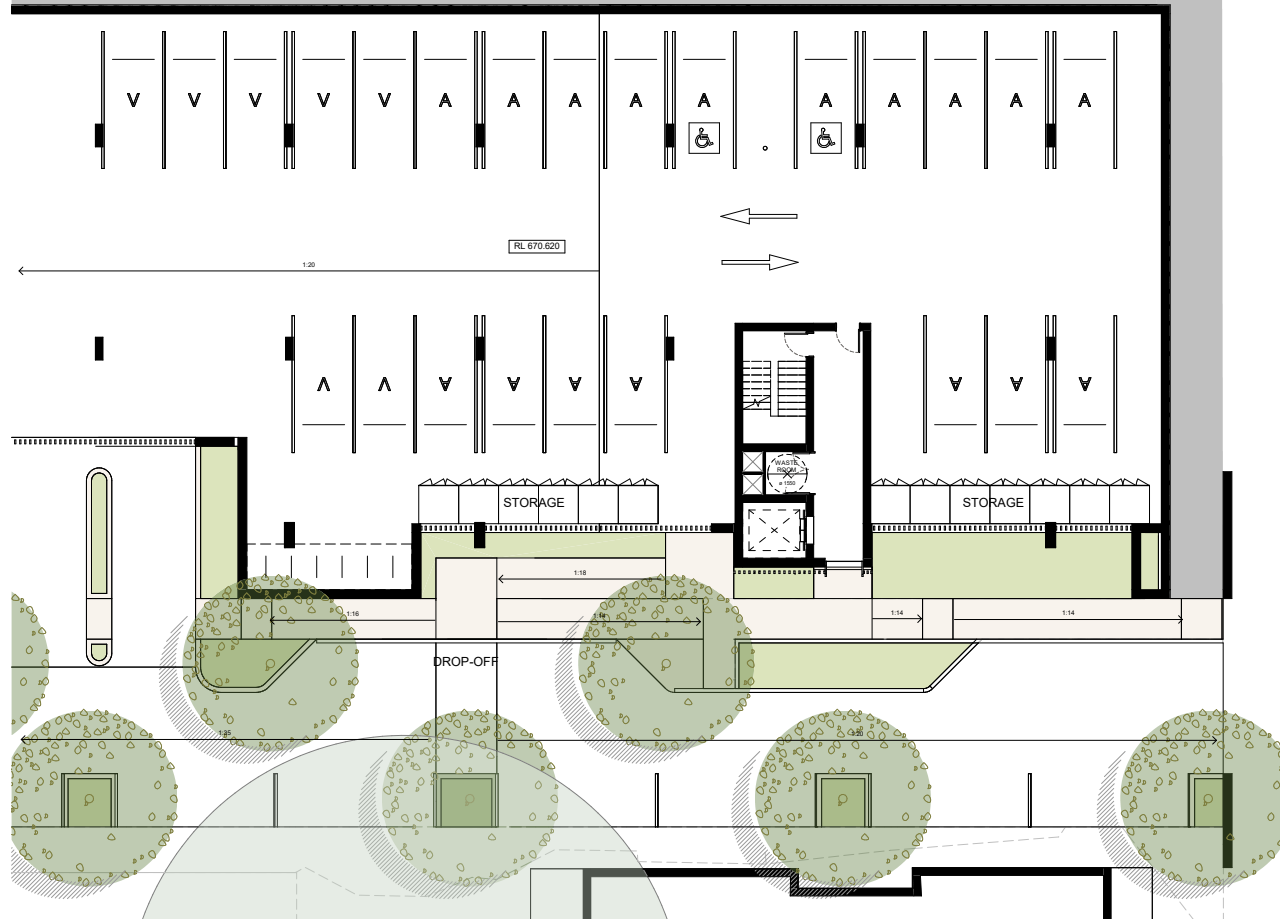


0 25 50
GROUND LEVEL PLAN
BATHURST | 34 BUSBY STREET,
SOUTH BATHURST NSW 2795
458 of 756

1:500 @A1
1:1000 @A3

PP
3.03





Appendix B

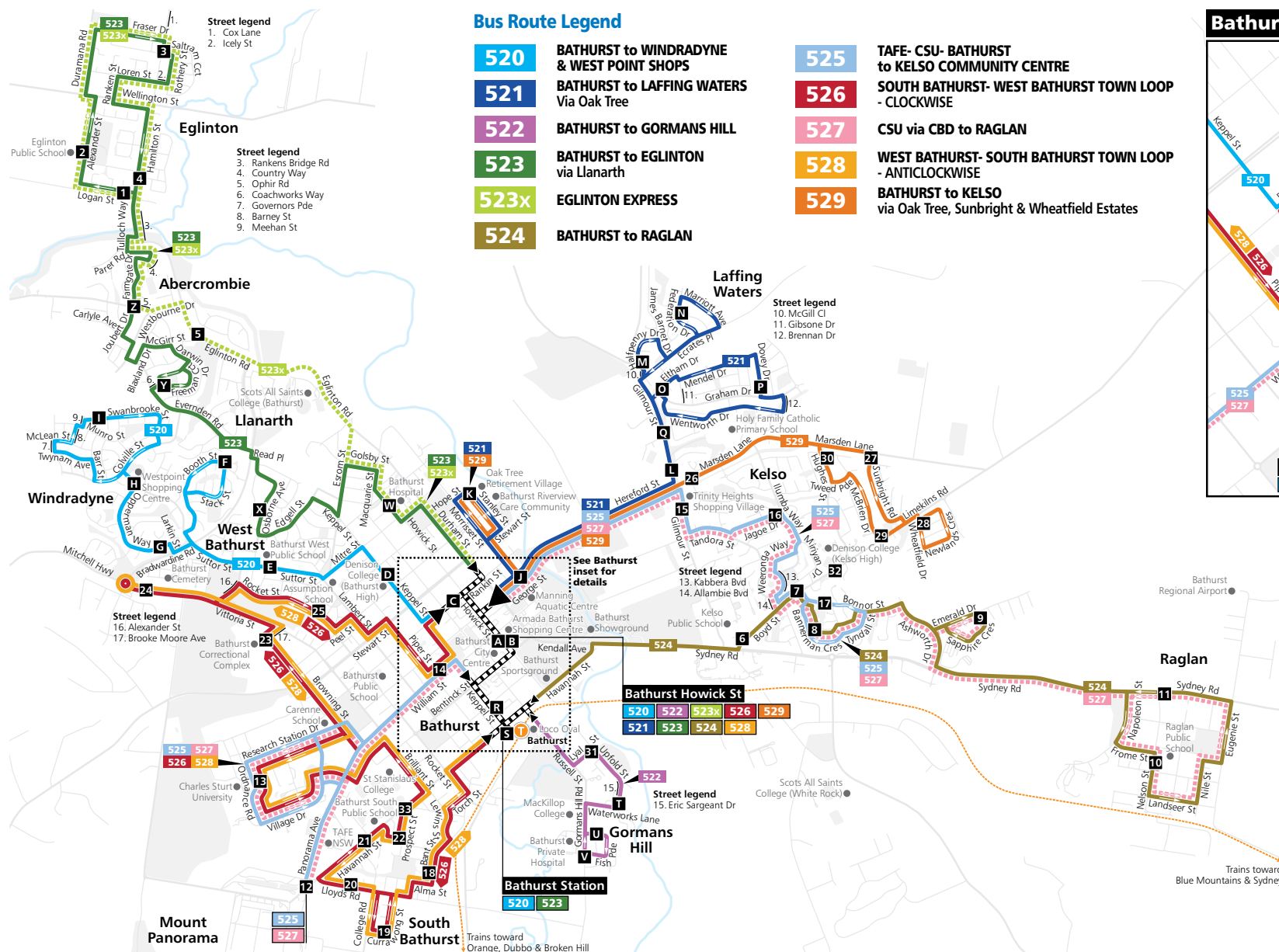
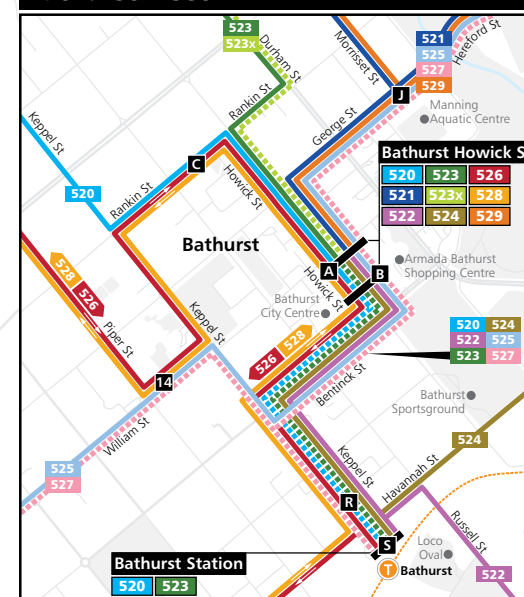
526 & 528 bus timetables and route maps

B Bathurst bus network map

Bus Route Legend

520	BATHURST to WINDRADYNE & WEST POINT SHOPS	525	TAFE- CSU- BATHURST to KELSO COMMUNITY CENTRE
521	BATHURST to LAFFING WATERS Via Oak Tree	526	SOUTH BATHURST- WEST BATHURST TOWN LOOP - CLOCKWISE
522	BATHURST to GORMANS HILL	527	CSU via CBD to RAGLAN
523	BATHURST to EGLINTON via Llanarth	528	WEST BATHURST- SOUTH BATHURST TOWN LOOP - ANTICLOCKWISE
523x	EGLINTON EXPRESS	529	BATHURST to KELSO via Oak Tree, Sunbright & Wheatfield Estates
524	BATHURST to RAGLAN		

Bathurst inset



How to use this timetable

- Go to the route map in this timetable and find the two timing points your bus stop is located between.
- Then find these two timing points on the timetable.
- Your bus is scheduled to arrive between the times shown for these points. Please arrive at your bus stop before your bus is scheduled.

School services

The School Student Transport Scheme (SSTS) is run by Transport for NSW in conjunction with schools and transport companies to enable eligible students to travel to and from school at no cost to the parents or guardians. Eligibility criteria apply.

Your ticketing options

Fares and sections

Bus routes are broken into sections, so you only pay for the distance you travel. Tickets are based on these sections. Adults are welcome to use any school service operating.

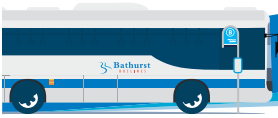
RED (Regional Excursion Daily) tickets

If you hold a Pensioner, Seniors Card or NSW War Widow/er concession card, you can purchase a RED ticket and qualify for:

- All day travel, without needing to pay for another ticket.
- Free transfers between RED ticket bus operators.

Disclaimer: Information in this timetable is based on the latest details at the time of printing, and is subject to change without notice.



Version 2.0, 28 June 2021 TG21359 | Base map © OpenStreetMap contributors



526



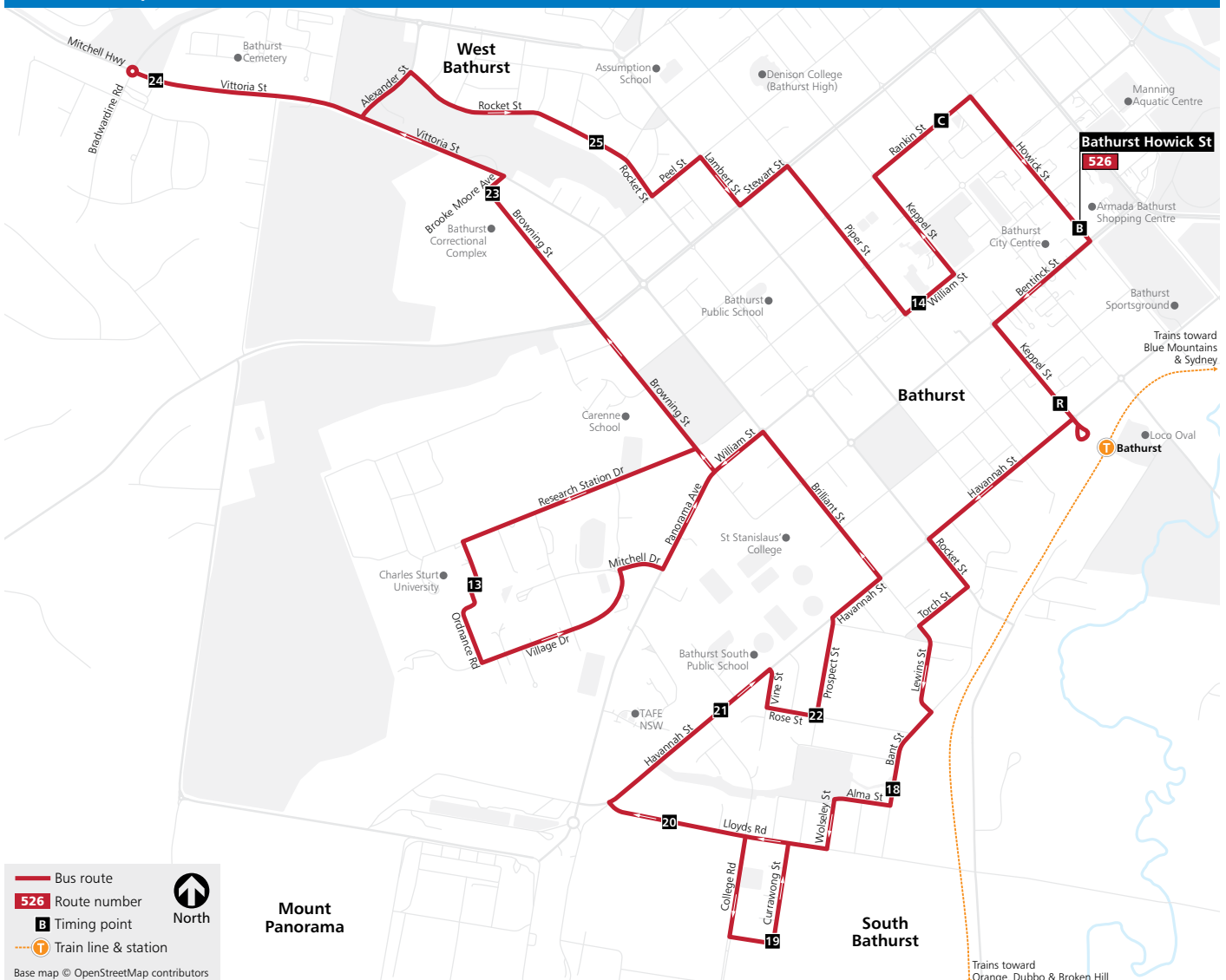
SOUTH BATHURST- WEST BATHURST TOWN LOOP - CLOCKWISE

map ref	Monday to Friday 								Saturday 				
	am	am	am	am	pm	pm	pm	pm	am	am	pm	pm	pm
B Bathurst City- Stocklands- Howick St Stand B	7.30	8.05	9.05	10.05	12.35	2.35	4.35	6.50	8.45	10.45	12.45	2.45	4.45
R Havannah St after Keppel Street- opp Bathurst Railway Station	7.34	8.09	9.09	10.09	12.39	2.39	4.39	6.55	8.49	10.49	12.49	2.49	4.49
18 Bant Street after Rose Street	7.38	8.13	9.13	10.13	12.43	2.43	4.43	6.59	8.53	10.53	12.53	2.53	4.53
19 Currawong Street near College Street	7.42	8.17	9.17	10.17	12.47	2.47	4.47	7.03	8.57	10.57	12.57	2.57	4.57
20 Lloyds Road opposite St Philomenas Catholic School	7.44	8.19	9.19	10.19	12.49	2.49	4.49	7.05	8.59	10.59	12.59	2.59	4.59
21 South Bathurst Public School- Havannah Street	7.46	8.21	9.21	10.21	12.51	2.51	4.51	7.07	9.01	11.01	1.01	3.01	5.01
22 Rose Street before Prospect Street	7.48	8.23	9.23	10.23	12.53	2.53	4.53	7.09	9.03	11.03	1.03	3.03	5.03
13 Charles Sturt University- Ordnance Road	7.54	8.29	9.29	10.29	12.59	2.59	4.59	7.15	...	...	...	...	...
23 Bathurst Correctional Centre- Browning Street Bus Stop	7.59	8.34	9.34	10.34	1.04	3.04	5.04	7.20	9.09	11.09	1.09	3.09	5.09
24 Bathurst Industrial Centre- Mitchell Hwy before Bradwardine Rd	8.02	8.37	9.37	10.37	1.07	3.07	5.07	...	...	...	...	...	...
25 Rocket Street and Henderson Street	8.05	8.40	9.40	10.40	1.10	3.10	5.10	7.23	9.12	11.12	1.12	3.12	5.12
14 Bathurst Panthers Club- outside in William Street	8.09	8.44	9.44	10.44	1.14	3.14	5.14	7.27	9.16	11.16	1.16	3.16	5.16
C Bathurst RSL- Rankin Street	8.12	8.47	9.47	10.47	1.17	3.17	5.17	7.30	9.19	11.19	1.19	3.19	5.19
B Bathurst City- Stocklands- Howick St Stand B	8.16	8.51	9.51	10.51	1.21	3.21	5.21	7.34	9.23	11.23	1.23	3.22	5.22

Explanations

R Enters Railway Station roadway.

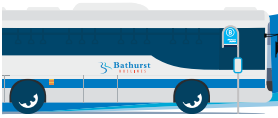
Bus route map



For more information visit
www.bathurstbuslines.com.au
 or call (02) 6331 2744

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 Includes accessible services
 Effective from 28 June 2021
 Version 2.0



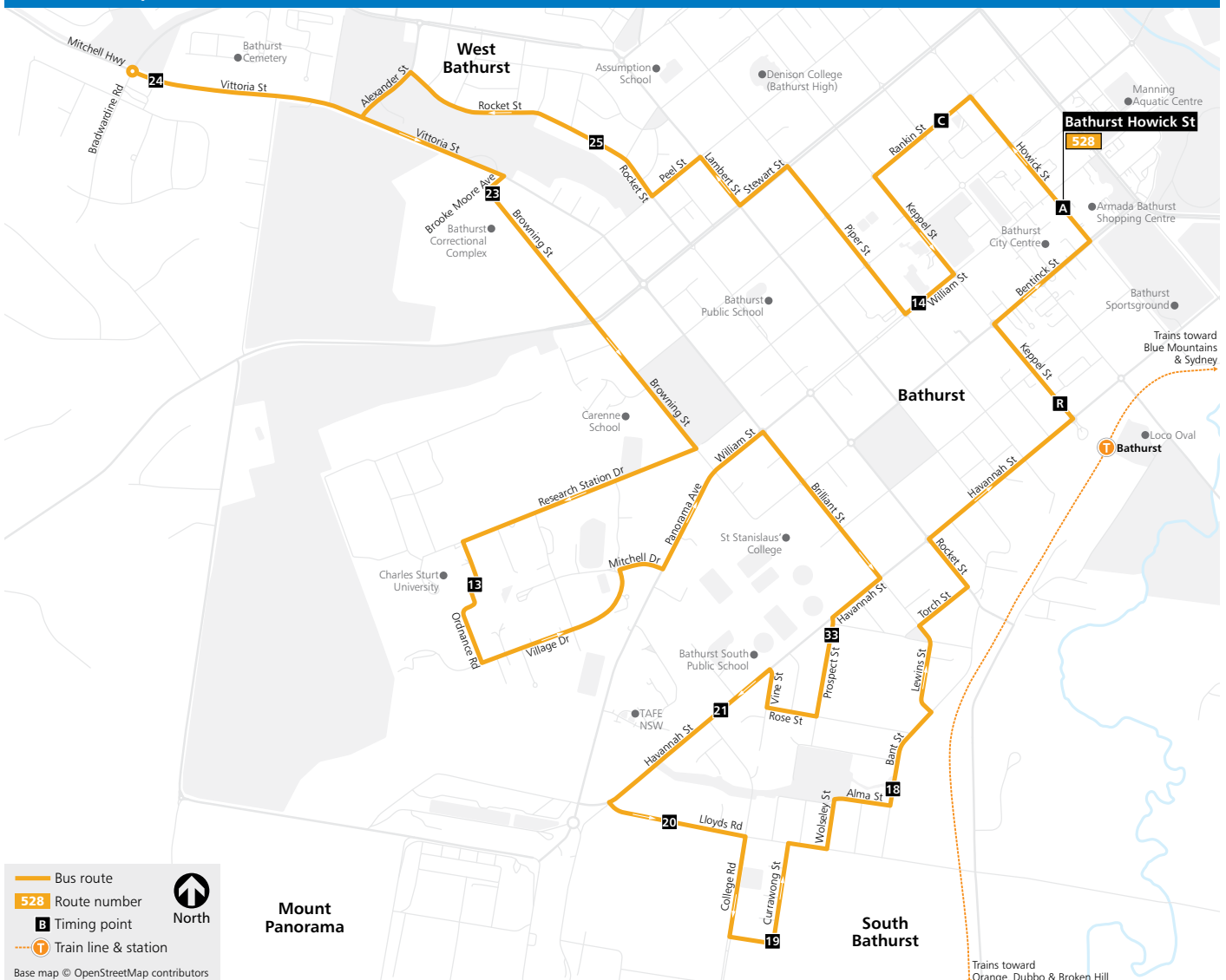
528



WEST BATHURST- SOUTH BATHURST TOWN LOOP - ANTICLOCKWISE

map	Monday to Friday 							Saturday 				
	am	am	am	am	pm	pm	pm	am	am	pm	pm	pm
A Bathurst City- Acropole- Howick St Stand A	8.40	9.35	10.35	11.35	1.35	5.25	6.25	9.45	11.45	1.45	3.45	5.45
C Bathurst RSL- Rankin Street	8.43	9.38	10.38	11.38	1.38	5.28	6.28	9.48	11.48	1.48	3.48	5.48
14 Bathurst Panthers Club- opp in William Street	8.46	9.41	10.41	11.41	1.41	5.31	6.31	9.51	11.51	1.51	3.51	5.51
25 Rocket Street opp Henderson Street	8.50	9.45	10.45	11.45	1.45	5.35	6.35	9.55	11.55	1.55	3.55	5.55
24 Bathurst Industrial Centre- Mitchell Hwy before Bradwardine Rd	8.53	9.48	10.48	11.48	1.48	5.38	...	...	...	...	...	...
23 Opp Bathurst Correctional Centre- Browning Street	8.56	9.51	10.51	11.51	1.51	5.41	6.38	9.58	11.58	1.58	3.58	5.58
13 Charles Sturt University- Ordinance Road Bus Stop	9.01	9.56	10.56	11.56	1.56	5.46	...	...	...	...	...	...
33 Prospect Street after Havannah Street	9.08	10.03	11.03	12.03	2.03	5.53	6.45	10.03	12.03	2.03	4.03	6.03
21 Opposite South Bathurst Public School- Havannah Street	9.10	10.05	11.05	12.05	2.05	5.55	6.47	10.05	12.05	2.05	4.05	6.05
20 Lloyds Road outside St Philomenas Catholic School	9.12	10.08	11.08	12.08	2.08	5.58	6.49	10.07	12.07	2.07	4.07	6.07
19 Currawong Street near College Street	9.13	10.09	11.09	12.09	2.09	5.59	6.50	10.08	12.08	2.08	4.08	6.08
18 Bant Street before Rose Street	9.16	10.12	11.12	12.12	2.12	6.02	6.53	10.11	12.11	2.11	4.11	6.11
R Havannah St at Keppel Street- opp Bathurst Railway Station	9.20	10.16	11.16	12.16	2.16	6.06	6.57	10.15	12.15	2.15	4.15	6.15
A Bathurst City- Acropole- Howick St Stand A	9.24	10.20	11.20	12.20	2.20	6.10	7.01	10.19	12.19	2.19	4.19	6.19

Bus route map



For more information visit
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 or call (02) 6331 2744

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 Includes accessible services
 Effective from 28 June 2021
 Version 2.0

Appendix C

Traffic survey results

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Havannah St and Rocket St, South Bathurst

GPS -31.428938, 149.576685

Date: Thu 15/02/24

Weather: Fine

Suburban: South Bathurst

Customer: CJP

North: Rocket St

East: Havannah St

South: Rocket St

West: Havannah St

Survey Period AM: 7:00 AM-8:00 AM

PM: 4:00 PM-5:00 PM

Traffic Peak AM: 8:00 AM-9:00 AM

PM: 4:15 PM-5:15 PM

Time		North Approach Rocket St				East Approach Havannah St				South Approach Rocket St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	3	13	6	0	5	20	17	0	21	28	6	0	6	13	1	792
7:15	7:30	1	9	21	2	0	9	44	19	0	12	24	7	0	9	24	2	927
7:30	7:45	0	4	19	9	0	6	48	18	0	23	32	8	0	10	22	4	1048
7:45	8:00	0	7	30	5	0	5	84	21	0	27	44	9	1	11	36	7	1230
8:00	8:15	0	12	26	11	1	13	50	20	0	33	46	8	0	7	37	10	1345
8:15	8:30	0	16	32	17	0	11	68	19	0	34	46	8	0	4	43	6	
8:30	8:45	0	16	38	17	1	16	89	30	0	34	62	10	0	5	49	18	
8:45	9:00	0	13	40	15	2	39	41	30	0	40	65	6	3	9	48	31	
9:00	9:15	1	18	36	11	2	6	50	33	0	37	57	17	0	5	53	10	1325
9:15	9:30	1	17	46	14	1	7	56	34	0	38	37	2	1	9	58	11	1327
9:30	9:45	0	12	34	14	0	12	60	32	0	37	39	12	1	4	57	17	1313
9:45	10:00	0	11	29	13	2	16	79	28	0	23	45	4	0	11	56	9	1262
10:00	10:15	1	25	36	10	0	14	65	35	0	35	38	4	0	6	62	7	1209
10:15	10:30	0	12	38	4	1	12	49	44	0	39	33	6	3	13	54	10	
10:30	10:45	0	9	39	7	0	10	49	41	0	24	38	6	1	6	40	10	
10:45	11:00	0	6	36	16	3	11	54	21	0	29	26	7	0	11	45	8	

Peak Time	North Approach Rocket St	East Approach Havannah St	South Approach Rocket St	West Approach Havannah St	Peak total
8:00 - 9:00	0 57 138 60	4 75 248 99	0 141 219 32	3 25 177 65	1345
16:15 - 17:15	2 65 145 51	3 49 260 129	0 133 159 22	2 30 223 44	1327

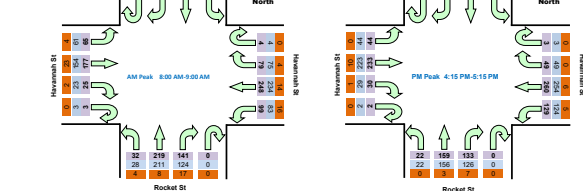
Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total

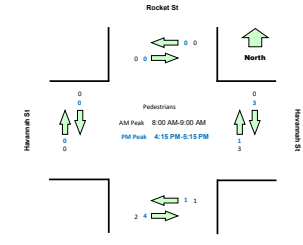
Light

Heavy



Time		North Approach Rocket St				East Approach Havannah St				South Approach Rocket St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	9
7:15	7:30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	8
7:30	7:45	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	8
7:45	8:00	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	8
8:00	8:15	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	6
8:15	8:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
8:30	8:45	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	
8:45	9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:00	9:15	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	11
9:15	9:30	0	0	2	0	0	0	2	0	0	0	2	0	0	0	0	0	9
9:30	9:45	0	0	1	0	0	0	2	0	0	0	2	0	0	0	0	0	9
9:45	10:00	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	9
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
10:15	10:30	0	0	0	0	3	1	2	0	0	3	1	3	0	0	0	0	
10:30	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Peak Time	North Approach Rocket St	East Approach Havannah St	South Approach Rocket St	West Approach Havannah St	Peak total
8:00 - 9:00	0 0 0 0	3 1 2 0	0 0 0 0	0 0 0 0	6
16:15 - 17:15	0 0 0 3	1 1 4 0	0 0 0 0	0 0 0 0	9



Time		North Approach Rocket St				East Approach Havannah St				South Approach Rocket St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	3	13	5	0	5	17	14	0	13	24	6	0	6	12	0	
7:15	7:30	1	9	20	2	0	8	42	14	0	9	23	6	0	7	22	2	
7:30	7:45	0	4	16	8	0	6	39	15	0	21	29	8	0	10	19	4	
7:45	8:00	0	5	27	5	0	5	80	19	0	23	43	9	1	11	34	6	
8:00	8:15	0	11	25	11	1	13	46	16	0	28	43	7	0	5	32	10	
8:15	8:30	0	16	30	15	0	10	64	15	0	28	45	8	0	4	36	5	
8:30	8:45	0	16	35	17	1	15	85	25	0	32	62	9	0	5	44	18	
8:45	9:00	0	13	39	14	2	37	39	27	0	36	61	4	3	9	42	28	
9:00	9:15	1	18	34	11	2	6	49	29	0	34	55	17	0	5	48	10	
9:15	9:30	1	17	43	14	1	7	54	33	0	35	38	2	1	8	54	11	
9:30	9:45	0	12	34	14	0	12	60	30	0	36	38	12	1	4	52	17	
9:45	10:00	0	11	29	11	2	16	76	28	0	21	45	4	0	11	56	9	
10:00	10:15	1	25	36	10	0	14	64	33	0	34	37	4	0	6	61	7	
10:15	10:30	0	12	37	3	1	12	47	43	0	37	33	6	3	13	54	10	
10:30	10:45	0	9	39	7	0	10	47	39	0	23	38	6	1	6	39	10	
10:45	11:00	0	6	34	15	3	11	54	20	0	27	26	7	0	11	45	8	

Peak Time	North Approach Rocket St	East Approach Havannah St	South Approach Rocket St	West Approach Havannah St	Peak total
8:00 - 9:00	0 56 129 57	4 75 234 83	0 124 211 28	3 23 154 61	1242
16:15 - 17:15	2 65 142 49	3 49 254 124	0 126 156 22	2 29 223 44	1290

Light Vehicles

Time		North Approach Rocket St				East Approach Havannah St				South Approach Rocket St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	0	0	1	0	0	3	3	0	8	4	0	0	0	1	1	
7:15	7:30	0	0	1	0	0	1	2	5	0	3	1	1	0	2	2	0	
7:30	7:45	0	0	3	1	0	0	9	2	0	2	3	0	0	0	3	0	
7:45	8:00	0	2	3	0	0	0	4	2	0	4	1	0	0	0	2	1	
8:00	8:15	0	1	1	0	0	0	4	4	0	5	3	1	0	2	5	0	
8:15	8:30	0	0	2	2	0	1	4	4	0	6	1	0	0	0	7	1	
8:30	8:45	0	0	3	0	0	1	4	5	0	2	0	1	0	0	5	0	
8:45	9:00	0	0	1	1	0	2	2	3	0	4	4	2	0	0	6	3	
9:00	9:15	0	0	2	0	0	0	1	4	0	3	2	0	0	0	5	0	
9:15	9:30	0	0	3	0	0	0	2	1	0	3	1	0	0	0	1	4	
9:30	9:45	0	0	0	0	0	0	0	2	0	1	1	0	0	0	0	5	
9:45	10:00	0	0	0	2	0	0	3	0	0	2	0	0	0	0	0	0	
10:00	10:15	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	
10:15	10:30	0	0	1	1	0	0	2	1	0	2	0	0	0	0	0	0	
10:30	10:45	0	0	0	0	0	0	2	2	0	1	0	0	0	0	0	1	
10:45	11:00	0	0	2	1	0	0	0	1	0	2	0	0	0	0	0	0	

Peak Time	North Approach Rocket St	East Approach Havannah St	South Approach Rocket St	West Approach Havannah St	Peak total
8:00 - 9:00	0 1 7 3	0 4 14 16	0 17 8 4	0 2 23 4	103
16:15 - 17:15	0 0 3 2	0 0 6 5	0 7 3 0	0 0 1 0	37

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Busby St and Bant St, South Bathurst

GPS -33.432597, 149.578417

Date: Thu 15/02/24
 Weather: Fine
 Suburban: South Bathurst
 Customer: CJP

North: Bant St
 East: N/A
 South: Bant St
 West: Busby St

Survey AM: 7:00 AM-9:00 AM
 Period PM: 4:30 PM-5:30 PM
 Traffic AM: 8:00 AM-9:00 AM
 Peak PM: 4:30 PM-5:30 PM

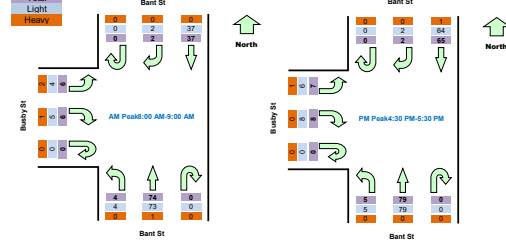
All Vehicles

Time		North Approach Bant St			South Approach Bant St			West Approach Busby St			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	0	0	4	0	7	0	0	0	0	72	
7:15	7:30	0	2	6	0	14	0	0	0	0	92	
7:30	7:45	0	0	5	0	9	1	0	1	0	100	
7:45	8:00	0	1	10	0	9	0	0	1	2	118	
8:00	8:15	0	0	6	0	21	1	0	1	2	129	Peak
8:15	8:30	0	0	6	0	21	0	0	1	2		
8:30	8:45	0	0	13	0	16	2	0	3	0		
8:45	9:00	0	2	12	0	16	1	0	1	2		
16:00	16:15	1	1	15	0	23	0	0	6	1	152	
16:15	16:30	1	0	14	0	16	1	0	1	3	146	
16:30	16:45	0	1	17	0	19	0	0	0	3	166	Peak
16:45	17:00	0	0	9	0	16	0	0	3	1	158	
17:00	17:15	0	1	17	0	21	1	0	1	0	161	
17:15	17:30	0	0	22	0	23	4	0	4	3		
17:30	17:45	0	1	18	0	11	1	0	1	0		
17:45	18:00	0	2	12	0	12	2	0	2	2		

Peak Time		North Approach Bant St			South Approach Bant St			West Approach Busby St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	2	37	0	74	4	0	6	6	129
16:30	17:30	0	2	65	0	79	5	0	8	7	166

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic



Light Vehicles

Time		North Approach Bant St			South Approach Bant St			West Approach Busby St		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	0	4	0	6	0	0	0	0
7:15	7:30	0	1	6	0	13	0	0	0	0
7:30	7:45	0	0	5	0	9	1	0	1	0
7:45	8:00	0	1	9	0	9	0	0	1	0
8:00	8:15	0	0	6	0	21	1	0	1	2
8:15	8:30	0	0	6	0	20	0	0	1	1
8:30	8:45	0	0	13	0	16	2	0	2	0
8:45	9:00	0	2	12	0	16	1	0	1	1
16:00	16:15	1	1	15	0	23	0	0	6	1
16:15	16:30	1	0	14	0	16	1	0	1	3
16:30	16:45	0	1	17	0	19	0	0	0	2
16:45	17:00	0	0	9	0	16	0	0	3	1
17:00	17:15	0	1	16	0	21	1	0	1	0
17:15	17:30	0	0	22	0	23	4	0	4	3
17:30	17:45	0	1	18	0	11	1	0	1	0
17:45	18:00	0	2	12	0	12	2	0	2	2

Peak Time		North Approach Bant St			South Approach Bant St			West Approach Busby St			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:00	9:00	0	2	37	0	73	4	0	5	4	125
16:30	17:30	0	2	64	0	79	5	0	8	6	164

Heavy Vehicles

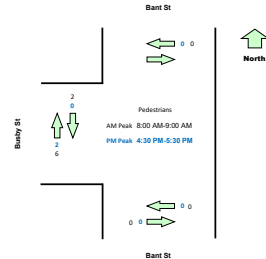
Heavy Vehicle		North Approach Bant St			South Approach Bant St			West Approach Busby St		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	0	0	0	1	0	0	0	0
7:15	7:30	0	1	0	0	1	0	0	0	0
7:30	7:45	0	0	0	0	0	0	0	0	0
7:45	8:00	0	0	1	0	0	0	0	0	2
8:00	8:15	0	0	0	0	0	0	0	0	0
8:15	8:30	0	0	0	0	1	0	0	0	1
8:30	8:45	0	0	0	0	0	0	0	1	0
8:45	9:00	0	0	0	0	0	0	0	0	1
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	1
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	1	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach Bant St			South Approach Bant St			West Approach Busby St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	0	0	0	1	0	0	1	2	4
16:30	17:30	0	0	1	0	0	0	0	0	1	2

Pedestrians Crossing

Time		North Approach Bant St		South Approach Bant St		West Approach Busby St		Hourly Total
Period Start	Period End	Westbound	Eastbound	Westbound	Eastbound	Southbound	Northbound	
7:00	7:15	0	0	0	0	0	0	5
7:15	7:30	0	0	0	0	1	0	6
7:30	7:45	0	0	0	0	0	2	6
7:45	8:00	0	0	0	0	1	1	9
8:00	8:15	0	0	0	0	0	1	8
8:15	8:30	0	0	0	0	0	1	
8:30	8:45	0	0	0	0	2	3	
8:45	9:00	0	0	0	0	0	1	
16:00	16:15	0	0	0	0	1	0	8
16:15	16:30	0	0	0	0	3	2	7
16:30	16:45	0	0	0	0	0	0	2
16:45	17:00	0	0	0	0	0	2	2
17:00	17:15	0	0	0	0	0	0	2
17:15	17:30	0	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	2	

Peak Time		North Approach Bant St		South Approach Bant St		West Approach Busby St		Peak total
Period Start	Period End	Westbound	Eastbound	Westbound	Eastbound	Southbound	Northbound	
8:00	9:00	0	0	0	0	2	6	
16:30	17:30	0	0	0	0	0	2	2



TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Bant St and Rocket St, South Bathurst

GPS

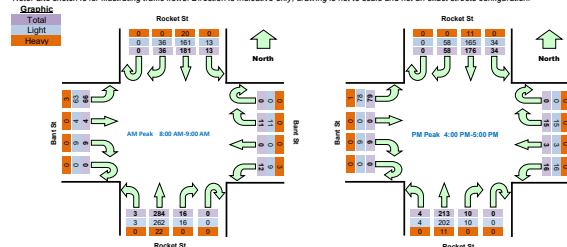
-33.431019, 149.578655

Date:	Thu 15/02/24	North:	Rocket St	Survey	AM: 7:00 AM-9:00 AM
Weather:	Fine	East:	Bant St	Period:	PM: 4:00 PM-6:00 PM
Suburban:	South Bathurst	South:	Rocket St	Traffic	AM: 8:00 AM-9:00 AM
Customer:	CJP	West:	Bant St	Peak:	PM: 4:00 PM-5:00 PM

Time		North Approach Rocket St				East Approach Bant St				South Approach Rocket St				West Approach Bant St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	1	30	4	0	1	0	2	0	2	42	0	0	0	0	6	405	
7:15	7:30	0	6	25	6	0	0	1	1	0	0	29	1	0	6	0	12	449	
7:30	7:45	0	6	30	5	0	4	0	0	0	0	46	0	0	0	0	10	506	
7:45	8:00	0	11	43	5	0	0	0	1	0	2	54	1	0	0	1	11	571	
8:00	8:15	0	7	41	2	0	1	0	3	0	2	56	0	0	2	1	17	635	Peak
8:15	8:30	0	6	44	4	0	4	0	4	0	3	57	0	0	1	0	21		
8:30	8:45	0	10	50	1	0	1	0	2	0	1	79	3	0	5	0	14		
8:45	9:00	0	13	46	6	0	5	0	3	0	10	92	0	0	1	3	14		
9:00	9:15	0	15	42	8	0	5	3	2	0	1	73	1	0	1	0	21	617	Peak
9:15	9:30	0	16	45	9	0	6	0	5	0	3	43	1	0	4	0	17	587	
9:30	9:45	0	16	46	9	0	3	0	4	0	4	60	2	0	1	0	23	594	
9:45	10:00	0	11	43	8	0	1	0	5	0	2	37	0	0	3	0	18	562	
10:00	10:15	0	18	43	2	0	5	1	5	0	1	43	1	0	2	1	20	544	
10:15	10:30	0	20	59	6	0	4	0	3	0	0	40	0	0	3	0	21		
10:30	10:45	0	19	46	8	0	5	1	0	0	0	42	1	0	3	0	11		
10:45	11:00	0	10	37	3	0	1	2	1	0	1	36	2	0	3	0	14		

Peak Time		North Approach Rocket St				East Approach Bant St				South Approach Rocket St				West Approach Bant St				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	36	181	13	0	11	0	12	0	16	284	3	0	9	4	66	635
16:00	17:00	0	58	176	34	0	15	3	16	0	10	213	4	0	5	0	79	617

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Time		North Approach Rocket St				East Approach Bant St				South Approach Rocket St				West Approach Bant St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	1	27	4	0	0	0	2	0	2	32	0	0	0	0	5		
7:15	7:30	0	5	20	6	0	0	1	0	0	0	26	1	0	6	0	11		
7:30	7:45	0	6	26	5	0	4	0	0	0	0	41	0	0	0	0	10		
7:45	8:00	0	9	40	5	0	0	0	1	0	2	50	1	0	0	1	9		
8:00	8:15	0	7	36	2	0	1	0	2	0	2	50	0	0	2	1	17		
8:15	8:30	0	6	39	4	0	4	0	4	0	3	53	0	0	1	0	19		
8:30	8:45	0	10	44	1	0	1	0	1	0	1	77	3	0	5	0	14		
8:45	9:00	0	13	42	6	0	5	0	2	0	10	82	0	0	1	3	13		
9:00	9:15	0	15	37	8	0	5	3	2	0	1	69	1	0	1	0	21		
9:15	9:30	0	16	40	9	0	6	0	5	0	3	39	1	0	4	0	17		
9:30	9:45	0	16	45	9	0	3	0	4	0	4	59	2	0	1	0	22		
9:45	10:00	0	11	43	8	0	1	0	5	0	2	35	0	0	3	0	18		
10:00	10:15	0	17	42	2	0	5	1	5	0	1	41	1	0	2	1	20		
10:15	10:30	0	20	57	6	0	4	0	3	0	0	38	0	0	3	0	21		
10:30	10:45	0	19	44	8	0	5	1	0	0	0	41	1	0	3	0	11		
10:45	11:00	0	10	34	3	0	1	2	1	0	1	34	2	0	3	0	14		

Peak Time		North Approach Rocket St				East Approach Bant St				South Approach Rocket St				West Approach Bant St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Total
8:00	9:00	0	36	161	13	0	11	0	9	0	16	262	3	0	9	4	63	587
16:00	17:00	58	176	165	34	0	15	3	16	0	10	202	4	0	5	0	78	635

Time		North Approach Rocket St				East Approach Bant St				South Approach Rocket St				West Approach Bant St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	0	3	0	0	1	0	0	0	0	10	0	0	0	0	1		
7:15	7:30	0	1	5	0	0	0	0	1	0	0	3	0	0	0	0	1		
7:30	7:45	0	0	4	0	0	0	0	0	0	0	5	0	0	0	0	0		
7:45	8:00	0	2	3	0	0	0	0	0	0	0	4	0	0	0	0	2		
8:00	8:15	0	0	5	0	0	0	0	1	0	0	6	0	0	0	0	0		
8:15	8:30	0	0	5	0	0	0	0	0	0	0	4	0	0	0	0	2		
8:30	8:45	0	0	6	0	0	0	0	1	0	0	2	0	0	0	0	0		
8:45	9:00	0	0	4	0	0	0	0	1	0	0	10	0	0	0	0	1		
9:00	9:15	0	0	5	0	0	0	0	0	0	0	4	0	0	0	0	0		
9:15	9:30	0	0	5	0	0	0	0	0	0	0	4	0	0	0	0	0		
9:30	9:45	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1		
9:45	10:00	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0		
10:00	10:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0		
10:15	10:30	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0		
10:30	10:45	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0		
10:45	11:00	0	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0		

Peak Time		North Approach Rocket St				East Approach Bant St				South Approach Rocket St				West Approach Bant St				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	0	20	0	0	0	0	3	0	0	22	0	0	0	0	3	48
16:00	17:00	0	0	11	0	0	0	0	0	0	0	11	0	0	0	0	1	23

Pedestrians Crossing		North Approach Rocket St				East Approach Bant St				South Approach Rocket St				West Approach Bant St				Hourly Total
Time	Period	Eastbound	Southbound	Westbound	Northbound	Eastbound	Southbound	Westbound	Northbound	Eastbound	Southbound	Westbound	Northbound	Eastbound	Southbound	Westbound	Northbound	
7:00	7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
7:15	7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
7:30	7:45	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	12	
7:45	8:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
8:00	8:15	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10	
8:15	8:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0		
8:30	8:45	1	1	0	3	0	0	0	0	1	0	0	0	0	0	0		
8:45	9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:00	9:15	1	0	1	0	0	0	0	0	0	0	0	0	0	1	5		
9:15	9:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:45	10:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:30	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:45	11:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
11:00	11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
11:15	11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
11:30	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11:45	18:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Peak Time		North Approach Rocket St		East Approach Bant St		South Approach Rocket St		West Approach Bant St		Peak hour
Period Start	Period End	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	
8:00	9:00	3	2	0	4	0	0	1	0	10
16:00	17:00	2	1	1	0	0	0	0	1	5

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Torch St and Rocket St, South Bathurst

GPS -33.430576, 149.578269

Date: Thu 15/02/24
 Weather: Fine
 Suburban: South Bathurst
 Customer: CJP

North: Rocket St
 East: N/A
 South: Rocket St
 West: Torch St

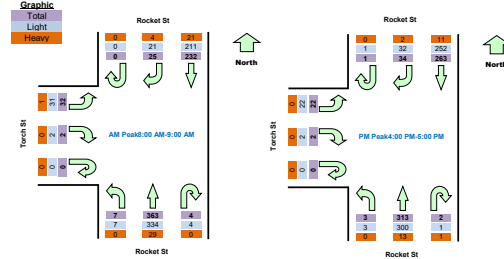
Survey AM: 7:00 AM-9:00 AM
 Period PM: 4:00 PM-5:00 PM
 Traffic AM: 8:00 AM-9:00 AM
 Peak PM: 4:00 PM-5:00 PM

All Vehicles

Time		North Approach Rocket St			South Approach Rocket St			West Approach Torch St			Hourly Total	Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	
7:00	7:15	0	2	37	0	51	0	0	0	3	432	Peak
7:15	7:30	0	5	40	2	38	1	0	0	6	481	
7:30	7:45	0	2	42	0	60	0	0	0	4	538	
7:45	8:00	0	3	58	0	70	0	0	4	4	606	
8:00	8:15	0	2	49	2	80	1	0	0	8	665	
8:15	8:30	0	5	54	0	82	1	0	1	6		
8:30	8:45	0	7	64	0	94	0	0	0	11		
8:45	9:00	0	11	65	2	107	5	0	1	7		
16:00	16:15	0	5	67	0	102	0	0	1	7	640	Peak
16:15	16:30	0	9	71	2	68	1	0	0	8	608	
16:30	16:45	1	10	65	0	86	1	0	1	2	623	
16:45	17:00	0	10	60	0	57	1	0	0	5	610	
17:00	17:15	0	7	64	1	70	1	0	0	7	597	
17:15	17:30	0	14	83	0	68	0	0	1	8		
17:30	17:45	0	12	70	1	60	0	0	3	7		
17:45	18:00	0	9	50	1	55	0	0	1	4		

Peak Time		North Approach Rocket St			South Approach Rocket St			West Approach Torch St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	25	232	4	363	7	0	2	32	665
16:00	17:00	1	34	263	2	313	3	0	2	22	640

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles

Time		North Approach Rocket St			South Approach Rocket St			West Approach Torch St		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	2	34	0	39	0	0	0	3
7:15	7:30	0	4	33	2	34	1	0	0	5
7:30	7:45	0	1	38	0	55	0	0	0	4
7:45	8:00	0	3	53	0	65	0	0	4	4
8:00	8:15	0	1	43	2	71	1	0	0	7
8:15	8:30	0	4	49	0	76	1	0	1	6
8:30	8:45	0	5	58	0	91	0	0	0	11
8:45	9:00	0	11	61	2	96	5	0	1	7
16:00	16:15	0	4	62	0	97	0	0	1	7
16:15	16:30	0	9	66	1	64	1	0	0	8
16:30	16:45	1	9	64	0	84	1	0	1	2
16:45	17:00	0	10	60	0	55	1	0	0	5
17:00	17:15	0	7	62	1	68	1	0	0	7
17:15	17:30	0	14	81	0	66	0	0	1	8
17:30	17:45	0	12	68	1	59	0	0	3	7
17:45	18:00	0	9	47	1	53	0	0	1	4

Peak Time		North Approach Rocket St			South Approach Rocket St			West Approach Torch St			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:00	9:00	0	21	211	4	334	7	0	2	31	610
16:00	17:00	1	32	252	1	300	3	0	2	22	613

Heavy Vehicles

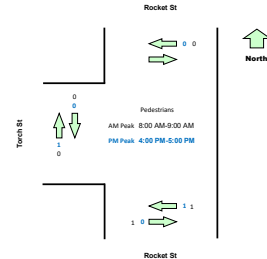
Heavy Vehicles		North Approach Rocket St			South Approach Rocket St			West Approach Torch St		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	0	3	0	12	0	0	0	0
7:15	7:30	0	1	7	0	4	0	0	0	1
7:30	7:45	0	1	4	0	5	0	0	0	0
7:45	8:00	0	0	5	0	5	0	0	0	0
8:00	8:15	0	1	6	0	9	0	0	0	1
8:15	8:30	0	1	5	0	6	0	0	0	0
8:30	8:45	0	2	6	0	3	0	0	0	0
8:45	9:00	0	0	4	0	11	0	0	0	0
16:00	16:15	0	1	5	0	5	0	0	0	0
16:15	16:30	0	0	5	1	4	0	0	0	0
16:30	16:45	0	1	1	0	2	0	0	0	0
16:45	17:00	0	0	0	0	2	0	0	0	0
17:00	17:15	0	0	2	0	2	0	0	0	0
17:15	17:30	0	0	2	0	2	0	0	0	0
17:30	17:45	0	0	2	0	1	0	0	0	0
17:45	18:00	0	0	3	0	2	0	0	0	0

Peak Time		North Approach Rocket St			South Approach Rocket St			West Approach Torch St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	4	21	0	29	0	0	0	1	55
16:00	17:00	0	2	11	1	13	0	0	0	0	27

Pedestrians Crossing

Time		North Approach Rocket		South Approach Rocket		West Approach Torch St		Hourly Total
Period Start	Period End	Westbound	Eastbound	Westbound	Eastbound	Southbound	Northbound	
7:00	7:15	0	0	0	0	0	0	5
7:15	7:30	0	0	0	0	1	0	7
7:30	7:45	0	0	1	2	1	0	6
7:45	8:00	0	0	0	0	0	0	3
8:00	8:15	0	0	1	1	0	0	3
8:15	8:30	0	0	0	0	0	0	0
8:30	8:45	0	1	0	0	0	0	0
8:45	9:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	2
16:15	16:30	0	0	1	0	0	1	2
16:30	16:45	0	0	0	0	0	0	1
16:45	17:00	0	0	0	0	0	0	2
17:00	17:15	0	0	0	0	0	0	5
17:15	17:30	0	0	0	0	0	1	0
17:30	17:45	0	1	0	0	0	0	0
17:45	18:00	0	0	2	1	0	0	0

Peak Time		North Approach Rocket St		South Approach Rocket St		West Approach Torch St		Peak total
Period Start	Period End	Westbound	Eastbound	Westbound	Eastbound	Southbound	Northbound	
8:00	9:00	0	1	1	1	0	0	3
16:00	17:00	0	0	1	0	0	1	2



TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Havannah St and Prospect St, South Bat

GPS -33.431594, 149.572837

Date: Thu 15/02/24
 Weather: Fine
 Suburban: South Bahurst
 Customer: CJP

North: N/A
 East: Havannah St
 South: Prospect St
 West: Havannah St

Survey AM: 7:00 AM-9:00 AM
 PM: 4:00 PM-5:15 PM
 Traffic AM: 8:00 AM-9:00 AM
 Peak PM: 4:15 PM-5:15 PM

All Vehicles

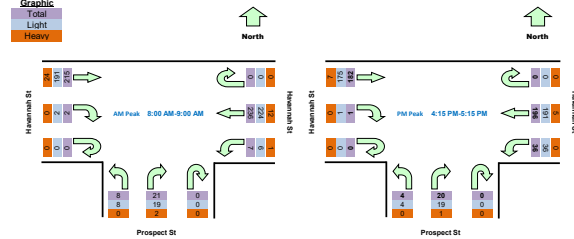
Time		East Approach Havannah St			South Approach Prospect St			West Approach Havannah St			Hourly Total	Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	Hour	Peak
7:00	7:15	0	10	2	0	4	0	0	0	8	216	
7:15	7:30	0	30	3	0	6	0	0	0	16	267	
7:30	7:45	0	33	1	0	0	3	0	0	16	319	
7:45	8:00	0	42	6	0	4	0	0	1	31	409	
8:00	8:15	0	39	3	0	8	1	0	0	24	489	Peak
8:15	8:30	0	63	3	0	5	1	0	0	35		
8:30	8:45	0	74	1	0	5	2	0	1	60		
8:45	9:00	0	60	0	0	3	4	0	1	96		
16:00	16:15	0	51	6	0	3	0	0	0	36	417	
16:15	16:30	0	43	10	0	5	1	0	0	45	439	Peak
16:30	16:45	0	52	7	0	4	1	0	0	47	427	
16:45	17:00	0	45	9	0	9	1	0	0	42	404	
17:00	17:15	0	56	10	0	2	1	0	1	48	375	
17:15	17:30	0	39	6	0	3	1	0	0	43		
17:30	17:45	0	39	7	0	4	0	0	0	38		
17:45	18:00	0	30	8	0	5	0	0	1	33		

Peak Time		East Approach Havannah S			South Approach Prospect S			West Approach Havannah S			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:00	9:00	0	236	7	0	21	8	0	2	215	489
16:15	17:15	0	196	36	0	20	4	0	1	182	439

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

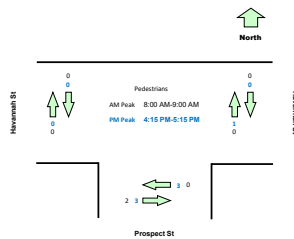
Total
 Light
 Heavy



Pedestrians Crossing

Time		1st Approach Havannah		2nd Approach Prospect		3rd Approach Havannah		Hourly Total
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	
7:00	7:15	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	1
7:30	7:45	0	0	0	0	0	0	1
7:45	8:00	0	0	0	0	0	0	2
8:00	8:15	0	0	0	1	0	0	2
8:15	8:30	0	0	0	0	0	0	0
8:30	8:45	0	0	0	1	0	0	0
8:45	9:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	1
16:15	16:30	0	1	0	0	0	0	7
16:30	16:45	0	0	0	0	0	0	6
16:45	17:00	0	0	0	0	0	0	6
17:00	17:15	0	0	3	3	0	0	6
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0

Peak Time		East Approach Havannah		West Approach Prospect		West Approach Havannah		Peak total
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	
8:00	9:00	0	0	0	2	0	0	2
16:15	17:15	0	1	3	3	0	0	7



Light Vehicles

Time		East Approach Havannah			South Approach Prospect St			West Approach Havannah		
Period Start	Period End	U	WB	L	U	R	L	U	R	EB
7:00	7:15	0	10	2	0	4	0	0	0	8
7:15	7:30	0	29	3	0	6	0	0	0	14
7:30	7:45	0	25	1	0	0	3	0	0	14
7:45	8:00	0	38	5	0	3	0	0	1	26
8:00	8:15	0	35	3	0	7	1	0	0	21
8:15	8:30	0	60	2	0	4	1	0	0	30
8:30	8:45	0	73	1	0	5	2	0	1	56
8:45	9:00	0	56	0	0	3	4	0	1	84
16:00	16:15	0	50	6	0	3	0	0	0	34
16:15	16:30	0	42	10	0	5	1	0	0	43
16:30	16:45	0	51	7	0	4	1	0	0	44
16:45	17:00	0	43	9	0	8	1	0	0	42
17:00	17:15	0	55	10	0	2	1	0	1	46
17:15	17:30	0	39	6	0	3	1	0	0	43
17:30	17:45	0	38	7	0	4	0	0	0	37
17:45	18:00	0	30	7	0	5	0	0	1	33

Peak Time		East Approach Havannah St			South Approach Prospect St			West Approach Havannah St			Peak total
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	
8:00	9:00	0	224	6	0	19	8	0	2	191	450
16:15	17:15	0	191	36	0	19	4	0	1	175	426

Heavy Vehicles

Time		East Approach Havannah St				South Approach Prospect St				West Approach Havannah St			
Period Start	Period End	U	WB	L	U	R	L	U	R	U	R	EB	
7:00	7:15	0	0	0	0	0	0	0	0	0	0	0	
7:15	7:30	0	1	0	0	0	0	0	0	0	0	0	
7:30	7:45	0	8	0	0	0	0	0	0	0	0	2	
7:45	8:00	0	4	1	0	1	0	0	0	0	0	5	
8:00	8:15	0	4	0	0	1	0	0	0	0	0	3	
8:15	8:30	0	3	1	0	1	0	0	0	0	0	5	
8:30	8:45	0	1	0	0	0	0	0	0	0	0	4	
8:45	9:00	0	4	0	0	0	0	0	0	0	0	12	
16:00	16:15	0	1	0	0	0	0	0	0	0	0	2	
16:15	16:30	0	1	0	0	0	0	0	0	0	0	2	
16:30	16:45	0	1	0	0	0	0	0	0	0	0	3	
16:45	17:00	0	2	0	0	1	0	0	0	0	0	0	
17:00	17:15	0	1	0	0	0	0	0	0	0	0	2	
17:15	17:30	0	0	0	0	0	0	0	0	0	0	0	
17:30	17:45	0	1	0	0	0	0	0	0	0	0	1	
17:45	18:00	0	0	1	0	0	0	0	0	0	0	0	

Peak Time		East Approach Havannah St			South Approach Prospect St			West Approach Havannah St			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:00	9:00	0	12	1	0	2	0	0	0	24	39
16:15	17:15	0	5	0	0	1	0	0	0	7	13

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Prospect St and Busby St, South Bathurst

GPS -33.431782, 149.572867

Date: Thu 15/02/24
Weather: Fine
Suburban: South Bathurst
Customer: CJP

North: Prospect St
East: Busby St
South: Prospect St
West: N/A

Survey AM: 7:00 AM-9:00 AM
Period PM: 4:00 PM-5:00 PM
Traffic AM: 7:45 AM-8:45 AM
Peak PM: 4:15 PM-5:15 PM

All Vehicles

Time		North Approach Prospect St			East Approach Busby St			South Approach Prospect St			Hourly Total	Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	2	0	0	1	1	0	0	3	33	
7:15	7:30	0	3	0	0	0	0	0	0	6	40	
7:30	7:45	0	1	0	0	0	1	0	0	3	40	
7:45	8:00	0	5	2	0	0	0	0	1	4	44	Peak
8:00	8:15	0	3	0	0	0	0	0	2	9	40	
8:15	8:30	0	2	1	0	1	0	0	0	5		
8:30	8:45	0	1	1	0	2	0	0	0	5		
8:45	9:00	0	1	0	0	3	0	0	0	4		
16:00	16:15	0	5	1	0	0	1	0	0	3	59	
16:15	16:30	0	9	1	0	1	0	0	0	5	63	Peak
16:30	16:45	0	6	1	0	1	0	0	0	4	57	
16:45	17:00	0	8	1	0	1	2	0	0	9	57	
17:00	17:15	0	11	0	0	1	0	0	0	2	50	
17:15	17:30	0	6	0	0	1	0	0	0	3		
17:30	17:45	0	7	0	0	0	1	0	0	4		
17:45	18:00	0	9	0	0	0	0	0	0	5		

Peak Time		North Approach Prospect St			East Approach Busby St			South Approach Prospect St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:45	8:45	0	11	4	0	3	0	0	3	23	44
16:15	17:15	0	34	3	0	4	2	0	0	20	63

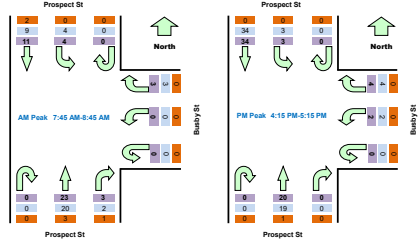
Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total

Light

Heavy

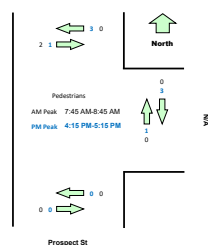


Pedestrians Crossing

Time		North Approach Prospect		East Approach Busby		South Approach Prospect		Hourly Total
Period Start	Period End	Westbound	Eastbound	Northbound	Southbound	Westbound	Eastbound	
7:00	7:15	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	1
7:30	7:45	0	0	0	0	0	0	1
7:45	8:00	0	0	0	0	0	0	2
8:00	8:15	0	1	0	0	0	0	2
8:15	8:30	0	0	0	0	0	0	0
8:30	8:45	0	1	0	0	0	0	0
8:45	9:00	0	0	0	0	0	0	0
16:00	16:15	0	0	1	0	0	0	1
16:15	16:30	0	0	0	0	0	0	8
16:30	16:45	0	0	0	0	0	0	8
16:45	17:00	0	0	0	0	0	0	9
17:00	17:15	3	1	3	1	0	0	9
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	1	0	0	0
17:45	18:00	0	0	0	0	0	0	0

Peak Time		North Approach Prospect		East Approach Busby St		South Approach Prospect		Peak total
Period Start	Period End	Westbound	Eastbound	Northbound	Southbound	Westbound	Eastbound	
7:45	8:45	0	2	0	0	0	0	
16:15	17:15	3	1	3	1	0	0	8

Prospect St



Light Vehicles

Time		North Approach Prospect St			East Approach Busby St			South Approach Prospect St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	2	0	0	1	1	0	0	3
7:15	7:30	0	3	0	0	0	0	0	0	6
7:30	7:45	0	1	0	0	0	0	1	0	3
7:45	8:00	0	4	2	0	0	0	0	1	3
8:00	8:15	0	3	0	0	0	0	0	1	8
8:15	8:30	0	1	1	0	1	0	0	0	4
8:30	8:45	0	1	1	0	2	0	0	0	5
8:45	9:00	0	1	0	0	3	0	0	0	4
16:00	16:15	0	5	1	0	0	0	0	0	3
16:15	16:30	0	9	1	0	1	0	0	0	5
16:30	16:45	0	6	1	0	1	0	0	0	4
16:45	17:00	0	8	1	0	1	2	0	0	8
17:00	17:15	0	11	0	0	1	0	0	0	2
17:15	17:30	0	6	0	0	1	0	0	0	3
17:30	17:45	0	7	0	0	0	1	0	0	4
17:45	18:00	0	8	0	0	0	0	0	0	5

Peak Time		North Approach Prospect St			East Approach Busby St			South Approach Prospect St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:45	8:45	0	9	4	0	3	0	0	2	20	38
16:15	17:15	0	34	3	0	4	2	0	0	19	62

Heavy Vehicles

Time		North Approach Prospect St			East Approach Busby St			South Approach Prospect St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	0	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0	0	0
7:30	7:45	0	0	0	0	0	0	0	0	0
7:45	8:00	0	1	0	0	0	0	0	0	1
8:00	8:15	0	0	0	0	0	0	0	1	1
8:15	8:30	0	1	0	0	0	0	0	0	1
8:30	8:45	0	0	0	0	0	0	0	0	0
8:45	9:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	1	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	1
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	1	0	0	0	0	0	0	0

Peak Time		North Approach Prospect St			East Approach Busby St			South Approach Prospect St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
7:45	8:45	0	2	0	0	0	0	0	1	3	6
16:15	17:15	0	0	0	0	0	0	0	0	1	1

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Havannah St and Spencer St, South Bath

GPS -33.430916, 149.573800

Date: Thu 15/02/24
 Weather: Fine
 Suburban: South Bathurst
 Customer: CJP

North: N/A
 East: Havannah St
 South: Spencer St
 West: Havannah St

Survey AM: 7:00 AM-9:00 AM
 PM: 4:00 PM-5:00 PM
 Traffic AM: 8:00 AM-9:00 AM
 Peak PM: 4:15 PM-5:15 PM

All Vehicles

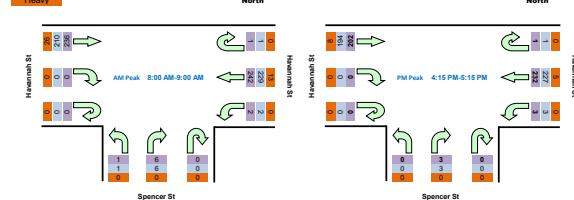
Time		East Approach Havannah St		South Approach Spencer St		West Approach Havannah St		Hourly Total		Peak		
Period Start	Period End	U	WB	L	U	R	L	U	R		EB	Hour
7:00	7:15	0	12	0	0	0	0	0	0	12	215	
7:15	7:30	0	33	0	0	0	0	0	0	22	268	
7:30	7:45	0	34	0	0	1	0	0	0	16	319	
7:45	8:00	0	48	2	0	0	0	0	0	35	411	
8:00	8:15	0	42	0	0	3	0	0	0	32	488	
8:15	8:30	0	66	0	0	0	0	0	0	40		Peak
8:30	8:45	0	75	1	0	2	0	0	0	65		
8:45	9:00	1	59	1	0	1	1	0	0	99		
16:00	16:15	0	57	1	0	0	0	0	0	39	419	Peak
16:15	16:30	0	53	0	0	2	0	0	0	50	441	
16:30	16:45	0	59	1	0	0	0	0	0	51	429	
16:45	17:00	0	54	1	0	0	0	0	0	51	407	
17:00	17:15	1	66	1	0	1	0	0	0	50	379	
17:15	17:30	0	45	1	0	1	0	0	0	46		
17:30	17:45	0	46	1	0	0	0	0	0	42		
17:45	18:00	0	38	0	0	2	0	0	1	37		

Peak Time		East Approach Havannah St			South Approach Spencer St			West Approach Havannah St			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:00	9:00	1	242	2	0	6	1	0	0	238	488
16:15	17:15	1	232	3	0	3	0	0	0	202	441

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
 Light
 Heavy



Pedestrians Crossing

Time		East Approach Havannah		South Approach Spencer		West Approach Havannah		Hourly Total
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	
7:00	7:15	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	1
7:30	7:45	0	0	0	0	0	0	1
7:45	8:00	0	0	0	0	0	0	1
8:00	8:15	0	0	0	1	0	0	2
8:15	8:30	0	0	0	0	0	0	
8:30	8:45	0	0	0	0	0	0	
8:45	9:00	0	0	0	1	0	0	
16:00	16:15	0	0	0	0	0	0	1
16:15	16:30	0	0	0	0	0	1	10
16:30	16:45	0	0	0	0	0	0	9
16:45	17:00	0	0	0	0	0	0	9
17:00	17:15	0	3	0	3	3	0	9
17:15	17:30	0	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	0	

Peak Time		East Approach Havannah		South Approach Spencer		West Approach Havannah		Peak total
Period Start	Period End	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	
8:00	9:00	0	0	0	2	0	0	
16:15	17:15	0	3	0	3	3	1	
								10

Light Vehicles

Time		East Approach Havannah St			South Approach Spencer St			West Approach Havannah St		
Period Start	Period End	U	WB	L	U	R	L	U	R	EB
7:00	7:15	0	12	0	0	0	0	0	0	12
7:15	7:30	0	32	0	0	0	0	0	0	20
7:30	7:45	0	26	0	0	1	0	0	0	14
7:45	8:00	0	43	2	0	0	0	0	0	29
8:00	8:15	0	38	0	0	3	0	0	0	28
8:15	8:30	0	62	0	0	0	0	0	0	34
8:30	8:45	0	74	1	0	2	0	0	0	61
8:45	9:00	1	55	1	0	1	1	0	0	87
16:00	16:15	0	56	1	0	0	0	0	0	37
16:15	16:30	0	52	0	0	2	0	0	0	48
16:30	16:45	0	58	1	0	0	0	0	0	48
16:45	17:00	0	52	1	0	0	0	0	0	50
17:00	17:15	1	65	1	0	1	0	0	0	48
17:15	17:30	0	45	1	0	1	0	0	0	46
17:30	17:45	0	45	1	0	0	0	0	0	41
17:45	18:00	0	37	0	0	2	0	0	1	37

Peak Time		East Approach Havannah St			South Approach Spencer St			West Approach Havannah St			Peak
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total
8:00	9:00	1	229	2	0	6	1	0	0	210	449
16:15	17:15	1	227	3	0	3	0	0	0	194	428

Heavy Vehicles

Hourly Volume		Hourly Volume									
		East Approach Havannah St			South Approach Spencer St			West Approach Havannah St			
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	
7:00	7:15	0	0	0	0	0	0	0	0	0	
7:15	7:30	0	1	0	0	0	0	0	0	2	
7:30	7:45	0	8	0	0	0	0	0	0	2	
7:45	8:00	0	5	0	0	0	0	0	0	6	
8:00	8:15	0	4	0	0	0	0	0	0	4	
8:15	8:30	0	4	0	0	0	0	0	0	6	
8:30	8:45	0	1	0	0	0	0	0	0	4	
8:45	9:00	0	4	0	0	0	0	0	0	12	
16:00	16:15	0	1	0	0	0	0	0	0	2	
16:15	16:30	0	1	0	0	0	0	0	0	2	
16:30	16:45	0	1	0	0	0	0	0	0	3	
16:45	17:00	0	2	0	0	0	0	0	0	1	
17:00	17:15	0	1	0	0	0	0	0	0	2	
17:15	17:30	0	0	0	0	0	0	0	0	0	
17:30	17:45	0	1	0	0	0	0	0	0	1	
17:45	18:00	0	1	0	0	0	0	0	0	0	

Peak Time		East Approach Havannah St			South Approach Spencer St			West Approach Havannah St			Peak	
Period Start	Period End	U	WB	L	U	R	L	U	R	EB	total	
8:00	9:00	0	13	0	0	0	0	0	0	0	26	39
16:15	17:15	0	5	0	0	0	0	0	0	0	6	13

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Havannah St and Brilliant St, South Bathurst

GPS
Date: Thu 15/02/24
Weather: Fine
Suburban: South Bathurst
Customer: CJP

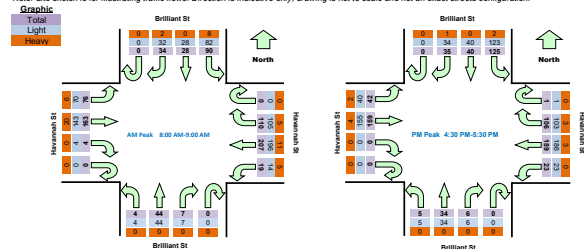
North: Brilliant St
East: Havannah St
South: Brilliant St
West: Havannah St

Survey Period
AM: 7:00 AM-9:00 AM
PM: 4:00 PM-5:00 PM
Traffic Peak
AM: 8:00 AM-9:00 AM
PM: 4:30 PM-5:30 PM

Time		North Approach Brilliant St				East Approach Havannah St				South Approach Brilliant St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	2	3	16	0	15	10	2	0	0	4	0	0	0	6	6	436
7:15	7:30	0	1	1	21	0	24	30	3	0	0	3	2	0	0	14	8	530
7:30	7:45	0	4	4	17	0	24	30	2	0	3	5	0	0	0	11	6	600
7:45	8:00	0	9	6	25	0	30	41	3	0	0	10	0	0	0	27	8	721
8:00	8:15	0	4	9	28	0	27	38	6	0	3	8	0	0	1	24	10	786
8:15	8:30	0	4	8	18	0	33	60	1	0	1	10	2	0	0	29	11	
8:30	8:45	0	6	7	20	0	35	70	9	0	1	12	0	0	0	53	14	
8:45	9:00	0	20	4	24	0	15	39	3	0	2	14	2	0	3	57	41	
9:00	9:15	0	5	8	28	0	29	52	5	0	2	7	1	0	0	30	9	722
9:15	9:30	0	7	4	33	0	19	46	6	0	1	6	0	0	0	42	10	748
9:30	9:45	0	8	5	26	0	22	50	6	0	0	10	2	0	0	45	6	765
9:45	10:00	0	10	11	28	0	37	44	5	0	2	3	1	0	0	41	10	734
10:00	10:15	0	8	11	33	1	22	60	6	0	2	7	0	0	0	38	14	694
10:15	10:30	0	9	13	38	0	25	35	6	0	2	14	2	0	0	35	12	
10:30	10:45	0	7	8	23	0	20	38	6	0	0	3	2	0	0	32	10	
10:45	11:00	0	9	8	25	0	27	29	4	0	3	8	0	0	1	34	4	

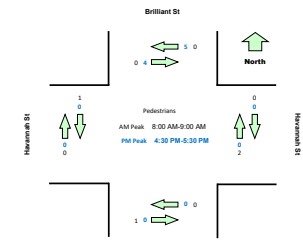
Peak Time		North Approach Brilliant St				East Approach Havannah St				South Approach Brilliant St				West Approach Havannah St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	34	28	90	0	110	207	19	0	7	44	4	0	4	163	76	786
16:30	17:30	0	35	40	125	1	106	189	23	0	6	34	5	0	0	159	42	765

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Time		North Approach Brilliant St				East Approach Havannah St				South Approach Brilliant St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
7:15	7:30	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30	7:45	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6
7:45	8:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
8:00	8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:15	8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30	8:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
8:45	9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
9:15	9:30	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
9:30	9:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
9:45	10:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
10:00	10:15	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:30	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45	11:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:00	11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15	11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:30	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45	12:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Peak Time		In Approach Brilliant		Approach Havannah		In Approach Brilliant		Approach Havannah		Peak hour
Period Start	Period End	Westbound	Eastbound	Southbound	Northbound	Westbound	Eastbound	Southbound	Northbound	
8:00	9:00	0	0	0	2	0	1	1	0	4
16:30	17:30	5	4	0	0	0	0	0	0	9



Time		North Approach Brilliant St				East Approach Havannah St				South Approach Brilliant St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	2	3	14	0	13	10	1	0	0	4	0	0	0	6	6	
7:15	7:30	0	1	1	20	0	22	30	3	0	0	2	1	0	0	12	8	
7:30	7:45	0	4	3	17	0	22	22	2	0	3	5	0	0	0	9	6	
7:45	8:00	0	6	5	25	0	27	39	3	0	0	10	0	0	0	23	6	
8:00	8:15	0	4	9	26	0	25	34	6	0	3	8	0	0	1	20	10	
8:15	8:30	0	3	8	15	0	32	57	1	0	1	10	2	0	0	24	10	
8:30	8:45	0	5	7	19	0	34	70	4	0	1	12	0	0	0	50	13	
8:45	9:00	0	20	4	22	0	14	35	3	0	2	14	2	0	3	49	37	
9:00	9:15	0	5	8	26	0	29	51	5	0	2	7	1	0	0	28	9	
9:15	9:30	0	7	4	30	0	18	45	6	0	1	6	0	0	0	40	10	
9:30	9:45	0	7	5	24	0	22	50	6	0	0	10	2	0	0	42	6	
9:45	10:00	0	10	11	28	0	36	42	5	0	2	3	1	0	0	41	9	
10:00	10:15	0	8	11	33	1	22	59	6	0	2	7	0	0	0	37	13	
10:15	10:30	0	9	13	38	0	23	35	6	0	2	14	2	0	0	35	12	
10:30	10:45	0	7	8	23	0	19	37	6	0	0	3	2	0	0	31	10	
10:45	11:00	0	8	8	25	0	27	29	4	0	3	8	0	0	1	34	4	

