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22 July 2025

Our Ref: 24-1123
Your Ref: MCU/22/0003

Mareeba Shire Council
PO Box 154
MAREEBA QLD 4880

Attention: Mr Brian Millard

Dear Brian,

RE: REQUEST FOR A 'MINOR CHANGE' UNDER S78 OF THE PLANNING ACT 2016 TO A DEVELOPMENT APPROVAL OVER LAND AT 232 BYRNES STREET AND PART OF LAND AT CLOSE AVENUE, MAREEBA, MORE FORMALLY DESCRIBED AS LOT 78 ON SP298287 AND LOT 20 ON NR7137.

Reedlodge Pty Ltd (the Applicant) have instructed Urban Sync Pty Ltd (Urban Sync) to apply to Mareeba Shire Council (Council), as the Assessment Manager, to request a 'Change Approval' Minor under s78 of the *Planning Act 2016* (PA) to an existing Development Permit over the above-described land. In support of this application, we include the following to assist with Council's assessment:

- Planning Act Form 5 – Change Application and Landowners Consent as **Attachment 1**;
- Copy of the Relevant Approval as **Attachment 2**;
- Updated Plans of Development prepared by Thomson Adsett as **Attachment 3**;
- Traffic Impact Assessment prepared by SLR as **Attachment 4**; and
- 'Change Approval' Minor Application issued to State Assessment and Referral Agency as **Attachment 5**.

Per Mareeba Shire Council's Schedule of Fees and Charges 2025-2026, the application fee amounts to **$6,310.50**, broken down as follows::

- Shopping Centre – Impact Greater than 2,500m^2 GFA = $9,511.00 + Food and Drink Outlet – Impact = $3,110.00;
- $12,621.00 x 50% (Charge is 50% of current prescribed fee)
- **$6,310.50**

In accordance with s79 of the PA, as the Applicant is the owner of Lot 78, NO landowners consent for this lot is required. As the Applicant is NOT the owner of Lot 20, landowners' consent has been included for this lot. We trust this application can now be progressed for assessment. Should you require any further information or clarification on any matters regarding this application, please do not hesitate to contact on office on the email provided below.

Yours faithfully

Matt Ingram
Planning Manager
E matt@urbansync.com.au | **T** 07 4051 6946 | **M** 0488 200 229

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Limitation: This report has been prepared on behalf of Urban Sync Pty Ltd for our client, Reedlodge Pty Ltd and considers the instructions and requirements of Reedlodge Pty Ltd with regards to the development being proposed. This report should not be relied upon by any third party and Urban Sync Pty Ltd accepts no liability or responsibility for the reliance on this report, or data contained within the report, by any third party.

Reference	Revision	Date	Prepared by	Checked by	Authorised by
24-1123	1.0	22/07/2025	NCD	MDI	MDI

22/07/2025
Final Version 1.0
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1 SITE DETAILS

Registered Landowner:	▪ Lot 78: Reedlodge Pty Ltd; and ▪ Lot 20: State Government (with Council as Trustee)
Applicant:	Reedlodge Pty Ltd
Site Location:	232 Byrnes Street and Close Avenue, Mareeba
Lot and Description:	Lot 78 on SP298287 and part of Lot 20 on NR7137
Site Area:	1.62ha (Lot 78: 1.51ha and Part of Lot 20: 1,124m^2)
Tenure:	▪ Lot 78: Freehold ▪ Lot 20: Reserve
Easements/Encumbrances:	▪ Lot 78: Nil ▪ Lot 20: Lease A
Existing Improvements:	Lot 78 is generally unimproved. The portion of Lot 20 to be utilised for the proposed development is also vacant, although the remainder of Lot 20 is improved with aged care housing.



Figure 1: The Parent Allotments – 232 Byrnes Street and Close Avenue, Mareeba (Source: Queensland Globe, 2025).

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Figure 2: Development Site – 232 Byrnes Street and Close Avenue, Mareeba (Source: Queensland Globe, 2025).

2 APPLICATION AND APPROVAL BACKGROUND

The site has an extended approval history with serval approvals being issued dating back to the 1990's. However, the application relevant to this correspondence (the 'application') was lodged in July 2022 by Mareeba 232 Pty Ltd and sought approval for a Material Change of Use to facilitate the construction of a 'Shopping Centre' and a drive thru 'Food & Drink Outlet'. The application was lodged under and assessed against the *Planning Act 2016* and the *Mareeba Shire Council Planning Scheme 2016*, as well as all other relevant legislation.

The application was Impact Assessable and was therefore, required to be assessed against the entire Planning Scheme and undergo a period of public notification. The site is also located on a significant juncture at Byrnes Street (a State-controlled Road) & Rankin Street, meaning that the application was also required to be referred to the Department of Transport and Main Roads via the State Assessment and Referral Agency (SARA). The application was approved by SARA on 24 February 2023 with the formal approval from Council being issued on 16 March 2023. The approval authorised the following aspect of development.

- **Development Permit for Material Change of Use (Shopping Centre and Food and Drink Outlet).**

It is this approval which is the 'relevant' approval over the site, and which is applicable to this Change Application (Minor). For ease of reference, a copy of this approval is included in **Attachment 2**.

The **approved** development included the following key elements (see **Figure 3**):

- A 3,655m^2 Woolworths supermarket;
- 814m^2 of specialty retail shops located within the 'forecourt mall';
- Amenities located within the 'forecourt mall' comprising a total area of 90m^2;
- A height of approx. 9.6m above ground level;

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- A 270m^2 drive through Food and Drink Outlet with a maximum height of approx. 6.5m above ground level and including a dual drive through lane;
- 235 car parking spaces;
- Twelve (12) bicycle spaces;
- End of trip facilities including an accessible shower and seven (7) secure staff bicycle spaces; and
- Landscaping to approximately, 1,200m^2 of the site.

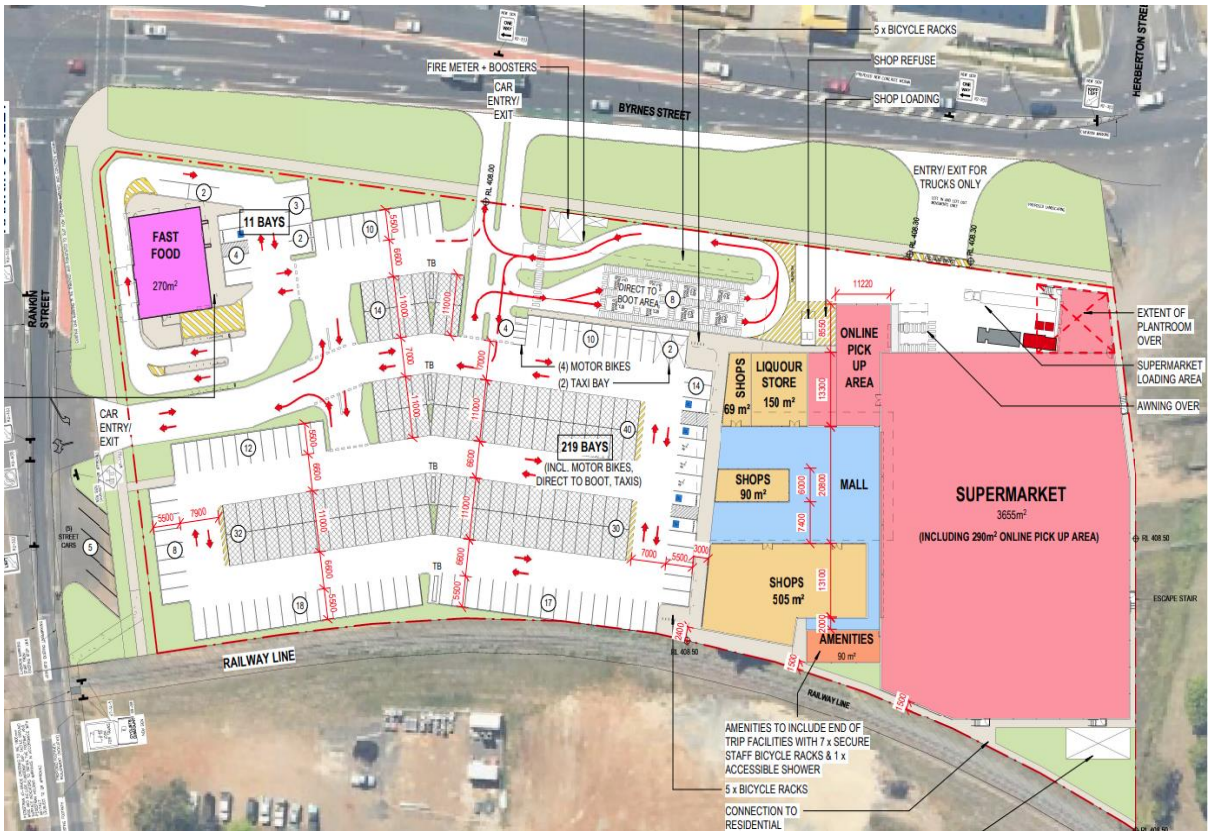


Figure 3: Approved Plans of Development (Source: Thomson Adsett, 2022)

3 PROPOSED CHANGES

Since the issuing of the relevant approval, Mareeba 232 Pty Ltd have abandoned the site. The Applicant (Reedlodge Pty Ltd) has recently secured a heads of agreement with Woolworths and now plan to complete the approved development. However, several changes to the approved development are required in order to:

- Address the Applicants preferences and requirements for the approved development;
- Reflect current community needs; and
- Reflect the lead tenant (Woolworths) current needs.

The changes being sought primarily relate to the retail shops, forecourt mall and the site car parking layout, generally as summarised below:

- A 476m^2 increase in Gross Floor Area (GFA) to the 'retail shop' component (814m^2 to 1290m^2);
- A 115m^2 reduction in the floor area within the 'enclosed mall/foyer/passage area' (637m^2 to 522m^2);

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- The above equates to a floor area increase of 361m^2;
- Relocation of the services (fire metre, boosters, etc.) northward of the Byrnes Street crossover;
- Internal modifications throughout the car parking layout;
- Changes to the 'direct to boot' area to remove the drive thru aspect in favour of dedicated parking spaces';
- An additional eighteen (18) car parking spaces, for an increased total of 253 car parking spaces;
- Modification to the taxi-bays to be longer and allow a drive-through function;
- An additional one (1) bicycle space, for an increased total of thirteen (13) bicycle spaces;
- Internal layout changes including arrangements/modifications to the:
  - Enclosed mall/foyer/passage area;
  - Size and orientation of eastern tenancies and adjacent online pick up area;
  - Removal of central shop tenancy;
  - Increase in size of the western most tenancy/tenancies; and
  - Amenities area.

These changes are identified on the updated plans of development in **Attachment 3** and **Figure 4** below. To facilitate these changes, the approved plans as well as all conditions in the relevant approval which reference the now defunct approved plans are required to be changed as part of this Change Application (Minor).

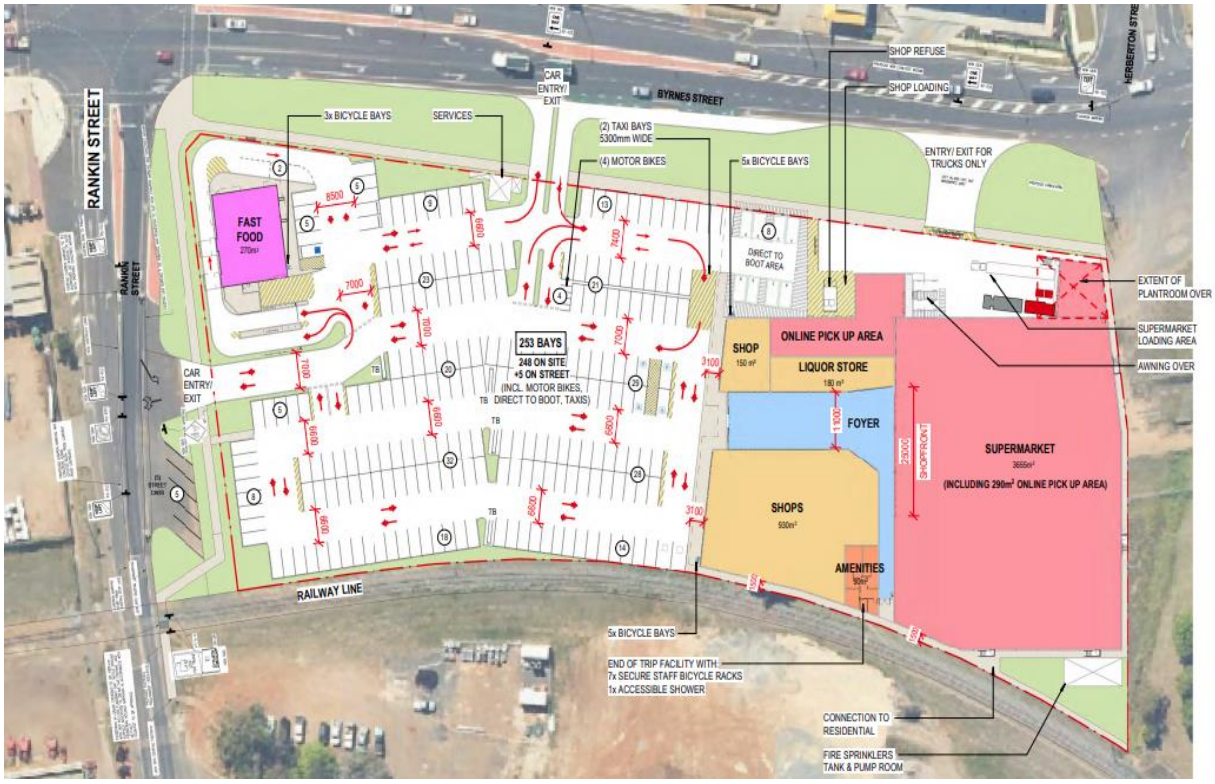


Figure 4: Amended Plans of Development (Source: Thomson Adsett, 2025)

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4 REQUESTED CHANGES TO THE RELEVANT APPROVAL

As outlined in **Section 3** above, the proposed changes trigger amendments to the approved plans AND any conditions that reference the approved plans i.e., Conditions 3.6, 4.3, 4.4.3, 4.5.3, 4.5.4, and 4.7.3. With this in mind, Urban Sync requests the following amendments to the existing conditions of approval MCU/22/0003 noting for ease of reference, deletions have been 'struck out' and additions added in **bold** and underlined.

Approved Plans

Original Condition

<table>
<tr><th>Condition</th><th>Amendments</th></tr>
<tr><td colspan="2">Approved Plans</td></tr>
<tr><td>-</td><td>The following plans are Approved plans for the development:
<table>
<tr><th>Reference</th><th>Drawing or Document</th><th>Prepared by</th><th>Date</th></tr>
<tr><td>Drawing: TA# 19.0298.17 A0.00 Rev 7</td><td>Cover Sheet</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A0.10 Rev 7</td><td>Site Context</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A1.01 Rev 18A</td><td>Site Plan</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A1.02 Rev 14</td><td>Development Plan</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.01 Rev 12</td><td>Ground Floor Plan Supermarket</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.02 Rev 6</td><td>Roof Plan - Supermarket</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.03 Rev 6</td><td>Elevations - Supermarket</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.04 Rev 6</td><td>Elevations - Supermarket</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.05 Rev 7</td><td>Sections - Supermarket</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A4.01 Rev 6</td><td>Ground Floor Plan – Fast Food</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A4.02 Rev 5</td><td>Elevations – Fast Food</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A5.01 Rev 8</td><td>3D Views</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: TA# 19.0298.17 A5.02 Rev 8</td><td>3D Views</td><td>Thomas Adsett</td><td>18/01/2023</td></tr>
<tr><td>Drawing: 1604-002 Rev F</td><td>Rankin Street Median Extension Concept</td><td>Trinity Engineering and Consulting</td><td>22/12/22</td></tr>
</table></td></tr>
</table>

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Proposed New Condition

<table>
<tr><th>Condition</th><th>Amendments</th></tr>
<tr><td colspan="2">Approved Plans</td></tr>
<tr><td>-</td><td>The following plans are Approved plans for the development:
<table>
<tr><th>Reference</th><th>Drawing or Document</th><th>Prepared by</th><th>Date</th></tr>
<tr><td>Drawing: TA# 19.0298.17 A0.00 Rev ~~7~~ <u>9</u></td><td>Cover Sheet</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A0.10 Rev ~~7~~ <u>10</u></td><td>Site Context</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A1.01 Rev ~~18A~~ <u>27</u></td><td>Site Plan</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A1.02 Rev ~~14~~ <u>21</u></td><td>Development Plan</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.01 Rev ~~12~~ <u>15</u></td><td>Ground Floor Plan Supermarket</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.02 Rev ~~6~~ <u>9</u></td><td>Roof Plan - Supermarket</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.03 Rev ~~6~~ <u>9</u></td><td>Elevations - Supermarket</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.04 Rev ~~6~~ <u>9</u></td><td>Elevations - Supermarket</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A2.05 Rev ~~7~~ <u>9</u></td><td>Sections - Supermarket</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A4.01 Rev ~~6~~ <u>7</u></td><td>Ground Floor Plan – Fast Food</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A4.02 Rev ~~5~~ <u>6</u></td><td>Elevations – Fast Food</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A5.01 Rev ~~8~~ <u>9</u></td><td>3D Views</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: TA# 19.0298.17 A5.02 Rev ~~8~~ <u>9</u></td><td>3D Views</td><td>Thomas Adsett</td><td>~~18/01/2023~~ <u>24/06/2025</u></td></tr>
<tr><td>Drawing: 1604-002 Rev F</td><td>Rankin Street Median Extension Concept</td><td>Trinity Engineering and Consulting</td><td>22/12/22</td></tr>
</table></td></tr>
</table>

Town Planning Commentary:

The approved plans are required to be amended to reflect the changes needed to the approved plans for the reasons listed in **Section 3** i.e., to:

- Address the Applicants preferences and requirements for the approved development;
- Reflect current community needs; and

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- Reflect the lead tenant (Woolworths) current needs.

Other Conditions

While the proposed changes relate solely to the introduction of updated plans of development, several existing conditions of approval make specific reference to the previously approved plans. As such, changes will be required to the following conditions to suitably reflect the updated plans of development:

- 3.6;
- 4.3;
- 4.4.3;
- 4.5.3;
- 4.5.4; and
- 4.7.3

Note: We are open to discussing the most suitable wording/referencing these changes with Council as part of the assessment (if required).

5 REQUEST TO CHANGE (S78) – STATUTORY ASSESSMENT

The 'Minor' Change Application process set out within the *Planning Act 2016* (PA) provides a mechanism to make changes to a development approval without the need for the complexity and delay of a 'fresh' assessment, so long as it would, because of the change, not result in a 'substantially different development'. To assist Council in respect of their consideration and support for this request, an assessment against the relevant statutory and non-statutory requirements set out under the act are provided below in **Tables 1-3**.

Table 1: Test under Schedule 2 of the PA

Tests	Consideration of the proposed change
A minor change, means that -	
*For a **development approval** -*	
Would not result in a substantially different development; and	Please refer to the commentary provided under **Table 2** below which demonstrates the proposed changes do not constitute 'substantially different development'.
If a development application for the development, including the change, were made when the change application is made would not cause –	
(a) The inclusion of prohibited development in the application; or	None of the proposed changes trigger any prohibited development under the PA, nor per Schedule 10, Parts 2-5, Parts 10-11 and Parts 16 and 20, of the *Planning Regulation 2017* (PR).
(b) Referral to a referral agency, other than to the chief executive, if there were no referral agencies for the development application; or	N/A – There were referral agencies for the originating application.
(c) Referral to an extra referral agencies, other than to the chief executive; or	If the original application were resubmitted today including the changes, in accordance with Schedule 10 of the PR, the changes being proposed would not

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	trigger any additional referral agency assessment requirements to the chief executive or otherwise.
(d) *A referral agency to assess the application against, or have regard to, matters prescribed under the regulation under section 55(2), other than matters the referral agency must have assessed the application against, or have regard to, when the application was made; or*	The original assessment undertaken by the SARA related to a State-controlled Road, State-controlled road intersection and the railway. The proposed changes would not trigger assessment of any other State related matters over and above these matters/those matters which were originally assessed.
(e) *Public notification if public notification was not required for the development application.*	N/A - The originating application was Impact Assessable.

The Development Assessment Rules under the PA provides further guidance to assist in determining whether a change may constitute 'substantially different development'. The phrase 'substantially different development' is not defined in the PA. Hence, the assessment of whether the effect of a change would, or would not, result in a 'substantially different development' involves matters of fact and degree, which should be considered broadly and fairly. Accordingly, and to determine that the changes do not in fact, result in 'substantially different development', an assessment of the changes against the 'substantially different development' criteria listed under Schedule 1 of the DA Rules is provided below in **Table 2**.

Table 2: Substantially Different Development Test

<table>
<tr><th>Tests</th><th>Consideration of the Proposed Change</th></tr>
<tr><td>Involves a new use</td><td>The proposed changes do not seek to introduce any new uses.</td></tr>
<tr><td>Results in the application applying to a new parcel of land</td><td>The proposed changes are entirely contained within the original parcels of land.</td></tr>
<tr><td>Dramatically changes the built form in terms of scale, bulk and appearance</td><td>As outlined in Section 3, the proposed changes predominantly relate to the retail shops, forecourt mall and the site car parking layout. It is reasonable to consider that the changes to the car parking area do not constitute any changes to the scale, bulk or appearance of the development as the car parking area does not involve any actual 'built form' i.e. a structure or raised elements. As such, the scope of the proposed 'built form' changes relate to the shopping centre 'box' and this will be the focus of the below commentary.

The setbacks and height of the 'box' remain generally unchanged. Additional floor area has been provided, and it will be whether this additional floor area has 'dramatically' changed the appearance of the 'box' which will determine compliance with this aspect of the test. We note here that this additional floor area is related solely to the retail shops component of the 'box' with no changes to the supermarket component of the development being proposed.

The table below provides a summary of the changes that have occurred to the dimensions of the 'box':

<table>
<tr><th></th><th>Approved Plan of Development</th><th>Amended Plans of Development</th></tr>
<tr><td>Total Floor Area</td><td>5,466m^2</td><td>5,827m^2</td></tr>
</table>
</td></tr>
</table>

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Length (Western Boundary)	Approx. 87m	Approx. 96m
Length (Eastern Boundary)	Approx 87m	Approx. 96m
Width (Northern boundary)	Approx. 79m	Approx. 79m
Width (Southern boundary)	Approx. 81m	Approx. 78m

As is evident from the table above, the proposed changes has resulted in the 'box' becoming an extra, approx. nine (9) meters wide, while minimal/nil changes to the width of the 'box' have occurred. The additional length is predominantly associated with the additional floor area and changed size/shape etc., of the western most tenancy of the retail component and has occurred as a result of enlarging this western most tenancy via a redesign of the internal layout, the reduction of the enclosed mall area and a minor northern expansion toward the car parking area. It is the latter change which is the driver for the additional length of the 'box'. **Figure 5** below identifies this 'additional' length when viewed facing west from Byrnes Street. Such a minor increase to the dimensions of the 'box' could not reasonably be considered to 'dramatically' change the built form in terms of scale, bulk or appearance.

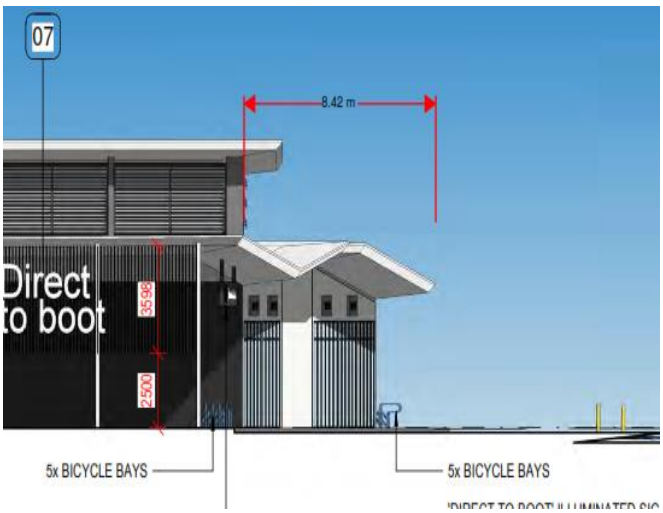


Figure 5: Additional Extent of Shopping Center Box – Side View
(Source: Thomson Adsett, 2025)

Changes the ability of the proposal to operate as intended. For example, reducing the size of a retail complex may reduce the capacity of the complex to service the intended catchment	The proposed changes do not affect the ability of the approved development to operate as was originally intended i.e., the approved development will still operate as a 'Shopping Centre' and 'Food and Drink Outlet'. Additionally, as had been outlined in the Economic Needs Report prepared by Foresight Partners and submitted with the original development application:

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	▪ Retail spending generated by Total Trade Area (TTA) residents in 2021 could support the proposed development (the TTA in the Foresight report included Mareeba, Dimbulah and Kuranda); and ▪ That there would be no adverse impacts on other centre areas. While the proposed changes include a minor increase in floor area, the population of the TTA would also have grown marginally since 2021. This would likely ensure: ▪ The development will still be able to suitably service the TTA; and ▪ The development will not have any adverse viability impacts on surrounding retail activities.
Removes a component that is integral to the operation of the development	Not applicable. The proposed changes do not 'remove' any components of the approved development; they seek modifications to the approved development only.
Significantly impacts on traffic flow and the transport network, such as increasing traffic to the site	As demonstrated in the Traffic Impact Assessment prepared by SLR (See **Attachment 4**), the proposed changes will not result in any adverse impacts on the surrounding road network.
Introduces new impacts or increases the severity of known impacts	The initial 'impacts' associated with the proposed development have been suitably addressed as part of the original application. That said, traffic is and has always been the key 'issue' with the proposed development. With this in mind, the Traffic Impact Assessment prepared by SLR in **Attachment 4** demonstrates that the proposed changes will not introduce any new, nor any adverse/unacceptable traffic impacts.
Removes an incentive or offset component that would have balanced a negative impact of the development	Not applicable. There were no incentives and/or offsets that supported the original approval.
Impacts on infrastructure provision, location or demand	As the proposed changes relate to an increase in floor area of circa 361m^2, it is expected that an increased demand for services, such as water and sewer, will be required. However as outlined in the originating development application, specifically the Engineering Report prepared by Trinity Engineering, the local network has the capacity to facilitate this very minor increase in demand. The specifics of this arrangement will be determined during detailed design and be documented in the associated Operational Works Application.

In summary, the above assessment demonstrates to a suitable standard that the proposed changes will not result in substantially different development and can therefore, be considered a 'Minor Change'. As a result, it would be reasonable and suitable in the circumstances to amend/modify the existing conditions of approval, as sought by **Section 4**.

Section 81 of the PA outlines what the 'Responsible Entity' must consider when assessing a Change Application and **Table 3** below provides commentary against these matters.

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Table 3: Commentary Against Section 81 of the PA

Tests	Consideration of the Proposed Change
(2) "In assessing the change application, the responsible entity must consider—"	-
(2)(a) "The information the applicant included with the application"	Please refer to the supporting material included with this Change Application (Minor).
(2)(b) "If the responsible entity is the assessment manager—any properly made submissions about the development application or another change application that was approved"	The originating application was subject to Impact Assessment and was required to undergo a period of Public Notification where two (2) submissions were received. The submissions received were responded to as part of the original development application process and it is acknowledged that Council can reconsider these submissions as part of their assessment of the proposed changes.
(2)(c) Any pre-request response notice or response notice given in relation to the change application"	No pre-request response has been sought, although we confirm a formal request for a 'Change Approval' Minor has also been submitted to SARA (see **Attachment 5**).
(2)(d) "If the responsible entity is, under section 78A(3), the Minister—all matters the Minister would or may assess against or have regard to, if the change application were a development application called in by the Minister"	The responsibility entity is not the Minister.
(2)(da) "If paragraph (d) does not apply—all matters the responsible entity would or may assess against or have regard to, if the change application were a development application"	The proposed changes do not result in new non-compliances with the Mareeba Shire Council Planning Scheme (Planning Scheme) over and above that which has already been assessed and approved by Council.
(2)(e) "Another matter that the responsible entity considers relevant"	Any 'other matters' were suitably considered as part of the original approval. As has been outlined throughout this application, the proposed changes do not introduce any new or increase the severity of any existing impacts that Council may need to consider in their assessment of this application.
(3) "Subsections (4) and (5) apply if the responsible entity must, in assessing the change application under subsection (2)(d) or (da), consider— *a) a statutory instrument; or* *b) another document applied, adopted or incorporated (with or without changes) in a statutory instrument"*	See below.
(4) "The responsible entity must consider the statutory instrument, or other document, as in effect when the development application for the development approval was properly made"	The proposed changes remain generally compliant with the higher order provisions of the Planning Scheme.

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(5) "However, the responsible entity may give the weight the responsible entity considers is appropriate, in the circumstances, to— *a) the statutory instrument or other document as in effect when the change application was made; or* *b) if the statutory instrument or other document is amended or replaced after the change application is made but before it is decided—the amended or replacement instrument or document; or* *c) another statutory instrument—* *(i) that comes into effect after the change application is made but before it is decided; and* *(ii) that the responsible entity would have been required to consider if the instrument had been in effect when the development application for the development approval was properly made"*	There are no other statutory documents considered relevant to give weight to in the assessment of this Change Application (Minor).

6 CONCLUSION

Urban Sync Pty Ltd are submitting this statutory request for a Change Approval (Minor) under s78 of the *Planning Act 2016* on behalf of Reedlodge Pty Ltd over Lot 78 on SP298287 and part of Lot 20 on NR7137 at 232 Byrnes Street and Close Avenue, Mareeba.

Other parties interested in developing the development, have over time, all abandoned the site/development, and the Applicants have now re-established an intent to deliver the development. This application is required to address the Applicants preferences and requirements for the approved development, and better reflect not only the communities, but also, the lead tenant (Woolworths), current needs.

This application has demonstrated that the proposed change will not result in any new impacts and accordingly, the changes will not affect previous Council assessment or result in a different/worse development outcome on-site, or on adjacent premises, over and above that which has previously been approved.

To confirm the requested changes can in fact, be considered as a 'minor change' this application also undertook an assessment against the relevant statutory tests for a 'Minor Change' in the PA and DA Rules. While the meaning of 'substantially different development' is not fixed or definitive and instead, involves matters of fact and degree, if considered broadly and fairly having regards to the circumstances put forward within this application, it is our view that the changes being proposed are in this instance, not 'substantially different development'. As such, the application has demonstrated the proposed changes are in fact, a 'Minor Change' and as a result, it would be reasonable in this instance, to amend the conditions of approval, as outlined in **Section 4** of this application and issue a new Decision Notice.

We trust this application can now be progressed for assessment. Should you require any further information or clarification on any matters regarding this application, please do not hesitate to contact me.

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ATTACHMENT I
PLANNING ACT - FORM 5 AND LANDOWNER CONSENT

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Change application form

Planning Act Form 5 (version 1.2 effective 7 February 2020) made under Section 282 of the Planning Act 2016.

This form is to be used for a change application made under section 78 of the *Planning Act 2016*. It is important when making a change application to be aware of whether the application is for a minor change that will be assessed under section 81 of the *Planning Act 2016* or for an other change that will be assessed under section 82 of the *Planning Act 2016*.

An applicant must complete all parts of this form, and provide any supporting information that the form identifies as being required to accompany the change application, unless stated otherwise. Additional pages may be attached if there is insufficient space on the form to complete any part.

***Note**: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).*

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (*individual or company full name*)	Reedlodge Pty Ltd
Contact name *(only applicable for companies)*	Urban Sync Pty Ltd
Postal address *(P.O. Box or street address)*	C/- Urban Sync Pty Ltd, PO Box 2970
Suburb	Cairns
State	Queensland
Postcode	4870
Country	Australia
Email address *(non-mandatory)*	admin@urbansync.com.au
Mobile number *(non-mandatory)*	
Applicant's reference number(s) *(if applicable)*	24-1123

2) Owner's consent - Is written consent of the owner required for this change application?

***Note**: Section 79(1A) of the Planning Act 2016 states the requirements in relation to owner's consent.*

☒ Yes – the written consent of the owner(s) is attached to this change application
☐ No

PART 2 – LOCATION DETAILS

3) Location of the premises *(complete 3.1) or 3.2), and 3.3) as applicable)*

3.1) Street address and lot on plan

☒ Street address **AND** lot on plan (*all lots must be listed*), ***or***
☐ Street address **AND** lot on plan for an adjoining or adjacent property of the premises *(appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).*

a)	Unit No.	Street No.	Street Name and Type	Suburb
		232	Byrnes Street	Mareeba
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4880	78	SP298287	Mareeba Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
			Close Avenue	Mareeba
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4880	20	NR7137	Mareeba Shire Council

Queensland Government

3.2) Coordinates of premises *(appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)*

***Note**: Place each set of coordinates in a separate row.*

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) *(if applicable)*
		☐ WGS84 ☐ GDA94 ☐ Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) *(if applicable)*
		☐ 54 ☐ 55 ☐ 56	☐ WGS84 ☐ GDA94 ☐ Other:	

3.3) Additional premises

☐ Additional premises are relevant to the original development approval and the details of these premises have been attached in a schedule to this application

☒ Not required

PART 3 – RESPONSIBLE ENTITY DETAILS

4) Identify the responsible entity that will be assessing this change application

***Note**: see section 78(3) of the Planning Act 2016*

Mareeba Shire Council

PART 4 – CHANGE DETAILS

5) Provide details of the existing development approval subject to this change application

Approval type	Reference number	Date issued	Assessment manager/approval entity
☒ Development permit ☐ Preliminary approval	MCU/22/0003	16 March 2023	Mareeba Shire Council
☐ Development permit ☐ Preliminary approval			

6) Type of change proposed

6.1) Provide a brief description of the changes proposed to the development approval *(e.g. changing a development approval for a five unit apartment building to provide for a six unit apartment building)*:

Changing the approved development to include additional GFA, a revised car parking layout and other, minor internal changes.

6.2) What type of change does this application propose?

☒ Minor change application – proceed to Part 5

☐ Other change application – proceed to Part 6

PART 5 – MINOR CHANGE APPLICATION REQUIREMENTS

7) Are there any affected entities for this change application

☐ No – proceed to Part 7

☒ Yes – list all affected entities below and proceed to Part 7

***Note**: section 80(1) of the Planning Act 2016 states that the person making the change application must give notice of the proposal and the details of the change to each affected entity as identified in section 80(2) of the Planning Act 2016.*

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Affected entity	Pre-request response provided? (*where a pre-request response notice for the application has been given, a copy of the notice must accompany this change application)*	Date notice given *(where no pre-request response provided)*
State Assessment & Referral Agency (SARA) - Department of State Development, infrastructure. Local Government and Planning	☒ No ☐ Yes – pre-request response is attached to this change application	
	☐ No ☐ Yes – pre-request response is attached to this change application	
	☐ No ☐ Yes – pre-request response is attached to this change application	

PART 6 – OTHER CHANGE APPLICATION REQUIREMENTS

***Note**: To complete this part it will be necessary for you to complete parts of DA Form 1 – Development application details and in some instances parts of DA Form 2 – Building work details, as mentioned below. These forms are available at https://planning.dsdmip.qld.gov.au.*

8) Location details - Are there any additional premises included in this change application that were not part of the original development approval?

☐ No
☐ Yes

9) Development details

9.1) Is there any change to the type of development, approval type, or level of assessment in this change application?

☐ No
☐ Yes – the completed Sections 1 and 2 of Part 3 (Development details) of *DA Form 1 – Development application details* as these sections relate to the new or changed aspects of development are provided with this application.

9.2) Does the change application involve building work?

☐ No
☐ Yes – the completed Part 5 (Building work details) of *DA Form 2 – Building work details* as it relates to the change application is provided with this application.

10) Referral details – Does the change application require referral for any referral requirements?

***Note**: The application must be referred to each referral agency triggered by the change application as if the change application was the original development application including the proposed change.*

☐ No
☐ Yes – the completed Part 5 (Referral details) of *DA Form 1 – Development application details* as it relates to the change application is provided with this application. Where referral is required for matters relating to building work the Referral checklist for building work is also completed.

11) Information request under Part 3 of the DA Rules

☐ I agree to receive an information request if determined necessary for this change application
☐ I do not agree to accept an information request for this change application

***Note**: By not agreeing to accept an information request I, the applicant, acknowledge:*

- *that this change application will be assessed and decided based on the information provided when making this change application and the assessment manager and any referral agencies relevant to the change application are not obligated under the DA Rules to accept any additional information provided by the applicant for the change application unless agreed to by the relevant parties*
- *Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.*

Further advice about information requests is contained in the DA Forms Guide: Forms 1 and 2.

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12) Further details
☐ Part 7 of *DA Form 1 – Development application details* is completed as if the change application was a development application and is provided with this application.

PART 7 – CHECKLIST AND APPLICANT DECLARATION

13) Change application checklist	
I have identified the: • responsible entity in 4); and • for a minor change, any affected entities; and • for an other change all relevant referral requirement(s) in 10) ***Note**: See the Planning Regulation 2017 for referral requirements*	☒ Yes
For an other change application, the relevant sections of *DA Form 1 – Development application details* have been completed and is attached to this application	☐ Yes ☒ Not applicable
For an other change application, where building work is associated with the change application, the relevant sections of *DA Form 2 – Building work details* have been completed and is attached to this application	☐ Yes ☒ Not applicable
Supporting information addressing any applicable assessment benchmarks is attached to this application ***Note**: This includes any templates provided under 23.6 and 23.7 of DA Form 1 – Development application details that are relevant as a result of the change application, a planning report and any technical reports required by the relevant categorising instrument(s) (e.g. the local government planning scheme, State Planning Policy, State Development Assessment Provisions). For further information, see DA Forms Guide: Planning report template.*	☒ Yes
Relevant plans of the development are attached to this development application ***Note**: Relevant plans are required to be submitted for all relevant aspects of this change application. For further information, see DA Forms Guide: Relevant plans.*	☒ Yes

14) Applicant declaration
☒ By making this change application, I declare that all information in this change application is true and correct. ☒ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the responsible entity and any relevant affected entity or referral agency for the change application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*. ***Note**: It is unlawful to intentionally provide false or misleading information.*
Privacy – Personal information collected in this form will be used by the responsible entity and/or chosen assessment manager, any relevant affected entity or referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the change application. All information relating to this change application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website. Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where: • such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or • required by other legislation (including the *Right to Information Act 2009*); or • otherwise required by law. This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

PART 8 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

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Date received:		Reference number(s):	

QLeave notification and payment *Note: For completion by assessment manager if applicable*			
Description of the work			
QLeave project number			
Amount paid ($)		Date paid (dd/mm/yy)	
Date receipted form sighted by assessment manager			
Name of officer who sighted the form			

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Company owner's consent to the making of a development application under the *Planning Act 2016*

I, Jennifer McCarthy

Acting Chief Executive Officer

Of Mareeba Shire Council (ABN: 39 114 383 874)

The body being the trustee of the premises identified as follows:

Lot 20 on NR7137 at Close Avenue, Mareeba

Consent to the making of a development application under the *Planning Act 2016* by:

Reedlodge Pty Ltd C/- Urban Sync Pty Ltd

On the premises described above for:

'Change Approval' Minor under s78 of the Planning Act 2016 to an Approval for a Development Permit for a Material Change of Use for a Shopping Centre & Food and Drink Outlet (MSC Ref: MCU/22/0003).

Company Name and ACN: Mareeba Shire Council (ABN: 39 114 383 874)

.....
Signature of Acting Chief Executive Officer

30 May 2025
.....
Date

The Planning Act 2016 is administered by the Department of Local Government, Infrastructure and Planning, Queensland Government.

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ATTACHMENT 2
RELEVANT APPROVAL

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Mareeba
SHIRE COUNCIL

65 Rankin Street
PO Box 154 MAREEBA QLD 4880

P: 1300 308 461
F: 07 4092 3323

W: www.msc.qld.gov.au
E: info@msc.qld.gov.au

16 March 2023

Senior Planner: Brian Millard
Direct Phone: 4086 4657
Our Reference: MCU/22/0003
Your Reference: 21-740

Mareeba 232 Pty Ltd
C/- Urban Sync Pty Ltd
PO Box 2970
CAIRNS QLD 4870

Dear Applicants,

Decision Notice
Planning Act 2016

I refer to your application and advise that on 15 March 2023, Council decided to approve the application in full subject to conditions.

Details of the decision are as follows:

APPLICATION DETAILS

Application No:	MCU/22/0003
Street Address:	232 Byrnes Street and Close Street, Mareeba
Real Property Description:	Lot 78 on SP298287 and Lease A in Lot 20 on NR7137
Planning Scheme:	Mareeba Shire Council Planning Scheme 2016

DECISION DETAILS

Type of Decision:	Approval
Type of Approval:	Development Permit for Material Change of Use – Shopping Centre and Food and Drink Outlet
Date of Decision:	15 March 2023

CURRENCY PERIOD OF APPROVAL

The currency period for this development approval is six (6) years starting the day that this development approval takes effect. (Refer to Section 85 "Lapsing of approval at end of currency period" of the *Planning Act 2016*.)

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INFRASTRUCTURE

Where conditions relate to the provision of infrastructure, these are non-trunk infrastructure conditions unless specifically nominated as a ***"necessary infrastructure condition"*** for the provision of trunk infrastructure as defined under Chapter 4 of the *Planning Act 2016*.

ASSESSMENT MANAGER CONDITIONS

(A) ASSESSMENT MANAGER'S CONDITIONS (COUNCIL)

(a) Development assessable against the Planning Scheme

1. Development must be carried out generally in accordance with the approved plans and the facts and circumstances of the use as submitted with the application, subject to any alterations:
   - found necessary by Council's delegated officer at the time of examination of the engineering plans or during construction of the development because of particular engineering requirements; and
   - to ensure compliance with the following conditions of approval and the conditions of the State Referral Agency.

2. Timing of Effect

   2.1 The conditions of the development permit must be complied with to the satisfaction of Council's delegated officer prior to the commencement of the use except where specified otherwise in these conditions of approval.

   2.2 Prior to the commencement of use, the applicant must notify Council that all the conditions have been complied with, except where specified otherwise in these conditions of approval.

   2.3 Prior to the commencement of use, the applicant must provide a letter from the State Referral Agency confirming that the department is satisfied their conditions are complied with and/or that the department has no objections to the commencement of the use.

3. General

   3.1 The development approval would not have been issued if not for the conditions requiring the construction of infrastructure within the conditions of approval.

   3.2 The applicant/developer is responsible for the cost of necessary alterations to existing public utility mains, services or installations required by works in relation to the proposed development or any works required by condition(s) of this approval.

   3.3 All works must be designed, constructed and carried out in accordance with FNQROC Development Manual requirements (as amended) and to the satisfaction of Council's delegated officer.

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3.4 Emissions

Emissions associated with operational activities must not cause an 'environmental nuisance' within the meaning of the Environmental Protection Act (1994) to any sensitive receptor and comply with the Air Quality Objectives as stated within Schedule 1 of the Environmental Protection (Air) Policy 2019.

3.5 Waste Management

On-site refuge storage area/s must be provided and be screened from view from adjoining properties and road reserve by 1 metre wide landscaped screening buffer or 1.8m high solid fence or building.

Where bulk bins are used and are to be serviced on site, certification by a Registered Professional Engineer of Queensland (RPEQ) must be provided to Council prior to the issue of a building permit which demonstrates that internal access is of adequate design and construction to allow waste collection/delivery vehicles to enter and exit the site in a forward gear.

3.6 Trolley Bays

Trolley bay areas must be provided on the site generally in accordance with Drawing No. TA#19.0298.17 A1.02 Rev. 14.

3.7 Rubbish Bins

Waste bins must be provided at each pedestrian entrance to the proposed development.

3.8 Amenity

3.8.1 The southern wall of the supermarket must be finished in a combination of Woolworths green, Dulux monument and Dulux vivid white to prevent the dominance of any one colour, to the satisfaction of Council's delegated officer.

3.8.2 All building materials and colours to be used must be non-reflective and be generally in accordance with the approved plans to the satisfaction of Council's delegated officer.

3.9 No trucks, other than service vehicles for the shopping centre, are permitted to park on the subject land when the shopping centre is closed to the public. All service vehicles must leave the subject land as soon as reasonably practical after serving the shopping centre.

3.10 Advertising signage

The placement and sizing of advertising signage is to be generally in accordance with the approved plans.

4. Infrastructure Services and Standards

4.1 Access – Rankin Street

Any crossover/s used to access the development must be constructed to **Commercial** standard (from the edge of the road pavement to the property boundary of the subject lot) in accordance with the FNQROC Development Manual, to the satisfaction of Council's delegated officer.

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Where applicable, the applicant/developer must ensure that any redundant vehicle crossovers are removed and reinstated with kerb and channel.

4.2 Stormwater Drainage/Water Quality

4.2.1 The applicant/developer must take all reasonable steps to ensure a non-worsening effect on surrounding land as a consequence of the development.

4.2.2 Prior to the issue of a development permit for operational works, the applicant/developer must submit a revised Stormwater Management Plan prepared and certified by a suitably qualified design engineer (RPEQ) that meets or exceeds the standards of design and construction set out in the Queensland Urban Drainage Manual (QUDM) and the FNQROC Development Manual, to the satisfaction of Council's delegated officer.

4.2.3 The applicant/developer must construct the stormwater drainage infrastructure in accordance with the approved Stormwater Management Plan.

4.2.4 All stormwater drainage must be collected from site and discharged to an approved legal point of discharge.

4.3 Car Parking/Internal Driveways

The applicant/developer must ensure that the development is provided with on-site car parking spaces, generally in accordance with Drawing No. TA#19.0298.17 A1.02 rev.14, which are available for use solely for the parking of vehicles associated with the use of the premises. All car parking spaces must be sealed, line-marked and appropriately drained prior to the commencement of the use, to the satisfaction of Council's delegated officer.

Car parking shade structures must generally be provided in accordance with Drawing No. TA#19.0298.17 A1.01 rev. 18A.

Prior to the issue of a development permit for operational works, the applicant/developer must submit engineering plans and specifications, prepared by a Registered Professional Engineer of Queensland (RPEQ) or an Architectural Building Designer, for the construction of proposed car parking facilities and internal driveways demonstrating:

- Compliance with Australian Standard AS2890.1 Off Street Parking – Car Parking Facilities;
- Compliance with Australian Standard AS2890.2 – Parking Facilities (Off-street Parking) Commercial Vehicle Facilities;
- Compliance with Australian Standard AS2890.3 Bicycle Parking Facilities;
- Compliance with Australian Standard AS2890.6 – Parking Facilities – Off-street parking for people with disabilities;
- A sign must be erected in proximity to the access driveway indicating the availability of on-site car parking.

4.4 Frontage Works - Byrnes Street

The applicant/developer is required to construct the following works, designed in accordance with FNQROC Development Manual standards (as amended) to

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the satisfaction of Council's delegated officer and the Department of Transport and Main Roads:

4.4.1 Kerb and channelling for the full frontage of Lot 78 on SP298287.

4.4.2 Signage and line marking as per the Department of Transport and Main Roads Manual of Uniform Traffic control Devices (MUTCD).

4.4.3 Entry/exit arrangements in accordance with the extent of works shown on Drawing No. TA#19.0298.17 A1.02 Rev.14.

4.4.4 A paved footpath, including kerb ramps and associated tactile indicators must be constructed on Byrnes Street to the general extent indicated on Drawing No. TA#19.0298.17 A1.02 Rev.14. The footpath must be constructed in accordance with the FNQROC Development Manual. No section of paved footpath is to be less than two (2) metres in width.

Prior to the issue of a development permit for operational works, the applicant/developer must submit engineering plans and specifications for the construction of proposed works.

4.5 Frontage Works - Rankin Street

The applicant/developer is required to construct the following works, designed in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer:

4.5.1 Kerb and channelling for the full frontage of Lot 78 on SP298287.

4.5.2 Signage and line marking as per the Department of Transport and Main Roads Manual of Uniform Traffic control Devices (MUTCD).

4.5.3 On street car parking and entry/exit arrangements in accordance with the extent of works shown on Drawing No. TA#19.0298.17 A1.02 Rev.14

4.5.4 A paved footpath, including kerb ramps and associated tactile indicators must be constructed on Rankin Street to the general extent indicated on Drawing TA#19.0298.17 A1.02 Rev.14. The footpath must be constructed in accordance with the FNQROC Development Manual. No section of paved footpath is to be less than two (2) metres in width.

Prior to the issue of a development permit for operational works, the applicant/developer must submit engineering plans and specifications for the construction of proposed works.

4.6 Frew Street Works

The applicant/developer is required to construct the following works, designed in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer:

4.6.1 Widening of the sealed pavement on the western side of Frew Street to the existing kerb and channel.

4.6.2 Appropriate line marking to allow for RV/larger vehicle parking on the western side of Frew Street.

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4.6.3 Construction of a cul-de-sac head at the southern end of Frew Street to allow for turning of RV/larger vehicles.

4.6.4 Construction of concrete footpath and pedestrian level crossing as shown on Drawing No. 1604-002 Revision F in accordance with the FNQROC Development Manual and Queensland Rail standards. No section of paved footpath is to be less than two (2) metres in width.

Prior to the issue of a development permit for operational works, the applicant/developer must submit engineering plans and specifications for the construction of proposed works.

4.7 Landscaping

4.7.1 The development must be landscaped in accordance with an approved landscape plan.

4.7.2 Prior to the issue of the development permit for operational works, a detailed landscape plan must be prepared for the site and submitted to Council's delegated officer for consideration and approval.

4.7.3 The landscape plan should be generally consistent with green areas shown on Drawing No. TA#19.0298.17 A1.02 Rev.14 and demonstrate compliance with the Landscaping Code. Plant species are to be generally selected from the Plant Schedule in Planning Scheme Policy 6 - Landscaping and preferred plant species.

4.7.4 The landscape plan must also provide for the landscaping of Byrnes Street and Rankin Street frontages.

4.7.5 A minimum of 25% of new plants is provided as larger, advanced stock with a minimum plant height of 0.7 metres and mulched to a minimum depth of 0.1 metres with organic mulch.

4.7.6 The landscaping of the site must be carried out in accordance with the endorsed landscape plan/s, and prior to the commencement of the use, and mulched, irrigated and maintained to the satisfaction of Council's delegated officer.

4.8 Lighting

All lighting installed upon the premises including car parking areas must be certified by Ergon Energy (or such other suitably qualified person). The vertical illumination at 1.5 metres outside the boundary of the subject land must not exceed eight (8) lux measured at any level upwards from ground level.

4.9 Water Supply

4.9.1 The applicant/developer must connect the proposed development to the Council's reticulated water supply system in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer.

Where the existing reticulated water supply does not currently service the site or is not at an adequate capacity to serve the proposed development requirements, the applicant/developer is required to extend the reticulated water supply infrastructure to connect the site

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to Council's existing infrastructure at a point that has sufficient capacity to service the development requirements in accordance with FNQROC Development Manual Standard (as amended).

4.9.2 Prior to the issue of a development permit for operational works, the applicant/developer must submit engineering plans and specifications for the connection of the development to Council's reticulated water supply system demonstrating compliance with Condition 4.9.1.

The engineering plans and specifications for the connection, including any requirement for onsite firefighting storage, must be accompanied by an engineering report demonstrating that Council's existing infrastructure will be able to provide the minimum acceptable standard of service for water reticulation.

4.10 Sewerage Connection

4.10.1 The applicant/developer must connect the proposed development to Council's reticulated sewerage system in accordance with FNQROC Development Manual standards (as amended) to the satisfaction of Council's delegated officer.

Where sewerage connections are not available to the site, or where existing connections are not satisfactory for the proposed development, the applicant/developer is required to extend the reticulated sewerage infrastructure to connect the site to Council's existing infrastructure at a point that has sufficient capacity to service the development in accordance with FNQROC Development Manual standards (as amended).

4.10.2 Prior to the issue of a development permit for operational works, the applicant/developer must submit engineering plans and specifications for the connection of the development to Council's reticulated sewerage system demonstrating compliance with Condition 4.10.1.

REFERRAL AGENCIES

The referral agencies applicable to this application are:

Aspect of development stated in schedule 20		
Development application for an aspect of development stated in schedule 20 that is assessable development under a local categorising instrument or section 21, if— (a) the development is for a purpose stated in schedule 20, column 1 for the aspect; and (b) the development meets or exceeds the threshold — (i) for development in local government area 1 — stated in	Part 9, Division 4, Subdivision 1, Table 1	State Assessment & Referral Agency (SARA) Department of State Development, Infrastructure, Local Government and Planning PO Box 2358 Cairns Qld 4870 CairnsSARA@dsdilgp.qld.gov.au

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schedule 20, column 2 for the purpose; or (ii) for development in local government area 2 — stated in schedule 20, column 3 for the purpose; and (c) for development in local government area 1 — the development is not for an accommodation activity or an office at premises wholly or partly in the excluded area However, if the development is for a combination of purposes stated in the same item of schedule 20, the threshold is for the combination of purposes and not for each individual purpose.		
Material change of use of premises near a State transport corridor or that is a future State transport corridor		
Development application for a material change of use, other than an excluded material change of use, that is assessable development under a local categorising instrument, if all or part of the premises— (a) are within 25m of a State transport corridor; or (b) are a future State transport corridor; or (c) are— (i) adjacent to a road that intersects with a State-controlled road; and (ii) within 100m of the intersection	Schedule 10, Part 9, Division 4, Subdivision 2, Table 4	State Assessment & Referral Agency (SARA) Department of State Development, Infrastructure, Local Government and Planning PO Box 2358 Cairns Qld 4870 CairnsSARA@dsdilgp.qld.gov.au

A copy of any referral agency conditions are attached.