Peak Time		North Approach Brilliant St				East Approach Havannah St				South Approach Brilliant St				West Approach Havannah St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	32	28	82	0	105	196	14	0	7	44	4	0	4	143	70	729
16:30	17:30	0	34	40	123	1	103	186	23	0	6	34	5	0	0	155	40	750

Time		North Approach Brilliant St				East Approach Havannah St				South Approach Brilliant St				West Approach Havannah St				Hourly Total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour
7:00	7:15	0	0	0	2	0	2	0	1	0	0	0	0	0	0	0	0	
7:15	7:30	0	0	0	1	0	2	0	0	0	0	0	1	0	0	2	0	
7:30	7:45	0	0	1	0	0	2	8	0	0	0	0	0	0	0	2	0	
7:45	8:00	0	3	1	0	0	3	2	0	0	0	0	0	0	0	4	2	
8:00	8:15	0	0	0	2	0	2	4	0	0	0	0	0	0	0	4	0	
8:15	8:30	0	1	0	3	0	1	3	0	0	0	0	0	0	0	5	1	
8:30	8:45	0	1	0	1	0	1	0	5	0	0	0	0	0	0	3	1	
8:45	9:00	0	0	0	2	0	1	4	0	0	0	0	0	0	0	8	4	
9:00	9:15	0	0	0	2	0	0	1	0	0	0	0	0	0	0	2	0	
9:15	9:30	0	0	0	3	0	1	1	0	0	0	0	0	0	0	2	0	
9:30	9:45	0	1	0	2	0	0	0	0	0	0	0	0	0	0	3	0	
9:45	10:00	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	
10:00	10:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	
10:15	10:30	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	
10:30	10:45	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	
10:45	11:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Peak Time		North Approach Brilliant St				East Approach Havannah St				South Approach Brilliant St				West Approach Havannah St				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	2	0	8	0	5	11	5	0	0	0	0	0	0	20	6	
12:00	12:30	0	4	0	0	0	0	7	0	0	0	0	0	0	0	4	0	

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Busby St and Spencer St, South Bathurst

GPS -33.432065, 149.574816

Date: Thu 15/02/24
Weather: Fine
Suburban: South Bathurst
Customer: CJP

North: Spencer St
East: Busby St
South: N/A
West: Busby St

Survey AM: 7:00 AM-9:00 AM
Period PM: 4:00 PM-5:00 PM
Traffic AM: 8:00 AM-9:00 AM
Peak PM: 4:45 PM-5:45 PM

All Vehicles

Time		North Approach Spencer St			East Approach Busby St			West Approach Busby St			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:00	7:15	0	0	0	0	0	2	0	0	0	8	
7:15	7:30	0	0	0	0	0	0	0	0	0	9	
7:30	7:45	0	0	0	0	0	1	0	0	0	11	
7:45	8:00	0	0	2	0	0	0	0	2	1	16	
8:00	8:15	0	0	0	0	0	0	0	2	1	20	Peak
8:15	8:30	0	0	0	0	0	1	0	1	0		
8:30	8:45	0	0	3	0	0	2	0	1	0		
8:45	9:00	0	0	4	0	2	3	0	0	0		
16:00	16:15	0	0	1	0	0	2	0	0	1	13	
16:15	16:30	0	0	0	0	1	1	0	1	0	12	
16:30	16:45	0	0	0	0	0	1	0	0	1	11	
16:45	17:00	0	0	0	0	0	3	0	1	0	14	Peak
17:00	17:15	1	0	1	0	0	1	0	0	0	10	
17:15	17:30	0	0	0	0	1	1	0	0	0		
17:30	17:45	0	0	3	0	1	1	0	0	0		
17:45	18:00	0	0	0	0	0	0	0	0	0		

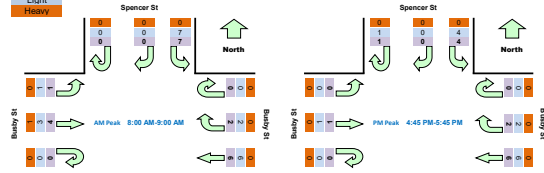
Peak Time		North Approach Spencer St			East Approach Busby St			West Approach Busby St			Peak total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total	
8:00	9:00	0	0	7	0	2	6	0	4	1	20	
16:45	17:45	1	0	4	0	2	6	0	1	0	14	

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Light

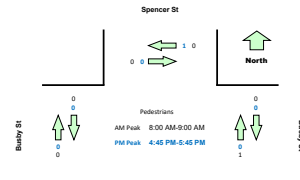
Heavy



Pedestrians Crossing

Time		North Approach Spencer St		East Approach Busby St		West Approach Busby St		Hourly Total	
Period Start	Period End	Westbound	Eastbound	Southbound	Northbound	Southbound	Northbound	Hourly Total	Peak
7:00	7:15	0	0	0	0	0	0	0	
7:15	7:30	0	0	0	0	0	0	0	
7:30	7:45	0	0	0	0	0	0	0	1
7:45	8:00	0	0	0	0	0	0	0	1
8:00	8:15	0	0	0	0	0	0	0	1
8:15	8:30	0	0	0	1	0	0	0	
8:30	8:45	0	0	0	0	0	0	0	
8:45	9:00	0	0	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	0	0	
16:15	16:30	0	0	0	0	0	0	0	
16:30	16:45	0	0	0	0	0	0	0	
16:45	17:00	0	0	0	0	0	0	0	1
17:00	17:15	0	0	0	0	0	0	0	1
17:15	17:30	0	0	0	0	0	0	0	
17:30	17:45	1	0	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	0	0	

Peak Time		North Approach Spencer St		East Approach Busby St		West Approach Busby St		Peak total	
Period Start	Period End	Westbound	Eastbound	Southbound	Northbound	Southbound	Northbound	total	
8:00	9:00	0	0	0	0	0	0	0	1
16:45	17:45	1	0	0	0	0	0	0	1



Light Vehicles

Time		North Approach Spencer St			East Approach Busby St			West Approach Busby St			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:00	7:15	0	0	0	0	0	2	0	0	0	8	
7:15	7:30	0	0	0	0	0	0	0	0	0	9	
7:30	7:45	0	0	0	0	0	1	0	0	0	11	
7:45	8:00	0	0	2	0	0	0	0	2	1	16	
8:00	8:15	0	0	0	0	0	0	0	2	1	20	Peak
8:15	8:30	0	0	0	0	0	1	0	1	0		
8:30	8:45	0	0	3	0	0	2	0	1	0		
8:45	9:00	0	0	4	0	2	3	0	0	0		
16:00	16:15	0	0	1	0	0	1	0	0	1	13	
16:15	16:30	0	0	0	0	1	1	0	1	0	12	
16:30	16:45	0	0	0	0	0	1	0	0	1	11	
16:45	17:00	0	0	0	0	0	3	0	1	0	14	Peak
17:00	17:15	1	0	1	0	0	1	0	0	0	10	
17:15	17:30	0	0	0	0	1	1	0	0	0		
17:30	17:45	0	0	3	0	1	1	0	0	0		
17:45	18:00	0	0	0	0	0	0	0	0	0		

Peak Time		North Approach Spencer St			East Approach Busby St			West Approach Busby St			Peak total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total	
8:00	9:00	0	0	7	0	2	6	0	3	1	19	
16:45	17:45	1	0	4	0	2	6	0	1	0	14	

Heavy Vehicles

Time		North Approach Spencer St			East Approach Busby St			West Approach Busby St			Hourly Total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	Hour	Peak
7:00	7:15	0	0	0	0	0	0	0	0	0	0	
7:15	7:30	0	0	0	0	0	0	0	0	0	0	
7:30	7:45	0	0	0	0	0	0	0	0	0	0	
7:45	8:00	0	0	0	0	0	0	0	0	0	0	
8:00	8:15	0	0	0	0	0	0	0	0	1	0	
8:15	8:30	0	0	0	0	0	0	0	0	0	0	
8:30	8:45	0	0	0	0	0	0	0	0	0	0	
8:45	9:00	0	0	0	0	0	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	1	0	0	0	0	
16:15	16:30	0	0	0	0	0	0	0	0	0	0	
16:30	16:45	0	0	0	0	0	0	0	0	0	0	
16:45	17:00	0	0	0	0	0	0	0	0	0	0	
17:00	17:15	0	0	0	0	0	0	0	0	0	0	
17:15	17:30	0	0	0	0	0	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	0	0	0	0	0	

Peak Time		North Approach Spencer St			East Approach Busby St			West Approach Busby St			Peak total	
Period Start	Period End	U	R	L	U	R	WB	U	EB	L	total	
8:00	9:00	0	0	0	0	0	0	0	1	0	1	
16:45	17:45	0	0	0	0	0	0	0	0	0	0	

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Torch St and Brilliant St, South Bathurst

GPS
Date: Thu 15/02/24
Weather: Fine
Suburban: South Bathurst
Customer: CJP

North: Brilliant St
East: Torch St
South: Brilliant St
West: Torch St

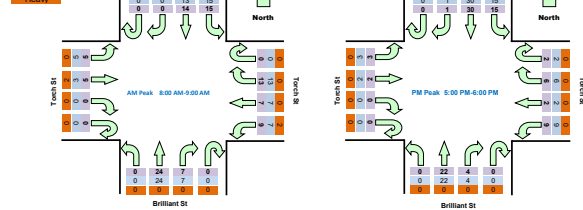
Survey Period
AM: 7:00 AM-9:00 AM
PM: 4:00 PM-6:00 PM
Traffic Peak
AM: 8:00 AM-9:00 AM
PM: 5:00 PM-6:00 PM

Time		North Approach Brilliant St				East Approach Torch St				South Approach Brilliant St				West Approach Torch St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	0	2	1	0	1	1	1	0	0	4	0	0	0	0	0	53	
7:15	7:30	0	0	3	0	0	2	0	0	0	2	3	0	0	0	0	0	62	
7:30	7:45	0	0	2	0	0	0	0	1	0	1	4	0	0	0	0	0	68	
7:45	8:00	0	0	6	2	0	1	0	1	0	4	7	0	0	0	4	0	89	
8:00	8:15	0	0	5	4	0	0	0	1	0	2	5	0	0	0	1	1	99	Peak
8:15	8:30	0	0	2	1	0	3	1	3	0	2	4	0	0	0	0	0		
8:30	8:45	0	0	4	5	0	3	1	2	0	1	8	0	0	0	4	1		
8:45	9:00	0	0	3	5	0	7	5	3	0	2	7	0	0	0	0	3		
9:00	9:15	0	0	10	4	0	2	1	4	0	4	0	0	0	0	2	0	78	
9:15	9:30	0	0	5	0	0	3	0	4	0	2	2	0	0	0	0	0	80	
9:30	9:45	0	0	5	2	0	2	1	4	0	1	3	0	0	0	0	0	93	
9:45	10:00	0	1	9	3	0	1	1	0	0	0	2	0	0	0	0	0	92	
10:00	10:15	0	0	6	5	0	2	1	4	0	2	7	0	0	0	0	2	96	Peak
10:15	10:30	0	1	10	5	2	2	0	2	0	1	6	0	0	0	0	0		
10:30	10:45	0	0	6	3	0	0	1	2	0	0	2	0	0	0	2	1		
10:45	11:00	0	0	8	2	0	2	0	1	0	1	7	0	0	0	0	0		

Peak Time	North Approach Brilliant St	East Approach Torch St	South Approach Brilliant St	West Approach Torch St	Peak total
8:00 - 9:00	0	0	13	15	28
17:00 - 18:00	0	1	30	15	46

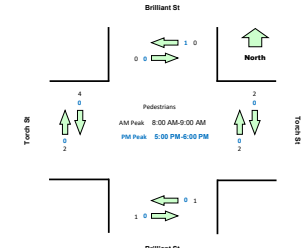
Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic



Time		North Approach Brilliant St				East Approach Torch St				South Approach Brilliant St				West Approach Torch St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5
7:15	7:30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5
7:30	7:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	7
7:45	8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
8:00	8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	12
8:15	8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
8:30	8:45	0	0	2	0	1	0	1	0	0	0	0	0	0	0	0	1	0	
8:45	9:00	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	1	0	
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:30	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:00	11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15	11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:30	11:45	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45	12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Peak Time	North Approach Brilliant St	East Approach Torch St	South Approach Brilliant St	West Approach Torch St	Peak total
8:00 - 9:00	0	0	2	1	3
17:00 - 18:00	0	0	0	0	0



Time		North Approach Brilliant St				East Approach Torch St				South Approach Brilliant St				West Approach Torch St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	0	2	1	0	1	1	1	0	0	3	0	0	0	0	0		
7:15	7:30	0	0	3	0	0	2	0	0	0	2	2	0	0	0	0	0		
7:30	7:45	0	0	2	0	0	0	0	0	0	1	4	0	0	0	0	0		
7:45	8:00	0	0	5	1	0	1	0	0	0	4	7	0	0	0	4	0		
8:00	8:15	0	0	5	4	0	0	0	0	0	2	5	0	0	0	0	1		
8:15	8:30	0	0	2	1	0	3	1	2	0	2	4	0	0	0	0	0		
8:30	8:45	0	0	3	5	0	3	1	2	0	1	8	0	0	0	3	1		
8:45	9:00	0	0	3	5	0	7	5	3	0	2	7	0	0	0	0	3		
9:00	9:15	0	0	10	4	0	2	1	4	0	4	0	0	0	0	2	0		
9:15	9:30	0	0	5	0	0	3	0	4	0	2	2	0	0	0	0	0		
9:30	9:45	0	0	5	2	0	2	1	4	0	1	3	0	0	0	0	0		
9:45	10:00	0	1	9	3	0	1	1	0	0	0	2	0	0	0	0	0		
10:00	10:15	0	0	6	5	0	2	1	4	0	2	7	0	0	0	0	2		
10:15	10:30	0	1	10	5	2	2	0	2	0	1	6	0	0	0	0	0		
10:30	10:45	0	0	6	3	0	0	1	2	0	0	2	0	0	0	2	1		
10:45	11:00	0	0	8	2	0	2	0	1	0	1	7	0	0	0	0	0		

Peak Time	North Approach Brilliant St	East Approach Torch St	South Approach Brilliant St	West Approach Torch St	Peak total
8:00 - 9:00	0	0	13	15	28
17:00 - 18:00	0	1	30	15	46

Heavy Vehicles

Time		North Approach Brilliant St				East Approach Torch St				South Approach Brilliant St				West Approach Torch St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		
7:15	7:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		
7:30	7:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		
7:45	8:00	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0		
8:00	8:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1		
8:15	8:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		
8:30	8:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1		
8:45	9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:30	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:45	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Peak Time	North Approach Brilliant St	East Approach Torch St	South Approach Brilliant St	West Approach Torch St	Peak total
8:00 - 9:00	0	0	0	0	0
17:00 - 18:00	0	0	0	0	0

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

Intersection of Rocket St and Alpha St, South Bathurst

GPS: -33.431813, 149.580101

Date: Thu 15/02/24
Weather: Fine
Suburban: South Bathurst
Customer: CJP

North: Alpha St
East: N/A
South: Vale Rd
West: Rocket St

Survey Period: AM: 7:00 AM-9:00 AM
PM: 4:00 PM-6:00 PM
Traffic Peak: AM: 8:00 AM-9:00 AM
PM: 4:00 PM-5:00 PM

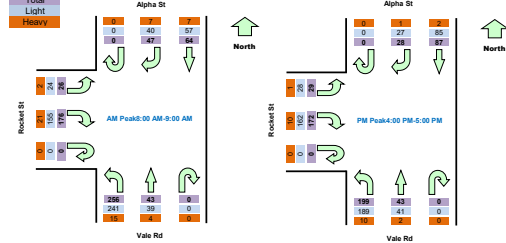
All Vehicles

Time		North Approach Alpha St			South Approach Vale Rd			West Approach Rocket St			Hourly Total	Peak
Period Start	Period End	U	R	SB	U	MB	L	U	R	L	Hour	
7:00	7:15	0	3	4	0	13	41	0	30	2	390	
7:15	7:30	0	4	5	0	4	26	0	30	2	415	
7:30	7:45	0	3	8	0	15	43	0	23	7	479	
7:45	8:00	0	3	10	0	16	54	0	36	8	553	
8:00	8:15	0	7	4	0	10	51	0	40	6	612	Peak
8:15	8:30	0	8	10	0	16	52	0	44	5		
8:30	8:45	0	15	24	0	9	68	0	47	10		
8:45	9:00	0	17	26	0	8	85	0	45	5		
16:00	16:15	0	10	29	0	11	65	0	38	7	558	Peak
16:15	16:30	0	8	26	0	14	39	0	43	11	521	
16:30	16:45	0	7	14	0	12	59	0	48	3	513	
16:45	17:00	0	3	18	0	6	36	0	43	8	487	
17:00	17:15	0	4	19	0	9	41	0	44	6	480	
17:15	17:30	0	6	21	0	7	34	0	55	10		
17:30	17:45	0	4	17	0	8	39	0	43	6		
17:45	18:00	0	6	15	0	12	33	0	30	11		

Peak Time		North Approach Alpha St			South Approach Vale Rd			West Approach Rocket St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	47	64	0	43	256	0	176	26	612
16:00	17:00	0	28	87	0	43	199	0	172	29	558

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic



Light Vehicles

Time		North Approach Alpha St			South Approach Vale Rd			West Approach Rocket St		
Period Start	Period End	U	R	SB	U	NS	L	U	R	L
7:00	7:15	0	3	4	0	11	31	0	27	2
7:15	7:30	0	4	4	0	4	23	0	25	7
7:30	7:45	0	3	8	0	13	38	0	19	8
7:45	8:00	0	2	8	0	16	51	0	33	8
8:00	8:15	0	6	4	0	9	46	0	34	6
8:15	8:30	0	6	8	0	15	50	0	40	4
8:30	8:45	0	14	21	0	8	67	0	41	9
8:45	9:00	0	14	24	0	7	78	0	40	5
16:00	16:15	0	9	29	0	11	62	0	34	6
16:15	16:30	0	8	24	0	14	35	0	38	11
16:30	16:45	0	7	14	0	11	58	0	47	3
16:45	17:00	0	3	18	0	5	34	0	43	8
17:00	17:15	0	4	18	0	9	39	0	43	6
17:15	17:30	0	6	21	0	7	32	0	54	9
17:30	17:45	0	4	17	0	8	38	0	41	6
17:45	18:00	0	6	15	0	12	31	0	27	11

Peak Time		North Approach Alpha St			South Approach Vale Rd			West Approach Rocket St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	40	57	0	39	241	0	155	24	556
16:00	17:00	0	27	85	0	41	189	0	162	28	532

Heavy Vehicles

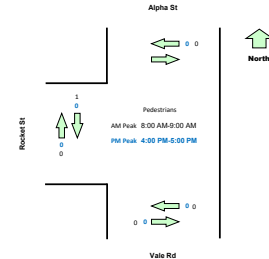
Time		North Approach Alpha St			South Approach Vale Rd			West Approach Rocket St		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	0	0	0	2	10	0	3	0
7:15	7:30	0	0	1	0	0	3	0	5	1
7:30	7:45	0	0	0	0	2	5	0	4	0
7:45	8:00	0	1	2	0	0	3	0	3	0
8:00	8:15	0	1	0	0	1	5	0	6	0
8:15	8:30	0	2	2	0	1	2	0	4	1
8:30	8:45	0	1	3	0	1	1	0	6	1
8:45	9:00	0	3	2	0	1	7	0	5	0
16:00	16:15	0	1	0	0	0	3	0	4	1
16:15	16:30	0	0	2	0	0	4	0	5	0
16:30	16:45	0	0	0	0	1	1	0	1	0
16:45	17:00	0	0	0	0	1	2	0	0	0
17:00	17:15	0	0	1	0	0	2	0	1	0
17:15	17:30	0	0	0	0	0	2	0	1	1
17:30	17:45	0	0	0	0	0	1	0	2	0
17:45	18:00	0	0	0	0	0	2	0	3	0

Peak Time		North Approach Alpha St			South Approach Vale Rd			West Approach Rocket St			Peak
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	total
8:00	9:00	0	7	7	0	4	15	0	21	2	56
16:00	17:00	0	1	2	0	2	10	0	10	1	26

Pedestrians Crossing

Time		th Approach Alpha		th Approach Vale		th Approach Rocket		Hourly Total
Period Start	Period End	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	
7:00	7:15	0	0	0	0	0	0	0
7:15	7:30	0	0	0	0	0	0	0
7:30	7:45	0	0	0	0	0	0	0
7:45	8:00	0	0	0	0	0	0	0
8:00	8:15	0	0	0	0	0	0	1
8:15	8:30	0	0	0	0	0	0	0
8:30	8:45	0	0	0	0	0	0	0
8:45	9:00	0	0	0	0	1	0	0
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0

Peak Time		North Approach Alpha St		South Approach Vale Rd		West Approach Rocket St		Peak
Period Start	Period End	Westbound	Eastbound	Westbound	Eastbound	Westbound	Eastbound	total
8:00	9:00	0	0	0	0	1	0	1
16:00	17:00	0	0	0	0	0	0	0



Appendix D

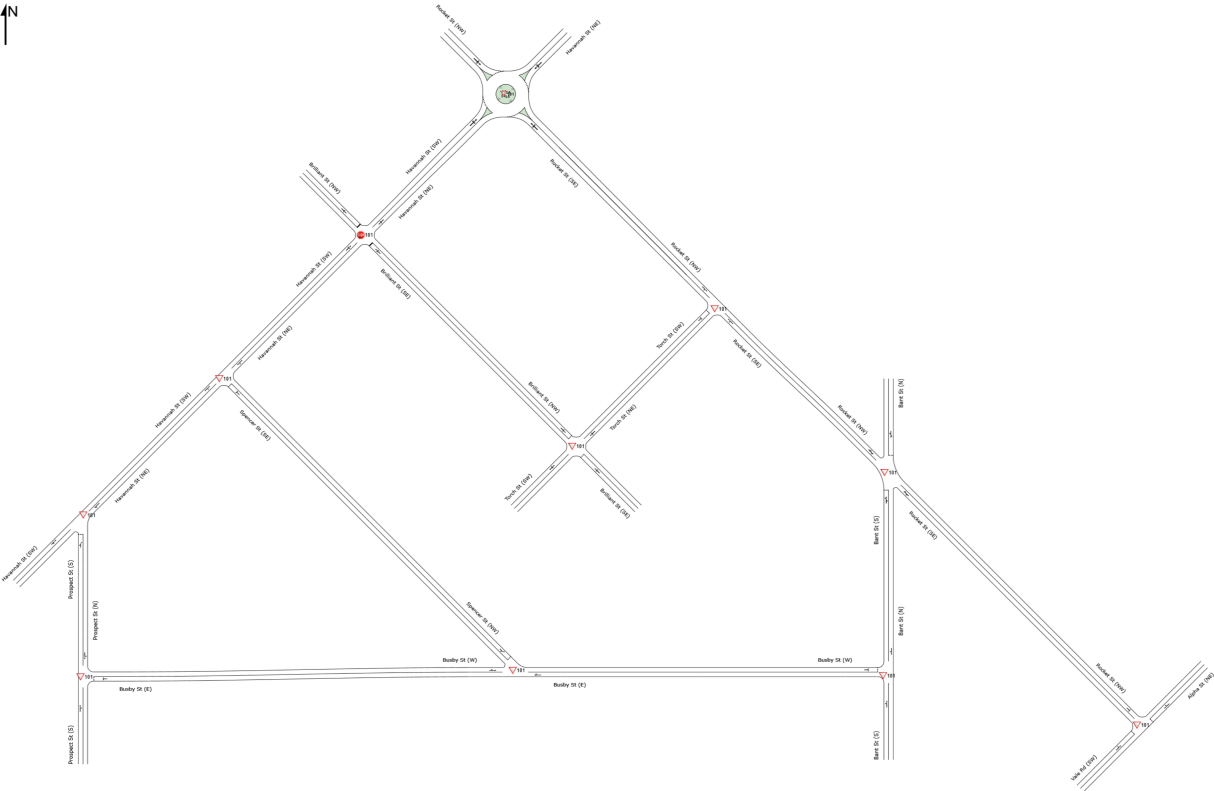
SIDRA movement summaries

NETWORK LAYOUT

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Existing AM 2024
▽101	NA	Havannah & Spencer Existing AM 2024
STOP101	NA	Havannah & Brilliant Existing AM 2024
▽101	NA	Havannah & Rocket Existing AM 2024
▽101	NA	Prospect & Busby Existing AM 2024
▽101	NA	Busby & Spencer Existing 2024
▽101	NA	Billiant & Torch Existing AM 2024
▽101	NA	Bant St & Busby St Existing AM 2024
▽101	NA	Rocket & Torch Existing AM 2024
▽101	NA	Rocket & Bant Existing AM 2024
▽101	NA	Rocket, Vale & Alpha Existing AM 2024

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\Existing Network AM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect St (S)															
1b	L3	All MCs	8	0.0	8	0.0	0.031	4.1	LOS A	0.0	0.3	0.39	0.56	0.39	40.0
3a	R1	All MCs	21	0.0	21	0.0	0.031	3.9	LOS A	0.0	0.3	0.39	0.56	0.39	18.9
Approach			29	0.0	29	0.0	0.031	4.0	LOS A	0.0	0.3	0.39	0.56	0.39	30.6
NorthEast: Havannah St (NE)															
24a	L1	All MCs	7	0.0	7	0.0	0.129	5.3	LOS A	0.0	0.0	0.00	0.02	0.00	58.6
25	T1	All MCs	236	5.1	236	5.1	0.129	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.4
Approach			243	4.9	243	4.9	0.129	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.4
SouthWest: Havannah St (SW)															
31	T1	All MCs	215	11.2	215	11.2	0.120	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	59.5
32b	R3	All MCs	2	0.0	2	0.0	0.120	6.2	LOS A	0.0	0.0	0.01	0.01	0.01	59.5
Approach			217	11.1	217	11.1	0.120	0.1	NA	0.0	0.0	0.01	0.01	0.01	59.5
All Vehicles			489	7.4	489	7.4	0.129	0.3	NA	0.0	0.3	0.03	0.05	0.03	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.008	5.3	LOS A	0.0	0.1	0.41	0.59	0.41	32.0
23	R2	All MCs	6	0.0	6	0.0	0.008	6.5	LOS A	0.0	0.1	0.41	0.59	0.41	32.0
Approach			7	0.0	7	0.0	0.008	6.3	LOS A	0.0	0.1	0.41	0.59	0.41	32.0
NorthEast: Havannah St (NE)															
24	L2	All MCs	2	0.0	2	0.0	0.130	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
25	T1	All MCs	242	5.4	242	5.4	0.130	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			244	5.3	244	5.3	0.130	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	236	11.0	236	11.0	0.130	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
32	R2	All MCs	1	0.0	1	0.0	0.130	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			237	11.0	237	11.0	0.130	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
All Vehicles			488	8.0	488	8.0	0.130	0.1	NA	0.0	0.1	0.01	0.01	0.01	58.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.


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MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Existing AM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network AM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
4	L2	All MCs	4	0.0	4	0.0	0.091	8.3	LOS A	0.1	0.9	0.53	0.99	0.53	30.9
5	T1	All MCs	44	0.0	44	0.0	0.091	11.1	LOS A	0.1	0.9	0.53	0.99	0.53	40.8
6	R2	All MCs	7	0.0	7	0.0	0.091	12.2	LOS A	0.1	0.9	0.53	0.99	0.53	30.9
Approach			55	0.0	55	0.0	0.091	11.1	LOS A	0.1	0.9	0.53	0.99	0.53	39.9
NorthEast: Havannah St (NE)															
7	L2	All MCs	19	26.3	19	26.3	0.203	6.8	LOS A	0.3	2.5	0.28	0.34	0.28	47.8
8	T1	All MCs	207	5.3	207	5.3	0.203	0.5	LOS A	0.3	2.5	0.28	0.34	0.28	47.8
9	R2	All MCs	110	4.5	110	4.5	0.203	6.5	LOS A	0.3	2.5	0.28	0.34	0.28	47.2
Approach			336	6.3	336	6.3	0.203	2.9	NA	0.3	2.5	0.28	0.34	0.28	47.5
NorthWest: Brilliant St (NW)															
10	L2	All MCs	90	0.0	90	0.0	0.187	8.2	LOS A	0.3	2.1	0.43	0.88	0.43	40.4
11	T1	All MCs	28	0.0	28	0.0	0.187	11.4	LOS A	0.3	2.1	0.43	0.88	0.43	40.4
12	R2	All MCs	34	0.0	34	0.0	0.187	12.4	LOS A	0.3	2.1	0.43	0.88	0.43	40.4
Approach			152	0.0	152	0.0	0.187	9.7	LOS A	0.3	2.1	0.43	0.88	0.43	40.4
SouthWest: Havannah St (SW)															
1	L2	All MCs	76	7.9	76	7.9	0.136	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	47.1
2	T1	All MCs	163	12.3	163	12.3	0.136	0.0	LOS A	0.0	0.1	0.02	0.20	0.02	46.4
3	R2	All MCs	4	0.0	4	0.0	0.136	5.9	LOS A	0.0	0.1	0.02	0.20	0.02	46.4
Approach			243	10.7	243	10.7	0.136	1.9	NA	0.0	0.1	0.02	0.20	0.02	46.9
All Vehicles			786	6.0	786	6.0	0.203	4.4	NA	0.3	2.5	0.24	0.44	0.24	44.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Existing AM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network AM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				km/h
			veh/h	%	veh/h	%	v/c	sec			m				
SouthEast: Rocket St (SE)															
4	L2	All MCs	32	12.5	32	12.5	0.428	6.4	LOS A	1.2	8.8	0.68	0.64	0.68	33.8
5	T1	All MCs	219	3.7	219	3.7	0.428	6.1	LOS A	1.2	8.8	0.68	0.64	0.68	42.8
6	R2	All MCs	141	12.1	141	12.1	0.428	10.3	LOS A	1.2	8.8	0.68	0.64	0.68	38.2
Approach			392	7.4	392	7.4	0.428	7.7	LOS A	1.2	8.8	0.68	0.64	0.68	41.1
NorthEast: Havannah St (NE)															
7	L2	All MCs	99	16.2	99	16.2	0.395	6.1	LOS A	1.1	8.3	0.53	0.56	0.53	38.3
8	T1	All MCs	248	5.6	248	5.6	0.395	6.1	LOS A	1.1	8.3	0.53	0.56	0.53	38.3
9	R2	All MCs	83	4.8	83	4.8	0.395	10.0	LOS A	1.1	8.3	0.53	0.56	0.53	44.2
Approach			430	7.9	430	7.9	0.395	6.9	LOS A	1.1	8.3	0.53	0.56	0.53	40.6
NorthWest: Rocket St (NW)															
10	L2	All MCs	60	5.0	60	5.0	0.261	5.5	LOS A	0.6	4.6	0.57	0.59	0.57	44.0
11	T1	All MCs	136	5.1	136	5.1	0.261	5.6	LOS A	0.6	4.6	0.57	0.59	0.57	42.3
12	R2	All MCs	57	0.0	57	0.0	0.261	9.3	LOS A	0.6	4.6	0.57	0.59	0.57	42.3
Approach			253	4.0	253	4.0	0.261	6.4	LOS A	0.6	4.6	0.57	0.59	0.57	42.8
SouthWest: Havannah St (SW)															
1	L2	All MCs	65	6.2	65	6.2	0.321	7.3	LOS A	0.8	6.3	0.68	0.65	0.68	44.0
2	T1	All MCs	177	13.0	177	13.0	0.321	7.9	LOS A	0.8	6.3	0.68	0.65	0.68	41.6
3	R2	All MCs	28	7.1	28	7.1	0.321	11.6	LOS A	0.8	6.3	0.68	0.65	0.68	37.0
Approach			270	10.7	270	10.7	0.321	8.1	LOS A	0.8	6.3	0.68	0.65	0.68	42.2
All Vehicles			1345	7.6	1345	7.6	0.428	7.3	LOS A	1.2	8.8	0.61	0.61	0.61	41.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prospect & Busby Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect St (S)															
2	T1	All MCs	23	0.0	23	0.0	0.013	0.0	LOS A	0.0	0.0	0.01	0.05	0.01	49.5
3	R2	All MCs	2	0.0	2	0.0	0.013	4.6	LOS A	0.0	0.0	0.01	0.05	0.01	49.5
Approach			25	0.0	25	0.0	0.013	0.4	NA	0.0	0.0	0.01	0.05	0.01	49.5
East: Busby St (E)															
4	L2	All MCs	1	0.0	1	0.0	0.005	4.6	LOS A	0.0	0.0	0.07	0.53	0.07	43.9
6	R2	All MCs	6	0.0	6	0.0	0.005	4.6	LOS A	0.0	0.0	0.07	0.53	0.07	36.0
Approach			7	0.0	7	0.0	0.005	4.6	LOS A	0.0	0.0	0.07	0.53	0.07	38.7
North: Prospect St (N)															
7	L2	All MCs	2	0.0	2	0.0	0.005	2.5	LOS A	0.0	0.0	0.00	0.11	0.00	40.0
8	T1	All MCs	7	0.0	7	0.0	0.005	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	49.3
Approach			9	0.0	9	0.0	0.005	0.6	NA	0.0	0.0	0.00	0.11	0.00	49.1
All Vehicles			41	0.0	41	0.0	0.013	1.1	NA	0.0	0.0	0.02	0.14	0.02	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414\Existing Network AM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Existing 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist]			km/h	
East: Busby St (E)															
5	T1	All MCs	6	0.0	6	0.0	0.004	0.0	LOS A	0.0	0.0	0.02	0.12	0.02	48.0
6a	R1	All MCs	2	0.0	2	0.0	0.004	3.6	LOS A	0.0	0.0	0.02	0.12	0.02	48.0
Approach			8	0.0	8	0.0	0.004	0.9	NA	0.0	0.0	0.02	0.12	0.02	48.0
NorthWest: Spencer St (NW)															
27a	L1	All MCs	7	0.0	7	0.0	0.005	4.4	LOS A	0.0	0.1	0.03	0.54	0.03	34.3
29b	R3	All MCs	1	0.0	1	0.0	0.005	5.2	LOS A	0.0	0.1	0.03	0.54	0.03	34.3
Approach			8	0.0	8	0.0	0.005	4.5	LOS A	0.0	0.1	0.03	0.54	0.03	34.3
West: Busby St (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.003	5.4	LOS A	0.0	0.0	0.00	0.12	0.00	46.0
11	T1	All MCs	4	0.0	4	0.0	0.003	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	46.0
Approach			5	0.0	5	0.0	0.003	1.1	NA	0.0	0.0	0.00	0.12	0.00	46.0
All Vehicles			21	0.0	21	0.0	0.005	2.3	NA	0.0	0.1	0.02	0.28	0.02	43.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414\Existing Network AM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Billiant & Torch Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh. veh	Dist] m				
SouthEast: Brilliant St (SE)															
1	L2	All MCs	1	0.0	1	0.0	0.026	4.6	LOS A	0.0	0.3	0.10	0.47	0.10	35.3
2	T1	All MCs	24	0.0	24	0.0	0.026	3.3	LOS A	0.0	0.3	0.10	0.47	0.10	45.2
3	R2	All MCs	7	0.0	7	0.0	0.026	4.8	LOS A	0.0	0.3	0.10	0.47	0.10	45.2
Approach			32	0.0	32	0.0	0.026	3.7	LOS A	0.0	0.3	0.10	0.47	0.10	44.8
NorthEast: Torch St (NE)															
4	L2	All MCs	9	0.0	9	0.0	0.016	4.6	LOS A	0.0	0.2	0.05	0.40	0.05	45.3
5	T1	All MCs	7	0.0	7	0.0	0.016	0.0	LOS A	0.0	0.2	0.05	0.40	0.05	42.3
6	R2	All MCs	13	0.0	13	0.0	0.016	4.6	LOS A	0.0	0.2	0.05	0.40	0.05	40.9
Approach			29	0.0	29	0.0	0.016	3.5	NA	0.0	0.2	0.05	0.40	0.05	43.5
NorthWest: Brilliant St (NW)															
7	L2	All MCs	15	0.0	15	0.0	0.021	4.6	LOS A	0.0	0.2	0.04	0.48	0.04	39.9
8	T1	All MCs	14	0.0	14	0.0	0.021	3.2	LOS A	0.0	0.2	0.04	0.48	0.04	45.3
9	R2	All MCs	1	0.0	1	0.0	0.021	4.6	LOS A	0.0	0.2	0.04	0.48	0.04	26.5
Approach			30	0.0	30	0.0	0.021	3.9	LOS A	0.0	0.2	0.04	0.48	0.04	43.2
SouthWest: Torch St (SW)															
10	L2	All MCs	5	0.0	5	0.0	0.006	3.9	LOS A	0.0	0.0	0.02	0.29	0.02	33.8
11	T1	All MCs	5	0.0	5	0.0	0.006	0.0	LOS A	0.0	0.0	0.02	0.29	0.02	33.8
12	R2	All MCs	1	0.0	1	0.0	0.006	3.9	LOS A	0.0	0.0	0.02	0.29	0.02	45.1
Approach			11	0.0	11	0.0	0.006	2.1	NA	0.0	0.0	0.02	0.29	0.02	38.4
All Vehicles			102	0.0	102	0.0	0.026	3.5	NA	0.0	0.3	0.06	0.43	0.06	43.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m			km/h	
South: Bant St (S)															
1	L2	All MCs	4	0.0	4	0.0	0.040	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
2	T1	All MCs	74	0.0	74	0.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach			78	0.0	78	0.0	0.040	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.7
North: Bant St (N)															
8	T1	All MCs	37	0.0	37	0.0	0.020	0.0	LOS A	0.0	0.0	0.02	0.03	0.02	49.7
9	R2	All MCs	2	0.0	2	0.0	0.020	4.6	LOS A	0.0	0.0	0.02	0.03	0.02	48.6
Approach			39	0.0	39	0.0	0.020	0.2	NA	0.0	0.0	0.02	0.03	0.02	49.7
West: Busby St (W)															
10	L2	All MCs	6	0.0	6	0.0	0.009	4.8	LOS A	0.0	0.1	0.17	0.51	0.17	34.0
12	R2	All MCs	6	0.0	6	0.0	0.009	4.9	LOS A	0.0	0.1	0.17	0.51	0.17	43.2
Approach			12	0.0	12	0.0	0.009	4.8	LOS A	0.0	0.1	0.17	0.51	0.17	41.1
All Vehicles			129	0.0	129	0.0	0.040	0.7	NA	0.0	0.1	0.02	0.07	0.02	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Torch Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	7	0.0	7	0.0	0.200	2.7	LOS A	0.0	0.0	0.00	0.00	58.1
5	T1	All MCs	363	8.0	363	8.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	58.1
Approach			370	7.8	370	7.8	0.200	0.1	NA	0.0	0.0	0.00	0.00	58.1
NorthWest: Rocket St (NW)														
11	T1	All MCs	232	9.1	232	9.1	0.150	0.3	LOS A	0.1	0.8	0.12	0.14	55.5
12	R2	All MCs	25	16.0	25	16.0	0.150	7.5	LOS A	0.1	0.8	0.12	0.14	55.5
Approach			257	9.7	257	9.7	0.150	1.0	NA	0.1	0.8	0.12	0.14	55.5
SouthWest: Torch St (SW)														
1	L2	All MCs	32	0.0	32	0.0	0.031	5.8	LOS A	0.0	0.3	0.41	0.59	35.7
3	R2	All MCs	2	0.0	2	0.0	0.031	7.6	LOS A	0.0	0.3	0.41	0.59	35.7
Approach			34	0.0	34	0.0	0.031	5.9	LOS A	0.0	0.3	0.41	0.59	35.7
All Vehicles			661	8.2	661	8.2	0.200	0.7	NA	0.1	0.8	0.07	0.07	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Existing Network AM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Rocket & Bant Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%	v/c	sec	[Veh. veh	Dist] m					
South: Bant St (S)															
1a	L1	All MCs	66	0.0	66	0.0	0.073	5.4	LOS A	0.1	0.8	0.39	0.60	0.39	43.1
2	T1	All MCs	4	0.0	4	0.0	0.073	6.0	LOS A	0.1	0.8	0.39	0.60	0.39	45.5
3b	R3	All MCs	9	0.0	9	0.0	0.073	8.7	LOS A	0.1	0.8	0.39	0.60	0.39	43.1
Approach			79	0.0	79	0.0	0.073	5.8	LOS A	0.1	0.8	0.39	0.60	0.39	43.3
SouthEast: Rocket St (SE)															
21b	L3	All MCs	3	0.0	3	0.0	0.165	7.1	LOS A	0.1	0.4	0.04	0.06	0.04	56.5
5	T1	All MCs	284	7.7	284	7.7	0.165	0.1	LOS A	0.1	0.4	0.04	0.06	0.04	56.5
23a	R1	All MCs	16	0.0	16	0.0	0.165	5.3	LOS A	0.1	0.4	0.04	0.06	0.04	49.5
Approach			303	7.3	303	7.3	0.165	0.4	NA	0.1	0.4	0.04	0.06	0.04	54.9
North: Bant St (N)															
7a	L1	All MCs	12	0.0	12	0.0	0.029	5.0	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
8	T1	All MCs	1	0.0	1	0.0	0.029	5.8	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
9b	R3	All MCs	11	0.0	11	0.0	0.029	9.0	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
Approach			24	0.0	24	0.0	0.029	6.9	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
NorthWest: Rocket St (NW)															
27b	L3	All MCs	13	0.0	13	0.0	0.133	4.5	LOS A	0.1	0.9	0.16	0.20	0.16	47.0
11	T1	All MCs	181	11.0	181	11.0	0.133	0.3	LOS A	0.1	0.9	0.16	0.20	0.16	39.4
29a	R1	All MCs	36	0.0	36	0.0	0.133	2.9	LOS A	0.1	0.9	0.16	0.20	0.16	39.4
Approach			230	8.7	230	8.7	0.133	0.9	NA	0.1	0.9	0.16	0.20	0.16	42.9
All Vehicles			636	6.6	636	6.6	0.165	1.5	NA	0.1	0.9	0.14	0.20	0.14	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Existing AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	[Total HV]										
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m			km/h
NorthEast: Alpha St (NE)														
5	T1	All MCs	64	10.9	64	10.9	0.126	4.0	LOS A	0.2	1.4	0.38	0.58	48.5
6	R2	All MCs	47	14.9	47	14.9	0.126	8.0	LOS A	0.2	1.4	0.38	0.58	43.4
Approach			111	12.6	111	12.6	0.126	5.7	LOS A	0.2	1.4	0.38	0.58	47.0
NorthWest: Rocket St (NW)														
7	L2	All MCs	26	7.7	26	7.7	0.118	5.6	LOS A	0.0	0.0	0.00	0.60	49.1
9	R2	All MCs	176	11.9	176	11.9	0.118	5.6	LOS A	0.0	0.0	0.00	0.60	48.4
Approach			202	11.4	202	11.4	0.118	5.6	NA	0.0	0.0	0.00	0.60	48.5
SouthWest: Vale Rd (SW)														
10	L2	All MCs	256	5.9	256	5.9	0.181	5.6	LOS A	0.4	3.0	0.36	0.59	49.2
11	T1	All MCs	43	9.3	43	9.3	0.181	11.4	LOS A	0.4	3.0	0.36	0.59	48.6
Approach			299	6.4	299	6.4	0.181	6.4	LOS A	0.4	3.0	0.36	0.59	49.0
All Vehicles			612	9.2	612	9.2	0.181	6.0	NA	0.4	3.0	0.25	0.59	48.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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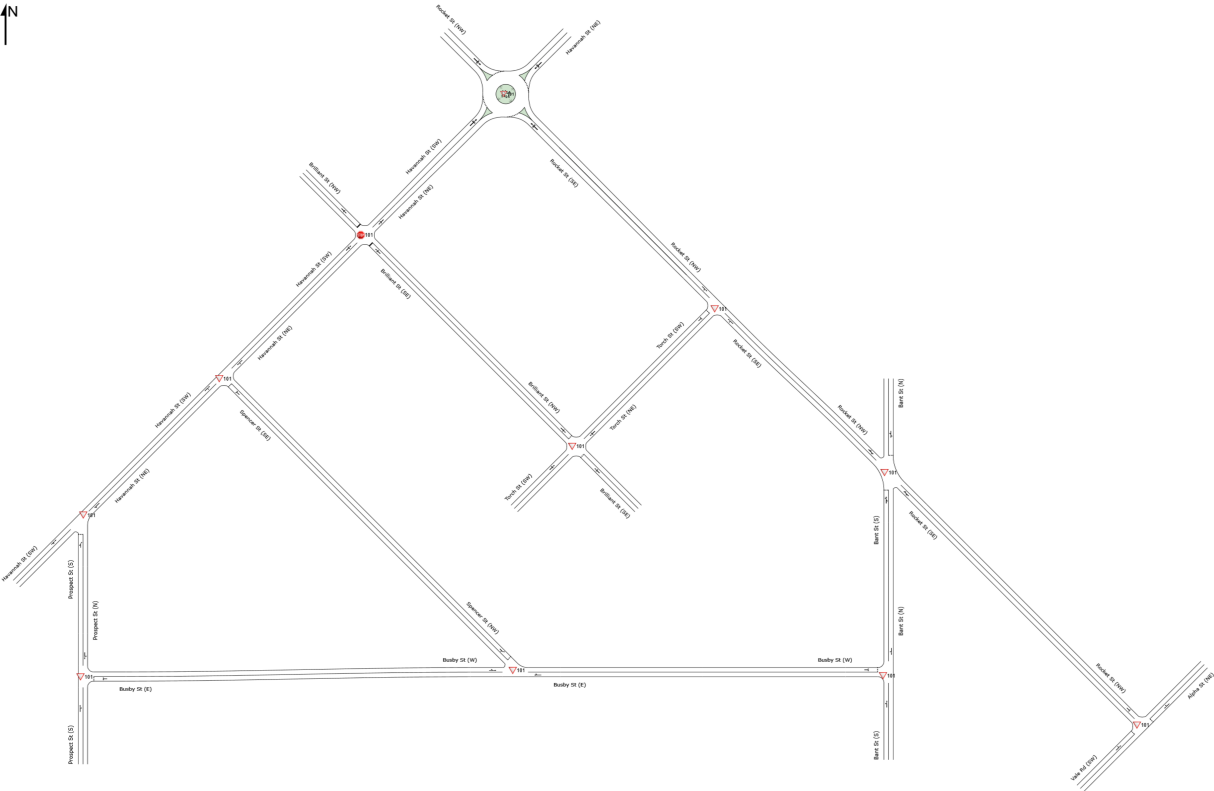
Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414\Existing Network AM 2024.sip9

NETWORK LAYOUT

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Existing PM 2024
▽101	NA	Havannah & Spencer Existing PM 2024
STOP101	NA	Havannah & Brilliant Existing PM 2024
▽101	NA	Havannah & Rocket Existing PM 2024
▽101	NA	Prospect & Busby Existing PM 2024
▽101	NA	Busby & Spencer Existing PM 2024
▽101	NA	Billiant & Torch Existing PM 2024
▽101	NA	Bant St & Busby St Existing PM 2024
▽101	NA	Rocket & Torch Existing PM 2024
▽101	NA	Rocket & Bant Existing PM 2024
▽101	NA	Rocket, Vale & Alpha Existing PM 2024

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414
\Existing Network PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
South: Prospect St (S)															
1b	L3	All MCs	3	0.0	3	0.0	0.025	3.9	LOS A	0.0	0.2	0.36	0.53	0.36	40.8
3a	R1	All MCs	21	0.0	21	0.0	0.025	3.5	LOS A	0.0	0.2	0.36	0.53	0.36	19.6
Approach			24	0.0	24	0.0	0.025	3.5	LOS A	0.0	0.2	0.36	0.53	0.36	26.7
NorthEast: Havannah St (NE)															
24a	L1	All MCs	32	0.0	32	0.0	0.116	5.3	LOS A	0.0	0.0	0.00	0.09	0.00	54.1
25	T1	All MCs	191	2.6	191	2.6	0.116	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	57.6
Approach			223	2.2	223	2.2	0.116	0.8	NA	0.0	0.0	0.00	0.09	0.00	57.4
SouthWest: Havannah St (SW)															
31	T1	All MCs	170	4.1	170	4.1	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
32b	R3	All MCs	1	0.0	1	0.0	0.090	6.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			171	4.1	171	4.1	0.090	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles			418	2.9	418	2.9	0.116	0.6	NA	0.0	0.2	0.02	0.08	0.02	57.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Organisation: CJP CONSULTING ENGINEERS | Licence: NETWORK / 1PC | Processed: Wednesday, 13 March 2024 12:08:35 PM

Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414\Existing Network PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.003	5.2	LOS A	0.0	0.0	0.35	0.54	0.35	32.9
23	R2	All MCs	2	0.0	2	0.0	0.003	6.1	LOS A	0.0	0.0	0.35	0.54	0.35	32.9
Approach			3	0.0	3	0.0	0.003	5.8	LOS A	0.0	0.0	0.35	0.54	0.35	32.9
NorthEast: Havannah St (NE)															
24	L2	All MCs	3	0.0	3	0.0	0.118	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
25	T1	All MCs	223	2.2	223	2.2	0.118	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach			226	2.2	226	2.2	0.118	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.3
SouthWest: Havannah St (SW)															
31	T1	All MCs	191	4.2	191	4.2	0.101	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
32	R2	All MCs	1	0.0	1	0.0	0.101	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			192	4.2	192	4.2	0.101	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
All Vehicles			421	3.1	421	3.1	0.118	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Existing Network PM 2024.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Existing PM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network PM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
SouthEast: Brilliant St (SE)															
4	L2	All MCs	5	0.0	5	0.0	0.051	8.2	LOS A	0.1	0.5	0.48	0.94	0.48	31.9
5	T1	All MCs	26	0.0	26	0.0	0.051	10.3	LOS A	0.1	0.5	0.48	0.94	0.48	41.3
6	R2	All MCs	4	0.0	4	0.0	0.051	11.9	LOS A	0.1	0.5	0.48	0.94	0.48	31.9
Approach			35	0.0	35	0.0	0.051	10.1	LOS A	0.1	0.5	0.48	0.94	0.48	40.2
NorthEast: Havannah St (NE)															
7	L2	All MCs	22	0.0	22	0.0	0.186	6.2	LOS A	0.3	2.2	0.24	0.31	0.24	47.9
8	T1	All MCs	192	1.6	192	1.6	0.186	0.4	LOS A	0.3	2.2	0.24	0.31	0.24	47.9
9	R2	All MCs	107	2.8	107	2.8	0.186	6.2	LOS A	0.3	2.2	0.24	0.31	0.24	47.3
Approach			321	1.9	321	1.9	0.186	2.7	NA	0.3	2.2	0.24	0.31	0.24	47.5
NorthWest: Brilliant St (NW)															
10	L2	All MCs	115	0.0	115	0.0	0.189	8.1	LOS A	0.3	2.2	0.38	0.88	0.38	40.8
11	T1	All MCs	28	0.0	28	0.0	0.189	10.8	LOS A	0.3	2.2	0.38	0.88	0.38	40.8
12	R2	All MCs	30	0.0	30	0.0	0.189	11.5	LOS A	0.3	2.2	0.38	0.88	0.38	40.8
Approach			173	0.0	173	0.0	0.189	9.2	LOS A	0.3	2.2	0.38	0.88	0.38	40.8
SouthWest: Havannah St (SW)															
1	L2	All MCs	35	5.7	35	5.7	0.103	5.6	LOS A	0.0	0.0	0.01	0.11	0.01	48.2
2	T1	All MCs	158	2.5	158	2.5	0.103	0.0	LOS A	0.0	0.0	0.01	0.11	0.01	52.0
3	R2	All MCs	1	0.0	1	0.0	0.103	5.6	LOS A	0.0	0.0	0.01	0.11	0.01	52.0
Approach			194	3.1	194	3.1	0.103	1.0	NA	0.0	0.0	0.01	0.11	0.01	49.8
All Vehicles			723	1.7	723	1.7	0.189	4.2	NA	0.3	2.2	0.22	0.42	0.22	44.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Existing Network PM 2024.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Existing PM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network PM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	35	0.0	35	0.0	0.354	5.5	LOS A	0.9	6.7	0.61	0.61	34.3
5	T1	All MCs	178	1.7	178	1.7	0.354	5.6	LOS A	0.9	6.7	0.61	0.61	43.1
6	R2	All MCs	135	5.2	135	5.2	0.354	9.6	LOS A	0.9	6.7	0.61	0.61	39.3
Approach			348	2.9	348	2.9	0.354	7.1	LOS A	0.9	6.7	0.61	0.61	41.5
NorthEast: Havannah St (NE)														
7	L2	All MCs	127	3.9	127	3.9	0.378	5.9	LOS A	1.1	7.5	0.53	0.53	38.7
8	T1	All MCs	245	2.4	245	2.4	0.378	6.1	LOS A	1.1	7.5	0.53	0.53	38.7
9	R2	All MCs	46	0.0	46	0.0	0.378	9.9	LOS A	1.1	7.5	0.53	0.53	44.4
Approach			418	2.6	418	2.6	0.378	6.5	LOS A	1.1	7.5	0.53	0.53	40.2
NorthWest: Rocket St (NW)														
10	L2	All MCs	52	3.8	52	3.8	0.269	5.7	LOS A	0.7	4.7	0.60	0.60	44.0
11	T1	All MCs	145	2.1	145	2.1	0.269	5.7	LOS A	0.7	4.7	0.60	0.60	42.1
12	R2	All MCs	60	0.0	60	0.0	0.269	9.5	LOS A	0.7	4.7	0.60	0.60	42.1
Approach			257	1.9	257	1.9	0.269	6.6	LOS A	0.7	4.7	0.60	0.60	42.6
SouthWest: Havannah St (SW)														
1	L2	All MCs	47	0.0	47	0.0	0.315	6.5	LOS A	0.8	5.9	0.61	0.61	44.5
2	T1	All MCs	224	4.5	224	4.5	0.315	6.9	LOS A	0.8	5.9	0.61	0.61	43.2
3	R2	All MCs	31	6.5	31	6.5	0.315	10.9	LOS A	0.8	5.9	0.61	0.61	37.9
Approach			302	4.0	302	4.0	0.315	7.2	LOS A	0.8	5.9	0.61	0.61	43.2
All Vehicles			1325	2.9	1325	2.9	0.378	6.8	LOS A	1.1	7.5	0.58	0.58	41.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prospect & Busby Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
South: Prospect St (S)															
2	T1	All MCs	21	0.0	21	0.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	49.7
3	R2	All MCs	1	0.0	1	0.0	0.011	4.6	LOS A	0.0	0.0	0.01	0.03	0.01	49.7
Approach			22	0.0	22	0.0	0.011	0.2	NA	0.0	0.0	0.01	0.03	0.01	49.7
East: Busby St (E)															
4	L2	All MCs	3	0.0	3	0.0	0.004	4.6	LOS A	0.0	0.0	0.10	0.51	0.10	43.9
6	R2	All MCs	3	0.0	3	0.0	0.004	4.7	LOS A	0.0	0.0	0.10	0.51	0.10	35.8
Approach			6	0.0	6	0.0	0.004	4.7	LOS A	0.0	0.0	0.10	0.51	0.10	41.9
North: Prospect St (N)															
7	L2	All MCs	4	0.0	4	0.0	0.017	2.5	LOS A	0.0	0.0	0.00	0.06	0.00	43.7
8	T1	All MCs	28	0.0	28	0.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach			32	0.0	32	0.0	0.017	0.3	NA	0.0	0.0	0.00	0.06	0.00	49.5
All Vehicles			60	0.0	60	0.0	0.017	0.7	NA	0.0	0.0	0.01	0.09	0.01	48.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Busby St (E)															
5	T1	All MCs	7	0.0	7	0.0	0.004	0.0	LOS A	0.0	0.0	0.01	0.06	0.01	49.0
6a	R1	All MCs	1	0.0	1	0.0	0.004	3.6	LOS A	0.0	0.0	0.01	0.06	0.01	49.0
Approach			8	0.0	8	0.0	0.004	0.5	NA	0.0	0.0	0.01	0.06	0.01	49.0
NorthWest: Spencer St (NW)															
27a	L1	All MCs	1	0.0	1	0.0	0.001	4.4	LOS A	0.0	0.0	0.02	0.57	0.02	33.8
29b	R3	All MCs	1	0.0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.02	0.57	0.02	33.8
Approach			2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.02	0.57	0.02	33.8
West: Busby St (W)															
10b	L3	All MCs	2	0.0	2	0.0	0.002	5.4	LOS A	0.0	0.0	0.00	0.30	0.00	41.3
11	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	41.3
Approach			4	0.0	4	0.0	0.002	2.7	NA	0.0	0.0	0.00	0.30	0.00	41.3
All Vehicles			14	0.0	14	0.0	0.004	1.7	NA	0.0	0.0	0.01	0.20	0.01	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414
Existing Network PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h	
SouthEast: Brilliant St (SE)															
1	L2	All MCs	3	0.0	3	0.0	0.011	4.6	LOS A	0.0	0.1	0.05	0.47	0.05	35.4
2	T1	All MCs	11	0.0	11	0.0	0.011	3.2	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
Approach			15	0.0	15	0.0	0.011	3.6	LOS A	0.0	0.1	0.05	0.47	0.05	42.8
NorthEast: Torch St (NE)															
4	L2	All MCs	12	0.0	12	0.0	0.012	4.6	LOS A	0.0	0.1	0.02	0.47	0.02	45.0
5	T1	All MCs	3	0.0	3	0.0	0.012	0.0	LOS A	0.0	0.1	0.02	0.47	0.02	41.6
6	R2	All MCs	8	0.0	8	0.0	0.012	4.6	LOS A	0.0	0.1	0.02	0.47	0.02	40.1
Approach			23	0.0	23	0.0	0.012	4.0	NA	0.0	0.1	0.02	0.47	0.02	43.8
NorthWest: Brilliant St (NW)															
7	L2	All MCs	9	0.0	9	0.0	0.029	4.6	LOS A	0.0	0.3	0.04	0.47	0.04	40.6
8	T1	All MCs	29	0.0	29	0.0	0.029	3.2	LOS A	0.0	0.3	0.04	0.47	0.04	45.6
9	R2	All MCs	1	0.0	1	0.0	0.029	4.6	LOS A	0.0	0.3	0.04	0.47	0.04	26.8
Approach			39	0.0	39	0.0	0.029	3.6	LOS A	0.0	0.3	0.04	0.47	0.04	44.8
SouthWest: Torch St (SW)															
10	L2	All MCs	1	0.0	1	0.0	0.002	3.9	LOS A	0.0	0.0	0.04	0.26	0.04	34.1
11	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.04	0.26	0.04	34.1
12	R2	All MCs	1	0.0	1	0.0	0.002	3.9	LOS A	0.0	0.0	0.04	0.26	0.04	45.2
Approach			4	0.0	4	0.0	0.002	1.9	NA	0.0	0.0	0.04	0.26	0.04	41.9
All Vehicles			81	0.0	81	0.0	0.029	3.6	NA	0.0	0.3	0.03	0.46	0.03	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414
Existing Network PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1	L2	All MCs	1	0.0	1	0.0	0.038	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
2	T1	All MCs	74	0.0	74	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			75	0.0	75	0.0	0.038	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Bant St (N)															
8	T1	All MCs	55	0.0	55	0.0	0.029	0.0	LOS A	0.0	0.0	0.01	0.02	0.01	49.8
9	R2	All MCs	2	0.0	2	0.0	0.029	4.6	LOS A	0.0	0.0	0.01	0.02	0.01	49.1
Approach			57	0.0	57	0.0	0.029	0.2	NA	0.0	0.0	0.01	0.02	0.01	49.8
West: Busby St (W)															
10	L2	All MCs	8	0.0	8	0.0	0.014	4.8	LOS A	0.0	0.1	0.17	0.51	0.17	33.9
12	R2	All MCs	10	0.0	10	0.0	0.014	5.0	LOS A	0.0	0.1	0.17	0.51	0.17	43.2
Approach			18	0.0	18	0.0	0.014	4.9	LOS A	0.0	0.1	0.17	0.51	0.17	41.4
All Vehicles			150	0.0	150	0.0	0.038	0.7	NA	0.0	0.1	0.03	0.07	0.03	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Torch Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	3	0.0	3	0.0	0.165	2.7	LOS A	0.0	0.0	0.00	0.00	59.1
5	T1	All MCs	313	2.6	313	2.6	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	59.1
Approach			316	2.5	316	2.5	0.165	0.0	NA	0.0	0.0	0.00	0.00	59.1
NorthWest: Rocket St (NW)														
11	T1	All MCs	263	1.9	263	1.9	0.163	0.2	LOS A	0.1	0.8	0.12	0.14	55.0
12	R2	All MCs	34	0.0	34	0.0	0.163	6.7	LOS A	0.1	0.8	0.12	0.14	55.0
Approach			297	1.7	297	1.7	0.163	1.0	NA	0.1	0.8	0.12	0.14	55.0
SouthWest: Torch St (SW)														
1	L2	All MCs	22	0.0	22	0.0	0.021	5.6	LOS A	0.0	0.2	0.37	0.37	35.9
3	R2	All MCs	2	0.0	2	0.0	0.021	7.3	LOS A	0.0	0.2	0.37	0.37	35.9
Approach			24	0.0	24	0.0	0.021	5.7	LOS A	0.0	0.2	0.37	0.37	35.9
All Vehicles			637	2.0	637	2.0	0.165	0.7	NA	0.1	0.8	0.07	0.07	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Bant Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1a	L1	All MCs	79	0.0	79	0.0	0.073	5.1	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
2	T1	All MCs	1	0.0	1	0.0	0.073	5.7	LOS A	0.1	0.8	0.33	0.57	0.33	45.6
3b	R3	All MCs	9	0.0	9	0.0	0.073	8.1	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
Approach			89	0.0	89	0.0	0.073	5.4	LOS A	0.1	0.8	0.33	0.57	0.33	43.4
SouthEast: Rocket St (SE)															
21b	L3	All MCs	4	0.0	4	0.0	0.122	7.0	LOS A	0.0	0.2	0.04	0.05	0.04	56.6
5	T1	All MCs	213	5.2	213	5.2	0.122	0.0	LOS A	0.0	0.2	0.04	0.05	0.04	56.6
23a	R1	All MCs	10	0.0	10	0.0	0.122	5.3	LOS A	0.0	0.2	0.04	0.05	0.04	49.6
Approach			227	4.8	227	4.8	0.122	0.4	NA	0.0	0.2	0.04	0.05	0.04	55.2
North: Bant St (N)															
7a	L1	All MCs	16	0.0	16	0.0	0.040	5.0	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
8	T1	All MCs	3	0.0	3	0.0	0.040	5.4	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
9b	R3	All MCs	15	0.0	15	0.0	0.040	8.6	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
Approach			34	0.0	34	0.0	0.040	6.6	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
NorthWest: Rocket St (NW)															
27b	L3	All MCs	34	0.0	34	0.0	0.153	4.2	LOS A	0.2	1.4	0.19	0.27	0.19	46.6
11	T1	All MCs	176	6.3	176	6.3	0.153	0.3	LOS A	0.2	1.4	0.19	0.27	0.19	35.5
29a	R1	All MCs	58	0.0	58	0.0	0.153	2.6	LOS A	0.2	1.4	0.19	0.27	0.19	35.5
Approach			268	4.1	268	4.1	0.153	1.3	NA	0.2	1.4	0.19	0.27	0.19	42.7
All Vehicles			618	3.6	618	3.6	0.153	1.9	NA	0.2	1.4	0.17	0.25	0.17	46.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Existing PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				
NorthEast: Alpha St (NE)															
5	T1	All MCs	87	3.4	87	3.4	0.104	3.8	LOS A	0.2	1.1	0.31	0.53	0.31	49.4
6	R2	All MCs	28	0.0	28	0.0	0.104	6.7	LOS A	0.2	1.1	0.31	0.53	0.31	44.4
Approach			115	2.6	115	2.6	0.104	4.5	LOS A	0.2	1.1	0.31	0.53	0.31	48.6
NorthWest: Rocket St (NW)															
7	L2	All MCs	29	0.0	29	0.0	0.111	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	49.5
9	R2	All MCs	172	4.1	172	4.1	0.111	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	48.9
Approach			201	3.5	201	3.5	0.111	5.5	NA	0.0	0.0	0.00	0.60	0.00	49.0
SouthWest: Vale Rd (SW)															
10	L2	All MCs	199	4.5	199	4.5	0.146	5.6	LOS A	0.3	2.3	0.35	0.59	0.35	49.3
11	T1	All MCs	43	4.7	43	4.7	0.146	9.5	LOS A	0.3	2.3	0.35	0.59	0.35	48.7
Approach			242	4.5	242	4.5	0.146	6.3	LOS A	0.3	2.3	0.35	0.59	0.35	49.1
All Vehicles			558	3.8	558	3.8	0.146	5.6	NA	0.3	2.3	0.22	0.58	0.22	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

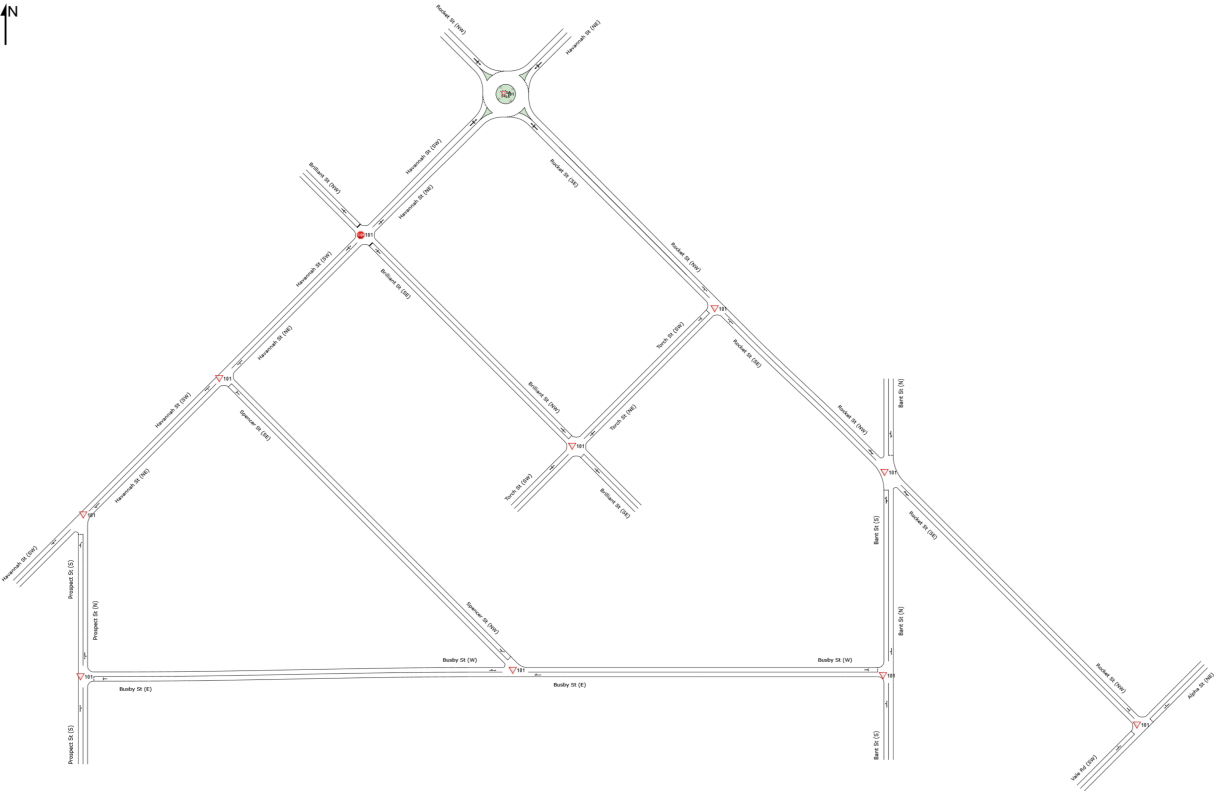
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 Busby) AM 2024
▽101	NA	Havannah & Spencer Proposed (with 34 Busby) AM 2024
STOP101	NA	Havannah & Brilliant Proposed (with 34 Busby) AM 2024
▽101	NA	Havannah & Rocket Proposed (with 34 Busby) AM 2024
▽101	NA	Prospect & Busby Proposed (with 34 Busby) AM 2024
▽101	NA	Busby & Spencer Proposed (with 34 Busby) AM 2024
▽101	NA	Billiant & Torch Proposed (with 34 Busby) AM 2024
▽101	NA	Bant St & Busby St Proposed (with 34 Busby) AM 2024
▽101	NA	Rocket & Torch Proposed (with 34 Busby) AM 2024
▽101	NA	Rocket & Bant Proposed (with 34 Busby) AM 2024
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 Busby) AM 2024

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\\Proposed Network (with 34 Busby) AM 2024.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Havannah & Prospect Proposed (with 34 Busby)
AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 Busby) AM
2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect St (S)															
1b	L3	All MCs	18	0.0	18	0.0	0.060	4.1	LOS A	0.1	0.6	0.40	0.59	0.40	39.5
3a	R1	All MCs	37	0.0	37	0.0	0.060	4.3	LOS A	0.1	0.6	0.40	0.59	0.40	18.5
Approach			55	0.0	55	0.0	0.060	4.2	LOS A	0.1	0.6	0.40	0.59	0.40	31.3
NorthEast: Havannah St (NE)															
24a	L1	All MCs	73	0.0	73	0.0	0.163	5.3	LOS A	0.0	0.0	0.00	0.14	0.00	50.7
25	T1	All MCs	236	5.1	236	5.1	0.163	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.1
Approach			309	3.9	309	3.9	0.163	1.3	NA	0.0	0.0	0.00	0.14	0.00	55.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	215	11.2	215	11.2	0.126	0.1	LOS A	0.0	0.3	0.04	0.06	0.04	57.7
32b	R3	All MCs	10	0.0	10	0.0	0.126	7.2	LOS A	0.0	0.3	0.04	0.06	0.04	57.7
Approach			225	10.7	225	10.7	0.126	0.4	NA	0.0	0.3	0.04	0.06	0.04	57.7
All Vehicles			589	6.1	589	6.1	0.163	1.2	NA	0.1	0.6	0.05	0.15	0.05	54.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Havannah & Spencer Proposed (with 34 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.009	5.5	LOS A	0.0	0.1	0.45	0.61	0.45	31.2
23	R2	All MCs	6	0.0	6	0.0	0.009	7.0	LOS A	0.0	0.1	0.45	0.61	0.45	31.2
Approach			7	0.0	7	0.0	0.009	6.8	LOS A	0.0	0.1	0.45	0.61	0.45	31.2
NorthEast: Havannah St (NE)															
24	L2	All MCs	2	0.0	2	0.0	0.163	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
25	T1	All MCs	308	4.2	308	4.2	0.163	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			310	4.2	310	4.2	0.163	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
SouthWest: Havannah St (SW)															
31	T1	All MCs	252	10.3	252	10.3	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
32	R2	All MCs	1	0.0	1	0.0	0.139	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			253	10.3	253	10.3	0.139	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles			570	6.8	570	6.8	0.163	0.1	NA	0.0	0.1	0.01	0.01	0.01	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2024.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 Busby) AM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h	
SouthEast: Brilliant St (SE)															
4	L2	All MCs	4	0.0	4	0.0	0.311	9.3	LOS A	0.5	3.6	0.65	1.06	0.78	27.9
5	T1	All MCs	72	0.0	72	0.0	0.311	13.3	LOS A	0.5	3.6	0.65	1.06	0.78	39.1
6	R2	All MCs	74	0.0	74	0.0	0.311	14.9	LOS B	0.5	3.6	0.65	1.06	0.78	27.9
Approach			150	0.0	150	0.0	0.311	13.9	LOS A	0.5	3.6	0.65	1.06	0.78	35.5
NorthEast: Havannah St (NE)															
7	L2	All MCs	36	13.9	36	13.9	0.238	6.7	LOS A	0.4	2.8	0.27	0.33	0.27	48.2
8	T1	All MCs	254	4.3	254	4.3	0.238	0.5	LOS A	0.4	2.8	0.27	0.33	0.27	48.2
9	R2	All MCs	110	4.5	110	4.5	0.238	6.6	LOS A	0.4	2.8	0.27	0.33	0.27	47.3
Approach			400	5.3	400	5.3	0.238	2.8	NA	0.4	2.8	0.27	0.33	0.27	47.7
NorthWest: Brilliant St (NW)															
10	L2	All MCs	90	0.0	90	0.0	0.258	8.3	LOS A	0.4	2.9	0.51	0.88	0.51	39.5
11	T1	All MCs	35	0.0	35	0.0	0.258	12.6	LOS A	0.4	2.9	0.51	0.88	0.51	39.5
12	R2	All MCs	53	0.0	53	0.0	0.258	14.1	LOS A	0.4	2.9	0.51	0.88	0.51	39.5
Approach			178	0.0	178	0.0	0.258	10.9	LOS A	0.4	2.9	0.51	0.88	0.51	39.5
SouthWest: Havannah St (SW)															
1	L2	All MCs	81	7.4	81	7.4	0.145	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	47.2
2	T1	All MCs	174	11.5	174	11.5	0.145	0.0	LOS A	0.0	0.1	0.02	0.20	0.02	46.4
3	R2	All MCs	4	0.0	4	0.0	0.145	6.1	LOS A	0.0	0.1	0.02	0.20	0.02	46.4
Approach			259	10.0	259	10.0	0.145	1.9	NA	0.0	0.1	0.02	0.20	0.02	46.9
All Vehicles			987	4.8	987	4.8	0.311	5.7	NA	0.5	3.6	0.30	0.51	0.32	42.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Rocket Proposed (with 34 Busby) AM 2024 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh. veh	Dist] m				
SouthEast: Rocket St (SE)															
4	L2	All MCs	32	12.5	32	12.5	0.455	7.1	LOS A	1.3	9.7	0.73	0.68	0.74	33.2
5	T1	All MCs	219	3.7	219	3.7	0.455	6.8	LOS A	1.3	9.7	0.73	0.68	0.74	42.5
6	R2	All MCs	141	12.1	141	12.1	0.455	11.0	LOS A	1.3	9.7	0.73	0.68	0.74	37.7
Approach			392	7.4	392	7.4	0.455	8.3	LOS A	1.3	9.7	0.73	0.68	0.74	40.7
NorthEast: Havannah St (NE)															
7	L2	All MCs	99	16.2	99	16.2	0.446	6.3	LOS A	1.3	9.9	0.58	0.57	0.58	38.0
8	T1	All MCs	301	4.7	301	4.7	0.446	6.3	LOS A	1.3	9.9	0.58	0.57	0.58	38.0
9	R2	All MCs	83	4.8	83	4.8	0.446	10.2	LOS A	1.3	9.9	0.58	0.57	0.58	44.0
Approach			483	7.0	483	7.0	0.446	6.9	LOS A	1.3	9.9	0.58	0.57	0.58	40.2
NorthWest: Rocket St (NW)															
10	L2	All MCs	60	5.0	60	5.0	0.291	6.0	LOS A	0.7	5.3	0.64	0.62	0.64	43.7
11	T1	All MCs	136	5.1	136	5.1	0.291	6.1	LOS A	0.7	5.3	0.64	0.62	0.64	41.8
12	R2	All MCs	68	0.0	68	0.0	0.291	9.7	LOS A	0.7	5.3	0.64	0.62	0.64	41.8
Approach			264	3.8	264	3.8	0.291	7.0	LOS A	0.7	5.3	0.64	0.62	0.64	42.3
SouthWest: Havannah St (SW)															
1	L2	All MCs	78	5.1	78	5.1	0.411	7.5	LOS A	1.1	8.5	0.72	0.66	0.72	43.9
2	T1	All MCs	242	9.5	242	9.5	0.411	8.0	LOS A	1.1	8.5	0.72	0.66	0.72	41.8
3	R2	All MCs	28	7.1	28	7.1	0.411	11.8	LOS A	1.1	8.5	0.72	0.66	0.72	36.8
Approach			348	8.3	348	8.3	0.411	8.2	LOS A	1.1	8.5	0.72	0.66	0.72	42.3
All Vehicles			1487	6.9	1487	6.9	0.455	7.6	LOS A	1.3	9.9	0.66	0.63	0.67	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Prospect & Busby Proposed (with 34 Busby) AM 2024 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
South: Prospect St (S)															
2	T1	All MCs	23	0.0	23	0.0	0.013	0.0	LOS A	0.0	0.0	0.03	0.05	0.03	49.3
3	R2	All MCs	2	0.0	2	0.0	0.013	4.7	LOS A	0.0	0.0	0.03	0.05	0.03	49.3
Approach			25	0.0	25	0.0	0.013	0.4	NA	0.0	0.0	0.03	0.05	0.03	49.3
East: Busby St (E)															
4	L2	All MCs	1	0.0	1	0.0	0.027	4.6	LOS A	0.0	0.2	0.12	0.53	0.12	43.8
6	R2	All MCs	32	0.0	32	0.0	0.027	4.8	LOS A	0.0	0.2	0.12	0.53	0.12	35.5
Approach			33	0.0	33	0.0	0.027	4.8	LOS A	0.0	0.2	0.12	0.53	0.12	36.3
North: Prospect St (N)															
7	L2	All MCs	76	0.0	76	0.0	0.045	2.5	LOS A	0.0	0.0	0.00	0.45	0.00	26.0
8	T1	All MCs	7	0.0	7	0.0	0.045	0.0	LOS A	0.0	0.0	0.00	0.45	0.00	47.1
Approach			83	0.0	83	0.0	0.045	2.3	NA	0.0	0.0	0.00	0.45	0.00	35.2
All Vehicles			141	0.0	141	0.0	0.045	2.6	NA	0.0	0.2	0.03	0.40	0.03	41.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Proposed (with 34 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Busby St (E)															
5	T1	All MCs	20	0.0	20	0.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.04	0.01	49.2
6a	R1	All MCs	2	0.0	2	0.0	0.011	3.6	LOS A	0.0	0.0	0.01	0.04	0.01	49.2
Approach			22	0.0	22	0.0	0.011	0.3	NA	0.0	0.0	0.01	0.04	0.01	49.2
NorthWest: Spencer St (NW)															
27a	L1	All MCs	7	0.0	7	0.0	0.005	4.4	LOS A	0.0	0.1	0.04	0.54	0.04	34.2
29b	R3	All MCs	1	0.0	1	0.0	0.005	5.2	LOS A	0.0	0.1	0.04	0.54	0.04	34.2
Approach			8	0.0	8	0.0	0.005	4.5	LOS A	0.0	0.1	0.04	0.54	0.04	34.2
West: Busby St (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.004	5.4	LOS A	0.0	0.0	0.00	0.08	0.00	47.4
11	T1	All MCs	7	0.0	7	0.0	0.004	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	47.4
Approach			8	0.0	8	0.0	0.004	0.7	NA	0.0	0.0	0.00	0.08	0.00	47.4
All Vehicles			38	0.0	38	0.0	0.011	1.3	NA	0.0	0.1	0.01	0.16	0.01	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Billiant & Torch Proposed (with 34 Busby) AM 2024
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 Busby) AM
2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV] veh/h	%	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
1	L2	All MCs	1	0.0	1	0.0	0.027	4.6	LOS A	0.0	0.3	0.16	0.47	0.16	35.2
2	T1	All MCs	24	0.0	24	0.0	0.027	3.6	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
3	R2	All MCs	7	0.0	7	0.0	0.027	4.8	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
Approach			32	0.0	32	0.0	0.027	3.9	LOS A	0.0	0.3	0.16	0.47	0.16	44.5
NorthEast: Torch St (NE)															
4	L2	All MCs	9	0.0	9	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	44.8
5	T1	All MCs	7	0.0	7	0.0	0.016	0.2	LOS A	0.0	0.2	0.18	0.40	0.18	41.4
6	R2	All MCs	13	0.0	13	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	39.8
Approach			29	0.0	29	0.0	0.016	3.7	NA	0.0	0.2	0.18	0.40	0.18	42.8
NorthWest: Brilliant St (NW)															
7	L2	All MCs	15	0.0	15	0.0	0.044	4.6	LOS A	0.1	0.4	0.07	0.50	0.07	39.1
8	T1	All MCs	14	0.0	14	0.0	0.044	3.4	LOS A	0.1	0.4	0.07	0.50	0.07	45.0
9	R2	All MCs	24	0.0	24	0.0	0.044	4.9	LOS A	0.1	0.4	0.07	0.50	0.07	26.2
Approach			53	0.0	53	0.0	0.044	4.4	LOS A	0.1	0.4	0.07	0.50	0.07	35.7
SouthWest: Torch St (SW)															
10	L2	All MCs	100	0.0	100	0.0	0.057	3.9	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
11	T1	All MCs	5	0.0	5	0.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
12	R2	All MCs	1	0.0	1	0.0	0.057	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	43.7
Approach			106	0.0	106	0.0	0.057	3.7	NA	0.0	0.0	0.00	0.49	0.00	28.8
All Vehicles			220	0.0	220	0.0	0.057	3.9	NA	0.1	0.4	0.06	0.48	0.06	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Proposed (with 34 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%	v/c	sec	[Veh. veh	Dist] m					km/h
South: Bant St (S)															
1	L2	All MCs	4	0.0	4	0.0	0.040	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
2	T1	All MCs	74	0.0	74	0.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach			78	0.0	78	0.0	0.040	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.7
North: Bant St (N)															
8	T1	All MCs	37	0.0	37	0.0	0.025	0.1	LOS A	0.0	0.1	0.07	0.12	0.07	48.8
9	R2	All MCs	9	0.0	9	0.0	0.025	4.8	LOS A	0.0	0.1	0.07	0.12	0.07	45.3
Approach			46	0.0	46	0.0	0.025	1.0	NA	0.0	0.1	0.07	0.12	0.07	48.6
West: Busby St (W)															
10	L2	All MCs	16	0.0	16	0.0	0.016	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	34.0
12	R2	All MCs	6	0.0	6	0.0	0.016	4.9	LOS A	0.0	0.2	0.16	0.50	0.16	43.2
Approach			22	0.0	22	0.0	0.016	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	39.1
All Vehicles			146	0.0	146	0.0	0.040	1.2	NA	0.0	0.2	0.05	0.13	0.05	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Proposed Network (with 34 Busby) AM 2024.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Torch Proposed (with 34 Busby) AM 2024
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 Busby) AM
2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	7	0.0	7	0.0	0.200	2.7	LOS A	0.0	0.0	0.00	0.00	58.1
5	T1	All MCs	363	8.0	363	8.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	58.1
Approach			370	7.8	370	7.8	0.200	0.1	NA	0.0	0.0	0.00	0.00	58.1
NorthWest: Rocket St (NW)														
11	T1	All MCs	232	9.1	232	9.1	0.150	0.3	LOS A	0.1	0.8	0.12	0.12	55.5
12	R2	All MCs	25	16.0	25	16.0	0.150	7.5	LOS A	0.1	0.8	0.12	0.12	55.5
Approach			257	9.7	257	9.7	0.150	1.0	NA	0.1	0.8	0.12	0.12	55.5
SouthWest: Torch St (SW)														
1	L2	All MCs	32	0.0	32	0.0	0.031	5.8	LOS A	0.0	0.3	0.41	0.41	35.7
3	R2	All MCs	2	0.0	2	0.0	0.031	7.6	LOS A	0.0	0.3	0.41	0.41	35.7
Approach			34	0.0	34	0.0	0.031	5.9	LOS A	0.0	0.3	0.41	0.41	35.7
All Vehicles			661	8.2	661	8.2	0.200	0.7	NA	0.1	0.8	0.07	0.07	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Bant Proposed (with 34 Busby) AM 2024
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 Busby) AM
2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1a	L1	All MCs	66	0.0	66	0.0	0.089	5.4	LOS A	0.1	0.9	0.41	0.62	0.41	42.8
2	T1	All MCs	4	0.0	4	0.0	0.089	6.1	LOS A	0.1	0.9	0.41	0.62	0.41	45.3
3b	R3	All MCs	19	0.0	19	0.0	0.089	8.8	LOS A	0.1	0.9	0.41	0.62	0.41	42.8
Approach			89	0.0	89	0.0	0.089	6.2	LOS A	0.1	0.9	0.41	0.62	0.41	43.0
SouthEast: Rocket St (SE)															
21b	L3	All MCs	10	0.0	10	0.0	0.170	6.9	LOS A	0.1	0.4	0.05	0.07	0.05	55.5
5	T1	All MCs	284	7.7	284	7.7	0.170	0.1	LOS A	0.1	0.4	0.05	0.07	0.05	55.5
23a	R1	All MCs	16	0.0	16	0.0	0.170	5.3	LOS A	0.1	0.4	0.05	0.07	0.05	49.4
Approach			310	7.1	310	7.1	0.170	0.5	NA	0.1	0.4	0.05	0.07	0.05	54.1
North: Bant St (N)															
7a	L1	All MCs	12	0.0	12	0.0	0.029	5.0	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
8	T1	All MCs	1	0.0	1	0.0	0.029	5.8	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
9b	R3	All MCs	11	0.0	11	0.0	0.029	9.0	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
Approach			24	0.0	24	0.0	0.029	6.9	LOS A	0.0	0.3	0.40	0.59	0.40	42.1
NorthWest: Rocket St (NW)															
27b	L3	All MCs	13	0.0	13	0.0	0.133	4.5	LOS A	0.1	0.9	0.16	0.20	0.16	47.0
11	T1	All MCs	181	11.0	181	11.0	0.133	0.3	LOS A	0.1	0.9	0.16	0.20	0.16	39.3
29a	R1	All MCs	36	0.0	36	0.0	0.133	2.9	LOS A	0.1	0.9	0.16	0.20	0.16	39.3
Approach			230	8.7	230	8.7	0.133	0.9	NA	0.1	0.9	0.16	0.20	0.16	42.8
All Vehicles			653	6.4	653	6.4	0.170	1.7	NA	0.1	0.9	0.15	0.21	0.15	46.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Rocket, Vale & Alpha Proposed (with 34 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Alpha St (NE)															
5	T1	All MCs	64	10.9	64	10.9	0.128	4.1	LOS A	0.2	1.4	0.39	0.59	0.39	48.5
6	R2	All MCs	47	14.9	47	14.9	0.128	8.2	LOS A	0.2	1.4	0.39	0.59	0.39	43.3
Approach			111	12.6	111	12.6	0.128	5.8	LOS A	0.2	1.4	0.39	0.59	0.39	47.0
NorthWest: Rocket St (NW)															
7	L2	All MCs	26	7.7	26	7.7	0.123	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	49.1
9	R2	All MCs	186	11.3	186	11.3	0.123	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	48.5
Approach			212	10.8	212	10.8	0.123	5.6	NA	0.0	0.0	0.00	0.60	0.00	48.5
SouthWest: Vale Rd (SW)															
10	L2	All MCs	263	5.7	263	5.7	0.185	5.6	LOS A	0.4	3.1	0.37	0.60	0.37	49.1
11	T1	All MCs	43	9.3	43	9.3	0.185	11.9	LOS A	0.4	3.1	0.37	0.60	0.37	48.6
Approach			306	6.2	306	6.2	0.185	6.5	LOS A	0.4	3.1	0.37	0.60	0.37	49.0
All Vehicles			629	8.9	629	8.9	0.185	6.1	NA	0.4	3.1	0.25	0.60	0.25	48.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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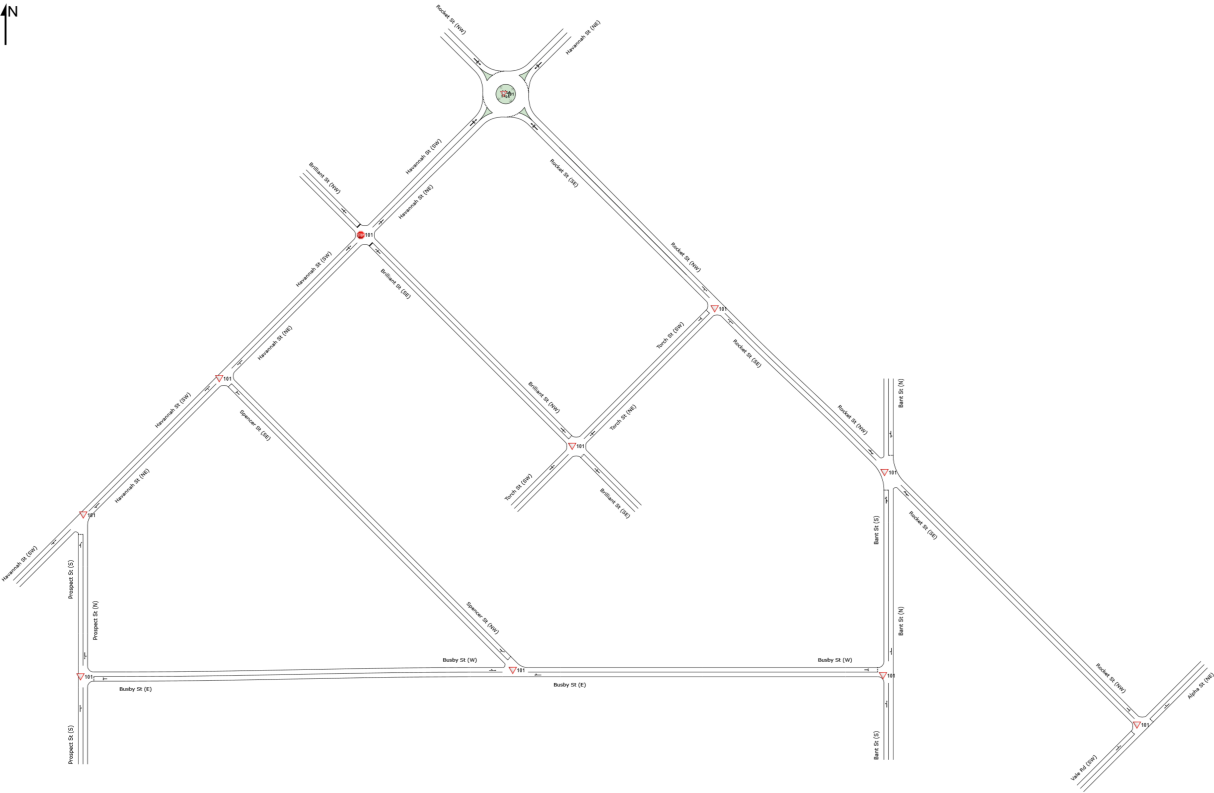
\Proposed Network (with 34 Busby) AM 2024.sip9

NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 Busby) PM 2024
(Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 Busby) PM 2024
▽101	NA	Havannah & Spencer Proposed (with 34 Busby) PM 2024
STOP101	NA	Havannah & Brilliant Proposed (with 34 Busby) PM 2024
▽101	NA	Havannah & Rocket Proposed (with 34 Busby) PM 2024
▽101	NA	Prospect & Busby Proposed (with 34 Busby) PM 2024
▽101	NA	Busby & Spencer Proposed (with 34 Busby) PM 2024
▽101	NA	Brilliant & Torch Proposed (with 34 Busby) PM 2024
▽101	NA	Bant St & Busby St Proposed (with 34 Busby) PM 2024
▽101	NA	Rocket & Torch Proposed (with 34 Busby) PM 2024
▽101	NA	Rocket & Bant Proposed (with 34 Busby) PM 2024
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 Busby) PM 2024

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MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Proposed (with 34 Busby)
PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 Busby) PM
2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect St (S)															
1b	L3	All MCs	5	0.0	5	0.0	0.028	4.0	LOS A	0.0	0.3	0.37	0.54	0.37	40.4
3a	R1	All MCs	21	0.0	21	0.0	0.028	3.7	LOS A	0.0	0.3	0.37	0.54	0.37	19.2
Approach			26	0.0	26	0.0	0.028	3.8	LOS A	0.0	0.3	0.37	0.54	0.37	28.7
NorthEast: Havannah St (NE)															
24a	L1	All MCs	98	0.0	98	0.0	0.151	5.3	LOS A	0.0	0.0	0.00	0.20	0.00	47.8
25	T1	All MCs	191	2.6	191	2.6	0.151	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	54.7
Approach			289	1.7	289	1.7	0.151	1.8	NA	0.0	0.0	0.00	0.20	0.00	53.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	170	4.1	170	4.1	0.102	0.1	LOS A	0.0	0.3	0.08	0.10	0.08	56.3
32b	R3	All MCs	15	0.0	15	0.0	0.102	7.1	LOS A	0.0	0.3	0.08	0.10	0.08	56.3
Approach			185	3.8	185	3.8	0.102	0.7	NA	0.0	0.3	0.08	0.10	0.08	56.3
All Vehicles			500	2.4	500	2.4	0.151	1.5	NA	0.0	0.3	0.05	0.18	0.05	53.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Havannah & Spencer Proposed (with 34 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.003	5.4	LOS A	0.0	0.0	0.39	0.55	0.39	32.4
23	R2	All MCs	2	0.0	2	0.0	0.003	6.5	LOS A	0.0	0.0	0.39	0.55	0.39	32.4
Approach			3	0.0	3	0.0	0.003	6.1	LOS A	0.0	0.0	0.39	0.55	0.39	32.4
NorthEast: Havannah St (NE)															
24	L2	All MCs	3	0.0	3	0.0	0.151	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
25	T1	All MCs	289	1.7	289	1.7	0.151	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			292	1.7	292	1.7	0.151	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
SouthWest: Havannah St (SW)															
31	T1	All MCs	191	4.2	191	4.2	0.101	0.0	LOS A	0.0	0.0	0.01	0.00	0.01	59.6
32	R2	All MCs	1	0.0	1	0.0	0.101	5.6	LOS A	0.0	0.0	0.01	0.00	0.01	59.6
Approach			192	4.2	192	4.2	0.101	0.0	NA	0.0	0.0	0.01	0.00	0.01	59.6
All Vehicles			487	2.7	487	2.7	0.151	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 Busby) PM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 Busby) PM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Brilliant St (SE)														
4	L2	All MCs	5	0.0	5	0.0	0.111	8.4	LOS A	0.2	1.1	0.56	1.00	29.9
5	T1	All MCs	33	0.0	33	0.0	0.111	11.2	LOS A	0.2	1.1	0.56	1.00	40.3
6	R2	All MCs	21	0.0	21	0.0	0.111	13.7	LOS A	0.2	1.1	0.56	1.00	29.9
Approach			59	0.0	59	0.0	0.111	11.9	LOS A	0.2	1.1	0.56	1.00	37.7
NorthEast: Havannah St (NE)														
7	L2	All MCs	89	0.0	89	0.0	0.246	6.1	LOS A	0.4	2.7	0.22	0.33	47.3
8	T1	All MCs	239	1.3	239	1.3	0.246	0.4	LOS A	0.4	2.7	0.22	0.33	47.3
9	R2	All MCs	107	2.8	107	2.8	0.246	6.3	LOS A	0.4	2.7	0.22	0.33	47.1
Approach			435	1.4	435	1.4	0.246	3.0	NA	0.4	2.7	0.22	0.33	47.2
NorthWest: Brilliant St (NW)														
10	L2	All MCs	115	0.0	115	0.0	0.286	8.2	LOS A	0.5	3.4	0.48	0.87	39.9
11	T1	All MCs	56	0.0	56	0.0	0.286	12.6	LOS A	0.5	3.4	0.48	0.87	39.9
12	R2	All MCs	49	0.0	49	0.0	0.286	12.7	LOS A	0.5	3.4	0.48	0.87	39.9
Approach			220	0.0	220	0.0	0.286	10.3	LOS A	0.5	3.4	0.48	0.87	39.9
SouthWest: Havannah St (SW)														
1	L2	All MCs	35	5.7	35	5.7	0.103	5.6	LOS A	0.0	0.0	0.01	0.11	48.1
2	T1	All MCs	158	2.5	158	2.5	0.103	0.0	LOS A	0.0	0.0	0.01	0.11	51.9
3	R2	All MCs	1	0.0	1	0.0	0.103	5.7	LOS A	0.0	0.0	0.01	0.11	51.9
Approach			194	3.1	194	3.1	0.103	1.0	NA	0.0	0.0	0.01	0.11	49.8
All Vehicles			908	1.3	908	1.3	0.286	4.9	NA	0.5	3.4	0.26	0.46	43.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Rocket Proposed (with 34 Busby) PM 2024 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV] veh/h	%	[Total HV] veh/h	%	v/c	sec	[Veh. veh	Dist] m					
SouthEast: Rocket St (SE)															
4	L2	All MCs	35	0.0	35	0.0	0.392	6.3	LOS A	1.1	7.7	0.70	0.66	0.70	33.4
5	T1	All MCs	178	1.7	178	1.7	0.392	6.5	LOS A	1.1	7.7	0.70	0.66	0.70	42.6
6	R2	All MCs	135	5.2	135	5.2	0.392	10.5	LOS A	1.1	7.7	0.70	0.66	0.70	38.7
Approach			348	2.9	348	2.9	0.392	8.0	LOS A	1.1	7.7	0.70	0.66	0.70	40.9
NorthEast: Havannah St (NE)															
7	L2	All MCs	127	3.9	127	3.9	0.468	6.2	LOS A	1.4	10.1	0.60	0.57	0.60	38.1
8	T1	All MCs	340	1.8	340	1.8	0.468	6.4	LOS A	1.4	10.1	0.60	0.57	0.60	38.1
9	R2	All MCs	46	0.0	46	0.0	0.468	10.2	LOS A	1.4	10.1	0.60	0.57	0.60	44.2
Approach			513	2.1	513	2.1	0.468	6.7	LOS A	1.4	10.1	0.60	0.57	0.60	39.4
NorthWest: Rocket St (NW)															
10	L2	All MCs	52	3.8	52	3.8	0.292	5.9	LOS A	0.7	5.2	0.62	0.61	0.62	43.8
11	T1	All MCs	145	2.1	145	2.1	0.292	5.9	LOS A	0.7	5.2	0.62	0.61	0.62	41.9
12	R2	All MCs	79	0.0	79	0.0	0.292	9.6	LOS A	0.7	5.2	0.62	0.61	0.62	41.9
Approach			276	1.8	276	1.8	0.292	6.9	LOS A	0.7	5.2	0.62	0.61	0.62	42.3
SouthWest: Havannah St (SW)															
1	L2	All MCs	50	0.0	50	0.0	0.334	6.5	LOS A	0.9	6.4	0.63	0.61	0.63	44.4
2	T1	All MCs	238	4.2	238	4.2	0.334	6.9	LOS A	0.9	6.4	0.63	0.61	0.63	43.1
3	R2	All MCs	31	6.5	31	6.5	0.334	10.9	LOS A	0.9	6.4	0.63	0.61	0.63	37.7
Approach			319	3.8	319	3.8	0.334	7.3	LOS A	0.9	6.4	0.63	0.61	0.63	43.1
All Vehicles			1456	2.6	1456	2.6	0.468	7.2	LOS A	1.4	10.1	0.63	0.61	0.63	41.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Prospect & Busby Proposed (with 34 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
South: Prospect St (S)														
2	T1	All MCs	21	0.0	21	0.0	0.011	0.0	LOS A	0.0	0.0	0.02	0.03	49.6
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.0	0.02	0.03	49.6
Approach			22	0.0	22	0.0	0.011	0.2	NA	0.0	0.0	0.02	0.03	49.6
East: Busby St (E)														
4	L2	All MCs	3	0.0	3	0.0	0.006	4.6	LOS A	0.0	0.1	0.12	0.51	43.8
6	R2	All MCs	5	0.0	5	0.0	0.006	4.8	LOS A	0.0	0.1	0.12	0.51	35.6
Approach			8	0.0	8	0.0	0.006	4.8	LOS A	0.0	0.1	0.12	0.51	41.0
North: Prospect St (N)														
7	L2	All MCs	85	0.0	85	0.0	0.060	2.5	LOS A	0.0	0.0	0.00	0.37	28.2
8	T1	All MCs	28	0.0	28	0.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.37	47.6
Approach			113	0.0	113	0.0	0.060	1.9	NA	0.0	0.0	0.00	0.37	42.8
All Vehicles			143	0.0	143	0.0	0.060	1.8	NA	0.0	0.1	0.01	0.33	44.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Busby & Spencer Proposed (with 34 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Busby St (E)															
5	T1	All MCs	14	0.0	14	0.0	0.008	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	49.4
6a	R1	All MCs	1	0.0	1	0.0	0.008	3.6	LOS A	0.0	0.0	0.01	0.03	0.01	49.4
Approach			15	0.0	15	0.0	0.008	0.2	NA	0.0	0.0	0.01	0.03	0.01	49.4
NorthWest: Spencer St (NW)															
27a	L1	All MCs	1	0.0	1	0.0	0.001	4.5	LOS A	0.0	0.0	0.06	0.56	0.06	33.5
29b	R3	All MCs	1	0.0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.06	0.56	0.06	33.5
Approach			2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.06	0.56	0.06	33.5
West: Busby St (W)															
10b	L3	All MCs	2	0.0	2	0.0	0.007	5.4	LOS A	0.0	0.0	0.00	0.10	0.00	46.9
11	T1	All MCs	11	0.0	11	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	46.9
Approach			13	0.0	13	0.0	0.007	0.8	NA	0.0	0.0	0.00	0.10	0.00	46.9
All Vehicles			30	0.0	30	0.0	0.008	0.8	NA	0.0	0.0	0.01	0.10	0.01	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Proposed (with 34 Busby) PM 2024
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 Busby) PM
2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]	m			km/h
SouthEast: Brilliant St (SE)															
1	L2	All MCs	3	0.0	3	0.0	0.011	4.6	LOS A	0.0	0.1	0.05	0.47	0.05	35.4
2	T1	All MCs	11	0.0	11	0.0	0.011	3.3	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
Approach			15	0.0	15	0.0	0.011	3.6	LOS A	0.0	0.1	0.05	0.47	0.05	42.8
NorthEast: Torch St (NE)															
4	L2	All MCs	12	0.0	12	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	44.8
5	T1	All MCs	3	0.0	3	0.0	0.013	0.0	LOS A	0.0	0.1	0.07	0.45	0.07	41.3
6	R2	All MCs	8	0.0	8	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	39.8
Approach			23	0.0	23	0.0	0.013	4.0	NA	0.0	0.1	0.07	0.45	0.07	43.6
NorthWest: Brilliant St (NW)															
7	L2	All MCs	9	0.0	9	0.0	0.117	4.6	LOS A	0.2	1.2	0.07	0.52	0.07	38.9
8	T1	All MCs	29	0.0	29	0.0	0.117	3.3	LOS A	0.2	1.2	0.07	0.52	0.07	44.9
9	R2	All MCs	96	0.0	96	0.0	0.117	4.7	LOS A	0.2	1.2	0.07	0.52	0.07	26.1
Approach			134	0.0	134	0.0	0.117	4.4	LOS A	0.2	1.2	0.07	0.52	0.07	32.3
SouthWest: Torch St (SW)															
10	L2	All MCs	24	0.0	24	0.0	0.015	3.9	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
11	T1	All MCs	2	0.0	2	0.0	0.015	0.0	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
12	R2	All MCs	1	0.0	1	0.0	0.015	3.8	LOS A	0.0	0.0	0.01	0.48	0.01	43.8
Approach			27	0.0	27	0.0	0.015	3.6	NA	0.0	0.0	0.01	0.48	0.01	31.0
All Vehicles			199	0.0	199	0.0	0.117	4.2	NA	0.2	1.2	0.06	0.50	0.06	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Bant St & Busby St Proposed (with 34 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1	L2	All MCs	1	0.0	1	0.0	0.038	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
2	T1	All MCs	74	0.0	74	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			75	0.0	75	0.0	0.038	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Bant St (N)															
8	T1	All MCs	55	0.0	55	0.0	0.038	0.1	LOS A	0.0	0.3	0.08	0.14	0.08	48.6
9	R2	All MCs	16	0.0	16	0.0	0.038	4.8	LOS A	0.0	0.3	0.08	0.14	0.08	44.7
Approach			71	0.0	71	0.0	0.038	1.1	NA	0.0	0.3	0.08	0.14	0.08	48.3
West: Busby St (W)															
10	L2	All MCs	10	0.0	10	0.0	0.015	4.8	LOS A	0.0	0.2	0.18	0.51	0.18	33.9
12	R2	All MCs	10	0.0	10	0.0	0.015	5.0	LOS A	0.0	0.2	0.18	0.51	0.18	43.2
Approach			20	0.0	20	0.0	0.015	4.9	LOS A	0.0	0.2	0.18	0.51	0.18	41.0
All Vehicles			166	0.0	166	0.0	0.038	1.1	NA	0.0	0.3	0.06	0.13	0.06	48.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, South Bathurst\SIDRA\240414

\Proposed Network (with 34 Busby) PM 2024.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Torch Proposed (with 34 Busby) PM 2024
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 Busby) PM
2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	3	0.0	3	0.0	0.165	2.7	LOS A	0.0	0.0	0.00	0.00	59.1
5	T1	All MCs	313	2.6	313	2.6	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	59.1
Approach			316	2.5	316	2.5	0.165	0.0	NA	0.0	0.0	0.00	0.00	59.1
NorthWest: Rocket St (NW)														
11	T1	All MCs	263	1.9	263	1.9	0.163	0.2	LOS A	0.1	0.8	0.12	0.14	55.0
12	R2	All MCs	34	0.0	34	0.0	0.163	6.7	LOS A	0.1	0.8	0.12	0.14	55.0
Approach			297	1.7	297	1.7	0.163	1.0	NA	0.1	0.8	0.12	0.14	55.0
SouthWest: Torch St (SW)														
1	L2	All MCs	22	0.0	22	0.0	0.021	5.6	LOS A	0.0	0.2	0.37	0.37	35.9
3	R2	All MCs	2	0.0	2	0.0	0.021	7.3	LOS A	0.0	0.2	0.37	0.37	35.9
Approach			24	0.0	24	0.0	0.021	5.7	LOS A	0.0	0.2	0.37	0.37	35.9
All Vehicles			637	2.0	637	2.0	0.165	0.7	NA	0.1	0.8	0.07	0.07	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Rocket & Bant Proposed (with 34 Busby) PM 2024
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 Busby) PM
2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Bant St (S)															
1a	L1	All MCs	79	0.0	79	0.0	0.076	5.1	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
2	T1	All MCs	1	0.0	1	0.0	0.076	5.7	LOS A	0.1	0.8	0.33	0.57	0.33	45.6
3b	R3	All MCs	11	0.0	11	0.0	0.076	8.2	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
Approach			91	0.0	91	0.0	0.076	5.5	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
SouthEast: Rocket St (SE)															
21b	L3	All MCs	18	0.0	18	0.0	0.131	6.7	LOS A	0.0	0.3	0.04	0.09	0.04	54.3
5	T1	All MCs	213	5.2	213	5.2	0.131	0.0	LOS A	0.0	0.3	0.04	0.09	0.04	54.3
23a	R1	All MCs	10	0.0	10	0.0	0.131	5.3	LOS A	0.0	0.3	0.04	0.09	0.04	49.2
Approach			241	4.6	241	4.6	0.131	0.8	NA	0.0	0.3	0.04	0.09	0.04	53.4
North: Bant St (N)															
7a	L1	All MCs	16	0.0	16	0.0	0.040	5.0	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
8	T1	All MCs	3	0.0	3	0.0	0.040	5.5	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
9b	R3	All MCs	15	0.0	15	0.0	0.040	8.6	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
Approach			34	0.0	34	0.0	0.040	6.6	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
NorthWest: Rocket St (NW)															
27b	L3	All MCs	34	0.0	34	0.0	0.154	4.2	LOS A	0.2	1.4	0.20	0.27	0.20	46.6
11	T1	All MCs	176	6.3	176	6.3	0.154	0.3	LOS A	0.2	1.4	0.20	0.27	0.20	35.2
29a	R1	All MCs	58	0.0	58	0.0	0.154	2.7	LOS A	0.2	1.4	0.20	0.27	0.20	35.2
Approach			268	4.1	268	4.1	0.154	1.3	NA	0.2	1.4	0.20	0.27	0.20	42.5
All Vehicles			634	3.5	634	3.5	0.154	2.0	NA	0.2	1.4	0.17	0.26	0.17	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) PM 2024.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Rocket, Vale & Alpha Proposed (with 34 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
NorthEast: Alpha St (NE)															
5	T1	All MCs	87	3.4	87	3.4	0.105	3.9	LOS A	0.2	1.1	0.31	0.53	0.31	49.4
6	R2	All MCs	28	0.0	28	0.0	0.105	6.8	LOS A	0.2	1.1	0.31	0.53	0.31	44.4
Approach			115	2.6	115	2.6	0.105	4.6	LOS A	0.2	1.1	0.31	0.53	0.31	48.6
NorthWest: Rocket St (NW)															
7	L2	All MCs	29	0.0	29	0.0	0.114	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	49.5
9	R2	All MCs	178	3.9	178	3.9	0.114	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	48.9
Approach			207	3.4	207	3.4	0.114	5.5	NA	0.0	0.0	0.00	0.60	0.00	49.0
SouthWest: Vale Rd (SW)															
10	L2	All MCs	209	4.3	209	4.3	0.152	5.6	LOS A	0.3	2.4	0.36	0.59	0.36	49.3
11	T1	All MCs	43	4.7	43	4.7	0.152	9.9	LOS A	0.3	2.4	0.36	0.59	0.36	48.7
Approach			252	4.4	252	4.4	0.152	6.3	LOS A	0.3	2.4	0.36	0.59	0.36	49.1
All Vehicles			574	3.7	574	3.7	0.152	5.7	NA	0.3	2.4	0.22	0.58	0.22	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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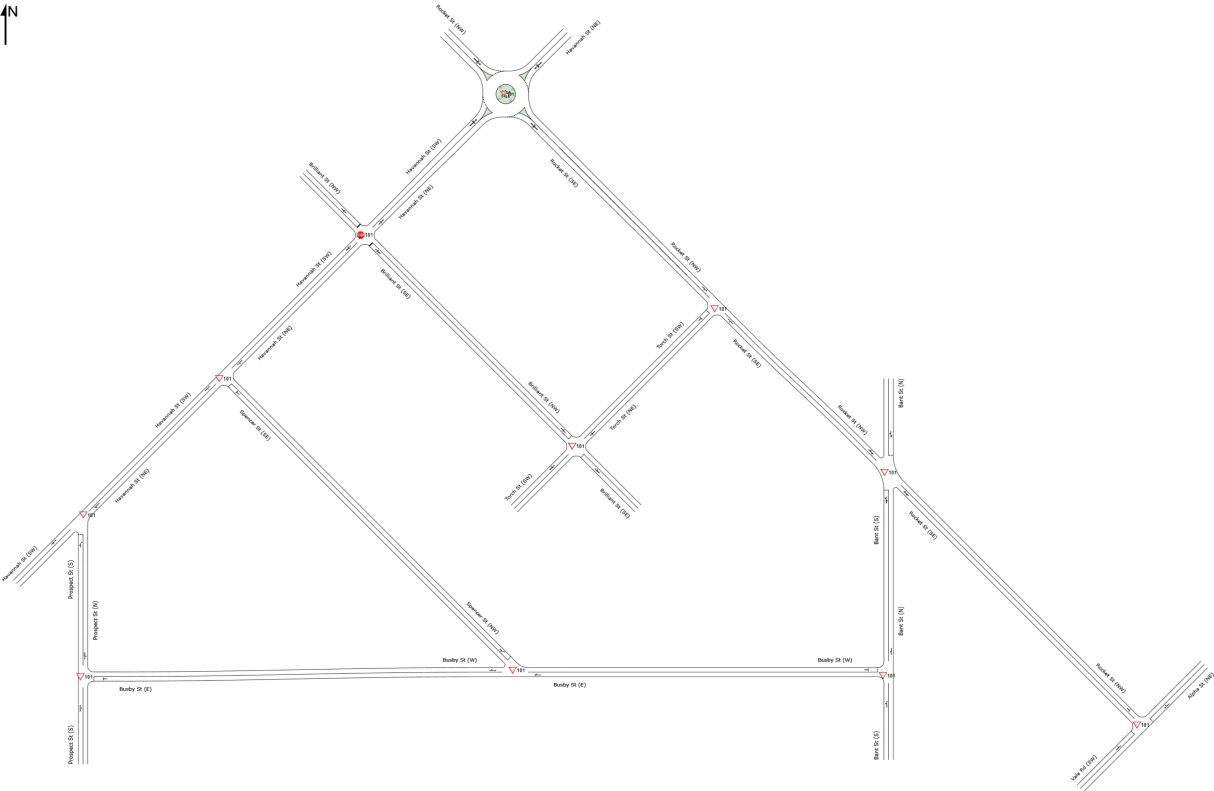
\Proposed Network (with 34 Busby) PM 2024.sip9

NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Havannah & Spencer Proposed (with 34 & 50 Busby) AM 2024
STOP101	NA	Havannah & Brilliant Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Havannah & Rocket Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Prospect & Busby Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Busby & Spencer Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Billiant & Torch Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Bant St & Busby St Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Rocket & Torch Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Rocket & Bant Proposed (with 34 & 50 Busby) AM 2024
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) AM 2024

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\\Proposed Network (with 34 & 50 Busby) AM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Prospect St (S)															
1b	L3	All MCs	21	0.0	21	0.0	0.119	4.2	LOS A	0.2	1.1	0.44	0.63	0.44	39.2
3a	R1	All MCs	81	0.0	81	0.0	0.119	4.4	LOS A	0.2	1.1	0.44	0.63	0.44	17.5
Approach			102	0.0	102	0.0	0.119	4.4	LOS A	0.2	1.1	0.44	0.63	0.44	27.3
NorthEast: Havannah St (NE)															
24a	L1	All MCs	84	0.0	84	0.0	0.169	5.3	LOS A	0.0	0.0	0.00	0.16	0.00	49.9
25	T1	All MCs	236	5.1	236	5.1	0.169	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	55.7
Approach			320	3.8	320	3.8	0.169	1.4	NA	0.0	0.0	0.00	0.16	0.00	55.0
SouthWest: Havannah St (SW)															
31	T1	All MCs	215	11.2	215	11.2	0.127	0.1	LOS A	0.0	0.3	0.05	0.06	0.05	57.5
32b	R3	All MCs	11	0.0	11	0.0	0.127	7.2	LOS A	0.0	0.3	0.05	0.06	0.05	57.5
Approach			226	10.6	226	10.6	0.127	0.4	NA	0.0	0.3	0.05	0.06	0.05	57.5
All Vehicles			648	5.6	648	5.6	0.169	1.5	NA	0.2	1.1	0.09	0.20	0.09	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.009	5.6	LOS A	0.0	0.1	0.47	0.63	0.47	30.7
23	R2	All MCs	6	0.0	6	0.0	0.009	7.3	LOS A	0.0	0.1	0.47	0.63	0.47	30.7
Approach			7	0.0	7	0.0	0.009	7.1	LOS A	0.0	0.1	0.47	0.63	0.47	30.7
NorthEast: Havannah St (NE)															
24	L2	All MCs	2	0.0	2	0.0	0.169	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
25	T1	All MCs	319	4.1	319	4.1	0.169	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			321	4.0	321	4.0	0.169	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
SouthWest: Havannah St (SW)															
31	T1	All MCs	296	8.8	296	8.8	0.161	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
32	R2	All MCs	1	0.0	1	0.0	0.161	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			297	8.8	297	8.8	0.161	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles			625	6.2	625	6.2	0.169	0.1	NA	0.0	0.1	0.01	0.01	0.01	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).


HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				
			veh/h	%	veh/h	%	v/c	sec						km/h	
SouthEast: Brilliant St (SE)															
4	L2	All MCs	4	0.0	4	0.0	0.331	9.6	LOS A	0.6	3.9	0.68	1.07	0.84	27.1
5	T1	All MCs	72	0.0	72	0.0	0.331	14.1	LOS A	0.6	3.9	0.68	1.07	0.84	38.6
6	R2	All MCs	74	0.0	74	0.0	0.331	15.7	LOS B	0.6	3.9	0.68	1.07	0.84	27.1
Approach			150	0.0	150	0.0	0.331	14.8	LOS B	0.6	3.9	0.68	1.07	0.84	35.0
NorthEast: Havannah St (NE)															
7	L2	All MCs	36	13.9	36	13.9	0.246	6.9	LOS A	0.4	2.9	0.29	0.35	0.29	48.1
8	T1	All MCs	262	4.2	262	4.2	0.246	0.6	LOS A	0.4	2.9	0.29	0.35	0.29	48.1
9	R2	All MCs	110	4.5	110	4.5	0.246	6.9	LOS A	0.4	2.9	0.29	0.35	0.29	47.3
Approach			408	5.1	408	5.1	0.246	2.9	NA	0.4	2.9	0.29	0.35	0.29	47.6
NorthWest: Brilliant St (NW)															
10	L2	All MCs	90	0.0	90	0.0	0.280	8.6	LOS A	0.5	3.3	0.55	0.90	0.57	39.0
11	T1	All MCs	35	0.0	35	0.0	0.280	13.4	LOS A	0.5	3.3	0.55	0.90	0.57	39.0
12	R2	All MCs	56	0.0	56	0.0	0.280	15.0	LOS B	0.5	3.3	0.55	0.90	0.57	39.0
Approach			181	0.0	181	0.0	0.280	11.5	LOS A	0.5	3.3	0.55	0.90	0.57	39.0
SouthWest: Havannah St (SW)															
1	L2	All MCs	95	6.3	95	6.3	0.168	5.6	LOS A	0.0	0.1	0.02	0.20	0.02	47.2
2	T1	All MCs	204	9.8	204	9.8	0.168	0.0	LOS A	0.0	0.1	0.02	0.20	0.02	46.6
3	R2	All MCs	4	0.0	4	0.0	0.168	6.1	LOS A	0.0	0.1	0.02	0.20	0.02	46.6
Approach			303	8.6	303	8.6	0.168	1.8	NA	0.0	0.1	0.02	0.20	0.02	47.0
All Vehicles			1042	4.5	1042	4.5	0.331	5.8	NA	0.6	3.9	0.31	0.51	0.34	42.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) AM 2024.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
SouthEast: Rocket St (SE)															
4	L2	All MCs	32	12.5	32	12.5	0.459	7.2	LOS A	1.3	9.8	0.74	0.68	0.76	33.1
5	T1	All MCs	219	3.7	219	3.7	0.459	6.9	LOS A	1.3	9.8	0.74	0.68	0.76	42.4
6	R2	All MCs	141	12.1	141	12.1	0.459	11.1	LOS A	1.3	9.8	0.74	0.68	0.76	37.7
Approach			392	7.4	392	7.4	0.459	8.4	LOS A	1.3	9.8	0.74	0.68	0.76	40.7
NorthEast: Havannah St (NE)															
7	L2	All MCs	99	16.2	99	16.2	0.453	6.3	LOS A	1.4	10.1	0.58	0.57	0.58	37.9
8	T1	All MCs	307	4.6	307	4.6	0.453	6.3	LOS A	1.4	10.1	0.58	0.57	0.58	37.9
9	R2	All MCs	83	4.8	83	4.8	0.453	10.2	LOS A	1.4	10.1	0.58	0.57	0.58	44.0
Approach			489	7.0	489	7.0	0.453	7.0	LOS A	1.4	10.1	0.58	0.57	0.58	40.1
NorthWest: Rocket St (NW)															
10	L2	All MCs	60	5.0	60	5.0	0.300	6.2	LOS A	0.8	5.5	0.66	0.63	0.66	43.5
11	T1	All MCs	136	5.1	136	5.1	0.300	6.3	LOS A	0.8	5.5	0.66	0.63	0.66	41.7
12	R2	All MCs	70	0.0	70	0.0	0.300	9.9	LOS A	0.8	5.5	0.66	0.63	0.66	41.7
Approach			266	3.8	266	3.8	0.300	7.2	LOS A	0.8	5.5	0.66	0.63	0.66	42.2
SouthWest: Havannah St (SW)															
1	L2	All MCs	83	4.8	83	4.8	0.444	7.6	LOS A	1.3	9.4	0.74	0.67	0.74	43.9
2	T1	All MCs	267	8.6	267	8.6	0.444	8.1	LOS A	1.3	9.4	0.74	0.67	0.74	41.8
3	R2	All MCs	28	7.1	28	7.1	0.444	11.9	LOS A	1.3	9.4	0.74	0.67	0.74	36.6
Approach			378	7.7	378	7.7	0.444	8.2	LOS A	1.3	9.4	0.74	0.67	0.74	42.3
All Vehicles			1525	6.7	1525	6.7	0.459	7.7	LOS A	1.4	10.1	0.68	0.64	0.68	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prospect & Busby Proposed (with 34 & 50 Busby)
AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 & 50 Busby)
AM 2024 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
South: Prospect St (S)															
2	T1	All MCs	70	0.0	70	0.0	0.039	0.0	LOS A	0.0	0.1	0.03	0.04	0.03	49.4
3	R2	All MCs	5	0.0	5	0.0	0.039	4.7	LOS A	0.0	0.1	0.03	0.04	0.03	49.4
Approach			75	0.0	75	0.0	0.039	0.3	NA	0.0	0.1	0.03	0.04	0.03	49.4
East: Busby St (E)															
4	L2	All MCs	1	0.0	1	0.0	0.028	4.6	LOS A	0.0	0.3	0.19	0.53	0.19	43.6
6	R2	All MCs	32	0.0	32	0.0	0.028	5.0	LOS A	0.0	0.3	0.19	0.53	0.19	35.1
Approach			33	0.0	33	0.0	0.028	5.0	LOS A	0.0	0.3	0.19	0.53	0.19	35.8
North: Prospect St (N)															
7	L2	All MCs	76	0.0	76	0.0	0.051	2.5	LOS A	0.0	0.0	0.00	0.40	0.00	27.5
8	T1	All MCs	19	0.0	19	0.0	0.051	0.0	LOS A	0.0	0.0	0.00	0.40	0.00	47.5
Approach			95	0.0	95	0.0	0.051	2.0	NA	0.0	0.0	0.00	0.40	0.00	41.3
All Vehicles			203	0.0	203	0.0	0.051	1.9	NA	0.0	0.3	0.04	0.29	0.04	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Proposed (with 34 & 50 Busby)
AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 & 50 Busby)
AM 2024 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				
East: Busby St (E)															
5	T1	All MCs	21	0.0	21	0.0	0.012	0.0	LOS A	0.0	0.0	0.01	0.04	0.01	49.3
6a	R1	All MCs	2	0.0	2	0.0	0.012	3.6	LOS A	0.0	0.0	0.01	0.04	0.01	49.3
Approach			23	0.0	23	0.0	0.012	0.3	NA	0.0	0.0	0.01	0.04	0.01	49.3
NorthWest: Spencer St (NW)															
27a	L1	All MCs	7	0.0	7	0.0	0.005	4.4	LOS A	0.0	0.1	0.05	0.54	0.05	34.1
29b	R3	All MCs	1	0.0	1	0.0	0.005	5.2	LOS A	0.0	0.1	0.05	0.54	0.05	34.1
Approach			8	0.0	8	0.0	0.005	4.5	LOS A	0.0	0.1	0.05	0.54	0.05	34.1
West: Busby St (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.006	5.4	LOS A	0.0	0.0	0.00	0.06	0.00	48.1
11	T1	All MCs	10	0.0	10	0.0	0.006	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	48.1
Approach			11	0.0	11	0.0	0.006	0.5	NA	0.0	0.0	0.00	0.06	0.00	48.1
All Vehicles			42	0.0	42	0.0	0.012	1.2	NA	0.0	0.1	0.02	0.14	0.02	46.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
SouthEast: Brilliant St (SE)															
1	L2	All MCs	1	0.0	1	0.0	0.027	4.6	LOS A	0.0	0.3	0.16	0.47	0.16	35.2
2	T1	All MCs	24	0.0	24	0.0	0.027	3.6	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
3	R2	All MCs	7	0.0	7	0.0	0.027	4.8	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
Approach			32	0.0	32	0.0	0.027	3.9	LOS A	0.0	0.3	0.16	0.47	0.16	44.5
NorthEast: Torch St (NE)															
4	L2	All MCs	9	0.0	9	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	44.8
5	T1	All MCs	7	0.0	7	0.0	0.016	0.2	LOS A	0.0	0.2	0.18	0.40	0.18	41.4
6	R2	All MCs	13	0.0	13	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	39.8
Approach			29	0.0	29	0.0	0.016	3.7	NA	0.0	0.2	0.18	0.40	0.18	42.8
NorthWest: Brilliant St (NW)															
7	L2	All MCs	15	0.0	15	0.0	0.044	4.6	LOS A	0.1	0.4	0.07	0.50	0.07	39.1
8	T1	All MCs	14	0.0	14	0.0	0.044	3.4	LOS A	0.1	0.4	0.07	0.50	0.07	45.0
9	R2	All MCs	24	0.0	24	0.0	0.044	4.9	LOS A	0.1	0.4	0.07	0.50	0.07	26.2
Approach			53	0.0	53	0.0	0.044	4.4	LOS A	0.1	0.4	0.07	0.50	0.07	35.7
SouthWest: Torch St (SW)															
10	L2	All MCs	100	0.0	100	0.0	0.057	3.9	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
11	T1	All MCs	5	0.0	5	0.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
12	R2	All MCs	1	0.0	1	0.0	0.057	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	43.7
Approach			106	0.0	106	0.0	0.057	3.7	NA	0.0	0.0	0.00	0.49	0.00	28.8
All Vehicles			220	0.0	220	0.0	0.057	3.9	NA	0.1	0.4	0.06	0.48	0.06	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]	m			km/h
South: Bant St (S)															
1	L2	All MCs	4	0.0	4	0.0	0.040	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
2	T1	All MCs	74	0.0	74	0.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach			78	0.0	78	0.0	0.040	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.7
North: Bant St (N)															
8	T1	All MCs	37	0.0	37	0.0	0.025	0.1	LOS A	0.0	0.2	0.08	0.14	0.08	48.7
9	R2	All MCs	10	0.0	10	0.0	0.025	4.8	LOS A	0.0	0.2	0.08	0.14	0.08	44.9
Approach			47	0.0	47	0.0	0.025	1.1	NA	0.0	0.2	0.08	0.14	0.08	48.4
West: Busby St (W)															
10	L2	All MCs	19	0.0	19	0.0	0.018	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	34.1
12	R2	All MCs	6	0.0	6	0.0	0.018	5.0	LOS A	0.0	0.2	0.16	0.50	0.16	43.2
Approach			25	0.0	25	0.0	0.018	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	38.8
All Vehicles			150	0.0	150	0.0	0.040	1.3	NA	0.0	0.2	0.05	0.14	0.05	48.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Torch Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				
SouthEast: Rocket St (SE)															
4	L2	All MCs	7	0.0	7	0.0	0.200	2.7	LOS A	0.0	0.0	0.00	0.01	0.00	58.1
5	T1	All MCs	363	8.0	363	8.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.1
Approach			370	7.8	370	7.8	0.200	0.1	NA	0.0	0.0	0.00	0.01	0.00	58.1
NorthWest: Rocket St (NW)															
11	T1	All MCs	232	9.1	232	9.1	0.150	0.3	LOS A	0.1	0.8	0.12	0.14	0.12	55.5
12	R2	All MCs	25	16.0	25	16.0	0.150	7.5	LOS A	0.1	0.8	0.12	0.14	0.12	55.5
Approach			257	9.7	257	9.7	0.150	1.0	NA	0.1	0.8	0.12	0.14	0.12	55.5
SouthWest: Torch St (SW)															
1	L2	All MCs	32	0.0	32	0.0	0.031	5.8	LOS A	0.0	0.3	0.41	0.59	0.41	35.7
3	R2	All MCs	2	0.0	2	0.0	0.031	7.6	LOS A	0.0	0.3	0.41	0.59	0.41	35.7
Approach			34	0.0	34	0.0	0.031	5.9	LOS A	0.0	0.3	0.41	0.59	0.41	35.7
All Vehicles			661	8.2	661	8.2	0.200	0.7	NA	0.1	0.8	0.07	0.09	0.07	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) AM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Rocket & Bant Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
South: Bant St (S)														
1a	L1	All MCs	66	0.0	66	0.0	0.094	5.4	LOS A	0.1	1.0	0.41	0.63	42.7
2	T1	All MCs	4	0.0	4	0.0	0.094	6.1	LOS A	0.1	1.0	0.41	0.63	45.3
3b	R3	All MCs	22	0.0	22	0.0	0.094	8.8	LOS A	0.1	1.0	0.41	0.63	42.7
Approach			92	0.0	92	0.0	0.094	6.3	LOS A	0.1	1.0	0.41	0.63	42.9
SouthEast: Rocket St (SE)														
21b	L3	All MCs	11	0.0	11	0.0	0.170	6.9	LOS A	0.1	0.4	0.05	0.07	55.4
5	T1	All MCs	284	7.7	284	7.7	0.170	0.1	LOS A	0.1	0.4	0.05	0.07	55.4
23a	R1	All MCs	16	0.0	16	0.0	0.170	5.3	LOS A	0.1	0.4	0.05	0.07	49.3
Approach			311	7.1	311	7.1	0.170	0.6	NA	0.1	0.4	0.05	0.07	54.0
North: Bant St (N)														
7a	L1	All MCs	12	0.0	12	0.0	0.029	5.0	LOS A	0.0	0.3	0.40	0.59	42.1
8	T1	All MCs	1	0.0	1	0.0	0.029	5.8	LOS A	0.0	0.3	0.40	0.59	42.1
9b	R3	All MCs	11	0.0	11	0.0	0.029	9.0	LOS A	0.0	0.3	0.40	0.59	42.1
Approach			24	0.0	24	0.0	0.029	6.9	LOS A	0.0	0.3	0.40	0.59	42.1
NorthWest: Rocket St (NW)														
27b	L3	All MCs	13	0.0	13	0.0	0.133	4.5	LOS A	0.1	0.9	0.16	0.20	47.0
11	T1	All MCs	181	11.0	181	11.0	0.133	0.3	LOS A	0.1	0.9	0.16	0.20	39.2
29a	R1	All MCs	36	0.0	36	0.0	0.133	2.9	LOS A	0.1	0.9	0.16	0.20	39.2
Approach			230	8.7	230	8.7	0.133	0.9	NA	0.1	0.9	0.16	0.20	42.8
All Vehicles			657	6.4	657	6.4	0.170	1.7	NA	0.1	1.0	0.15	0.22	46.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) AM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
NorthEast: Alpha St (NE)															
5	T1	All MCs	64	10.9	64	10.9	0.128	4.1	LOS A	0.2	1.4	0.39	0.59	0.39	48.5
6	R2	All MCs	47	14.9	47	14.9	0.128	8.2	LOS A	0.2	1.4	0.39	0.59	0.39	43.3
Approach			111	12.6	111	12.6	0.128	5.8	LOS A	0.2	1.4	0.39	0.59	0.39	46.9
NorthWest: Rocket St (NW)															
7	L2	All MCs	26	7.7	26	7.7	0.125	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	49.1
9	R2	All MCs	189	11.1	189	11.1	0.125	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	48.5
Approach			215	10.7	215	10.7	0.125	5.6	NA	0.0	0.0	0.00	0.60	0.00	48.5
SouthWest: Vale Rd (SW)															
10	L2	All MCs	264	5.7	264	5.7	0.185	5.6	LOS A	0.4	3.1	0.38	0.60	0.38	49.1
11	T1	All MCs	43	9.3	43	9.3	0.185	12.1	LOS A	0.4	3.1	0.38	0.60	0.38	48.5
Approach			307	6.2	307	6.2	0.185	6.5	LOS A	0.4	3.1	0.38	0.60	0.38	49.0
All Vehicles			633	8.8	633	8.8	0.185	6.1	NA	0.4	3.1	0.25	0.60	0.25	48.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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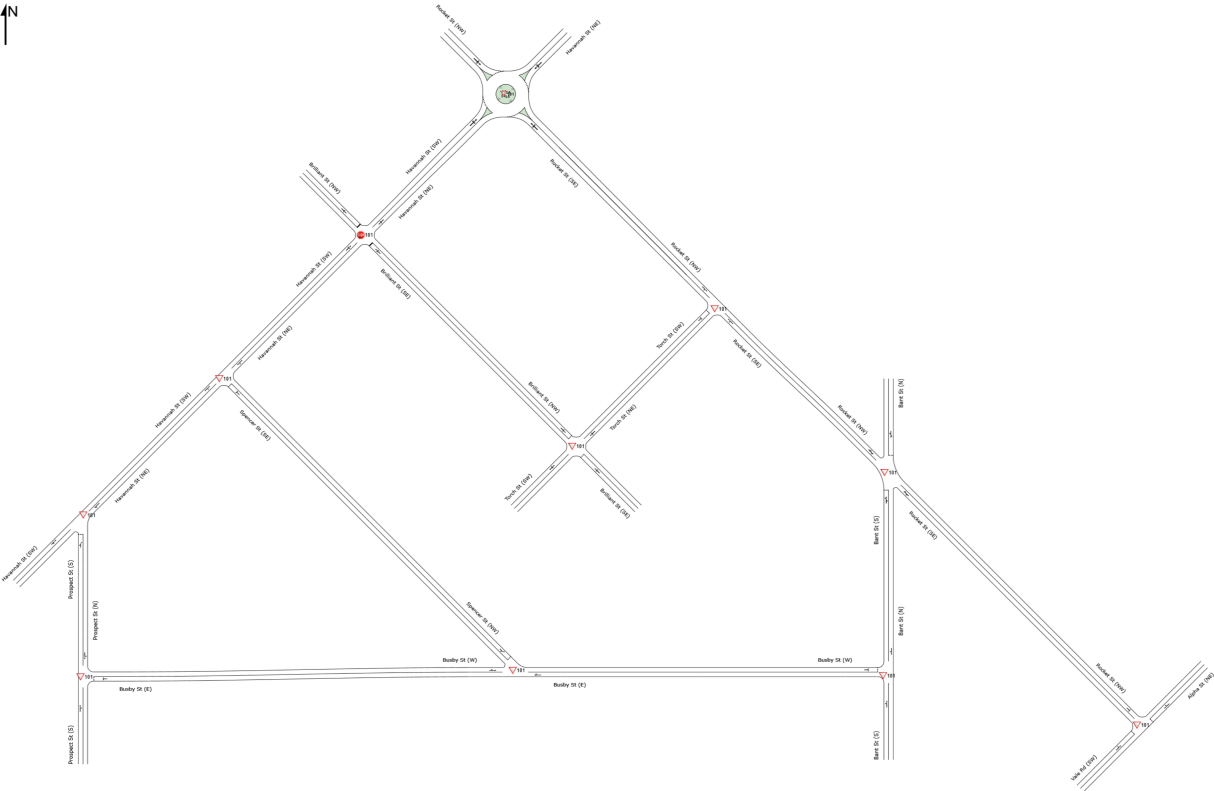
\Proposed Network (with 34 & 50 Busby) AM 2024.sip9

NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Havannah & Spencer Proposed (with 34 & 50 Busby) PM 2024
STOP101	NA	Havannah & Brilliant Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Havannah & Rocket Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Prospect & Busby Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Busby & Spencer Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Billiant & Torch Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Bant St & Busby St Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Rocket & Torch Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Rocket & Bant Proposed (with 34 & 50 Busby) PM 2024
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) PM 2024

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MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Prospect St (S)															
1b	L3	All MCs	6	0.0	6	0.0	0.042	4.0	LOS A	0.1	0.4	0.39	0.57	0.39	40.1
3a	R1	All MCs	32	0.0	32	0.0	0.042	3.9	LOS A	0.1	0.4	0.39	0.57	0.39	18.6
Approach			38	0.0	38	0.0	0.042	3.9	LOS A	0.1	0.4	0.39	0.57	0.39	26.9
NorthEast: Havannah St (NE)															
24a	L1	All MCs	142	0.0	142	0.0	0.174	5.3	LOS A	0.0	0.0	0.00	0.25	0.00	45.4
25	T1	All MCs	191	2.6	191	2.6	0.174	0.0	LOS A	0.0	0.0	0.00	0.25	0.00	53.5
Approach			333	1.5	333	1.5	0.174	2.3	NA	0.0	0.0	0.00	0.25	0.00	51.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	170	4.1	170	4.1	0.105	0.2	LOS A	0.1	0.4	0.10	0.12	0.10	55.5
32b	R3	All MCs	18	0.0	18	0.0	0.105	7.3	LOS A	0.1	0.4	0.10	0.12	0.10	55.5
Approach			188	3.7	188	3.7	0.105	0.9	NA	0.1	0.4	0.10	0.12	0.10	55.5
All Vehicles			559	2.1	559	2.1	0.174	1.9	NA	0.1	0.4	0.06	0.23	0.06	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%	v/c	sec	[Veh. veh	Dist] m					km/h
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.003	5.6	LOS A	0.0	0.0	0.42	0.57	0.42	32.0
23	R2	All MCs	2	0.0	2	0.0	0.003	6.8	LOS A	0.0	0.0	0.42	0.57	0.42	32.0
Approach			3	0.0	3	0.0	0.003	6.4	LOS A	0.0	0.0	0.42	0.57	0.42	32.0
NorthEast: Havannah St (NE)															
24	L2	All MCs	3	0.0	3	0.0	0.174	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
25	T1	All MCs	333	1.5	333	1.5	0.174	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			336	1.5	336	1.5	0.174	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	202	4.0	202	4.0	0.107	0.0	LOS A	0.0	0.0	0.01	0.00	0.01	59.6
32	R2	All MCs	1	0.0	1	0.0	0.107	5.7	LOS A	0.0	0.0	0.01	0.00	0.01	59.6
Approach			203	3.9	203	3.9	0.107	0.0	NA	0.0	0.0	0.01	0.00	0.01	59.6
All Vehicles			542	2.4	542	2.4	0.174	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).


HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
SouthEast: Brilliant St (SE)															
4	L2	All MCs	5	0.0	5	0.0	0.117	8.6	LOS A	0.2	1.1	0.57	1.01	0.57	29.4
5	T1	All MCs	33	0.0	33	0.0	0.117	11.7	LOS A	0.2	1.1	0.57	1.01	0.57	40.0
6	R2	All MCs	21	0.0	21	0.0	0.117	14.3	LOS A	0.2	1.1	0.57	1.01	0.57	29.4
Approach			59	0.0	59	0.0	0.117	12.4	LOS A	0.2	1.1	0.57	1.01	0.57	37.4
NorthEast: Havannah St (NE)															
7	L2	All MCs	89	0.0	89	0.0	0.262	6.1	LOS A	0.4	2.8	0.22	0.32	0.22	47.8
8	T1	All MCs	269	1.1	269	1.1	0.262	0.4	LOS A	0.4	2.8	0.22	0.32	0.22	47.8
9	R2	All MCs	107	2.8	107	2.8	0.262	6.3	LOS A	0.4	2.8	0.22	0.32	0.22	47.3
Approach			465	1.3	465	1.3	0.262	2.8	NA	0.4	2.8	0.22	0.32	0.22	47.5
NorthWest: Brilliant St (NW)															
10	L2	All MCs	115	0.0	115	0.0	0.328	8.5	LOS A	0.6	4.4	0.52	0.89	0.56	39.3
11	T1	All MCs	56	0.0	56	0.0	0.328	13.6	LOS A	0.6	4.4	0.52	0.89	0.56	39.3
12	R2	All MCs	63	0.0	63	0.0	0.328	13.7	LOS A	0.6	4.4	0.52	0.89	0.56	39.3
Approach			234	0.0	234	0.0	0.328	11.1	LOS A	0.6	4.4	0.52	0.89	0.56	39.3
SouthWest: Havannah St (SW)															
1	L2	All MCs	38	5.3	38	5.3	0.108	5.6	LOS A	0.0	0.0	0.01	0.11	0.01	48.1
2	T1	All MCs	166	2.4	166	2.4	0.108	0.0	LOS A	0.0	0.0	0.01	0.11	0.01	51.7
3	R2	All MCs	1	0.0	1	0.0	0.108	5.8	LOS A	0.0	0.0	0.01	0.11	0.01	51.7
Approach			205	2.9	205	2.9	0.108	1.1	NA	0.0	0.0	0.01	0.11	0.01	49.7
All Vehicles			963	1.2	963	1.2	0.328	5.1	NA	0.6	4.4	0.27	0.46	0.28	43.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				
			veh/h	%	veh/h	%	v/c	sec						km/h	
SouthEast: Rocket St (SE)															
4	L2	All MCs	35	0.0	35	0.0	0.405	6.6	LOS A	1.1	8.0	0.73	0.68	0.73	33.1
5	T1	All MCs	178	1.7	178	1.7	0.405	6.7	LOS A	1.1	8.0	0.73	0.68	0.73	42.4
6	R2	All MCs	135	5.2	135	5.2	0.405	10.7	LOS A	1.1	8.0	0.73	0.68	0.73	38.5
Approach			348	2.9	348	2.9	0.405	8.3	LOS A	1.1	8.0	0.73	0.68	0.73	40.7
NorthEast: Havannah St (NE)															
7	L2	All MCs	127	3.9	127	3.9	0.493	6.2	LOS A	1.5	11.0	0.62	0.58	0.62	37.9
8	T1	All MCs	365	1.6	365	1.6	0.493	6.5	LOS A	1.5	11.0	0.62	0.58	0.62	37.9
9	R2	All MCs	46	0.0	46	0.0	0.493	10.3	LOS A	1.5	11.0	0.62	0.58	0.62	44.1
Approach			538	2.0	538	2.0	0.493	6.7	LOS A	1.5	11.0	0.62	0.58	0.62	39.2
NorthWest: Rocket St (NW)															
10	L2	All MCs	52	3.8	52	3.8	0.300	5.9	LOS A	0.8	5.4	0.62	0.62	0.62	43.7
11	T1	All MCs	145	2.1	145	2.1	0.300	5.9	LOS A	0.8	5.4	0.62	0.62	0.62	41.8
12	R2	All MCs	84	0.0	84	0.0	0.300	9.7	LOS A	0.8	5.4	0.62	0.62	0.62	41.8
Approach			281	1.8	281	1.8	0.300	7.0	LOS A	0.8	5.4	0.62	0.62	0.62	42.2
SouthWest: Havannah St (SW)															
1	L2	All MCs	52	0.0	52	0.0	0.344	6.5	LOS A	0.9	6.7	0.63	0.61	0.63	44.4
2	T1	All MCs	244	4.1	244	4.1	0.344	7.0	LOS A	0.9	6.7	0.63	0.61	0.63	43.1
3	R2	All MCs	31	6.5	31	6.5	0.344	10.9	LOS A	0.9	6.7	0.63	0.61	0.63	37.7
Approach			327	3.7	327	3.7	0.344	7.3	LOS A	0.9	6.7	0.63	0.61	0.63	43.1
All Vehicles			1494	2.5	1494	2.5	0.493	7.3	LOS A	1.5	11.0	0.65	0.62	0.65	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Proposed Network (with 34 & 50 Busby) PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Prospect & Busby Proposed (with 34 & 50 Busby)
PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 & 50 Busby)
PM 2024 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	[Total HV]						[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
South: Prospect St (S)															
2	T1	All MCs	33	0.0	33	0.0	0.018	0.0	LOS A	0.0	0.0	0.04	0.04	0.04	49.4
3	R2	All MCs	2	0.0	2	0.0	0.018	5.0	LOS A	0.0	0.0	0.04	0.04	0.04	49.4
Approach			35	0.0	35	0.0	0.018	0.3	NA	0.0	0.0	0.04	0.04	0.04	49.4
East: Busby St (E)															
4	L2	All MCs	6	0.0	6	0.0	0.008	4.8	LOS A	0.0	0.1	0.18	0.51	0.18	43.6
6	R2	All MCs	5	0.0	5	0.0	0.008	5.0	LOS A	0.0	0.1	0.18	0.51	0.18	35.2
Approach			11	0.0	11	0.0	0.008	4.9	LOS A	0.0	0.1	0.18	0.51	0.18	41.9
North: Prospect St (N)															
7	L2	All MCs	85	0.0	85	0.0	0.084	2.5	LOS A	0.0	0.0	0.00	0.27	0.00	31.9
8	T1	All MCs	75	0.0	75	0.0	0.084	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.3
Approach			160	0.0	160	0.0	0.084	1.4	NA	0.0	0.0	0.00	0.27	0.00	46.7
All Vehicles			206	0.0	206	0.0	0.084	1.4	NA	0.0	0.1	0.02	0.24	0.02	47.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Proposed (with 34 & 50 Busby)
PM 2024 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 & 50 Busby)
PM 2024 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Busby St (E)															
5	T1	All MCs	17	0.0	17	0.0	0.009	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	49.5
6a	R1	All MCs	1	0.0	1	0.0	0.009	3.6	LOS A	0.0	0.0	0.01	0.03	0.01	49.5
Approach			18	0.0	18	0.0	0.009	0.2	NA	0.0	0.0	0.01	0.03	0.01	49.5
NorthWest: Spencer St (NW)															
27a	L1	All MCs	1	0.0	1	0.0	0.001	4.5	LOS A	0.0	0.0	0.06	0.55	0.06	33.5
29b	R3	All MCs	1	0.0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.06	0.55	0.06	33.5
Approach			2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.06	0.55	0.06	33.5
West: Busby St (W)															
10b	L3	All MCs	2	0.0	2	0.0	0.007	5.4	LOS A	0.0	0.0	0.00	0.09	0.00	47.1
11	T1	All MCs	12	0.0	12	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	47.1
Approach			14	0.0	14	0.0	0.007	0.8	NA	0.0	0.0	0.00	0.09	0.00	47.1
All Vehicles			34	0.0	34	0.0	0.009	0.7	NA	0.0	0.0	0.01	0.08	0.01	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
1	L2	All MCs	3	0.0	3	0.0	0.011	4.6	LOS A	0.0	0.1	0.05	0.47	0.05	35.4
2	T1	All MCs	11	0.0	11	0.0	0.011	3.3	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
Approach			15	0.0	15	0.0	0.011	3.6	LOS A	0.0	0.1	0.05	0.47	0.05	42.8
NorthEast: Torch St (NE)															
4	L2	All MCs	12	0.0	12	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	44.8
5	T1	All MCs	3	0.0	3	0.0	0.013	0.0	LOS A	0.0	0.1	0.07	0.45	0.07	41.3
6	R2	All MCs	8	0.0	8	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	39.8
Approach			23	0.0	23	0.0	0.013	4.0	NA	0.0	0.1	0.07	0.45	0.07	43.6
NorthWest: Brilliant St (NW)															
7	L2	All MCs	9	0.0	9	0.0	0.117	4.6	LOS A	0.2	1.2	0.07	0.52	0.07	38.9
8	T1	All MCs	29	0.0	29	0.0	0.117	3.3	LOS A	0.2	1.2	0.07	0.52	0.07	44.9
9	R2	All MCs	96	0.0	96	0.0	0.117	4.7	LOS A	0.2	1.2	0.07	0.52	0.07	26.1
Approach			134	0.0	134	0.0	0.117	4.4	LOS A	0.2	1.2	0.07	0.52	0.07	32.3
SouthWest: Torch St (SW)															
10	L2	All MCs	24	0.0	24	0.0	0.015	3.9	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
11	T1	All MCs	2	0.0	2	0.0	0.015	0.0	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
12	R2	All MCs	1	0.0	1	0.0	0.015	3.8	LOS A	0.0	0.0	0.01	0.48	0.01	43.8
Approach			27	0.0	27	0.0	0.015	3.6	NA	0.0	0.0	0.01	0.48	0.01	31.0
All Vehicles			199	0.0	199	0.0	0.117	4.2	NA	0.2	1.2	0.06	0.50	0.06	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Bant St (S)															
1	L2	All MCs	1	0.0	1	0.0	0.038	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
2	T1	All MCs	74	0.0	74	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			75	0.0	75	0.0	0.038	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Bant St (N)															
8	T1	All MCs	55	0.0	55	0.0	0.040	0.1	LOS A	0.0	0.3	0.09	0.16	0.09	48.4
9	R2	All MCs	19	0.0	19	0.0	0.040	4.8	LOS A	0.0	0.3	0.09	0.16	0.09	44.1
Approach			74	0.0	74	0.0	0.040	1.3	NA	0.0	0.3	0.09	0.16	0.09	48.1
West: Busby St (W)															
10	L2	All MCs	11	0.0	11	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.51	0.18	33.9
12	R2	All MCs	10	0.0	10	0.0	0.016	5.0	LOS A	0.0	0.2	0.18	0.51	0.18	43.2
Approach			21	0.0	21	0.0	0.016	4.9	LOS A	0.0	0.2	0.18	0.51	0.18	40.9
All Vehicles			170	0.0	170	0.0	0.040	1.2	NA	0.0	0.3	0.06	0.14	0.06	48.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Torch Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
SouthEast: Rocket St (SE)															
4	L2	All MCs	3	0.0	3	0.0	0.165	2.7	LOS A	0.0	0.0	0.00	0.01	0.00	59.1
5	T1	All MCs	313	2.6	313	2.6	0.165	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.1
Approach			316	2.5	316	2.5	0.165	0.0	NA	0.0	0.0	0.00	0.01	0.00	59.1
NorthWest: Rocket St (NW)															
11	T1	All MCs	263	1.9	263	1.9	0.163	0.2	LOS A	0.1	0.8	0.12	0.14	0.12	55.0
12	R2	All MCs	34	0.0	34	0.0	0.163	6.7	LOS A	0.1	0.8	0.12	0.14	0.12	55.0
Approach			297	1.7	297	1.7	0.163	1.0	NA	0.1	0.8	0.12	0.14	0.12	55.0
SouthWest: Torch St (SW)															
1	L2	All MCs	22	0.0	22	0.0	0.021	5.6	LOS A	0.0	0.2	0.37	0.56	0.37	35.9
3	R2	All MCs	2	0.0	2	0.0	0.021	7.3	LOS A	0.0	0.2	0.37	0.56	0.37	35.9
Approach			24	0.0	24	0.0	0.021	5.7	LOS A	0.0	0.2	0.37	0.56	0.37	35.9
All Vehicles			637	2.0	637	2.0	0.165	0.7	NA	0.1	0.8	0.07	0.09	0.07	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Bant Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Bant St (S)															
1a	L1	All MCs	79	0.0	79	0.0	0.078	5.1	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
2	T1	All MCs	1	0.0	1	0.0	0.078	5.7	LOS A	0.1	0.8	0.33	0.57	0.33	45.6
3b	R3	All MCs	12	0.0	12	0.0	0.078	8.2	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
Approach			92	0.0	92	0.0	0.078	5.5	LOS A	0.1	0.8	0.33	0.57	0.33	43.3
SouthEast: Rocket St (SE)															
21b	L3	All MCs	21	0.0	21	0.0	0.132	6.7	LOS A	0.0	0.3	0.04	0.10	0.04	53.9
5	T1	All MCs	213	5.2	213	5.2	0.132	0.0	LOS A	0.0	0.3	0.04	0.10	0.04	53.9
23a	R1	All MCs	10	0.0	10	0.0	0.132	5.3	LOS A	0.0	0.3	0.04	0.10	0.04	49.1
Approach			244	4.5	244	4.5	0.132	0.8	NA	0.0	0.3	0.04	0.10	0.04	53.1
North: Bant St (N)															
7a	L1	All MCs	16	0.0	16	0.0	0.040	5.0	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
8	T1	All MCs	3	0.0	3	0.0	0.040	5.5	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
9b	R3	All MCs	15	0.0	15	0.0	0.040	8.6	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
Approach			34	0.0	34	0.0	0.040	6.6	LOS A	0.1	0.4	0.39	0.60	0.39	42.4
NorthWest: Rocket St (NW)															
27b	L3	All MCs	34	0.0	34	0.0	0.154	4.2	LOS A	0.2	1.4	0.20	0.27	0.20	46.6
11	T1	All MCs	176	6.3	176	6.3	0.154	0.3	LOS A	0.2	1.4	0.20	0.27	0.20	35.1
29a	R1	All MCs	58	0.0	58	0.0	0.154	2.7	LOS A	0.2	1.4	0.20	0.27	0.20	35.1
Approach			268	4.1	268	4.1	0.154	1.3	NA	0.2	1.4	0.20	0.27	0.20	42.5
All Vehicles			638	3.4	638	3.4	0.154	2.0	NA	0.2	1.4	0.17	0.27	0.17	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, South Bathurst\SIDRA\240414

\Proposed Network (with 34 & 50 Busby) PM 2024.sip9

MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) PM 2024 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2024 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
NorthEast: Alpha St (NE)															
5	T1	All MCs	87	3.4	87	3.4	0.105	3.9	LOS A	0.2	1.1	0.32	0.53	0.32	49.4
6	R2	All MCs	28	0.0	28	0.0	0.105	6.8	LOS A	0.2	1.1	0.32	0.53	0.32	44.4
Approach			115	2.6	115	2.6	0.105	4.6	LOS A	0.2	1.1	0.32	0.53	0.32	48.6
NorthWest: Rocket St (NW)															
7	L2	All MCs	29	0.0	29	0.0	0.115	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	49.5
9	R2	All MCs	179	3.9	179	3.9	0.115	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	48.9
Approach			208	3.4	208	3.4	0.115	5.5	NA	0.0	0.0	0.00	0.60	0.00	49.0
SouthWest: Vale Rd (SW)															
10	L2	All MCs	212	4.2	212	4.2	0.153	5.6	LOS A	0.3	2.4	0.36	0.59	0.36	49.3
11	T1	All MCs	43	4.7	43	4.7	0.153	10.0	LOS A	0.3	2.4	0.36	0.59	0.36	48.7
Approach			255	4.3	255	4.3	0.153	6.3	LOS A	0.3	2.4	0.36	0.59	0.36	49.1
All Vehicles			578	3.6	578	3.6	0.153	5.7	NA	0.3	2.4	0.22	0.58	0.22	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

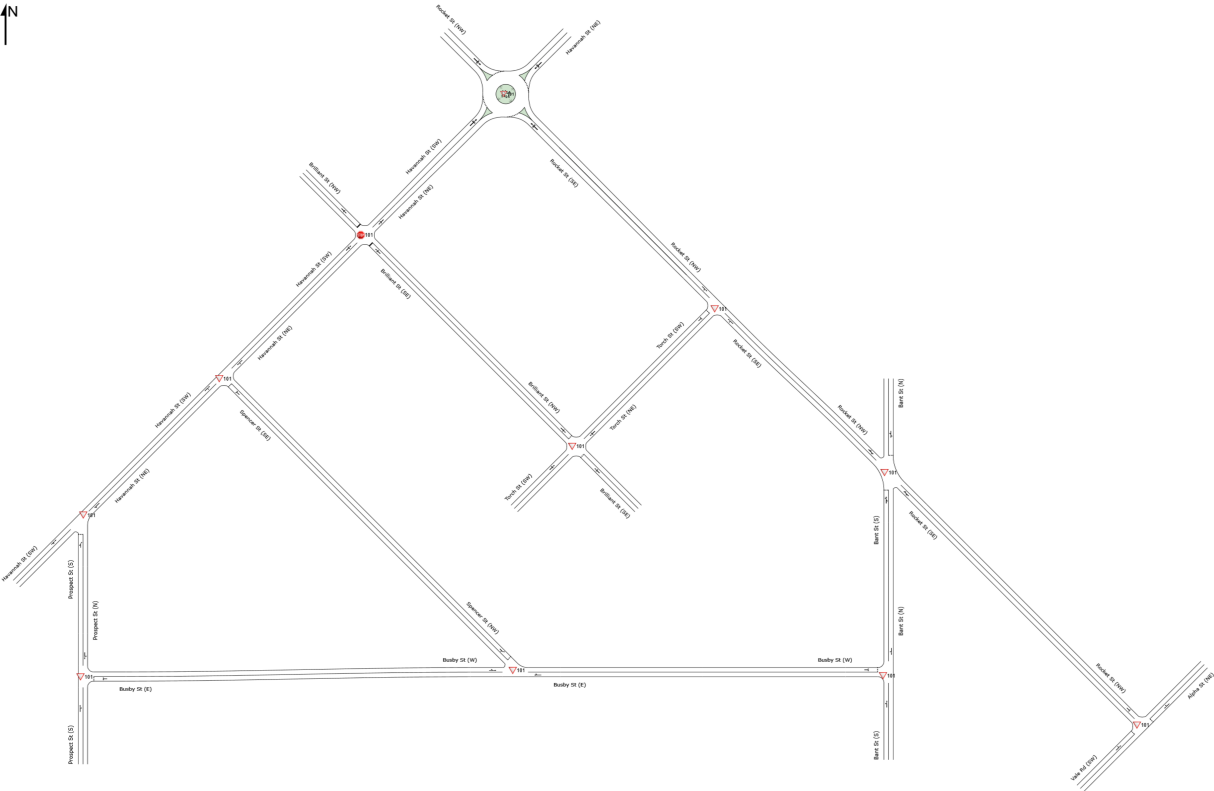
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

NETWORK LAYOUT

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Existing AM 2034
▽101	NA	Havannah & Spencer Existing AM 2034
●101	NA	Havannah & Brilliant Existing AM 2034
▽101	NA	Havannah & Rocket Existing AM 2034
▽101	NA	Prospect & Busby Existing AM 2034
▽101	NA	Busby & Spencer Existing 2034
▽101	NA	Billiant & Torch Existing AM 2034
▽101	NA	Bant St & Busby St Existing AM 2034
▽101	NA	Rocket & Torch Existing AM 2034
▽101	NA	Rocket & Bant Existing AM 2034
▽101	NA	Rocket, Vale & Alpha Existing AM 2034

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\Existing Network AM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
South: Prospect St (S)															
1b	L3	All MCs	8	0.0	8	0.0	0.035	4.3	LOS A	0.0	0.3	0.43	0.60	0.43	39.1
3a	R1	All MCs	21	0.0	21	0.0	0.035	4.5	LOS A	0.0	0.3	0.43	0.60	0.43	17.6
Approach			29	0.0	29	0.0	0.035	4.5	LOS A	0.0	0.3	0.43	0.60	0.43	29.3
NorthEast: Havannah St (NE)															
24a	L1	All MCs	7	0.0	7	0.0	0.155	5.3	LOS A	0.0	0.0	0.00	0.01	0.00	58.9
25	T1	All MCs	288	4.2	288	4.2	0.155	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			295	4.1	295	4.1	0.155	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	262	9.2	262	9.2	0.144	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.6
32b	R3	All MCs	2	0.0	2	0.0	0.144	6.3	LOS A	0.0	0.1	0.01	0.01	0.01	59.6
Approach			264	9.1	264	9.1	0.144	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.6
All Vehicles			588	6.1	588	6.1	0.155	0.3	NA	0.0	0.3	0.02	0.04	0.02	58.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.009	5.5	LOS A	0.0	0.1	0.45	0.62	0.45	31.0
23	R2	All MCs	6	0.0	6	0.0	0.009	7.1	LOS A	0.0	0.1	0.45	0.62	0.45	31.0
Approach			7	0.0	7	0.0	0.009	6.9	LOS A	0.0	0.1	0.45	0.62	0.45	31.0
NorthEast: Havannah St (NE)															
24	L2	All MCs	2	0.0	2	0.0	0.157	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
25	T1	All MCs	295	4.4	295	4.4	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			297	4.4	297	4.4	0.157	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
SouthWest: Havannah St (SW)															
31	T1	All MCs	288	9.0	288	9.0	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
32	R2	All MCs	1	0.0	1	0.0	0.157	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			289	9.0	289	9.0	0.157	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles			593	6.6	593	6.6	0.157	0.1	NA	0.0	0.1	0.01	0.01	0.01	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).


HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Existing AM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network AM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
4	L2	All MCs	4	0.0	4	0.0	0.106	8.5	LOS A	0.1	1.0	0.58	1.02	0.58	29.6
5	T1	All MCs	44	0.0	44	0.0	0.106	12.3	LOS A	0.1	1.0	0.58	1.02	0.58	40.1
6	R2	All MCs	7	0.0	7	0.0	0.106	14.1	LOS A	0.1	1.0	0.58	1.02	0.58	29.6
Approach			55	0.0	55	0.0	0.106	12.3	LOS A	0.1	1.0	0.58	1.02	0.58	39.1
NorthEast: Havannah St (NE)															
7	L2	All MCs	19	26.3	19	26.3	0.247	7.0	LOS A	0.4	3.2	0.31	0.36	0.31	47.6
8	T1	All MCs	252	4.4	252	4.4	0.247	0.7	LOS A	0.4	3.2	0.31	0.36	0.31	47.6
9	R2	All MCs	134	3.7	134	3.7	0.247	6.7	LOS A	0.4	3.2	0.31	0.36	0.31	47.2
Approach			405	5.2	405	5.2	0.247	3.0	NA	0.4	3.2	0.31	0.36	0.31	47.3
NorthWest: Brilliant St (NW)															
10	L2	All MCs	110	0.0	110	0.0	0.226	8.4	LOS A	0.4	2.6	0.48	0.88	0.48	40.0
11	T1	All MCs	28	0.0	28	0.0	0.226	12.8	LOS A	0.4	2.6	0.48	0.88	0.48	40.0
12	R2	All MCs	34	0.0	34	0.0	0.226	14.3	LOS A	0.4	2.6	0.48	0.88	0.48	40.0
Approach			172	0.0	172	0.0	0.226	10.3	LOS A	0.4	2.6	0.48	0.88	0.48	40.0
SouthWest: Havannah St (SW)															
1	L2	All MCs	76	7.9	76	7.9	0.155	5.6	LOS A	0.0	0.1	0.02	0.17	0.02	47.4
2	T1	All MCs	199	10.1	199	10.1	0.155	0.0	LOS A	0.0	0.1	0.02	0.17	0.02	47.9
3	R2	All MCs	4	0.0	4	0.0	0.155	6.0	LOS A	0.0	0.1	0.02	0.17	0.02	47.9
Approach			279	9.3	279	9.3	0.155	1.6	NA	0.0	0.1	0.02	0.17	0.02	47.6
All Vehicles			911	5.2	911	5.2	0.247	4.5	NA	0.4	3.2	0.27	0.44	0.27	44.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Existing Network AM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Existing AM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network AM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
SouthEast: Rocket St (SE)															
4	L2	All MCs	32	12.5	32	12.5	0.540	8.0	LOS A	1.8	13.5	0.78	0.73	0.86	32.4
5	T1	All MCs	267	3.0	267	3.0	0.540	7.7	LOS A	1.8	13.5	0.78	0.73	0.86	42.0
6	R2	All MCs	172	9.9	172	9.9	0.540	11.8	LOS A	1.8	13.5	0.78	0.73	0.86	37.4
Approach			471	6.2	471	6.2	0.540	9.2	LOS A	1.8	13.5	0.78	0.73	0.86	40.4
NorthEast: Havannah St (NE)															
7	L2	All MCs	120	13.3	120	13.3	0.475	6.4	LOS A	1.5	10.7	0.61	0.58	0.61	37.7
8	T1	All MCs	302	4.6	302	4.6	0.475	6.5	LOS A	1.5	10.7	0.61	0.58	0.61	37.7
9	R2	All MCs	83	4.8	83	4.8	0.475	10.4	LOS A	1.5	10.7	0.61	0.58	0.61	43.9
Approach			505	6.7	505	6.7	0.475	7.1	LOS A	1.5	10.7	0.61	0.58	0.61	39.9
NorthWest: Rocket St (NW)															
10	L2	All MCs	60	5.0	60	5.0	0.311	6.1	LOS A	0.8	5.7	0.64	0.62	0.64	43.7
11	T1	All MCs	166	4.2	166	4.2	0.311	6.1	LOS A	0.8	5.7	0.64	0.62	0.64	41.9
12	R2	All MCs	57	0.0	57	0.0	0.311	9.8	LOS A	0.8	5.7	0.64	0.62	0.64	41.9
Approach			283	3.5	283	3.5	0.311	6.9	LOS A	0.8	5.7	0.64	0.62	0.64	42.4
SouthWest: Havannah St (SW)															
1	L2	All MCs	65	6.2	65	6.2	0.400	8.1	LOS A	1.1	8.4	0.77	0.69	0.77	43.6
2	T1	All MCs	216	10.6	216	10.6	0.400	8.6	LOS A	1.1	8.4	0.77	0.69	0.77	41.2
3	R2	All MCs	28	7.1	28	7.1	0.400	12.4	LOS A	1.1	8.4	0.77	0.69	0.77	36.1
Approach			309	9.4	309	9.4	0.400	8.8	LOS A	1.1	8.4	0.77	0.69	0.77	41.7
All Vehicles			1568	6.5	1568	6.5	0.540	8.0	LOS A	1.8	13.5	0.70	0.66	0.72	41.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prospect & Busby Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]										
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist]			km/h	
South: Prospect St (S)															
2	T1	All MCs	23	0.0	23	0.0	0.013	0.0	LOS A	0.0	0.0	0.01	0.05	0.01	49.5
3	R2	All MCs	2	0.0	2	0.0	0.013	4.6	LOS A	0.0	0.0	0.01	0.05	0.01	49.5
Approach			25	0.0	25	0.0	0.013	0.4	NA	0.0	0.0	0.01	0.05	0.01	49.5
East: Busby St (E)															
4	L2	All MCs	1	0.0	1	0.0	0.005	4.6	LOS A	0.0	0.0	0.07	0.53	0.07	43.9
6	R2	All MCs	6	0.0	6	0.0	0.005	4.6	LOS A	0.0	0.0	0.07	0.53	0.07	36.0
Approach			7	0.0	7	0.0	0.005	4.6	LOS A	0.0	0.0	0.07	0.53	0.07	38.7
North: Prospect St (N)															
7	L2	All MCs	2	0.0	2	0.0	0.005	2.5	LOS A	0.0	0.0	0.00	0.11	0.00	40.0
8	T1	All MCs	7	0.0	7	0.0	0.005	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	49.3
Approach			9	0.0	9	0.0	0.005	0.6	NA	0.0	0.0	0.00	0.11	0.00	49.1
All Vehicles			41	0.0	41	0.0	0.013	1.1	NA	0.0	0.0	0.02	0.14	0.02	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Existing 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]			km/h	
East: Busby St (E)															
5	T1	All MCs	6	0.0	6	0.0	0.004	0.0	LOS A	0.0	0.0	0.02	0.12	0.02	48.0
6a	R1	All MCs	2	0.0	2	0.0	0.004	3.6	LOS A	0.0	0.0	0.02	0.12	0.02	48.0
Approach			8	0.0	8	0.0	0.004	0.9	NA	0.0	0.0	0.02	0.12	0.02	48.0
NorthWest: Spencer St (NW)															
27a	L1	All MCs	7	0.0	7	0.0	0.005	4.4	LOS A	0.0	0.1	0.03	0.54	0.03	34.3
29b	R3	All MCs	1	0.0	1	0.0	0.005	5.2	LOS A	0.0	0.1	0.03	0.54	0.03	34.3
Approach			8	0.0	8	0.0	0.005	4.5	LOS A	0.0	0.1	0.03	0.54	0.03	34.3
West: Busby St (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.003	5.4	LOS A	0.0	0.0	0.00	0.12	0.00	46.0
11	T1	All MCs	4	0.0	4	0.0	0.003	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	46.0
Approach			5	0.0	5	0.0	0.003	1.1	NA	0.0	0.0	0.00	0.12	0.00	46.0
All Vehicles			21	0.0	21	0.0	0.005	2.3	NA	0.0	0.1	0.02	0.28	0.02	43.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back	Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
1	L2	All MCs	1	0.0	1	0.0	0.026	4.6	LOS A	0.0	0.3	0.10	0.47	0.10	35.3
2	T1	All MCs	24	0.0	24	0.0	0.026	3.3	LOS A	0.0	0.3	0.10	0.47	0.10	45.2
3	R2	All MCs	7	0.0	7	0.0	0.026	4.8	LOS A	0.0	0.3	0.10	0.47	0.10	45.2
Approach			32	0.0	32	0.0	0.026	3.7	LOS A	0.0	0.3	0.10	0.47	0.10	44.8
NorthEast: Torch St (NE)															
4	L2	All MCs	9	0.0	9	0.0	0.016	4.6	LOS A	0.0	0.2	0.05	0.40	0.05	45.3
5	T1	All MCs	7	0.0	7	0.0	0.016	0.0	LOS A	0.0	0.2	0.05	0.40	0.05	42.3
6	R2	All MCs	13	0.0	13	0.0	0.016	4.6	LOS A	0.0	0.2	0.05	0.40	0.05	40.9
Approach			29	0.0	29	0.0	0.016	3.5	NA	0.0	0.2	0.05	0.40	0.05	43.5
NorthWest: Brilliant St (NW)															
7	L2	All MCs	15	0.0	15	0.0	0.021	4.6	LOS A	0.0	0.2	0.04	0.48	0.04	39.9
8	T1	All MCs	14	0.0	14	0.0	0.021	3.2	LOS A	0.0	0.2	0.04	0.48	0.04	45.3
9	R2	All MCs	1	0.0	1	0.0	0.021	4.6	LOS A	0.0	0.2	0.04	0.48	0.04	26.5
Approach			30	0.0	30	0.0	0.021	3.9	LOS A	0.0	0.2	0.04	0.48	0.04	43.2
SouthWest: Torch St (SW)															
10	L2	All MCs	5	0.0	5	0.0	0.006	3.9	LOS A	0.0	0.0	0.02	0.29	0.02	33.8
11	T1	All MCs	5	0.0	5	0.0	0.006	0.0	LOS A	0.0	0.0	0.02	0.29	0.02	33.8
12	R2	All MCs	1	0.0	1	0.0	0.006	3.9	LOS A	0.0	0.0	0.02	0.29	0.02	45.1
Approach			11	0.0	11	0.0	0.006	2.1	NA	0.0	0.0	0.02	0.29	0.02	38.4
All Vehicles			102	0.0	102	0.0	0.026	3.5	NA	0.0	0.3	0.06	0.43	0.06	43.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m			km/h	
South: Bant St (S)															
1	L2	All MCs	4	0.0	4	0.0	0.040	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
2	T1	All MCs	74	0.0	74	0.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach			78	0.0	78	0.0	0.040	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.7
North: Bant St (N)															
8	T1	All MCs	37	0.0	37	0.0	0.020	0.0	LOS A	0.0	0.0	0.02	0.03	0.02	49.7
9	R2	All MCs	2	0.0	2	0.0	0.020	4.6	LOS A	0.0	0.0	0.02	0.03	0.02	48.6
Approach			39	0.0	39	0.0	0.020	0.2	NA	0.0	0.0	0.02	0.03	0.02	49.7
West: Busby St (W)															
10	L2	All MCs	6	0.0	6	0.0	0.009	4.8	LOS A	0.0	0.1	0.17	0.51	0.17	34.0
12	R2	All MCs	6	0.0	6	0.0	0.009	4.9	LOS A	0.0	0.1	0.17	0.51	0.17	43.2
Approach			12	0.0	12	0.0	0.009	4.8	LOS A	0.0	0.1	0.17	0.51	0.17	41.1
All Vehicles			129	0.0	129	0.0	0.040	0.7	NA	0.0	0.1	0.02	0.07	0.02	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Torch Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
SouthEast: Rocket St (SE)															
4	L2	All MCs	7	0.0	7	0.0	0.241	2.7	LOS A	0.0	0.0	0.00	0.01	0.00	58.4
5	T1	All MCs	443	6.5	443	6.5	0.241	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.4
Approach			450	6.4	450	6.4	0.241	0.0	NA	0.0	0.0	0.00	0.01	0.00	58.4
NorthWest: Rocket St (NW)															
11	T1	All MCs	283	7.4	283	7.4	0.179	0.4	LOS A	0.1	0.9	0.12	0.14	0.12	55.8
12	R2	All MCs	25	16.0	25	16.0	0.179	8.1	LOS A	0.1	0.9	0.12	0.14	0.12	55.8
Approach			308	8.1	308	8.1	0.179	1.0	NA	0.1	0.9	0.12	0.14	0.12	55.8
SouthWest: Torch St (SW)															
1	L2	All MCs	32	0.0	32	0.0	0.034	6.2	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
3	R2	All MCs	2	0.0	2	0.0	0.034	8.7	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
Approach			34	0.0	34	0.0	0.034	6.4	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
All Vehicles			792	6.8	792	6.8	0.241	0.7	NA	0.1	0.9	0.07	0.09	0.07	53.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Bant Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1a	L1	All MCs	66	0.0	66	0.0	0.079	5.7	LOS A	0.1	0.8	0.43	0.63	0.43	42.8
2	T1	All MCs	4	0.0	4	0.0	0.079	6.8	LOS A	0.1	0.8	0.43	0.63	0.43	45.3
3b	R3	All MCs	9	0.0	9	0.0	0.079	9.8	LOS A	0.1	0.8	0.43	0.63	0.43	42.8
Approach			79	0.0	79	0.0	0.079	6.2	LOS A	0.1	0.8	0.43	0.63	0.43	43.0
SouthEast: Rocket St (SE)															
21b	L3	All MCs	3	0.0	3	0.0	0.198	7.3	LOS A	0.1	0.4	0.04	0.05	0.04	56.9
5	T1	All MCs	346	6.4	346	6.4	0.198	0.1	LOS A	0.1	0.4	0.04	0.05	0.04	56.9
23a	R1	All MCs	16	0.0	16	0.0	0.198	5.5	LOS A	0.1	0.4	0.04	0.05	0.04	49.6
Approach			365	6.0	365	6.0	0.198	0.4	NA	0.1	0.4	0.04	0.05	0.04	55.5
North: Bant St (N)															
7a	L1	All MCs	12	0.0	12	0.0	0.033	5.1	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
8	T1	All MCs	1	0.0	1	0.0	0.033	6.6	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
9b	R3	All MCs	11	0.0	11	0.0	0.033	10.1	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
Approach			24	0.0	24	0.0	0.033	7.5	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
NorthWest: Rocket St (NW)															
27b	L3	All MCs	13	0.0	13	0.0	0.155	4.8	LOS A	0.1	1.0	0.16	0.20	0.16	47.0
11	T1	All MCs	221	9.0	221	9.0	0.155	0.3	LOS A	0.1	1.0	0.16	0.20	0.16	39.8
29a	R1	All MCs	36	0.0	36	0.0	0.155	3.2	LOS A	0.1	1.0	0.16	0.20	0.16	39.8
Approach			270	7.4	270	7.4	0.155	0.9	NA	0.1	1.0	0.16	0.20	0.16	42.8
All Vehicles			738	5.7	738	5.7	0.198	1.4	NA	0.1	1.0	0.14	0.19	0.14	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Existing AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
NorthEast: Alpha St (NE)															
5	T1	All MCs	64	10.9	64	10.9	0.138	4.2	LOS A	0.2	1.5	0.42	0.61	0.42	48.2
6	R2	All MCs	47	14.9	47	14.9	0.138	9.0	LOS A	0.2	1.5	0.42	0.61	0.42	42.9
Approach			111	12.6	111	12.6	0.138	6.2	LOS A	0.2	1.5	0.42	0.61	0.42	46.6
NorthWest: Rocket St (NW)															
7	L2	All MCs	26	7.7	26	7.7	0.139	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	49.1
9	R2	All MCs	215	9.8	215	9.8	0.139	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	48.6
Approach			241	9.5	241	9.5	0.139	5.6	NA	0.0	0.0	0.00	0.60	0.00	48.6
SouthWest: Vale Rd (SW)															
10	L2	All MCs	312	4.8	312	4.8	0.212	5.6	LOS A	0.5	3.7	0.40	0.61	0.40	48.9
11	T1	All MCs	43	9.3	43	9.3	0.212	14.7	LOS B	0.5	3.7	0.40	0.61	0.40	48.5
Approach			355	5.4	355	5.4	0.212	6.7	LOS A	0.5	3.7	0.40	0.61	0.40	48.8
All Vehicles			707	7.9	707	7.9	0.212	6.2	NA	0.5	3.7	0.27	0.61	0.27	48.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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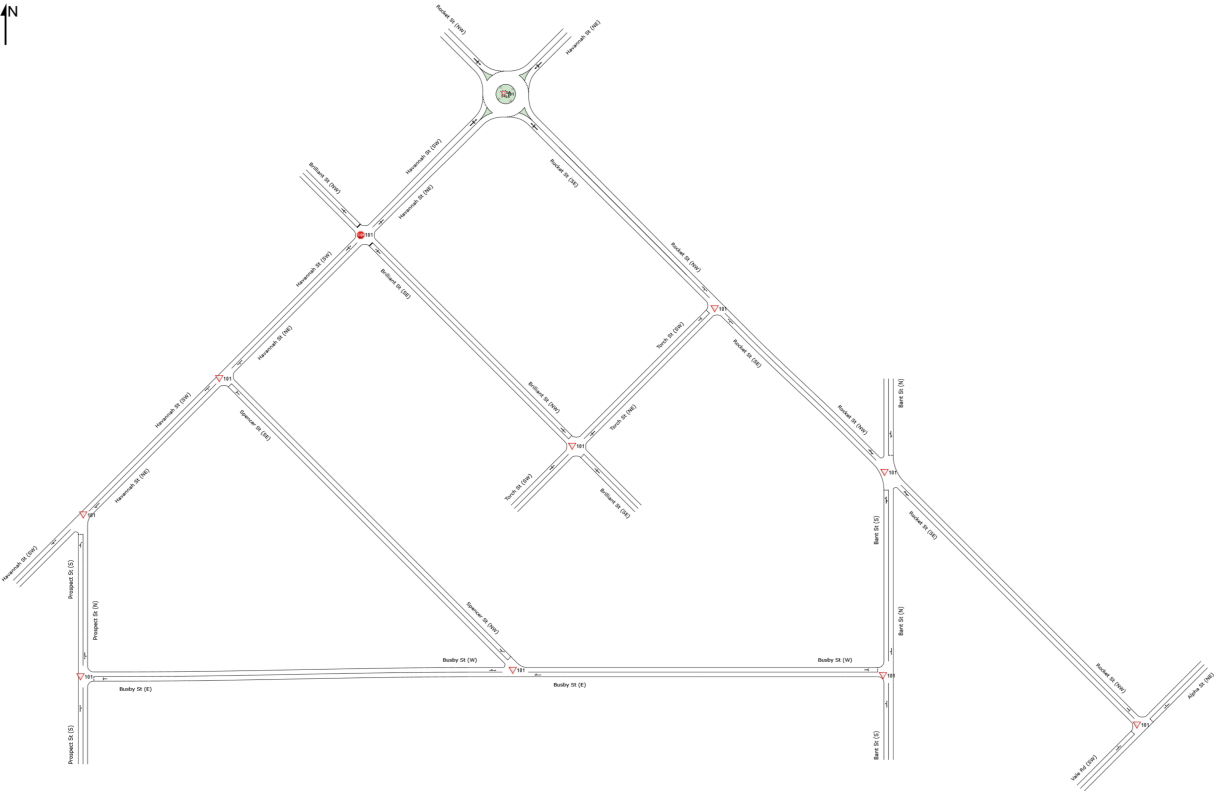
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NETWORK LAYOUT

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Existing PM 2034
▽101	NA	Havannah & Spencer Existing PM 2034
STOP101	NA	Havannah & Brilliant Existing PM 2034
▽101	NA	Havannah & Rocket Existing PM 2034
▽101	NA	Prospect & Busby Existing PM 2034
▽101	NA	Busby & Spencer Existing PM 2034
▽101	NA	Billiant & Torch Existing PM 2034
▽101	NA	Bant St & Busby St Existing PM 2034
▽101	NA	Rocket & Torch Existing PM 2034
▽101	NA	Rocket & Bant Existing PM 2034
▽101	NA	Rocket, Vale & Alpha Existing PM 2034

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\Existing Network PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect St (S)															
1b	L3	All MCs	3	0.0	3	0.0	0.027	4.1	LOS A	0.0	0.2	0.40	0.56	0.40	40.1
3a	R1	All MCs	21	0.0	21	0.0	0.027	3.9	LOS A	0.0	0.2	0.40	0.56	0.40	18.5
Approach			24	0.0	24	0.0	0.027	3.9	LOS A	0.0	0.2	0.40	0.56	0.40	25.5
NorthEast: Havannah St (NE)															
24a	L1	All MCs	32	0.0	32	0.0	0.138	5.3	LOS A	0.0	0.0	0.00	0.07	0.00	54.9
25	T1	All MCs	233	2.1	233	2.1	0.138	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	58.0
Approach			265	1.9	265	1.9	0.138	0.6	NA	0.0	0.0	0.00	0.07	0.00	57.8
SouthWest: Havannah St (SW)															
31	T1	All MCs	207	3.4	207	3.4	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
32b	R3	All MCs	1	0.0	1	0.0	0.109	6.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			208	3.4	208	3.4	0.109	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles			497	2.4	497	2.4	0.138	0.5	NA	0.0	0.2	0.02	0.07	0.02	57.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]										
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m			km/h	
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.003	5.4	LOS A	0.0	0.0	0.40	0.55	0.40	32.3
23	R2	All MCs	2	0.0	2	0.0	0.003	6.6	LOS A	0.0	0.0	0.40	0.55	0.40	32.3
Approach			3	0.0	3	0.0	0.003	6.2	LOS A	0.0	0.0	0.40	0.55	0.40	32.3
NorthEast: Havannah St (NE)															
24	L2	All MCs	3	0.0	3	0.0	0.143	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
25	T1	All MCs	272	1.8	272	1.8	0.143	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach			275	1.8	275	1.8	0.143	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
SouthWest: Havannah St (SW)															
31	T1	All MCs	233	3.4	233	3.4	0.123	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
32	R2	All MCs	1	0.0	1	0.0	0.123	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			234	3.4	234	3.4	0.123	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
All Vehicles			512	2.5	512	2.5	0.143	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Existing PM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network PM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
4	L2	All MCs	5	0.0	5	0.0	0.059	8.4	LOS A	0.1	0.6	0.53	0.96	0.53	30.8
5	T1	All MCs	26	0.0	26	0.0	0.059	11.2	LOS A	0.1	0.6	0.53	0.96	0.53	40.8
6	R2	All MCs	4	0.0	4	0.0	0.059	13.6	LOS A	0.1	0.6	0.53	0.96	0.53	30.8
Approach			35	0.0	35	0.0	0.059	11.1	LOS A	0.1	0.6	0.53	0.96	0.53	39.6
NorthEast: Havannah St (NE)															
7	L2	All MCs	22	0.0	22	0.0	0.226	6.4	LOS A	0.4	2.8	0.27	0.33	0.27	47.7
8	T1	All MCs	234	1.3	234	1.3	0.226	0.5	LOS A	0.4	2.8	0.27	0.33	0.27	47.7
9	R2	All MCs	130	2.3	130	2.3	0.226	6.4	LOS A	0.4	2.8	0.27	0.33	0.27	47.2
Approach			386	1.6	386	1.6	0.226	2.8	NA	0.4	2.8	0.27	0.33	0.27	47.4
NorthWest: Brilliant St (NW)															
10	L2	All MCs	140	0.0	140	0.0	0.227	8.4	LOS A	0.4	2.7	0.43	0.87	0.43	40.5
11	T1	All MCs	28	0.0	28	0.0	0.227	12.1	LOS A	0.4	2.7	0.43	0.87	0.43	40.5
12	R2	All MCs	30	0.0	30	0.0	0.227	13.1	LOS A	0.4	2.7	0.43	0.87	0.43	40.5
Approach			198	0.0	198	0.0	0.227	9.6	LOS A	0.4	2.7	0.43	0.87	0.43	40.5
SouthWest: Havannah St (SW)															
1	L2	All MCs	35	5.7	35	5.7	0.120	5.6	LOS A	0.0	0.0	0.01	0.09	0.01	48.3
2	T1	All MCs	192	2.1	192	2.1	0.120	0.0	LOS A	0.0	0.0	0.01	0.09	0.01	53.0
3	R2	All MCs	1	0.0	1	0.0	0.120	5.6	LOS A	0.0	0.0	0.01	0.09	0.01	53.0
Approach			228	2.6	228	2.6	0.120	0.9	NA	0.0	0.0	0.01	0.09	0.01	50.6
All Vehicles			847	1.4	847	1.4	0.227	4.2	NA	0.4	2.8	0.25	0.42	0.25	44.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Existing Network PM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Existing PM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Existing Network PM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Rocket St (SE)															
4	L2	All MCs	35	0.0	35	0.0	0.446	6.1	LOS A	1.3	9.1	0.70	0.65	0.70	33.6
5	T1	All MCs	217	1.4	217	1.4	0.446	6.2	LOS A	1.3	9.1	0.70	0.65	0.70	42.7
6	R2	All MCs	164	4.3	164	4.3	0.446	10.1	LOS A	1.3	9.1	0.70	0.65	0.70	38.9
Approach			416	2.4	416	2.4	0.446	7.7	LOS A	1.3	9.1	0.70	0.65	0.70	41.1
NorthEast: Havannah St (NE)															
7	L2	All MCs	155	3.2	155	3.2	0.466	6.2	LOS A	1.4	10.1	0.62	0.58	0.62	38.0
8	T1	All MCs	299	2.0	299	2.0	0.466	6.5	LOS A	1.4	10.1	0.62	0.58	0.62	38.0
9	R2	All MCs	46	0.0	46	0.0	0.466	10.3	LOS A	1.4	10.1	0.62	0.58	0.62	44.2
Approach			500	2.2	500	2.2	0.466	6.8	LOS A	1.4	10.1	0.62	0.58	0.62	39.4
NorthWest: Rocket St (NW)															
10	L2	All MCs	52	3.8	52	3.8	0.325	6.4	LOS A	0.8	6.0	0.67	0.64	0.67	43.7
11	T1	All MCs	177	1.7	177	1.7	0.325	6.4	LOS A	0.8	6.0	0.67	0.64	0.67	41.7
12	R2	All MCs	60	0.0	60	0.0	0.325	10.1	LOS A	0.8	6.0	0.67	0.64	0.67	41.7
Approach			289	1.7	289	1.7	0.325	7.1	LOS A	0.8	6.0	0.67	0.64	0.67	42.1
SouthWest: Havannah St (SW)															
1	L2	All MCs	47	0.0	47	0.0	0.392	7.1	LOS A	1.1	7.8	0.70	0.64	0.70	44.1
2	T1	All MCs	273	3.7	273	3.7	0.392	7.5	LOS A	1.1	7.8	0.70	0.64	0.70	42.7
3	R2	All MCs	31	6.5	31	6.5	0.392	11.5	LOS A	1.1	7.8	0.70	0.64	0.70	37.0
Approach			351	3.4	351	3.4	0.392	7.8	LOS A	1.1	7.8	0.70	0.64	0.70	42.7
All Vehicles			1556	2.4	1556	2.4	0.466	7.3	LOS A	1.4	10.1	0.67	0.62	0.67	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prospect & Busby Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]										
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist]			km/h	
South: Prospect St (S)															
2	T1	All MCs	21	0.0	21	0.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	49.7
3	R2	All MCs	1	0.0	1	0.0	0.011	4.6	LOS A	0.0	0.0	0.01	0.03	0.01	49.7
Approach			22	0.0	22	0.0	0.011	0.2	NA	0.0	0.0	0.01	0.03	0.01	49.7
East: Busby St (E)															
4	L2	All MCs	3	0.0	3	0.0	0.004	4.6	LOS A	0.0	0.0	0.10	0.51	0.10	43.9
6	R2	All MCs	3	0.0	3	0.0	0.004	4.7	LOS A	0.0	0.0	0.10	0.51	0.10	35.8
Approach			6	0.0	6	0.0	0.004	4.7	LOS A	0.0	0.0	0.10	0.51	0.10	41.9
North: Prospect St (N)															
7	L2	All MCs	4	0.0	4	0.0	0.017	2.5	LOS A	0.0	0.0	0.00	0.06	0.00	43.7
8	T1	All MCs	28	0.0	28	0.0	0.017	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.6
Approach			32	0.0	32	0.0	0.017	0.3	NA	0.0	0.0	0.00	0.06	0.00	49.5
All Vehicles			60	0.0	60	0.0	0.017	0.7	NA	0.0	0.0	0.01	0.09	0.01	48.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Busby St (E)															
5	T1	All MCs	7	0.0	7	0.0	0.004	0.0	LOS A	0.0	0.0	0.01	0.06	0.01	49.0
6a	R1	All MCs	1	0.0	1	0.0	0.004	3.6	LOS A	0.0	0.0	0.01	0.06	0.01	49.0
Approach			8	0.0	8	0.0	0.004	0.5	NA	0.0	0.0	0.01	0.06	0.01	49.0
NorthWest: Spencer St (NW)															
27a	L1	All MCs	1	0.0	1	0.0	0.001	4.4	LOS A	0.0	0.0	0.02	0.57	0.02	33.8
29b	R3	All MCs	1	0.0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.02	0.57	0.02	33.8
Approach			2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.02	0.57	0.02	33.8
West: Busby St (W)															
10b	L3	All MCs	2	0.0	2	0.0	0.002	5.4	LOS A	0.0	0.0	0.00	0.30	0.00	41.3
11	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	41.3
Approach			4	0.0	4	0.0	0.002	2.7	NA	0.0	0.0	0.00	0.30	0.00	41.3
All Vehicles			14	0.0	14	0.0	0.004	1.7	NA	0.0	0.0	0.01	0.20	0.01	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, SOUTH BATHURST\SIDRA\240414\Existing Network PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h	
SouthEast: Brilliant St (SE)															
1	L2	All MCs	3	0.0	3	0.0	0.011	4.6	LOS A	0.0	0.1	0.05	0.47	0.05	35.4
2	T1	All MCs	11	0.0	11	0.0	0.011	3.2	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
Approach			15	0.0	15	0.0	0.011	3.6	LOS A	0.0	0.1	0.05	0.47	0.05	42.8
NorthEast: Torch St (NE)															
4	L2	All MCs	12	0.0	12	0.0	0.012	4.6	LOS A	0.0	0.1	0.02	0.47	0.02	45.0
5	T1	All MCs	3	0.0	3	0.0	0.012	0.0	LOS A	0.0	0.1	0.02	0.47	0.02	41.6
6	R2	All MCs	8	0.0	8	0.0	0.012	4.6	LOS A	0.0	0.1	0.02	0.47	0.02	40.1
Approach			23	0.0	23	0.0	0.012	4.0	NA	0.0	0.1	0.02	0.47	0.02	43.8
NorthWest: Brilliant St (NW)															
7	L2	All MCs	9	0.0	9	0.0	0.029	4.6	LOS A	0.0	0.3	0.04	0.47	0.04	40.6
8	T1	All MCs	29	0.0	29	0.0	0.029	3.2	LOS A	0.0	0.3	0.04	0.47	0.04	45.6
9	R2	All MCs	1	0.0	1	0.0	0.029	4.6	LOS A	0.0	0.3	0.04	0.47	0.04	26.8
Approach			39	0.0	39	0.0	0.029	3.6	LOS A	0.0	0.3	0.04	0.47	0.04	44.8
SouthWest: Torch St (SW)															
10	L2	All MCs	1	0.0	1	0.0	0.002	3.9	LOS A	0.0	0.0	0.04	0.26	0.04	34.1
11	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.04	0.26	0.04	34.1
12	R2	All MCs	1	0.0	1	0.0	0.002	3.9	LOS A	0.0	0.0	0.04	0.26	0.04	45.2
Approach			4	0.0	4	0.0	0.002	1.9	NA	0.0	0.0	0.04	0.26	0.04	41.9
All Vehicles			81	0.0	81	0.0	0.029	3.6	NA	0.0	0.3	0.03	0.46	0.03	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Existing Network PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1	L2	All MCs	1	0.0	1	0.0	0.038	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
2	T1	All MCs	74	0.0	74	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			75	0.0	75	0.0	0.038	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Bant St (N)															
8	T1	All MCs	55	0.0	55	0.0	0.029	0.0	LOS A	0.0	0.0	0.01	0.02	0.01	49.8
9	R2	All MCs	2	0.0	2	0.0	0.029	4.6	LOS A	0.0	0.0	0.01	0.02	0.01	49.1
Approach			57	0.0	57	0.0	0.029	0.2	NA	0.0	0.0	0.01	0.02	0.01	49.8
West: Busby St (W)															
10	L2	All MCs	8	0.0	8	0.0	0.014	4.8	LOS A	0.0	0.1	0.17	0.51	0.17	33.9
12	R2	All MCs	10	0.0	10	0.0	0.014	5.0	LOS A	0.0	0.1	0.17	0.51	0.17	43.2
Approach			18	0.0	18	0.0	0.014	4.9	LOS A	0.0	0.1	0.17	0.51	0.17	41.4
All Vehicles			150	0.0	150	0.0	0.038	0.7	NA	0.0	0.1	0.03	0.07	0.03	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Torch Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	3	0.0	3	0.0	0.200	2.7	LOS A	0.0	0.0	0.00	0.00	59.2
5	T1	All MCs	382	2.1	382	2.1	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	59.2
Approach			385	2.1	385	2.1	0.200	0.0	NA	0.0	0.0	0.00	0.00	59.2
NorthWest: Rocket St (NW)														
11	T1	All MCs	320	1.6	320	1.6	0.194	0.3	LOS A	0.1	0.9	0.11	0.14	55.5
12	R2	All MCs	34	0.0	34	0.0	0.194	7.1	LOS A	0.1	0.9	0.11	0.14	55.5
Approach			354	1.4	354	1.4	0.194	0.9	NA	0.1	0.9	0.11	0.14	55.5
SouthWest: Torch St (SW)														
1	L2	All MCs	22	0.0	22	0.0	0.023	5.9	LOS A	0.0	0.2	0.42	0.58	35.6
3	R2	All MCs	2	0.0	2	0.0	0.023	8.2	LOS A	0.0	0.2	0.42	0.58	35.6
Approach			24	0.0	24	0.0	0.023	6.1	LOS A	0.0	0.2	0.42	0.58	35.6
All Vehicles			763	1.7	763	1.7	0.200	0.6	NA	0.1	0.9	0.07	0.07	54.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Bant Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Bant St (S)															
1a	L1	All MCs	79	0.0	79	0.0	0.078	5.3	LOS A	0.1	0.8	0.36	0.59	0.36	43.2
2	T1	All MCs	1	0.0	1	0.0	0.078	6.3	LOS A	0.1	0.8	0.36	0.59	0.36	45.5
3b	R3	All MCs	9	0.0	9	0.0	0.078	8.9	LOS A	0.1	0.8	0.36	0.59	0.36	43.2
Approach			89	0.0	89	0.0	0.078	5.7	LOS A	0.1	0.8	0.36	0.59	0.36	43.2
SouthEast: Rocket St (SE)															
21b	L3	All MCs	4	0.0	4	0.0	0.146	7.2	LOS A	0.0	0.3	0.04	0.05	0.04	57.0
5	T1	All MCs	260	4.2	260	4.2	0.146	0.0	LOS A	0.0	0.3	0.04	0.05	0.04	57.0
23a	R1	All MCs	10	0.0	10	0.0	0.146	5.5	LOS A	0.0	0.3	0.04	0.05	0.04	49.6
Approach			274	4.0	274	4.0	0.146	0.4	NA	0.0	0.3	0.04	0.05	0.04	55.8
North: Bant St (N)															
7a	L1	All MCs	16	0.0	16	0.0	0.043	5.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
8	T1	All MCs	3	0.0	3	0.0	0.043	6.0	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
9b	R3	All MCs	15	0.0	15	0.0	0.043	9.4	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
Approach			34	0.0	34	0.0	0.043	7.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
NorthWest: Rocket St (NW)															
27b	L3	All MCs	34	0.0	34	0.0	0.175	4.3	LOS A	0.2	1.5	0.19	0.26	0.19	46.7
11	T1	All MCs	214	5.1	214	5.1	0.175	0.3	LOS A	0.2	1.5	0.19	0.26	0.19	36.0
29a	R1	All MCs	58	0.0	58	0.0	0.175	2.8	LOS A	0.2	1.5	0.19	0.26	0.19	36.0
Approach			306	3.6	306	3.6	0.175	1.2	NA	0.2	1.5	0.19	0.26	0.19	42.6
All Vehicles			703	3.1	703	3.1	0.175	1.7	NA	0.2	1.5	0.17	0.24	0.17	46.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Existing Network PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Existing PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Existing Network PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
NorthEast: Alpha St (NE)														
5	T1	All MCs	87	3.4	87	3.4	0.110	4.0	LOS A	0.2	1.1	0.35	0.35	49.3
6	R2	All MCs	28	0.0	28	0.0	0.110	7.3	LOS A	0.2	1.1	0.35	0.35	44.2
Approach			115	2.6	115	2.6	0.110	4.8	LOS A	0.2	1.1	0.35	0.35	48.5
NorthWest: Rocket St (NW)														
7	L2	All MCs	29	0.0	29	0.0	0.131	5.5	LOS A	0.0	0.0	0.00	0.00	49.5
9	R2	All MCs	210	3.3	210	3.3	0.131	5.5	LOS A	0.0	0.0	0.00	0.00	48.9
Approach			239	2.9	239	2.9	0.131	5.5	NA	0.0	0.0	0.00	0.00	49.0
SouthWest: Vale Rd (SW)														
10	L2	All MCs	242	3.7	242	3.7	0.171	5.6	LOS A	0.4	2.8	0.39	0.39	49.1
11	T1	All MCs	43	4.7	43	4.7	0.171	11.7	LOS A	0.4	2.8	0.39	0.39	48.6
Approach			285	3.9	285	3.9	0.171	6.5	LOS A	0.4	2.8	0.39	0.39	48.9
All Vehicles			639	3.3	639	3.3	0.171	5.8	NA	0.4	2.8	0.23	0.23	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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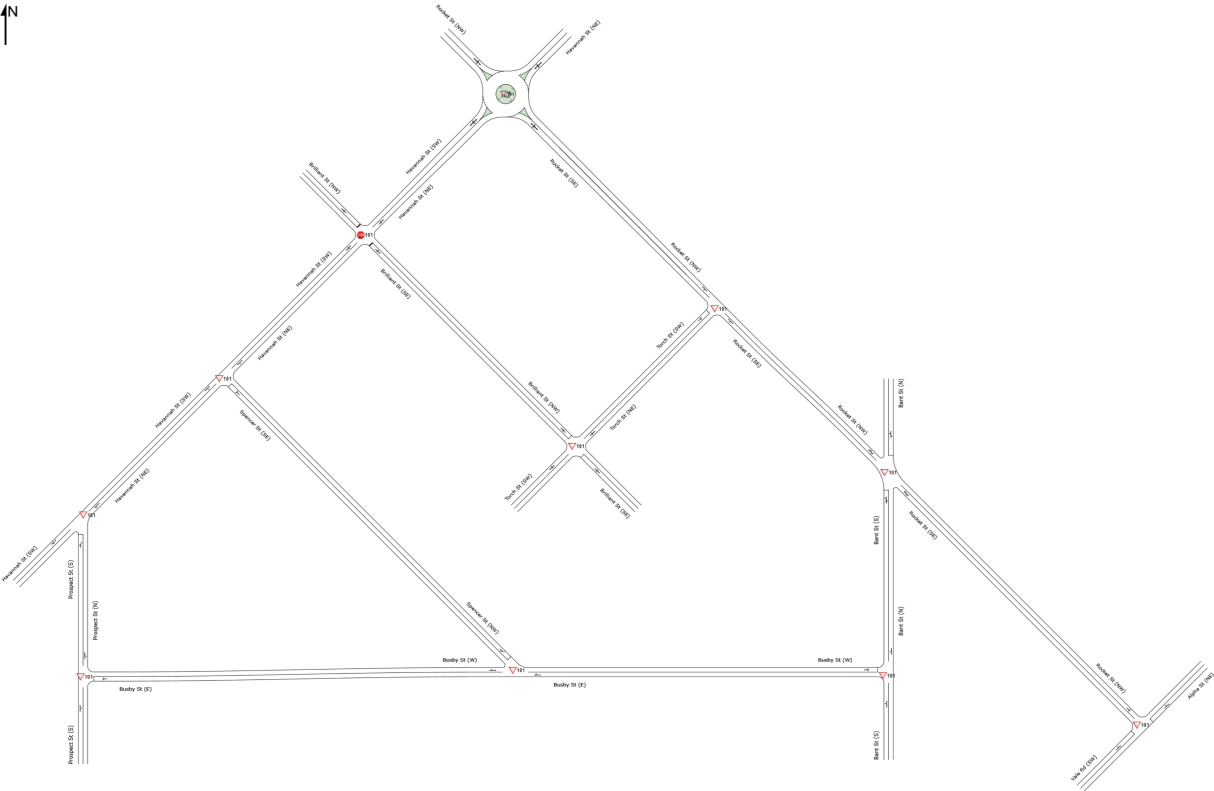
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NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 Busby) AM 2034
(Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 Busby) AM 2034
▽101	NA	Havannah & Spencer Proposed (with 34 Busby) AM 2034
STOP101	NA	Havannah & Brilliant Proposed (with 34 Busby) AM 2034
▽101	NA	Havannah & Rocket Proposed (with 34 Busby) AM 2034
▽101	NA	Prospect & Busby Proposed (with 34 Busby) AM 2034
▽101	NA	Busby & Spencer Proposed (with 34 Busby) AM 2034
▽101	NA	Brilliant & Torch Proposed (with 34 Busby) AM 2034
▽101	NA	Bant St & Busby St Proposed (with 34 Busby) AM 2034
▽101	NA	Rocket & Torch Proposed (with 34 Busby) AM 2034
▽101	NA	Rocket & Bant Proposed (with 34 Busby) AM 2034
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 Busby) AM 2034

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, South Bathurst\SIDRA\240414
\\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Prospect Proposed (with 34 Busby) AM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
South: Prospect St (S)															
1b	L3	All MCs	18	0.0	18	0.0	0.066	4.4	LOS A	0.1	0.6	0.45	0.63	0.45	38.6
3a	R1	All MCs	37	0.0	37	0.0	0.066	4.9	LOS A	0.1	0.6	0.45	0.63	0.45	17.2
Approach			55	0.0	55	0.0	0.066	4.7	LOS A	0.1	0.6	0.45	0.63	0.45	30.0
NorthEast: Havannah St (NE)															
24a	L1	All MCs	73	0.0	73	0.0	0.190	5.3	LOS A	0.0	0.0	0.00	0.12	0.00	51.9
25	T1	All MCs	288	4.2	288	4.2	0.190	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	56.6
Approach			361	3.3	361	3.3	0.190	1.1	NA	0.0	0.0	0.00	0.12	0.00	56.2
SouthWest: Havannah St (SW)															
31	T1	All MCs	262	9.2	262	9.2	0.151	0.1	LOS A	0.0	0.3	0.04	0.05	0.04	58.0
32b	R3	All MCs	10	0.0	10	0.0	0.151	7.5	LOS A	0.0	0.3	0.04	0.05	0.04	58.0
Approach			272	8.8	272	8.8	0.151	0.4	NA	0.0	0.3	0.04	0.05	0.04	58.0
All Vehicles			688	5.2	688	5.2	0.190	1.1	NA	0.1	0.6	0.05	0.13	0.05	55.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Havannah & Spencer Proposed (with 34 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.010	5.7	LOS A	0.0	0.1	0.49	0.64	0.49	30.1
23	R2	All MCs	6	0.0	6	0.0	0.010	7.7	LOS A	0.0	0.1	0.49	0.64	0.49	30.1
Approach			7	0.0	7	0.0	0.010	7.4	LOS A	0.0	0.1	0.49	0.64	0.49	30.1
NorthEast: Havannah St (NE)															
24	L2	All MCs	2	0.0	2	0.0	0.191	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
25	T1	All MCs	361	3.6	361	3.6	0.191	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			363	3.6	363	3.6	0.191	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
SouthWest: Havannah St (SW)															
31	T1	All MCs	304	8.6	304	8.6	0.165	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
32	R2	All MCs	1	0.0	1	0.0	0.165	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			305	8.5	305	8.5	0.165	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles			675	5.8	675	5.8	0.191	0.1	NA	0.0	0.1	0.01	0.01	0.01	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 Busby) AM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m			
			veh/h	%	veh/h	%	v/c	sec						km/h
SouthEast: Brilliant St (SE)														
4	L2	All MCs	4	0.0	4	0.0	0.371	10.3	LOS A	0.6	4.4	0.73	1.09	25.7
5	T1	All MCs	72	0.0	72	0.0	0.371	15.5	LOS B	0.6	4.4	0.73	1.09	37.7
6	R2	All MCs	74	0.0	74	0.0	0.371	18.0	LOS B	0.6	4.4	0.73	1.09	25.7
Approach			150	0.0	150	0.0	0.371	16.6	LOS B	0.6	4.4	0.73	1.09	33.8
NorthEast: Havannah St (NE)														
7	L2	All MCs	36	13.9	36	13.9	0.282	6.9	LOS A	0.5	3.5	0.30	0.36	47.9
8	T1	All MCs	299	3.7	299	3.7	0.282	0.7	LOS A	0.5	3.5	0.30	0.36	47.9
9	R2	All MCs	134	3.7	134	3.7	0.282	6.9	LOS A	0.5	3.5	0.30	0.36	47.3
Approach			469	4.5	469	4.5	0.282	2.9	NA	0.5	3.5	0.30	0.36	47.5
NorthWest: Brilliant St (NW)														
10	L2	All MCs	110	0.0	110	0.0	0.311	8.9	LOS A	0.6	4.0	0.57	0.91	38.6
11	T1	All MCs	35	0.0	35	0.0	0.311	14.8	LOS B	0.6	4.0	0.57	0.91	38.6
12	R2	All MCs	53	0.0	53	0.0	0.311	16.8	LOS B	0.6	4.0	0.57	0.91	38.6
Approach			198	0.0	198	0.0	0.311	12.0	LOS A	0.6	4.0	0.57	0.91	38.6
SouthWest: Havannah St (SW)														
1	L2	All MCs	81	7.4	81	7.4	0.163	5.6	LOS A	0.0	0.1	0.02	0.18	47.4
2	T1	All MCs	210	9.5	210	9.5	0.163	0.0	LOS A	0.0	0.1	0.02	0.18	47.8
3	R2	All MCs	4	0.0	4	0.0	0.163	6.3	LOS A	0.0	0.1	0.02	0.18	47.8
Approach			295	8.8	295	8.8	0.163	1.6	NA	0.0	0.1	0.02	0.18	47.5
All Vehicles			1112	4.2	1112	4.2	0.371	6.0	NA	0.6	4.4	0.33	0.51	42.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Proposed (with 34 Busby) AM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
SouthEast: Rocket St (SE)															
4	L2	All MCs	32	12.5	32	12.5	0.575	9.4	LOS A	2.1	15.6	0.84	0.79	0.98	30.8
5	T1	All MCs	267	3.0	267	3.0	0.575	9.0	LOS A	2.1	15.6	0.84	0.79	0.98	41.2
6	R2	All MCs	172	9.9	172	9.9	0.575	13.2	LOS A	2.1	15.6	0.84	0.79	0.98	36.3
Approach			471	6.2	471	6.2	0.575	10.5	LOS A	2.1	15.6	0.84	0.79	0.98	39.4
NorthEast: Havannah St (NE)															
7	L2	All MCs	120	13.3	120	13.3	0.528	6.6	LOS A	1.7	12.6	0.66	0.60	0.66	37.4
8	T1	All MCs	355	3.9	355	3.9	0.528	6.6	LOS A	1.7	12.6	0.66	0.60	0.66	37.4
9	R2	All MCs	83	4.8	83	4.8	0.528	10.6	LOS A	1.7	12.6	0.66	0.60	0.66	43.8
Approach			558	6.1	558	6.1	0.528	7.2	LOS A	1.7	12.6	0.66	0.60	0.66	39.4
NorthWest: Rocket St (NW)															
10	L2	All MCs	60	5.0	60	5.0	0.344	6.7	LOS A	0.9	6.6	0.71	0.66	0.71	43.4
11	T1	All MCs	166	4.2	166	4.2	0.344	6.7	LOS A	0.9	6.6	0.71	0.66	0.71	41.4
12	R2	All MCs	67	0.0	67	0.0	0.344	10.3	LOS A	0.9	6.6	0.71	0.66	0.71	41.4
Approach			293	3.4	293	3.4	0.344	7.5	LOS A	0.9	6.6	0.71	0.66	0.71	41.9
SouthWest: Havannah St (SW)															
1	L2	All MCs	78	5.1	78	5.1	0.497	9.1	LOS A	1.6	12.0	0.82	0.74	0.90	43.1
2	T1	All MCs	281	8.2	281	8.2	0.497	9.6	LOS A	1.6	12.0	0.82	0.74	0.90	40.7
3	R2	All MCs	28	7.1	28	7.1	0.497	13.4	LOS A	1.6	12.0	0.82	0.74	0.90	35.1
Approach			387	7.5	387	7.5	0.497	9.8	LOS A	1.6	12.0	0.82	0.74	0.90	41.2
All Vehicles			1709	6.0	1709	6.0	0.575	8.8	LOS A	2.1	15.6	0.75	0.69	0.81	40.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Prospect & Busby Proposed (with 34 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]										
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m			km/h	
South: Prospect St (S)															
2	T1	All MCs	23	0.0	23	0.0	0.013	0.0	LOS A	0.0	0.0	0.03	0.05	0.03	49.3
3	R2	All MCs	2	0.0	2	0.0	0.013	4.7	LOS A	0.0	0.0	0.03	0.05	0.03	49.3
Approach			25	0.0	25	0.0	0.013	0.4	NA	0.0	0.0	0.03	0.05	0.03	49.3
East: Busby St (E)															
4	L2	All MCs	1	0.0	1	0.0	0.027	4.6	LOS A	0.0	0.2	0.12	0.53	0.12	43.8
6	R2	All MCs	32	0.0	32	0.0	0.027	4.8	LOS A	0.0	0.2	0.12	0.53	0.12	35.5
Approach			33	0.0	33	0.0	0.027	4.8	LOS A	0.0	0.2	0.12	0.53	0.12	36.3
North: Prospect St (N)															
7	L2	All MCs	76	0.0	76	0.0	0.045	2.5	LOS A	0.0	0.0	0.00	0.45	0.00	26.0
8	T1	All MCs	7	0.0	7	0.0	0.045	0.0	LOS A	0.0	0.0	0.00	0.45	0.00	47.1
Approach			83	0.0	83	0.0	0.045	2.3	NA	0.0	0.0	0.00	0.45	0.00	35.2
All Vehicles			141	0.0	141	0.0	0.045	2.6	NA	0.0	0.2	0.03	0.40	0.03	41.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Proposed (with 34 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Busby St (E)															
5	T1	All MCs	19	0.0	19	0.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.05	0.01	49.2
6a	R1	All MCs	2	0.0	2	0.0	0.011	3.6	LOS A	0.0	0.0	0.01	0.05	0.01	49.2
Approach			21	0.0	21	0.0	0.011	0.3	NA	0.0	0.0	0.01	0.05	0.01	49.2
NorthWest: Spencer St (NW)															
27a	L1	All MCs	7	0.0	7	0.0	0.005	4.4	LOS A	0.0	0.1	0.04	0.54	0.04	34.2
29b	R3	All MCs	1	0.0	1	0.0	0.005	5.2	LOS A	0.0	0.1	0.04	0.54	0.04	34.2
Approach			8	0.0	8	0.0	0.005	4.5	LOS A	0.0	0.1	0.04	0.54	0.04	34.2
West: Busby St (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.004	5.4	LOS A	0.0	0.0	0.00	0.08	0.00	47.4
11	T1	All MCs	7	0.0	7	0.0	0.004	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	47.4
Approach			8	0.0	8	0.0	0.004	0.7	NA	0.0	0.0	0.00	0.08	0.00	47.4
All Vehicles			37	0.0	37	0.0	0.011	1.3	NA	0.0	0.1	0.01	0.16	0.01	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Proposed (with 34 Busby) AM 2034
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 Busby) AM
2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
1	L2	All MCs	1	0.0	1	0.0	0.027	4.6	LOS A	0.0	0.3	0.16	0.47	0.16	35.2
2	T1	All MCs	24	0.0	24	0.0	0.027	3.6	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
3	R2	All MCs	7	0.0	7	0.0	0.027	4.8	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
Approach			32	0.0	32	0.0	0.027	3.9	LOS A	0.0	0.3	0.16	0.47	0.16	44.5
NorthEast: Torch St (NE)															
4	L2	All MCs	9	0.0	9	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	44.8
5	T1	All MCs	7	0.0	7	0.0	0.016	0.2	LOS A	0.0	0.2	0.18	0.40	0.18	41.4
6	R2	All MCs	13	0.0	13	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	39.8
Approach			29	0.0	29	0.0	0.016	3.7	NA	0.0	0.2	0.18	0.40	0.18	42.8
NorthWest: Brilliant St (NW)															
7	L2	All MCs	15	0.0	15	0.0	0.044	4.6	LOS A	0.1	0.4	0.07	0.50	0.07	39.1
8	T1	All MCs	14	0.0	14	0.0	0.044	3.4	LOS A	0.1	0.4	0.07	0.50	0.07	45.0
9	R2	All MCs	24	0.0	24	0.0	0.044	4.9	LOS A	0.1	0.4	0.07	0.50	0.07	26.2
Approach			53	0.0	53	0.0	0.044	4.4	LOS A	0.1	0.4	0.07	0.50	0.07	35.7
SouthWest: Torch St (SW)															
10	L2	All MCs	100	0.0	100	0.0	0.057	3.9	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
11	T1	All MCs	5	0.0	5	0.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
12	R2	All MCs	1	0.0	1	0.0	0.057	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	43.7
Approach			106	0.0	106	0.0	0.057	3.7	NA	0.0	0.0	0.00	0.49	0.00	28.8
All Vehicles			220	0.0	220	0.0	0.057	3.9	NA	0.1	0.4	0.06	0.48	0.06	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Proposed (with 34 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1	L2	All MCs	4	0.0	4	0.0	0.040	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
2	T1	All MCs	74	0.0	74	0.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach			78	0.0	78	0.0	0.040	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.7
North: Bant St (N)															
8	T1	All MCs	37	0.0	37	0.0	0.025	0.1	LOS A	0.0	0.1	0.07	0.12	0.07	48.8
9	R2	All MCs	9	0.0	9	0.0	0.025	4.8	LOS A	0.0	0.1	0.07	0.12	0.07	45.3
Approach			46	0.0	46	0.0	0.025	1.0	NA	0.0	0.1	0.07	0.12	0.07	48.6
West: Busby St (W)															
10	L2	All MCs	16	0.0	16	0.0	0.016	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	34.0
12	R2	All MCs	6	0.0	6	0.0	0.016	4.9	LOS A	0.0	0.2	0.16	0.50	0.16	43.2
Approach			22	0.0	22	0.0	0.016	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	39.1
All Vehicles			146	0.0	146	0.0	0.040	1.2	NA	0.0	0.2	0.05	0.13	0.05	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) AM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Torch Proposed (with 34 Busby) AM 2034
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 Busby) AM
2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				
SouthEast: Rocket St (SE)															
4	L2	All MCs	7	0.0	7	0.0	0.241	2.7	LOS A	0.0	0.0	0.00	0.01	0.00	58.4
5	T1	All MCs	443	6.5	443	6.5	0.241	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.4
Approach			450	6.4	450	6.4	0.241	0.0	NA	0.0	0.0	0.00	0.01	0.00	58.4
NorthWest: Rocket St (NW)															
11	T1	All MCs	283	7.4	283	7.4	0.179	0.4	LOS A	0.1	0.9	0.12	0.14	0.12	55.8
12	R2	All MCs	25	16.0	25	16.0	0.179	8.1	LOS A	0.1	0.9	0.12	0.14	0.12	55.8
Approach			308	8.1	308	8.1	0.179	1.0	NA	0.1	0.9	0.12	0.14	0.12	55.8
SouthWest: Torch St (SW)															
1	L2	All MCs	32	0.0	32	0.0	0.034	6.2	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
3	R2	All MCs	2	0.0	2	0.0	0.034	8.7	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
Approach			34	0.0	34	0.0	0.034	6.4	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
All Vehicles			792	6.8	792	6.8	0.241	0.7	NA	0.1	0.9	0.07	0.09	0.07	53.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket & Bant Proposed (with 34 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist ]					km/h
South: Bant St (S)															
1a	L1	All MCs	66	0.0	66	0.0	0.098	5.7	LOS A	0.1	1.0	0.46	0.66	0.46	42.3
2	T1	All MCs	4	0.0	4	0.0	0.098	6.9	LOS A	0.1	1.0	0.46	0.66	0.46	45.0
3b	R3	All MCs	19	0.0	19	0.0	0.098	9.9	LOS A	0.1	1.0	0.46	0.66	0.46	42.3
Approach			89	0.0	89	0.0	0.098	6.7	LOS A	0.1	1.0	0.46	0.66	0.46	42.5
SouthEast: Rocket St (SE)															
21b	L3	All MCs	10	0.0	10	0.0	0.202	7.1	LOS A	0.1	0.4	0.05	0.07	0.05	56.0
5	T1	All MCs	346	6.4	346	6.4	0.202	0.1	LOS A	0.1	0.4	0.05	0.07	0.05	56.0
23a	R1	All MCs	16	0.0	16	0.0	0.202	5.5	LOS A	0.1	0.4	0.05	0.07	0.05	49.5
Approach			372	5.9	372	5.9	0.202	0.5	NA	0.1	0.4	0.05	0.07	0.05	54.8
North: Bant St (N)															
7a	L1	All MCs	12	0.0	12	0.0	0.033	5.1	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
8	T1	All MCs	1	0.0	1	0.0	0.033	6.6	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
9b	R3	All MCs	11	0.0	11	0.0	0.033	10.1	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
Approach			24	0.0	24	0.0	0.033	7.5	LOS A	0.0	0.3	0.45	0.62	0.45	41.6
NorthWest: Rocket St (NW)															
27b	L3	All MCs	13	0.0	13	0.0	0.156	4.8	LOS A	0.1	1.0	0.16	0.20	0.16	47.0
11	T1	All MCs	221	9.0	221	9.0	0.156	0.3	LOS A	0.1	1.0	0.16	0.20	0.16	39.6
29a	R1	All MCs	36	0.0	36	0.0	0.156	3.3	LOS A	0.1	1.0	0.16	0.20	0.16	39.6
Approach			270	7.4	270	7.4	0.156	0.9	NA	0.1	1.0	0.16	0.20	0.16	42.7
All Vehicles			755	5.6	755	5.6	0.202	1.6	NA	0.1	1.0	0.15	0.20	0.15	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Proposed (with 34 Busby) AM 2034 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec	[Veh. veh	Dist]	m			km/h	
NorthEast: Alpha St (NE)															
5	T1	All MCs	64	10.9	64	10.9	0.140	4.2	LOS A	0.2	1.5	0.43	0.62	0.43	48.1
6	R2	All MCs	47	14.9	47	14.9	0.140	9.2	LOS A	0.2	1.5	0.43	0.62	0.43	42.8
Approach			111	12.6	111	12.6	0.140	6.3	LOS A	0.2	1.5	0.43	0.62	0.43	46.5
NorthWest: Rocket St (NW)															
7	L2	All MCs	26	7.7	26	7.7	0.144	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	49.1
9	R2	All MCs	225	9.3	225	9.3	0.144	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	48.6
Approach			251	9.2	251	9.2	0.144	5.6	NA	0.0	0.0	0.00	0.60	0.00	48.6
SouthWest: Vale Rd (SW)															
10	L2	All MCs	319	4.7	319	4.7	0.216	5.6	LOS A	0.5	3.8	0.41	0.62	0.41	48.9
11	T1	All MCs	43	9.3	43	9.3	0.216	15.4	LOS B	0.5	3.8	0.41	0.62	0.41	48.4
Approach			362	5.2	362	5.2	0.216	6.8	LOS A	0.5	3.8	0.41	0.62	0.41	48.8
All Vehicles			724	7.7	724	7.7	0.216	6.3	NA	0.5	3.8	0.27	0.61	0.27	48.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

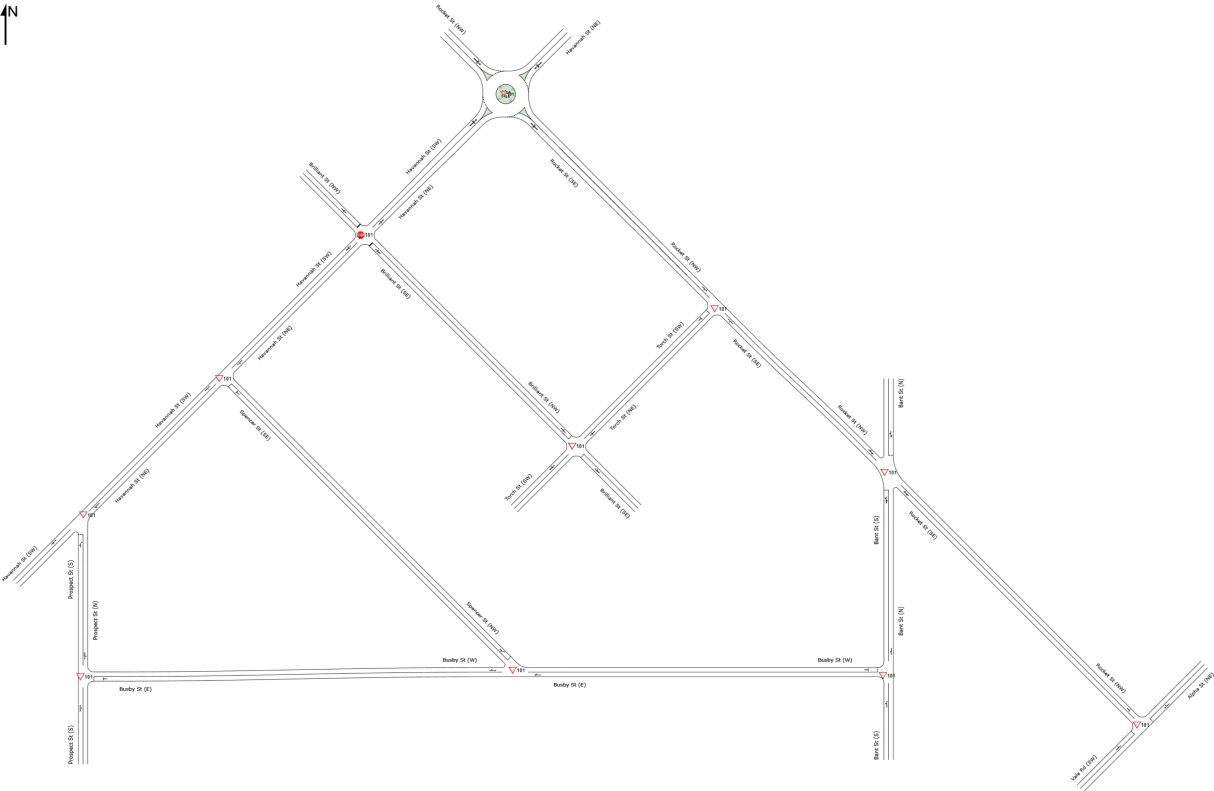
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NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 Busby) PM 2034
(Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 Busby) PM 2034
▽101	NA	Havannah & Spencer Proposed (with 34 Busby) PM 2034
STOP101	NA	Havannah & Brilliant Proposed (with 34 Busby) PM 2034
▽101	NA	Havannah & Rocket Proposed (with 34 Busby) PM 2034
▽101	NA	Prospect & Busby Proposed (with 34 Busby) PM 2034
▽101	NA	Busby & Spencer Proposed (with 34 Busby) PM 2034
▽101	NA	Billiant & Torch Proposed (with 34 Busby) PM 2034
▽101	NA	Bant St & Busby St Proposed (with 34 Busby) PM 2034
▽101	NA	Rocket & Torch Proposed (with 34 Busby) PM 2034
▽101	NA	Rocket & Bant Proposed (with 34 Busby) PM 2034
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 Busby) PM 2034