APPROVED PLANS

The following plans are Approved plans for the development:

Plan/Document Number	Plan/Document Title	Prepared by	Dated
TA#19.0298.17 A0.00 rev. 7	Cover Sheet	Thomson Adsett	18/01/2023
TA#19.0298.17 A0.10 rev. 7	Site Context	Thomson Adsett	18/01/2023
TA#19.0298.17 A1.01 rev. 18A	Site Plan	Thomson Adsett	19/12/2022

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Version: 1, Version Date: 25/07/2025

TA#19.0298.17 A1.02 rev. 14	Development Plan	Thomson Adsett	18/01/2023
TA#19.0298.17 A2.01 rev. 12	Ground Floor Plan - Supermarket	Thomson Adsett	18/01/2023
TA#19.0298.17 A2.02 rev. 6	Roof Plan - Supermarket	Thomson Adsett	18/01/2023
TA#19.0298.17 A2.03 rev. 6	Elevations - Supermarket	Thomson Adsett	18/01/2023
TA#19.0298.17 A2.04 rev. 6	Elevations - Supermarket	Thomson Adsett	18/01/2023
TA#19.0298.17 A2.05 rev. 6	Sections - Supermarket	Thomson Adsett	18/01/2023
TA#19.0298.17 A4.01 rev. 6	Ground Floor Plan – Fast Food	Thomson Adsett	11/07/2022
TA#19.0298.17 A4.02 rev. 5	Elevations – Fast Food	Thomson Adsett	06/07/2022
TA#19.0298.17 A5.01 rev. 6	3D Views	Thomson Adsett	18/01/2023
TA#19.0298.17 A5.02 rev. 6	3D Views	Thomson Adsett	18/01/2023
1604-002 Rev. F	Rankin Street Median Extension Concept	Trinity Engineering and Consulting	22/12/22

ADVISORY NOTES

The following notes are included for guidance and information purposes only and do not form part of the assessment manager conditions:

(A) ASSESSMENT MANAGER'S ADVICE

(a) An Adopted Infrastructure Charges Notice has been issued with respect to the approved development. The Adopted Infrastructure Charges Notice details the type of infrastructure charge/s, the amount of the charge/s and when the charge/s are payable.

(b) The Adopted Infrastructure Charges Notice does not include all charges or payments that are payable with respect to the approved development. A number of other charges or payments may be payable as conditions of approval. The applicable fee is set out in Council's Fees & Charges Schedule for each respective financial year.

(c) Food Premises

Premises proposed for the storage and preparation, handling, packing or service of food must comply with the requirements of the Food Act 2006.

(d) A Trade Waste Permit will be required prior to the commencement of use.

(e) Compliance with applicable codes/policies

The development must be carried out to ensure compliance with the provisions of Council's Local Laws, Planning Scheme Policies, Planning Scheme and Planning

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Scheme Codes to the extent they have not been varied by a condition of this approval.

(f) Compliance with Acts and Regulations

The erection and use of the building must comply with the Building Act and all other relevant Acts, Regulations and Laws, and these approval conditions.

(g) Environmental Protection and Biodiversity Conservation Act 1999

The applicant is advised that referral may be required under the *Environmental Protection and Biodiversity Conservation Act 1999* if the proposed activities are likely to have a significant impact on a matter of national environmental significance. Further information on these matters can be obtained from www.dcceew.gov.au.

(h) Cultural Heritage

In carrying out the activity the applicant must take all reasonable and practicable measures to ensure that no harm is done to Aboriginal cultural heritage (the "cultural heritage duty of care"). The applicant will comply with the cultural heritage duty of care if the applicant acts in accordance with gazetted cultural heritage duty of care guidelines. An assessment of the proposed activity against the duty of care guidelines will determine whether or to what extent Aboriginal cultural heritage may be harmed by the activity. Further information on cultural heritage, together with a copy of the duty of care guidelines and cultural heritage search forms, may be obtained from www.dsdsatsip.qld.gov.au.

(B) REFFERAL AGENCY CONDITIONS

State Assessment and Referral Agency response dated 24 February 2023.

FURTHER DEVELOPMENT PERMITS REQUIRED

- Development Permit for Operational Work
- Development Permit for Building Work

SUBMISSIONS

There were two (2) properly made submissions about the application. In accordance with the *Planning Act 2016*, the name, residential or business address, and electronic address of the principal submitter for each properly made submission is provided below:

Name of Principal submitter	Address
1. C Roll	carlieroll@hotmail.com
2. J Burnett	joelineburnett@gmail.com

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Version: 1, Version Date: 25/07/2025

RIGHTS OF APPEAL

You are entitled to appeal against this decision. A copy of the relevant appeal provisions from the *Planning Act 2016* is attached.

During the appeal period, you as the applicant may suspend your appeal period and make written representations to council about the conditions contained within the development approval. If council agrees or agrees in part with the representations, a "negotiated decision notice" will be issued. Only one "negotiated decision notice" may be given. Taking this step will defer your appeal period, which will commence again from the start the day after you receive a "negotiated decision notice".

OTHER DETAILS

If you wish to obtain more information about Council's decision, electronic copies are available on line at www.msc.qld.gov.au, or at Council Offices.

Yours faithfully

BRIAN MILLARD
SENIOR PLANNER

Enc: Approved Plans/Documents
Referral Agency Response
Appeal Rights
Adopted Infrastructure Charge Notice

Copy: Department of State Development, Manufacturing, Infrastructure and Planning
CairnsSARA@dsdilgp.qld.gov.au

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Approved Plans/Documents





EXISTING VIEW FROM CORNER OF BYRNES & FRANKLIN STREET

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

DRAWING LIST - CONCEPT

A_000	COVER SHEET	
A_010	SITE CONTEXT PLAN	
A_101	SITE PLAN	
A_102	DEVELOPMENT PLAN	
A_201	GROUND FLOOR PLAN - SUPERMARKET	
A_202	ROOF PLAN - SUPERMARKET	
A_203	ELEVATIONS - SUPERMARKET	
A_204	ELEVATIONS - SUPERMARKET	
A_205	SECTIONS - SUPERMARKET	
A_401	GROUND FLOOR PLAN - FAST FOOD	
A_402	ELEVATIONS - FAST FOOD	
A_501	3D VIEWS	
A_502	3D VIEWS	

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

MAREEBA 232 PTY LTD

thomson adsett

COVER SHEET

1 : 1 @ A1

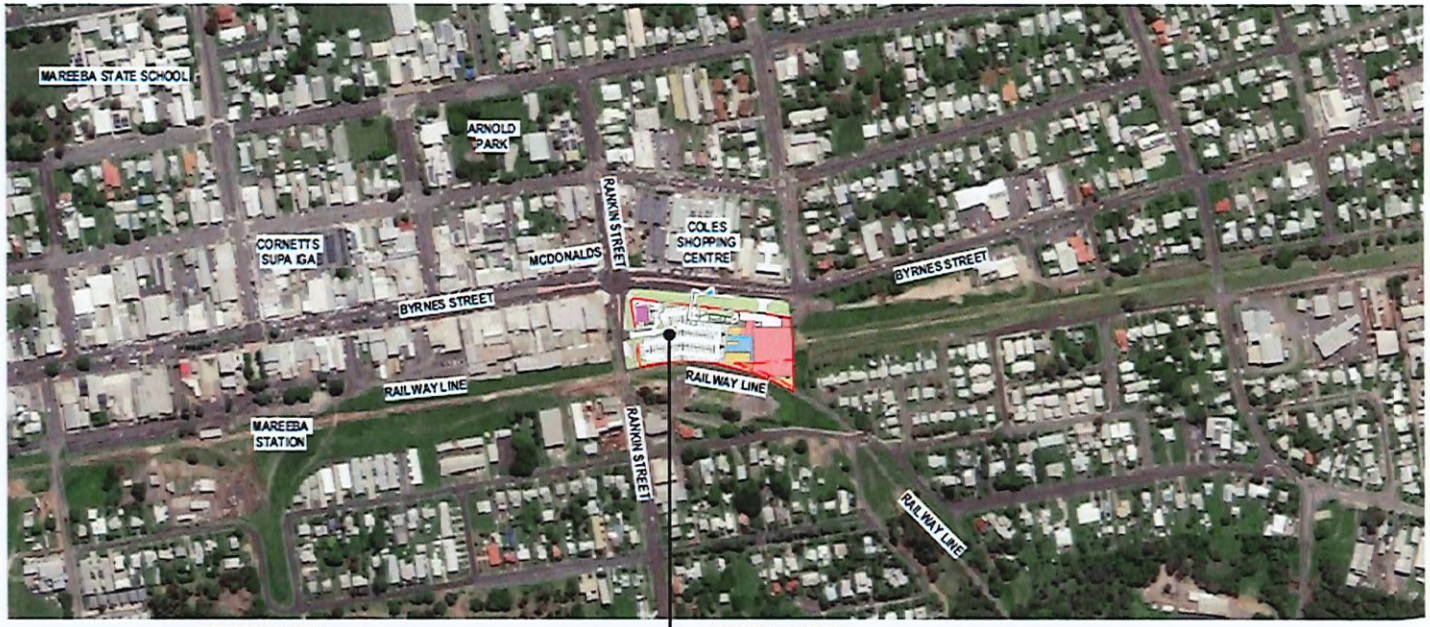
TA # 19.0288.17 A0.00

rev. 7

16/3/2023

DEVELOPMENT APPLICATION

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 SITE CONTEXT PLAN
1 : 2500

16/3/2023
B. [illegible]

DEVELOPMENT APPLICATION

1

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE
232 BYRNES STREET, MAREEBA

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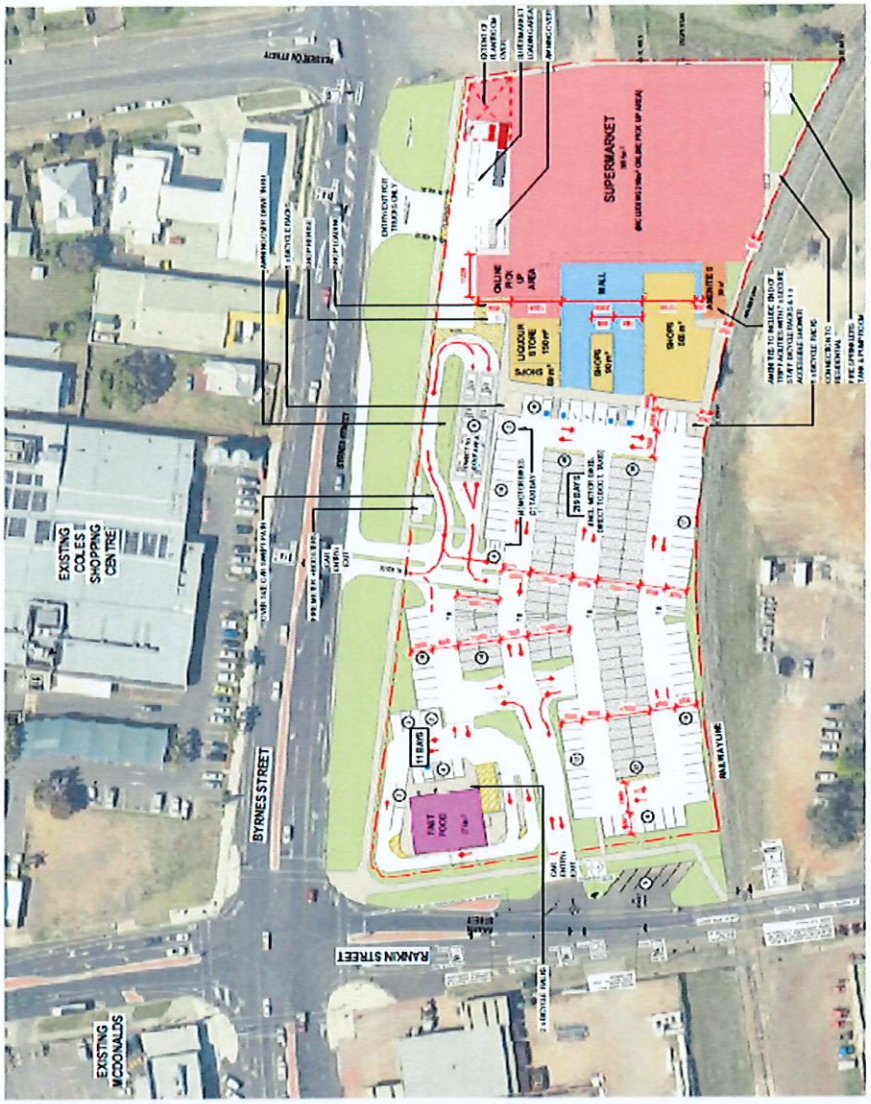
TA # 19.0298.17

SITE CONTEXT PLAN

1 : 2500 @ A1 | 19/01/2023

A0.10 | rev. 7

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



DEVELOPMENT SCHEDULE

PROPOSED USES	GFA	GLAR
SUPERMARKET	3655m²	3603m²
SHOPS	814m²	796m²
AMENITIES	90m²	
TOTAL CENTRE	4559m²	4399m²
FAST FOOD	270m²	270m²
TOTAL	4829m²	4669m²

CAR PARKING SCHEDULE	
CARS FAST FOOD	11
CARS CENTRE	219
ON SITE CARS	230
STREET CARS	5
TOTAL CARS PROVIDED	235
TOTAL CARS REQUIRED	186

NOTE
CARS REQUIRED IS BASED ON:
1/50 UP TO 400m² GFA
1/25 ABOVE 400m² GFA

NOTE: SUPERMARKET GLAR EXCLUDES EXTERNAL WALLS AND LOADING DOCK

COVERED CARPARKS

AREA OF ENCLOSED MALL / PASSAGE - 637m²

SITE PLAN
1 : 1500

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE
222 BYRNES STREET, MAREEBA

MAREEBA 232 PTY LTD

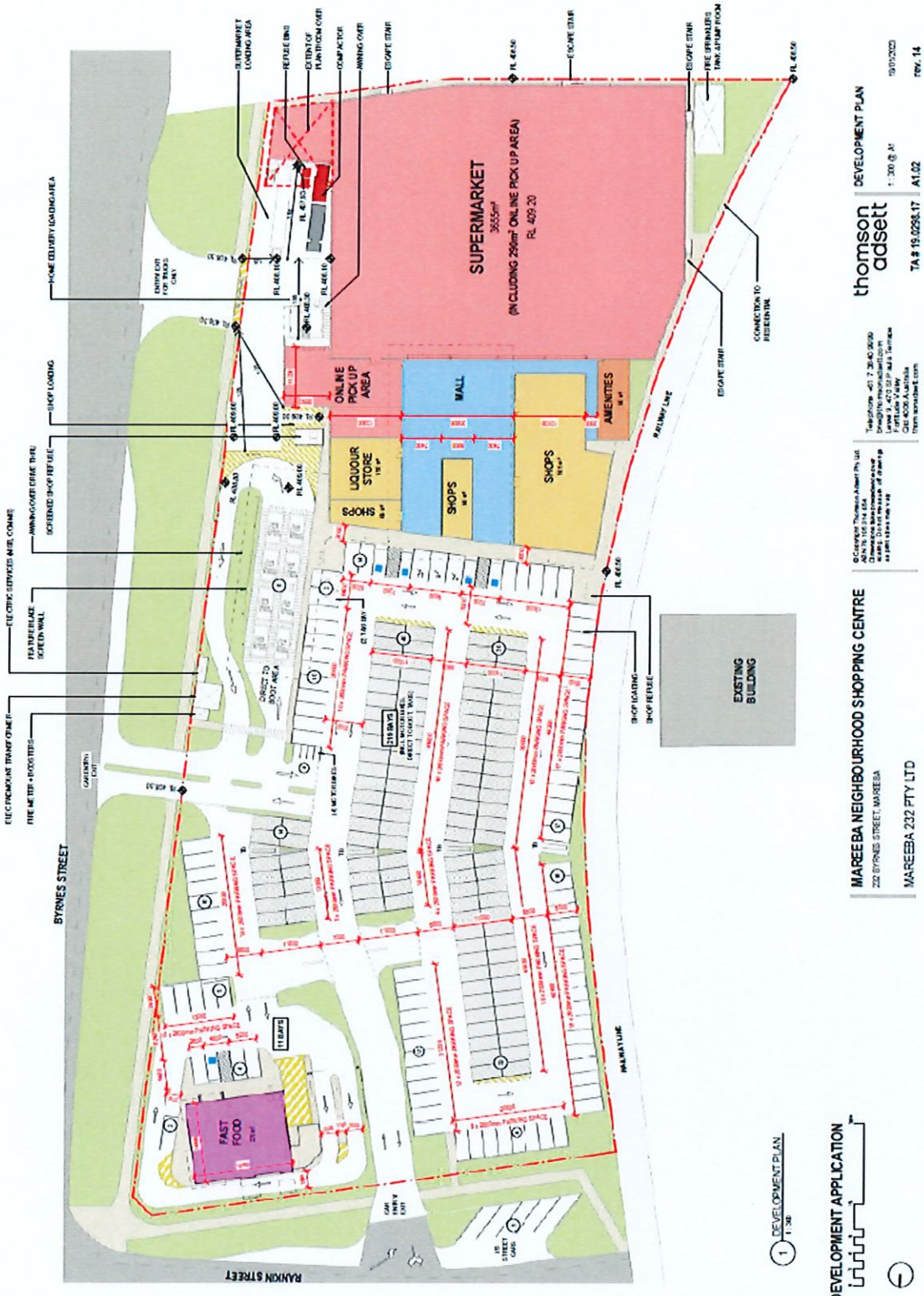
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SITE PLAN
Autodesk @ A1 — 15/12/2022
TA # 19.0298.17 — A1.01 — rev. 18A

DEVELOPMENT APPLICATION

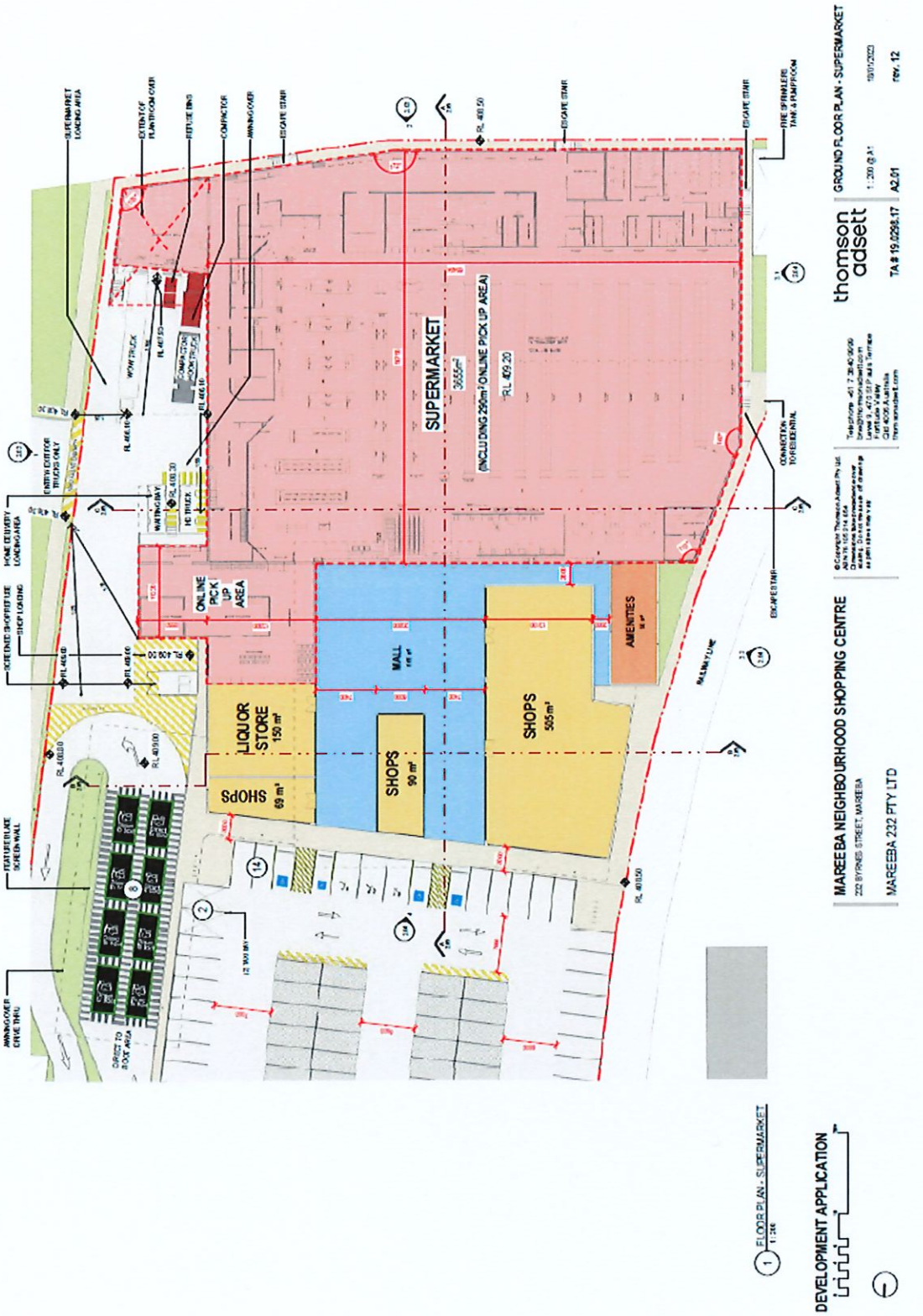
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Version: 1, Version Date: 25/07/2025



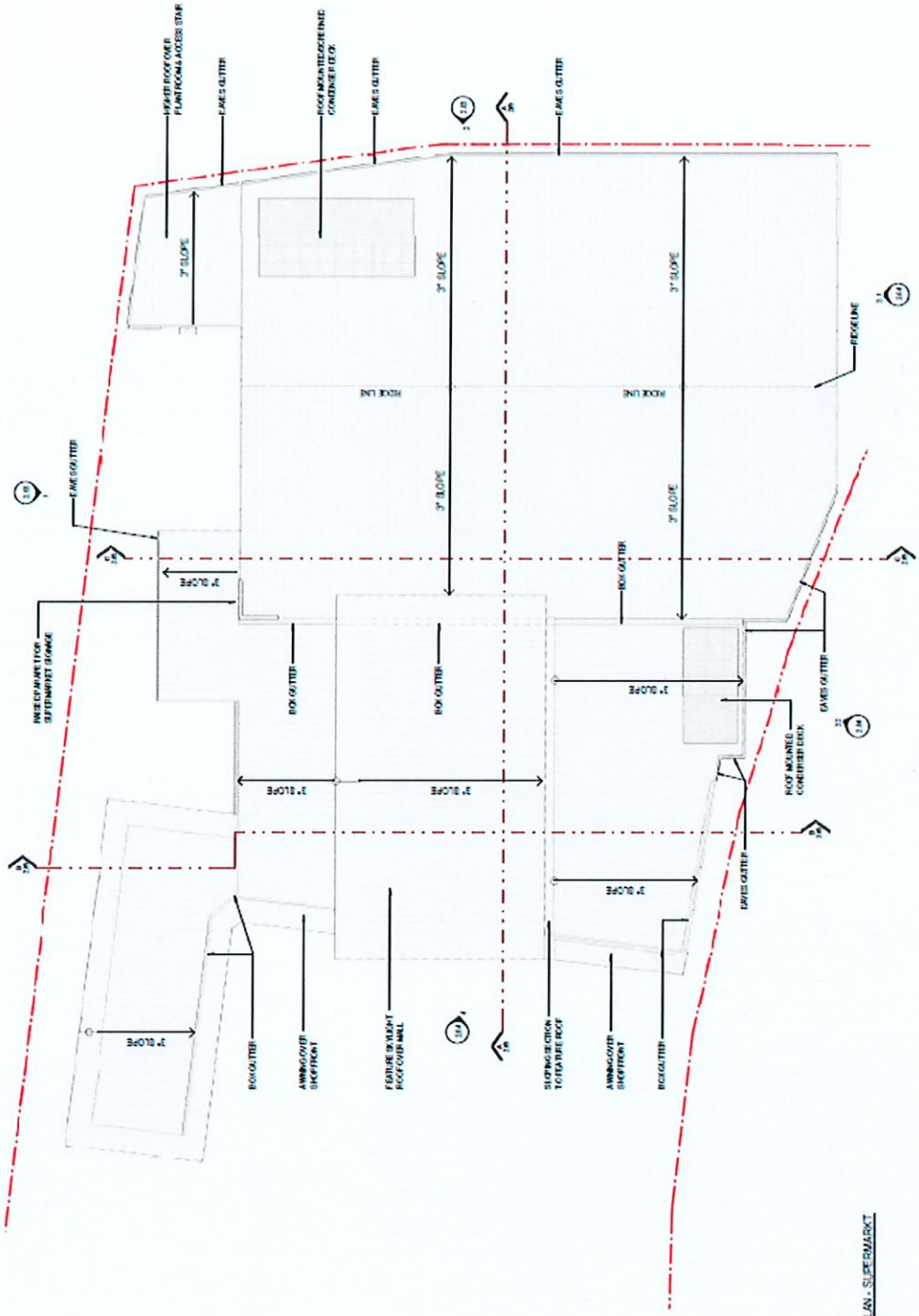
16/3/2023

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



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Version: 1, Version Date: 25/07/2025