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MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Proposed (with 34 Busby)
PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 Busby) PM
2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
South: Prospect St (S)															
1b	L3	All MCs	5	0.0	5	0.0	0.030	4.1	LOS A	0.0	0.3	0.41	0.57	0.41	39.6
3a	R1	All MCs	21	0.0	21	0.0	0.030	4.1	LOS A	0.0	0.3	0.41	0.57	0.41	18.1
Approach			26	0.0	26	0.0	0.030	4.1	LOS A	0.0	0.3	0.41	0.57	0.41	27.5
NorthEast: Havannah St (NE)															
24a	L1	All MCs	98	0.0	98	0.0	0.172	5.3	LOS A	0.0	0.0	0.00	0.18	0.00	49.1
25	T1	All MCs	233	2.1	233	2.1	0.172	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	55.3
Approach			331	1.5	331	1.5	0.172	1.6	NA	0.0	0.0	0.00	0.18	0.00	54.4
SouthWest: Havannah St (SW)															
31	T1	All MCs	207	3.4	207	3.4	0.121	0.1	LOS A	0.1	0.4	0.07	0.09	0.07	56.7
32b	R3	All MCs	15	0.0	15	0.0	0.121	7.3	LOS A	0.1	0.4	0.07	0.09	0.07	56.7
Approach			222	3.2	222	3.2	0.121	0.6	NA	0.1	0.4	0.07	0.09	0.07	56.7
All Vehicles			579	2.1	579	2.1	0.172	1.3	NA	0.1	0.4	0.05	0.16	0.05	54.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) PM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Havannah & Spencer Proposed (with 34 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.004	5.6	LOS A	0.0	0.0	0.43	0.57	0.43	31.7
23	R2	All MCs	2	0.0	2	0.0	0.004	7.0	LOS A	0.0	0.0	0.43	0.57	0.43	31.7
Approach			3	0.0	3	0.0	0.004	6.5	LOS A	0.0	0.0	0.43	0.57	0.43	31.7
NorthEast: Havannah St (NE)															
24	L2	All MCs	3	0.0	3	0.0	0.177	5.5	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
25	T1	All MCs	338	1.5	338	1.5	0.177	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach			341	1.5	341	1.5	0.177	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	233	3.4	233	3.4	0.123	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
32	R2	All MCs	1	0.0	1	0.0	0.123	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			234	3.4	234	3.4	0.123	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
All Vehicles			578	2.2	578	2.2	0.177	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) PM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 Busby) PM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 Busby) PM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Brilliant St (SE)														
4	L2	All MCs	5	0.0	5	0.0	0.130	8.7	LOS A	0.2	1.2	0.61	1.02	28.5
5	T1	All MCs	33	0.0	33	0.0	0.130	12.4	LOS A	0.2	1.2	0.61	1.02	39.5
6	R2	All MCs	21	0.0	21	0.0	0.130	15.8	LOS B	0.2	1.2	0.61	1.02	28.5
Approach			59	0.0	59	0.0	0.130	13.3	LOS A	0.2	1.2	0.61	1.02	36.7
NorthEast: Havannah St (NE)														
7	L2	All MCs	89	0.0	89	0.0	0.286	6.3	LOS A	0.5	3.4	0.26	0.35	47.1
8	T1	All MCs	281	1.1	281	1.1	0.286	0.5	LOS A	0.5	3.4	0.26	0.35	47.1
9	R2	All MCs	130	2.3	130	2.3	0.286	6.5	LOS A	0.5	3.4	0.26	0.35	47.1
Approach			500	1.2	500	1.2	0.286	3.1	NA	0.5	3.4	0.26	0.35	47.1
NorthWest: Brilliant St (NW)														
10	L2	All MCs	140	0.0	140	0.0	0.342	8.8	LOS A	0.7	4.8	0.54	0.90	39.1
11	T1	All MCs	56	0.0	56	0.0	0.342	14.8	LOS B	0.7	4.8	0.54	0.90	39.1
12	R2	All MCs	49	0.0	49	0.0	0.342	15.0	LOS B	0.7	4.8	0.54	0.90	39.1
Approach			245	0.0	245	0.0	0.342	11.4	LOS A	0.7	4.8	0.54	0.90	39.1
SouthWest: Havannah St (SW)														
1	L2	All MCs	35	5.7	35	5.7	0.120	5.6	LOS A	0.0	0.0	0.01	0.09	48.3
2	T1	All MCs	192	2.1	192	2.1	0.120	0.0	LOS A	0.0	0.0	0.01	0.09	53.0
3	R2	All MCs	1	0.0	1	0.0	0.120	5.8	LOS A	0.0	0.0	0.01	0.09	53.0
Approach			228	2.6	228	2.6	0.120	0.9	NA	0.0	0.0	0.01	0.09	50.5
All Vehicles			1032	1.2	1032	1.2	0.342	5.1	NA	0.7	4.8	0.29	0.46	43.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) PM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Proposed (with 34 Busby) PM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 Busby) PM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	35	0.0	35	0.0	0.498	7.7	LOS A	1.6	11.5	0.80	0.74	32.1
5	T1	All MCs	217	1.4	217	1.4	0.498	7.8	LOS A	1.6	11.5	0.80	0.74	41.9
6	R2	All MCs	164	4.3	164	4.3	0.498	11.8	LOS A	1.6	11.5	0.80	0.74	37.8
Approach			416	2.4	416	2.4	0.498	9.4	LOS A	1.6	11.5	0.80	0.74	40.2
NorthEast: Havannah St (NE)														
7	L2	All MCs	155	3.2	155	3.2	0.560	6.6	LOS A	1.9	13.5	0.70	0.61	37.3
8	T1	All MCs	394	1.5	394	1.5	0.560	6.9	LOS A	1.9	13.5	0.70	0.61	37.3
9	R2	All MCs	46	0.0	46	0.0	0.560	10.7	LOS A	1.9	13.5	0.70	0.61	43.9
Approach			595	1.8	595	1.8	0.560	7.1	LOS A	1.9	13.5	0.70	0.61	38.5
NorthWest: Rocket St (NW)														
10	L2	All MCs	52	3.8	52	3.8	0.351	6.6	LOS A	0.9	6.6	0.70	0.65	43.4
11	T1	All MCs	177	1.7	177	1.7	0.351	6.5	LOS A	0.9	6.6	0.70	0.65	41.4
12	R2	All MCs	79	0.0	79	0.0	0.351	10.3	LOS A	0.9	6.6	0.70	0.65	41.4
Approach			308	1.6	308	1.6	0.351	7.5	LOS A	0.9	6.6	0.70	0.65	41.9
SouthWest: Havannah St (SW)														
1	L2	All MCs	50	0.0	50	0.0	0.414	7.1	LOS A	1.2	8.5	0.72	0.65	44.0
2	T1	All MCs	287	3.5	287	3.5	0.414	7.6	LOS A	1.2	8.5	0.72	0.65	42.6
3	R2	All MCs	31	6.5	31	6.5	0.414	11.6	LOS A	1.2	8.5	0.72	0.65	36.9
Approach			368	3.3	368	3.3	0.414	7.8	LOS A	1.2	8.5	0.72	0.65	42.6
All Vehicles			1687	2.3	1687	2.3	0.560	7.9	LOS A	1.9	13.5	0.73	0.66	40.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) PM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Prospect & Busby Proposed (with 34 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 Busby) PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prospect St (S)															
2	T1	All MCs	21	0.0	21	0.0	0.011	0.0	LOS A	0.0	0.0	0.02	0.03	0.02	49.6
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.0	0.02	0.03	0.02	49.6
Approach			22	0.0	22	0.0	0.011	0.2	NA	0.0	0.0	0.02	0.03	0.02	49.6
East: Busby St (E)															
4	L2	All MCs	3	0.0	3	0.0	0.006	4.6	LOS A	0.0	0.1	0.12	0.51	0.12	43.8
6	R2	All MCs	5	0.0	5	0.0	0.006	4.8	LOS A	0.0	0.1	0.12	0.51	0.12	35.6
Approach			8	0.0	8	0.0	0.006	4.8	LOS A	0.0	0.1	0.12	0.51	0.12	41.0
North: Prospect St (N)															
7	L2	All MCs	85	0.0	85	0.0	0.060	2.5	LOS A	0.0	0.0	0.00	0.37	0.00	28.2
8	T1	All MCs	28	0.0	28	0.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.37	0.00	47.6
Approach			113	0.0	113	0.0	0.060	1.9	NA	0.0	0.0	0.00	0.37	0.00	42.8
All Vehicles			143	0.0	143	0.0	0.060	1.8	NA	0.0	0.1	0.01	0.33	0.01	44.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Proposed (with 34 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Busby St (E)															
5	T1	All MCs	14	0.0	14	0.0	0.008	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	49.4
6a	R1	All MCs	1	0.0	1	0.0	0.008	3.6	LOS A	0.0	0.0	0.01	0.03	0.01	49.4
Approach			15	0.0	15	0.0	0.008	0.2	NA	0.0	0.0	0.01	0.03	0.01	49.4
NorthWest: Spencer St (NW)															
27a	L1	All MCs	1	0.0	1	0.0	0.001	4.5	LOS A	0.0	0.0	0.06	0.56	0.06	33.5
29b	R3	All MCs	1	0.0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.06	0.56	0.06	33.5
Approach			2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.06	0.56	0.06	33.5
West: Busby St (W)															
10b	L3	All MCs	2	0.0	2	0.0	0.007	5.4	LOS A	0.0	0.0	0.00	0.10	0.00	46.9
11	T1	All MCs	11	0.0	11	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	46.9
Approach			13	0.0	13	0.0	0.007	0.8	NA	0.0	0.0	0.00	0.10	0.00	46.9
All Vehicles			30	0.0	30	0.0	0.008	0.8	NA	0.0	0.0	0.01	0.10	0.01	47.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Proposed (with 34 Busby) PM 2034
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 Busby) PM
2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]	m			km/h
SouthEast: Brilliant St (SE)															
1	L2	All MCs	3	0.0	3	0.0	0.011	4.6	LOS A	0.0	0.1	0.05	0.47	0.05	35.4
2	T1	All MCs	11	0.0	11	0.0	0.011	3.3	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
Approach			15	0.0	15	0.0	0.011	3.6	LOS A	0.0	0.1	0.05	0.47	0.05	42.8
NorthEast: Torch St (NE)															
4	L2	All MCs	12	0.0	12	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	44.8
5	T1	All MCs	3	0.0	3	0.0	0.013	0.0	LOS A	0.0	0.1	0.07	0.45	0.07	41.3
6	R2	All MCs	8	0.0	8	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	39.8
Approach			23	0.0	23	0.0	0.013	4.0	NA	0.0	0.1	0.07	0.45	0.07	43.6
NorthWest: Brilliant St (NW)															
7	L2	All MCs	9	0.0	9	0.0	0.117	4.6	LOS A	0.2	1.2	0.07	0.52	0.07	38.9
8	T1	All MCs	29	0.0	29	0.0	0.117	3.3	LOS A	0.2	1.2	0.07	0.52	0.07	44.9
9	R2	All MCs	96	0.0	96	0.0	0.117	4.7	LOS A	0.2	1.2	0.07	0.52	0.07	26.1
Approach			134	0.0	134	0.0	0.117	4.4	LOS A	0.2	1.2	0.07	0.52	0.07	32.3
SouthWest: Torch St (SW)															
10	L2	All MCs	24	0.0	24	0.0	0.015	3.9	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
11	T1	All MCs	2	0.0	2	0.0	0.015	0.0	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
12	R2	All MCs	1	0.0	1	0.0	0.015	3.8	LOS A	0.0	0.0	0.01	0.48	0.01	43.8
Approach			27	0.0	27	0.0	0.015	3.6	NA	0.0	0.0	0.01	0.48	0.01	31.0
All Vehicles			199	0.0	199	0.0	0.117	4.2	NA	0.2	1.2	0.06	0.50	0.06	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 Busby) PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Proposed (with 34 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist]			km/h	
South: Bant St (S)															
1	L2	All MCs	1	0.0	1	0.0	0.038	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
2	T1	All MCs	74	0.0	74	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			75	0.0	75	0.0	0.038	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Bant St (N)															
8	T1	All MCs	55	0.0	55	0.0	0.038	0.1	LOS A	0.0	0.3	0.08	0.14	0.08	48.6
9	R2	All MCs	16	0.0	16	0.0	0.038	4.8	LOS A	0.0	0.3	0.08	0.14	0.08	44.7
Approach			71	0.0	71	0.0	0.038	1.1	NA	0.0	0.3	0.08	0.14	0.08	48.3
West: Busby St (W)															
10	L2	All MCs	10	0.0	10	0.0	0.015	4.8	LOS A	0.0	0.2	0.18	0.51	0.18	33.9
12	R2	All MCs	10	0.0	10	0.0	0.015	5.0	LOS A	0.0	0.2	0.18	0.51	0.18	43.2
Approach			20	0.0	20	0.0	0.015	4.9	LOS A	0.0	0.2	0.18	0.51	0.18	41.0
All Vehicles			166	0.0	166	0.0	0.038	1.1	NA	0.0	0.3	0.06	0.13	0.06	48.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Torch Proposed (with 34 Busby) PM 2034
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 Busby) PM
2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
SouthEast: Rocket St (SE)														
4	L2	All MCs	3	0.0	3	0.0	0.200	2.7	LOS A	0.0	0.0	0.00	0.00	59.2
5	T1	All MCs	382	2.1	382	2.1	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	59.2
Approach			385	2.1	385	2.1	0.200	0.0	NA	0.0	0.0	0.00	0.00	59.2
NorthWest: Rocket St (NW)														
11	T1	All MCs	320	1.6	320	1.6	0.194	0.3	LOS A	0.1	0.9	0.11	0.14	55.5
12	R2	All MCs	34	0.0	34	0.0	0.194	7.1	LOS A	0.1	0.9	0.11	0.14	55.5
Approach			354	1.4	354	1.4	0.194	0.9	NA	0.1	0.9	0.11	0.14	55.5
SouthWest: Torch St (SW)														
1	L2	All MCs	22	0.0	22	0.0	0.023	5.9	LOS A	0.0	0.2	0.42	0.58	35.6
3	R2	All MCs	2	0.0	2	0.0	0.023	8.2	LOS A	0.0	0.2	0.42	0.58	35.6
Approach			24	0.0	24	0.0	0.023	6.1	LOS A	0.0	0.2	0.42	0.58	35.6
All Vehicles			763	1.7	763	1.7	0.200	0.6	NA	0.1	0.9	0.07	0.07	54.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Bant Proposed (with 34 Busby) PM 2034
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 Busby) PM
2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh Dist] veh m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h	
South: Bant St (S)															
1a	L1	All MCs	79	0.0	79	0.0	0.081	5.3	LOS A	0.1	0.9	0.37	0.59	0.37	43.1
2	T1	All MCs	1	0.0	1	0.0	0.081	6.3	LOS A	0.1	0.9	0.37	0.59	0.37	45.5
3b	R3	All MCs	11	0.0	11	0.0	0.081	9.0	LOS A	0.1	0.9	0.37	0.59	0.37	43.1
Approach			91	0.0	91	0.0	0.081	5.8	LOS A	0.1	0.9	0.37	0.59	0.37	43.2
SouthEast: Rocket St (SE)															
21b	L3	All MCs	18	0.0	18	0.0	0.155	6.8	LOS A	0.0	0.3	0.04	0.08	0.04	55.1
5	T1	All MCs	260	4.2	260	4.2	0.155	0.0	LOS A	0.0	0.3	0.04	0.08	0.04	55.1
23a	R1	All MCs	10	0.0	10	0.0	0.155	5.5	LOS A	0.0	0.3	0.04	0.08	0.04	49.3
Approach			288	3.8	288	3.8	0.155	0.7	NA	0.0	0.3	0.04	0.08	0.04	54.2
North: Bant St (N)															
7a	L1	All MCs	16	0.0	16	0.0	0.043	5.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
8	T1	All MCs	3	0.0	3	0.0	0.043	6.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
9b	R3	All MCs	15	0.0	15	0.0	0.043	9.4	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
Approach			34	0.0	34	0.0	0.043	7.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
NorthWest: Rocket St (NW)															
27b	L3	All MCs	34	0.0	34	0.0	0.175	4.4	LOS A	0.2	1.5	0.20	0.26	0.20	46.6
11	T1	All MCs	214	5.1	214	5.1	0.175	0.3	LOS A	0.2	1.5	0.20	0.26	0.20	35.6
29a	R1	All MCs	58	0.0	58	0.0	0.175	2.9	LOS A	0.2	1.5	0.20	0.26	0.20	35.6
Approach			306	3.6	306	3.6	0.175	1.3	NA	0.2	1.5	0.20	0.26	0.20	42.4
All Vehicles			719	3.1	719	3.1	0.175	1.9	NA	0.2	1.5	0.17	0.25	0.17	45.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Proposed (with 34 Busby) PM 2034 (Site Folder: General)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 Busby) PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV] veh/h	%	[Total HV] veh/h	%				[Veh. veh	Dist] m				
NorthEast: Alpha St (NE)															
5	T1	All MCs	87	3.4	87	3.4	0.110	4.0	LOS A	0.2	1.1	0.35	0.55	0.35	49.3
6	R2	All MCs	28	0.0	28	0.0	0.110	7.4	LOS A	0.2	1.1	0.35	0.55	0.35	44.2
Approach			115	2.6	115	2.6	0.110	4.8	LOS A	0.2	1.1	0.35	0.55	0.35	48.5
NorthWest: Rocket St (NW)															
7	L2	All MCs	29	0.0	29	0.0	0.132	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	49.5
9	R2	All MCs	212	3.3	212	3.3	0.132	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	48.9
Approach			241	2.9	241	2.9	0.132	5.5	NA	0.0	0.0	0.00	0.60	0.00	49.0
SouthWest: Vale Rd (SW)															
10	L2	All MCs	256	3.5	256	3.5	0.178	5.6	LOS A	0.4	3.0	0.39	0.61	0.39	49.0
11	T1	All MCs	43	4.7	43	4.7	0.178	12.2	LOS A	0.4	3.0	0.39	0.61	0.39	48.6
Approach			299	3.7	299	3.7	0.178	6.5	LOS A	0.4	3.0	0.39	0.61	0.39	48.9
All Vehicles			655	3.2	655	3.2	0.178	5.9	NA	0.4	3.0	0.24	0.59	0.24	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

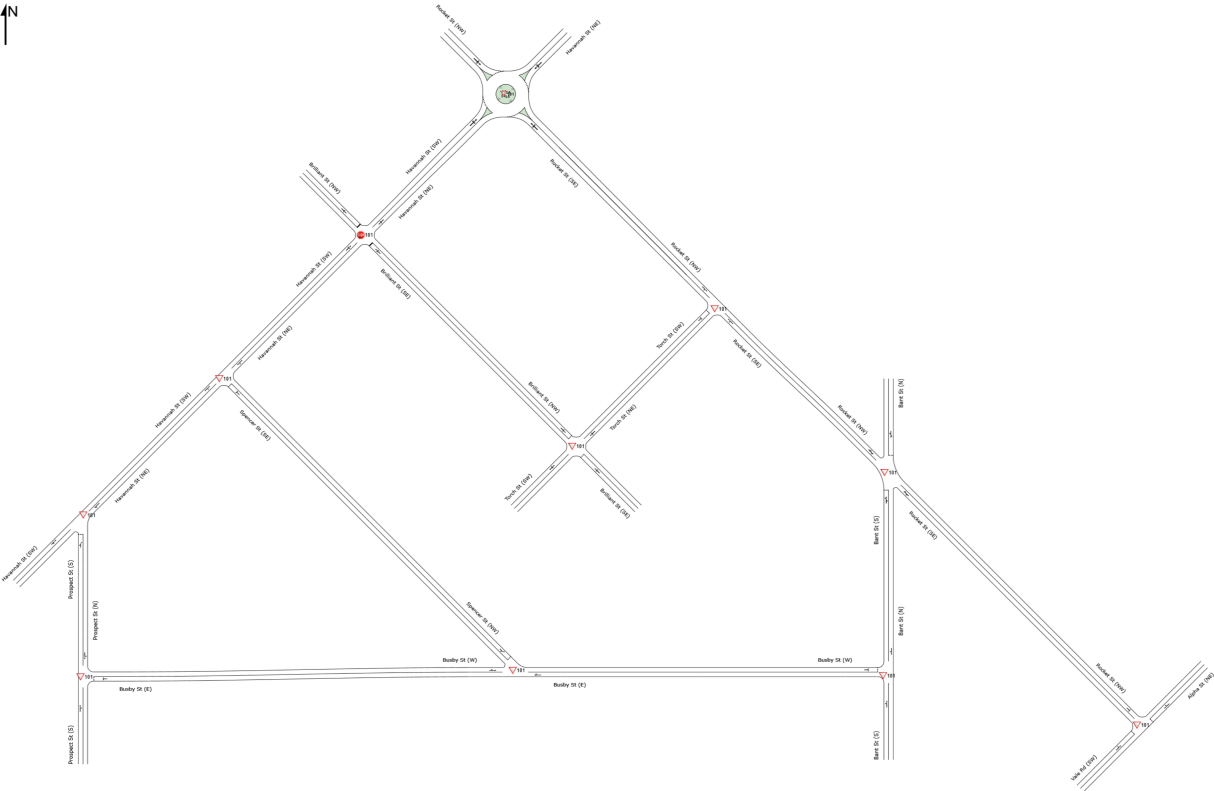
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NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Havannah & Spencer Proposed (with 34 & 50 Busby) AM 2034
STOP101	NA	Havannah & Brilliant Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Havannah & Rocket Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Prospect & Busby Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Busby & Spencer Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Billiant & Torch Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Bant St & Busby St Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Rocket & Torch Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Rocket & Bant Proposed (with 34 & 50 Busby) AM 2034
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) AM 2034

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MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
			veh/h		veh/h					veh	m			km/h	
South: Prospect St (S)															
1b	L3	All MCs	21	0.0	21	0.0	0.131	4.4	LOS A	0.2	1.3	0.48	0.68	0.48	38.1
3a	R1	All MCs	81	0.0	81	0.0	0.131	5.1	LOS A	0.2	1.3	0.48	0.68	0.48	16.1
Approach			102	0.0	102	0.0	0.131	5.0	LOS A	0.2	1.3	0.48	0.68	0.48	25.7
NorthEast: Havannah St (NE)															
24a	L1	All MCs	84	0.0	84	0.0	0.196	5.3	LOS A	0.0	0.0	0.00	0.14	0.00	51.1
25	T1	All MCs	288	4.2	288	4.2	0.196	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	56.3
Approach			372	3.2	372	3.2	0.196	1.2	NA	0.0	0.0	0.00	0.14	0.00	55.7
SouthWest: Havannah St (SW)															
31	T1	All MCs	262	9.2	262	9.2	0.152	0.1	LOS A	0.0	0.3	0.05	0.06	0.05	57.8
32b	R3	All MCs	11	0.0	11	0.0	0.152	7.5	LOS A	0.0	0.3	0.05	0.06	0.05	57.8
Approach			273	8.8	273	8.8	0.152	0.4	NA	0.0	0.3	0.05	0.06	0.05	57.8
All Vehicles			747	4.8	747	4.8	0.196	1.4	NA	0.2	1.3	0.08	0.18	0.08	53.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	[Total HV]						[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m				km/h
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.011	5.8	LOS A	0.0	0.1	0.50	0.66	0.50	29.6
23	R2	All MCs	6	0.0	6	0.0	0.011	8.1	LOS A	0.0	0.1	0.50	0.66	0.50	29.6
Approach			7	0.0	7	0.0	0.011	7.8	LOS A	0.0	0.1	0.50	0.66	0.50	29.6
NorthEast: Havannah St (NE)															
24	L2	All MCs	2	0.0	2	0.0	0.196	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
25	T1	All MCs	372	3.5	372	3.5	0.196	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			374	3.5	374	3.5	0.196	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
SouthWest: Havannah St (SW)															
31	T1	All MCs	348	7.5	348	7.5	0.188	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
32	R2	All MCs	1	0.0	1	0.0	0.188	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach			349	7.4	349	7.4	0.188	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles			730	5.3	730	5.3	0.196	0.1	NA	0.0	0.1	0.01	0.01	0.01	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).


HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
SouthEast: Brilliant St (SE)															
4	L2	All MCs	4	0.0	4	0.0	0.396	10.6	LOS A	0.7	4.8	0.76	1.09	1.01	24.8
5	T1	All MCs	72	0.0	72	0.0	0.396	16.7	LOS B	0.7	4.8	0.76	1.09	1.01	37.1
6	R2	All MCs	74	0.0	74	0.0	0.396	19.1	LOS B	0.7	4.8	0.76	1.09	1.01	24.8
Approach			150	0.0	150	0.0	0.396	17.7	LOS B	0.7	4.8	0.76	1.09	1.01	33.0
NorthEast: Havannah St (NE)															
7	L2	All MCs	36	13.9	36	13.9	0.291	7.2	LOS A	0.5	3.7	0.32	0.39	0.32	47.7
8	T1	All MCs	307	3.6	307	3.6	0.291	0.8	LOS A	0.5	3.7	0.32	0.39	0.32	47.7
9	R2	All MCs	134	3.7	134	3.7	0.291	7.1	LOS A	0.5	3.7	0.32	0.39	0.32	47.2
Approach			477	4.4	477	4.4	0.291	3.0	NA	0.5	3.7	0.32	0.39	0.32	47.4
NorthWest: Brilliant St (NW)															
10	L2	All MCs	110	0.0	110	0.0	0.337	9.3	LOS A	0.7	4.6	0.61	0.94	0.73	38.0
11	T1	All MCs	35	0.0	35	0.0	0.337	15.9	LOS B	0.7	4.6	0.61	0.94	0.73	38.0
12	R2	All MCs	56	0.0	56	0.0	0.337	18.1	LOS B	0.7	4.6	0.61	0.94	0.73	38.0
Approach			201	0.0	201	0.0	0.337	12.9	LOS A	0.7	4.6	0.61	0.94	0.73	38.0
SouthWest: Havannah St (SW)															
1	L2	All MCs	95	6.3	95	6.3	0.186	5.6	LOS A	0.0	0.1	0.02	0.18	0.02	47.4
2	T1	All MCs	240	8.3	240	8.3	0.186	0.0	LOS A	0.0	0.1	0.02	0.18	0.02	47.7
3	R2	All MCs	4	0.0	4	0.0	0.186	6.3	LOS A	0.0	0.1	0.02	0.18	0.02	47.7
Approach			339	7.7	339	7.7	0.186	1.7	NA	0.0	0.1	0.02	0.18	0.02	47.5
All Vehicles			1167	4.0	1167	4.0	0.396	6.2	NA	0.7	4.8	0.34	0.51	0.39	41.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) AM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				
			veh/h	%	veh/h	%	v/c	sec						km/h	
SouthEast: Rocket St (SE)															
4	L2	All MCs	32	12.5	32	12.5	0.580	9.6	LOS A	2.2	15.9	0.84	0.80	1.00	30.6
5	T1	All MCs	267	3.0	267	3.0	0.580	9.1	LOS A	2.2	15.9	0.84	0.80	1.00	41.1
6	R2	All MCs	172	9.9	172	9.9	0.580	13.3	LOS A	2.2	15.9	0.84	0.80	1.00	36.1
Approach			471	6.2	471	6.2	0.580	10.7	LOS A	2.2	15.9	0.84	0.80	1.00	39.3
NorthEast: Havannah St (NE)															
7	L2	All MCs	120	13.3	120	13.3	0.535	6.7	LOS A	1.8	12.9	0.67	0.60	0.67	37.3
8	T1	All MCs	361	3.9	361	3.9	0.535	6.7	LOS A	1.8	12.9	0.67	0.60	0.67	37.3
9	R2	All MCs	83	4.8	83	4.8	0.535	10.6	LOS A	1.8	12.9	0.67	0.60	0.67	43.7
Approach			564	6.0	564	6.0	0.535	7.2	LOS A	1.8	12.9	0.67	0.60	0.67	39.3
NorthWest: Rocket St (NW)															
10	L2	All MCs	60	5.0	60	5.0	0.356	6.9	LOS A	1.0	6.9	0.73	0.67	0.73	43.2
11	T1	All MCs	166	4.2	166	4.2	0.356	6.9	LOS A	1.0	6.9	0.73	0.67	0.73	41.3
12	R2	All MCs	69	0.0	69	0.0	0.356	10.6	LOS A	1.0	6.9	0.73	0.67	0.73	41.3
Approach			295	3.4	295	3.4	0.356	7.7	LOS A	1.0	6.9	0.73	0.67	0.73	41.8
SouthWest: Havannah St (SW)															
1	L2	All MCs	83	4.8	83	4.8	0.534	9.6	LOS A	1.9	13.7	0.84	0.77	0.95	42.8
2	T1	All MCs	306	7.5	306	7.5	0.534	10.1	LOS A	1.9	13.7	0.84	0.77	0.95	40.3
3	R2	All MCs	28	7.1	28	7.1	0.534	14.0	LOS A	1.9	13.7	0.84	0.77	0.95	34.3
Approach			417	7.0	417	7.0	0.534	10.2	LOS A	1.9	13.7	0.84	0.77	0.95	40.8
All Vehicles			1747	5.8	1747	5.8	0.580	9.0	LOS A	2.2	15.9	0.77	0.70	0.83	40.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Proposed Network (with 34 & 50 Busby) AM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Prospect & Busby Proposed (with 34 & 50 Busby)
AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 & 50 Busby)
AM 2034 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
			veh/h		veh/h					veh	m			km/h	
South: Prospect St (S)															
2	T1	All MCs	70	0.0	70	0.0	0.039	0.0	LOS A	0.0	0.1	0.03	0.04	0.03	49.4
3	R2	All MCs	5	0.0	5	0.0	0.039	4.7	LOS A	0.0	0.1	0.03	0.04	0.03	49.4
Approach			75	0.0	75	0.0	0.039	0.3	NA	0.0	0.1	0.03	0.04	0.03	49.4
East: Busby St (E)															
4	L2	All MCs	2	0.0	2	0.0	0.029	4.6	LOS A	0.0	0.3	0.17	0.53	0.17	43.6
6	R2	All MCs	32	0.0	32	0.0	0.029	5.0	LOS A	0.0	0.3	0.17	0.53	0.17	35.2
Approach			34	0.0	34	0.0	0.029	5.0	LOS A	0.0	0.3	0.17	0.53	0.17	36.6
North: Prospect St (N)															
7	L2	All MCs	76	0.0	76	0.0	0.051	2.5	LOS A	0.0	0.0	0.00	0.40	0.00	27.5
8	T1	All MCs	19	0.0	19	0.0	0.051	0.0	LOS A	0.0	0.0	0.00	0.40	0.00	47.5
Approach			95	0.0	95	0.0	0.051	2.0	NA	0.0	0.0	0.00	0.40	0.00	41.3
All Vehicles			204	0.0	204	0.0	0.051	1.9	NA	0.0	0.3	0.04	0.29	0.04	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) AM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Proposed (with 34 & 50 Busby)
AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 & 50 Busby)
AM 2034 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h	
East: Busby St (E)															
5	T1	All MCs	20	0.0	20	0.0	0.011	0.0	LOS A	0.0	0.0	0.01	0.04	0.01	49.2
6a	R1	All MCs	2	0.0	2	0.0	0.011	3.6	LOS A	0.0	0.0	0.01	0.04	0.01	49.2
Approach			22	0.0	22	0.0	0.011	0.3	NA	0.0	0.0	0.01	0.04	0.01	49.2
NorthWest: Spencer St (NW)															
27a	L1	All MCs	7	0.0	7	0.0	0.005	4.4	LOS A	0.0	0.1	0.05	0.54	0.05	34.1
29b	R3	All MCs	1	0.0	1	0.0	0.005	5.2	LOS A	0.0	0.1	0.05	0.54	0.05	34.1
Approach			8	0.0	8	0.0	0.005	4.5	LOS A	0.0	0.1	0.05	0.54	0.05	34.1
West: Busby St (W)															
10b	L3	All MCs	1	0.0	1	0.0	0.006	5.4	LOS A	0.0	0.0	0.00	0.06	0.00	48.1
11	T1	All MCs	10	0.0	10	0.0	0.006	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	48.1
Approach			11	0.0	11	0.0	0.006	0.5	NA	0.0	0.0	0.00	0.06	0.00	48.1
All Vehicles			41	0.0	41	0.0	0.011	1.2	NA	0.0	0.1	0.02	0.14	0.02	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) AM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
SouthEast: Brilliant St (SE)															
1	L2	All MCs	1	0.0	1	0.0	0.027	4.6	LOS A	0.0	0.3	0.16	0.47	0.16	35.2
2	T1	All MCs	24	0.0	24	0.0	0.027	3.6	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
3	R2	All MCs	7	0.0	7	0.0	0.027	4.8	LOS A	0.0	0.3	0.16	0.47	0.16	45.0
Approach			32	0.0	32	0.0	0.027	3.9	LOS A	0.0	0.3	0.16	0.47	0.16	44.5
NorthEast: Torch St (NE)															
4	L2	All MCs	9	0.0	9	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	44.8
5	T1	All MCs	7	0.0	7	0.0	0.016	0.2	LOS A	0.0	0.2	0.18	0.40	0.18	41.4
6	R2	All MCs	13	0.0	13	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.40	0.18	39.8
Approach			29	0.0	29	0.0	0.016	3.7	NA	0.0	0.2	0.18	0.40	0.18	42.8
NorthWest: Brilliant St (NW)															
7	L2	All MCs	15	0.0	15	0.0	0.044	4.6	LOS A	0.1	0.4	0.07	0.50	0.07	39.1
8	T1	All MCs	14	0.0	14	0.0	0.044	3.4	LOS A	0.1	0.4	0.07	0.50	0.07	45.0
9	R2	All MCs	24	0.0	24	0.0	0.044	4.9	LOS A	0.1	0.4	0.07	0.50	0.07	26.2
Approach			53	0.0	53	0.0	0.044	4.4	LOS A	0.1	0.4	0.07	0.50	0.07	35.7
SouthWest: Torch St (SW)															
10	L2	All MCs	100	0.0	100	0.0	0.057	3.9	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
11	T1	All MCs	5	0.0	5	0.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.49	0.00	28.1
12	R2	All MCs	1	0.0	1	0.0	0.057	3.8	LOS A	0.0	0.0	0.00	0.49	0.00	43.7
Approach			106	0.0	106	0.0	0.057	3.7	NA	0.0	0.0	0.00	0.49	0.00	28.8
All Vehicles			220	0.0	220	0.0	0.057	3.9	NA	0.1	0.4	0.06	0.48	0.06	38.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) AM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Bant St & Busby St Proposed (with 34 & 50 Busby)
AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 & 50 Busby)
AM 2034 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Bant St (S)															
1	L2	All MCs	4	0.0	4	0.0	0.040	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
2	T1	All MCs	74	0.0	74	0.0	0.040	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach			78	0.0	78	0.0	0.040	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.7
North: Bant St (N)															
8	T1	All MCs	37	0.0	37	0.0	0.025	0.1	LOS A	0.0	0.2	0.08	0.14	0.08	48.7
9	R2	All MCs	10	0.0	10	0.0	0.025	4.8	LOS A	0.0	0.2	0.08	0.14	0.08	44.9
Approach			47	0.0	47	0.0	0.025	1.1	NA	0.0	0.2	0.08	0.14	0.08	48.4
West: Busby St (W)															
10	L2	All MCs	19	0.0	19	0.0	0.018	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	34.1
12	R2	All MCs	6	0.0	6	0.0	0.018	5.0	LOS A	0.0	0.2	0.16	0.50	0.16	43.2
Approach			25	0.0	25	0.0	0.018	4.8	LOS A	0.0	0.2	0.16	0.50	0.16	38.8
All Vehicles			150	0.0	150	0.0	0.040	1.3	NA	0.0	0.2	0.05	0.14	0.05	48.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) AM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Torch Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				
SouthEast: Rocket St (SE)															
4	L2	All MCs	7	0.0	7	0.0	0.241	2.7	LOS A	0.0	0.0	0.00	0.01	0.00	58.4
5	T1	All MCs	443	6.5	443	6.5	0.241	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	58.4
Approach			450	6.4	450	6.4	0.241	0.0	NA	0.0	0.0	0.00	0.01	0.00	58.4
NorthWest: Rocket St (NW)															
11	T1	All MCs	283	7.4	283	7.4	0.179	0.4	LOS A	0.1	0.9	0.12	0.14	0.12	55.8
12	R2	All MCs	25	16.0	25	16.0	0.179	8.1	LOS A	0.1	0.9	0.12	0.14	0.12	55.8
Approach			308	8.1	308	8.1	0.179	1.0	NA	0.1	0.9	0.12	0.14	0.12	55.8
SouthWest: Torch St (SW)															
1	L2	All MCs	32	0.0	32	0.0	0.034	6.2	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
3	R2	All MCs	2	0.0	2	0.0	0.034	8.7	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
Approach			34	0.0	34	0.0	0.034	6.4	LOS A	0.1	0.4	0.46	0.62	0.46	35.4
All Vehicles			792	6.8	792	6.8	0.241	0.7	NA	0.1	0.9	0.07	0.09	0.07	53.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Bant Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m			km/h
South: Bant St (S)														
1a	L1	All MCs	66	0.0	66	0.0	0.104	5.7	LOS A	0.2	1.1	0.46	0.67	42.2
2	T1	All MCs	4	0.0	4	0.0	0.104	6.9	LOS A	0.2	1.1	0.46	0.67	45.0
3b	R3	All MCs	22	0.0	22	0.0	0.104	9.9	LOS A	0.2	1.1	0.46	0.67	42.2
Approach			92	0.0	92	0.0	0.104	6.8	LOS A	0.2	1.1	0.46	0.67	42.4
SouthEast: Rocket St (SE)														
21b	L3	All MCs	11	0.0	11	0.0	0.202	7.1	LOS A	0.1	0.5	0.05	0.07	55.9
5	T1	All MCs	346	6.4	346	6.4	0.202	0.1	LOS A	0.1	0.5	0.05	0.07	55.9
23a	R1	All MCs	16	0.0	16	0.0	0.202	5.5	LOS A	0.1	0.5	0.05	0.07	49.4
Approach			373	5.9	373	5.9	0.202	0.5	NA	0.1	0.5	0.05	0.07	54.7
North: Bant St (N)														
7a	L1	All MCs	12	0.0	12	0.0	0.033	5.1	LOS A	0.0	0.3	0.45	0.62	41.6
8	T1	All MCs	1	0.0	1	0.0	0.033	6.6	LOS A	0.0	0.3	0.45	0.62	41.6
9b	R3	All MCs	11	0.0	11	0.0	0.033	10.1	LOS A	0.0	0.3	0.45	0.62	41.6
Approach			24	0.0	24	0.0	0.033	7.5	LOS A	0.0	0.3	0.45	0.62	41.6
NorthWest: Rocket St (NW)														
27b	L3	All MCs	13	0.0	13	0.0	0.156	4.8	LOS A	0.1	1.0	0.16	0.20	47.0
11	T1	All MCs	221	9.0	221	9.0	0.156	0.3	LOS A	0.1	1.0	0.16	0.20	39.5
29a	R1	All MCs	36	0.0	36	0.0	0.156	3.3	LOS A	0.1	1.0	0.16	0.20	39.5
Approach			270	7.4	270	7.4	0.156	0.9	NA	0.1	1.0	0.16	0.20	42.7
All Vehicles			759	5.5	759	5.5	0.202	1.6	NA	0.2	1.1	0.15	0.20	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) AM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) AM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				km/h
			veh/h		veh/h					veh	m				
NorthEast: Alpha St (NE)															
5	T1	All MCs	64	10.9	64	10.9	0.141	4.3	LOS A	0.2	1.5	0.44	0.62	0.44	48.1
6	R2	All MCs	47	14.9	47	14.9	0.141	9.2	LOS A	0.2	1.5	0.44	0.62	0.44	42.7
Approach			111	12.6	111	12.6	0.141	6.4	LOS A	0.2	1.5	0.44	0.62	0.44	46.5
NorthWest: Rocket St (NW)															
7	L2	All MCs	26	7.7	26	7.7	0.146	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	49.1
9	R2	All MCs	228	9.2	228	9.2	0.146	5.6	LOS A	0.0	0.0	0.00	0.60	0.00	48.6
Approach			254	9.1	254	9.1	0.146	5.6	NA	0.0	0.0	0.00	0.60	0.00	48.6
SouthWest: Vale Rd (SW)															
10	L2	All MCs	320	4.7	320	4.7	0.217	5.6	LOS A	0.5	3.9	0.41	0.62	0.41	48.9
11	T1	All MCs	43	9.3	43	9.3	0.217	15.5	LOS B	0.5	3.9	0.41	0.62	0.41	48.4
Approach			363	5.2	363	5.2	0.217	6.8	LOS A	0.5	3.9	0.41	0.62	0.41	48.8
All Vehicles			728	7.7	728	7.7	0.217	6.3	NA	0.5	3.9	0.27	0.61	0.27	48.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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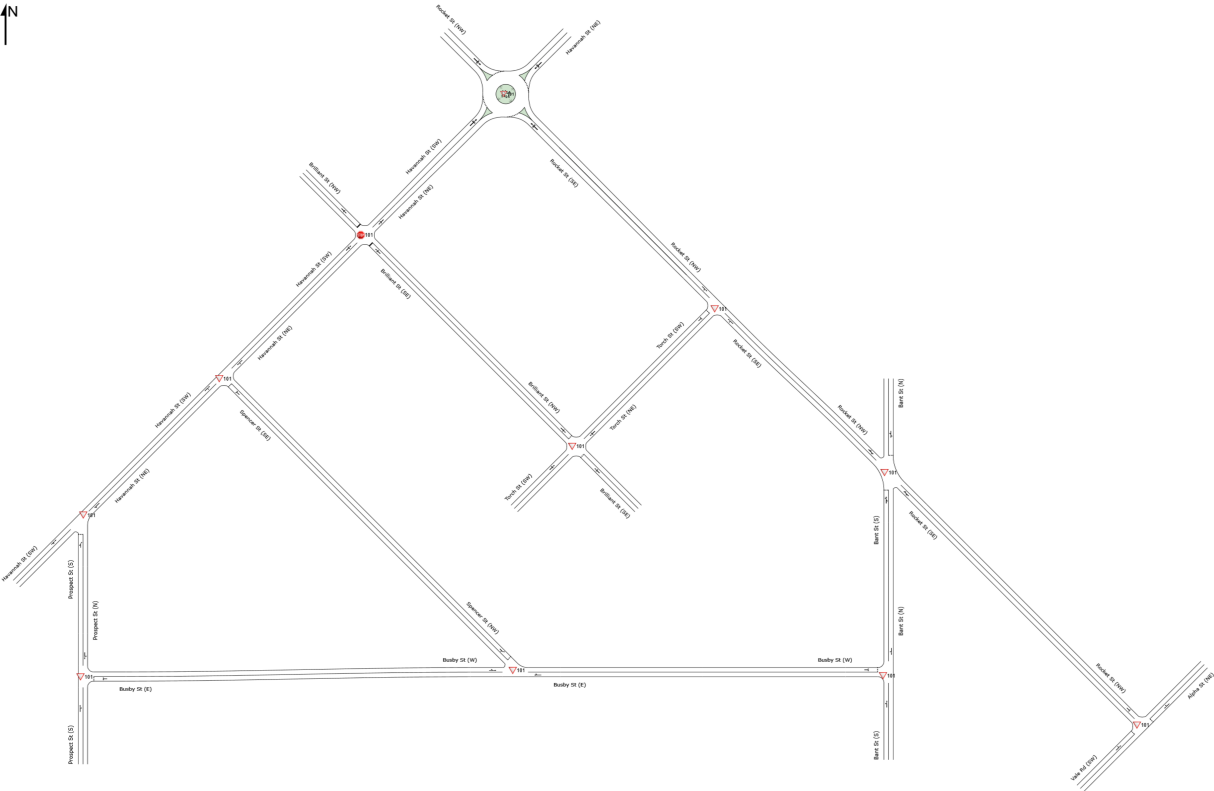
\Proposed Network (with 34 & 50 Busby) AM 2034.sip9

NETWORK LAYOUT

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	CCG ID	Site Name
▽101	NA	Havannah & Prospect Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Havannah & Spencer Proposed (with 34 & 50 Busby) PM 2034
STOP101	NA	Havannah & Brilliant Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Havannah & Rocket Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Prospect & Busby Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Busby & Spencer Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Brilliant & Torch Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Bant St & Busby St Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Rocket & Torch Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Rocket & Bant Proposed (with 34 & 50 Busby) PM 2034
▽101	NA	Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) PM 2034

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MOVEMENT SUMMARY

Site: 101 [Havannah & Prospect Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
			veh/h		veh/h					veh	m			km/h	
South: Prospect St (S)															
1b	L3	All MCs	6	0.0	6	0.0	0.046	4.1	LOS A	0.1	0.4	0.43	0.60	0.43	39.3
3a	R1	All MCs	32	0.0	32	0.0	0.046	4.3	LOS A	0.1	0.4	0.43	0.60	0.43	17.5
Approach			38	0.0	38	0.0	0.046	4.3	LOS A	0.1	0.4	0.43	0.60	0.43	25.7
NorthEast: Havannah St (NE)															
24a	L1	All MCs	142	0.0	142	0.0	0.195	5.3	LOS A	0.0	0.0	0.00	0.23	0.00	46.7
25	T1	All MCs	233	2.1	233	2.1	0.195	0.0	LOS A	0.0	0.0	0.00	0.23	0.00	54.2
Approach			375	1.3	375	1.3	0.195	2.0	NA	0.0	0.0	0.00	0.23	0.00	52.6
SouthWest: Havannah St (SW)															
31	T1	All MCs	207	3.4	207	3.4	0.124	0.2	LOS A	0.1	0.5	0.09	0.11	0.09	56.0
32b	R3	All MCs	18	0.0	18	0.0	0.124	7.5	LOS A	0.1	0.5	0.09	0.11	0.09	56.0
Approach			225	3.1	225	3.1	0.124	0.8	NA	0.1	0.5	0.09	0.11	0.09	56.0
All Vehicles			638	1.9	638	1.9	0.195	1.7	NA	0.1	0.5	0.06	0.21	0.06	52.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Havannah & Spencer Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				
SouthEast: Spencer St (SE)															
21	L2	All MCs	1	0.0	1	0.0	0.004	5.8	LOS A	0.0	0.0	0.46	0.59	0.46	31.2
23	R2	All MCs	2	0.0	2	0.0	0.004	7.3	LOS A	0.0	0.0	0.46	0.59	0.46	31.2
Approach			3	0.0	3	0.0	0.004	6.8	LOS A	0.0	0.0	0.46	0.59	0.46	31.2
NorthEast: Havannah St (NE)															
24	L2	All MCs	3	0.0	3	0.0	0.199	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
25	T1	All MCs	382	1.3	382	1.3	0.199	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			385	1.3	385	1.3	0.199	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.5
SouthWest: Havannah St (SW)															
31	T1	All MCs	244	3.3	244	3.3	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
32	R2	All MCs	1	0.0	1	0.0	0.129	5.7	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			245	3.3	245	3.3	0.129	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
All Vehicles			633	2.1	633	2.1	0.199	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

 **Site: 101 [Havannah & Brilliant Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
SouthEast: Brilliant St (SE)															
4	L2	All MCs	5	0.0	5	0.0	0.139	8.8	LOS A	0.2	1.3	0.64	1.02	0.64	27.9
5	T1	All MCs	33	0.0	33	0.0	0.139	13.0	LOS A	0.2	1.3	0.64	1.02	0.64	39.1
6	R2	All MCs	21	0.0	21	0.0	0.139	16.7	LOS B	0.2	1.3	0.64	1.02	0.64	27.9
Approach			59	0.0	59	0.0	0.139	13.9	LOS A	0.2	1.3	0.64	1.02	0.64	36.3
NorthEast: Havannah St (NE)															
7	L2	All MCs	89	0.0	89	0.0	0.302	6.3	LOS A	0.5	3.5	0.26	0.34	0.26	47.5
8	T1	All MCs	311	1.0	311	1.0	0.302	0.5	LOS A	0.5	3.5	0.26	0.34	0.26	47.5
9	R2	All MCs	130	2.3	130	2.3	0.302	6.5	LOS A	0.5	3.5	0.26	0.34	0.26	47.2
Approach			530	1.1	530	1.1	0.302	2.9	NA	0.5	3.5	0.26	0.34	0.26	47.3
NorthWest: Brilliant St (NW)															
10	L2	All MCs	140	0.0	140	0.0	0.391	9.3	LOS A	0.9	6.2	0.59	0.93	0.74	38.2
11	T1	All MCs	56	0.0	56	0.0	0.391	16.3	LOS B	0.9	6.2	0.59	0.93	0.74	38.2
12	R2	All MCs	63	0.0	63	0.0	0.391	16.6	LOS B	0.9	6.2	0.59	0.93	0.74	38.2
Approach			259	0.0	259	0.0	0.391	12.6	LOS A	0.9	6.2	0.59	0.93	0.74	38.2
SouthWest: Havannah St (SW)															
1	L2	All MCs	38	5.3	38	5.3	0.126	5.6	LOS A	0.0	0.0	0.01	0.10	0.01	48.3
2	T1	All MCs	200	2.0	200	2.0	0.126	0.0	LOS A	0.0	0.0	0.01	0.10	0.01	52.8
3	R2	All MCs	1	0.0	1	0.0	0.126	5.8	LOS A	0.0	0.0	0.01	0.10	0.01	52.8
Approach			239	2.5	239	2.5	0.126	0.9	NA	0.0	0.0	0.01	0.10	0.01	50.4
All Vehicles			1087	1.1	1087	1.1	0.391	5.4	NA	0.9	6.2	0.30	0.47	0.34	43.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\ChrisPalmer\OneDrive - CJP Consulting Engineers\Projects\2023\23225 - 34 Busby St, South Bathurst\SIDRA\240414

\Proposed Network (with 34 & 50 Busby) PM 2034.sip9

MOVEMENT SUMMARY

 **Site: 101 [Havannah & Rocket Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

 **Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]**

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist] m				
			veh/h	%	veh/h	%	v/c	sec						km/h	
SouthEast: Rocket St (SE)															
4	L2	All MCs	35	0.0	35	0.0	0.514	8.2	LOS A	1.7	12.3	0.82	0.76	0.92	31.4
5	T1	All MCs	217	1.4	217	1.4	0.514	8.4	LOS A	1.7	12.3	0.82	0.76	0.92	41.5
6	R2	All MCs	164	4.3	164	4.3	0.514	12.4	LOS A	1.7	12.3	0.82	0.76	0.92	37.3
Approach			416	2.4	416	2.4	0.514	9.9	LOS A	1.7	12.3	0.82	0.76	0.92	39.8
NorthEast: Havannah St (NE)															
7	L2	All MCs	155	3.2	155	3.2	0.585	7.0	LOS A	2.1	15.0	0.72	0.63	0.74	37.1
8	T1	All MCs	419	1.4	419	1.4	0.585	7.2	LOS A	2.1	15.0	0.72	0.63	0.74	37.1
9	R2	All MCs	46	0.0	46	0.0	0.585	11.0	LOS A	2.1	15.0	0.72	0.63	0.74	43.8
Approach			620	1.8	620	1.8	0.585	7.4	LOS A	2.1	15.0	0.72	0.63	0.74	38.3
NorthWest: Rocket St (NW)															
10	L2	All MCs	52	3.8	52	3.8	0.359	6.6	LOS A	1.0	6.8	0.70	0.66	0.70	43.4
11	T1	All MCs	177	1.7	177	1.7	0.359	6.6	LOS A	1.0	6.8	0.70	0.66	0.70	41.4
12	R2	All MCs	84	0.0	84	0.0	0.359	10.4	LOS A	1.0	6.8	0.70	0.66	0.70	41.4
Approach			313	1.6	313	1.6	0.359	7.6	LOS A	1.0	6.8	0.70	0.66	0.70	41.8
SouthWest: Havannah St (SW)															
1	L2	All MCs	52	0.0	52	0.0	0.424	7.1	LOS A	1.2	8.8	0.73	0.65	0.73	44.0
2	T1	All MCs	293	3.4	293	3.4	0.424	7.6	LOS A	1.2	8.8	0.73	0.65	0.73	42.6
3	R2	All MCs	31	6.5	31	6.5	0.424	11.6	LOS A	1.2	8.8	0.73	0.65	0.73	36.8
Approach			376	3.2	376	3.2	0.424	7.9	LOS A	1.2	8.8	0.73	0.65	0.73	42.6
All Vehicles			1725	2.2	1725	2.2	0.585	8.2	LOS A	2.1	15.0	0.74	0.67	0.77	40.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Proposed Network (with 34 & 50 Busby) PM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Prospect & Busby Proposed (with 34 & 50 Busby)
PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed
Network (with 34 & 50 Busby)
PM 2034 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				
South: Prospect St (S)															
2	T1	All MCs	33	0.0	33	0.0	0.018	0.0	LOS A	0.0	0.0	0.04	0.04	0.04	49.4
3	R2	All MCs	2	0.0	2	0.0	0.018	5.0	LOS A	0.0	0.0	0.04	0.04	0.04	49.4
Approach			35	0.0	35	0.0	0.018	0.3	NA	0.0	0.0	0.04	0.04	0.04	49.4
East: Busby St (E)															
4	L2	All MCs	6	0.0	6	0.0	0.008	4.8	LOS A	0.0	0.1	0.18	0.51	0.18	43.6
6	R2	All MCs	5	0.0	5	0.0	0.008	5.0	LOS A	0.0	0.1	0.18	0.51	0.18	35.2
Approach			11	0.0	11	0.0	0.008	4.9	LOS A	0.0	0.1	0.18	0.51	0.18	41.9
North: Prospect St (N)															
7	L2	All MCs	85	0.0	85	0.0	0.084	2.5	LOS A	0.0	0.0	0.00	0.27	0.00	31.9
8	T1	All MCs	75	0.0	75	0.0	0.084	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	48.3
Approach			160	0.0	160	0.0	0.084	1.4	NA	0.0	0.0	0.00	0.27	0.00	46.7
All Vehicles			206	0.0	206	0.0	0.084	1.4	NA	0.0	0.1	0.02	0.24	0.02	47.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Busby & Spencer Proposed (with 34 & 50 Busby)
PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 & 50 Busby)
PM 2034 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m			km/h	
East: Busby St (E)															
5	T1	All MCs	17	0.0	17	0.0	0.009	0.0	LOS A	0.0	0.0	0.01	0.03	0.01	49.5
6a	R1	All MCs	1	0.0	1	0.0	0.009	3.6	LOS A	0.0	0.0	0.01	0.03	0.01	49.5
Approach			18	0.0	18	0.0	0.009	0.2	NA	0.0	0.0	0.01	0.03	0.01	49.5
NorthWest: Spencer St (NW)															
27a	L1	All MCs	1	0.0	1	0.0	0.001	4.5	LOS A	0.0	0.0	0.06	0.55	0.06	33.5
29b	R3	All MCs	1	0.0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.06	0.55	0.06	33.5
Approach			2	0.0	2	0.0	0.001	4.8	LOS A	0.0	0.0	0.06	0.55	0.06	33.5
West: Busby St (W)															
10b	L3	All MCs	2	0.0	2	0.0	0.007	5.4	LOS A	0.0	0.0	0.00	0.09	0.00	47.1
11	T1	All MCs	12	0.0	12	0.0	0.007	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	47.1
Approach			14	0.0	14	0.0	0.007	0.8	NA	0.0	0.0	0.00	0.09	0.00	47.1
All Vehicles			34	0.0	34	0.0	0.009	0.7	NA	0.0	0.0	0.01	0.08	0.01	48.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Brilliant & Torch Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Brilliant St (SE)															
1	L2	All MCs	3	0.0	3	0.0	0.011	4.6	LOS A	0.0	0.1	0.05	0.47	0.05	35.4
2	T1	All MCs	11	0.0	11	0.0	0.011	3.3	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
3	R2	All MCs	1	0.0	1	0.0	0.011	4.7	LOS A	0.0	0.1	0.05	0.47	0.05	45.4
Approach			15	0.0	15	0.0	0.011	3.6	LOS A	0.0	0.1	0.05	0.47	0.05	42.8
NorthEast: Torch St (NE)															
4	L2	All MCs	12	0.0	12	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	44.8
5	T1	All MCs	3	0.0	3	0.0	0.013	0.0	LOS A	0.0	0.1	0.07	0.45	0.07	41.3
6	R2	All MCs	8	0.0	8	0.0	0.013	4.6	LOS A	0.0	0.1	0.07	0.45	0.07	39.8
Approach			23	0.0	23	0.0	0.013	4.0	NA	0.0	0.1	0.07	0.45	0.07	43.6
NorthWest: Brilliant St (NW)															
7	L2	All MCs	9	0.0	9	0.0	0.117	4.6	LOS A	0.2	1.2	0.07	0.52	0.07	38.9
8	T1	All MCs	29	0.0	29	0.0	0.117	3.3	LOS A	0.2	1.2	0.07	0.52	0.07	44.9
9	R2	All MCs	96	0.0	96	0.0	0.117	4.7	LOS A	0.2	1.2	0.07	0.52	0.07	26.1
Approach			134	0.0	134	0.0	0.117	4.4	LOS A	0.2	1.2	0.07	0.52	0.07	32.3
SouthWest: Torch St (SW)															
10	L2	All MCs	24	0.0	24	0.0	0.015	3.9	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
11	T1	All MCs	2	0.0	2	0.0	0.015	0.0	LOS A	0.0	0.0	0.01	0.48	0.01	28.3
12	R2	All MCs	1	0.0	1	0.0	0.015	3.8	LOS A	0.0	0.0	0.01	0.48	0.01	43.8
Approach			27	0.0	27	0.0	0.015	3.6	NA	0.0	0.0	0.01	0.48	0.01	31.0
All Vehicles			199	0.0	199	0.0	0.117	4.2	NA	0.2	1.2	0.06	0.50	0.06	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) PM 2034.sip9

MOVEMENT SUMMARY

Site: 101 [Bant St & Busby St Proposed (with 34 & 50 Busby)
PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Proposed
Network (with 34 & 50 Busby)
PM 2034 (Network Folder:
General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
			veh/h		veh/h					veh	m			km/h	
South: Bant St (S)															
1	L2	All MCs	1	0.0	1	0.0	0.038	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
2	T1	All MCs	74	0.0	74	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			75	0.0	75	0.0	0.038	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
North: Bant St (N)															
8	T1	All MCs	55	0.0	55	0.0	0.040	0.1	LOS A	0.0	0.3	0.09	0.16	0.09	48.4
9	R2	All MCs	19	0.0	19	0.0	0.040	4.8	LOS A	0.0	0.3	0.09	0.16	0.09	44.1
Approach			74	0.0	74	0.0	0.040	1.3	NA	0.0	0.3	0.09	0.16	0.09	48.1
West: Busby St (W)															
10	L2	All MCs	11	0.0	11	0.0	0.016	4.8	LOS A	0.0	0.2	0.18	0.51	0.18	33.9
12	R2	All MCs	10	0.0	10	0.0	0.016	5.0	LOS A	0.0	0.2	0.18	0.51	0.18	43.2
Approach			21	0.0	21	0.0	0.016	4.9	LOS A	0.0	0.2	0.18	0.51	0.18	40.9
All Vehicles			170	0.0	170	0.0	0.040	1.2	NA	0.0	0.3	0.06	0.14	0.06	48.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) PM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Torch Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■ Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist]				
			veh/h		veh/h					veh	m			km/h	
SouthEast: Rocket St (SE)															
4	L2	All MCs	3	0.0	3	0.0	0.200	2.7	LOS A	0.0	0.0	0.00	0.00	0.00	59.2
5	T1	All MCs	382	2.1	382	2.1	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.2
Approach			385	2.1	385	2.1	0.200	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.2
NorthWest: Rocket St (NW)															
11	T1	All MCs	320	1.6	320	1.6	0.194	0.3	LOS A	0.1	0.9	0.11	0.14	0.11	55.5
12	R2	All MCs	34	0.0	34	0.0	0.194	7.1	LOS A	0.1	0.9	0.11	0.14	0.11	55.5
Approach			354	1.4	354	1.4	0.194	0.9	NA	0.1	0.9	0.11	0.14	0.11	55.5
SouthWest: Torch St (SW)															
1	L2	All MCs	22	0.0	22	0.0	0.023	5.9	LOS A	0.0	0.2	0.42	0.58	0.42	35.6
3	R2	All MCs	2	0.0	2	0.0	0.023	8.2	LOS A	0.0	0.2	0.42	0.58	0.42	35.6
Approach			24	0.0	24	0.0	0.023	6.1	LOS A	0.0	0.2	0.42	0.58	0.42	35.6
All Vehicles			763	1.7	763	1.7	0.200	0.6	NA	0.1	0.9	0.07	0.08	0.07	54.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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\Proposed Network (with 34 & 50 Busby) PM 2034.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Rocket & Bant Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]

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■ Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]		[Total HV]					[Veh. veh	Dist]				
			veh/h	%	veh/h	%	v/c	sec			m			km/h	
South: Bant St (S)															
1a	L1	All MCs	79	0.0	79	0.0	0.083	5.3	LOS A	0.1	0.9	0.37	0.59	0.37	43.1
2	T1	All MCs	1	0.0	1	0.0	0.083	6.3	LOS A	0.1	0.9	0.37	0.59	0.37	45.5
3b	R3	All MCs	12	0.0	12	0.0	0.083	9.0	LOS A	0.1	0.9	0.37	0.59	0.37	43.1
Approach			92	0.0	92	0.0	0.083	5.8	LOS A	0.1	0.9	0.37	0.59	0.37	43.2
SouthEast: Rocket St (SE)															
21b	L3	All MCs	21	0.0	21	0.0	0.157	6.8	LOS A	0.0	0.3	0.04	0.09	0.04	54.7
5	T1	All MCs	260	4.2	260	4.2	0.157	0.0	LOS A	0.0	0.3	0.04	0.09	0.04	54.7
23a	R1	All MCs	10	0.0	10	0.0	0.157	5.5	LOS A	0.0	0.3	0.04	0.09	0.04	49.2
Approach			291	3.8	291	3.8	0.157	0.7	NA	0.0	0.3	0.04	0.09	0.04	53.9
North: Bant St (N)															
7a	L1	All MCs	16	0.0	16	0.0	0.043	5.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
8	T1	All MCs	3	0.0	3	0.0	0.043	6.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
9b	R3	All MCs	15	0.0	15	0.0	0.043	9.4	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
Approach			34	0.0	34	0.0	0.043	7.1	LOS A	0.1	0.4	0.43	0.62	0.43	41.9
NorthWest: Rocket St (NW)															
27b	L3	All MCs	34	0.0	34	0.0	0.176	4.4	LOS A	0.2	1.5	0.20	0.27	0.20	46.6
11	T1	All MCs	214	5.1	214	5.1	0.176	0.3	LOS A	0.2	1.5	0.20	0.27	0.20	35.5
29a	R1	All MCs	58	0.0	58	0.0	0.176	2.9	LOS A	0.2	1.5	0.20	0.27	0.20	35.5
Approach			306	3.6	306	3.6	0.176	1.3	NA	0.2	1.5	0.20	0.27	0.20	42.3
All Vehicles			723	3.0	723	3.0	0.176	1.9	NA	0.2	1.5	0.17	0.25	0.17	45.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Rocket, Vale & Alpha Proposed (with 34 & 50 Busby) PM 2034 (Site Folder: General)]

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Network: N101 [Proposed Network (with 34 & 50 Busby) PM 2034 (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	[Total HV]											
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist]			km/h	
NorthEast: Alpha St (NE)															
5	T1	All MCs	87	3.4	87	3.4	0.111	4.0	LOS A	0.2	1.1	0.35	0.55	0.35	49.3
6	R2	All MCs	28	0.0	28	0.0	0.111	7.4	LOS A	0.2	1.1	0.35	0.55	0.35	44.2
Approach			115	2.6	115	2.6	0.111	4.8	LOS A	0.2	1.1	0.35	0.55	0.35	48.5
NorthWest: Rocket St (NW)															
7	L2	All MCs	29	0.0	29	0.0	0.133	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	49.5
9	R2	All MCs	213	3.3	213	3.3	0.133	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	48.9
Approach			242	2.9	242	2.9	0.133	5.5	NA	0.0	0.0	0.00	0.60	0.00	49.0
SouthWest: Vale Rd (SW)															
10	L2	All MCs	259	3.5	259	3.5	0.180	5.6	LOS A	0.4	3.0	0.39	0.61	0.39	49.0
11	T1	All MCs	43	4.7	43	4.7	0.180	12.4	LOS A	0.4	3.0	0.39	0.61	0.39	48.6
Approach			302	3.6	302	3.6	0.180	6.5	LOS A	0.4	3.0	0.39	0.61	0.39	48.9
All Vehicles			659	3.2	659	3.2	0.180	5.9	NA	0.4	3.0	0.24	0.60	0.24	48.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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34 Busby Street, South Bathurst

Noise Impact Assessment

Hamptons Property Services

Report Reference: 240053 – 34 Busby Street, South Bathurst – Noise Impact Assessment – R3

Date: 8 May 2024

Revision: R3

Project Number: 240053

**DOCUMENT CONTROL**

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Project Number:	240053
Report Reference:	240053 – 34 Busby Street, South Bathurst – Noise Impact Assessment – R3
Client:	Hamptons Property Services

Revision	Description	Reference	Date	Prepared	Checked	Authorised
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1	For Information	240053 – 34 Busby Street, South Bathurst – Noise Impact Assessment – R1	18/03/24	George Kinezos	Ben White	Ben White
2	For Information	240053 – 34 Busby Street, South Bathurst – Noise Impact Assessment – R2	01/05/24	George Kinezos	Ben White	Ben White
3	For Information	240053 – 34 Busby Street, South Bathurst – Noise Impact Assessment – R3	08/05/24	George Kinezos	Ben White	Ben White

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This report has been prepared by Pulse White Noise Acoustics Pty Ltd with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Hamptons Property Services.

Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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1 INTRODUCTION

Pulse White Noise Acoustics Pty Ltd (PWNA) has been engaged by Hampton Property Services Pty Ltd to undertake a Noise Impact Assessment for the proposed planning proposal of 34 Busby Street, Bathurst to include general residential use.

The assessment has been undertaken to assess the proposed planning proposal to ensure that the proposed general residential use of the site will be acoustically acceptable. The assessment includes noise impact on the proposed residential dwellings as well as potential noise emission resulting from the future use of the site.

A list of acoustic terminology used in this report has been included in Appendix A.

1.1 Relevant Guidelines

Acoustic criteria that have been adopted in this assessment include requirements from the local and state authorities as well as Australian and International Standards, which will be adopted in the absence of any relevant requirements.

Noise intrusion into the development will be controlled by the requirements of the local council and the objectives of Australian New Zealand Standard AS/NZS 2107:2016 Acoustics–Recommended design sound levels and reverberation times for building interiors has been adopted.

Furthermore, the noise emission impacts from the proposed development on the adjacent receivers are regulated by the Bathurst Regional Development Control Plan 2014 and the NSW EPA Noise Policy for Industry (NPI) 2017.

1.2 Planning Proposal

The project includes a planning proposal for a multi dwelling development including 218 sole occupancies over a number of buildings of up to 7 stories on the site. As part of the development, it is proposed to include commercial tenancies within the development.

A detailed assessment is to specifically be undertaken of the commercial portion of the project site, and to ensure that noise emissions from the operational use of the site does not adversely affect the residential buildings to be constructed as part of the project as well as the existing residential receivers within proximity of the site which those on Busy Street (and includes 50 Busby Street). It should also be noted that this additional assessment is to ensure that all legislative requirements and criteria is complied with.

The planning proposal includes the details included within the Marchese Partners architectural drawings, which includes the proposed layout included in Figure 1 below.

Figure 1: Proposed Planning Proposal Site Plan



1.3 Site Description

The project site is located at 34 Busby Street, Bathurst which is currently defined as R1 General Residential (R1) as described in the NSW ePlanning website and is proposed to be rezoned to include R3 General Residential use.

Residential dwellings surround the site to all boundaries, the nearest noise sensitive receivers to the site have been identified below.

- **Receiver 1:** Located to the north of the project site to the northern side of Busby Street includes single and dual level residential dwellings, including those located at 266 Havannah Street to 2 Spencer Street, South Bathurst.
- **Receiver 2:** Receiver located at 50 Busby Street which currently includes St Catherines Aged Care Facility and subject of a planning proposal to include residential use.
- **Receiver 3:** Bounding the eastern side of the project site is situated a series of dual and single level residential dwellings which are located from 23 Lewins Street to 28 Busby Street, South Bathurst.
- **Receiver 4:** Located to the south of the project site is located a series of dual level and single level residential dwellings, these properties are situated from 22 Prospect Street to 23 Rose Street, South Bathurst.



-
- **Receiver 5:** Bounding the west of the project site area a series of single and dual story residential dwellings located from 24 Prospect Street to 38 Prospect Street, South Bathurst.

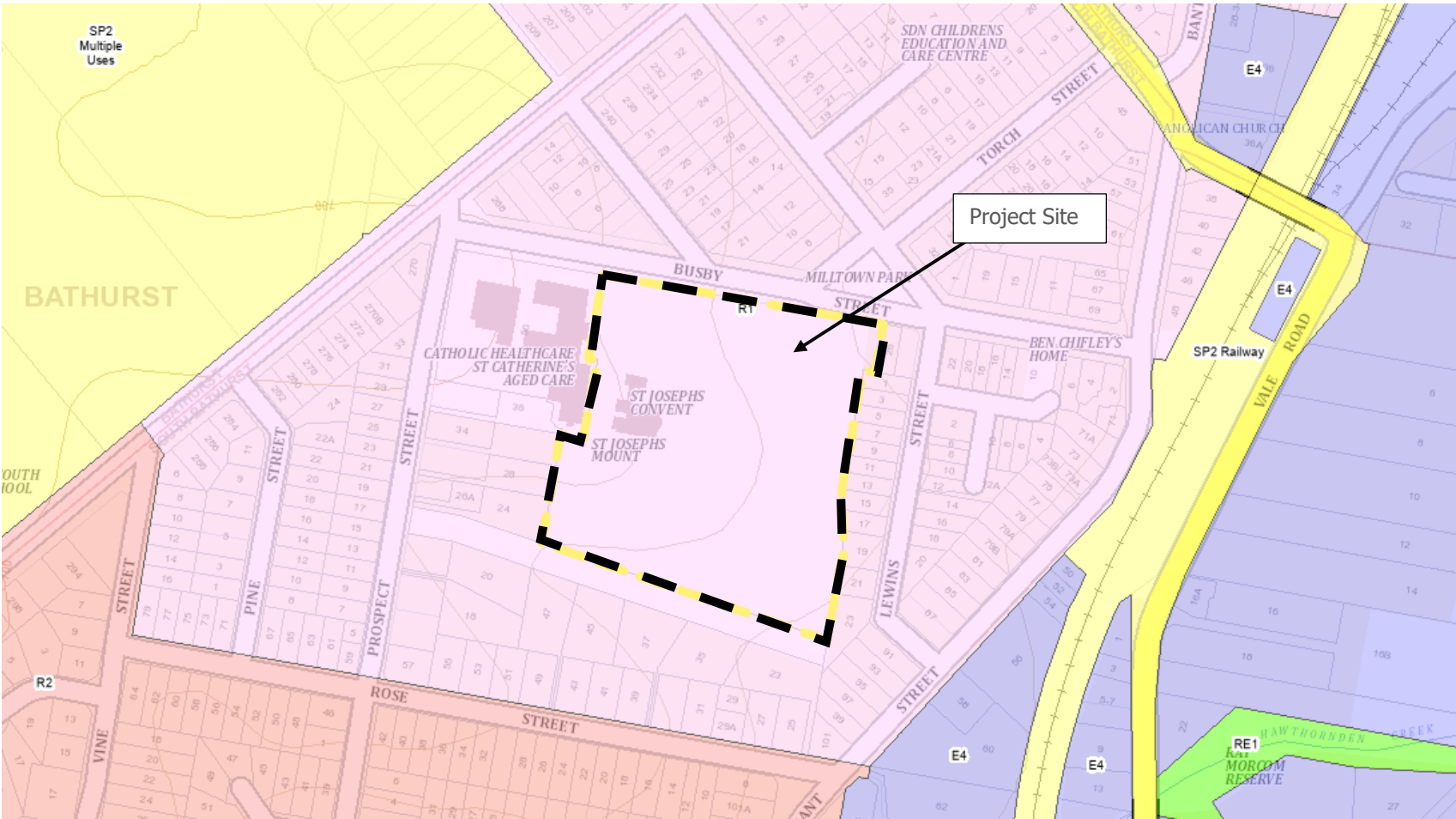


Figure 2: Site Map and Nearest Receivers, Unattended Monitoring Locations





Figure 3: ePlanner Site Map





2 ACOUSTIC AND VIBRATION SURVEY

2.1 Onsite Noise Measurements

Measured Noise Levels from the unattended noise survey are outlined below.

2.1.1 Unattended Noise Monitoring

An unattended noise survey was conducted between the 15th of February 2024 to the 23rd of February 2024

Instrumentation for the survey comprised of two Svantek 958 Sound Level Meters (serial numbers include 81344 & 97569). Calibration of the logger was checked prior to and following the measurements. Drift in calibration did not exceed ± 0.5 dB. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

Charts presenting summaries of the measured daily noise data are attached in Appendix B and C. The charts present each 24-hour period and show the LA10, LAeq and LA90 noise levels for the corresponding 15-minute periods. This data has been filtered to remove periods affected by adverse weather conditions based on weather information.

Unattended noise monitoring was strategically undertaken during this period in order to measure ambient background noise levels during a number of racing events at the Mount Panorama Race Track, which included the following:

1. 16th to the 18th February – the 2024 Bathurst 12 hour event.
2. 23rd to the 25th February – the 2024 Thrifty Bathurst 500.

This assessment has included a detailed assessment of proposed planning proposed to include general residential use of the site, including potential noise impacts from motor sport events.



2.1.1.1 Results in accordance with the NSW EPA Noise Policy for Industry (NPI) 2017 (RBL's)

To assess the acoustical implications of the development at nearby noise sensitive receivers, the measured background noise data of the logger was processed in accordance with the NSW EPA's Noise Policy for Industry (NPI, 2017).

The Rating Background Noise Level (RBL) is the background noise level used for assessment purposes at the nearest potentially-affected receiver. It is the 90th percentile of the daily background noise levels during each assessment period, being day, evening and night. RBL LA90 (15minute) and LAeq noise levels are presented in the table below.

Data affected by adverse meteorological conditions and by spurious and uncharacteristic events have been excluded from the results, and also excluded from the data used to determine the noise emission criteria. Meteorological information has been obtained from the Bathurst Airport Site ID:63291

Table 1 Measured Ambient Noise Levels corresponding to the NPI's Assessment Time Periods

Measurement Location	Daytime ¹		Evening ¹		Night-time ¹	
	7:00 am to 6:00 pm		6:00 pm to 10:00 pm		10:00 pm to 7:00 am	
	LA90 ² (dBA)	LAeq ³ (dBA)	LA90 ² (dBA)	LAeq ³ (dBA)	LA90 ² (dBA)	LAeq ³ (dBA)
Northern Logging Location (see Figure 1 for further detail)	45	49	44	44	41	41
Southern Logging Location (see figure 1 for further location)	43	47	41	45	40	42
<p><i>Note 1 For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am</i></p> <p><i>Note 2 The LA90 noise level is representative of the "average minimum background sound level" (in the absence of the source under consideration), or simply the background level.</i></p> <p><i>Note 3 The LAeq is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.</i></p>						



3 ACOUSTIC CRITERIA

The acoustic criteria which has been adopted for this assessment are outlined below. All criteria have been separated into the relevant assessment type. These are: Noise Intrusion Criteria (Assessment of building envelope), Noise Emission Criteria (Assessment of noise to surrounding receivers) and Acoustic Separation Criteria (Assessment of acoustic privacy within the building).

3.1 Noise Intrusion Criteria

External noise intrusion into the building will generally be via the building envelope (External wall, glazing or external roof). The design of the building envelope should be such that the requirements listed below are achieved.

3.1.1 Bathurst Regional Development Control Plan (DCP) 2014

The Bathurst Regional Development Control Plan 2014 does not provide any site specific numerical objectives, in the absence of any requirements guidance from the Australian / New Zealand Standard AS/NZS 2107:2016 Acoustics - Recommended design sound levels and reverberation times for building interiors - (AS/NZS 2107:2016), see below.

3.1.2 Australian / New Zealand Standard AS/NZS 2107:2016 Acoustics - Recommended design sound levels and reverberation times for building interiors - (AS/NZS 2107:2016)

Recommended ambient noise levels and reverberation times for internal spaces are given in a number of publications including Table 1 of Australian / New Zealand Standard 2107:2016 "Acoustics - Recommended design sound levels and reverberation times for building interiors". Unlike the previous version of this Standard, this latest edition recommends a range with lower and upper levels (rather than "satisfactory" and "maximum" internal noise levels) for building interiors based on room designation and location of the development relative to external noise sources. This change has occurred due to the fact that sound levels below 'satisfactory' could be interpreted as desirable, but the opposite may in fact be the case. Levels below those which were listed as 'satisfactory' can lead to inadequate acoustic masking resulting in loss of acoustic isolation and speech privacy.