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222 BYRNES STREET, MAREEBA
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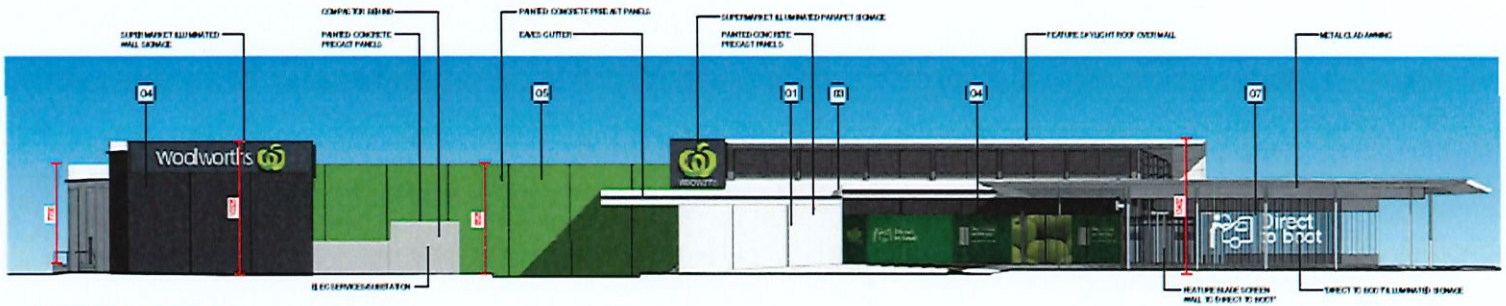
ROOF PLAN - SUPERMARKET
1:200 @ A1
A2.02
rev. 6

1 ROOF PLAN - SUPERMARKET
1:200

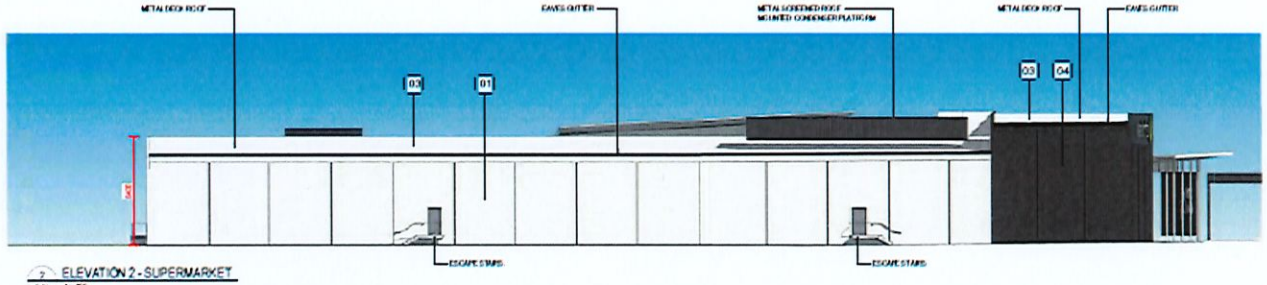
DEVELOPMENT APPLICATION

16/3/2023

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



ELEVATION 1 - SUPERMARKET



ELEVATION 2 - SUPERMARKET

1		PRECAST CONCRETE PANEL PAINTED DULUX "VIVID WHITE"	3		LONGLINE METAL SHEETING DULUX "MONUMENT"	5		PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7		ALUCLICK FEATURE BLADES POWDERCOATED DULUX "MONUMENT"
2		FC CLADDING PAINTED DULUX "VIVID WHITE"	4		PRECAST CONCRETE PANEL PAINTED DULUX "MONUMENT"	6		CLEAR GLAZING IN POWDERCOAT ALUMINIUM FRAME DARK GREY	8		POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER, PAINTED DULUX "MONUMENT"

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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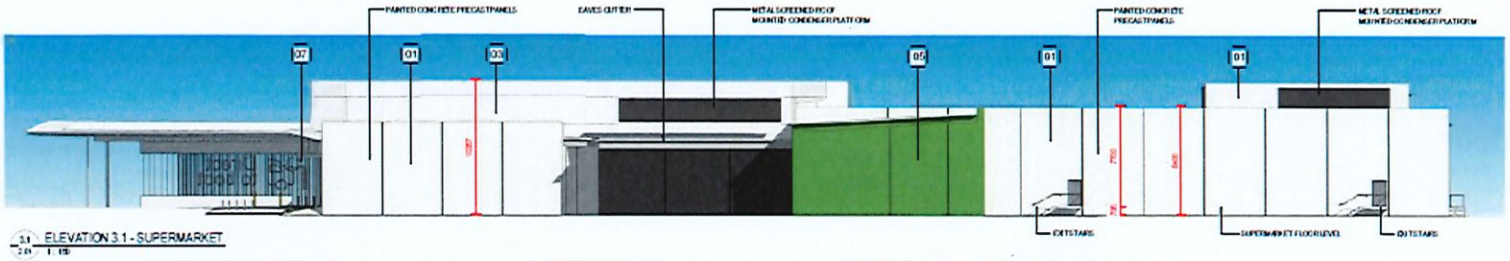
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ELEVATIONS - SUPERMARKET

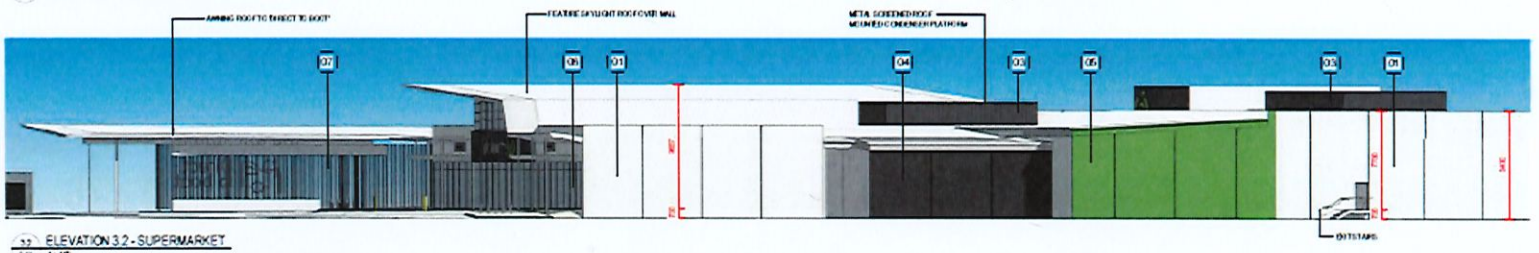
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A2.03	rev. 6

16/3/2023

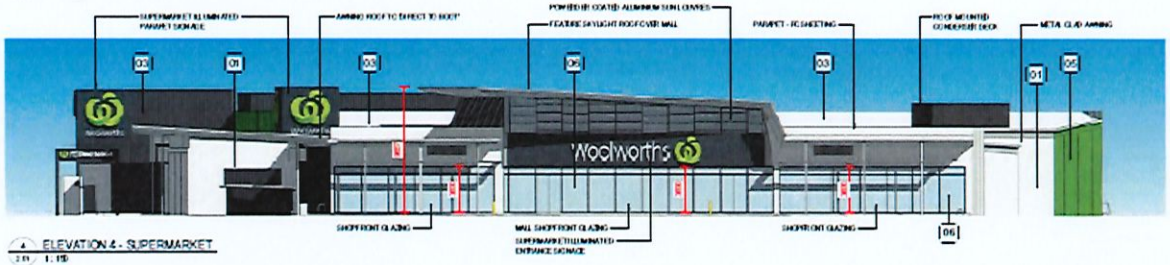
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



3.1 ELEVATION 3.1 - SUPERMARKET
1 : 100



3.2 ELEVATION 3.2 - SUPERMARKET
1 : 100



4 ELEVATION 4 - SUPERMARKET
1 : 100

1	PRECAST CONCRETE PANEL PAINTED DULUX "VIVID WHITE"	3	LONGLINE METAL SHEETING DULUX "MONUMENT"	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX "MONUMENT"
2	FC CLADDING PAINTED DULUX "VIVID WHITE"	4	PRECAST CONCRETE PANEL PAINTED DULUX "MONUMENT"	6	CLEAR GLAZING IN POWDERCOAT ALUMINIUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPING, GUTTERS, DOWNPIPES & ROLLER SHUTTER, PAINTED DULUX "MONUMENT"

DEVELOPMENT APPLICATION

16/3/2023
B. [illegible]

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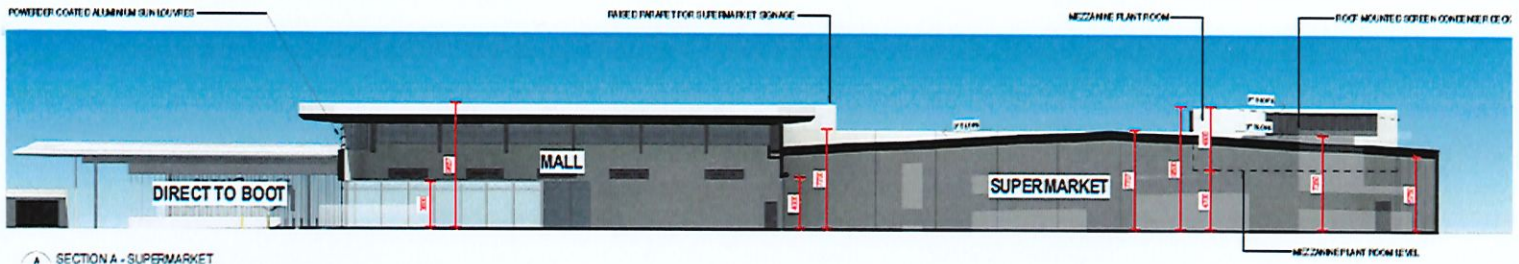
TA # 19.0298.17

ELEVATIONS - SUPERMARKET

As indicated @ A1 — 16/03/2023

A2.04 — rev. 6

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Version: 1, Version Date: 25/07/2025



SECTION A - SUPERMARKET
1 : 150



SECTION B - SUPERMARKET
1 : 150



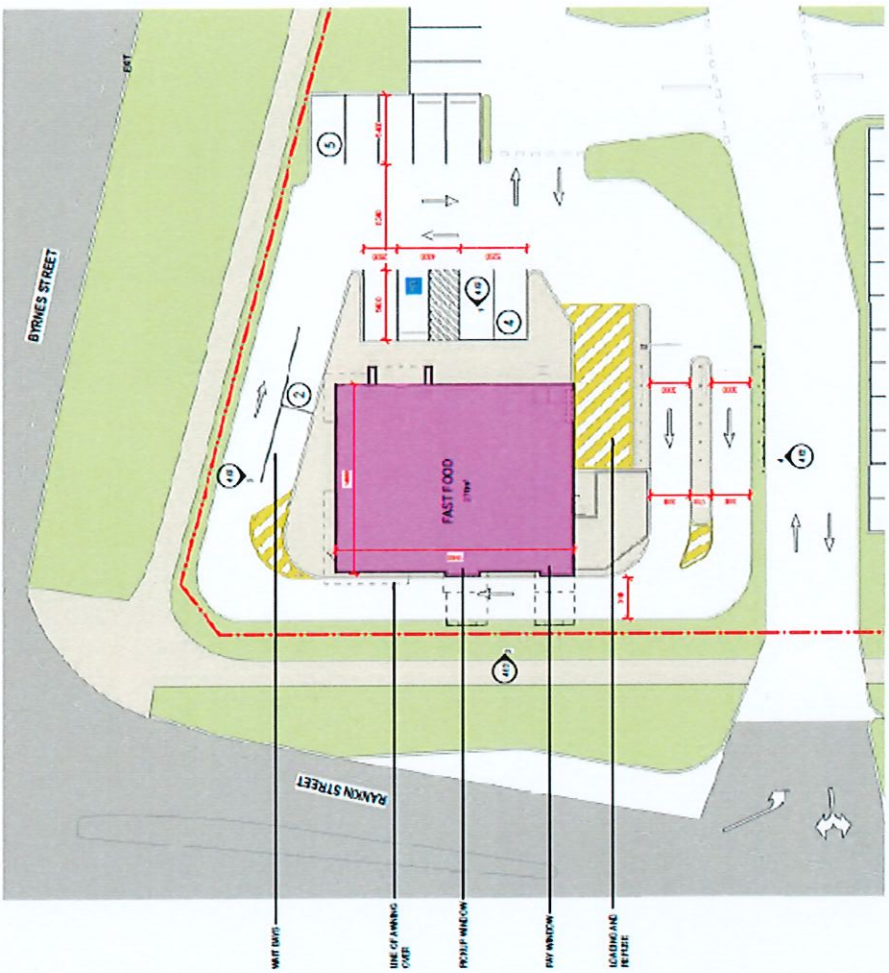
SECTION C - SUPERMARKET
1 : 150

16/3/2023

DEVELOPMENT APPLICATION

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



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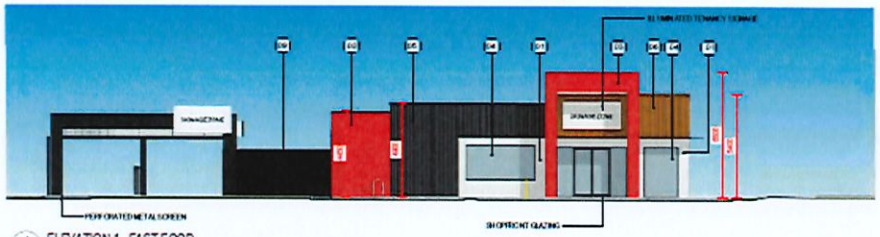
GROUND FLOOR PLAN - FAST FOOD
A4.01
rev. 6
TA# 19.0256.17

1 FLOOR PLAN - FAST FOOD

DEVELOPMENT APPLICATION

16/3/2023

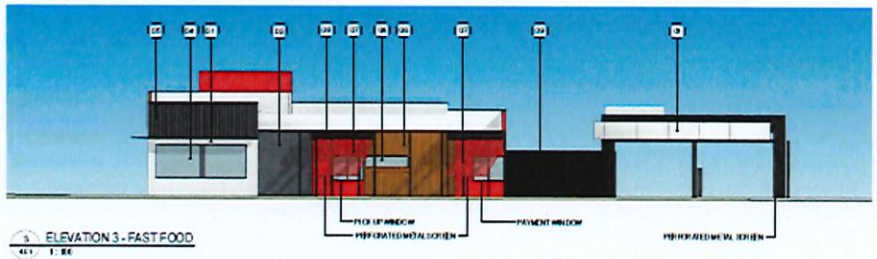
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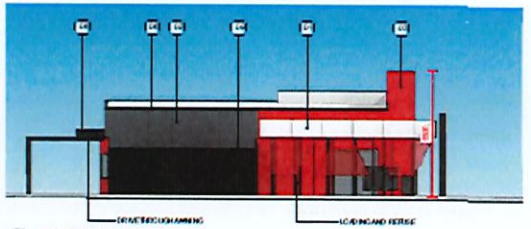
1 ELEVATION 1 - FAST FOOD
1:100



2 ELEVATION 2 - FAST FOOD
1:100



3 ELEVATION 3 - FAST FOOD
1:100



4 ELEVATION 4 - FAST FOOD
1:100

01		CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED WHITE	03		CFC SHEETING WITH EXPRESSED JOINTS TENANT CORPORATE COLOUR RED	05		LONGLINE 305 METAL WALL SHEETING COLORBOND 'MONUMENT' MID GREY	07		PERFERATED MESH SCREEN LOCKERGROUP POWDERCOAT 'RED' RED41	09		COLORBOND CORRUGATED METAL WALL SHEETING BLACK
02		CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED DULUX 'DARK GREY'	04		CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	06		TIMBER LOOK ALUMINUM CLADDING - KNOTWOOD DRIFTWOOD	08		POWDERCOATED METAL CAPPING, GUTTERS & DOWNPIPES PAINTED DULUX 'MONUMENT'			

16/3/2023
B. [illegible]

DEVELOPMENT APPLICATION

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TA # 19.0298.17

ELEVATIONS - FAST FOOD

1 : 100 @ A1 — 05/07/2022

A4.02 — rev. 5

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Version: 1, Version Date: 25/07/2025



RANKIN STREET - SITE ENTRANCE



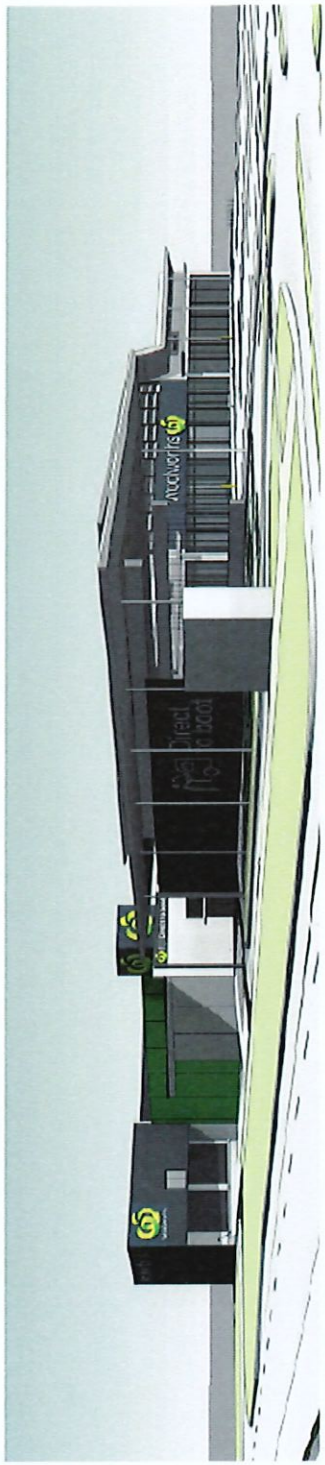
SUPERMARKET VIEW FROM CARPARK

16/3/2023

DEVELOPMENT APPLICATION

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



BYRNES STREET - SITE EXIT



BYRNES STREET - TRUCK & LOADING ENTRANCE

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE
232 BYRNES STREET, MAREEBA

MAREEBA 232 PTY LTD

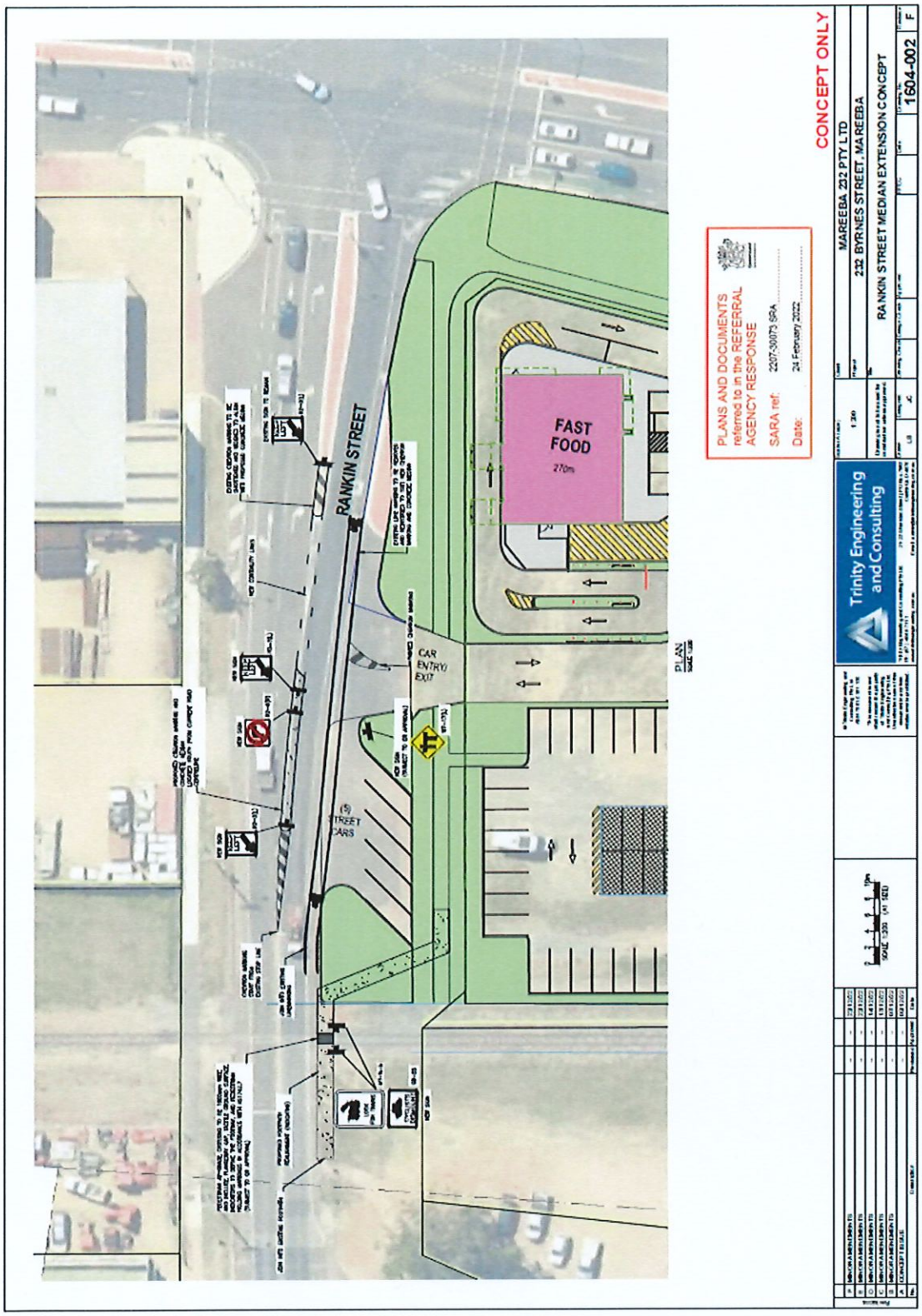
thomson adsett

3D VIEWS

TA # 19.0256.17 | A5.02 | rev. 6

16/3/2023
B. [illegible]

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



16/3/2023

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Referral Agency Response

RA6-N

Queensland Government

SARA reference: 2207-30073 SRA
Council reference: CU/22/0003
Applicant reference: 21-740

24 February 2023

Chief Executive Officer
Mareeba Shire Council
PO Box 154
Mareeba QLD 4880
planning@msc.qld.gov.au

Attention: Carl Ewin

Dear Sir/Madam

SARA referral agency response—232 Byrnes Street, Mareeba and 13 Close Street, Mareeba—Shopping Centre, Food and Drink Outlet and Shop

(Referral agency response given under section 56 of the *Planning Act 2016*)

The development application described below was confirmed as properly referred by the State Assessment and Referral Agency (SARA) on 16 August 2022.

Response

Outcome:	Referral agency response – with conditions
Date of response:	24 February 2023
Conditions:	The conditions in **Attachment 1** must be attached to any development approval
Advice:	Advice to the applicant is in **Attachment 2**
Reasons:	The reasons for the referral agency response are in **Attachment 3**

Development details

Description:	Development permit	Material Change of Use for a Shopping Centre, Food and Drink Outlet and Shop
SARA role:	Referral agency	

Far North Queensland regional office
Ground Floor, Cnr Grafton and Hartley Street, Cairns
PO Box 2358, Cairns QLD 4870

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

2207-30073 SRA

SARA triggers:	Schedule 10, Part 9, Division 4, Subdivision 1, Table 1 (Planning Regulation 2017) Development application for material change of use impacting on state transport infrastructure and thresholds Schedule 10, Part 9, Division 4, Subdivision 2, Table 4 (Planning Regulation 2017) Development application for material change of use near a state-controlled road, intersection, and railway
SARA reference:	2207-30073 SRA
Assessment manager:	Mareeba Shire Council
Street address:	232 Byrnes Street, Mareeba; 13 Close Street, Mareeba
Real property description:	78SP298287; 20NR7137
Applicant name:	Mareeba 232 Pty Ltd
Applicant contact details:	C/- Urban Sync Pty Ltd, PO Box 2970 Cairns QLD 4870 justin@urbansync.com.au
State-controlled road access permit:	This referral included an application for a road access location, under section 62A(2) of *Transport Infrastructure Act 1994*. Below are the details of the decision: • Approved • Reference: TMR22-037116 • Date: 7 February 2023 If you are seeking further information on the road access permit, please contact the Department of Transport and Main Roads at Far.North.Queensland.IDAS@tmr.qld.gov.au
Human Rights Act 2019 considerations:	A consideration of the 23 fundamental human rights protected under the *Human Right Act 2019* has been undertaken as part of this decision. It has been determined that this decision does not limit human rights.

Representations

An applicant may make representations to a concurrence agency, at any time before the application is decided, about changing a matter in the referral agency response (s.30 Development Assessment Rules). Copies of the relevant provisions are in **Attachment 4**.

A copy of this response has been sent to the applicant for their information.

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For further information please contact Tony Croke, Principal Planner, on 40373205 or via email CairnsSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

Brett Nancarrow
Manager (Planning)

cc Mareeba 232 Pty Ltd, justin@urbansync.com.au

enc Attachment 1 - Referral agency conditions
Attachment 2 - Advice to the applicant
Attachment 3 - Reasons for referral agency response
Attachment 4 - Representations about a referral agency response provisions
Attachment 5 - Documents referenced in conditions

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Attachment 1—Referral agency conditions

(Under section 56(1)(b)(i) of the *Planning Act 2016* the following conditions must be attached to any development approval relating to this application) (Copies of the documents referenced below are found at Attachment 5)

No.	Conditions	Condition timing
Material change of use		
Schedule 10, Part 9, Division 4, Subdivision 1, Table 1 (Planning Regulation 2017)–Material change of use impacting on state transport infrastructure and thresholds and Schedule 10, Part 9, Division 4, Subdivision 2, Table 4 (Planning Regulation 2017) Development application for material change of use near a state-controlled road, intersection, and railway—The chief executive administering the *Planning Act 2016* nominates the Director-General of the Department of Transport and Main Roads to be the enforcement authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following condition(s):		
Railway Corridor		
1.	Locate the shops and supermarket generally in accordance with the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red) to achieve the following minimum setbacks to the railway corridor: (a) Shops – 2.4m (b) Supermarket – 1.5m	Prior to the commencement of use and to be maintained at all times.
2.	Locate the Rankin Street site access generally in accordance with the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red) to achieve a minimum setback of 35m to the railway corridor.	Prior to the commencement of use and to be maintained at all times.
3.	Provide raised kerb wheel stops to all car parking spaces located perpendicular to the railway corridor as shown on the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red).	Prior to the commencement of use and to be maintained at all times
4.	The Mareeba-Dimbulah Road (Byrnes Street) site access must be separated from the Rankin Street / Mareeba-Dimbulah Road (Byrnes Street) signalised pedestrian crossing by 72m generally in accordance with the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red) for potential future public passenger transport.	Prior to the commencement of use and to be maintained at all times.
Fencing		
5.	Provide fencing along the site boundary with the railway corridor, in accordance with the railway manager's standards: (i) Queensland Rail drawing number QR-C-S3230 – 1.8m High Chain Link Security Fence with Without Rails Using 50mm Diamond Mesh General Arrangement; or (ii) Queensland Rail drawing number QR-C-S3231 – Standard	Prior to the commencement of use and to be maintained at all times.