Internal noise levels due to the combined contributions of external noise intrusion and mechanical ventilation plant should not exceed the maximum levels recommended in this Standard. The levels for areas relevant to this development are given in Table 4 below. The mid to maximum points of the internal noise level ranges are generally adopted as the internal design noise criteria for the combined effect of mechanical services and external noise intrusion. In this report we will confine our recommendations to dBA levels, however, where the background noise appears to be unbalanced, AS/NZS 2107:2016 provides direction in terms of suitable diagnostic tools that can be used to assess the spectrum distribution of the background noise.

**Table 2 Recommended Design Sound Levels**

Type of Occupancy/Activity	Design sound level range dBA (LAeq,t)	Project Design Noise Level ¹ dBA (LAeq,t)
Residential Buildings—		
Houses and apartments in suburban areas or near minor roads —		
Sleeping areas (night-time)	30 to 35	35
Living areas (anytime)	30 to 40	40
Washrooms and toilets (anytime)	45 to 55	50
<i>Note 1 Overall recommended level for mechanical services noise and intrusive noise, combined.</i>		

Section 6.18 of AS/NZ 2107:2016 notes that the presence of discrete frequencies or narrow band signals may cause the sound level to vary spatially within a particular area and be a source of distraction for occupants. Where this occurs, the sound level shall be determined as the highest level measured in the occupied location(s).

If tonal components are significant characteristics of the sound within a measurement time interval, an adjustment shall be applied for that time interval to the measured A-weighted sound pressure level to allow for the additional annoyance. If the background sounds include spectral imbalance, then the RC (Mark II) levels indicated in the Standard should be referenced (see also Appendix D of AS/NZ 2107:2016 for additional guidance).

Generally, where the final noise levels are within +/- 2 dB of the specified level given above, the design criteria will be considered met. Both the upper and lower limits will need to be satisfied especially where privacy is important or where noise intrusion is to be avoided.

3.1.2.1 Motor Sports Noise Impacts

As part of this acoustics assessment an investigation into the potential for noise impact on the site from the use of the Mt Panorama motorsport venue has been included as part this assessment.

The assessment has included a noise survey of the site which included a period of two weekends when motor sports events were being conducted as part of the Mt Panorama motor sports facility, including the following:

1. 16th to the 18th February – the 2024 Bathurst 12 hour event.
2. 23rd to the 25th February – the 2024 Thrifty Bathurst 500.

Based on the acoustic survey completed at the site during the periods which included the events above an acoustic assessment of the potential noise impact on the project has been assessed. Based on the recorded noise levels during the period when events were undertaken recommendations have been included as part of this assessment to ensure the resulting noise levels within the development will comply the recommendations of the Australian Standard AS2107:2016 and detailed in the section above.

Based on the details included in this assessment the recommended acoustic mitigations included in this which would ensure the acoustic amenity of the development would be acceptable, including periods when motor sports events are being undertaken with the Mt Panorama motor sports facility and the planning proposal to include general residential use on the site is acoustically acceptable.



3.2 Noise Emission Criteria

Noise Emissions from the operation of the site impacting on the adjacent land users are outlined below.

3.2.1 Bathurst Regional Development Control Plan (DCP) 2014

No Numerical external noise emission criteria is provided in the Bathurst Regional Development Control Plan, as such the NSW EPA NPI outlined below will be adopted for this assessment.

3.2.2 NSW EPA Noise Policy for Industry (NPI) 2017

In NSW, the control of noise emissions is the responsibility of Local Governments and the NSW Environment Protection Authority (NSW EPA).

The NSW EPA has recently released a document titled Noise Policy for Industry (NSW NPI) which provides a framework and process for determining external noise criteria for the assessment of noise emission from industrial developments. The NSW NPI criteria for industrial noise sources have two components:

- Controlling the intrusive noise impacts for residents and other sensitive receivers in the short term; and
- Maintaining noise level amenity of particular land uses for residents and sensitive receivers in other land uses.

3.2.2.1 Intrusive Noise Impacts (Residential Receivers)

The NSW NPI states that the noise from any single source should not intrude greatly above the prevailing background noise level. Industrial noises are generally considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (L_{Aeq}), measured over a 15-minute period, does not exceed the background noise level measured in the absence of the source by more than 5 dB(A). This is often termed the Intrusiveness Criterion.

The 'Rating Background Level' (RBL) is the background noise level to be used for assessment purposes and is determined by the methods given in the NSW NPI. Using the rating background noise level approach results in the intrusiveness criterion being met for 90% of the time. Adjustments are to be applied to the level of noise produced by the source that is received at the assessment point where the noise source contains annoying characteristics such as tonality or impulsiveness.

3.2.2.2 Protecting Noise Amenity (All Receivers)

To limit continuing increase in noise levels, the maximum ambient noise level within an area from industrial noise sources should not normally exceed the acceptable noise levels specified in Table 2.2 of the NSW NPI. That is, the ambient L_{Aeq} noise level should not exceed the level appropriate for the particular locality and land use. This is often termed the 'Background Creep' or Amenity Criterion.

The amenity assessment is based on noise criteria specified for a particular land use and corresponding sensitivity to noise. The cumulative effect of noise from industrial sources needs to be considered in assessing the impact. These criteria relate only to other continuous industrial-type noise and do not include road, rail or community noise. If the existing (measured) industrial-type noise level approaches the criterion value, then the NSW NPI sets maximum noise emission levels from new sources with the objective of ensuring that the cumulative levels do not significantly exceed the criterion.

Project amenity noise level for industrial developments is specified as the recommended amenity noise level (Table 2.2 of the NPI) minus 5 dB(A). To standardise the time periods for the intrusiveness and amenity noise levels, this policy assumes that the $L_{Aeq,15min}$ will be taken to be equal to the $L_{Aeq,period} + 3$ decibels (dB).



Where the resultant project amenity noise level is 10 dB or more lower than the existing traffic noise level, the project amenity noise levels can be set at 15 dB below existing traffic noise levels (i.e. $L_{Aeq,period(traffic)} - 15$ dBA).

3.2.2.2.1 Area Classification

The NSW NPI characterises the “Suburban Residential” noise environment as an area that has the following characteristics:

- An acoustical environment that:
 - Suburban –
 - sound of many unidentifiable, mostly traffic and/or industrial related sound sources.
 - Has through-traffic with characteristically heavy and continuous traffic flows during peak periods.
 - Is near commercial districts or industrial districts.
 - Has any combination of the above.

Table 3 NSW NPI – Recommended L_{Aeq} Noise Levels from Noise Sources

Type of Receiver	Indicative Noise Amenity Area	Time of Day ¹	Recommended Amenity Noise Level (LAeq, period) ² (dBA)
Residence	Suburban Residential	Day	55
		Evening	45
		Night	40
<i>Note 1 For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am.</i>			
<i>Note 2 The LAeq is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.</i>			



3.2.3 Project Trigger Noise Levels

The intrusive and amenity criteria for industrial noise emissions, derived from the measured data, are presented in Table 4. These criteria are nominated for the purpose of determining the operational noise limits for mechanical plant associated with the development which can potentially affect noise-sensitive receivers.

For each assessment period, the lower (i.e. the more stringent) of the amenity or intrusive criteria are adopted, which are shown in bold text in Table 4.

For the purposes of this assessment the noise levels recorded at the southern logging location will be utilised to carry out a conservative approach.

Table 4 External noise level criteria in accordance with the NSW NPI

Location	Time of Day ¹	Project Amenity Noise Level, $L_{Aeq, period}^2$ (dBA)	Measured $LA_{90, 15 min}$ (RBL) ³ (dBA)	Measured $L_{Aeq, period}$ Noise Level (dBA)	Intrusive $L_{Aeq, 15 min}$ Criterion for New Sources (dBA)	Amenity $L_{Aeq, 15 min}$ Criterion for New Sources (dBA)
Suburban Residences	Day	50	43	47	48	53
	Evening	40	41	45	46	43
	Night	35	40	42	45	38
<p><i>Note 1 For Monday to Saturday, Daytime 7:00 am – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 10:00 pm; Night-time 10:00 pm – 8:00 am.</i></p> <p><i>Note 2 Project Amenity Noise Levels corresponding to the discussion in Section 3.2.2 (i.e. existing L_{Aeq} noise level -15dBA).</i></p> <p><i>Note 3 LA_{90} Background Noise or Rating Background Level.</i></p> <p><i>Note 4 Project Noise Trigger Levels are shown in bold and underline.</i></p> <p><i>Note 5 Calculated based on the attended and unattended noise surveys.</i></p> <p><i>Note 6 As outlined in section 2.3 of the NSW NPI, evening project intrusiveness noise levels cannot be set higher than the day project intrusiveness criteria. Therefore, adoption of the daytime intrusiveness criteria has occurred.</i></p>						



4 ACOUSTIC ASSESSMENT

In addressing the planning proposal of the site to include general residential use noise an acoustic assessment of the proposed dwellings to be included as part of the development has been undertaken which is detailed in this section of the report.

4.1 Noise Intrusion – Building Envelope

This section of the report detail the assessment of environmental noise ingress into the proposed residential dwellings, including noise resulting from motor sports events on Mount Panorama Race Track, and the resulting constructions which would be proposed to ensure all relevant acoustic requirements for residential dwellings are achieved.

Based on the details included in this section of the report the planning proposal of the site to include general residential use will be acoustically acceptable, including possible mitigations to the future buildings which are include below.

4.1.1 Glazing Recommendations

The recommended sound transmission loss requirement required to satisfy the specified internal noise level criteria outlined above for the proposed residential dwelling will be achieved. Details of the recommended acoustic mitigations are summarised in Table 8 below.

Table 5 Glazing Recommendations

Building	Facade	Level	Room	Minimum Glazing System Rating Requirements ¹	Indicative Construction
All development Buildings	Northern	All Levels	Bedroom	Rw (C;Ctr): 32 (-1;-3)	Windows with 6.38mm Laminate
			Livingroom		
			Bathrooms		
	Eastern		Bedroom	Rw (C;Ctr): 32 (-1;-3)	Windows with 6.38mm Laminate
			Livingroom		
			Bathrooms		
	Southern		Bedroom	Rw (C;Ctr): 32 (-1;-3)	Windows with 6.38mm Laminate
			Livingroom		
			Bathrooms		
	Western		Bedroom	Rw (C;Ctr): 32 (-1;-3)	Windows with 6.38mm Laminate
			Livingroom		
			Bathrooms		

Please note for windows, this performance is not only subject to the glazing selection but also to the construction of the window frame and the frame seal selection. Therefore, it is recommended that the window manufacturer should confirm that the required sound insulation can be achieved. It is anticipated that the window system should



comprise Q-Lon (or equivalent) or fin seals with deep C channels as part of the window track (i.e. Performance levels outlined above need to be achieved with glazed panels + frame + seals).

4.1.2 External Building Elements

The proposed external building elements of the residential dwellings included as part of the planning proposal including masonry or concrete external walls and roof would be acoustically acceptable without additional acoustic treatment.

Any lightweight external walls and roof elements should be constructed from a constructed with minimum acoustic performance of R_w 45 and includes standard constructions for external building elements.

4.2 Noise from Engineering Services

At this stage of the project, the exact location of key plant items has not been selected, and or the selection of items to be installed. As such a detailed assessment of noise associated from engineering services cannot be undertaken.

However, to ensure that future selections of plant items meet external noise levels at neighbouring properties a proof-of-concept approach for the planning proposal has been considered.

In our experience, for this type of development the following mechanical systems would be installed, and their associated sound power levels are outlined below.

- Residential toilet exhaust fans – 45dBA (L_w)
- Air Conditioning Condensers – 75 dBA (L_w)
- Basement Ventilation Systems – 85 dBA (L_w)

It is anticipated apartment toilet exhaust fans for the units will individually discharge along the façade utilising a façade louvre above the glazed elements. It is recommended that 1m with acoustic flexible ducting is used on the intake and discharge side of the fan. On this assumption, compliance would be achieved.

Air conditioning condensers could be located on the balconies of each dwelling along the external wall or on the roof. Based on a typical sound power level of a condenser unit, the following acoustic treatments are recommended to be installed.

- Condenser plant are to be isolated from the base building structure with a rubber pad.
- Night operation mode must be in operation between 9:00pm and 7:00am and provided a minimum of 4-5dBA

High performing acoustic louvres which will provide a high level of noise reduction whilst maintaining the required airflow may be required. However, this is subject to final selections and should be reviewed prior to installation.

For ventilation systems, it is anticipated that the physical fans would be installed within plantrooms or the building structure with mechanical risers moving air to above ground level or to the roof or ground level. A dedicated plant room has been provided in the centre of the ground floor plate. On the assumption of the Sound Power Level above and the ductwork that is installed is acoustically treated with 50mm internal lining or attenuators (depending on the exact location), compliance would be achieved. A detailed review should be undertaken prior to the issue of the Construction Certificate once selections and locations are finalised.

Based on the planning proposal compliance with the requirements of noise emissions from the site can be achieved.



4.3 Additional Traffic on Public Roads

Noise impacts from the increase in vehicle movements on surrounding roadways has been assessed, including Busby Street, in accordance with the NSW EPA Road Noise Policy (RNP) 2011.

A review of the project traffic assessment results in an increase in traffic along Busby Street which will not exceed a 2dBA increase as summarised in the NSW EPA RNP to be barely perceptible to the average person and therefore considered acoustically acceptable.

4.4 Acoustic Separation

As this project is still within the planning proposal phase, information regarding the proposed constructions that will be separating units within the development is not known at this stage. As such, a detailed review of the constructions for compliance with the airborne and impact ratings from the National Construction Code cannot be undertaken. It is usual for such work to be conducted at the Construction Certificate (CC) stage of the development.

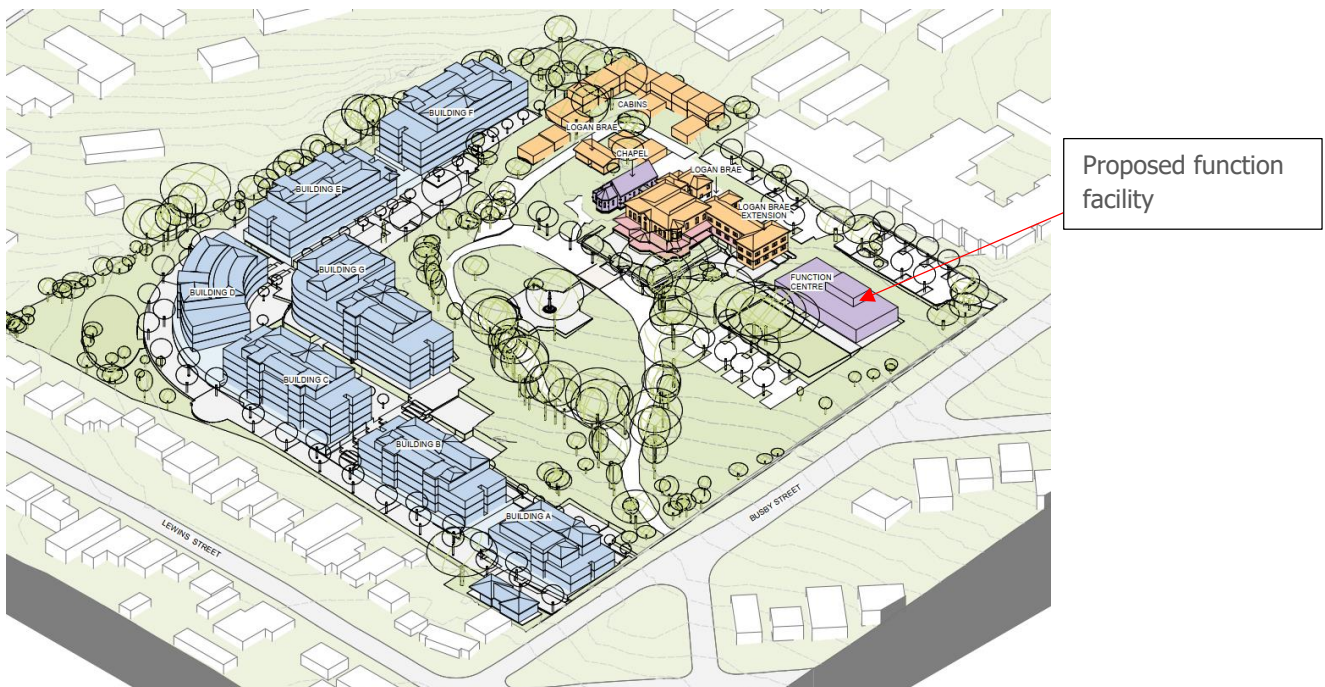
Compliance with the acoustic requirements of the National Construction Code (NCC) and Building Code of Australia (BCA) will be undertaken as part of the normal detailed design of the proposed dwellings to be included on the site.

4.5 Future Function Space Noise

The planning proposal anticipates a future use which will include the construction of seven multi-story residential buildings as well as on the western part of the land, subject to a separate planning proposal/development application, there will be a potential function space. The proposed function space and activity use to be included as part of this proposal will be designed and developed as part of the planning proposal/development approvals required for the proposed event use and built form of the facility.

The location of the proposed functions area is detailed in the figure below.

Figure 4: Location of the Proposed Function Facility



As part of the required planning proposals, development applications and detailed design of the functions space subsequent development approvals (including conditions of consent) will apply to the use of the facility.

The proposed function areas will be required to undertake detailed acoustic assessment of the potential noise emissions from the proposed activities which may be undertaken as part of the facility, which will determine the impact on all residential receivers including future dwellings on this site to the west, along with existing dwellings, which are external to the site.

The detailed noise assessment for the function areas of the project will include all required acoustic mitigations, including building constructions and management requirements, such that noise emissions will comply with the relevant noise criteria including the following:

- NSW EPA Noise Policy for Industry.
- Noise emission requirements for Liquor Licensed venues.



The expected acoustic mitigations and controls may include the following:

1. Limits to the patron numbers which the function space can hold.
2. Hours of operation of the function space, including restriction to the use of external areas.
3. Limits to the noise generations within the function space.
4. External construction for the required function space including upgraded glazing and required performance for the solid elements of the wall and roof/ceiling.
5. Management for the control of external openings, including air locks to the external access.
6. Security guard requirements to the external areas.
7. Contact number in the event of complaints.
8. Removal or waste and deliveries to the space during daytime hours.

A detailed acoustic assessment of the function area is required to be undertaken as part of the application for the facility. The detailed acoustic assessment will develop the relevant acoustic criteria as well as provide the recommendations for the management and built controls of the function facility such that acoustic requirements will be achieved.

By using both construction and management measures as part of the proposed function centre and associated activities, it is considered that the resulting noise emissions would be acoustically acceptable to ensure that the acoustic amenity of existing and future residential dwellings would be acceptable.

The proposed planning proposal including the general residential use on the site will be acoustically acceptable, including the potential for noise emissions from the proposed function facility as detailed in this section of the report.



5 CONCLUSION

Pulse White Noise Acoustics has been engaged to undertake an acoustic assessment of the planning proposal to include general residential use of the 34 Busby Street, Bathurst.

As part of this assessment an assessment of the proposed general residential use on the site has been undertaken and possible building mitigations recommended. Based on the results of the acoustic assessment the following has been concluded:

- The proposed residential dwelling included as part of the planning proposal will be acoustically acceptable, including potential noise impact from events undertaken as part of the Mount Panorama Race Track.
- Typical constructions and acoustic performance of the proposed buildings included as part of the planning proposal have been included in section 4 of this report such that compliance with the relevant acoustic requirements for residential dwellings can be achieved.
- To control noise impacts at external receivers, recommended indicative treatments of building services have been provided in section 4. From our review we have formulated the following opinion that the proposed planning proposal will be acoustically acceptable on the site.
- Noise associated with additional traffic on Public Roads has been reviewed and determined to not exceed the existing conditions by 2dBA, therefore compliance with the NSW Road Noise Policy is achieved resulting from the proposed planning proposal.
- An assessment of the potential function facility which may be included to the west of the proposed general residential use included as part this planning proposal will be acoustically acceptable, including the required acoustic design of the function facility and management controls to be included has part of any events which may occur.

Based on the details included in this assessment the proposed planning proposal to include general residential on 34 Busby Street, Bathurst will be acoustically acceptable.

For any additional information please do not hesitate to contact the undersigned.

Kind regards,

George Kinezos
Acoustic Engineer
PULSE WHITE NOISE ACOUSTICS PTY LTD



APPENDIX A. ACOUSTIC TERMINOLOGY

<i>Sound power level</i>	The total sound emitted by a source																						
<i>Sound pressure level</i>	The amount of sound at a specified point																						
<i>Decibel [dB]</i>	The measurement unit of sound																						
<i>A Weighted decibels [dB(A)]</i>	The A weighting is a frequency filter applied to measured noise levels to represent how humans hear sounds. The A-weighting filter emphasises frequencies in the speech range (between 1kHz and 4 kHz) which the human ear is most sensitive to, and places less emphasis on low frequencies at which the human ear is not so sensitive. When an overall sound level is A-weighted it is expressed in units of dB(A).																						
<i>Decibel scale</i>	<p>The decibel scale is logarithmic in order to produce a better representation of the response of the human ear. A 3 dB increase in the sound pressure level corresponds to a doubling in the sound energy. A 10 dB increase in the sound pressure level corresponds to a perceived doubling in volume. Examples of decibel levels of common sounds are as follows:</p> <table> <tr><td>0dB(A)</td><td>Threshold of human hearing</td></tr> <tr><td>30dB(A)</td><td>A quiet country park</td></tr> <tr><td>40dB(A)</td><td>Whisper in a library</td></tr> <tr><td>50dB(A)</td><td>Open office space</td></tr> <tr><td>70dB(A)</td><td>Inside a car on a freeway</td></tr> <tr><td>80dB(A)</td><td>Outboard motor</td></tr> <tr><td>90dB(A)</td><td>Heavy truck pass-by</td></tr> <tr><td>100dB(A)</td><td>Jackhammer/Subway train</td></tr> <tr><td>110 dB(A)</td><td>Rock Concert</td></tr> <tr><td>115dB(A)</td><td>Limit of sound permitted in industry</td></tr> <tr><td>120dB(A)</td><td>747 take off at 250 metres</td></tr> </table>	0dB(A)	Threshold of human hearing	30dB(A)	A quiet country park	40dB(A)	Whisper in a library	50dB(A)	Open office space	70dB(A)	Inside a car on a freeway	80dB(A)	Outboard motor	90dB(A)	Heavy truck pass-by	100dB(A)	Jackhammer/Subway train	110 dB(A)	Rock Concert	115dB(A)	Limit of sound permitted in industry	120dB(A)	747 take off at 250 metres
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110 dB(A)	Rock Concert																						
115dB(A)	Limit of sound permitted in industry																						
120dB(A)	747 take off at 250 metres																						
<i>Frequency [f]</i>	The repetition rate of the cycle measured in Hertz (Hz). The frequency corresponds to the pitch of the sound. A high frequency corresponds to a high pitched sound and a low frequency to a low pitched sound.																						
<i>Ambient sound</i>	The all-encompassing sound at a point composed of sound from all sources near and far.																						
<i>Equivalent continuous sound level [L_{eq}]</i>	The constant sound level which, when occurring over the same period of time, would result in the receiver experiencing the same amount of sound energy.																						
<i>Reverberation</i>	The persistence of sound in a space after the source of that sound has been stopped (the reverberation time is the time taken for a reverberant sound field to decrease by 60 dB)																						
<i>Air-borne sound</i>	The sound emitted directly from a source into the surrounding air, such as speech, television or music																						
<i>Impact sound</i>	The sound emitted from force of one object hitting another such as footfalls and slamming cupboards.																						
<i>Air-borne sound isolation</i>	The reduction of airborne sound between two rooms.																						
<i>Sound Reduction Index [R] (Sound Transmission Loss)</i>	The ratio the sound incident on a partition to the sound transmitted by the partition.																						
<i>Weighted sound reduction index [R_w]</i>	A single figure representation of the air-borne sound insulation of a partition based upon the R values for each frequency measured in a laboratory environment.																						
<i>Level difference [D]</i>	The difference in sound pressure level between two rooms.																						
<i>Normalised level difference [D_n]</i>	The difference in sound pressure level between two rooms normalised for the absorption area of the receiving room.																						
<i>Standardised level difference [D_{nT}]</i>	The difference in sound pressure level between two rooms normalised for the reverberation time of the receiving room.																						
<i>Weighted standardised level difference [D_{nT,w}]</i>	A single figure representation of the air-borne sound insulation of a partition based upon the level difference. Generally used to present the performance of a partition when measured in situ on site.																						
<i>C_{tr}</i>	A value added to an R _w or D _{nT,w} value to account for variations in the spectrum.																						



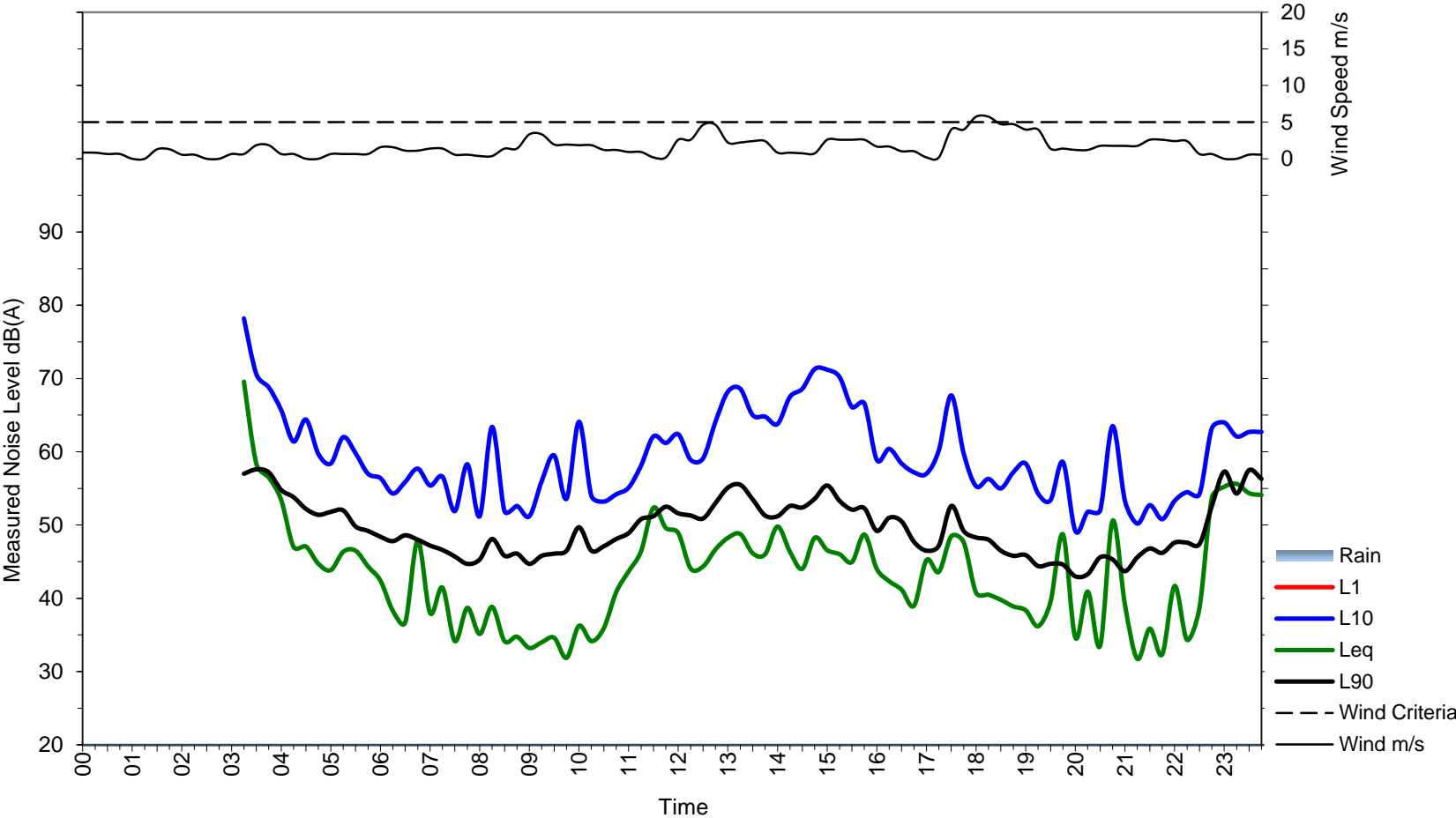
<i>Impact sound isolation</i>	The resistance of a floor or wall to transmit impact sound.
<i>Impact sound pressure level [L_i]</i>	The sound pressure level in the receiving room produced by impacts subjected to the adjacent floor or wall by a tapping machine.
<i>Normalised impact sound pressure level [L_n]</i>	The impact sound pressure level normalised for the absorption area of the receiving room.
<i>Weighted normalised impact sound pressure level [L_{n,w}]</i>	A single figure representation of the impact sound insulation of a floor or wall based upon the impact sound pressure level measured in a laboratory.
<i>Weighted standardised impact sound pressure level [L'_{nT,w}]</i>	A single figure representation of the impact sound insulation of a floor or wall based upon the impact sound pressure level measured in situ on site.
<i>G_i</i>	A value added to an L _{nW} or L _{nT,w} value to account for variations in the spectrum.
<i>Energy Equivalent Sound Pressure Level [L_{A,eq,T}]</i>	'A' weighted, energy averaged sound pressure level over the measurement period T.
<i>Percentile Sound Pressure Level [L_{A,x,T}]</i>	'A' weighted, sound pressure that is exceeded for percentile x of the measurement period T.
<i>Speech Privacy</i>	A non-technical term but one of common usage. Speech privacy and speech intelligibility are opposites and a high level of speech privacy means a low level of speech intelligibility. It should be recognised that acceptable levels of speech privacy do not require that speech from an adjacent room is inaudible.
<i>Sound Pressure Level, L_p dB</i>	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
<i>Sound Power Level, L_w dB</i>	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt
<i>Noise Reduction</i>	The difference in sound pressure level between any two areas. The term "noise reduction" does not specify any grade or performance quality unless accompanied by a specification of the units and conditions under which the units shall apply
<i>Audible Range</i>	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
<i>Background Sound Low</i>	The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted, external ambient noise sources. Usually taken to mean the LA90 value
<i>Character, acoustic</i>	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
<i>Loudness</i>	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on
<i>L_{Max}</i>	The maximum sound pressure level measured over a given period.
<i>L_{Min}</i>	The minimum sound pressure level measured over a given period.
<i>L₁</i>	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
<i>L₁₀</i>	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
<i>L₉₀</i>	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
<i>Leq</i>	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.



APPENDIX B. NOSIE LOGGING DATA – NORTHERN LOCATION

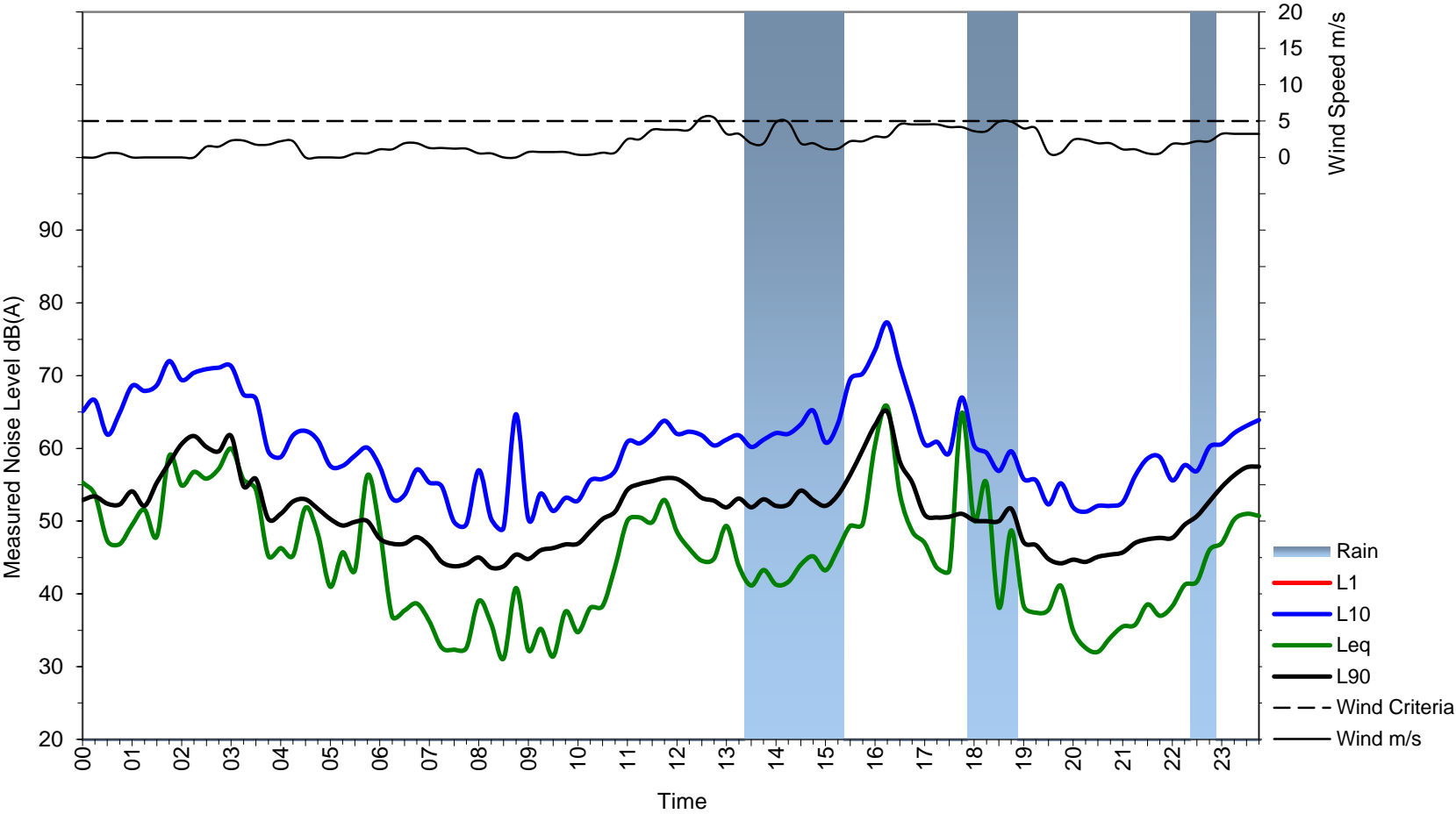


34 Busby Street, Bathurst
Thursday 15 February 2024



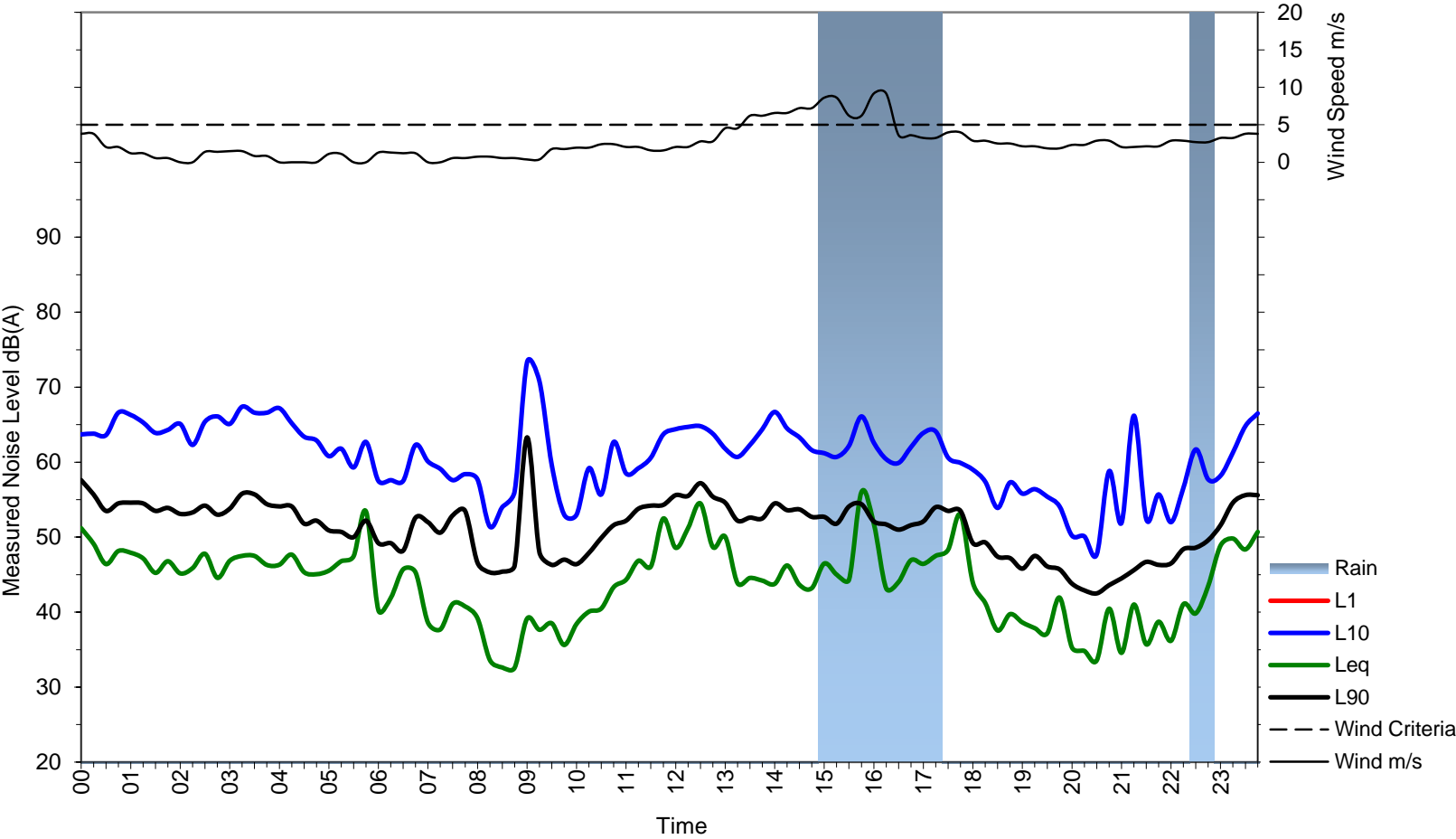


34 Busby Street, Bathurst
Saturday 17 February 2024



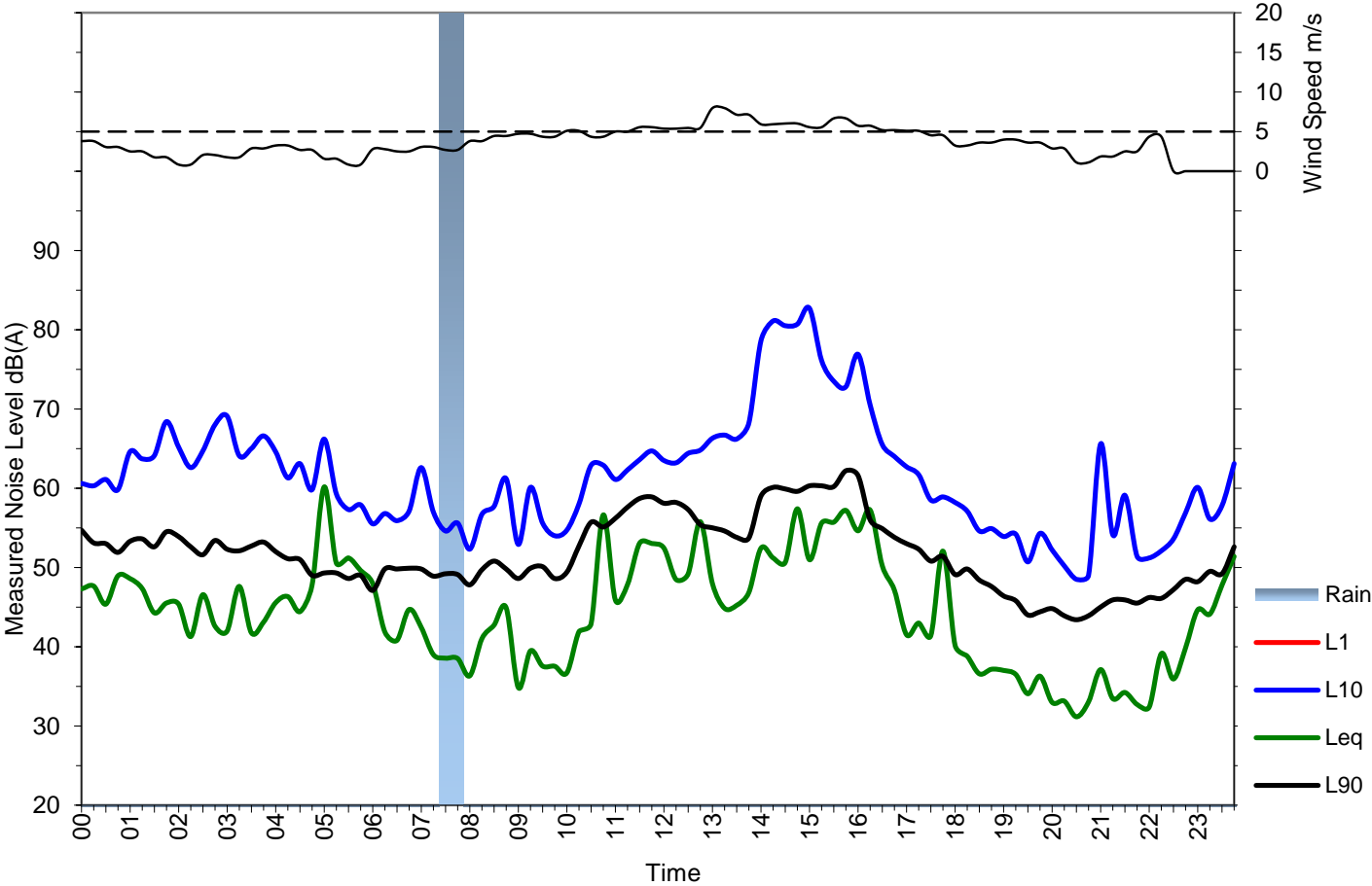


34 Busby Street, Bathurst
Sunday 18 February 2024





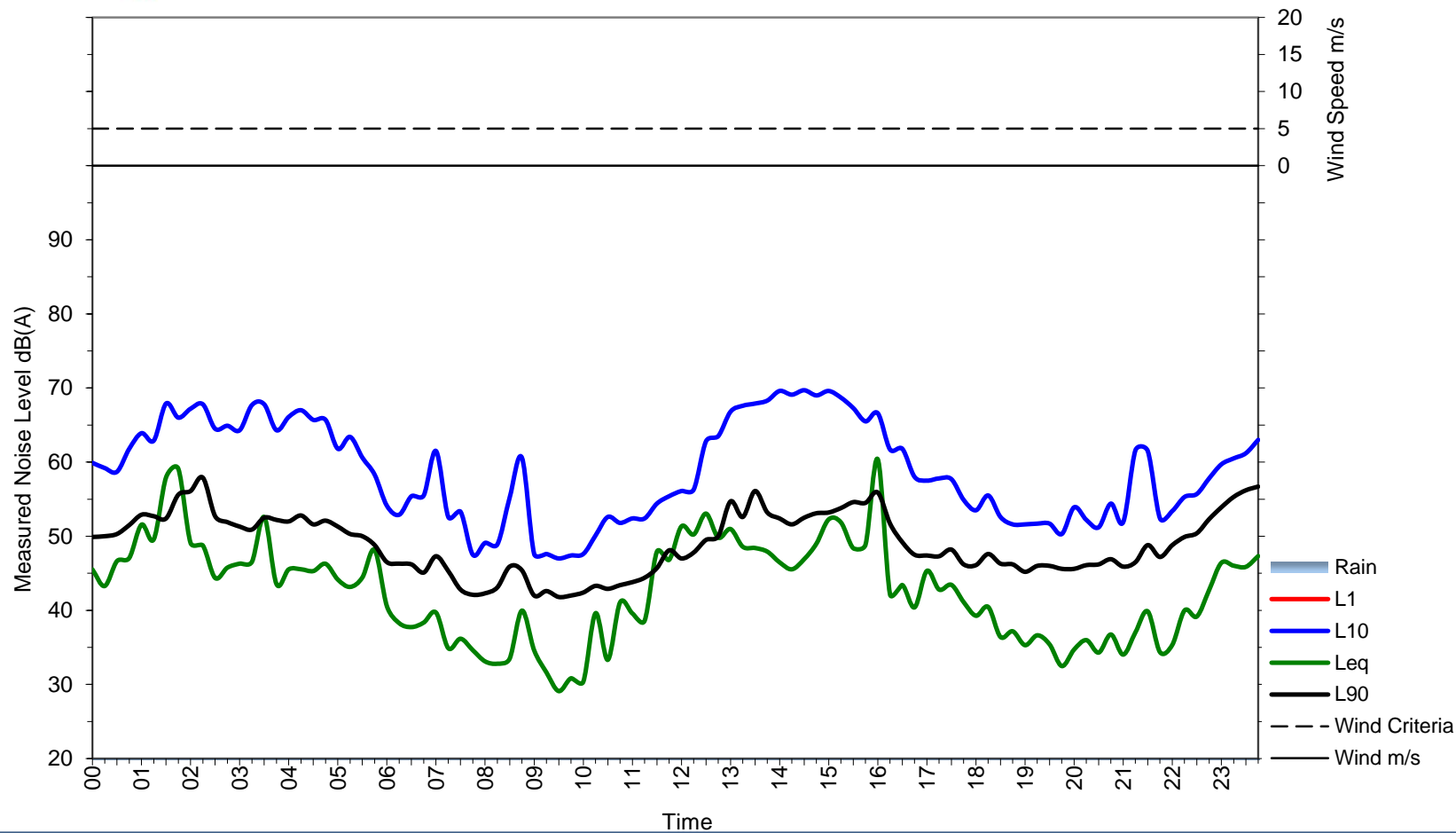
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Monday 19 February 2024





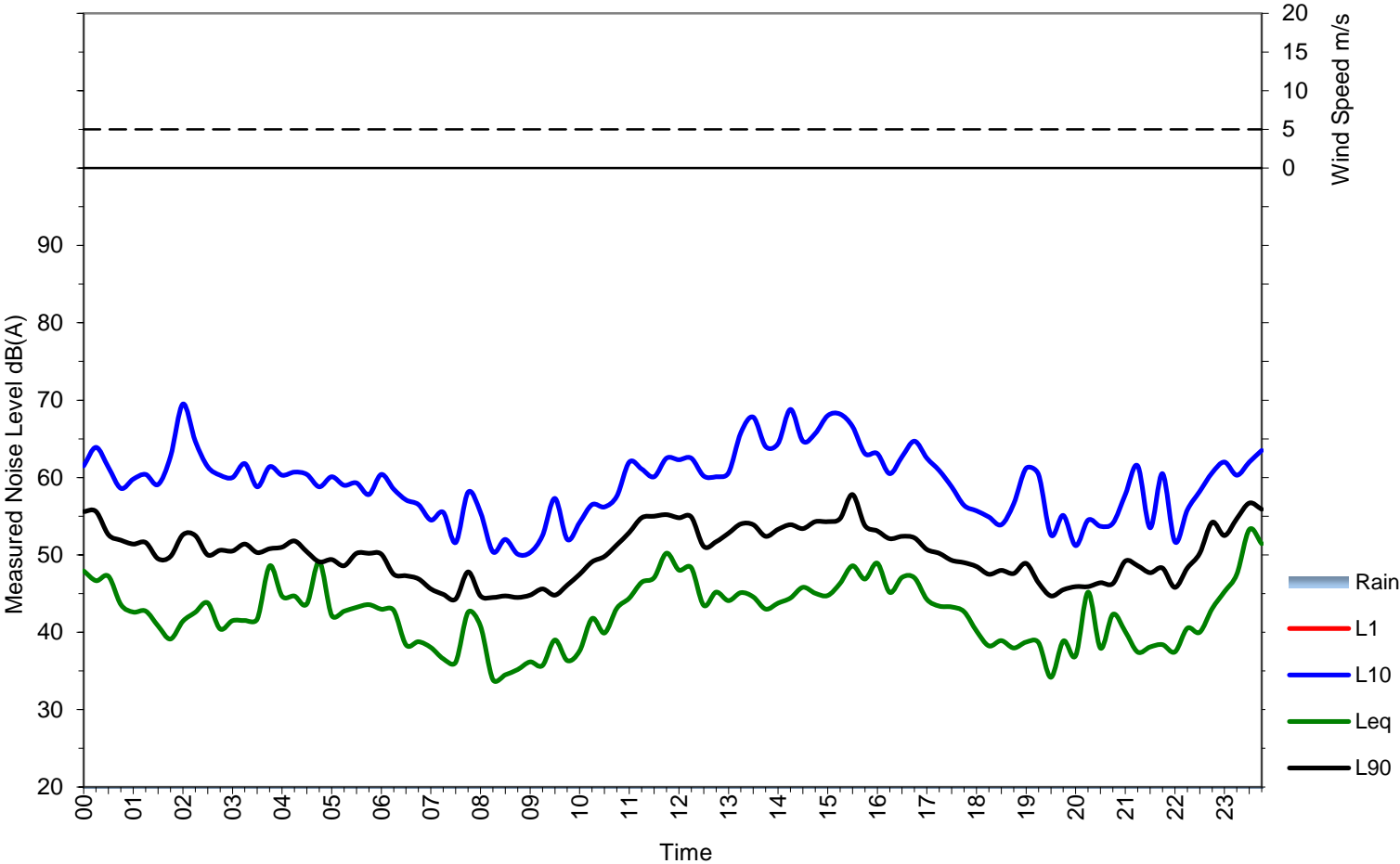
34 Busby Street, Bathurst

Tuesday 20 February 2024



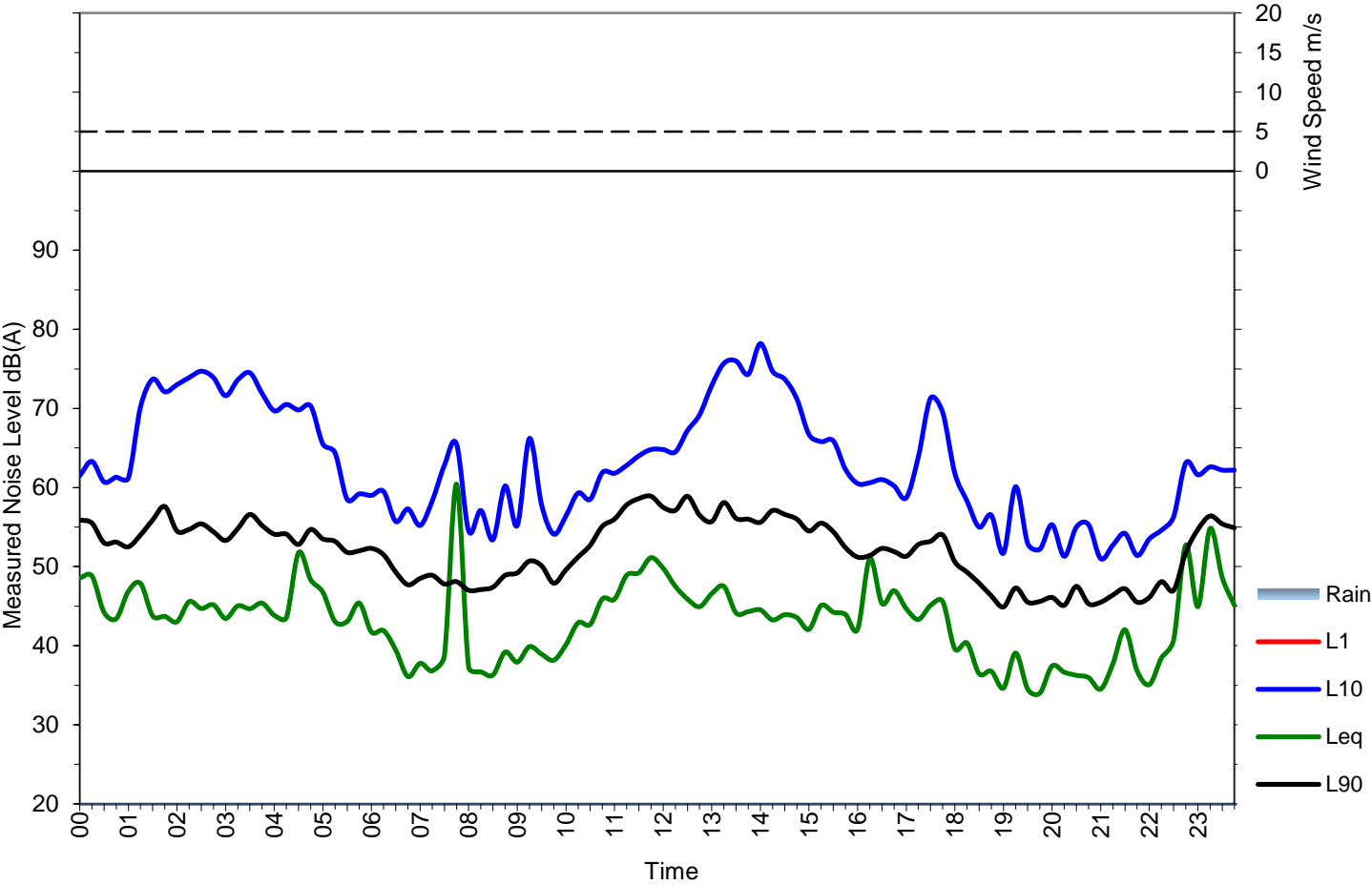


34 Busby Street, Bathurst
Wednesday 21 February 2024



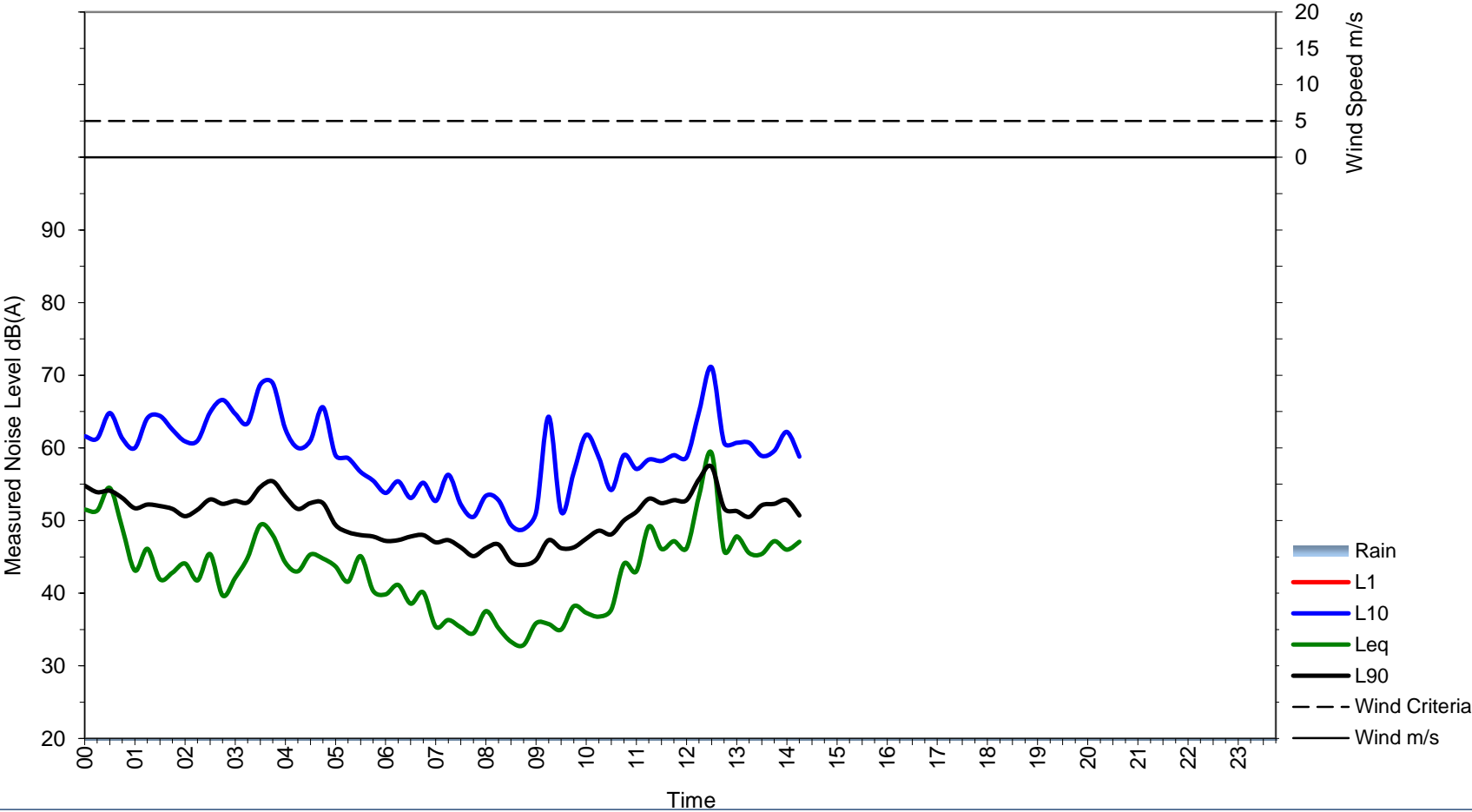


34 Busby Street, Bathurst
Thursday 22 February 2024





34 Busby Street, Bathurst
Friday 23 February 2024



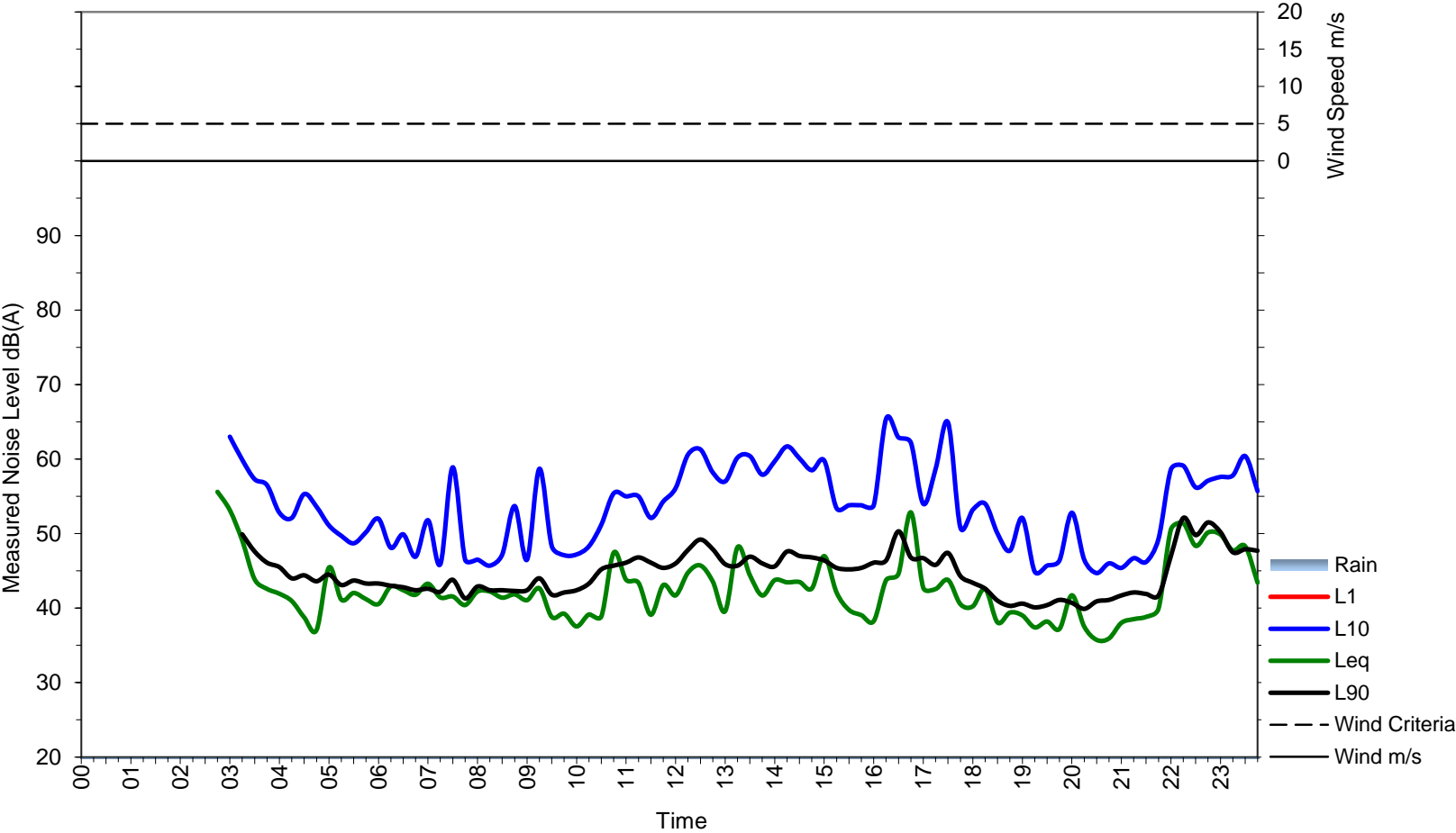


APPENDIX C. NOSIE LOGGING DATA – SOUTHERN LOCATION



34 Busby Street, Bathurst (Southern)

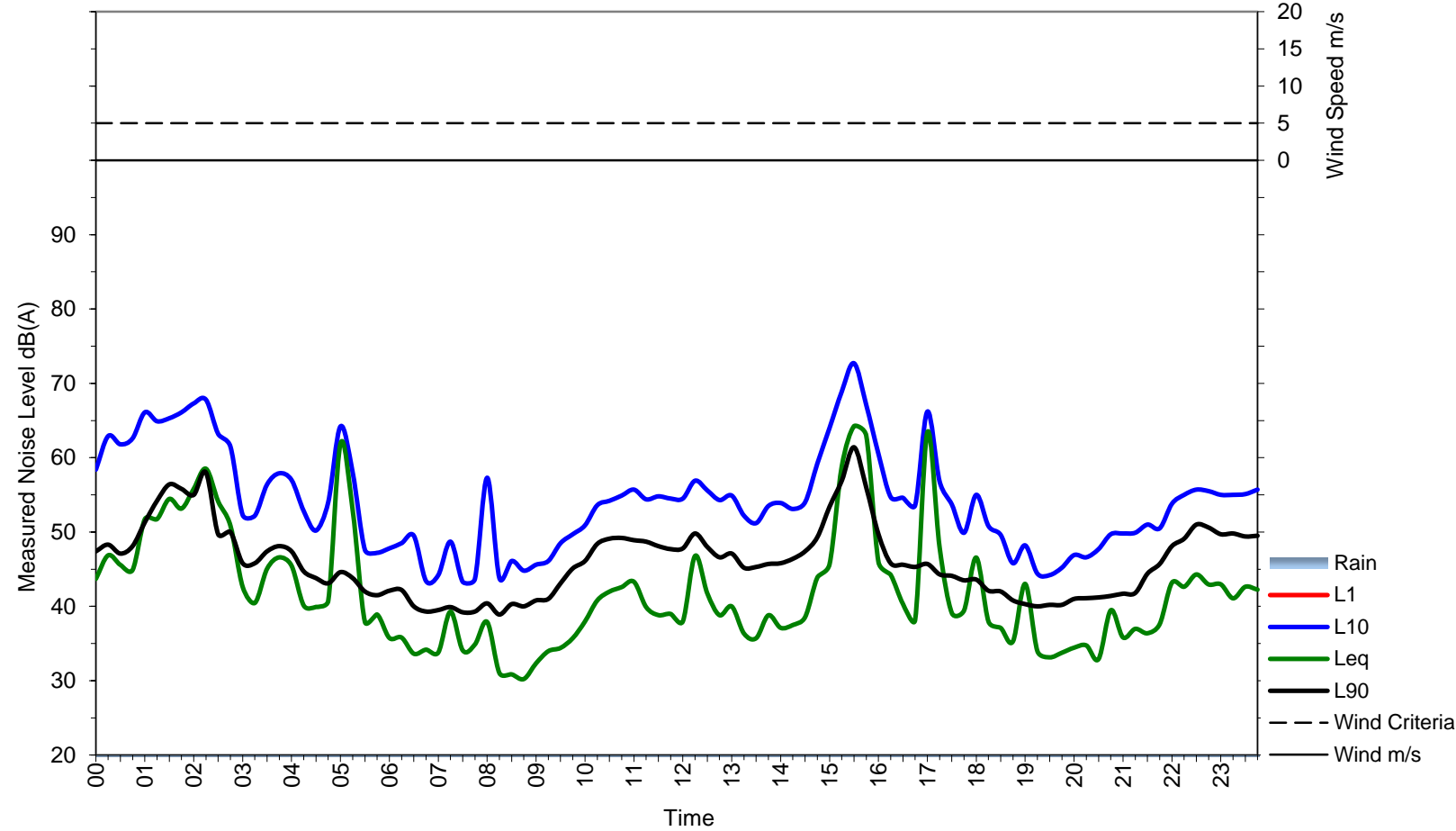
Thursday 15 February 2024





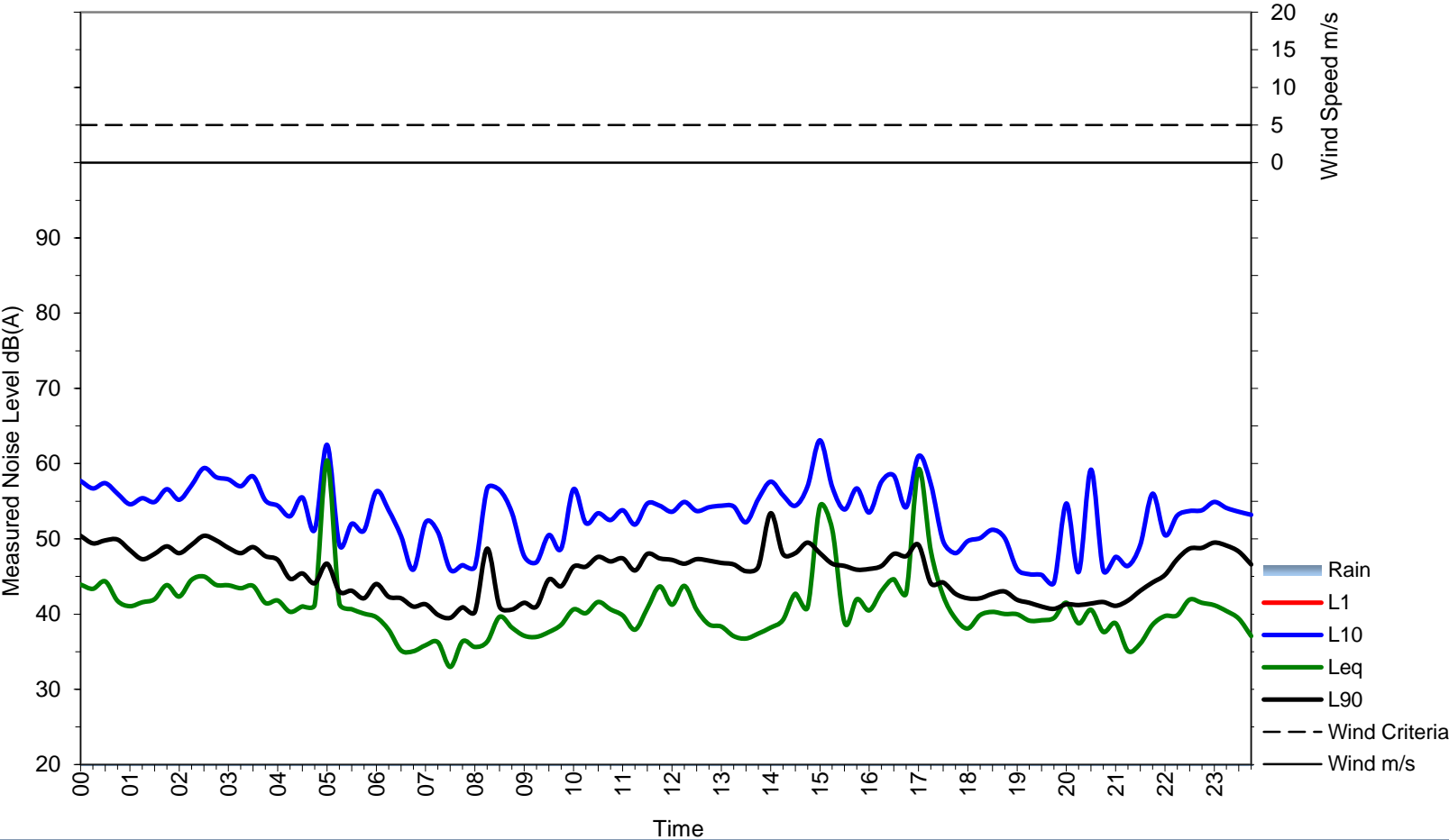
34 Busby Street, Bathurst (Southern)

Friday 16 February 2024





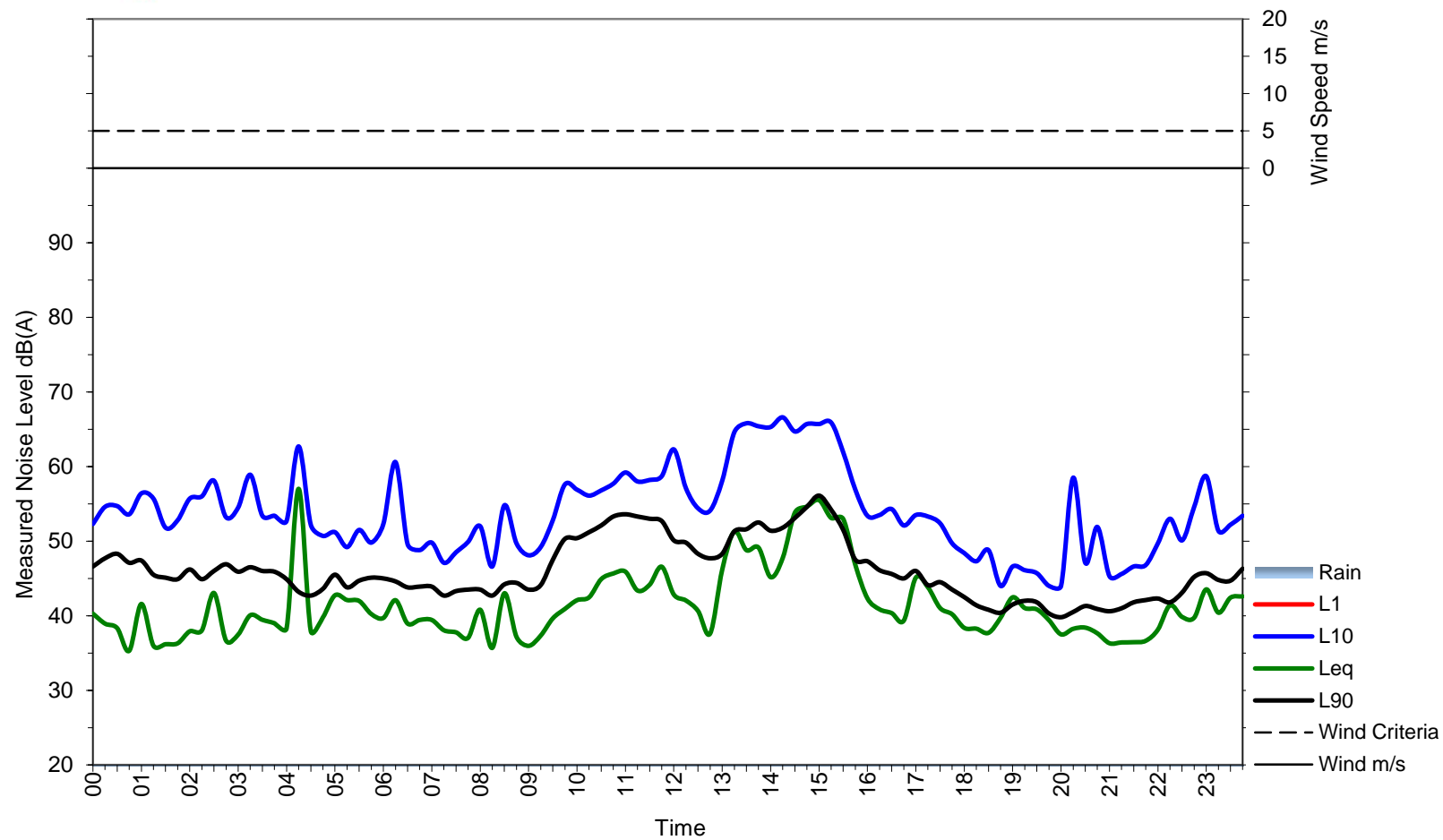
34 Busby Street, Bathurst (Southern)
Saturday 17 February 2024