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	Timber Fence 1800mm High Timber Paling Fence.	
Filling and excavation		
6.	Any excavation, filling/backfilling/compaction, retaining structures and other works involving ground disturbance must not encroach or de-stabilise the railway corridor and state-controlled road corridor including all transport infrastructure or the land supporting this infrastructure, or cause similar adverse impacts.	At all times.
Railway level crossing safety		
7.	(a) Road works to prevent right turns into the site at the Rankin Street site access, including a concrete traffic island, signage and line marking, must be provided generally in accordance with the Median Extension Concept, prepared by Trinity Engineering and Consulting, dated 22 December 2022, drawing number 1604-002, revision F as amended in red. (b) The road works in part (a) must be designed and constructed in accordance with: (i) Department of Transport and Main Roads' Road Planning and Design Manual (2nd Edition); and (ii) Manual of Uniform Traffic Control Devices (MUTCD).	Prior to the commencement of use
8.	(a) Locate the pedestrian railway crossing, including pathway connections to the footpath in Rankin Street, generally in accordance with the Median Extension Concept, prepared by Trinity Engineering and Consulting, dated 22 December 2022, drawing number 1604-002, revision F (as amended in red). (b) The pedestrian railway crossing mentioned in part (a) of this condition must be designed and constructed in accordance with: (i) AS1742.7:2016 Manual of uniform traffic control devices, *Part 7: Railway crossings*; and (ii) Queensland Rail Pedestrian Level Crossings, drawing number 10698.	Prior to the commencement of use
9.	(a) Provide a dedicated taxi rank parallel to the kerb within the location shown on the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red). (b) The dedicated taxi rank must be designed and constructed to include the following: (i) a minimum of two (2) taxi parking bays in total in accordance with AS2890.5 - Parking facilities, Part 5: On-street parking; (ii) of the taxi bays provided, at least one (1) is to be of a length and width suitable for use by people with disabilities in accordance AS1428.1 - Design for access and mobility and AS2890.6 – Parking Facilities, Part 6: Off-street parking for people with disabilities	(a) & (b) Prior to the commencement of use and to be maintained at all times

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	(iii) two taxi zone signs R5-21, placed at either end of the rank, and taxi zone line marking in accordance with AS1742.11 – Manual of uniform traffic control devices, Part 11: Parking controls (iv) lighting in accordance with AS/NZS 1158.3.1 – Lighting for Roads and Public Spaces, Part 3.1: Pedestrian Area (Category P) Lighting – Performance and Design Requirements and (v) accessibility in accordance with the Disability Standards for Accessible Public Transport 2002 made under subsection 31(1) of the *Disability Discrimination Act 1992* and the Department of Transport and Main Roads *Public Transport. Infrastructure. Manual 2015*. (c) Provide RPEQ certification, with supporting documentation, to the Program Delivery and Operations Unit, Far North Queensland Region (Far.North.Queensland.IDAS@tmr.qld.gov.au), within the Department of Transport and Main Roads confirming that the development has been constructed in accordance with parts (a) and (b) of this condition.	(c) Prior to the commencement of use
Public Passenger Transport		
10.	Any roadworks in Mareeba-Dimbulah Road (Byrnes Street) must be designed and constructed to be in accordance with the following, to accommodate a single unit rigid bus of 12.5m in length: (i) Department of Transport and Main Roads *Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design* (ii) Department of Transport and Main Roads *Supplement to Austroads Guide to Road Design* (Parts 3, 4-4C and 6) (iii) *Austroads Guide to Road Design* (Parts 3, 4-4C and 6) (iv) *Austroads Design Vehicles and Turning Path Templates* (v) Queensland Manual of Uniform Traffic Control Devices, Part 13: *Local Area Traffic Management* and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – *Local Area Traffic Management* and (vi) Chapter 2 - Planning and Design, Section 2.3.2 Bus Route Infrastructure (page 6) of the Department of Transport and Main Roads *Public Transport Infrastructure Manual 2015*.	Prior to the commencement of use

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Stormwater Management		
11.	(a) Stormwater management of the development must not cause worsening to the operating performance of the railway corridor and state-controlled road, such that any works on the land must not: (i) create any new discharge points for stormwater runoff onto the railway corridor and state-controlled road (ii) concentrate or increase the velocity of flows to a railway corridor and a state-controlled road (iii) interfere with and/or cause damage to the existing stormwater drainage on the railway corridor and state-controlled road (iv) surcharge any existing culvert or drain on the railway corridor and state-controlled road (v) reduce the quality of stormwater discharge onto the railway corridor and state-controlled road (vi) impede or interfere with any overland flow or hydraulic conveyance from the railway corridor and state-controlled road (vii) reduce the floodplain immunity of the railway corridor and state-controlled road.	(a) At all times.
	(b) Submit RPEQ certification Cairns Corridor Management Unit (Far.North.Queensland.IDAS@tmr.qld.gov.au) within the Department of Transport and Main Roads, confirming that the development has been designed in accordance with part (a) of this condition.	(b) Prior to obtaining development approval for operational work or building work, whichever occurs first.
	(c) Submit RPEQ certification Cairns Corridor Management Unit (Far.North.Queensland.IDAS@tmr.qld.gov.au) within the Department of Transport and Main Roads, confirming that the development has been constructed in accordance with parts (a) and (b) of this condition.	(c) Within 20 business days of the completion of works.
Roadworks on a state-controlled road		
12.	(a) Road works comprising in the extension of the existing concrete centre median for approximately 75m along Mareeba-Dimbulah Road (Byrnes Street) ending prior to the Herberton Street intersection must be provided. (b) The road works must be designed and constructed in accordance with Department of Transport and Main Roads', Road Planning and Design Manual, 2nd Edition, November 2021, Volume 3 – Guide to Road Design.	Prior to the commencement of use.
Vehicular access to a state-controlled road		
13.	(a) The existing vehicular property accesses located between Lot 78 on SP298287, and Mareeba-Dimbulah Road (Byrnes Street) must be permanently closed and removed. (b) The kerb and channeling between the pavement edge and the property boundary must be reinstated in accordance with Far	Prior to the commencement of use.

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	North Queensland Regional Council Organisation (FNQROC) Concrete Kerb and Channel, Standard Drawing S1000, dated 27/08/20, Revision G at no cost to the Department of Transport and Main Roads'.	
14.	(a) The road access locations on Mareeba-Dimbulah Road (Byrnes Street) are to be located generally in accordance with TMR Layout Plan (664 – 1.60km), prepared by Queensland Government Transport and Main Roads, dated 06/02/2023, Reference TMR22-37116 (500-310), Issue D. (b) Road access works comprising of: (i) a sealed left-in / left-out northern vehicular access (main access) including an auxiliary left-turn lane (AUL) and (ii) a sealed left-in / left-out southern vehicular access (service access) must be provided at the road access locations. (c) The road access works must be designed and constructed generally in accordance with: (i) Austroads Guide to Road Design, Part 4: Intersections and Crossing – General, 2021, Figure 8.6: Urban Auxiliary left-turn treatment (AUL) (ii) Department of Transport and Main Roads' Standard Rural Property Access Drawing, Sheets 1 & 2, Drawing No. 1807, Type C – Rural Property Access, dated 11/2021, Revision B; and (iii) Department of Transport and Main Roads', Road Planning and Design Manual, 2nd Edition, November 2021, Volume 3 – Guide to Road Design.	(a) At all times. (b) and (c): Prior to the commencement of use.

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Attachment 2—Advice to the applicant

General advice	
1.	**Terms and phrases** Terms and phrases used in this document are defined in the *Planning Act 2016*, its regulation or the State Development Assessment Provisions (SDAP) (version 3.0). If a word remains undefined it has its ordinary meaning.
2.	**Advertising device** The shopping centre, food and drink outlet and shops development is proposing to erect an advertising device that will be visible from a state-controlled road. The applicant should seek advice from the Department of Transport and Main Roads (DTMR) to ensure that the advertising device visible from a state-controlled road, and beyond the boundaries of the state-controlled road, is unlikely to create a traffic hazard for the state-controlled road. Note: DTMR has powers under section 139 of *the Transport Operations (Road Use Management - Accreditation and Other Provisions) Regulation 2015* to require removal or modification of an advertising sign and / or a device which is deemed to create a danger to traffic.
3.	**Railway Corridor** Pursuant to section 255 of the Transport Infrastructure Act 1994, the railway manager's written approval is required to carry out works in or on a railway corridor or otherwise interfere with the railway or its operations. In particular, the pedestrian crossing over the railway and fencing along the railway corridor boundary will require relevant approvals to be obtained from the railway manager. Please be advised that this referral agency response does not constitute an approval under section 255 of the *Transport Infrastructure Act 1994* and that such approvals need to be separately obtained from the relevant railway manager. The applicant should contact Queensland Rail Property Team at PropertyLeasing@qr.com.au in relation to this matter.
4.	**Public Passenger Transport** The existing urban bus route 850 (Atherton Tablelands to Cairns) travels along Byrnes Street and may be impacted on by the development. Urban bus route 850 needs to be able to function during the construction of the development. Accordingly, if any temporary road closures are required, the applicant needs to reach agreement on suitable arrangements with the Department of Transport and Main Roads' TransLink Division (bus_stops@translink.com.au or on 3851 8700) prior to any construction or works commencing.
5.	**Road Works Approval** Under section 33 of the *Transport Infrastructure Act 1994*, written approval is required from the Department of Transport and Main Roads to carry out road works. Please contact the Department of Transport and Main Roads on 4045 7144 to make an application for road works approval. This approval must be obtained prior to commencing any works on the state-controlled road reserve. The approval process may require the approval of engineering designs of the proposed works, certified by a Registered Professional Engineer of Queensland (RPEQ). Please contact the Department of Transport and Main Roads as soon as possible to ensure that gaining approval does not delay construction.
6.	**Road Corridor Permit**

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	An application for a road corridor permit is required for any ancillary works and encroachments on a state-controlled road. Under section 50(2) and Schedule 6 of the *Transport Infrastructure Act 1994* (TIA) and Part 5 and Schedule 1 of the *Transport Infrastructure (State-Controlled Roads) Regulation 2006*, the applicant must obtain a road corridor permit from the Department of Transport and Main Roads (DTMR) to carry out ancillary and encroachments works on a state-controlled road. The applicant is required to contact the Cairns district office of the Department of Transport and Main Roads on 4045 7144 to make an application for a road corridor permit to carry out ancillary works and encroachments. Ancillary works and encroachments include but are not limited to advertising signs or other advertising devices, paths or bikeways, buildings/shelters/structures, vegetation clearing, landscaping and planting.

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Attachment 3—Reasons for referral agency response

(Given under section 56(7) of the *Planning Act 2016*)

The reasons for the SARA's decision are:

The development complies with State code 1: Development in a state-controlled road environment, State code 2: Development in a railway environment and State code 6: Protection of state transport networks of the State Development Assessment Provisions (SDAP) as:

- The development is not located in the railway corridor or the state-controlled road.
- The vehicular access locations via Mareeba-Dimbulah Road will be required to be upgraded and constructed to the relevant standards.
- The centre median along Mareeba-Dimbulah Road will be extended up to the Herberton Street intersection.
- Additional traffic movements will be directed to Rankin Street, a local council road.
- The proposed development will require drainage infrastructure within the development site.
- The design of the development allows for the provision of a future bus stop and services.
- An on-site taxi set down, parallel to the shopping centre entrance, will be provided. One of the spaces will be accessible for people with a disability.
- Traffic management measures in Rankin Street adequately cater for the railway level crossing.
- Vehicular movements via Mareeba-Dimbulah Road will be via left-in / left-out access locations.
- A minimum setback of the development from the railway corridor will ensure maintenance can be carried out without access to the railway.
- The development is unlikely to cause significant damage to the railway corridor in the event of a train derailment.
- Fencing will be provided along the site boundary to prevent projectiles from being thrown onto the railway and to prevent unauthorised access to the railway by vehicles and pedestrians.

Material used in the assessment of the application:

- the development application material and submitted plans
- *Planning Act 2016*
- Planning Regulation 2017
- the SDAP (version 3.0), as published by SARA
- the Development Assessment Rules
- SARA DA Mapping system
- State Planning Policy mapping system
- section 58 of the *Human Rights Act 2019*

Attachment 4—Representations about a referral agency response provisions

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Attachment 5—Documents referenced in conditions

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DEVELOPMENT SCHEDULE

PROPOSED USES	GFA	GLAR
SUPERMARKET	3655m²	3603m²
SHOPS	814m²	796m²
AMENITIES	90m²	
TOTAL CENTRE	**4559m²**	**4399m²**
FAST FOOD	270m²	270m²
TOTAL	**4829m²**	**4669m²**

CAR PARKING SCHEDULE	
CARS FAST FOOD	11
CARS CENTRE (INCL. MOTOR BIKES, DIRECT TO BOOT + TAXI)	219
ON SITE CARS	230
STREET CARS	5
TOTAL CARS PROVIDED	**235**
TOTAL CARS REQUIRED	186

NOTE:
CARS REQUIRED IS BASED ON:
1/50 UP TO 400m² GFA
1/25 ABOVE 400m² GFA

NOTE: SUPERMARKET GLAR EXCLUDES EXTERNAL WALLS AND LOADING DOCK

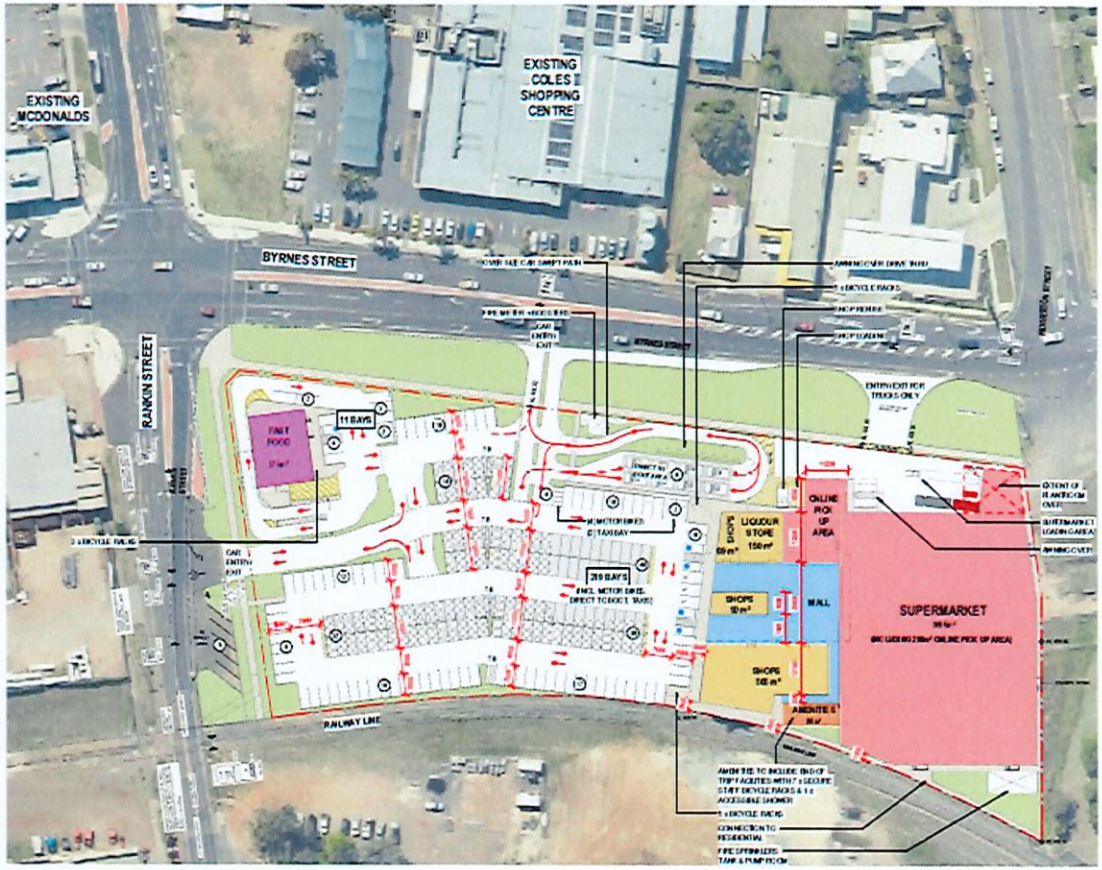
COVERED CARPARKS

AREA OF ENCLOSED MALL / PASSAGE - 637m²

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

SARA ref: 2207-30073 SRA

Date: 24 February 2022



1 SITE PLAN
1:500

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

MAREEBA 232 PTY LTD

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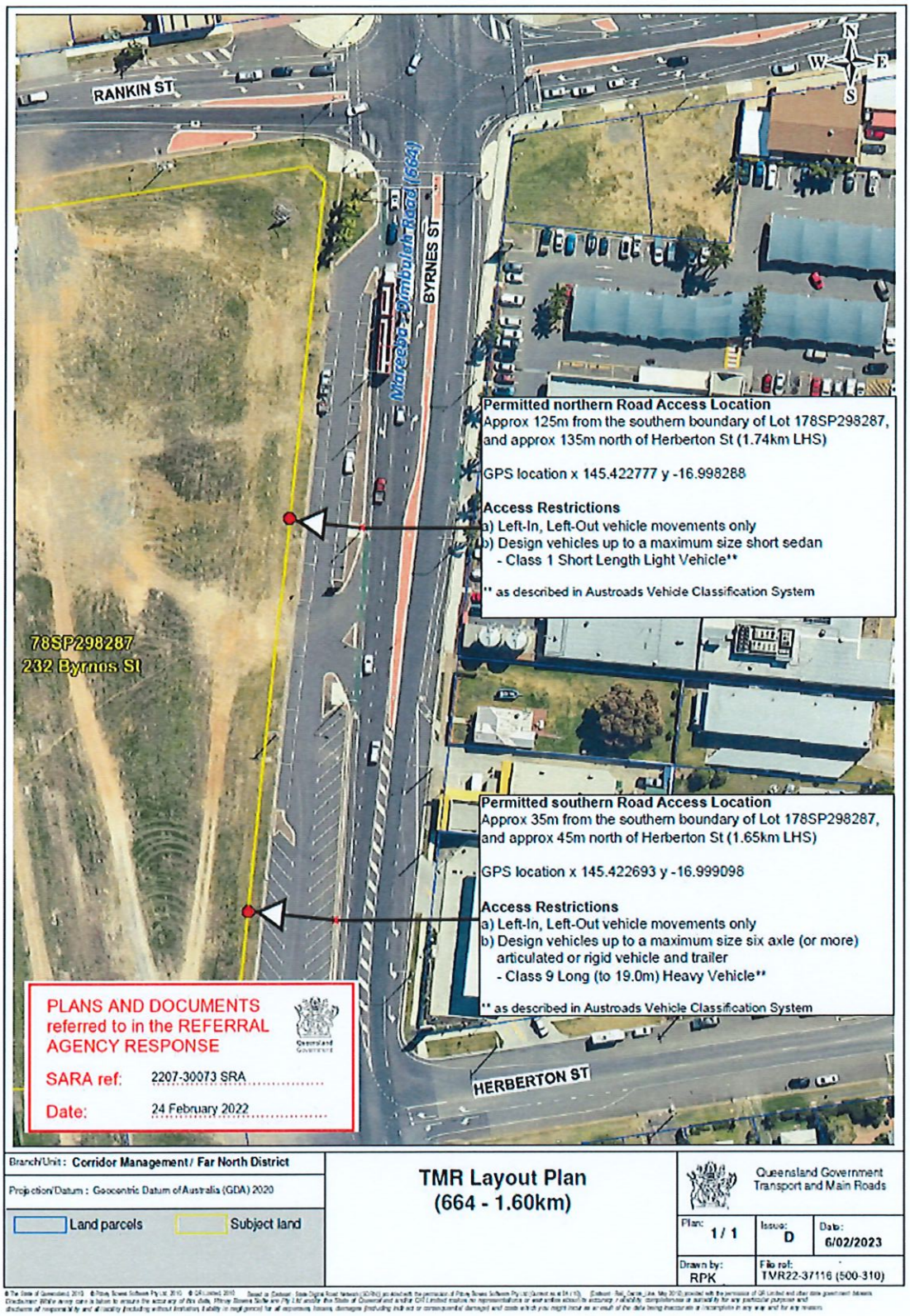
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SITE PLAN

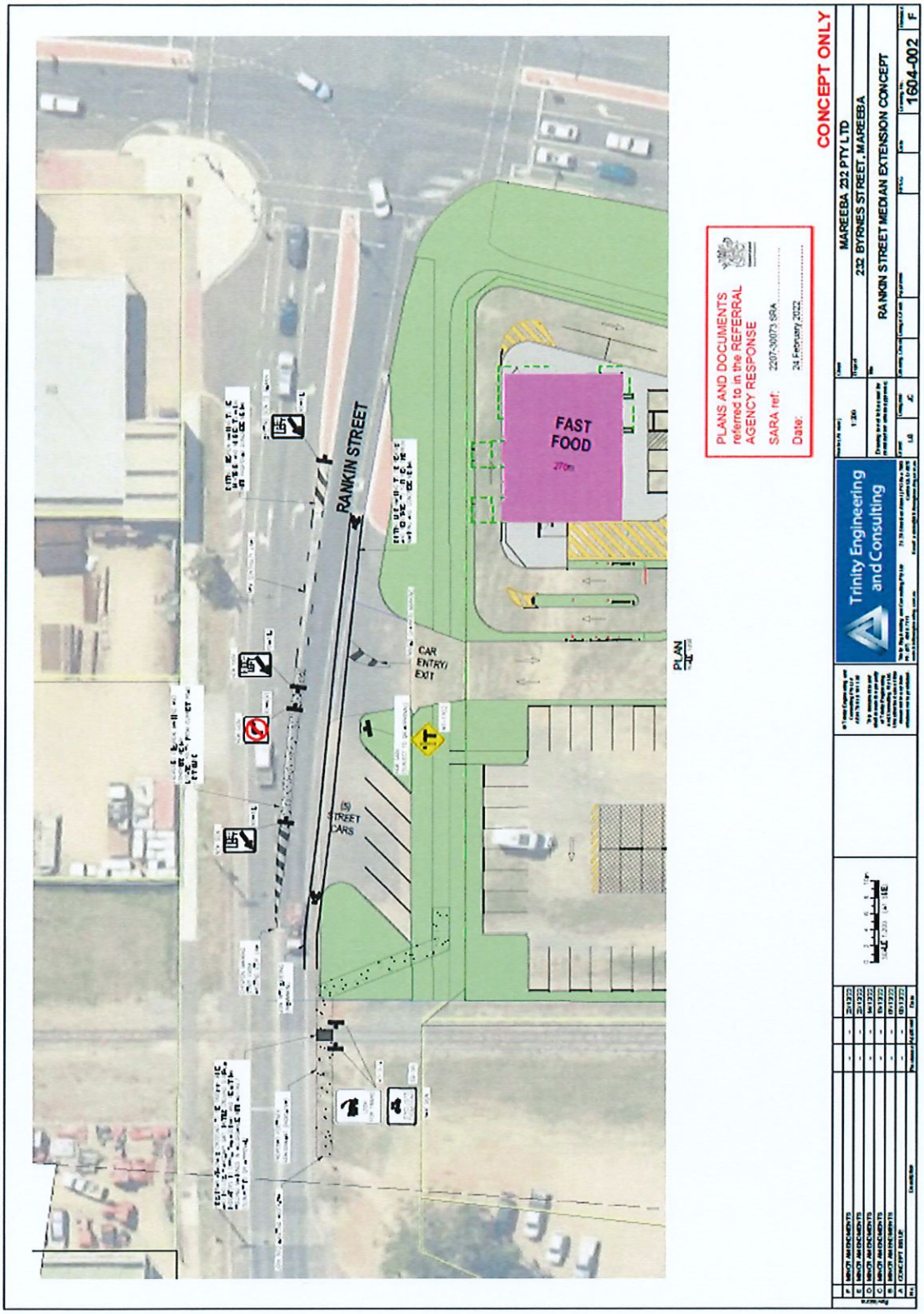
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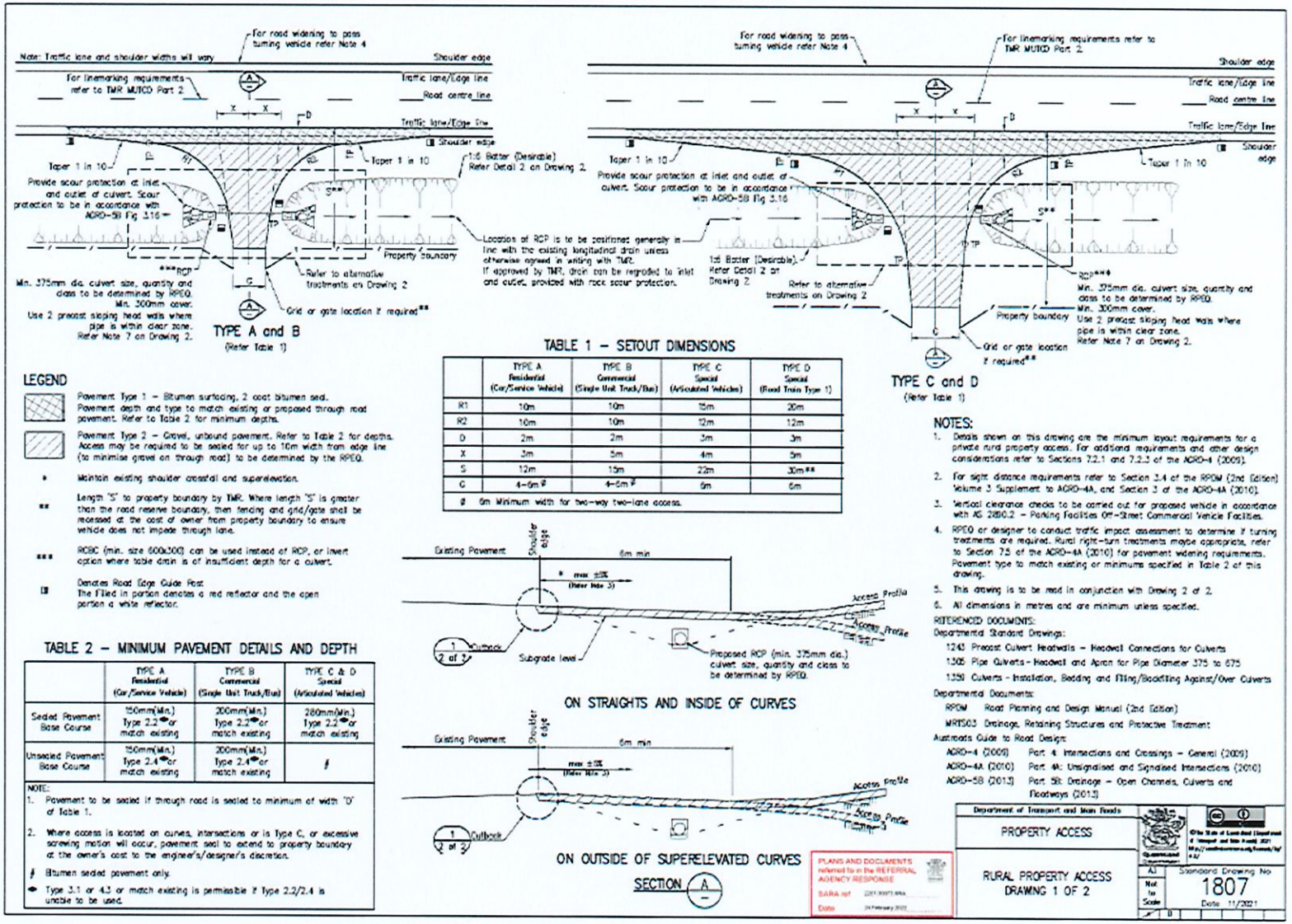


TABLE 1 – SETOUT DIMENSIONS

	TYPE A Residential (Car/Service Vehicle)	TYPE B Commercial (Single Unit Truck/Bus)	TYPE C Special (Articulated Vehicle)	TYPE D Special (Road Train Type 1)
R1	10m	10m	15m	20m
R2	10m	10m	12m	12m
D	2m	2m	3m	3m
X	3m	5m	4m	5m
S	12m	15m	22m	30m**
C	4–6m #	4–6m #	6m	6m

6m Minimum width for two-way two-lane access.