34 Busby Street, Bathurst (Southern)

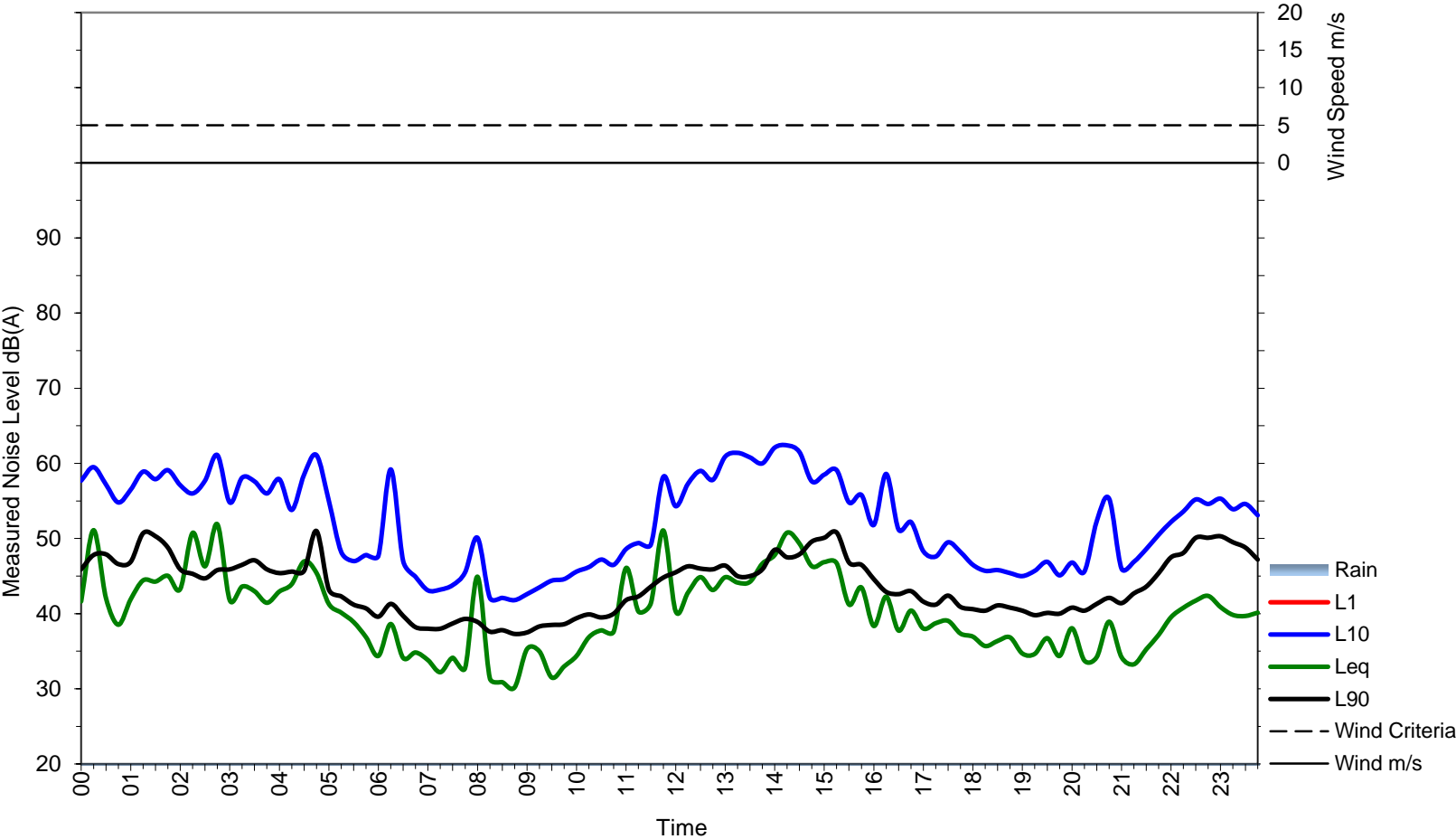
Sunday 18 February 2024





34 Busby Street, Bathurst (Southern)

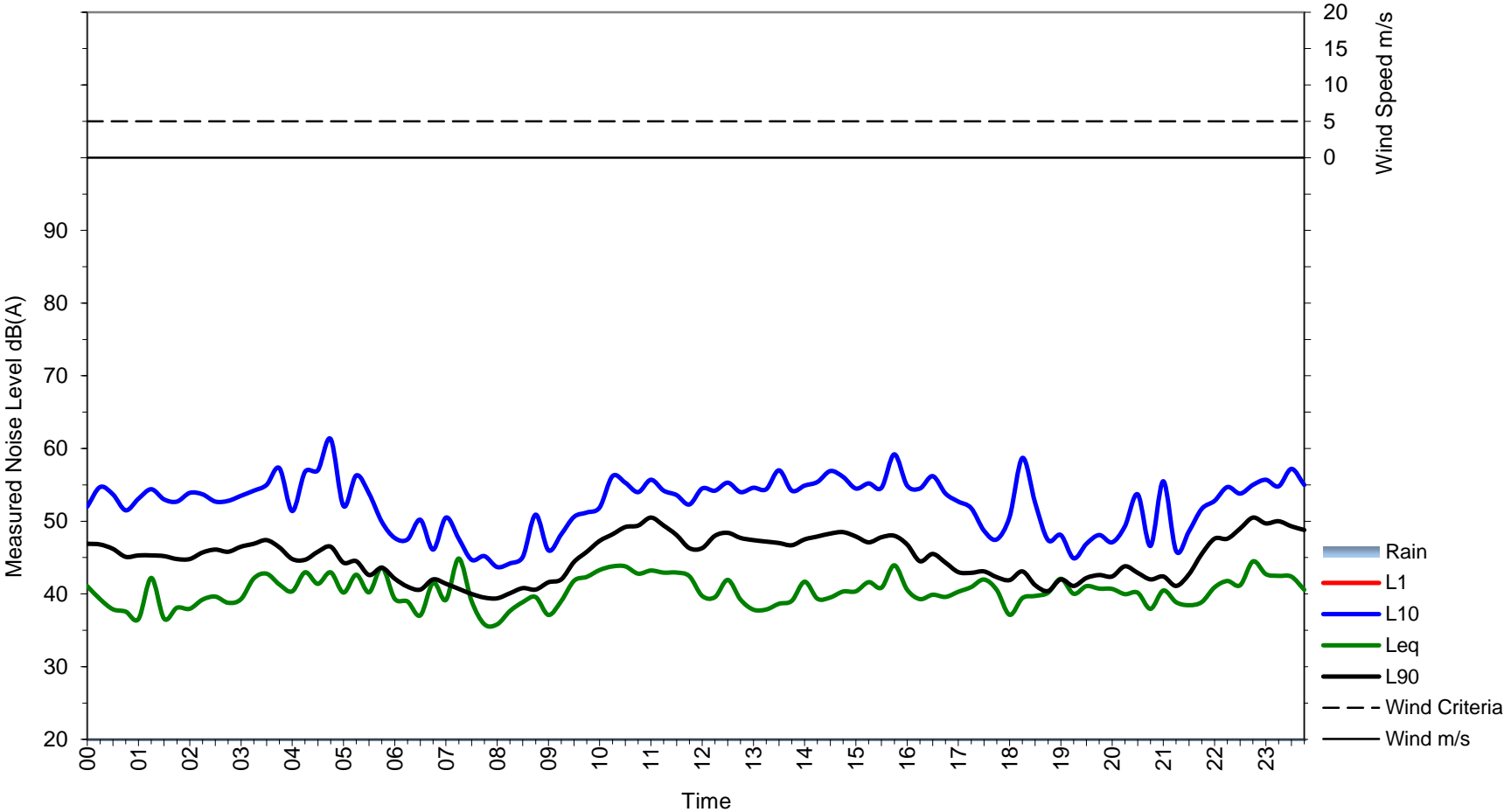
Monday 19 February 2024





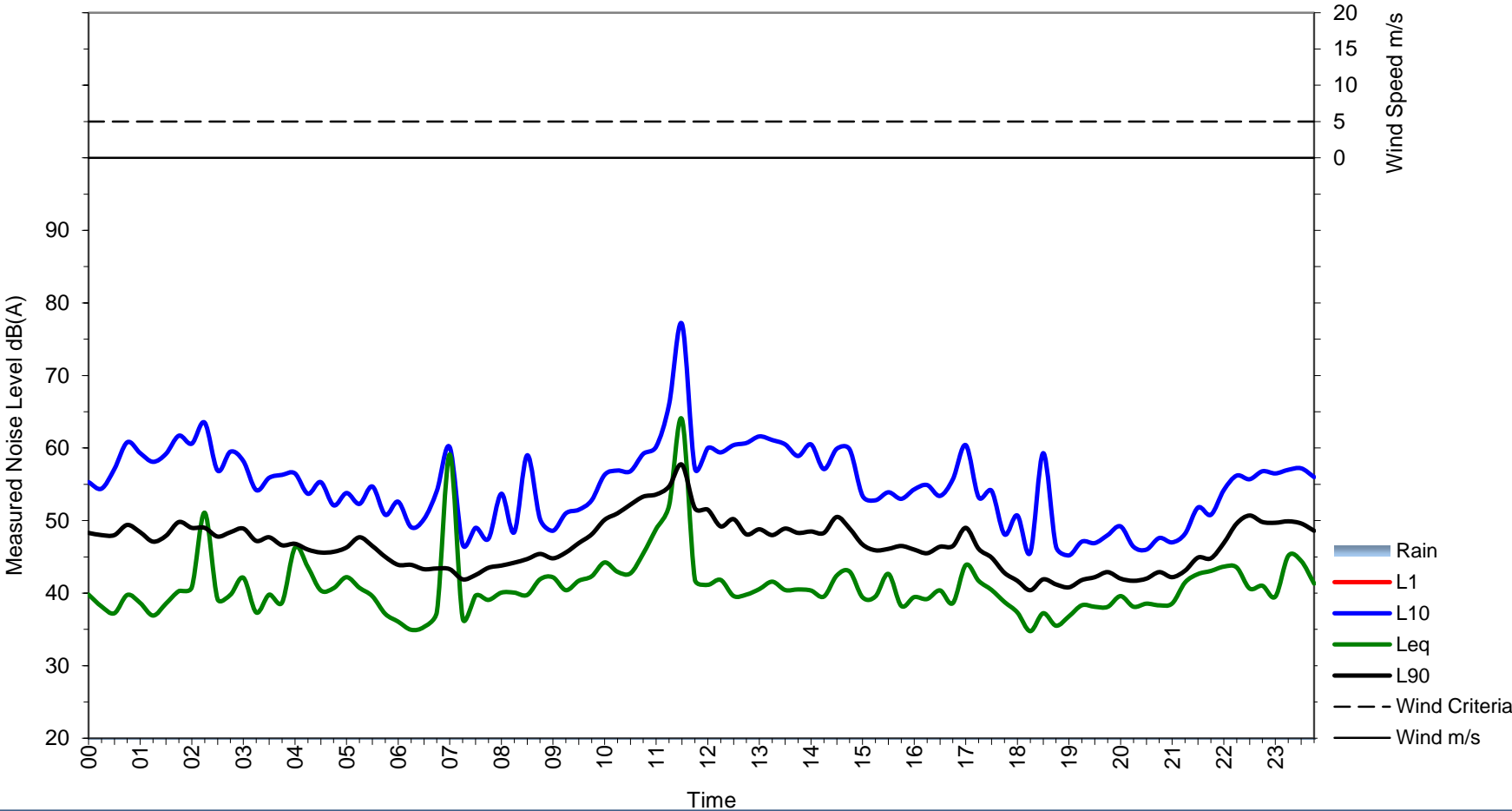
34 Busby Street, Bathurst (Southern)

Tuesday 20 February 2024





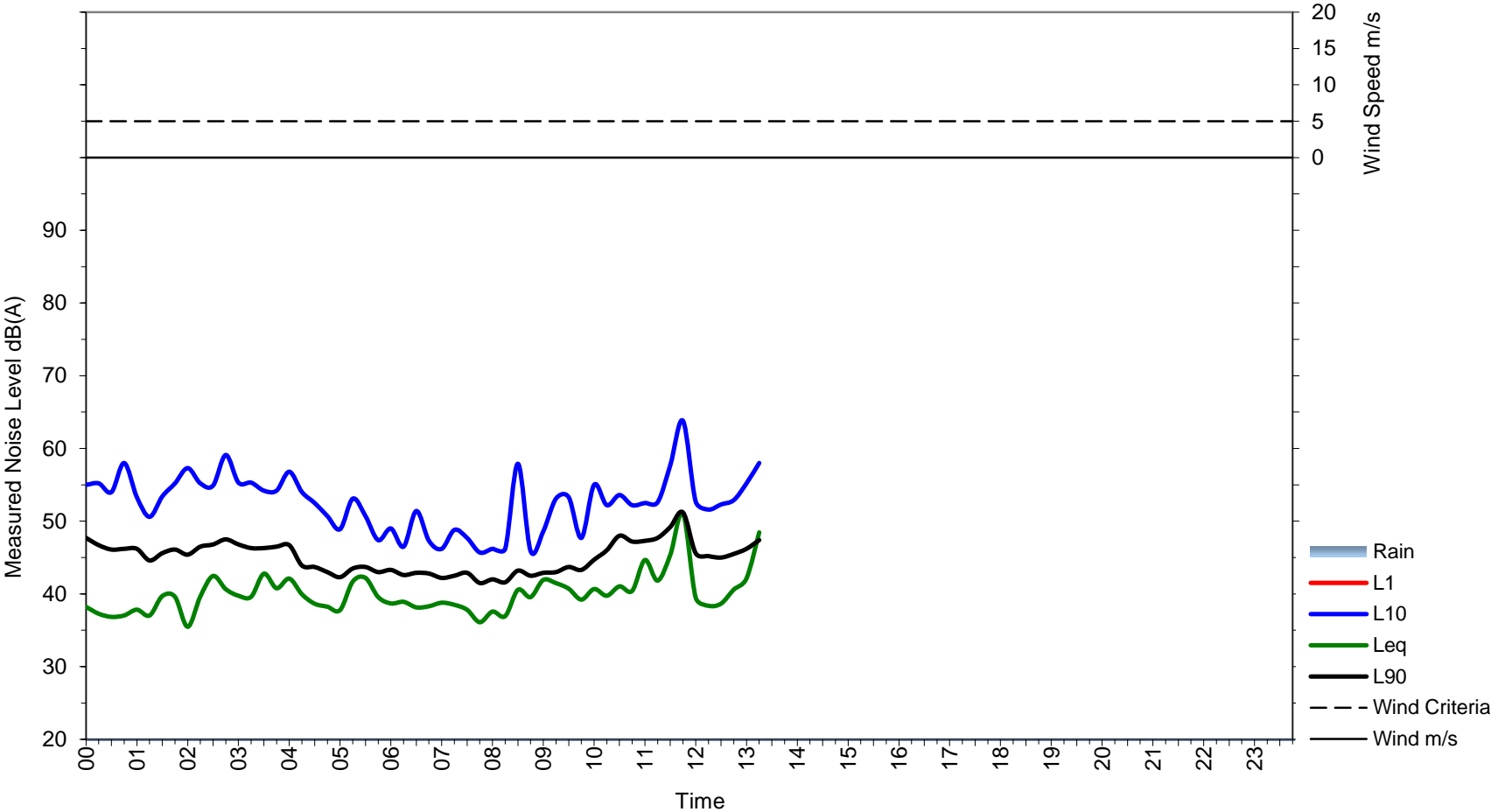
34 Busby Street, Bathurst (Southern)
Wednesday 21 February 2024





34 Busby Street, Bathurst (Southern)

Thursday 22 February 2024



Heritage Impact Assessment for Redevelopment of St Joseph's Mount (former) Bathurst NSW 2795



Date: 8 May 2024

Address and property description:

34 Busby Street
Bathurst NSW 2795
Lot 22 DP 1033481

Prepared by:

Ray Christison
High Ground Consulting
116 Hassans Walls Road
Lithgow NSW 2790
0419 438609

For:

Hamptons

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Introduction

High Ground Consulting has been engaged by Hamptons to provide a Statement of Heritage Impact for the proposed redevelopment of the site of the former St Joseph’s Mount Convent & Novitiate at 34 Busby Street, Bathurst. A Heritage Impact Assessment is required as the property is identified as an item of local heritage significance and is located within the Bathurst Heritage Conservation Area.

This report will address the following:

- Compliance of the proposed development with the guidelines of the Bathurst HCA;
- View analysis and consideration of the impact of new developments
- Potential impact of the proposed works on the cultural heritage significance of St Joseph’s Mount;
- What measures can be used to mitigate negative impacts;
- Why more sympathetic solutions were not viable.

It should be read with reference to the St Joseph’s Mount Conservation Management Plan 2021 and the St Joseph’s Mount Conservation Management Plan 2021 for reference to the former Convent and Novitiate and the St Joseph’s Mount Conservation Management Plan 2007 for reference to the Gatekeeper’s Cottage.

Location

The proposed development is located at 34 Busby Street, Bathurst. It comprises Lot 22 DP 1033481, which is proposed for subdivision into Lots 223, 224 and 225. The future Lots 223, 224 and 225 are referenced throughout this Heritage Impact Assessment.

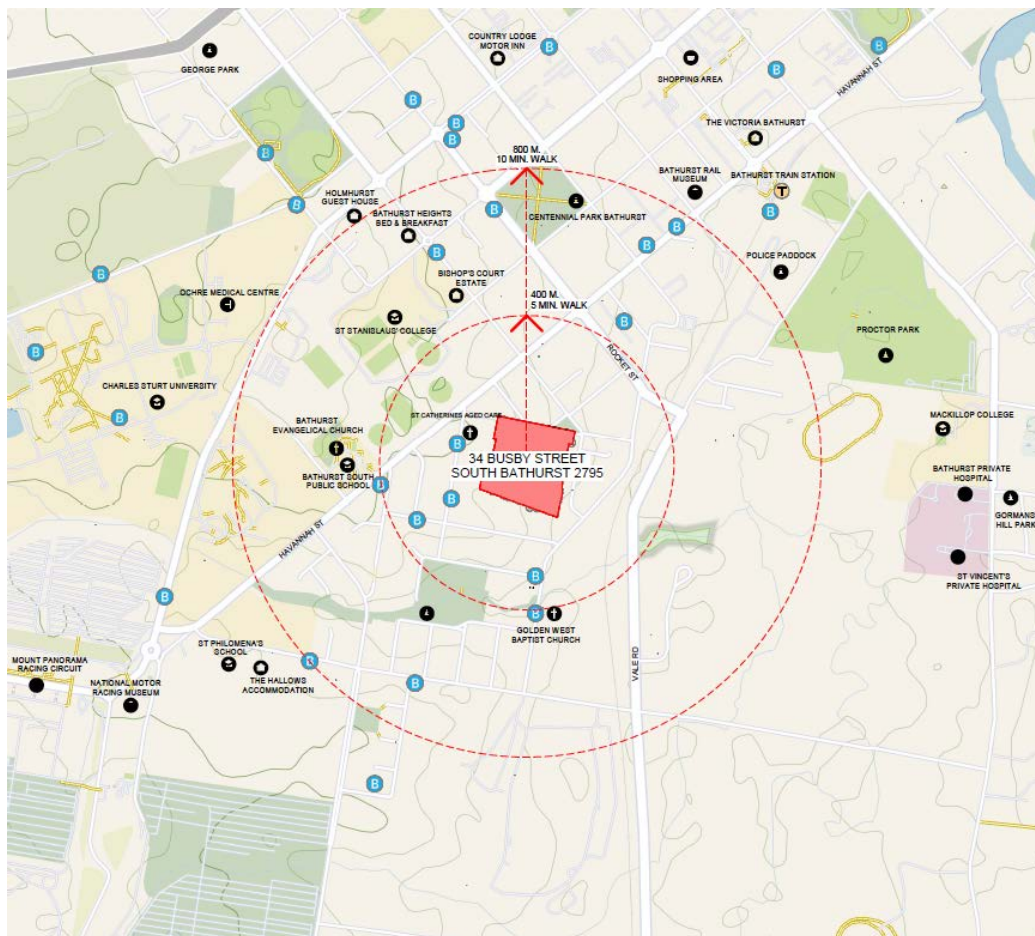


Figure 1: Plan of site location within Bathurst. (Marchese Partners/Life^{3A} 2024)

Author of this report

This report was prepared by Ray Christison BA (Hons), historical archaeologist of High Ground Consulting. Ray is an acknowledged expert in the history of the Australian iron and steel industry, the Australian coal industry and the history of NSW Central Tablelands. Ray is principal heritage consultant to the Australian Rail Track Corporation and Heritage Advisor to Hilltops LGA and Narrabri Shire. He has provided heritage management advice to the Catholic Diocese of Bathurst and the Sisters of Mercy for the past 24 years, and regularly provides advice on other conservation and development projects in Bathurst.

Ray prepared a Conservation Management Plan (CMP) for St Joseph’s Mount in 2007 and fully revised this plan in 2020-2021. He has subsequently provided advice and insights regarding subdivision of the site, and adaptive re-use and upgrading of existing buildings.

Limitations

The site of the former St Joseph’s Mount Convent and Novitiate is currently secured and not easy to photograph. This report has relied on observations and photographs taken in 2020 and 2021. Given the fact that the place has been inactive since that time, it is assumed that these provide an accurate representation of the state of the place. This assessment also relies heavily in the CMP prepared by High Ground Consulting in 2021 and subsequent discussions around subdivision of the property.

Due to staffing and time constraints an Interpretation Plan has not been prepared as part of this assessment. If required, it will be prepared as part of any future Development Application.

Description of the place

The former St Joseph’s Mount Convent & Novitiate was originally constructed in 1877 for John Busby and his family. In 1908 the property was purchased for the use of the order of the Sisters of Mercy and remained in their stewardship until 2021. A full thematic History of the place is included in the St Joseph’s Mount Conservation Management Plan 2020.

Historical timeline

- 1862 The property was part of Lot 6, a 100acre block that was originally granted to Sir John Jamison. It was transferred to John Busby.
- 1866 The first group of Sisters of Mercy arrived in Bathurst, establishing the former Deanery in Keppell Street.
- 1869 The Convent of the Immaculate Conception of Mary and St Mary’s College were constructed in William Street.
- 1877 Logan Brae was constructed for John Busby and his family.
- 1891 John Busby died and his wife relocated to Sydney.
- 1896 Logan Brae was purchased by Mrs Joseph Smith and leased by the NSW Government and used to accommodate students at the Bathurst Experimental Farm.
- 1897 Lot 6 had been subdivided along western boundary to create Prospect Street, Brilliant Road & Queens Street. All small blocks for housing development.
- 1908 Logan Brae was purchased by local retailer John Meagher for the Sisters of Mercy.
- 1916 A chapel was built adjacent to the convent.
- 1959 Science Room and classroom were built south of the chapel.
- 1962 A new accommodation wing (Novitiate Wing) was constructed on the northern side of the Mount St Joseph Convent (Logan Brae).
- 1964 The Bathurst Sisters of Mercy decided to establish a nursing home for elderly sisters at Bathurst to ensure these sisters did not have to move away from a familiar environment.
- 1966 St Catherine’s Aged Care was built as a 24 bed nursing home for the Sisters of Mercy. This facility was blessed and officially opened in October 1966.

Physical evidence

The former St Joseph’s Mount Convent & Novitiate comprises the former Logan Brae Victorian era villa and its extensions. A chapel was constructed adjacent to Logan Brae in 1916 and a Science Room, identified as MacAuley Cottage was constructed in 1959. Various outbuildings include gardener’s sheds and a number of buildings constructed north of the convent to support a community garden.

Landscape elements associated with the convent include:

1. A complex of buildings situated on the highest section of the site. This complex comprises:
 - a. ‘Logan Brae’, the 1870s ‘villa’ designed by Edward Gell,
 - b. A chapel constructed in 1916,
 - c. A former science room and classroom constructed in 1959,
 - d. An accommodation block constructed in 1962,
 - e. A garden shed/outbuilding located to the west of the chapel,
 - f. Cottage at 28 Busby Street, formerly the gatekeeper’s cottage.
2. Landscaped gardens and grounds.



Logan Brae viewed from the southeast. (Ray Christison 2020)

The 1962 Novitiate Wing with Logan Brae on the left. (Ray Christison 2020)



The 1916 Chapel. MacAuley Cottage is on the left. (Ray Christison 2020)

Summary Statement of Significance

The cultural heritage significance of St Joseph's Mount has been assessed as follows:

St Joseph's Mount has a multi-faceted history that reflects aspects of the development of Bathurst since 1877. Logan Brae is a grand Victorian mansion that retains a high level of integrity. The place has also served as an agricultural college and as the headquarters and novitiate of the Sisters of Mercy in the Bathurst Diocese. It was also one of the first

nongovernment teacher training facilities accredited in New South Wales. The place was involved in celebrations surrounding the Bathurst People’s Federal Convention of 1896. The place has direct associations with the outstanding educational and social work of the Sisters of Mercy in Western NSW. It also has direct associations with Bathurst architect Edward Gell, physician George Busby and with the works of entrepreneur John Meagher. Logan Brae is a fine example of the work of architect Edward Gell. The original mansion is generally intact. Extensions and renovations have largely respected the original form and fabric of the building and maintained a high level of aesthetic integrity. The house retains the form of its original gardens and landscaping. St Joseph’s Mount and Logan Brae are important elements of the social and spiritual fabric of Bathurst. The place is directly associated with the works of the Sisters of Mercy. The charitable and visionary mission of this organisation is still being developed and implemented around the fabric and the place. Logan Brae was used as part of the first Experimental Farm in Bathurst and served as an agricultural college for some years. It has also been a place of teacher training and learning. The intact 19th and early 20th century buildings of St Joseph’s Mount provide opportunities to explore the construction methods and social customs of these eras. St Joseph’s Mount was the only convent and novitiate of its kind in the Catholic Diocese of Bathurst. St Joseph’s Mount is representative of the successful adaptive re-use and effective management of large 19th century mansions.

Gradings of Significance

The St Joseph’s Mount CMP defined the grading of significance of each element of the property. Gradings of Significance were assessed using NSW Heritage Office criteria contained in the NSW Heritage Manual update Assessing Heritage Significance. According to this publication;

Different components of a place make a different relative contribution to its heritage value. Loss of integrity or condition may diminish significance¹.

Gradings of significance reflect the relative contribution of an item or its components to the significance of the whole. The NSW Heritage Manual update Assessing Heritage Significance identifies gradings of significance as follows:

Gradings of significance

Grading	Justification	Status
Exceptional	Rare or outstanding item of local or State significance. High degree of intactness. Item can be interpreted relatively easily.	Fulfil criteria for local or State listing.
High	High degree of original fabric. Demonstrates a key element of the item’s significance. Alterations do not detract from significance.	Fulfil criteria for local or State listing.
Moderate	Altered or modified elements. Elements with little heritage value, but which will contribute to the overall significance of the item.	Fulfil criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damaging to the item’s heritage significance.	Does not fulfil criteria for local or State listing.

Gradings of significance have been determined in accordance with the following criteria:

¹ NSW Heritage Office, 2001. Assessing heritage significance. p.11

- Original elements are generally regarded to have an exceptional or high grading of significance depending on condition and integrity.
- Gradings of significance of elements that have been compromised by ongoing modifications, storm damage, weathering or vandalism have been allocated according to the condition and integrity of each element.
- More recent elements or elements that have been heavily compromised have been identified as having little significance.

Logan Brae Exterior	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
Triple-hipped corrugated iron roof & roof structure		X			
Hipped roof over laundry wing		X			
Hipped roofs over novitiate kitchen		X			
Skillion roof over rear verandah			X		
Front verandah roof	X				
Guttering & downpipes		X			
Chimneys	X				
Decorative chimney tops	X				
Front verandah – cast pillars & lacework	X				
Verandah floor & structure	X				
Front steps	X				
Balcony above front entrance	X				
Decorative brick retaining walls & balustrades	X				
Cast balcony railing	X				
Cast drainage pipes (Metters brand) – northern side	X				
Eaves	X				
Cast vents in eaves	X				
Carved eave brackets.	X				
English Bond face brickwork	X				
Quoins	X				
Contrasting brickwork	X				
Decorative stone hood mouldings	X				
Double-hung windows	X				
Leadlight windows	X				
Front door		X			
Etched glass door light & sidelights		X			
Wrought iron panel – front door		X			
Front door bell			X		
Entry door & sidelight – southern side	X				
Door to dining room (refectory)			X		
Screen door – dining room (refectory)			X		
Rear verandah infill structure				X	
Rear verandah infill windows				X	
Ground floor extension – northern side of courtyard				X	
Doors & windows – ground floor extension				X	
Extensions – southwest wing				X	
Doors & windows – southwest extensions				X	
Rear courtyard			X		

Logan Brae Exterior	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
Plumbing ventilation flues				X	
Electrical services				X	
Television aerial				X	

Logan Brae interior	Exceptional	High	Moderate	Little	Intrusive
Logan Brae front hall					
Plaster ceiling	X				
Plaster wall surfaces, decorative arcading, cornices & ceiling rose	X				
Cedar joinery & skirting boards	X				
Art deco light fitting		X			
Madonna & child statue		X			
Tessellated tile floor	X				
Cedar front door & rim lock	X				
Front door night latch		X			
St Joseph’s Mount presentation plaque	X				
Electrical services & switches			X		
Fire extinguisher					X
John Meagher Room					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Fireplace infill				X	
Cedar joinery & skirting boards	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors	X				
Door lock mechanisms, door knobs & fingerplates		X			
Chandeliers			X		
St Joseph the worker statue			X		
Floor	X				
Carpet				X	
Portrait of John Meagher		X			
Electrical services & switches				X	
Gas heater and services				X	
Front parlour					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar joinery & skirting boards	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors	X				

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet				X	
Electrical services & switches				X	
Gas heater and services				X	
Telephone room					
Cedar panelled ceiling & walls	X				
Plaster wall surfaces	X				
Cedar panelled doors	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet				X	
Electrical services & switches				X	
Cellar					
English bond brickwork	X				
Drainage pipes	X				
Vaulted area beneath front hall	X				
Shelving in vaulted area	X				
Staircase & timber landing	X				
Drainage trenches (beneath front parlour)			X		
Repairs to front parlour floor				X	
Gas services				X	
Electrical services & fittings				X	
Central hall and main staircase					
Plaster ceiling	X				
Plaster wall surfaces, decorative arcading, cornices & ceiling rose	X				
Cedar joinery & skirting boards	X				
Art deco light fitting		X			
Statue of St Joseph	X				
Tessellated tile floor	X				
Cedar archway beneath staircase	X				
Side door & lock		X			
Grandfather clock & plinth		X			
Staircase	X				
Cedar panelling	X				
Balustrades, posts & cedar panelling	X				
Staircase windows	X				
Decorative friezes	X				
Madonna		X			
Hall to breakfast room	X				
Service bell & mounting	X				
Northern hall	X				
Electrical services & switches			X		
Breakfast room					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar joinery & skirting boards	X				
Cedar double hung window & window joinery	X				
Cedar panelled door	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet			X		
Electrical services & switches (pull switches)			X		
Gas heater and services				X	
Service hall & maid’s stairs					
Plaster ceiling & wall surfaces	X				
Cedar joinery & skirting boards	X				
Cedar panelled door to central hall & frosted glass panels	X				
Crown light above door	X				
Floor	X				
Carpet			X		
Archway to maid’s stairs	X				
Maids’ stairs railing	X				
Maids’ stairs	X				
Maids’ stairs linoleum		X			
Art deco era cupboard at top of stairs		X			
Cedar panelled door to rear verandah	X				
Cedar panelled door to larder	X				
Door to store room	X				
Light fittings			X		
Electrical services & switches				X	
Larder					
Plaster ceiling & wall surfaces	X				
Cedar joinery & skirting boards	X				
Cedar window joinery & window glazing	X				
Cedar panelled door to service hall	X				
Door to rear verandah		X			
Screen door on rear verandah		X			
Floor	X				
Linoleum		X			
Slate shelving	X				
Wooden shelving brackets	X				
White backing tiles	X				
High wooden shelving	X				
Light fitting & electrical services			X		
Store room					
Planked ceiling		X			
Cedar joinery & skirting boards		X			
Cedar window joinery & window glazing	X				

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
Cedar panelled door to service hall	X				
Cedar dresser		X			
Pine hutch		X			
Floor	X				
Carpet			X		
Electrical services & fittings			X		
Housemaid’s closet					
Plaster wall & ceiling linings	X				
Panelled stair linings	X				
Cedar joinery	X				
Shelving			X		
Floor	X				
Carpet			X		
Cedar door & joinery	X				
Electrical services & fittings			X		
Prayer room					
Plaster ceiling	X				
Plaster wall surfaces, cornices & ceiling rose	X				
Marble fireplace surround & mantelpiece		X			
Fireplace infill					X
Cedar joinery & skirting boards	X				
Cedar double hung window & window joinery	X				
Cedar panelled door	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet			X		
Electrical services & switches			X		
Gas heater and services				X	
Bedroom & dressing room					
Plaster ceiling	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar joinery & skirting boards	X				
Cedar double hung window & window joinery	X				
Cedar panelled door to hall	X				
Door lock mechanisms, door knobs & fingerplates		X			
Light fitting			X		
Floor	X				
Carpet				X	
Electrical services & switches (pull switches)			X		
Gas heater and services				X	
Downstairs bathroom					
Plaster ceiling		X			
Cedar double hung window & window joinery	X				

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
Cedar panelled doors	X				
Door lock mechanisms, door knobs & fingerplates		X			
Toilet & bath			X		
Floor and wall tiling			X		
Shower				X	
Light fitting				X	
Electrical services & switches				X	
Laundry (former kitchen)					
Gyprock ceiling			X		
Windows & window joinery		X			
Cedar panelled doors		X			
Plaster wall finishes		X			
Floor & wall tiling			X		
Former oven alcove		X			
Cupboards & benches			X		
Broom cupboard (former cook’s stairs)		X			
Plumbing services & fittings				X	
Electrical services & fittings				X	
Boiler room (former)					
Plaster wall & ceiling linings		X			
Concrete floor		X			
Window & window joinery		X			
Ledged & braced door		X			
Hollow core sliding door & frame				X	
Boarded lining of former cook’s stairs		X			
Wash tubs			X		
Plumbing & plumbing fittings			X		
Hot water service				X	
Former central heating pipes			X		
Electrical services, fittings & switchboard			X		
Port room					
Plaster wall & ceiling linings		X			
Concrete floor		X			
Window & window joinery	X				
Ledged door & rim lock	X				
Hollow core door & frame					X
Shadows of former cupboards			X		
Electrical services & fittings.			X		
Ground floor rear verandah					
1870s English bond brick walls	X				
1960s stretcher bond brick walls		X			
Timber-framed external windows			X		
Polished concrete paving & repairs			X		
Terrazzo paving			X		
Cast iron downpipes		X			
Electrical services & fittings			X		
Kitchen & breakfast room					
1870s English bond brick walls	X				
1960s stretcher bond brick walls		X			
1960s windows			X		
Kitchen benches, cupboards & fittings				X	

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
Floor coverings				X	
Cool room				X	
Central heating			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Scullery					
Benches, cupboards & fittings			X		
Floor coverings				X	
Central heating			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Upstairs landing & hallways					
Plaster ceiling	X				
Plaster wall surfaces, skirting, cornices & ceiling rose	X				
Cedar joinery, including cupboard doors	X				
Light fitting			X		
Madonna & child statue & stand			X		
Floor	X				
Linoleum floor coverings		X			
Balustrades, posts & cedar panelling	X				
Bedroom (Museum)					
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cast iron fire grate	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Light fitting			X		
Floor	X				
Electrical services & switches			X		
Dressing Room (Bursar’s office)					
Plaster ceiling, wall finishes & skirting	X				
Cedar double hung window & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Light fitting			X		
Floor	X				
Carpet			X		
Electrical services & switches			X		
Gas services & heater			X		
Eastern office					
Plaster ceiling, wall finishes, cornices & skirting	X				
Cedar french windows & window joinery	X				
Cedar panelled door & joinery	X				
Door lock mechanisms			X		
Floor	X				

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
Carpet			X		
Art deco cupboards & shelving		X			
Light fitting			X		
Electrical services & switches					
Gas services & heater			X		
Congregational Leader’s office					
Plaster ceiling, wall finishes, ceiling rose, cornice & skirting	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Light fittings			X		
Floor	X				
Carpet			X		
Electrical services & switches			X		
Gas services & heater			X		
Utility office					
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Floor	X				
Carpet			X		
Electrical services, lights & switches			X		
Gas services & heater			X		
Secretary’s office					
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cedar double hung windows & window joinery	X				
Cedar panelled door & joinery	X				
Door lock mechanisms			X		
Floor	X				
Carpet			X		
Electrical services, lights & switches			X		
Gas services & heater			X		
Toilet					
Plaster ceiling & wall finishes				X	
Cedar double hung window & window joinery	X				
Cedar panelled door & joinery	X				
Door lock mechanism				X	
Floor			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Kitchenette					

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
Ceiling & wall finishes				X	
Floor & floor tiling				X	
Kitchen bench & cupboards				X	
Cedar panelled door	X				
Door lock mechanism				X	
Cedar window & window joinery	X				
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Archive					
Plaster ceiling, wall finishes, cornice & skirting	X				
Marble fireplace surround & mantelpiece	X				
Cedar double hung window & window joinery	X				
Cedar panelled door & joinery	X				
Door lock mechanisms			X		
Floor	X				
Carpet			X		
Compactus			X		
Art deco era cupboard		X			
Electrical services, lights & switches			X		
Gas services & heater			X		
Bathroom					
Ceiling & wall finishes & tiling		X			
Floor & floor tiling			X		
Cedar panelled door, cedar window & joinery	X				
Door lock mechanism			X		
Plumbing services & fixtures			X		
Electrical services & fittings			X		
Kitchen					
Ceiling & wall finishes & skirting			X		
1960s cupboards			X		
Cedar double hung windows & window joinery	X				
Cedar panelled doors & joinery	X				
Door lock mechanisms			X		
Floor	X				
Floor coverings			X		
Plinth for sink & kitchen cupboards			X		
Kitchen benches & cupboards			X		
Plumbing services & fixtures			X		
Electrical services, lights, switches & stove			X		
Gas services & heater				X	
Upstairs rear verandah					
Roof lining				X	
English bond brickwork		X			
Arched door openings		X			
Stretcher bond brickwork – western wall			X		
Window frames & glazing – western wall				X	

Logan Brae interior	Excep- tional	High	Moderate	Little	Intrusive
1960s cupboards				X	
Arts & crafts style doors			X		
Floor			X		
Electrical services, lights & switches				X	
Cells and infirmary – northern wing					
Halls & steps			X		
Cells			X		
Internal doors, cupboards & other fixtures			X		
Central heating system			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	
Cells and bursary – southern wing					
Halls & steps			X		
Walkway to first floor rear verandah			X		
Cook’s staircase space			X		
Cells and bursary			X		
Bathroom & toilet			X		
Internal doors, cupboards & other fixtures			X		
Central heating system			X		
Plumbing services & fixtures				X	
Electrical services & fittings				X	

Building element	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
St Joseph’s Mount Novitiate wing exterior					
Hipped corrugated iron clad roof & roof structure		X			
Guttering & downpipes			X		
Eastern landing			X		
Western landing, steps & awning			X		
Stretcher Bond face brickwork	X				
Quoins & string courses	X				
Fenestration & window surrounds	X				
Aluminium-framed doors			X		
Timber-framed doors			X		
Aluminium-framed windows			X		
St Joseph’s Mount Novitiate wing: Ground floor interior					
Hall		X			
Terrazzo floor tiling		X			
Dining room		X			
Vinyl-tiled floor			X		
Scullery			X		
Scullery benches & cabinets			X		
Stair well & stairs		X			
Balustrades			X		
Bathroom			X		

Building element	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
Reading room		X			
Reading room display cabinets			X		
Library		X			
Internal doors, cupboards & other fixtures			X		
Central heating system				X	
Plumbing services & fixtures				X	
Electrical services & fittings				X	
St Joseph’s Mount Novitiate wing: Basement interior					
Stair well & stairs		X			
Balustrades			X		
Kitchenette			X		
Toilet			X		
Meeting room			X		
Office (store room)			X		
Internal doors, cupboards & other fixtures			X		
Central heating system				X	
Plumbing services & fixtures				X	
Electrical services & fittings				X	
St Joseph’s Mount Novitiate wing: First floor interior					
Entrance hall		X			
Stair well & stairs		X			
Balustrades			X		
Bathrooms			X		
Cells			X		
Internal doors, cupboards & other fixtures			X		
Central heating system				X	
Plumbing services & fixtures				X	
Electrical services & fittings				X	

Building element St Joseph’s Chapel	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
St Joseph’s Mount Chapel exterior					
Asbestos cement shingle roof over chapel		X			
Terracotta ridge capping	X				
Asbestos cement shingle and terracotta roof over apse and vestry		X			
Corrugated iron clad roof over portico			X		
Guttering & downpipes		X			
Stone crenellated battlements & gutters	X				
English Bond face brickwork	X				
Foundation stone	X				
Rendered gable coping & bolections	X				
Finials & lightning rods	X				
Terracotta vents			X		
Stone string courses	X				

Building element St Joseph’s Chapel	Grading of Significance				
	Excep- tional	High	Moderate	Little	Intrusive
Cement rendered footings	X				
Crazy paved retaining wall			X		
External concrete paving			X		
Statue & plinth – northern side		X			
Stone window sills & reveals	X				
Window hood mouldings	X				
Window frames, mullions & glazing – southern side				X	
Stained glass window infills – apse		X			
Stained glass window infills – northern side		X			
Lance window – eastern gable		X			
Lance window infill – eastern gable				X	
Lance window – western gable		X			
Lance window infill – western gable				X	
Windows – western end	X				
Stained glass window infills – western end		X			
Stucco finish – western end	X				
Portico colonnade	X				
Portico trusses & lining boards	X				
Portico stucco detailing	X				
Portico cement paving	X				
Calvary in portico		X			
Memorial panels in portico		X			
Chapel doors – lancet arched & ledged	X				
Vestry door – ledged & braced	X				
St Joseph’s Chapel interior					
Chapel ceiling lining & king post trusses	X				
Apse ceiling lining, bracing & king post	X				
Vestry ceiling		X			
Plaster wall linings	X				
Waratah wall vents	X				
Wall niches	X				
Floors	X				
Carpet floor coverings				X	
Memorial stained glass windows & plaques		X			
Door joinery & skirting boards	X				
Light fittings – chapel & apse				X	
Light fittings – vestry			X		
Electrical services				X	
Plumbing & hand basin - vestry				X	
Chapel pews			X		
Statuary		X			
Liturgical items		X			

Building element	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
McAuley Cottage					
Tile roof & roof structure		X			
Gable end barge boards		X			
Guttering & downpipes			X		
Stretcher bond face brickwork		X			
Raft floor			X		
Front steps		X			
Front door			X		
Windows & concrete window framing		X			
Plumbing & gas services & fixtures				X	
Electrical services & fittings				X	
Property element	Grading of Significance				
Landscape	Exceptional	High	Moderate	Little	Intrusive
Driveway & site access					
Eastern driveway (carriageway)		X			
Driveway gutter				X	
Gate pillars			X		
Wrought iron gates			X		
Western driveway				X	
Concrete paths & steps			X		
Gardens					
Parterre	X				
Terraced garden	X				
Ornamental garden		X			
Chapel garden		X			
Kitchen garden			X		
Landscape structures					
Potting shed				X	
Greenhouses				X	
Storage shed				X	
Outdoor shelter				X	
Wood fired oven				X	
Vegetable gardens				X	
Labyrinth				X	
Garage				X	
Gardener’s Shed			X		
Nissen Hut				X	
Religious & commemorative items					
Plinth from Bathurst Gaol			X		
Post with peace messages				X	
Bird bath			X		
Statue of St Joseph	X				
Calvary		X			
Statue of Christ		X			
Stone Grotto		X			
Tree plantings					
Driveway plantings		X			
Northern boundary			X		

Building element	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
Western boundary			X		
Southern boundary		X			
Specimen trees in groups			X		

Building element	Grading of Significance				
	Exceptional	High	Moderate	Little	Intrusive
Gatekeeper’s Cottage exterior					
Hipped roof & roof structure		X			
Kitchen & laundry skillion roof			X		
Chimney	X				
Television aerial					X
Guttering & downpipes			X		
Fascias & soffits		X			
Bullnose verandah roof		X			
Verandah structure		X			
Verandah timber fretwork	X				
Fibro verandah infill					X
Concrete verandah floor				X	
Colonial bond brick walls	X				
Cast iron wall vents	X				
Terracotta wall vents				X	
Double-hung windows		X			
Front door		X			
Front screen door					X
Rear verandah enclosure				X	
Back door				X	
Bathroom/laundry door				X	
Toilet extension				X	
Electrical services & fuse box				X	
Oil heater tank & flue					X
Satellite dish & wiring					X
Rear courtyard paving				X	
Concrete paving along western wall				X	
Gatekeeper’s Cottage interior					
Plaster ceilings & ceiling roses		X			
Plaster wall linings			X		
Picture rails & skirtings		X			
Internal four panel doors		X			
Floor coverings			X		
Floors & floor structure		X			
Built-in wardrobes & cupboards				X	
Kitchen fittings				X	
Bathroom/laundry fittings				X	
Bathroom tiling				X	
Toilet fittings				X	
Plumbing services & fittings				X	
Electrical services & fittings				X	

View Analysis - Management of Curtilage

Views to and from the former St Joseph’s Mount Convent and Novitiate were considered in the St Joseph’s Mount CMP 2021. This matter is one aspect of Curtilage. In defining curtilage the following issues must be addressed:

1. Historical allotments
2. Design, style and taste
3. Function, uses and interrelationships
4. Visual links
5. Scale
6. Significant features
7. Archaeological features

The curtilage of the former Convent and Novitiate is clearly defined in Section 4.5 of the St Joseph’s Mount CMP 2021. This noted that the principal visual links that must be retained are:

- Views of the eastern façade of St Joseph’s Mount from the driveway leading to the front of the buildings.
- Views from the buildings to the drive and gardens and views over the garden and surrounding properties to the countryside around Bathurst.
- Views along the front of the complex of buildings.

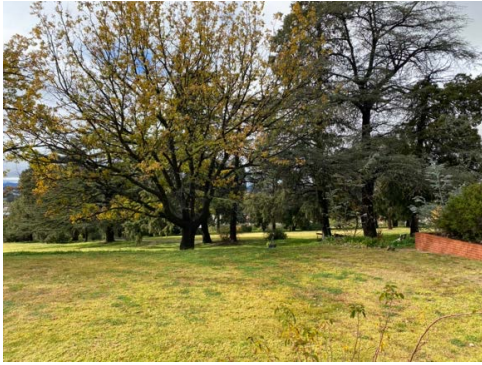
Existing view lines are illustrated below.



Significant views to the eastern side of St Joseph’s Mount within Lot 223 will be unaffected by the proposed development. (Ray Christison May 2020)



View northeast from the Novitiate Wing. This view will be uninterrupted by the proposed development. (Ray Christison May 2020)



Views to the east & southeast are protected by existing plantings that will obscure new development along the eastern & southern sides of the property. These must be managed to ensure their ongoing integrity. These photographs also illustrate the rapid fall away from the elevation of the Convent & Novitiate buildings.

(Ray Christison May 2020)



View southwest towards the 1962 Novitiate Wing and Logan Brae. The new pavilion will be erected in the garden area on the right. This structure should have minimal impact on views to and from either of the existing buildings. (Ray Christison May 2020)

The proposed development is considered to respect principal visual links as follows:

1. Views to the eastern façade of St Josephs Mount from the Eastern Driveway (Carriageway) have been conserved by;
 - a. Establishing the south-eastern boundary of Lot 223 along the outer edge of the driveway,
 - b. Conserving the row of mature trees along this boundary and creating a 20metre buffer zone within Lot 224.
 - c. Ensuring no new development is proposed on the eastern side of Lot 223.
2. Views from the buildings to the drive and gardens and views over the garden and surrounding properties to the countryside around Bathurst have been conserved by;
 - a. Restriction of development on the eastern and northern sides of Lot 223.
 - b. The substantial fall from the buildings of St Joseph’s Mount will ensure that views over surrounding properties and countryside beyond will be only minimally affected by new construction on Lot 225.
 - c. The proposed new pavilion to be located between the northern end of the Novitiate Wing and Busby Street should have the following design features;
 - i. Light structure that does not intrude on the presence of the Novitiate Wing in the landscape.
 - ii. Using the fall in ground levels to set the pavilion low in the landscape, within new gardens.
3. Views along the front of the complex of buildings have been conserved by:
 - a. Restriction of development on the eastern and northern sides of Lot 223.

The following should also be noted:

1. The lower parts of the property (now Lot 225) are considered not to have little significance and new development on this lot is permitted.
2. Design, style and taste should be retained through the retention of the form of existing buildings and the conservation of existing colour schemes.
3. Interrelationships between existing buildings should be retained. The concept masterplan has respected this.
4. The development proposal proposes conservation of significant features of the property.

Management of Sculptures

The landscaping of the St Joseph’s Mount complex includes a number of religious sculptures associated with the former use of the place. Most have been assessed as having high or exceptional significance. A number maintain a prominent place in the landscaping of Lot 223.



A statue of St Joseph maintains a prominent place in the landscape. This statue is considered to have exceptional significance. (Ray Christison May 2020)



A statue of Christ on the northern side of the driveway is considered to have a high grading of significance. (Ray Christison May 2020)



A calvary located on the southern side of the driveway is considered to have a high grading of significance. (Ray Christison May 2020)

A stone grotto is located on the southern side of the driveway. It has a high grading of significance. (Ray Christison May 2020)



The following recommendations are made into the statuary and monuments on site:

1. Plinth from Bathurst gaol – May be retained, removed or relocated to a less prominent location as required.
2. Post with peace messages – May be retained, removed or relocated to a less prominent location as required.
3. Bird Bath – May be retained, removed or relocated to a less prominent location as required.
4. Statue of St Joseph – Must be conserved in situ.
5. Calvary – Must be conserved. Could be relocated to a less prominent position.
6. Statue of Christ – Must be conserved. Could be relocated to a less prominent position.
7. Stone grotto – Must be conserved in situ.

The religious statuary should be included in site interpretation and could become a principal feature of interpretation planning, illustrating the contemplative life of the Sisters of Mercy and Novitiates.

Archaeological Assessment

Archaeological provisions of the Heritage Act 1977

Section 139 of the Heritage Act 1977 requires the following:

Excavation permit required in certain circumstances

- (1) A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.
- (2) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.
- (3) This section does not apply to a relic that is subject to an interim heritage order made by the Minister or a listing on the State Heritage Register.
- (4) The Heritage Council may by order published in the Gazette create exceptions to this section, either unconditionally or subject to conditions, in respect of any of the following:
 - (a) any relic of a specified kind or description,
 - (b) any disturbance or excavation of a specified kind or description,
 - (c) any disturbance or excavation of land in a specified location or having specified features or attributes,
 - (d) any disturbance or excavation of land in respect of which an archaeological assessment approved by the Heritage Council indicates that there is little likelihood of there being any relics in the land.
- (5) This section does not prevent a person from disturbing or excavating land in which a historic shipwreck is situated in accordance with a historic shipwrecks permit in force in respect of that shipwreck.

The Heritage Act 1977 defines a relic as follows:

"relic" means any deposit, artefact, object or material evidence that:

- (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
- (b) is of State or local heritage significance.

Managing archaeological potential

Having considered the history of the property and known built structures the following areas of St Joseph’s Mount are considered to be of high to moderate archaeological potential:

1. Logan Brae, particularly sub-floor areas and gardens immediately surrounding the house,
2. Sub-floor areas of St Joseph’s Mount Chapel.

The proposed works may include disturbance of these areas. A suitable management plan is required to comply with the provisions of the Heritage Act 1977 in relation to these works.

Mitigation & research strategies

It is recommended that excavations to accommodate the proposed new structures, ramps and fences be permitted under any approval provided for works on the site in accordance with [section 140](#) of the NSW Heritage Act 1977. These excavations will be limited to works required to manage landscaping, and disturbance of the sub-floor areas. Such works may be limited to minimise disturbance of the ground profile in these areas.

Archaeological Research Design & Methodology

Investigation of this site should seek to identify and analyse evidence of the following:

- Construction and occupation of Logan Brae as a family residence.
- Development and operation of a government farm.
- Development of St Joseph’s Mount Convent and Novitiate.

General management and supervision should be undertaken as follows:

1. A suitably qualified archaeologist should be nominated as the Excavation Director for the proposed works.
2. Excavation and building contractors to be briefed regarding the archaeological potential of the site prior to commencement of works.
3. The Excavation Director must be present on site to supervise the excavation of the pathway, all footings and service trenches.

Archaeological Zoning Plan

The following aerial has been used to illustrate areas of High to Moderate Archaeological Potential, which are lined out in red.



Aerial view of the main structures and features of St Joseph's Mount. The area outlined in red is considered to be of high to moderate archaeological potential. (Source - Six Maps)

Excavation

The following protocols should be observed during excavation:

- In the area of high archaeological potential a test excavation is to be undertaken to determine the likelihood of relics being present. This should be done prior to commencement of works on the site. Turf and topsoil are to be removed by excavator in an area measuring 1m x 1m and a 20mm grid set over the excavation. This area is then to be excavated by hand in spits of 50mm to a depth of 300mm. If relics are located they should be recorded within the grid and decisions made about the route of services.
- All excavations in areas of moderate archaeological potential are to be monitored by the nominated Excavation Director.
- Excavation will be undertaken by backhoe stripping. Each spit to be no more than 20 centimetres.
- If Relics (as defined by the Heritage Act 1977) are identified, backhoe excavation will cease and excavation will continue by hand. Where necessary a formal grid will be laid out and an excavation trench system established to ensure systematic excavation of larger areas.
- Unanticipated discovery of substantial or potentially significant relics. The unanticipated discovery of substantial or potentially significant relics should be reported immediately to the designated archaeologist. Work should cease in the affected area until it can be inspected and recorded by the archaeologist. Note: Section 146 of the Heritage Act 1977 states that the accidental discovery of relics should be reported immediately to the NSW Heritage Office (Heritage Act 1977, section 146).
- Identification of Aboriginal artefacts. The identification of any Aboriginal artefacts, or deposits likely to contain Aboriginal artefacts, during the archaeological investigation or otherwise, will be reported to the Director General of the NSW Office of Environment & Heritage (National Parks & Wildlife Service) and the relevant permits should be obtained under section 91 of the National Parks and Wildlife Service Act 1974.

Site Recording

The following methodology will be used for site recording:

- Excavations are to be photographed progressively with scale and arrows showing the alignment of the places or features being photographed.
- Site and area plans will be prepared as appropriate. The nature of these plans will depend on the scale and extent of any relics discovered.
- Where appropriate a stratigraphic matrix showing context relationships will be prepared.
- An catalogue of relics will be maintained throughout the excavations.
- A site datum will be established for maps and plans, including levels reduced to Australian Height Datum for identified features/contexts, with top and base of excavation.
- Relics records will include trench, feature, context and phase information as necessary to permit comprehensive identification of activity areas.

Research Framework

Themes relevant to St Joseph’s Mount Convent and Novitiate have been identified as:

1. Town development in New South Wales in the 19th century.
2. The work of the Sisters of Mercy in Western New South Wales.

Research questions should include:

- How does Logan Brae represent the life of wealthy citizens in Bathurst during the late 19th century?
- What evidence exists of the role of the Sisters of Mercy as educators within the Catholic Diocese of Bathurst?
- Do relics assist in illustrating the life of Sisters and Novitiates of the Sister of Mercy?

Post Excavation Reporting

A report on excavations will be prepared within three months of the completion of all works on site and submitted to Heritage NSW. This report will include:

- Description of the site and excavations undertaken
- Outline history of the place
- Protocols for management of archaeological potential
- Description of excavations undertaken, including detailed descriptions of features and relics identified and recorded.
- A detailed artefact catalogue and analysis.
- Discussion of research questions relevant to St Joseph’s Mount, Bathurst

Conservation Policies

All work should be undertaken in accordance with the principles of the Burra Charter, which guides all cultural heritage management practices in Australia. It establishes the following principles for the management of heritage places, including heritage buildings:

Burra Charter Hierarchy of interventions

The Burra Charter recommends the following hierarchy of interventions in the management of heritage places:

- *Conservation* is the preferred option. *Conservation* means all the processes of looking after a *place* so as to retain its *cultural significance*. It generally involves taking efforts to retain the existing fabric of the place or building.
- *Maintenance* means the continuous protective care of the *fabric* and *setting* of a *place*, and is to be distinguished from repair. Repair involves *restoration* or *reconstruction*.
- *Preservation* means maintaining the *fabric* of a *place* in its existing state and retarding deterioration.
- *Restoration* means returning the existing *fabric* of a *place* to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.
- *Reconstruction* means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material into the *fabric*.
- *Adaptation* means modifying a *place* to suit the existing use or proposed use.

The fundamental principle is to do as much as necessary, as little as possible.

The St Joseph’s Mount CMP 2021 includes detailed Conservation Policies and must be referred to when planning or making decisions regarding the future of the place.

Recommendations linked to Gradings of Significance – CMP Policy 7.2.1

Significant fabric of the buildings and landscape should be conserved in accordance with their grading of significance. The following policies apply to each grading of significance:

- Fabric with exceptional or high gradings of significance - The fabric of the buildings and landscape identified as having exceptional or high gradings of significance must be conserved and should not be damaged or interfered with.
- Fabric with moderate grading of significance - The fabric of the buildings and landscape identified as having a moderate grading of significance should be conserved but may be replaced or modified.
- Fabric with little or intrusive gradings of significance - The fabric of the buildings and landscape identified as having little or intrusive gradings of significance may be removed or replaced.
- Any new work must not damage, or interfere with, existing fabric considered to have exceptional or high gradings of significance.

Proposed works and guidelines

Proposed works

The following works have been proposed:

Lot 223 – Gatekeepers Cottage. Retain and refurbish cottage.

Lot 224 – St Joseph’s Mount

1. Adaptive re-use of the complex as a boutique hotel and hospitality venue.
 - a. Conversion of Logan Brae and Novitiate Wing into accommodation with restaurants, bar etc.
 - b. Conservation and restoration of the Chapel.
2. Construction of a new function centre.
 - a. Clearing of existing non-significant structures and community vegetable gardens near the north-western corner of the site.
 - b. Erection of a pavilion to serve as function centre.
3. Adjustment of existing access roads to cater for new arrangements and site uses.
4. Construction of additional short stay accommodation cabins.
5. Conversion of MacAuley Cottage as short stay accommodation.

Lot 225 – Development of new residential buildings.

1. Construction of seven (7) new residential buildings capable of accommodating a total of 218 apartments.
2. Maximum height of new buildings to be 18 metres.
3. Maintain visual separation from Lot 224 by conserving existing treelines.

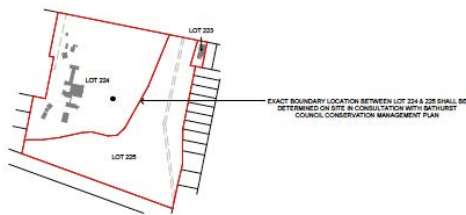


Figure 2: Concept plan of proposed works. (Marchese Partners/Life^{3A} 2024)

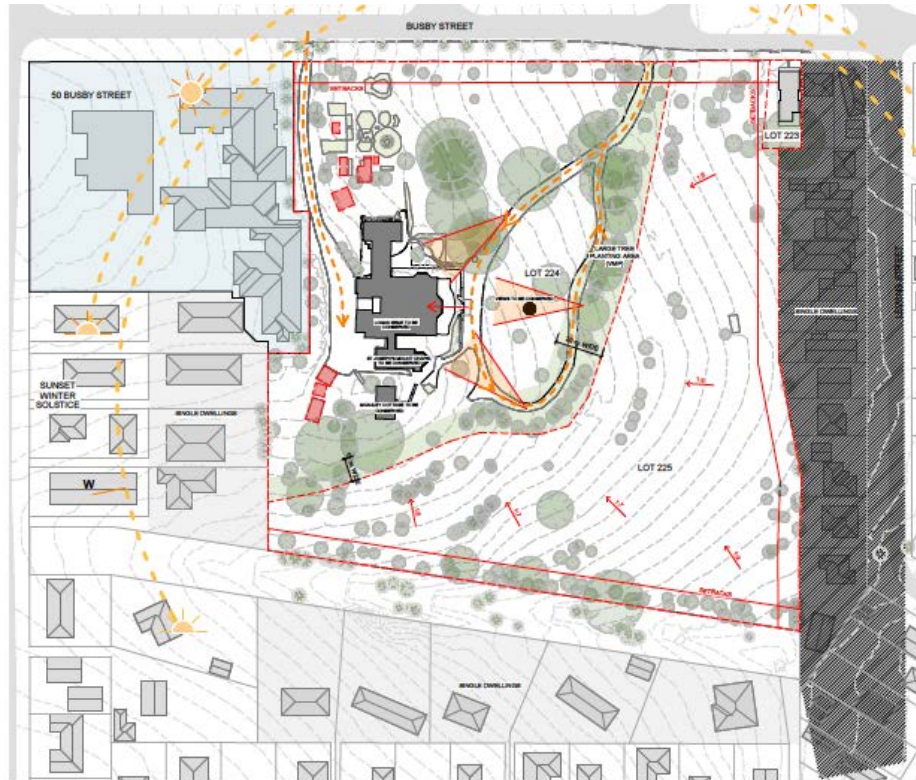


Figure 3: Site plan showing proposed works. Items highlighted in red are to be demolished location of structures to be demolished. (Marchese Partners/Life^{3A} 2024)

Compliance of works with CMP Policies

All proposed works must comply with the policies of the existing CMPs for the property. The following table attempts to link works proposals with individual policies and provide notes regarding compliance.

Proposed works	Relevant CMP Policies	Notes regarding compliance
Refurbish Gatekeepers Cottage	CMP 2007 Policy 8.2.1 Fabric CMP 2021 Policies 7.2.1 Fabric 7.2.4 Setting	This building has undergone substantial interior alteration since the 1940s. Refer to Gratings of Significance & associated recommendations.
Conversion of Logan Brae & Novitiate Wing	CMP 2021 Policies 7.2.1 Fabric 7.2.2 Use and Development 7.2.3 Access and Interpretation 7.2.4 Setting 7.2.6 Management of the precinct	Internal modifications should be permitted in the following circumstances: <ul style="list-style-type: none"> • The improve use of internal spaces. • They assist in compliance with the Disability Discrimination Act. • They support compliance with fire safety requirements.
Conservation & restoration of the Chapel	CMP 2021 Policies 7.2.1 Fabric 7.2.2 Use and Development 7.2.3 Access and Interpretation	Internal modifications should be permitted in the following circumstances:

Proposed works	Relevant CMP Policies	Notes regarding compliance
	7.2.4 Setting 7.2.6 Management of the precinct	<ul style="list-style-type: none"> The improve use of internal spaces. They assist in compliance with the Disability Discrimination Act. <p>They support compliance with fire safety requirements.</p>
Demolition of non-significant structures	CMP 2021 Policies 7.2.1 Fabric 7.2.4 Setting 7.2.6 Management of the precinct	Almost all structures identified for demolition have been identified as having low Gradings of Significance. The Gardener’s Shed has been identified as having a moderate Grading of Significance. This should be archivally recorded before demolition.
Erection of new pavilion	CMP 2021 Policies 7.2.4 Setting 7.2.6 Management of the precinct	The new pavilion must be designed to minimise its visual impact on views to and from the former Convent & Novitiate.
Adjustment of existing roadways	CMP 2021 Policies 7.2.1 Fabric 7.2.4 Setting 7.2.6 Management of the precinct	It is considered that adjustment of existing roadways to improve access is consistent with CMP requirements. The general form of the Eastern Driveway (Carriageway) should be conserved. The Western Driveway is considered to have little significance and may be modified as required.
Construction of additional short stay cabins	CMP 2021 Policies 7.2.4 Setting 7.2.6 Management of the precinct	The placement of new cabins has been chosen to minimise impact on critical site lines within the precinct.
Adaptation of MacAuley Cottage for short stay accommodation	CMP 2021 Policies 7.2.1 Fabric 7.2.6 Management of the precinct	The exterior presentation & fabric of the Cottage should be conserved.
Development of new residential units	CMP 2021 Policies 7.2.4 Setting 7.2.6 Management of the precinct	The proposed location of the proposed residential units is consistent with the analysis of Curtilage of the former Convent & Novitiate included in the CMP. Retention of the tree line along the eastern and southern boundaries of Lot 223 will assist in managing site lines.
Maintain existing treelines	CMP 2021 Policies 7.2.1 Fabric 7.2.4 Setting 7.2.6 Management of the precinct 7.3 Policies for a Sustainable Landscape	The recommendations of CMP Policy 7.3 must be considered in future management of the place.
Remove specific shrubs, trees & garden structures	CMP 2021 Policies 7.2.1 Fabric 7.2.4 Setting	The recommendations of CMP Policy 7.3 must be considered in future management of the place.

Proposed works	Relevant CMP Policies	Notes regarding compliance
	7.2.6 Management of the precinct 7.3 Policies for a Sustainable Landscape	Unhealthy plants should be removed.

Heritage Impact Assessment

Matters for consideration

The following issues have been considered in relation to the proposed works and relevant assessments provided.

Partial demolition of a heritage item

Matter considered	Assessment
If demolition is proposed, why is it necessary?	Demolition is necessary to assist in the adaptive re-use process. Buildings identified for demolition are located in spaces identified for developments to support adaptive re-use of the property. The buildings located north of the Novitiate wing were all constructed after 2007 and currently compromise the northern curtilage of the St Joseph’s Mount buildings. Almost all buildings identified for demolition have all been assessed as having little significance.
Have options for retention and adaptive re-use been explored? If yes, set out why these options have been discarded.	The proposed demolitions will support a wide process of adaptive re-use of the principal St Joseph’s Mount buildings. These will be converted into a boutique hotel and conference/events centre with co-located short-stay accommodation. The areas to be cleared are planned to host an event pavilion and short-stay accommodation. There is also little aesthetic argument to justify retention of the buildings proposed for demolition. Bathurst currently has a need for medium density residential development. The site is considered very suitable for such development.
Has technical advice for demolition been obtained?	Technical advice for demolition has not yet been obtained.
Identify and include about how significant elements, if removed by the proposal, will be salvaged and re-used.	It is not expected that significant elements will be removed during the proposed demolitions.

Alterations & additions	Responses
Do the proposed works comply with Article 22 of the Burra Charter, specifically Practice note article 22 – new work?	The proposed design of new works on this property has been considered and it is recommended that it meets the requirements of Article 22 of the Burra Charter in the following ways: <ul style="list-style-type: none"> The assessed significance of the St Joseph’s Mount Convent & Novitiate. The development proposal has been crafted to conserve the integrity of the former Convent & Novitiate and support the use of the place in a new role in the 21st century. Proposed new construction has been carefully designed to ensure that it does not compromise the integrity or curtilage of the original convent buildings and landscape. The setting of St Joseph’s Mount has been maintained by ensuring its continuing dominant presentation in the landscape and protecting views to and from the significant buildings. New buildings will be designed to make them readily identifiable as new work.
Are the proposed alterations sympathetic to the heritage item? In what way (eg. form, proportion, scale, design, materials)?	The form, scale, design and colours of the proposed new buildings and alterations will represent a sincere exercise in harmonising the needs of the owners with the significance of the property. The

	placement of new buildings will conserve the curtilage of the historic site.
Will the proposed works impact on significant fabric, design or layout, significant garden setting, landscape and trees, or on the heritage item’s setting or any significant views?	Significant fabric, design, layout and significant aspects of the setting will not be negatively impacted by the proposed works. Significant views will also be conserved.
How have the impact of the proposed alterations/additions on the heritage item been minimised?	The form, scale and placement of the proposed new buildings have been considered to ensure absolutely minimal direct impact on the St Joseph’s Mount complex and its curtilage. This seems a very polite proposal that respects the primacy of St Joseph’s Mount and its significance.
Are the additions sited on any known or potentially significant archaeological relics? If yes, has specialist advice from archaeologists been sought? How will the impact be avoided or mitigated?	An archaeological management plan has been included in this report.
Do the proposed works include removal of unsympathetic alterations and additions? How does this benefit of impact the heritage item and its significance?	The core focus of this proposal is to remove unsympathetic early 21st century accretions and create a more functionally efficient and visually pleasing place. It is considered that the proposed design affirms the cultural heritage significance of the place.

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Social Impact Assessment Proposed Rezoning and Future Residential Development

34 Busby Street, Bathurst

Prepared for:
ANAT Investments Pty Ltd

MAY 2024

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Sarah George Consulting acknowledges the traditional custodians of the lands on which we work. We pay our respects to Elders past, present and emerging.

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APPENDICES:

APPENDIX A – DEMOGRAPHIC PROFILE TABLE

APPENDIX B - QUALIFICATIONS AND EXPERIENCE OF AUTHOR

1.0 INTRODUCTION

Sarah George Consulting has been engaged by ANAT Investments Pty Ltd to prepare a Social Impact Assessment to accompany a Planning Proposal for a proposed mixed-use development including a residential apartment development in the order of 218 apartments at 34 Busby Street, South Bathurst.

Bathurst Regional Council provided preliminary advice as part of the preparation of a Planning Proposal that included a request for the preparation of a Social Impact Assessment that includes:

- a. Consideration of how the proposal supports and will achieve housing choice, diversity and affordability.
- b. Assessment of the potential of the proposal on services and facilities in the immediate neighbourhood and the need for new/upgraded services and facilities (e.g. open space, active transport connections etc) to cater for the new population and the mechanisms to achieve the required upgrades (e.g. planning agreement).

Council further noted that consideration should also be made of cumulative impacts associated with a similar proposal to allow medium density housing at the adjoining site at 50 Busby Street, Bathurst.

Bathurst Regional Council has no specific *Guidelines* or *Policies* relating to Social Impact Assessments (SIAs). As there are no specific *Policies* or *Guidelines* to stipulate what a development is to be assessed against, in addition to the specific points raised by Council, the proposed development will be assessed against the following criteria:

- Population change
- Housing Choice
- Health and safety
- Social Cohesion
- Community structure, character, values & beliefs
- A sense of place and community

- Community facilities and links
- Interaction between the development and the community
- Social equity, socio-economic groups & the disadvantaged
- Social displacement
- Social change management
- Amenity
- Public interest

A site and area inspection were undertaken as part of the preparation of this report.

2.0 SUBJECT SITE AND PROPOSAL

2.1 Subject site

The subject site is known as Lot 22 DP 1033481 and has the street address of 34 Busby Street, South Bathurst. The subject application relates to proposed Lot 225.

The overall site is irregular in shape and has an area of 46,700m².

Figure 1 – Subject site



The site is currently occupied, in part, by a 150-year-old building located on St Joseph's Mount and previously used as a convent and chapel. Also included on the site are a self-contained cottage and a 3-bedroom residence. The site has a large area of undeveloped, landscaped space.

Development surrounding the site is primarily low density residential, with some commercial uses including the previous use of *St Catherine's Aged Care* at 50 Busby Street, which has recently ceased operation. It is noted that the current owners of 50 Busby Street have lodged a Planning Proposal for medium density housing on that site with an estimated 97 dwellings.

The nearest public transport to the site is in the form of buses, with the closest bus stop located approximately 190m to the east of the subject site (Lewins St at Logan St), providing access to Route 526 with services to and from West Bathurst. Route 528, accessible from bus stops on Prospect Street (Prospect Street after Busby Street), approximately 290m walking distance, provides access to Route 528 with services to and from Bathurst.

NSW TrainLink provides regional train services to and from Bathurst daily. Bathurst Train Station is located approximately 1.4km from the subject site.

The site is located approximately 1.9km to the south-east of the Bathurst Town Centre, and approximately 1.5km from Charles Sturt University campus.

It is noted that the street frontage on Busby Street is without a paved footpath.

2.2 Proposal

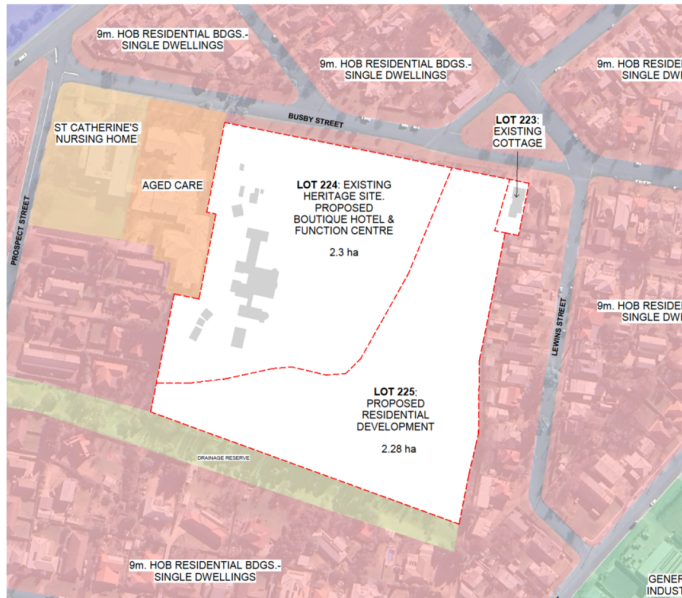
The subject proposal seeks a rezoning of the site from *R1 – Low Density Residential* to *R3 – Medium Density Residential* and the construction of approximately 218 apartments, subject to further design at the development application stage.

The proposal seeks to retain the existing, heritage listed building on the site and relates to land to the immediate south-east of the existing building. The existing heritage-listed building will be subject to a separate development application for use as a function centre and associated tourist accommodation.

The indicative subdivision plan is illustrated on Figure 2 below and comprises:

- Lot 223 - Existing cottage
- Lot 224 – Existing heritage site and proposed boutique hotel and function centre (2.3ha)
- Lot 225 – Proposed residential development

Figure 2 – Subdivision plan



2.3 Relevant Studies

Vision Bathurst 2040 – Bathurst Region Local Strategic Planning Statement

The *Statement* outlines the future planning approach to achieve forecast, desired and sustainable growth for the Bathurst Region to ensure:

- a sustainable water supply to support forecast population growth
- ensure the city is the premier motor racing venue for Australia
- ensure housing diversity that meets the needs of the changing demographic of the region with a compact urban form
- have a moderate living density, maintaining the rural character of the area
- protect and enhance the regions Indigenous and non-indigenous heritage including built heritage, heritage parks and gardens and natural landscapes and vistas
- align development, growth and infrastructure to meet the changing needs of the region
- value the natural environment, plan for a changing climate and build the community's resistance to natural hazards and extreme weather events

- maintain cultural and sporting heritage and continue to develop and enhance cultural, sporting and recreation facilities at a regional level
- be a smart community which embraces education, knowledge and technological change.

The LSPS notes that the region is growing, with an anticipated 20.8% growth in population between 2019-2036.

The LSPS was informed by feedback from community and stakeholders which was summarised in the Vision Bathurst 2020 – Bathurst Local Strategic Planning Statement Public Exhibition Feedback Report (2020)

The LSPS includes 19 planning priorities:

1. Plan for water security
2. Align development, growth and infrastructure
3. Connect the Bathurst Region
4. Maintain a thriving local business and retail economy
5. Ensure a suitable supply of employment and urban services land
6. Protect Mount Panorama (Wahluu) as a motor sport and event precinct
7. Leverage new opportunities
8. Become a smart city
9. Protect indigenous cultural heritage
10. Protect European and non-Indigenous heritage
11. Maximise the regions tourism opportunities
12. Enhance environmentally sensitive land and biodiversity
13. Protect primary production land
14. Create a sustainable Bathurst Region
15. Improve resilience to natural hazards and extreme weather events
16. Provide new homes
17. Create vibrant and sustainable rural villages and settlements
18. Deliver public space and recreation
19. Deliver social, community and cultural infrastructure.

Bathurst 2036 Housing Strategy

The *Housing Strategy* has been developed to assist Council in ensuring a range of housing is provided to meet the existing and future housing needs of the City of Bathurst. The *Strategy* considers demographic trends, housing affordability, housing demand and supply, land supply, housing density issues and the community's vision for housing.

The *Strategy* notes that housing sizes continue to decline, while overall population growth is consistent. It notes there is a generally good supply of housing, but that available housing is 3 or 4 bedroom, which may not meet the needs of the emerging trend towards lone person and two person households. In addition, it is noted that larger 3- and 4-bedroom dwellings are likely less affordable. Smaller dwellings would contribute to housing diversity, mix and affordability in the area.

The *Strategy* acknowledges the need for additional housing to accommodate projected population growth and that that housing needs to be of a size, type and price to accommodate a range of residents.

The *Strategy* takes distances of 400m and 800m from shops and services and uses this to identify accessible locations that are preferred locations for more intensive and diverse housing in both existing neighbourhoods and in newer suburban areas.

Bathurst Active Transport Survey 2021

This survey, undertaken by Taverner Research included interviews with residents and other stakeholders to inform Council's updated Transport Strategy.

Feedback from residents and stakeholders noted that while the city featured wide streets, and cycleways, many felt there were insufficient bike or shared paths, poor signage for bicycle riders, and a lack of connectivity between bike paths.

The Survey noted there was an opportunity to promote cycling and walking as key forms of transport within the city.

The strongest ideas to emerge from the survey included:

- extending the bike or shared paths
- a 'hub and spoke' system of pathways linking suburbs to the CBD
- dedicated bike lanes in, out and around the CBD
- aligning planning standards and developer contributions to ensure footpaths or shared paths in all new residential developments
- active transport considered within subdivision standards, local connections and delivery of projects
- improved signage for bicycle riders, pedestrians and motorists
- signage alerting motorists to the rights of bicycle riders on roads and roundabouts.