LEGEND

- Pavement Type 1 – Bitumen surfacing, 2 coat bitumen seal. Pavement depth and type to match existing or proposed through road pavement. Refer to Table 2 for minimum depths.
- Pavement Type 2 – Gravel, unbound pavement. Refer to Table 2 for depths. Access may be required to be sealed for up to 10m width from edge line (to minimise gravel on through road) to be determined by the RPEQ.
- * Maintain existing shoulder crossfall and superelevation.
- ** Length "S" to property boundary by TMR. Where length "S" is greater than the road reserve boundary, then fencing and grid/gate shall be recessed at the cost of owner from property boundary to ensure vehicle does not impede through lane.
- *** RCBC (min. size 600x300) can be used instead of RCP, or invert option where table drain is of insufficient depth for a culvert.
- Denotes Road Edge Guide Post. The Filled in portion denotes a red reflector and the open portion a white reflector.

TABLE 2 – MINIMUM PAVEMENT DETAILS AND DEPTH

	TYPE A Residential (Car/Service Vehicle)	TYPE B Commercial (Single Unit Truck/Bus)	TYPE C & D Special (Articulated Vehicles)
Sealed Pavement Base Course	150mm(Min.) Type 2.2◆ or match existing	200mm(Min.) Type 2.2◆ or match existing	280mm(Min.) Type 2.2◆ or match existing
Unsealed Pavement Base Course	150mm(Min.) Type 2.4◆ or match existing	200mm(Min.) Type 2.4◆ or match existing	#

NOTE:
1. Pavement to be sealed if through road is sealed to minimum of width 'D' of Table 1.
2. Where access is located on curves, intersections or is Type C, or excessive screening motion will occur, pavement seal to extend to property boundary at the owner's cost to the engineer's/designer's discretion.

Bitumen sealed pavement only.

◆ Type 3.1 or 4.1 or match existing is permissible if Type 2.2/2.4 is unable to be used.

ON STRAIGHTS AND INSIDE OF CURVES

ON OUTSIDE OF SUPERELEVATED CURVES

SECTION A

NOTES:

1. Details shown on this drawing are the minimum layout requirements for a private rural property access. For additional requirements and other design considerations refer to Sections 7.2.1 and 7.2.3 of the AGRD-4 (2009).
2. For sight distance requirements refer to Section 3.4 of the RPDM (2nd Edition) Volume 3 Supplement to AGRD-4A, and Section 3 of the AGRD-4A (2010).
3. Vertical clearance checks to be carried out for proposed vehicle in accordance with AS 2890.2 – Parking Facilities Off-Street Commercial Vehicle Facilities.
4. RPEQ or designer to conduct traffic impact assessment to determine if turning treatments are required. Rural right-turn treatments maybe appropriate, refer to Section 7.5 of the AGRD-4A (2010) for pavement widening requirements. Pavement type to match existing or minimums specified in Table 2 of this drawing.
5. This drawing is to be read in conjunction with Drawing 2 of 2.
6. All dimensions in metres and are minimum unless specified.

REFERENCED DOCUMENTS:

Departmental Standard Drawings:
- 1243 Precast Culvert Headwalls – Headwall Connections for Culverts
- 1305 Pipe Culverts - Headwall and Apron for Pipe Diameter 375 to 675
- 1351 Culverts - Installation, Bedding and Filling/Backfilling Against/Over Culverts

Departmental Documents:
- RPDM Road Planning and Design Manual (2nd Edition)
- MRTS03 Drainage, Retaining Structures and Protective Treatment

Austroads Guide to Road Design:
- AGRD-4 (2009) Part 4: Intersections and Crossings – General (2009)
- AGRD-4A (2010) Part 4A: Unsignalised and Signalised Intersections (2010)
- AGRD-5B (2013) Part 5B: Drainage – Open Channels, Culverts and Floodways (2013)

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE
SARA ref:
Date:

Department of Transport and Main Roads

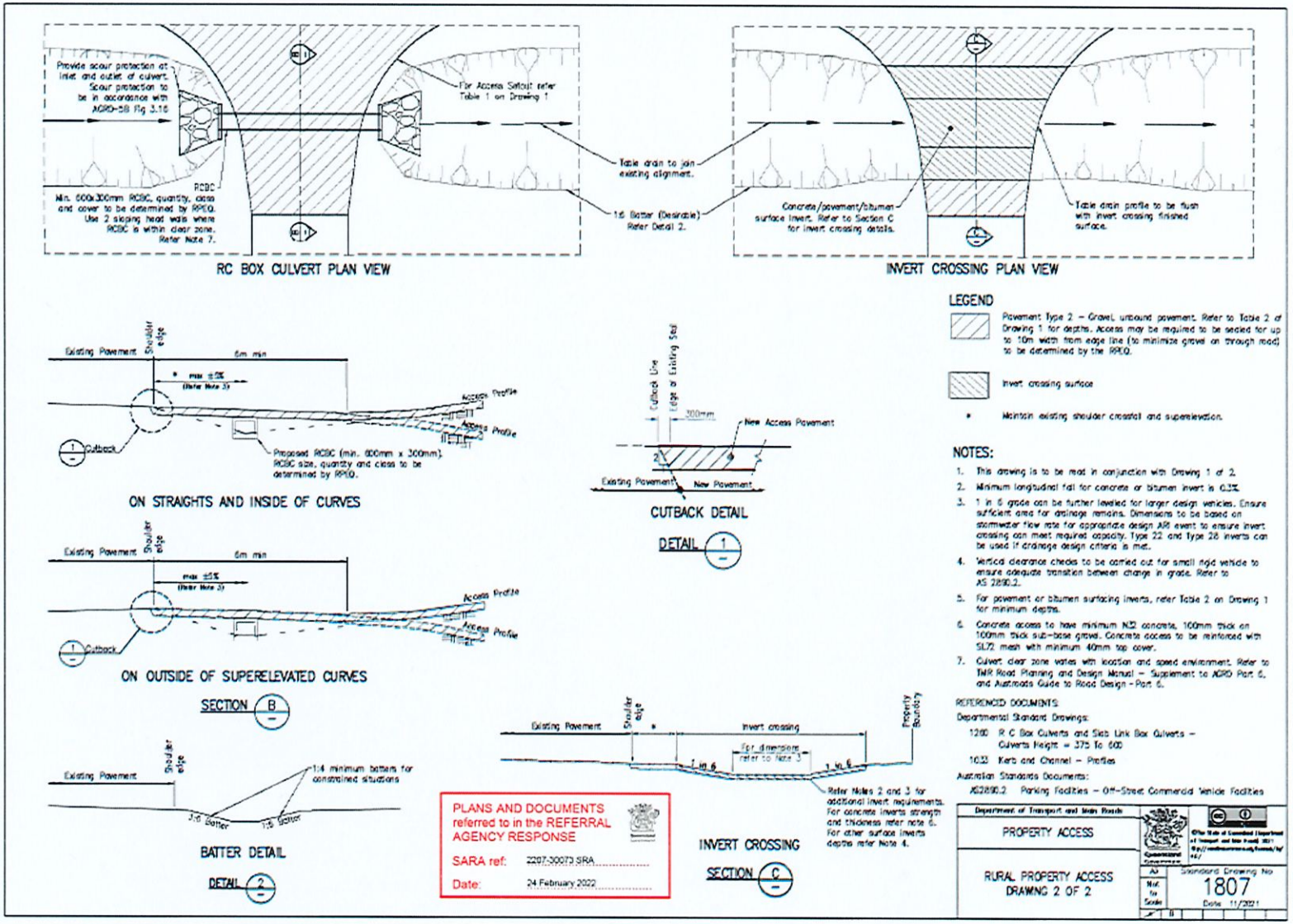
PROPERTY ACCESS

RURAL PROPERTY ACCESS
DRAWING 1 OF 2

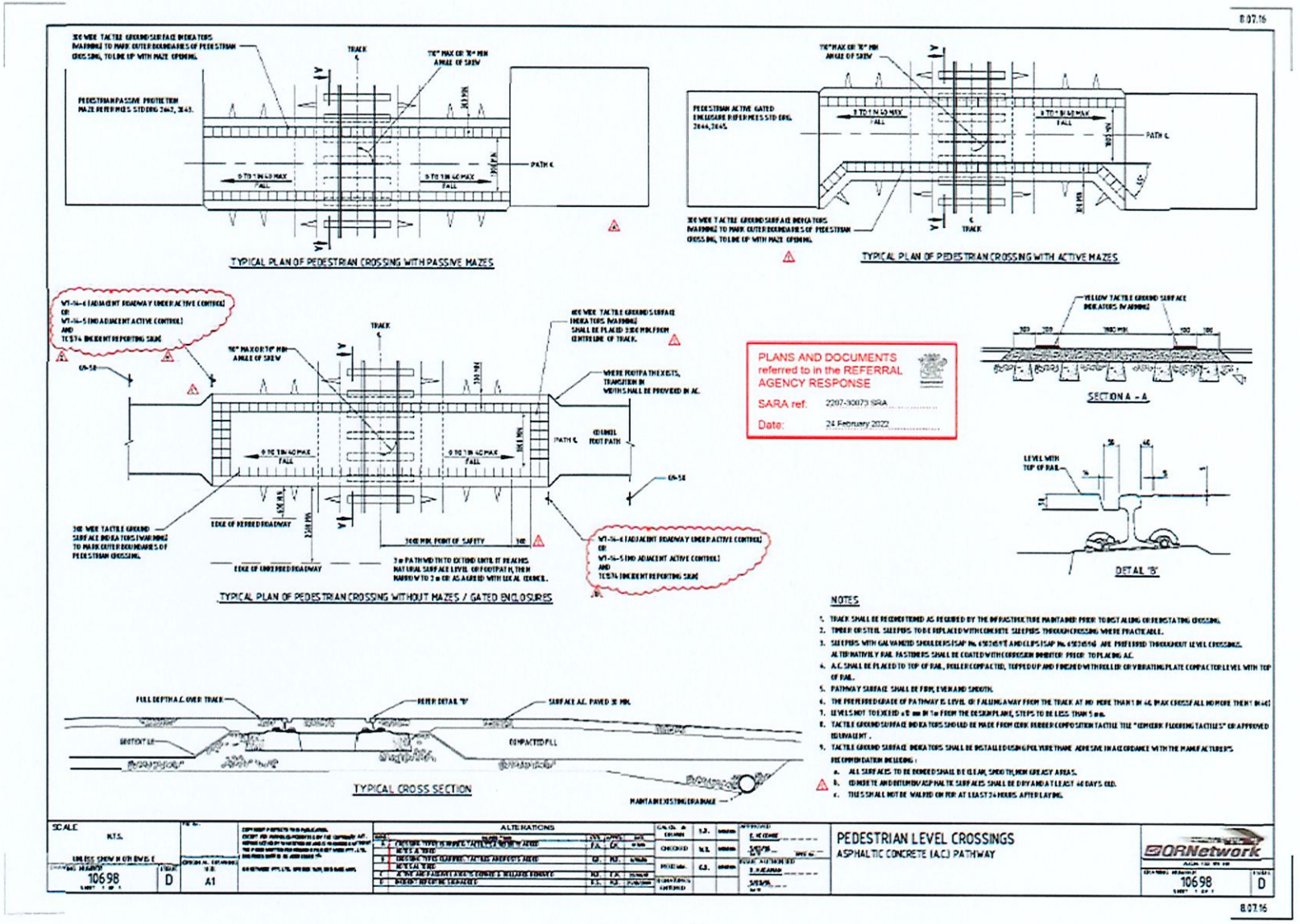
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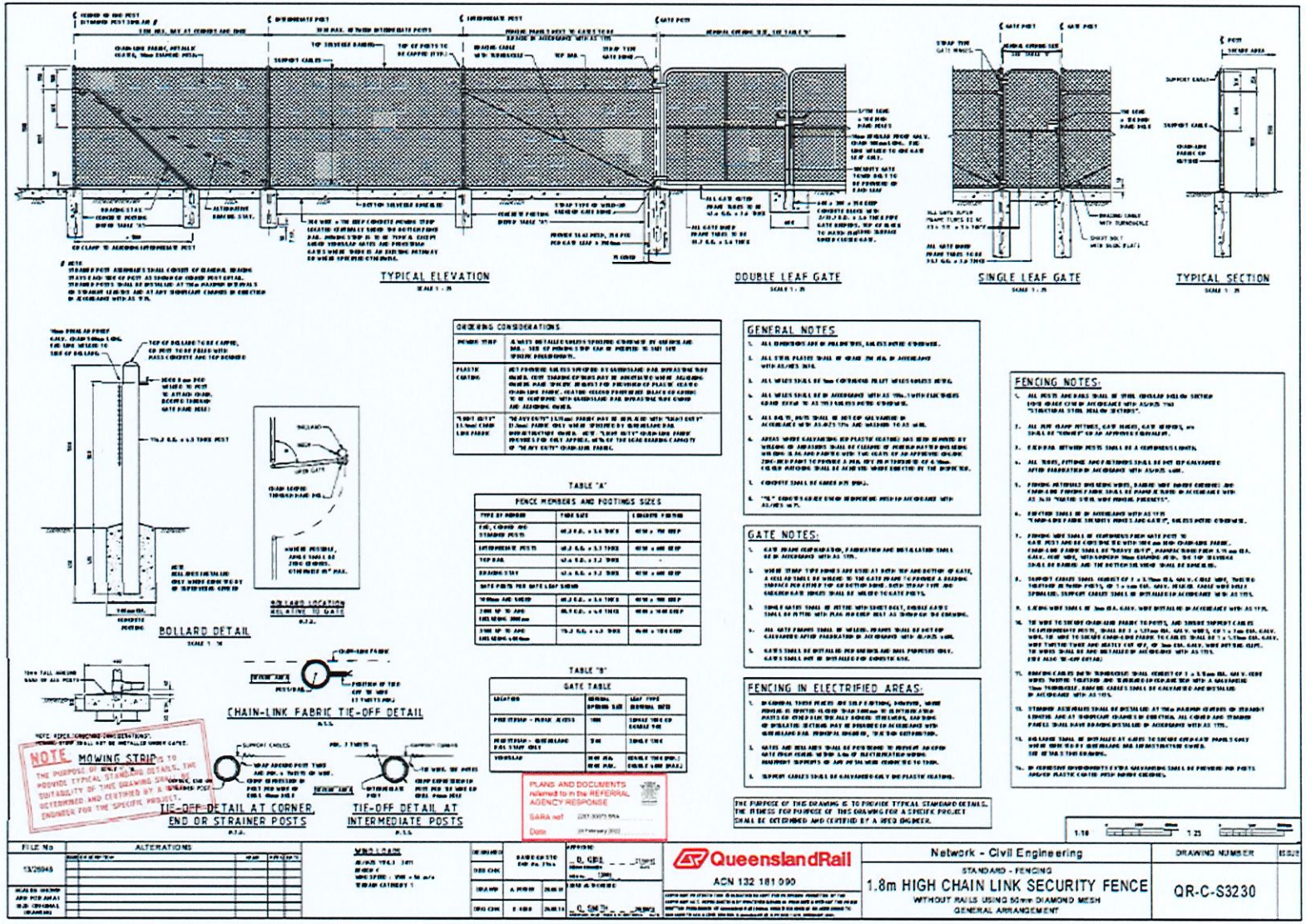
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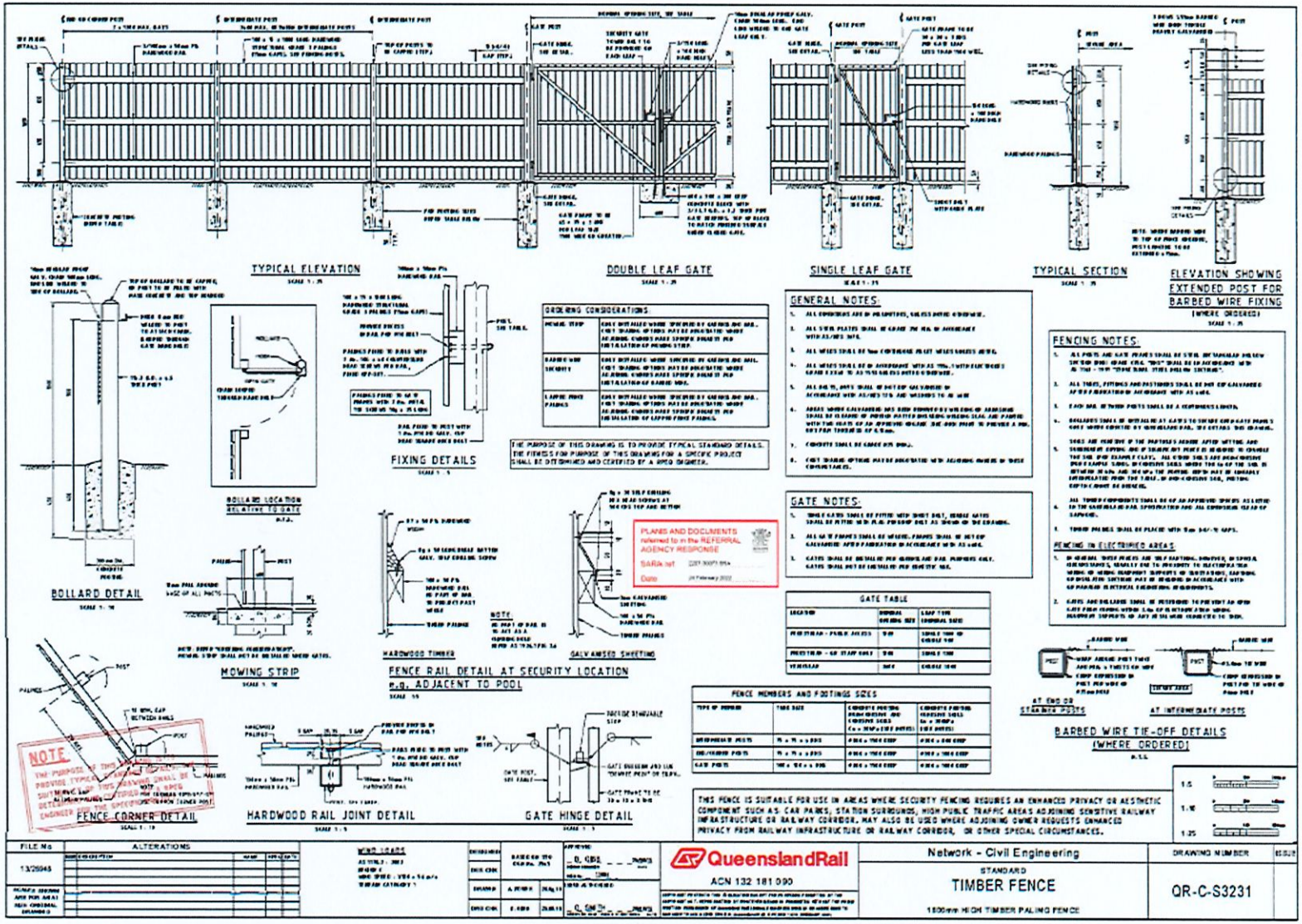
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Development Assessment Rules—Representations about a referral agency response

The following provisions are those set out in sections 28 and 30 of the Development Assessment Rules[1] regarding representations about a referral agency response

Part 6: Changes to the application and referral agency responses

28 Concurrence agency changes its response or gives a late response

28.1. Despite part 2, a concurrence agency may, after its referral agency assessment period and any further period agreed ends, change its referral agency response or give a late referral agency response before the application is decided, subject to section 28.2 and 28.3.

28.2. A concurrence agency may change its referral agency response at any time before the application is decided if—

(a) the change is in response to a change which the assessment manager is satisfied is a change under section 26.1; or

(b) the Minister has given the concurrence agency a direction under section 99 of the Act; or

(c) the applicant has given written agreement to the change to the referral agency response.[2]

28.3. A concurrence agency may give a late referral agency response before the application is decided, if the applicant has given written agreement to the late referral agency response.

28.4. If a concurrence agency proposes to change its referral agency response under section 28.2(a), the concurrence agency must—

(a) give notice of its intention to change its referral agency response to the assessment manager and a copy to the applicant within 5 days of receiving notice of the change under section 25.1; and

(b) the concurrence agency has 10 days from the day of giving notice under paragraph (a), or a further period agreed between the applicant and the concurrence agency, to give an amended referral agency response to the assessment manager and a copy to the applicant.

---

1 Pursuant to Section 68 of the *Planning Act 2016*

2 In the instance an applicant has made representations to the concurrence agency under section 30, and the concurrence agency agrees to make the change included in the representations, section 28.2(c) is taken to have been satisfied.

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Part 7: Miscellaneous

30 Representations about a referral agency response

30.1. An applicant may make representations to a concurrence agency at any time before the application is decided, about changing a matter in the referral agency response.[3]

[3] An applicant may elect, under section 32, to stop the assessment manager's decision period in which to take this action. If a concurrence agency wishes to amend their response in relation to representations made under this section, they must do so in accordance with section 28.

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Appeal Rights

PLANNING ACT 2016 & THE PLANNING REGULATION 2017

Chapter 6 Dispute resolution

Part 1 Appeal rights

229 Appeals to tribunal or P&E Court

(1) Schedule 1 of the *Planning Act 2016* states –
  (a) Matters that may be appealed to –
    (i) either a tribunal or the P&E Court; or
    (ii) only a tribunal; or
    (iii) only the P&E Court; and
  (b) The person-
    (i) who may appeal a matter (**the *appellant***); and
    (ii) who is a respondent in an appeal of the matter; and
    (iii) who is a co-respondent in an appeal of the matter; and
    (iv) who may elect to be a co-respondent in an appeal of the matter.

(Refer to Schedule 1 of the Planning Act 2016)

(2) An appellant may start an appeal within the appeal period.
(3) The ***appeal period*** is –
  (a) for an appeal by a building advisory agency – 10 business days after a decision notice for the decision is given to the agency; or
  (b) for an appeal against a deemed refusal – at any time after the deemed refusal happens; or
  (c) for an appeal against a decision of the Minister, under chapter 7, part 4, to register premises or to renew the registration of premises – 20 business days after a notice us published under section 269(3)(a) or (4); or
  (d) for an appeal against an infrastructure charges notice – 20 business days after the infrastructure charges notice is given to the person; or
  (e) for an appeal about a deemed approval of a development application for which a decision notice has not been given – 30 business days after the applicant gives the deemed approval notice to the assessment manager; or
  (f) for any other appeal – 20 business days after a notice of the decision for the matter, including an enforcement notice, is given to the person.

Note –
See the P&E Court Act for the court's power to extend the appeal period.

(4) Each respondent and co-respondent for an appeal may be heard in the appeal.
(5) If an appeal is only about a referral agency's response, the assessment manager may apply to the tribunal or P&E Court to withdraw from the appeal.

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(6) To remove any doubt. It is declared that an appeal against an infrastructure charges notice must not be about-
  (a) the adopted charge itself; or
  (b) for a decision about an offset or refund-
    (i) the establishment cost of trunk infrastructure identified in a LGIP; or
    (ii) the cost of infrastructure decided using the method included in the local government's charges resolution.

230 Notice of appeal

(1) An appellant starts an appeal by lodging, with the registrar of the tribunal or P&E Court, a notice of appeal that-
  (a) is in the approved form; and
  (b) succinctly states the grounds of the appeal.
(2) The notice of appeal must be accompanied by the required fee.
(3) The appellant or, for an appeal to a tribunal, the registrar must, within the service period, give a copy of the notice of appeal to –
  (a) the respondent for the appeal ; and
  (b) each co-respondent for the appeal; and
  (c) for an appeal about a development application under schedule 1, table 1, item 1 – each principal submitter for the development application; and
  (d) for and appeal about a change application under schedule 1, table 1, item 2 – each principal submitter for the change application; and
  (e) each person who may elect to become a co-respondent for the appeal, other than an eligible submitter who is not a principal submitter in an appeal under paragraph (c) or (d); and
  (f) for an appeal to the P&E Court – the chief executive; and
  (g) for an appeal to a tribunal under another Act – any other person who the registrar considers appropriate.
(4) The *service period* is –
  (a) if a submitter or advice agency started the appeal in the P&E Court – 2 business days after the appeal has started; or
  (b) otherwise – 10 business days after the appeal is started.
(5) A notice of appeal given to a person who may elect to be a co-respondent must state the effect of subsection (6).
(6) A person elects to be a co-respondent by filing a notice of election, in the approved form, within 10 business days after the notice of appeal is given to the person.