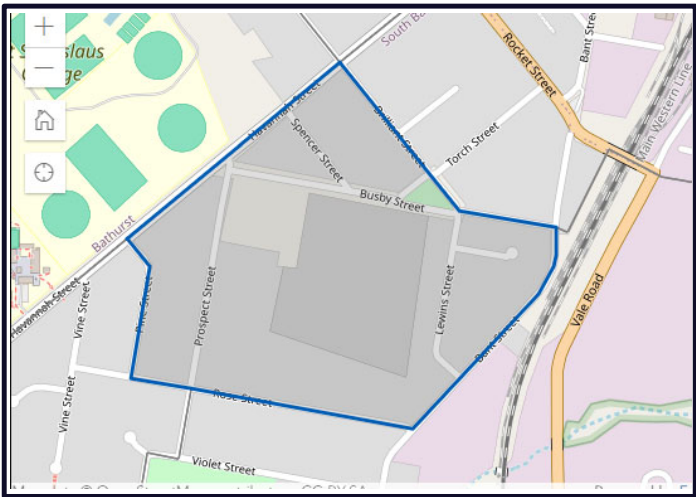
3.0 SOCIAL PROFILE

3.1 Existing socio-economic and demographic characteristics

A *Demographic Profile Table* including data describing the socio-economic and demographic characteristics of residents of the immediate area in which the subject site is located - Statistical Area Level 1 – 1105832/1031161209 (2016/2021), the suburb of South Bathurst and the Bathurst LGA compared to the Greater Sydney and New South Wales (NSW) (as at the 2016 & 2021 Census) is included at Appendix A to this report.










The SAL1 in which the subject site is located is illustrated on Figure 3 below.

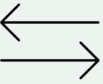


Figure 3 – SAL1 – 1105832/1031161209



The socio-economic and demographic profile reveals:

	<ul style="list-style-type: none">• A reduction in the population of the SAL of 7.2% between 2016 and 2021• No change in population in the suburb of South Bathurst• An increase in the total population of the Bathurst LGA of 5.2%
	<ul style="list-style-type: none">• A greater proportion of the population who identify as Aboriginal and/or Torres Strait Islander in the SAL1 (6.3%), in the suburb of South Bathurst, and in the Bathurst LGA (7.2%) compared to Greater Sydney (1.7%) and NSW (3.4%)• An underrepresentation of people born overseas in a non-English speaking country in the SAL1 (6.6%), the suburb of South Bathurst

	<p>(9.8%) and in the Bathurst LGA (12.3%) compared to Greater Sydney (67.2%) and NSW (30.3%)</p> <ul style="list-style-type: none"> A smaller proportion of the population who speak a language other than English at home in the SAL1 (7.1%), the suburb of South Bathurst (9.0%) and in the Bathurst LGA 12.4%) compared to Greater Sydney (37.4%) and NSW (26.5%)
	An older median age of residents in the SAL1 (42) compared to the suburb of South Bathurst and the LGA (both 38).
	A wealthier population with the median weekly household income being \$1,329 in the SAL, compared to the suburb of South Bathurst (\$1,222), but less than the median in the Bathurst LGA (\$1,585).
	A higher median weekly rent in the SAL1 (\$350) compared to the suburb of South Bathurst (310) and the Bathurst LGA (\$320).
	Lower unemployment rates in the SAL1 (4.4), the suburb of South Bathurst (4.3) and in the Bathurst LGA (4.0) compared to Greater Sydney (5.1) and NSW (4.9)
	Residents are more likely to never have married in the SAL 1(43.2%) and in the suburb of South Bathurst (46.8%), compared to the Bathurst LGA (37.9%), Greater Sydney (36.4%) and NSW (35.7%)
	An increasing proportion of the population who report following no religious or spiritual beliefs in the SAL1 (44.0% up from 22.8%), in the suburb of South Bathurst (41.8% up from 28.9%) and in the Bathurst LGA (32.4% up from 22.4%)
	More likely to be a couple family with no dependent children in the SAL1 (46.1%), the suburb of South Bathurst (41.1%) and in the Bathurst LGA (40.4%).
	The majority of households report owning one car in the sAL1 (44.4%), the suburb of South Bathurst (45.4%) compared to the Bathurst LGA (33.8%).
	<ul style="list-style-type: none"> Modest growth in the number of houses in the SAL1 from 141 to 160 (22.9%), in the suburb of South Bathurst (10.1%), and in the Bathurst LGA (10.3%) The majority of dwellings are separate dwellings in the sAL1 (85.3%), the suburb of South Bathurst (90.2%) and in the Bathurst LGA (84.8%). The majority of dwellings are being rented in the SAL1 (37.2%), the suburb of South Bathurst (37.3%), compared to the Bathurst LGA (30.3%). Most dwellings have three bedrooms in the SAL1 (52.6%), the suburb of Sout Bathurst (59.0%) compared to the Bathurst LGA

	<p>where houses of four-or-more bedrooms are most common (44.5%).</p> <ul style="list-style-type: none"> The majority of residents reside in lone or two person households in the suburb of South Bathurst (34.0% and 36.3% respectively, and in the Bathurst LGA (37.6% and 34.0% respectively). Data for this characteristic not available at the SAL1 level.
	<ul style="list-style-type: none"> Low rates of migration within the last year in the suburb of South Bathurst (79.7%) and the Bathurst LGA (76.5%). Higher migration rates within the last 5 years with only 53.2% of residents residing at the same address in the suburb of South Bathurst, and 50.7% in the Bathurst LGA. Data for this characteristic not available at the SAL1 level.
	<p>The majority of residents work in professional roles in the SAL1 (21.1%), the suburb of South Bathurst (18.4%) and in the Bathurst LGA (19.1%).</p> <p>Roles in the community services sector are the second most common occupation in the SAL1 (20.0%), greater than that in the suburb of south Bathurst (16.5%) and in the Bathurst LGA (15.0%).</p> <p>People working in labouring and related occupations are overrepresented in the SAL1 (10.3%), the suburb of South Bathurst (13.3%) and in the Bathurst LGA (10.8%) compared to Greater Sydney (6.7%) and NSW (8.1%).</p>
	<p>The majority of workers travelled to work by car as the driver in the SAL1 (65.7%), in the suburb of South Bathurst (65.2%) and in the Bathurst LGA (65.5%)</p> <p>A greater proportion of residents walked to work ??</p>

As can be observed, residents of the SAL1 tend to be older, earning better incomes, working in professional or community roles, residing in separate houses that are rented, and are more likely to be unmarried.

The comparative data from the 2016 & 2021 Census show limited growth in the number of new dwellings in the SAL1 and the suburb of South Bathurst, and minimal or no population growth in these areas.

Residents of the suburb of South Bathurst most likely moved to the area within the last year, reside alone or in a two-person household in separate dwellings of three or more bedrooms.

3.2 SEIFA Index

The Socio-Economic Indexes for Areas (SEIFA) measures the relative level of socio-economic disadvantage and/or advantage based on a range of Census characteristics.

There are two key Indexes that are commonly used to determine advantage or disadvantage:

- Index of Relative Socio-Economic Disadvantage (IRSD) which contains only disadvantage indicators (unemployment, income levels, education levels) which is best used to distinguish disadvantaged areas but does not differentiate between those areas which are highly advantaged, and those that may be lacking a lot of disadvantage.
- Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) which contains indicators of disadvantage as well as indicators of advantage (professional occupations, high incomes, high levels of education attainment, larger dwellings).

A high SEIFA index means a lower level of disadvantage, whereas a lower score indicates a higher level of disadvantage.

Percentile scores are also created to indicate an approximate position of a small area compared to other Australian suburbs and localities. The higher the percentage indicates the higher the socio-economic status.

Data drawn from the 2021 Census reveals that residents of the suburb of South Bathurst are less advantaged than residents of the broader LGA, Regional NSW and NSW:

	South Bathurst- Gormans Hill – White Rock	Bathurst LGA	Regional NSW	NSW
Score	949.7	991.5	982.0	1000.0
Percentage	19	37	32	42

3.3 Population Projections

Data provided by Profile ID¹ for the South Bathurst-Gormans Hill-White Rocks area and the Bathurst LGA notes:

Area	Population 2024	Population 2041	% change
South Bathurst – Gormans Hill-White Rocks	3,262	3,721	14.1%
Bathurst LGA	45,367	56,560	24.6%

As can be observed, the suburb of South Bathurst is anticipated to experience population growth to 2041.

Bathurst Regional Council’s *Bathurst Vision 2040* anticipates a growth in the LGA, of around 20.8%.

3.4 Crime data

The NSW Bureau of Crime Statistics and Research prepares crime *rate maps* and *hotspot maps* which identify densities of crimes in an area. The crime maps for the suburb of South Bathurst do not include any data for the suburb due to low population. Crime rates for the Bathurst LGA and NSW are included in the following table:

Crime rate table:

Crime	Bathurst LGA (per 100,000 population)	NSW (per 100,000 population)
Assault	1337.8 (medium density)	899.2
Domestic Assault	701.0 (medium density)	445.7
Non-domestic assault	602.5 (second highest density)	422.0
Assault Police	34.4 (second lowest density)	31.5

¹ <https://forecast.id.com.au/bathurst>

Robbery	20.6 (medium density)	23.7
Theft	278.3 (medium density)	2375.7
Malicious damage to property	893.4 (second highest density)	609.1
Sexual offences	375.7 (highest density)	214.8

January 2023 – December 2023 - <http://crimetool.bocsar.nsw.gov.au/bocsar/>

In terms of hotspots, the subject site is not located within any identified ‘hotspot’ for crime.

3.5 Existing Services and Facilities

As detailed in Chapter 2.1, the subject site is located close to public transport to the site in the form of buses, with the closest bus stop located approximately 190m to the east of the subject site (Lewins St at Logan St), providing access to Route 526 providing services to and from West Bathurst. Route 528, accessible from bus stops on Prospect Street (Prospect Street after Busby Street), approximately 290m walking distance, provides access to Route 528 with services to and from Bathurst.

Buses on these routes are scheduled approximately 5 times a day.

NSW TrainLink provide regional train services to and from Bathurst daily. Bathurst Train Station is located approximately 1.4km from the subject site.

The site is located approximately 1.9km to the south-east of the Bathurst Town Centre, and approximately 1.5km from Charles Sturt University campus.

There are three main shopping centres within Bathurst, the Bathurst City Centre, Armada Bathurst Shopping Centre and Bathurst Chase Shopping Centre all offering a range of Supermarkets, clothing, food, homewares and department stores. The Bathurst Town Centre also offers a range of commercial and retail services, pubs and hotels, and food and beverage venues.

The following services and facilities, their distance to the subject site and, where relevant their capacity to accommodate additional demand, are included in the following table.

Service/Facility	Distance from subject site (walking)
Public Transport	
Bus stop Lewins St at Logan Street (Route 526)	190m
Prospect Street after Busby Street (Route 528)	290m
Bathurst Train Station	1.4km
Shops/Supermarkets/Pharmacy	
Woolworths Supermarket, Bathurst City Centre, 210 Howick Street	2.5km
Aldi Supermarket, 128 Russell Street	2.0km
Panorama Mini Mart and Takeaway South Bathurst, 292 Havannah Street	550m
Coles Supermarket, Chase Shopping Centre, 47 William Street	2.5km
Harris Farm Markets Bathurst, 72 Rankin Street	2.9km
Recreation/Parks/Centres	
Police Paddock, Alpha Street	1.1km
Gormans Hill Park, Gormans Hill Road	2.7km
Centennial Park & Playground Bathurst, Seymour Street	850m
LOCO Oval, Russell Street	1.8km
George Park, Brilliant Street	1.6km
Bathurst Indoor Sports Stadium, 34 Alexander Street	3.2km
Bathurst Golf Club, 136 Vittoria Street	3.6km
Bathurst Adventure Playground, Durham Street	3.8km
Medical Centres/Hospitals	
Bathurst Health Services, 361 Howick Street	4.0km
Busby Medical Practice, 123 Howick Street	2.2km
Ochre Medical Centre, Charles Sturt University, 1470 Panorama Avenue	1.9km
Russell Street Medical Centre, 116 Russell Street	1.9km

Service/Facility	Distance from subject site (walking)
George Street Medical Practice, 115 George Street	2.5km
Macquarie Family Medical Centre, 210 Howick Street	2.2km
WeCare Health, 185 Durham Street	3.5km
Loxley House Family Practice, 46 Keppel Street	1.4km
After Hours GP Clinic 361-365 Howick Street	4.0km
Education Establishments	
Bathurst South Public School, Havannah Street	550m
TAFE NSW Bathurst & TAFE NSW Bathurst Adult Migrant English Program, Panorama Avenue	1.7km
St Stanislas College, 220 Bentinck Street	700m
Charles Sturt University, Panorama Avenue	1.6km
Carenne School, 158 Browning Street	1.4km
Bathurst West Public School, Suttor Street	3.4km
The Assumption School, 192 Mitre Street	3.0km
Bathurst Public School, 281 George Street	1.6km
Bathurst High School Campus – Denison College, Hope Street	2.9km
Kelso High School, Boyd Street Kelso	4.9km
Holy Family Primary School, 10 French Smith Place, Kelso	5.5km
Scots All Saints College Junior Campus, 70 Elington Road	5.4km
Scots All Saites College – Senior Campus, 4173 O'Connell Road	5.9km
Disability services	
Kiniari Community Services, 2/90 Keppel Street	1.6km
Minka Blue, 107 Kepple Street	1.8km
Vivability, 73 William Street	2.4km
New Horizons Bathurst, 369 Stewart Street	2.4km
Glenray Industries, 225 Howick Street	2.7km

Service/Facility	Distance from subject site (walking)
LiveBetter Community Services, 265 Durham Street	4.0km
Aurora Regional Services, 229 Russell Street	2.4km
Ocelot Care & Adventures, Floor G, Bathurst City Centre	2.3km
Libraries & Community Centres	
Bathurst Library, 70/78 Keppel Street	1.5km
The Neighbourhood Centre Bathurst, 96 Russell Street	1.8km

Service/Facility	Distance from subject site (walking)	Capacity to accommodate additional demand
Child Care Centre/OSHC		
Bathurst Little Learning Centre, 28 Havannah Street, South Bathurst	2.3km	No vacancies
St Phil's Out of School Hours Care, 65 Lloyds Road South Bathurst	1.5km	No vacancies
SDN Hamilton Street Children's Education and Care Centre, 7 Hamilton Street South Bathurst	350m	Information not available
ASPIRE Out of School ours Care, 251 Havannah Street, Bathurst	250m	No vacancies
Towri MACS, 42 Lloyds Road South Bathurst	1.4km	No vacancies
Mitchell Early Learning Centre, Charles Sturt University, Panorama Avenue, Bathurst	1.6km	No vacancies
Goodstart Early Learning Bathurst, 1 Russell Street	2.1km	Vacancies on some days for casual and permanent.
Keppel Street Kindy, 13 Keppel Street	1.3km	No vacancies
Jenny's Kindergarten and Early Learning Centre, 128 George Street	1.8km	No vacancies
Cathedral Out of School Hours Care, 98 George Street	2.0km	Information not available

Service/Facility	Distance from subject site (walking)	Capacity to accommodate additional demand
Sallywags Long Day Care & Preschool, 32 William Street	2.4km	No vacancies
Elizabeth Chifley Presbyterian Preschool, 74 George Street	2.5km	Information not available
Milestones Early Learning Centre, 81 Stanley Street	3.9km	No vacancies

Source: Google.com/maps; wayahead.org.au; google, startingblocks.gov.au; Bathurst City Council Community Directory

3.6 Similar developments

The NSW Planning Portal identifies the following applications relating to rezoning and/or residential subdivisions in the Bathurst area.

Proposal	Stage	Distance from subject site
50 Busby Road (Cnr Prospect Street) – Proposed rezoning & future residential subdivision	Planning Proposal for rezoning of the site and an increase in height limits and future development of the site for town house and residential flat buildings with a total of approximately 97 dwellings comprising 34 townhouses and 63 apartments. Proposal is for a staged development over 3-5 years	Adjacent to site

4.0 SOCIAL IMPACT ASSESSMENT

Bathurst Regional Council requested the preparation of a Social Impact Assessment to accompany the application. The SIA was to include:

- a. Consideration of how the proposal supports and will achieve housing choice, diversity and affordability.
- b. Assessment of the potential of the proposal on services and facilities in the immediate neighbourhood and the need for new/upgraded services and facilities (e.g. open space, active transport connections etc) to cater for the new population and the mechanisms to achieve the required upgrades (e.g. planning agreement).

Housing choice, diversity and mix is discussed in Chapter 4.2.

Potential impacts on services and facilities in the immediate neighbourhood and potential for new or upgraded services is discussed in Chapter 4.7.

Cumulative impacts are considered in Chapter 4.12.

Bathurst Regional Council has no specific *Guidelines* or *Policies* relating to Social Impact Assessments (SIAs). As such the proposed development will be assessed against the following criteria:

- Population change
- Housing Choice
- Health and safety
- Social Cohesion
- Community structure, character, values & beliefs
- A sense of place and community
- Community facilities and links
- Interaction between the development and the community
- Social equity, socio-economic groups & the disadvantaged

- Social displacement
- Social change management
- Public interest
- Amenity

4.1 Population change

The proposed development of proposed Lot 225 for residential dwellings will result in increases in the population of the area.

The indicative plans accompanying the application prepared by Marchese Partners indicate a total of 218 apartments with the following potential unit mix:

30 x 1-bedroom units

159 x 2-bedroom units

29 x 3-bedroom units

Based on the average number of people per bedroom as at the 2021 Census in the suburb of South Bathurst of 0.7, the proposal may result in a population on the site of approximately 305 people.

The minor increase in population on the site is unlikely to significantly alter the socio-economic or demographic characteristics of the suburb of South Bathurst, nor is it likely to result in significantly increased demand for services. New residents are likely to have similar socio-economic and demographic characteristics to the existing population.

As the proposal includes a number of three-bedroom dwellings, able to accommodate families, there is the potential for increased demand for child care, schools and public transport. It is likely any increased demand can be accommodated by existing services and providers. Should additional services such as child care be required, then this can be met by the creation of new centres which would provide positive benefits in terms of employment generation.

4.2 Housing Choice

The proposed subdivision, if approved, will provide land suitable for medium density residential redevelopment. There is potential for the addition of 218 new dwellings on the site, providing housing options for the existing and future population of the area.

In respect of how the proposal will support and achieve housing choice, diversity and affordability, the proposed rezoning seeks to permit medium density housing, which by its nature is likely to result in future residential developments of a smaller size than is most common in the area (3 or more-bedroom separate dwellings). The concept for the site includes the construction of a number of residential buildings over basement parking, and proposes a future mix of one-, two- and three-bedroom units. At the 2021 Census, units comprised 3.2% of dwellings in the SAL1 and 1.8% of dwellings in the suburb of South Bathurst.

The availability of smaller dwellings will result in more affordable housing for the community.

As noted in Chapter 3.1 the suburb of South Bathurst and the Bathurst LGA have an increasing number of lone and couple households, while the predominant form of housing is separate dwellings with three or more bedrooms. Council has also recognised this trend in its LSPS identifying the need for smaller dwellings to accommodate a range of household types.

The proposed subdivision of the site will provide an opportunity for the introduction of housing choice, diversity, and affordability in a location close to the town centre, and to employment areas.

4.3 Health and safety

There is nothing about the proposal to utilise Lot 225 for future residential development that is likely to result in any impacts in respect of health and safety for the community.

As noted in Chapter 3.4, the Bathurst LGA generally has low rates and densities of crime and the subject site is not located within any crime 'hotspots'.

Increased activity on the site, once developed, may result in improved safety and security around the site due to increased surveillance from properties to surrounding roads and land uses.

Impacts associated with construction noise and dust may generate some health impacts for nearby residents. These impacts are short term in nature and generally able to be managed through conditions of consent and best practice construction management practices.

4.4 Social Cohesion

There is nothing about the proposed use of the site for future residential development that is likely to generate any negative impacts in terms of social cohesion.

Should the subject application be approved, and the land developed for residential dwellings (subject to future DAs), the future residents on the site will have the same opportunities to participate in the local community, and join community groups, as existing residents.

4.5 Community Structure, Character, Values and Beliefs

The proposal is unlikely to generate any significant impacts in terms of community structure, character, values and beliefs.

The proposal seeks to introduce additional housing and improve housing diversity in an area that is close to the town centre, education and employment. Future residents are likely to be a mix of existing residents of Bathurst who may be downsizing, and new residents who are likely to have similar socio-economic and demographic characteristics as existing residents and as such, there is unlikely to be any discernible changes to community structure, values and beliefs.

The visual character of the site will change with future development on the site should the proposal be approved. This change in character is not unexpected and the use of land close to the Town Centre for new residential development is envisaged in Council's Land Use Planning Strategy.

The proposed residential development has been designed with consideration to *Logan Brae* to ensure that views and significant landscaping are retained.

4.6 A Sense of Place and Community

There is nothing about the proposal, located in an area characterised by residential development, close to public transport and the Town Centre, that is likely to generate any negative impacts on the sense of place or community in the local area.

The proposed conservation and potential use of the heritage-listed *Logan Brae* building for accommodation and functions (subject to a separate DA) ensures continuity of use on the largest part of the site, contributing to the existing sense of place.

4.7 Community Facilities and Links

The proposal does not result in the removal of any community facilities, nor does it reduce or impede community links.

A list of Community facilities and services is included at Chapter 3.5 and indicates that the Bathurst Town Centre is well serviced with health care, community services, education establishments, and recreation opportunities.

There are a number of child care services within the Town, many of which are at capacity and unable to accommodate additional demand. With the additional dwellings proposed, there may be an increase in demand for child care services. This may result in the creation of new child care facilities to meet additional demand. This would generate employment which is a positive impact.

The future residents of the site may increase usage of community facilities such as parks, community centres and public transport, but this increase is unlikely to be significant.

In terms of increased use of public transport, this is likely to generate positive impacts through the reinforcement of exiting timetables, and potentially increased service to the area.

A separate application relating to the potential use of the heritage building, *Logan Brae* as a boutique hotel and function centre and conservation works in line with a Conservation Management Plan, is proposed, ensuring the integrity of the building and key landscaping.

4.8 Interaction between the development and the community

The subject application will not result in any significant changes in respect of the interaction between the site and the community.

Future residential development on the site in an area zoned for residential development suggests that the interaction between the proposed development and the community will be the same as the existing situation for other residential development in the area.

4.9 Social equity, socio-economic groups & the disadvantaged

The proposal for the use of part of the overall site for future residential development is unlikely to result in any material impacts in respect of social equity.

The demographic profile presented in Chapter 3.0 identifies that the population of the immediate area, and the suburb of South Bathurst includes a limited number of groups that are potentially at heightened risk of social harm as a result of their particular socio-economic and demographic characteristics including:

- Aboriginal and/or Torres Strait Islander peoples
- one parent families
- those on low incomes
- people working in lower paying occupations.

There is nothing about the proposed rezoning and subdivision that is likely to generate any negative social impacts for members of these groups.

The proposed apartment dwellings with a mix of one, two and three-bedroom units provides housing diversity and likely provide dwellings that are more affordable than the predominant form of three-bedroom separate dwellings. The contribution to housing diversity and mix represents a positive impact for the community.

The proposal seeks to allow for future residential development of the land in an area that is anticipating population growth, and where housing diversity and options are needed to support that future growth.

4.10 Social displacement

No social displacement is generated as a result of the proposal as the relevant portion of the overall site to which the subject application relates is currently vacant.

4.11 Social change management

As Lot 225 is currently not in use, the proposal is unlikely to result in any significant or material social change.

As noted in Chapter 4.9, the proposal seeks to introduce a mix of one-, two-, and three-bedroom apartments providing additional choice in terms of the size and style of housing in the area. It is likely future residents will be a mix of existing residents of Bathurst who are seeking smaller or different types of housing, and potentially new residents. The introduction of a potential 218 apartments is unlikely to result in any social change that would require management.

4.12 Cumulative Impacts

Council noted that the adjoining property at 50 Busby Street was earmarked for future medium density residential development and it is understood that a planning proposal for the site has for the development of 97 dwellings (apartments and townhouses) has been submitted to Council.

Two proposals for rezoning and subdivisions are unlikely to result in any cumulative impacts.

In a practical sense, the subject site is separated from the site at 50 Busby Street due to the site topography, and *St Joseph's Mount* with its position above the subject site and as such, should there be two medium density sites on adjoining properties, they will be physically separated from each other.

Cumulative impacts may arise should both applications be approved, and future construction related works commence concurrently.

The most likely cumulative impacts that may arise if both proposals are approved include:

- cumulative impacts generated by concurrent site works and construction including noise, dust, truck movements and demand for on-street parking for workers. These impacts are short term in nature and are able to be managed through best practice construction management practices
- on occupation of future dwellings, there will be an increase in population in the SAL1. This increase in population will most likely be noticeable in terms of increased traffic on local roads. Traffic generation related to the subject site has been considered in detail in the *Traffic and Parking Assessment* Report prepared by CJP Consulting Engineers and discussed in Chapter 4.13.
- increased population in the area. The subject proposal is contemplating an indicative population on the site of 305 and the Planning Proposal for the site at 50 Busby Street estimates an increased population of 118 people, bringing the total estimated population of both sites to 423 people. This increase is likely to comprise, in part, existing residents of South Bathurst and other areas of Bathurst who are seeking to downsize while retaining links to the community. The increased population on the two sites is unlikely to result in any material social impacts in the area.

4.13 Amenity

The subject application seeks consent for the subdivision of the site to allow for future residential development. The proposed subdivision will not result in any amenity issues for the existing community.

Works associated with future development on the site in line with the proposed rezoning and subdivision may result in some amenity issues for existing residents. To the extent that amenity impacts can be addressed in social impact terms, the following discussion is provided:

4.13.1 Traffic and Parking

Traffic is likely to be generated during future site works and construction phases and associated with future residential use on the site.

On-street parking may be impacted during site works and construction associated with workers attending the site. These impacts are short term in nature and will be present during the construction process only.

The indicative plans for the site indicate potential for basement car parking for future residents, minimising demand for on-street car parking.

Traffic modelling discussed in the *Traffic and Parking Assessment Report* prepared by CJP Consulting Engineers identifies that should the subject proposal be approved there are unlikely to be any unacceptable traffic impacts. The Report also considers the proposed development in the context of the planned development for 97 dwellings at 50 Busby Street and notes:

...the proposed cumulative increase in traffic as a consequence of both developments will not result in any unacceptable traffic implications to the surrounding road network, nor will any road upgrades be required.

The *Traffic and Parking Assessment Report* concludes:

Based on the findings contained within this report, the following conclusions are made:

- *based on a number of “worst case” parameters, the proposed development on 34 Busby Street is expected to generate in the order of 219 to 239 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times*

- *based on information provided in the Allera PP report for the adjoining site, the proposed development on 5 Busby Street is expected to generate in the order of 69 to 75 vehicle trips during the weekday morning and afternoon peak periods, respectively, less at other times*
- *the proposed cumulative increase in traffic as a consequence of both developments will not result in any unacceptable traffic implications to the surrounding road network, nor will any road upgrades be required*
- *the proposed vehicular access, parking and loading area design will ultimately be designed to comply with the relevant requirements of the AS2890 series, Austroads and the NSW RFS's Planning for Bush Fire Protection*

4.13.2 Acoustics/Noise

Noise is likely to be generated should approval be granted and works commence to prepare the site, and related to future construction on the site.

Noise generated once future residential dwelling are occupied is unlikely to be discernible from any other residential uses. It is reasonable to assume that at the detailed design stage, acoustic intrusion and noise emissions into future residential dwellings will be assessed, and recommendations made in respect of material choices to minimise noise impacts.

A *Noise Impact Assessment* undertaken by Pulse White Noise accompanies the application.

That report considers noise impacts associated with construction and operation and includes suggested materials and practices to minimise noise emissions and noise intrusions.

That report concludes:

Pulse White Noise Acoustics has been engaged to undertake an acoustic assessment of the proposed residential development at 34 Busby Street, Bathurst. As part of this assessment, we have undertaken a review of the building envelope, noise emissions from the use of the site as well as established applicable acoustic separation requirements. From this assessment we note the following:

- *Minimum acoustic performances and associated indicative constructions for the building envelope have been provided in section 4 of this report. The recommended treatments have been provided to ensure compliance with the objectives presented in section 3.*
- *To control noise impacts at external receivers, recommended indicative treatments for major engineering services have been provided in section 4. From our review we have formulated the following opinion that at this stage of the project the exact selections/locations of plant items are not known. A preliminary assessment however has been carried out using our experience with similar types of developments and the typical plant items installed.*
- *Noise associated with additional traffic on Public Roads has been reviewed and determined to not exceed the conditions by 2bBA, therefore compliance with the NSW Road Noise Policy is achieved.*

4.14 Public Interest

The proposed rezoning and subdivision application is likely to generate a number of public interest benefits, including:

- provision of land for new housing, in a centrally located area, close to shops, facilities, education, employment and public transport;
- provision of land for future housing for the anticipated growth in population in the area;
- provision of diversity in respect of the size and type, and affordability of housing;
- a proposal that supports and contributes to Council's plans and strategies for the future of the Bathurst; and
- employment generation in undertaking site works, and in future construction.

5.0 ENHANCEMENT AND MITIGATION MEASURES

The potentially positive impacts generated by the proposal will only be realised if the consent is granted for the proposal.

The potentially negative impacts generated by the proposal include the short-term impacts associated with future works on the site. These impacts can generally be minimised and controlled through conditions of consent.

Due to the site's proximity to the Town Centre, Education and employment, there are opportunities for enhancement of passive transport routes to reduce dependence on private vehicles by future residents. Contributions for the installation of pedestrian foot paths along the site frontage to Busby Street or a bike path to link to existing bike paths may be considered.

6.0 CONCLUSION

This Social Impact Assessment assesses the potential impacts generated by the proposed rezoning and subsequent residential apartment development on proposed Lot 225 at 35 Busby Street, South Bathurst.

The proposed residential development on Lot 225 represents a suitable and appropriate location for future residential development given its close proximity to public transport, local shops and services such as medical centres.

The proposal supports Council's strategies and vision for the Bathurst area by:

- rezoning land close to the Town Centre for medium density housing
- contributing to the mix and diversity of housing close to the Town Centre, education and employment to accommodate the changing needs of residents
- future provision of smaller housing options for lone and couple households and generating more affordable accommodation and housing.

There is potential for contributions from the applicant to contribute to local foot and bike paths around the site to facilitate linkages to the Town Centre (??tbc??)

The proposed development is unlikely to generate any long term negative social impacts, but has the potential to generate a number of positive impacts, including:

- provision of land for new housing, in a centrally located area, close to shops, facilities, education, employment and public transport;
- provision of land for future housing for the anticipated growth in population in the area;
- provision of diversity in respect of the size and type, and affordability of housing;
- a proposal that supports and contributes to Council's plans and strategies for the future of the Bathurst; and
- employment generation in undertaking site works, and in future construction.

There are no reasons from a social planning perspective to refuse the application.

APPENDIX A

DEMOGRAPHIC PROFILE TABLE

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Demographic Profile Table

Demographic Characteristic	SAL1 - 1105832	SAL1 - 10301161209	South Bathurst Suburb 2016	South Bathurst suburb 2021	Bathurst LGA 2016	Bathurst LGA 2021	Greater Sydney 2016	Greater Sydney 2021	NSW 2016	NSW 2021
Total Persons	392	364	1,583	1,583	41,300	43,567	4 823 991	5, 231,147	7 480 228	8,072,163
Aboriginal and/or Torres Strait Islander	14 (3.5%)	23 (6.3%)	92 (5.8%)	170 (10.7%)	2,244 (5.4%)	3,153 (7.2%)	70 135 (1.4%)	90,939 (1.7%)	216 176 (2.8%)	278,043 (3.4%)
CALD Persons										
(i) No. born overseas in non-English speaking country.	27 (6.8%)	24 (6.6%)	176 (11.1%)	155 (9.8%)	5,362 (13.0%)	5,375 (12.3%)	1 474 715 (30.5%)	3,514,305 (67.2%)	1 646 057 (22.0%)	2,444,754 (30.3%)
(ii) No. speaking lang. other than English at home	37 (9.4%)	26 (7.1%)	157 (9.9%)	143 (9.0%)	5,394 (13.0%)	5,392 (12.4%)	1 727 574 (35.8%)	1,957,409 (37.4%)	1 882 015 (25.1%)	2,146,080 (26.5%)
In need of assistance							236 139 (4.9%)	270,665 (5.1%)	402 048 (5.3%)	464,712 (5.7%)
Age range:										
0-4 years			101 (6.4%)	92 (5.8%)	2,546 (6.2%)	2,479 (5.7%)	310,173 (6.4%)	312,364 (6.0%)	465,135 (6.2%)	468,056 (5.8%)
5-14 years			199 (12.6%)	199 (12.6%)	5,570 (13.5%)	5,687 (13.0%)	590,126 (12.2%)	650,843 (12.5%)	921,195 (12.3%)	1,001,950 (12.4%)
15-19 years			189 (12.0%)	91 (5.7%)	2,980 (7.2%)	2,898 (6.7%)	288,362 (5.9%)	294,764 (5.6%)	448,425 (5.9%)	457,896 (5.6%)
20-24 years	20 (5.1%)	25 (6.8%)	84 (5.3%)	128 (8.1%)	3,148 (7.6%)	2,880 (6.6%)	340,737 (7.0%)	343,064 (6.6%)	489,673 (6.5%)	496,185 (6.1%)
25-34 years	36 (9.0%)	44 (12.0%)	118 (7.5%)	222 (14.0%)	170 (7.6%)	5,166 (12.5%)	774,405 (16.0%)	811,314 (15.5%)	1,067,524 (14.2%)	1,103,170 (13.6%)
35-44 years	17 (4.3%)	15 (4.1%)	118 (7.5%)	222 (14.0%)	170 (7.6%)	5,166 (12.5%)	774,405 (16.0%)	811,314 (15.5%)	1,067,524 (14.2%)	1,103,170 (13.6%)
45-54 years	21 (5.3%)	20 (5.4%)	185 (11.7%)	170 (10.8%)	5,166 (12.5%)	5,683 (13.0%)	774,405 (16.0%)	811,314 (15.5%)	1,067,524 (14.2%)	1,103,170 (13.6%)
55-64 years	33 (8.4%)	49 (13.4%)	176 (11.2%)	183 (11.5%)	4,881 (11.8%)	5,126 (11.8%)	696,037 (14.4%)	777,748 (13.6%)	1,002,886 (13.4%)	1,016,948 (12.6%)
65-74 years	35 (8.9%)	40 (10.9%)	170 (10.8%)	203 (12.8%)	5,222 (12.7%)	5,366 (12.3%)	627,580 (13.0%)	667,167 (12.8%)	977,984 (13.0%)	961,784 (11.9%)
75-84 years	51 (12.9%)	45 (12.3%)	175 (11.2%)	160 (10.1%)	4,997 (12.1%)	5,337 (12.3%)	524,011 (10.8%)	579,166 (11.1%)	889,763 (11.9%)	451,521 (5.6%)
85 years and over	34 (8.6%)	48 (13.1%)	186 (11.8%)	114 (7.2%)	3,862 (9.3%)	4,491 (10.3%)	372,488 (7.7%)	439,467 (8.4%)	677,020 (9.0%)	183,895 (2.3%)
	52 (13.2%)	47 (12.8%)	170 (10.8%)	203 (12.8%)	5,222 (12.7%)	5,366 (12.3%)	627,580 (13.0%)	667,167 (12.8%)	977,984 (13.0%)	961,784 (11.9%)
	49 (12.4%)	23 (6.3%)	175 (11.2%)	160 (10.1%)	4,997 (12.1%)	5,337 (12.3%)	524,011 (10.8%)	579,166 (11.1%)	889,763 (11.9%)	451,521 (5.6%)
	48 (12.1%)	11 (3.0%)	186 (11.8%)	114 (7.2%)	3,862 (9.3%)	4,491 (10.3%)	372,488 (7.7%)	439,467 (8.4%)	677,020 (9.0%)	183,895 (2.3%)

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Demographic Characteristic	SAL1 - 1105832	SAL1 - 10301161209	South Bathurst Suburb 2016	South Bathurst suburb 2021	Bathurst LGA 2016	Bathurst LGA 2021	Greater Sydney 2016	Greater Sydney 2021	NSW 2016	NSW 2021
			122 (7.8%) 66 (4.2%)		2,018 (4.9%) 892 (2.2%)	2,523 (5.7%) 1,052 (2.4%)	204,051 (4.2%) 96,022 (1.9%)	249,517 (4.8%) 105,729 (2.0%)	373,115 (4.9%) 167,506 (2.2%)	
Unemployment rate	4.7	4.4	7.4	4.3	6.0	4.0	6.0	5.1	6.3	4.9
Median weekly household income	\$1,131	\$1,329	\$1,099	\$1,222	\$1,310	\$1,585	\$1750	\$2,077	\$1486	\$1,829
Median rent	\$295	\$350	\$280	\$310	\$280	\$320	\$	\$470	\$380	\$420
Med Age	52	42	41	38	37	38	36	37	38	39
Ave household size	2.2	2.3	2.2	2.2	2.5	2.5	2.8	2.7	2.6	2.6
Marital Status (aged 15+)										
Married	120 (35.2%)	109 (36.0%)	503 (38.8%)	405 (31.2%)	14,931 (45.0%)	15,447 (43.6%)	1 934 134 (49.3%)	2,062,160 (48.3%)	2 965 285 (48.6%)	3,124,151 (47.3%)
Separated	6 (1.8%)	18 (5.9%)	46 (3.5%)	61 (4.7%)	1,147 (3.5%)	1,370 (3.9%)	111 495 (2.8%)	125,769 (2.9%)	190 199 (3.1%)	209,657 (3.2%)
Divorced	39 (11.4%)	42 (13.9%)	126 (9.7%)	143 (11.0%)	2,884 (8.7%)	3,290 (9.3%)	298 433 (7.6%)	332,916 (7.8%)	512 297 (8.4%)	569,516 (8.6%)
Widowed	48 (14.1%)	12 (4.0%)	117 (9.0%)	73 (5.6%)	1,854 (5.6%)	1,890 (5.3%)	185 646 (4.7%)	191,863 (4.5%)	331 655 (5.4%)	339,990 (5.1%)
Never married	128 (37.5%)	131 (43.2%)	506 (39.0%)	608 (46.8%)	12,364 (37.3%)	13,397 (37.9%)	1 393 988 (35.5%)	1,555,230 (36.4%)	2 094 457 (34.3%)	2,358,844 (35.7%)
Religious Affiliation										
No Religion	88 (22.8%)	160 (44.0%)	457 (28.9%)	662 (41.8%)	9,250 (22.4%)	14,115 (32.4%)	1,188,280 (24.6%)	1,583,084 (30.3%)	1,879,562 (25.1%)	2,644,165 (32.8%)
Catholic	154 (39.9%)	99 (27.2%)	475 (30.1%)	382 (24.1%)	12,833 (31.1%)	12,392 (28.4%)	1,213,1236 (25.1%)	1,210,979 (23.1%)	1,846,443 (24.7%)	1,807,730 (22.4%)
Anglican	65 (16.8%)	45 (12.4%)	275 (17.4%)	236 (14.9%)	7,893 (19.1%)	6,833 (15.7%)	580, 341 (12.0%)	478,777 (9.2%)	1,161,810 (15.5%)	960,305 (11.9%)
Islam							253,436 (5.3%)	329,566 (6.3%)	267,659 (3.6%)	349,240 (4.3%)
Not stated	21 (5.4%)	20 (5.5%)	144 (9.1%)	89 (5.6%)	4,661 (11.3%)	3,474 (8.0%)	425,538 (8.8%)	326,469 (3.2%)	684,969 (9.2%)	548,340 (6.8%)
Family Structure										

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Demographic Characteristic	SAL1 - 1105832	SAL1 - 10301161209	South Bathurst Suburb 2016	South Bathurst suburb 2021	Bathurst LGA 2016	Bathurst LGA 2021	Greater Sydney 2016	Greater Sydney 2021	NSW 2016	NSW 2021
Couple families with dependent children under 15 years and other dependent children	30 (37.0%)	35 (34.3%)	121 (31.8%)	118 (27.9%)	4,308 (42.5%)	4,459 (39.7%)	501 238 (40.1%)	667,760 (48.4%)	718 364 (37.0%)	809,586 (37.9%)
Couple families with no children	32 (39.5%)	47 (46.1%)	153 (40.3%)	174 (41.1%)	3,885 (38.3%)	4,538 (40.4%)	416 588 (33.4%)	480,444 (34.8%)	709 524 (36.5%)	954,588 (44.7%)
One parent families with dependent children	19 (23.5%)	24 (23.5%)	103 (27.1%)	117 (27.7%)	1,811 (17.9%)	2,077 (18.5%)	113 772 (9.1%)	208,478 (15.1%)	192 626 (9.9%)	337,729 (15.8%)
Other families	0	0	3 (0.8%)	6 (1.4%)	131 (1.3%)	168 (1.5%)	22 992 (1.8%)	23,497 (1.7)	32 483 (1.6%)	34,061 (1.6%)
Car Ownership										
None	10 (7.1%)	6 (3.9%)	42 (6.9%)	42 (6.4%)	917 (6.4%)	925 (5.8%)	179 500 (11.0%)	203,081 (11.1%)	239 625 (9.2%)	262,031 (9.0%)
One	57 (40.4%)	68 (44.4%)	268 (43.8%)	299 (45.4%)	4,734 (32.8%)	5,381 (33.8%)	603 062 (37.1%)	722,036 (39.5%)	946 159 (36.3%)	1,096,761 (37.8%)
Two	42 (29.8%)	56 (36.6%)	197 (32.2%)	208 (31.6%)	5,223 (36.2%)	5,866 (36.8%)	532 633 (32.8%)	590,650 (32.3%)	887 849 (34.0%)	989,258 (34.1%)
Three	24 (17.0%)	23 (15.0%)	80 (13.1%)	103 (15.7%)	2,998 (20.8%)	3,548 (22.3%)	164 918 (10.1%)	181,932 (9.9%)	283 044 (10.8%)	321,310 (11.0%)
4 or more							89 744 (5.5%)	105,239 (5.7%)	152 500 (5.8%)	187,380 (6.5%)
Housing (dwellings)										
Sep house	119 (84.4%)	133 (85.3%)	553 (90.5%)	599 (90.2%)	12,166 (84.3%)	13,526 (84.8%)	924 225 (52.5%)	1,020,631 (55.8%)	1 729 820 (59.8%)	1,902,734 (65.6%)
Semi-detached	19 (13.5%)	22 (14.1%)	50 (8.2%)	62 (9.3%)	1,464 (10.1%)	1,633 (10.2%)	227 238 (49.8%)	234,000 (12.8%)	317 447 (35.7%)	340,582 (11.7%)
Unit	3 (2.1%)	5 (3.2%)	5 (0.8%)	12 (1.8%)	595 (4.1%)	699 (4.4%)	456 233 (25.9%)	561,988 (30.7%)	519 380 (17.9%)	630,030 (21.7%)
Other dwelling	0	0	0	0	49 (0.3%)	41 (0.3%)	9 129 (0.5%)	8,216 (0.4%)	23 583 (0.8%)	19,374 (0.7%)
Unoccupied dwellings	25 (15.1%)	16 (9.1%)	100 (14.1%)	54 (7.5%)	2,029 (12.3%)	1,580 (9.0%)	136 055 (7.7%)	164,628 (8.3%)	284 741 (9.8%)	299,524 (9.4%)

SARAH GEORGE CONSULTING

Demographic Characteristic	SAL1 - 1105832	SAL1 - 10301161209	South Bathurst Suburb 2016	South Bathurst suburb 2021	Bathurst LGA 2016	Bathurst LGA 2021	Greater Sydney 2016	Greater Sydney 2021	NSW 2016	NSW 2021
Home fully owned	43 (29.5%)	52 (33.3%)	188 (30.3%)	205 (30.9%)	4,691 (32.5%)	5,419 (34.0%)	472 635 (29.1%)	507,635 (27.8%)	839 665 (32.2%)	914,537 (31.5%)
Being purchased	41 (28.1%)	42 (26.9%)	179 (28.9%)	189 (28.5%)	4,854 (33.7%)	5,232 (32.8%)	539 917 (33.2%)	608,735 (33.3%)	840 665 (32.2%)	942,804 (32.5%)
Private rental	53 (36.3%)	58 (37.2%)	223 (36.0%)	248 (37.3%)	4,420 (30.7%)	4,827 (30.3%)	485 404 (29.9%)	596,390 (32.6%)	722 020 (27.7%)	851,852 (29.4%)
Public housing							67 845 (4.1%)	60,927 (3.3%)	104 902 (4.0%)	92,733 (3.2%)
Dwelling Structure - # of bedrooms										
0	0	0	0	0	52 (0.4%)	50 (0.3%)	12 812 (0.7%)	16,194 (0.9%)	17 157 (0.6%)	21,051 (0.7%)
1	8 (5.8%)	6 (3.9%)	11 (1.8%)	15 (2.3%)	531 (3.7%)	537 (3.4%)	118 881 (7.3%)	147,857 (8.1%)	157 194 (6.0%)	190,792 (6.6%)
2	27 (19.4%)	34 (22.1%)	96 (15.9%)	106 (16.0%)	2,085 (14.5%)	2,200 (13.8%)	402 675 (24.8%)	470,207 (25.7%)	577 675 (22.1%)	657,578 (22.7%)
3	76 (54.7%)	81 (52.6%)	359 (59.6%)	390 (59.0%)	5,559 (38.6%)	5,822 (36.5%)	548 987 (33.8%)	565,467 (30.9%)	970 001 (37.2%)	1,006,121 (34.7%)
4	25 (18.0%)	33 (21.4%)	114 (18.9%)	145 (21.9%)	5,834 (40.5%)	7,090 (44.5%)	376 427 (23.1%)	440,351 (24.0%)	633 184 (24.3%)	743,910 (25.6%)
5							101 053 (6.2%)	133,837 (7.3%)	148 851 (5.7%)	194, 074 (6.7%)
6+							23 774 (1.4%)	31,239 (1.7%)	34 370 (1.3%)	45,329 (1.5%)
Household composition										
Family households	84 (61.3%)	103 (63.6%)	374 (61.4%)	409 (61.0%)	9,934 (68.9%)	10,999 (69.0%)	1,195,662 (73.6%)	1,327,581 (27.8%)	1,874,524 (72.0%)	2,065,107 (71.2%)
Single/lone person	47 (4.3%)	52 (32.1%)	198 (32.5%)	226 (33.7%)	3,884 (27.0%)	4,406 (27.6%)	351,423 (21.6%)	424,713 (23.2%)	620,778 (23.8)	723,716 (25.0%)
Group Household	6 (4.4%)	7 (4.3%)	37 (6.1%)	35 (5.2%)	592 (4.1^)	538 (3.4%)	76,795 (4.7%)	76,558 (4.2%)	109,004 (4.2%)	111,646 (3.8%)
Household composition (Number of persons in residence Family and non/family combined)										
One			198 (32.3%)	226 (34.0%)	3,884 (26.9%)	4,406 (27.6%)	351,423 (21.6%)	424,713 (23.2%)	620,778 (23.8%)	723,716 (24.9%)
Two			222 (36.2%)	241 (36.3%)	4,903 (34.0%)	5,555 (34.8%)	486,347 (29.9%)	561,668 (30.7%)	842,300 (32.3%)	951,414 (32.8%)

SARAH GEORGE CONSULTING

Demographic Characteristic	SAL1 - 1105832	SAL1 - 10301161209	South Bathurst Suburb 2016	South Bathurst suburb 2021	Bathurst LGA 2016	Bathurst LGA 2021	Greater Sydney 2016	Greater Sydney 2021	NSW 2016	NSW 2021
Three			78 (12.7%)	91 (13.7%)	2,135 (14.8%)	2,313 (14.5%)	258,569 (17.6%)	315,293 (17.2%)	424,955 (16.3%)	466,330 (16.0%)
Four			69 (11.2%)	58 (8.7%)	2,090 (14.5%)	2,166 (13.6%)	293,508 (18.0%)	316,588 (17.3%)	422,804 (16.2%)	455,421 (15.7%)
Five			35 (5.7%)	39 (5.8%)	946 (6.5%)	1,010 (6.3%)	130,712 (8.0%)	133,944 (7.3%)	189,580 (7.3%)	196,481 (6.7%)
Six			12 (1.9%)	13 (1.9%)	452 (3.1%)	488 (3.0%)	76,323 (4.7%)	76,652 (4.2%)	103,893 (3.9%)	107,104 (3.7%)
Migration										
Same add 1yr ago			1,209 (77.2%)	1,247 (79.7%)	30,271 (74.1%)	32,980 (76.5%)	3 695 742 (77.5%)	4,119,424 (79.7%)	5 718 965 (77.3%)	6,335,812 (79.4%)
Same add 5 yr ago			794 (53.6%)	794 (53.2%)	19,380 (50.0%)	20,837 (50.7%)	2 402 160 (53.2%)	2,635,497 (53.6%)	3 775 527 (53.8%)	4,095,964 (53.8%)
Occupation										
Manager	11 (7.3%)	14 (8.0%)	42 (6.7%)	59 (8.1%)	2,173 (12.0%)	2,471 (12.1%)	311 762 (13.7%)	368,876 (15.2%)	456 084 (13.5%)	536,820 (14.6%)
Professional	26 (17.3%)	37 (21.1%)	126 (20.1%)	134 (18.4%)	3,437 (18.9%)	3,898 (19.1%)	597 798 (26.3%)	711,729 (29.3%)	798 126 (23.6%)	952,131 (25.8%)
Technical & Trade	26 (17.3%)	27 (15.4%)	110 (17.6%)	99 (13.6%)	2,626 (14.5%)	2,903 (14.2%)	265 056 (11.6%)	254,555 (10.5%)	429 239 (12.7%)	436,589 (11.8%)
Community	14 (9.3%)	35 (20.0%)	76 (12.1%)	120 (16.5%)	2,446 (13.5%)	3,068 (15.0%)	218 206 (9.6%)	225,062 (9.2%)	350 261 (10.3%)	390,779 (10.6%)
Clerical	16 (10.7%)	7 (4.0%)	72 (11.5%)	67 (9.2%)	2,182 (12.0%)	2,426 (11.9%)	331 135 (14.5%)	334,504 (13.7%)	467 977 (13.8%)	480,612 (13.0%)
Sales	16 (10.7%)	19 (10.9%)	54 (8.6%)	74 (10.2%)	1,773 (9.8%)	1,755 (8.6%)	205 051 (9.0%)	188,556 (7.7%)	311 414 (9.2%)	294,889 (8.0%)
Machinery op	5 (3.3%)	10 (5.7%)	38 (6.1%)	51 (7.0%)	1,162 (6.4%)	1,376 (6.7%)	128 020 (5.6%)	136,033 (5.6%)	206 839 (6.1%)	222,186 (6.0%)
Labourer	27 (18.0%)	18 (10.3%)	92 (14.7%)	97 (13.3%)	2,074 (11.4%)	2,211 (10.8%)	171 450 (7.5%)	164,335 (6.7%)	297 887 (8.1%)	300,966 (8.1%)
Travel to work										
Car driver	96 (66.7%)	115 (65.7%)	448 (71.6%)	475 (65.2%)	12,835 (70.7%)	13,402 (65.5%)	1 197 269 (52.6%)	832,277 (34.2%)	1 953 399 (57.7%)	1,587,613 (43.0%)
Train							247 051 (10.8%)	60,858 (2.5%)	252 786 (7.4%)	62,460 (1.7%)

SARAH GEORGE CONSULTING

Demographic Characteristic	SAL1 - 1105832	SAL1 - 10301161209	South Bathurst Suburb 2016	South Bathurst suburb 2021	Bathurst LGA 2016	Bathurst LGA 2021	Greater Sydney 2016	Greater Sydney 2021	NSW 2016	NSW 2021
Bus							125,503 (5.5%)	28,786 (1.2%)	133,903 (3.9%)	34,408 (0.9%)
Worked from home	8 (5.6%)	13 (7.4%)	16 (2.6%)	61 (8.4%)	838 (4.6%)	2,396 (11.7%)	98,906 (4.3%)	944,501 (38.8%)	163,026 (4.8%)	1,141,467 (30.9%)
Walked only	7 (4.9%)		23 (3.7%)	17 (2.3%)	685 (3.8%)	647 (3.2%)				

Source: 2016 & 2021 Census data (www.abs.gov.au) – QuickStats & General Community Profile – as at March 2024

APPENIDX B

EXPERIENCE AND QUALIFICATIONS OF AUTHOR

Sarah George – BA (Psych/Soc), Cert IV Youth Work, Cert IV Training & Assessment

QUALIFICATIONS:

Bachelor of Arts majoring in Psychology & Sociology (Macquarie University); Teaching by Distance (TAFE OTEN); Certificate IV – Workplace Training & Assessment, Youth Work Certificate IV (TAFE NSW).

EXPERIENCE:

In practicing as a consultant, I have completed assignments for a number of clients in the private and public sector, including:

- preparation of Statements of Evidence and representation as an Expert Witness in the Land and Environment Court of NSW & NSW Civil and Administrative Tribunal;
- preparation of the City of Sydney Council's Alcohol-Free Zone Policy Review & Guide;
- preparation of a draft Local Approvals Policy for the City of Sydney ("Sex on Premises Venues");
- preparation of Social Impact Assessments for Development Applications, including Matthew Talbot Lodge, Vincentian Village and the Ozanam Learning Centre for St Vincent de Paul, Malek Fahd Islamic School, and Hotel Development Applications at Hurstville and La Perouse and numerous packaged liquor licences;
- preparation of Community Impact Statements for packaged liquor outlets, on-premises licences for submission to the Office of Liquor, Gaming and Racing; and
- preparation of numerous Social Impact Assessments for licensed premises, both hotels and off-licence (retail) premises for submission to the Office of Liquor Gaming and Racing and the former Liquor Administration Board.

Prior to commencing as a consultant, I worked in community organisations and in the non-Government and private sectors in numerous roles including:

- Teacher – TAFE Digital (Mental Health, Alcohol & Other Drugs, Youth Work & Community Services)
- Project Officer – Education & Development with Hepatitis NSW
- Case Manager Big Brother Big Sister Mentoring Program with the YWCA NSW

- Drug and Alcohol educator and counsellor
- Youth Worker

I also worked for several years in a Town Planning Consultancy.

MEMBERSHIPS:

International Association of Impact Assessment

OTHER:

Justice of the Peace for NSW



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29 November 2023

Ms K Hodgkinson
Hampton Property Services

kristy@hamptonspropertyservices.com.au

Dear Ms Hodgkinson

Pre-Planning Proposal

**Proposed Lot 226 of a subdivision of Lot 22 DP1033481 at 34 Busby Street, Bathurst –
Proposed R3 Medium Density Zone**

I refer to our meeting held 14 November 2023 and subsequent emails indicating your intent to seek a rezoning of proposed lot 226 of a subdivision of Lot 22 DP1033481 at 34 Busby Street to R3 Medium Density Zone.

Preliminary concept plans were discussed at the meeting, and it is understood that your intention is to seek to rezone proposed lot 226 at 34 Busby St to enable medium density housing at a density that exceeds the current standard or that might be available by amending the residential density precinct under the Bathurst Regional Development Control Plan 2014.

The **attached** document contains a preliminary list of matters which should be considered in the preparation of your planning proposal documentation. This list should not be seen as exhaustive, but instead a minimum level of detail for the preparation of the Planning Proposal.

It is recommended that draft documentation be provided to Council for review and a further meeting be held with Council staff prior to formal lodgement of the Planning Proposal in the NSW Planning Portal.

Council would consider the Planning Proposal a major LEP amendment and so a fee of \$32,554 would apply to your application. Should a concurrent DCP amendment be required an additional fee of \$15,625 would also apply. Note that updated fees will apply after 1 July 2024. Please also note that at this time Council cannot guarantee support or success of the application.

If you have any queries, please contact myself, or Ms Tamsin McIntosh of Council's Environmental Planning & Building Services Department on 02 6333 6272.

Yours faithfully

J E Bingham
MANAGER STRATEGIC PLANNING

Reference: JB:JM:20.00373
Enquiries: Ms T McIntosh 02 6333 6272
ljb Hodgkinson.docx

34 Busby Street – Proposed Lot 226 of a subdivision of Lot 22 DP1033481 – Bathurst Regional Council – Preliminary Comments

(File 20.00373)

The following contains a preliminary list of matters which should be considered in the preparation of your planning proposal documentation to rezone proposed lot 226 (2.28ha) of a subdivision of Lot 22 DP1033481 at 34 Busby St to enable medium density housing. This list should not be seen as exhaustive, but instead a minimum level of detail for the preparation of the Planning Proposal.

Environmental Investigations to support the Planning Proposal

The following environmental investigations will be required (at a minimum) to support the Planning Proposal:

1. Heritage Impact Assessment – the dwelling yield proposed should directly respond to the opportunities and constraints identified through a heritage impact assessment (with reference to the current Conservation Management Plan prepared for the site), and with particular reference to:
 - a. View Analysis - protection of views to and from the heritage item located within 34 Busby St.
 - b. The impact of new built form on the heritage item.
 - c. The curtilage required to ensure ongoing financial viability of the heritage item and its adaptive reuse.
 - d. The potential for archaeology
 - e. The aesthetic and cultural significance of existing landscaping and sculptures. Council understands that there are some new additional features installed to commemorate peace/acknowledgement of the Wiradjuri people (possibly related to proposed lot 225). Opportunities for interpretation to be incorporated on the site. A detailed interpretation strategy would be required at DA stage.
2. Servicing Strategy - reticulated water, sewer and stormwater drainage.
 - a. Determine the capacity for reticulated water, sewer and stormwater services for the proposed dwelling yield and identify and cost any augmentation required.
 - b. Clarify the location of service connections including any adjoining properties that may be required for connection of services. Where services are dependent upon third party land, property agreements should be sought in the first instance to avoid projects being unable to be serviced. Where property agreements cannot be provided alternate means of servicing may be required.
3. Traffic Impact and Movement and Place assessment with particular reference to:
 - a. Impacts on the existing road network, especially the intersection of Busby/Prospect/Havannah Streets and impacts on other local roads including, but not limited to, Spencer and Torch Streets.
 - b. Active and Public transport access and improvements that might be required.
 - c. The adequacy of the internal road network (public or private) to cater for the dwelling yield proposed.
 - d. Access into and out of the site for service vehicles – e.g. emergency vehicles, waste disposal, delivery and removalist vehicles etc.

4. Place Analysis:
 - a. Survey and site plan (inclusive of heritage item and adaptive reuse proposals where known)
 - b. Site analysis plan
 - c. Urban design diagrams - 3 dimensional diagrams/computer model of new building forms (bulk and scale) – these should not be architectural drawings but rather diagrams/computer model showing the proposed building envelopes (height and footprint) against the existing features of the site (heritage item and landscaping to be retained/removed) and all adjoining and adjacent properties.
 - d. Shadow Diagrams.
 - e. View analysis – to and from the site, particularly from key vantage points.
5. Urban Design Report, with reference to:
 - a. recommendations for future built form, particularly to:
 - i. mitigate impacts on the heritage item and the wider heritage conservation area,
 - ii. improve and complement the existing streetscape, and
 - iii. minimise potential noise impacts from the Mount Panorama motor racing circuit.
 - b. Access to or the provision of new open space for residents and/or opportunities to embellish existing nearby spaces.
 - c. Requirements that should be included in the LEP (special provision) and/or concurrent DCP amendment to ensure future development achieves design excellence.
6. Social Impact Assessment:
 - a. Consideration of how the proposal supports and will achieve housing choice, diversity and affordability.
 - b. Assessment of the potential impact of the proposal on services and facilities in the immediate neighbourhood and the need for new/upgraded services and facilities (e.g open space, active transport connections etc) to cater for the new population and the mechanisms to achieve the required upgrades (e.g. planning agreement).

Council is aware that the owners of the adjoining 50 Busby St are also proposing a Planning Proposal to enable medium density housing on their site. It would be prudent for you to discuss your proposal with them and ensure that the above reports consider the accumulative impacts of both proposals particularly in terms of servicing and traffic impact.

Planning Proposal

The relevant local planning controls are:

- Bathurst Regional Local Environmental Plan 2014
- Bathurst Regional Development Control Plan 2014

1. Mapping:

Based on the investigations above, Council would expect the Planning Proposal to make recommendations for changes to the following mapping layers under Bathurst Regional Local Environmental Plan 2014:

- Land Zoning Map (LZN).
- Height of Buildings Map (HOB).
- Floor Space Ratio Map (FSR).
- Lot Size Map (LSZ).
- Minimum Lot Size Map – Manor Houses, Multi Dwelling Housing and Residential Flat Buildings Map (LSM).

Note that the Minimum Lot Size – Dual Occupancy Map (LSD) would not apply with dual occupancy currently prohibited in the R3 Medium Density Zone under LEP 2014.

Council would expect that the height of buildings and floor space ratio provisions will provide certainty to the maximum dwelling yield sought across proposed lot 226. Consideration should also be given to the zoning, height of buildings and floor space ratio provisions that might appropriately apply to proposed lot 225 upon which the heritage item is located.

All mapping is to be prepared in accordance with the NSW Department of Planning & Environment's *Standard Technical Requirements for Spatial Datasets and Maps*. The mapping data is to be supplied to Council in Shapefile format.

2. Special Provision – Design Excellence

Council would expect that the urban design report would identify the mechanisms required to deliver design excellence across the development site. Council would expect the principles to achieve design excellence to be translated into a special provision under the LEP that would apply to the site (and possibly the broader R3 Medium Density Zone). The Planning Proposal should also consider any indicative DCP provisions that might sit under the LEP provision. Note that a DCP amendment could be completed concurrently with the Planning Proposal.

In this regard consideration should be given to existing LEP Clause 7.17, existing DCP Clause 17.4.6 and to Council Policy "Future Proofing Our CBD – 2022 and Beyond" adopted by Council on 21 September 2022. Whilst this Clause and Policy applies to the Bathurst CBD, the principles embedded in these Clauses and Policy are likely relevant to this proposal. A copy of the Policy is **attached**.

Council would anticipate that if the special provision does not relate to the whole R3 zone that it would relate to the current proposals being considered for both 34 and 50 Busby Streets.

It is recommended that the *Government Architect New South Wales: Urban Design Guidelines* be considered during the preparation of the Planning Proposal. Available at:

Home Page:

<https://www.governmentarchitect.nsw.gov.au/>

E.g. Better Placed:

<https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/strategy-documents/better-placed-a-strategic-design-policy-for-the-built-environment-of-new-south-wales-2017.pdf>

E.g. Implementing Good Design:

<https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/discussion-papers/discussion-paper-implementing-good-design-2018-03.pdf>

E.g. Evaluating Good Design:

<https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/discussion-papers/discussion-paper-evaluating-good-design-2018-03.pdf>

E.g. Urban Design for Regional NSW:

<https://www.governmentarchitect.nsw.gov.au/guidance/regional-urban-design>

E.g. Good Urban Design (Draft):

<https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/design-guides/draft-guide-good-urban-design-2019-06-26.pdf>

E.g. Greener Places Design Guide (Draft):

<https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/discussion-papers/discussion-guide-greener-places-2020-06-03.pdf>

3. Final Built Form, Lot size and Staging Plan

In consideration of (1) and (2) above, Council needs certainty that the final built form can be controlled to achieve design excellence. Council anticipates that this would be best achieved by means of development occurring in the form of multi-dwelling housing/residential flat buildings on either one super lot or multiple super lots across your development site. Subsequent subdivision of the multi-dwelling housing/residential flat buildings would be enabled under clause 4.1B(4) of the LEP. Council is concerned that subdivision first (as small lots) will not provide the best design outcomes across the site.

Council would therefore anticipate a very large minimum lot size for dwellings (to restrict options to subdivide first) and a lot size for multi dwelling housing/RFB that matched a staging plan – that is a single or multiple super lots, depending upon likely staging of the development.

Existing Studies relevant to consideration of the environmental investigations and the Planning Proposal (not necessarily an exhaustive list)

Vision Bathurst 2040 – Bathurst Region Local Strategic Planning Statement 2020

https://www.bathurst.nsw.gov.au/files/assets/public/v/1/council/plans-policies/vision-bathurst-lsps_2020_-_final_lr.pdf

Bathurst 2036 Housing Strategy

<https://www.bathurst.nsw.gov.au/files/assets/public/v/1/council/plans-policies/bathurst-2036-housing-strategy-vol-1-final.pdf>

<https://www.bathurst.nsw.gov.au/files/assets/public/v/1/council/plans-policies/bathurst-2036-housing-strategy-vol-2-final.pdf>

Bathurst 2040 Open Space Strategy

https://www.bathurst.nsw.gov.au/files/assets/public/v/1/council/plans-policies/2040_open_space_strategy.pdf

Bathurst Community Access and Cycling Plan 2011 and 2022 Consultation report for new Active Transport Strategy

<https://www.bathurst.nsw.gov.au/files/assets/public/v/1/council/plans-policies/community-access-and-cycling-plan.pdf>

The active Transport survey can be provided upon request.

Infrastructure Contribution Plans

<https://www.bathurst.nsw.gov.au/Planning-Building/Planning-Controls/Development-Contribution-Plans>

Consultation:

At this stage, Council would anticipate consultation with the following parties (at a minimum) during the Planning Proposal process. Council would encourage your early consultation with these parties.

- Adjacent and adjoining landholders
- NSW Heritage
- Essential Energy
- Telstra
- Jemena
- Emergency service providers.

NSW Department of Planning and Environment (DPE)

It is anticipated that DPE would require consideration of the following matters in preparation of the Planning Proposal:

1. Need to follow Local Environmental Plan Making Guideline dated August 2023.
2. Address current section 9.1 Ministerial Directions and SEPPs.
3. Address Central West and Orana Regional Plan 2041.
4. Address local land use planning documents.

Attachment

POLICY:	FUTUREPROOFING OUR CBD - 2022 AND BEYOND
DATE ADOPTED:	Director Environmental Planning & Building Services Report # 9.2.5 Date: 21 September 2022
FILE REFERENCE:	20.00340
OBJECTIVE:	To establish the guiding principles to support future decision making in ensuring the public realm of the CBD responds to changing community values and economic and environmental influences over time.

1.0 BACKGROUND:

Bathurst Town Centre Master Plan

The Bathurst Town Centre Master Plan 2021 provides a vision for improving seven city blocks within the Bathurst CBD, an area known as the Bathurst Town Centre.

Allen Jack + Cottier Architects (AJ+C) were invited to prepare the Master Plan for Bathurst Regional Council. The project was co-sponsored by Charles Sturt University (CSU), who were investigating the opportunities for a Bathurst CBD Campus at that time.

The Master Plan outlines AJ+C's analysis of the existing condition of the Town Centre, the outcomes of stakeholder and community engagement undertaken in the development of the draft plan, and then makes several site or area-specific recommendations as well as Centre-wide master plan proposals. As CSU decided not to proceed with an investigation of a CBD Campus, several options explored for campus facilities were identified as open opportunities for other uses.

'Futureproofing our CBD', Council's Response to the Bathurst Town Centre Master Plan, summarises the key concepts proposed in the A J + C Master Plan. The 'Futureproofing our CBD' response did **not** recommend wholesale adoption of the Master Plan but outlined those elements of the Master Plan considered appropriate, at that time, for consideration of their implementation into the future.

The community's response to Council's 'Futureproofing Our CBD' report was sought through a formal public exhibition process. "Futureproofing Our CBD" was exhibited for a one-month period with submissions closing on **24 May 2021**.

A range of voices were heard and messages received during the public exhibition period. These were collated in the report: Futureproofing our CBD (Council's Response to the Bathurst Town Centre Master Plan) – "What Bathurst Said".

Relevant documents are available at:

<https://yoursay.bathurst.nsw.gov.au/bathursttowncentre/widgets/278695/documents>

Street as Shared Spaces

At about the time Council placed its proposed response to the Master Plan on public exhibition Council was successful in attracting a substantial grant (\$767,884) under the NSW Government's Streets as Shared Spaces (SaSS) program round 1.

The NSW Government's Streets as Shared Spaces program provided one-off grant funding to support local councils to test and pilot new and innovative ideas for streets as safe, shared public spaces.

The Pilot project and the additional grant received under round 2 of the program enabled Council to trial a number of the suggestions outlined in the Bathurst Town Centre Master Plan.

The SaSS projects have highlighted the value in trialing change in stages rather than seeking wide ranging irreversible change. This has proved a very effective method of engaging with the community as to how that change is best managed and achieved.

This Policy

This policy seeks to respond to the Bathurst Town Centre Master Plan and the community's response to it and the lessons learnt from the Streets as Shared Spaces Pilot projects. It sets the guiding principles for future change within the CBD to ensure impacts on the public realm respond to changing community values and economic and environmental influences. Decisions involving future changes will need to assess their consistency against these Principles. Those decisions can reference the Master Plan report for possible solutions or adapt solutions to suit the circumstances of the case or develop new solutions, provided they respond to the principles of the Policy. Other strategies and plans will also inform those decisions including for example the future Active Transport Strategy and a revised Retail Strategy. Importantly, community engagement can continue as each new decision is made.

2.0 AIM OF THIS POLICY:

The policy aims to guide change in the public realm of the Bathurst CBD, whether owned publicly or privately.

3.0 OBJECTIVE OF THIS POLICY:

The objective of this policy is to establish the guiding principles to support future decision making to ensure the public realm of the CBD responds to changing community values and economic and environmental influences over time.

This policy seeks to ensure that change within the public realm of the Bathurst CBD is positive and negative impacts are minimised and mitigated.

4.0 LAND TO WHICH THIS POLICY APPLIES:

This policy applies to lands located within the Central Business District (CBD) of the City of Bathurst, generally being those lands located within the extent of lands zoned B3 Commercial Core under Bathurst Regional Local Environmental Plan 2014.

The public realm is those spaces around, between and within buildings that are publicly accessible and visible including streets, plazas, parks, footpaths, laneways, parks and open spaces.

This policy applies to changes that may be made to land, buildings, streets, lanes, footpaths, parks, spaces, views and vistas that may impact or change the public realm of the Bathurst CBD.

This policy applies to privately owned land to the extent to which new development on private land impacts on the public realm.

5.0 GUIDING PRINCIPLES TO SUPPORT FUTURE DECISION MAKING TO ENSURE THE PUBLIC REALM OF THE CBD MEETS COMMUNITY EXPECTATIONS:

The Council will consider the following guiding principles (as applicable) when making decisions that impact on the public realm (private or public) of the Bathurst CBD.

5.1 Sense of Place - How does change engage the Bathurst Town Centre.

Considerations include:

- a. the geographical grid layout of the Bathurst Town Centre, inclusive of the meridian ridge line and the respective falls to the northwest and southeast.
- b. the role of the Bathurst Town Square as the heart of the Bathurst Town Centre.
- c. the role of the Carillon, located on the meridian ridge and as the high point of the city,
- d. Bathurst's two- and three-storey street frontage rhythm and character.
- e. significant stories and memories of place recognising cultural longevity and promoting its greater visibility (including relating to Aboriginal culture and heritage).
- f. the extent the community and visitors enjoy being in and take pride in the Bathurst Town Centre.

5.2 Heritage and Streetscape - How does change integrate with the Bathurst Town Centre and its heritage streetscapes and parklands.

Considerations include:

- a. scale, bulk, massing, form, and siting of new development to complement and improve the quality and amenity of the public domain.
- b. the external appearance of new development (building design, character, materials, colours, and detailing) and how it might improve the quality and amenity of the public realm.
- c. the design of new development and how it responds to and mitigates its potential to impact other property and the public realm in terms of, overshadowing and solar access, visual and acoustic privacy, noise, wind and reflectivity.
- d. protecting heritage assets and encouraging adaptive reuse of heritage building stock.

5.3 Landscape and environment - How does change respond to and integrate with the environment and landscape of the Bathurst Town Centre.

Considerations include opportunities to improve:

- a. amenity by connecting to networks of open space.
- b. the quality and the value of the public realm.
- c. the amenity of streets and public spaces through landscaping and vegetation, using plant species which are particular to the Bathurst Town Centre.
- d. water and air quality by utilising sustainable and resilient infrastructure.

5.4 Economic vitality - How does change revitalise the Bathurst Town Centre and particularly activate the streets of the Bathurst Town Centre.

Considerations include:

- a. encouraging economic activity that creates a distinct and attractive place for business to trade and invest, and for people to visit.
- b. creating new or improved places for people and communities to gather, meet and interact that are safe enjoyable and equitable, inclusive of the provision of street furniture.
- c. encouraging opportunities for events.
- d. encouraging night-time activation.

5.5 Connection - How does change prioritise connectivity and walkability.

Considerations include:

- a. contributing to walkable blocks, particularly at mid-block locations.
- b. increasing pedestrian traffic and contributing to business exposure in the public realm.
- c. encouraging people to walk around the Bathurst Town Centre by integrating pedestrian paths with vehicle access and designated parking areas.
- d. connecting significant natural features, buildings, views and cultural assets to make the Bathurst Town Centre more navigable, accessible, engaging and attractive and to reinforce local character, including new places to sit, rest and socialise.
- e. slowing traffic and minimising unnecessary truck movements.
- f. increasing pedestrian safety by designing for a balance of all users (pedestrian, cyclist or vehicular) with differing abilities.
- g. encouraging temporary road closures and events spaces.

5.6 Traffic and Parking - How does change manage disruptions to traffic and parking and enhance opportunities for public and active transport.

Considerations include:

- a. offsetting on-street car parking losses with new off street parking opportunities.
- b. providing drop off and pick up kerb side spaces.
- c. signalisation of intersections and the prioritisation of traffic and off street car parking locations away from the CBD high streets.
- d. encouraging opportunities for new forms of travel into, through and out of the Bathurst Town Centre including cycling, park and ride, shuttle services and EV infrastructure.

5.7 Climate and Resilience - How does change respond to climate conditions and their impacts on the Bathurst Town Centre.

Considerations include:

- a. new water conservation infrastructure.
- b. mitigating the effect of summers with increasing temperatures and declining rainfall, particularly through appropriate landscaping and greenery.
- c. mitigating the predominant winter winds and their impact in the public realm.

5.8 Liveability - How does change encourage new employees to work and new residents to live in the Bathurst Town Centre.

Considerations include:

- a. adaptive reuse of heritage assets for commercial and residential opportunities.
- b. redevelopment of centre block locations and mid-block laneway improvements to open the centre of blocks and vacant lands.
- c. identification of opportunities to appropriately increase living and built form density (e.g. building height, floor space ratio, better utilisation of on ground car parking air space, alterations to residential density standards) in ways that mitigate impacts to street frontage rhythm and character.
- d. enhancing public safety particularly at night-time.

6.0 COMMITMENT TO COMMUNITY ENGAGEMENT

In guiding change under the principles of this Policy, Council commits to ongoing engagement with the community including the business community.

Where appropriate, Council will seek to trial change in stages rather than seeking wide ranging irreversible change as an effective method of engaging with the community as to how that change is best managed and achieved.

7.0 MODELLING CHANGE

3D modelling can provide an invaluable tool in simulating change within the CBD to aid decision making under this Policy.

In guiding change under the principles of this Policy, Council may require the submission of digital data in a format prescribed by Council for the purpose of 3D modelling. This data may be used by Council for community consultation/engagement purposes.