231 Other appeals

(1) Subject to this chapter, schedule 1 and the P&E Court Act, unless the Supreme Court decides a decision or other matter under this Act is affected by jurisdictional error, the decision or matter is non-appealable.
(2) The *Judicial Review Act 1991*, part 5 applies to the decision or matter to the extent it is affected by jurisdictional error.
(3) A person who, but for subsection (1) could have made an application under the Judicial Review Act 1991 in relation to the decision or matter, may apply under part 4 of that Act for a statement of reasons in relation to the decision or matter.
(4) In this section –

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decision includes-
(a) conduct engaged in for the purpose of making a decision; and
(b) other conduct that relates to the making of a decision; and
(c) the making of a decision or failure to make a decision; and
(d) a purported decision ; and
(e) a deemed refusal.

non-appealable, for a decision or matter, means the decision or matter-
(a) is final and conclusive; and
(b) may not be challenged, appealed against, reviewed, quashed, set aside or called into question in any other way under the Judicial Review Act 1991 or otherwise, whether by the Supreme Court, another court, a tribunal or another entity; and
(c) is not subject to any declaratory, injunctive or other order of the Supreme Court, another court, a tribunal or another entity on any ground.

232 Rules of the P&E Court

(1) A person who is appealing to the P&E Court must comply with the rules of the court that apply to the appeal.
(2) However, the P&E Court may hear and decide an appeal even if the person has not complied with the rules of the P&E Court.

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ATTACHMENT 3

AMENDED PLANS OF DEVELOPMENT

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MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

DRAWING LIST - CONCEPT		
A	0.00	COVER SHEET
A	0.10	SITE CONTEXT PLAN
A	1.01A	SITE PLAN
A	1.02A	DEVELOPMENT PLAN
A	2.01	GROUND FLOOR PLAN - SUPERMARKET
A	2.02	ROOF PLAN - SUPERMARKET
A	2.03	ELEVATIONS - SUPERMARKET
A	2.04	ELEVATIONS - SUPERMARKET
A	2.05	SECTIONS - SUPERMARKET
A	4.01	GROUND FLOOR PLAN - FAST FOOD
A	4.02	ELEVATIONS - FAST FOOD
A	5.01	3D VIEWS
A	5.02	3D VIEWS





EXISTING VIEW FROM CORNER OF BYRNES & RANKIN STREET

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

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COVER SHEET

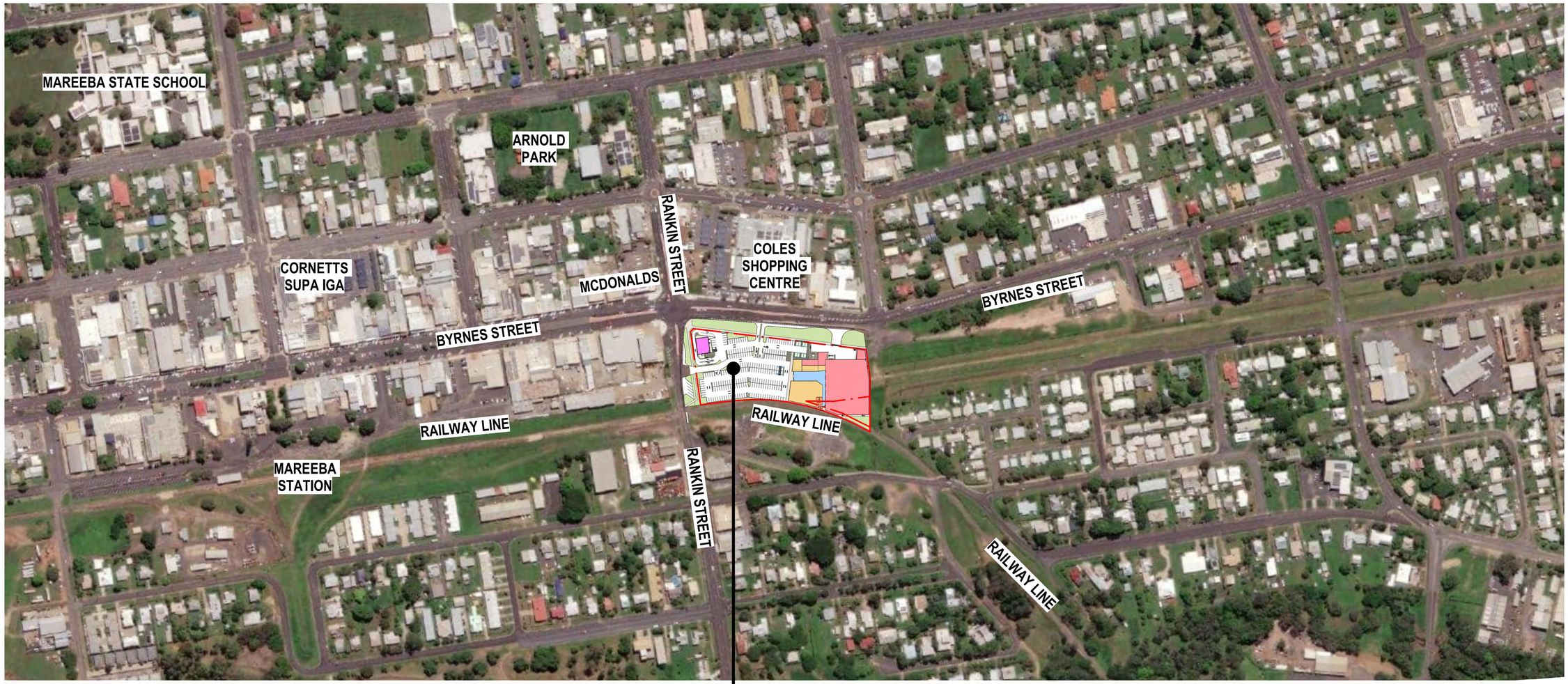
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2025-06-24

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1 SITE CONTEXT PLAN
1 : 2500

DEVELOPMENT APPLICATION

0 25 50 75 125 250 m

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SITE CONTEXT PLAN

1 : 2500 @ A1 2025-06-24

A0.10 **rev. 10**

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DEVELOPMENT SCHEDULE

PROPOSED USES	GFA	GLAR
SUPERMARKET	3655m^2	3603m^2
SHOPS	1290m^2	1260m^2
FAST FOOD	270m^2	270m^2
AMENITIES	90m^2	
TOTAL CENTRE	**5305m^2**	**5133m^2**

CAR PARKING SCHEDULE

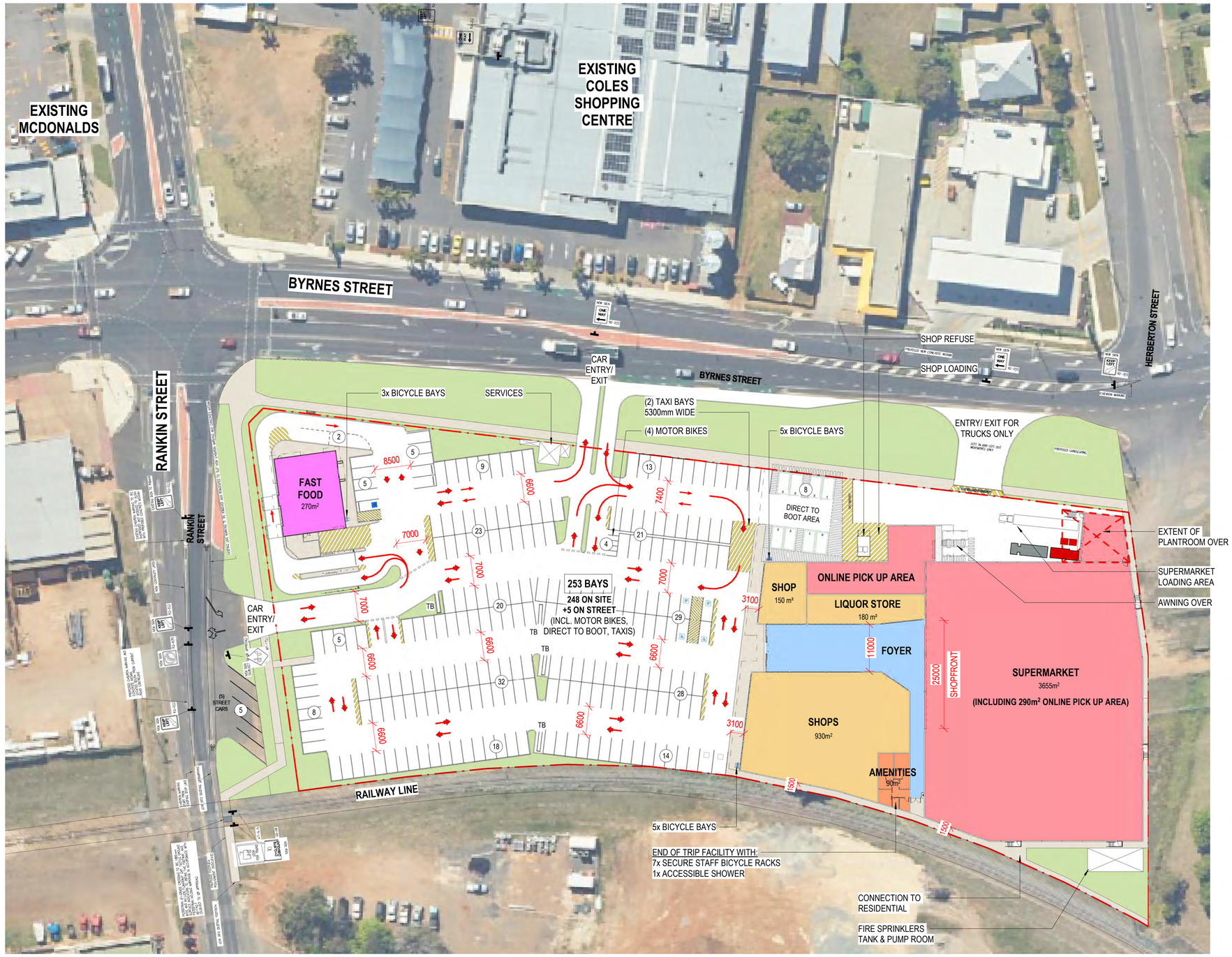
CARS CENTRE (ON SITE) (INCL. MOTOR BIKES, DIRECT TO BOOT + TAXIS)	248
STREET CARS	5
TOTAL CARS PROVIDED	**253** (4.93/100m^2 GLAR)
TOTAL CARS REQUIRED	205

NOTE:
CARS REQUIRED IS BASED ON:
1/50 UP TO 400m^2 GFA
1/25 ABOVE 400m^2 GFA

NOTE: SUPERMARKET GLAR EXCLUDES EXTERNAL WALLS AND LOADING DOCK

COVERED CARPARKS

AREA OF FOYER / PASSAGE - 522m^2



1 SITE PLAN - OPTION 6
1 : 500

DEVELOPMENT APPLICATION

0 5 10 15 25 50 m

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SITE PLAN

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3x BICYCLE BAYS
ELECTRIC PAD MOUNT TRANSFORMER
FIRE METER + BOOSTERS
5x BICYCLE BAYS
SCREENED SHOP REFUSE
SHOP LOADING
HOME DELIVERY LOADING AREA
WAITING BAYS
ELECTRICAL SERVICES (MSB/COMMS)
CAR ENTRY/ EXIT
BYRNES STREET
ENTRY/ EXIT FOR TRUCKS ONLY
RANKIN STREET
SUPERMARKET LOADING AREA
REFUSE BINS
EXTENT OF PLANTROOM OVER
COMPACTOR
ESCAPE STAIR
FAST FOOD 270m²
LOADING
DIRECT TO BOOT AREA
TAXI BAYS
(4) MOTOR BIKES
253 BAYS
248 ON SITE
+5 ON STREET
(INCL. MOTOR BIKES, DIRECT TO BOOT, TAXIS)
TB
CAR ENTRY/ EXIT
(5) STREET CARS
ONLINE PICK UP AREA
SHOP 150 m²
LIQUOR STORE 180 m²
FOYER
SUPERMARKET 3655m²
(INCLUDING 290m² ONLINE PICK UP AREA)
RL 409.20
SHOPS 930m²
AMENITIES 91 m²
RL 408.50
ESCAPE STAIR
5x BICYCLE BAYS
END OF TRIP FACILITY WITH:
7x SECURE STAFF BICYCLE RACKS
1x ACCESSIBLE SHOWER
ESCAPE STAIR
FIRE SPRINKLERS TANK & PUMP ROOM
CONNECTION TO RESIDENTIAL
RAILWAY LINE
EXISTING BUILDING

1 DEVELOPMENT PLAN - OPTION 6
1 : 300

DEVELOPMENT APPLICATION

0 3 6 9 15 30 m

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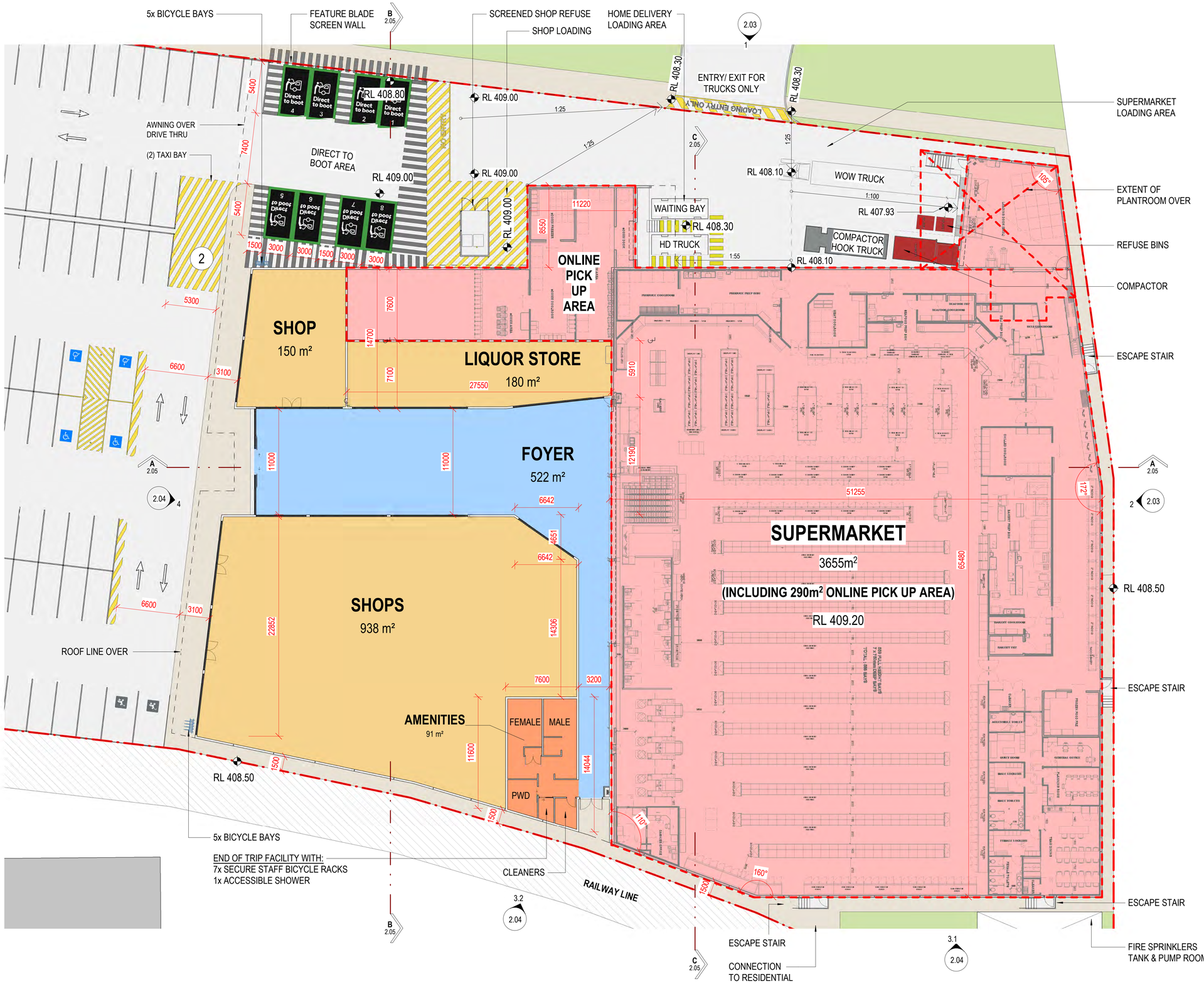
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DEVELOPMENT PLAN

1 : 300 @ A1 | 2025-06-24

A1.02A | **rev. 21**

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1 FLOOR PLAN - SUPERMARKET
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

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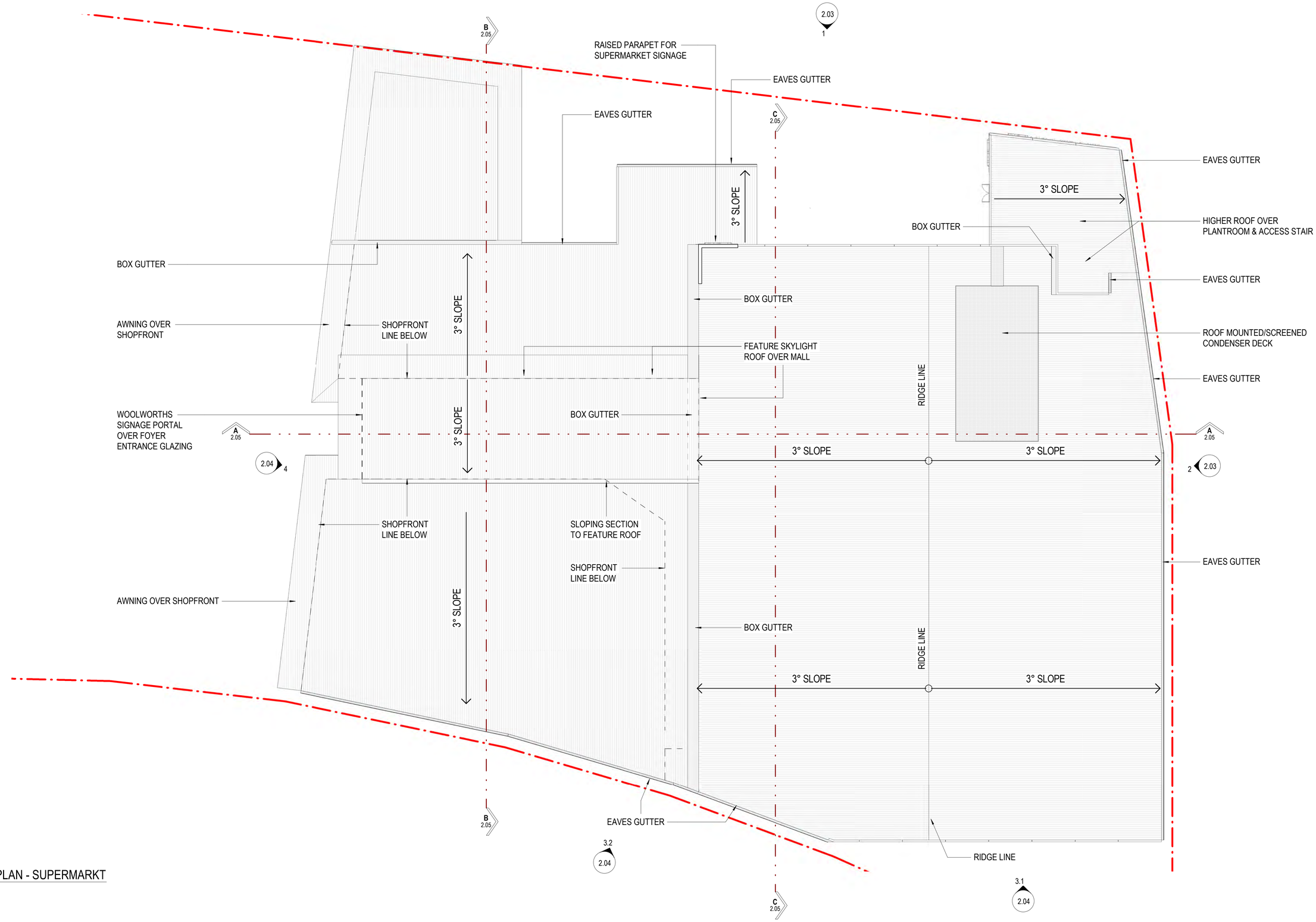
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GROUND FLOOR PLAN - SUPERMARKET

1 : 200 @ A1 | 2025-06-24

A2.01 | rev. 15

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 ROOF PLAN - SUPERMARKT
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

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ROOF PLAN - SUPERMARKET

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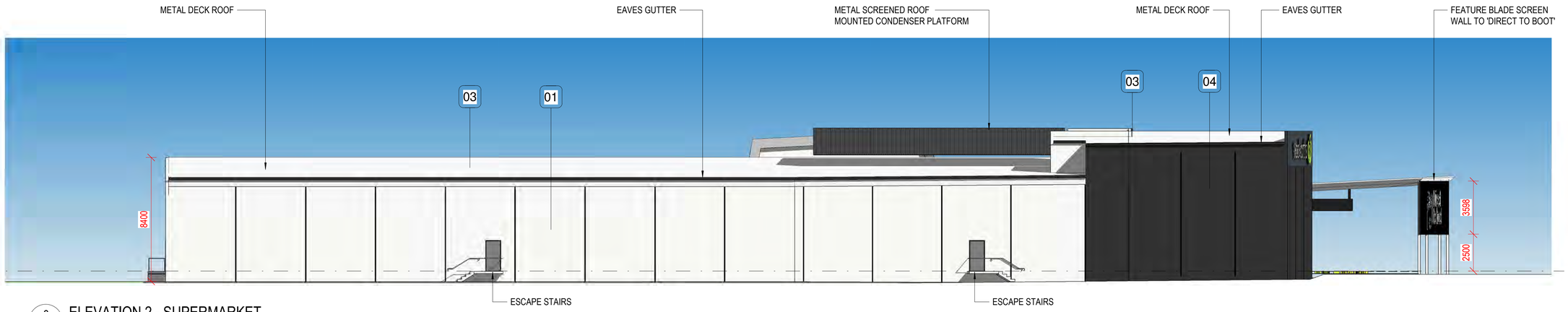
A2.02 | **rev. 9**

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1 / 2.01 ELEVATION 1 - SUPERMARKET

1 : 150



2 / 2.01 ELEVATION 2 - SUPERMARKET

1 : 150

1	PRECAST CONCRETE PANEL PAINTED DULUX 'VIVID WHITE'	3	LONGLINE METAL SHEETING DULUX 'MONUMENT'	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX 'MONUMENT'
2	FC CLADDING PAINTED DULUX 'VIVID WHITE'	4	PRECAST CONCRETE PANEL PAINTED DULUX 'MONUMENT'	6	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER. PAINTED DULUX 'MONUMENT'

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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ELEVATIONS - SUPERMARKET

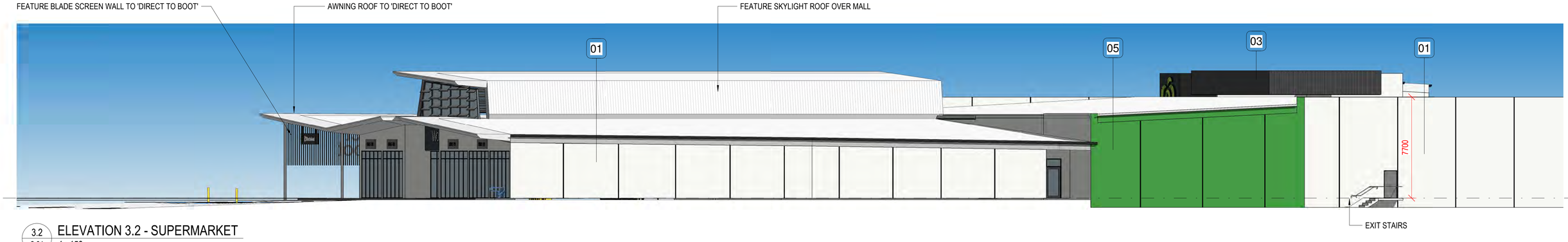
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3.1 / 2.01 ELEVATION 3.1 - SUPERMARKET
1 : 150



3.2 / 2.01 ELEVATION 3.2 - SUPERMARKET
1 : 150



4 / 2.01 ELEVATION 4 - SUPERMARKET
1 : 150

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2	FC CLADDING PAINTED DULUX 'VIVID WHITE'	4	PRECAST CONCRETE PANEL PAINTED DULUX 'MONUMENT'	6	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER. PAINTED DULUX 'MONUMENT'

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0 1.5 3.0 4.5 7.5 15m

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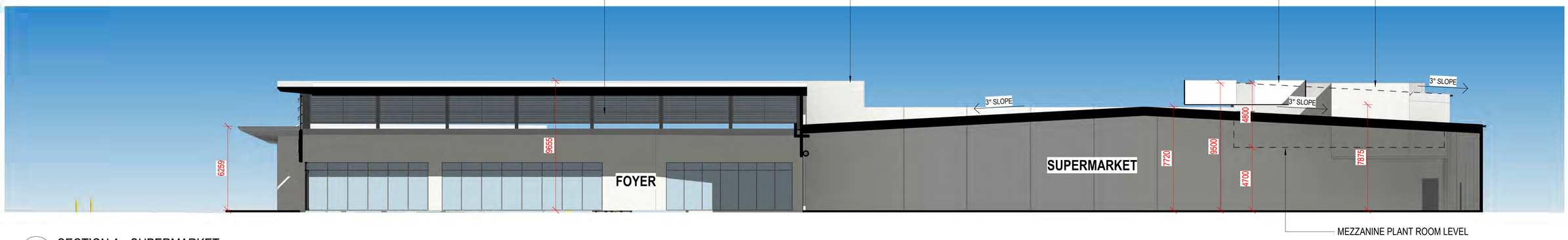
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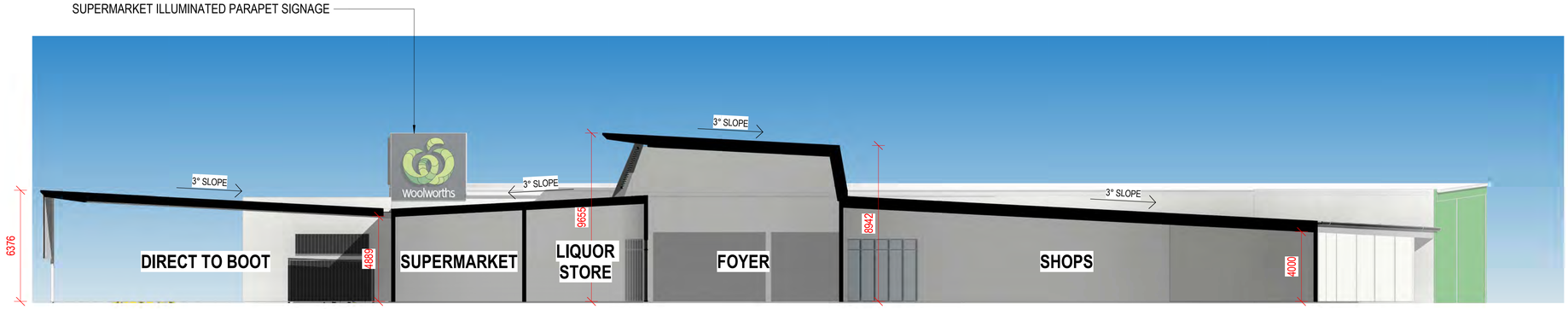
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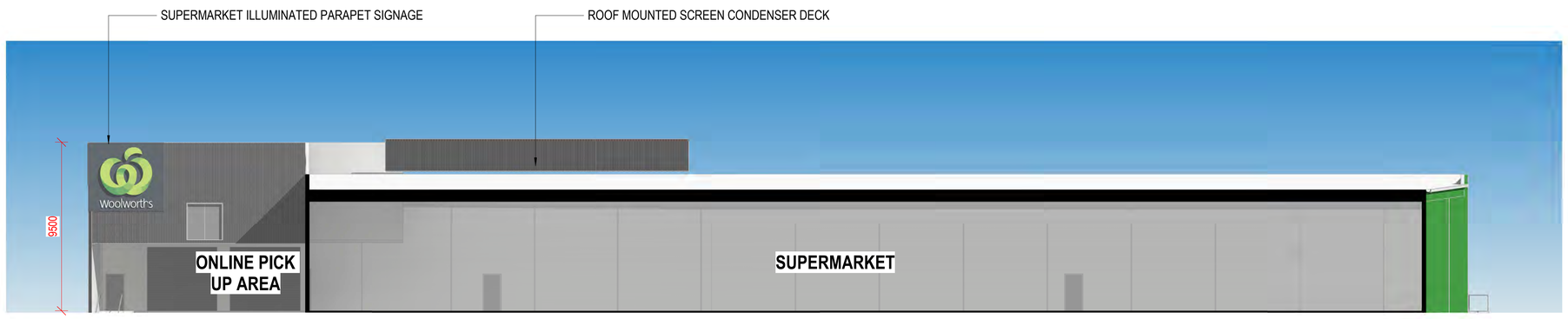
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A 2.01 SECTION A - SUPERMARKET
1 : 150



B 2.01 SECTION B - SUPERMARKET
1 : 150



C 2.01 SECTION C - SUPERMARKET
1 : 150

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0 1.5 3.0 4.5 7.5 15m

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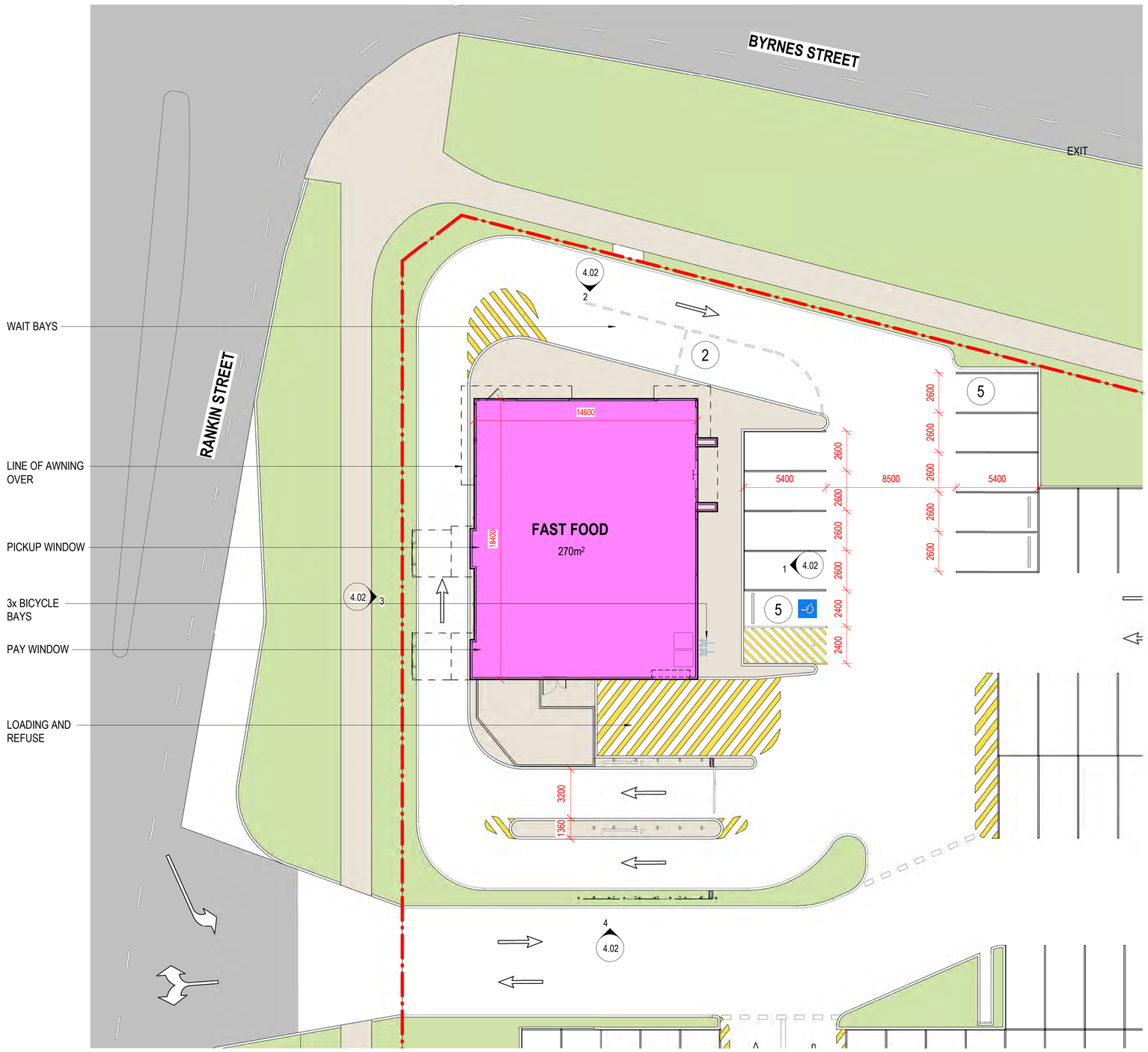
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SECTIONS - SUPERMARKET

1 : 150 @ A1 2025-06-24

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1 FLOOR PLAN - FAST FOOD
1 : 150

DEVELOPMENT APPLICATION

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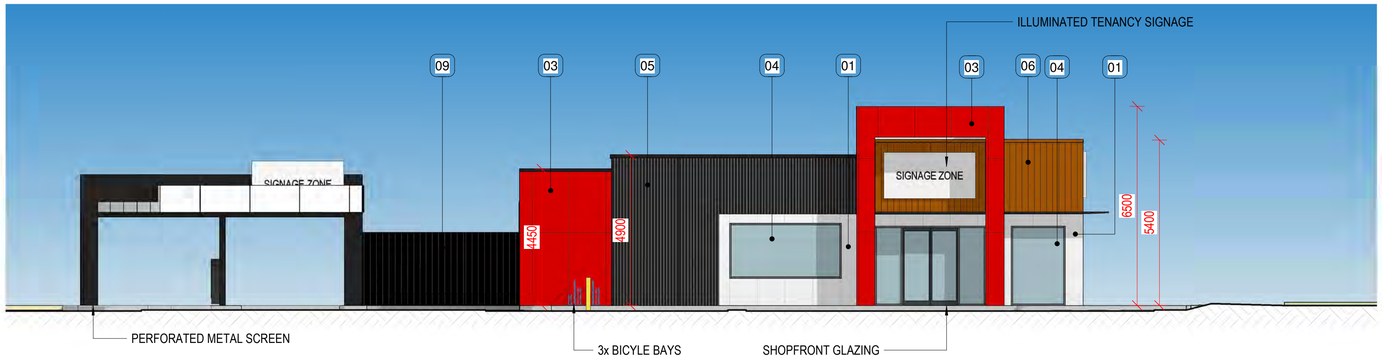
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GROUND FLOOR PLAN - FAST FOOD

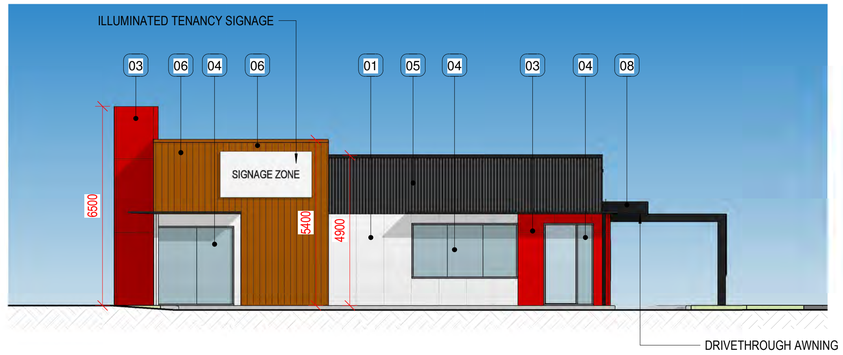
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A4.01 | **rev. 7**

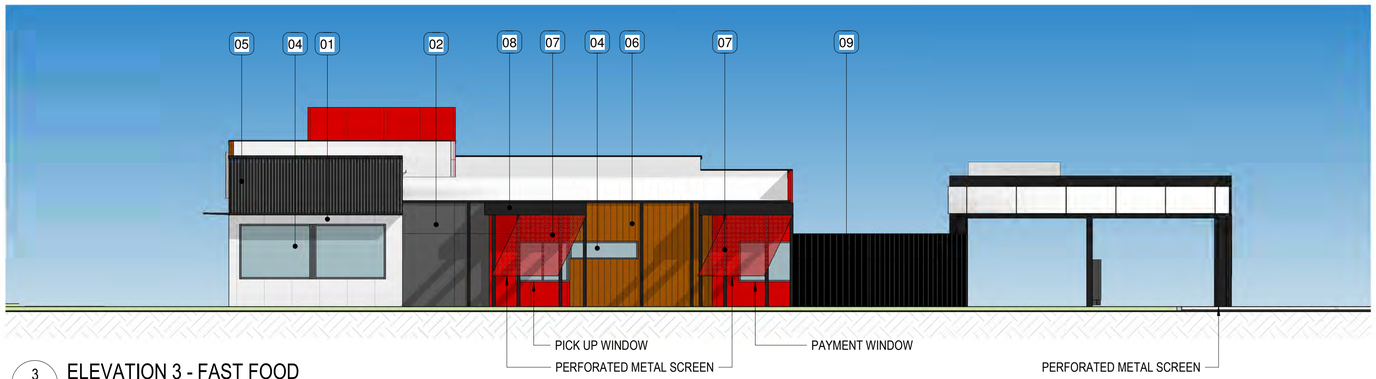
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1 / 3.01 ELEVATION 1 - FAST FOOD
1 : 100



2 / 4.01 ELEVATION 2 - FAST FOOD
1 : 100



3 / 4.01 ELEVATION 3 - FAST FOOD
1 : 100



4 / 3.01 ELEVATION 4 - FAST FOOD
1 : 100

01	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED WHITE	03	CFC SHEETING WITH EXPRESSED JOINTS TENANT CORPORATE COLOUR RED	05	LONGLINE 305 METAL WALL SHEETING COLORBOND 'MONUMENT' (MID GREY)	07	PERFERATED MESH SCREEN LOCKERGROUP POWDERCOAT "RED" R03341
09	COLORBOND CORRUGATED METAL WALL SHEETING BLACK	02	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED DULUX 'DARK GREY'	04	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	06	TIMBER-LOOK ALUMINIUM CLADDING - KNOTWOOD DRIFTWOOD
08	POWDERCOATED METAL CAPPINGS, GUTTERS & DOWNPIPES. PAINTED DULUX 'MONUMENT'						

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1 2 3 5 10m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

REEDLODGE PTY LTD.

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ELEVATIONS - FAST FOOD

1 : 100 @ A1 2025-06-24

A4.02 **rev. 6**

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ARIAL VIEW



SUPERMARKET VIEW FROM CARPARK

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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3D VIEWS

@ A1

2025-06-24

A5.01

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BYRNES STREET - SITE EXIT



BYRNES STREET - TRUCK & LOADING ENTRANCE

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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3D VIEWS

@ A1

2025-06-24

A5.02

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ATTACHMENT 4
TRAFFIC IMPACT ASSESSMENT & SDAP ASSESSMENT

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Traffic Impact Assessment

Proposed Shopping Centre 232 Byrnes Street, Mareeba

Girgenti Group

231 Byrnes Street,
Mareeba QLD 4880

Prepared by:

SLR Consulting Australia Pty Ltd

SLR Project No.: 620.041936.00001

27 June 2025

Revision: 0.2

Making Sustainability Happen

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0.1	12 July 2022	Samuel Joseph/Taylor Beauchamp	Kris Stone	Kris Stone
0.2	27 June 2025	Alex Moxon	Raymond Logan	Raymond Logan

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Girgenti Group (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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Appendix E Detailed Net Delay Table
Appendix F Conceptual Bus Stop Plans

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1.0 Introduction

1.1 Context

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Girgenti Group to prepare a Traffic Impact Assessment (TIA) for the proposed mixed-use development located at 232 Byrnes Street, Mareeba. Plans for the development, as prepared by Thomson Adsett, are included in **Appendix A**.

1.2 Planning Application

This Development Application (DA) seeks approval for a proposed mixed-use development comprising a shopping centre (including a Woolworths supermarket) and food & drink outlet on the existing Lot 78 on SP298287.

1.3 Assessment Scope

This TIA report assesses the consistency of the development with Council and State planning, and the impacts of the proposed development on the surrounding transport networks. The TIA identifies the transport infrastructure required to support the development, and provides an assessment of the traffic and transport aspects of the development against the requirements of the following relevant authorities:

- Mareeba Shire Council (MSC or Council).
- The Department of Transport and Main Roads (TMR).

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2.0 Existing Conditions

2.1 Subject Site

The subject site is located at 232 Byrnes Street, Mareeba, formally described as Lot 78 on SP152626. The site is situated within the Centre Zone of the Mareeba Shire Council Planning Scheme 2016.

The site is bound by Byrnes Street to the north, Rankin Street to the east, General Residential (Next Generation Neighbourhood) detached dwellings to the south, and a rail corridor to the west. The site is shown in the context of the broader area in **Figure 1** and within the local area in **Figure 2**.

Figure 1 Site Location: Regional Context



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Figure 2 Site Location: Local Context



2.2 Existing Site Use and Access Arrangements

This site is currently vacant, cleared land. Vehicular access to the site is via a driveway crossover to Rankin Street.

2.3 Surrounding Road Network

Details of the key roads surrounding the subject site are provided in **Table 1.**

Table 1 Key Surrounding Roads

Road Name	Authority	Classification	Existing Form	Posted Speed
Byrnes Street	Department of Transport and Mains Roads (Far North District)	State Road (Rural)	Dual carriageway with single traffic lane in either direction. Typically, a rural cross-section with a mixture of cycle lanes/sealed and unsealed shoulders in both directions with parking bays on both sides of the road.	60 km/h
Herberton Street	Mareeba Shire Council	Local Road (Rural)	Single carriageway with a single traffic lane in either direction, marked. Typically, a rural cross-section with parking bays on both sides of the road.	60 km/h
Rankin Street	Mareeba Shire Council	Local Road (Rural)	Single carriageway with single traffic lane in either direction, marked. Typically, a rural cross-section with parking bays on both sides of the road.	40 km/h

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Road Name	Authority	Classification	Existing Form	Posted Speed
Frew Street	Mareeba Shire Council (or privately owned)	Local Road (Rural)	Single carriageway with single traffic lane in either direction, unmarked. Typically, a rural cross-section with unsealed shoulders in both directions.	10 km/h

Byrnes Street, Herberton St and Rankin Street are all listed as part of MSC's Transport Network within Mareeba Shire Council.

2.4 Public Transport

The subject site is located within reasonable proximity to an existing bus stop (Hail N Ride Service serving existing bus routes) located within an approximate 250m walking distance to the north-east of the subject site on Walsh Street. Details of public transport services in the vicinity of the subject site are summarised in **Table 2**.

Table 2 Existing Bus Services

Service	Route	Peak Frequency	Nearest Stop
850	Atherton, Tolga, Walkamin, Mareeba stops, Koah, Speewah, Kuranda stops, Cairns	Only comes twice a day	250 m (Walsh Street near Rankin Street)

2.5 Crash History

To highlight any existing safety deficiencies on the external road network within the vicinity of the subject site, SLR have undertaken a review of DTMR crash data for the study area. Crashes are reported for the following periods, noting that only data collected within the last five years has been analysed herein:

- Fatal crashes: January 2018 to December 2023.
- Non-fatal casualty crashes: January 2018 to December 2023.

Reflective of the above, DTMR crash data for the study area within the vicinity of the site is summarised on **Figure 3** with details and DCA codes summarised in **Table 3**.

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Figure 3 DTMR Crash Data Summary

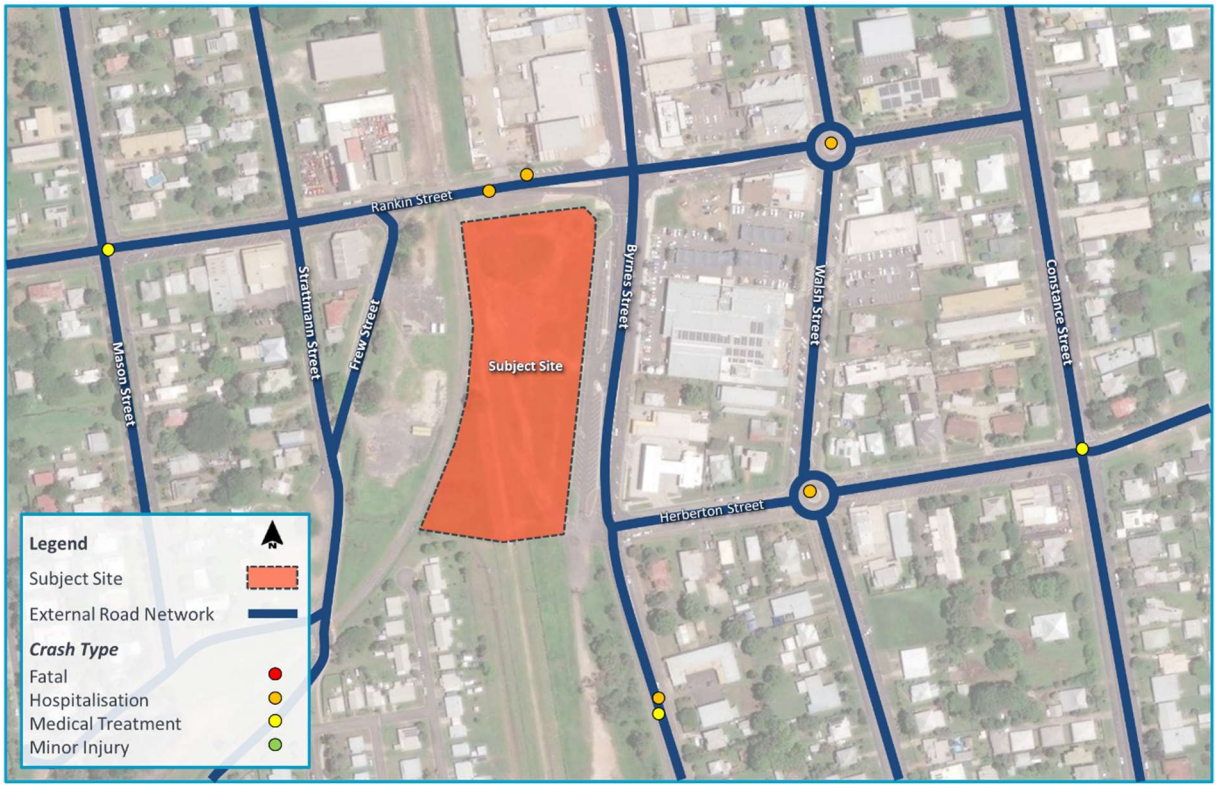


Table 3 Details of Reported Crashes (2018 – 2023) near the Proposed Development

Crash ID	Year	Severity	DCA Code	Description
107327	2019	Hospitalisation	104	Vehs Adjacent Approach: Thru-Right
129215	2019	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
205890	2022	Medical treatment	101	Vehs Adjacent Approach: Thru-Thru
24043	2021	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
244605	2022	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
246901	2018	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
24849	2018	Minor injury	101	Vehs Adjacent Approach: Thru-Thru
268078	2019	Medical treatment	202	Vehs Opposite Approach: Thru-Right
280500	2022	Medical treatment	101	Vehs Adjacent Approach: Thru-Thru
324419	2021	Hospitalisation	408	Vehs Manoeuvring: Entering From Footway
362877	2022	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
372828	2020	Hospitalisation	408	Vehs Manoeuvring: Entering From Footway
372931	2021	Hospitalisation	303	Vehs Same Direction: Right Rear
387175	2019	Minor injury	703	Off Path-Straight: Left Off Cway Hit Object

The following can be surmised from a review of the crash data:

- There were no fatal crashes reported in the vicinity of the subject site.

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- The crashes reported in the vicinity of the site were reported as Medical Treatment or Hospitalisation.
- The reported crashes were located at intersections, with no crashes reported mid-block.

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3.0 Development Overview

3.1 Proposed Development

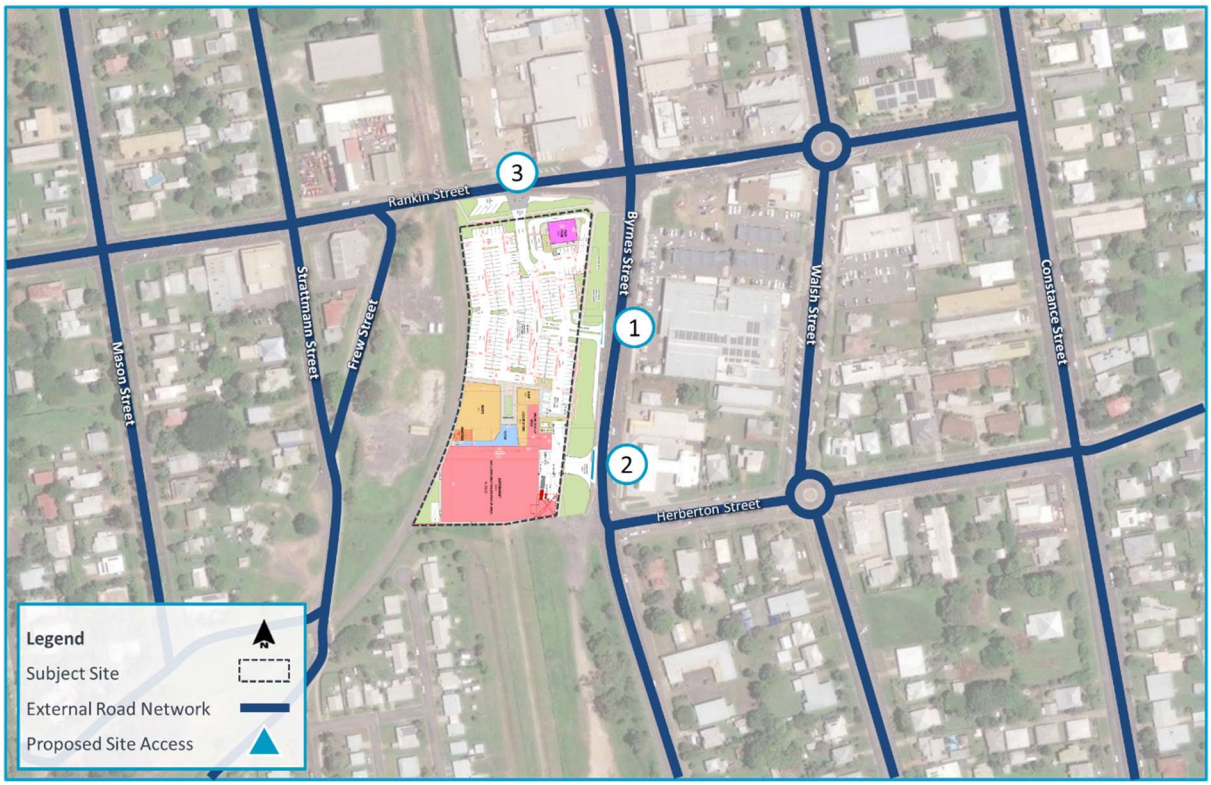
Based on the plans prepared by Thomson Adsett, which are included at **Appendix A**, it is proposed to develop the site for a proposed mixed-use development comprising a shopping centre (including a Woolworths supermarket), a food & drink outlet, and shop land uses. The land uses and associated yields proposed as part of the development are described in terms of Gross Floor Area (GFA) and Gross Leasable Floor Area (GLFA) in **Table 4**. Note that all floor areas have been extracted from the architectural plans and are current at the time of preparing this report.

Table 4 Development Summary

Tenancy	Land Use	Yield (GFA)	Yield (GLFA)
Supermarket (Woolworths)	Shopping Centre	4,945m²	4,863m²
Shops			
Fast Food	Food and Drink Outlet	270m²	270m²
Total		**5,215m²**	**5,133m²**
Car parking (including parking for persons with a disability)		*253 spaces*	

The development layout and the proposed site access locations are mapped on **Figure 4**.

Figure 4 Development Layout and Site Access



3.2 Site Access and Car Parking

The development's proposed vehicular access arrangements are summarised as follows:

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- Access 1: Byrnes Road – Passenger Vehicles Only
    - Left-in, left-out driveway designed to accommodate entry and exit for passenger vehicles.
- Access 2: Byrnes Road – Service Vehicles Only
    - Left-in, left-out driveway designed to accommodate entry and exit for service vehicles only, up to an Articulated Vehicle (**AV**).
- Access 3: Rankin Street – Passenger and Service Vehicles
    - Left-in, all movements out driveway designed to accommodate entry and exit for passenger vehicles and service vehicles up to a Heavy Rigid Vehicle (**HRV**) in size.

3.3 Servicing

The southern driveway on Byrnes Street and the Rankin Street driveway are intended to accommodate service vehicle access to and from the site, although their design varies based on the type of service vehicle access proposed at each driveway. The service vehicle driveway to Byrnes Street will facilitate service vehicles up to an AV in size for the supermarket. The access to Rankin Street will provide access for service vehicles up to a HRV servicing the fast-food tenancies. Swept path figures are included at **Appendix B**.

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4.0 Car Parking Provision

4.1 Statutory Requirements

Table 9.4.3.3B – Vehicle Parking and Service Vehicle Spare Requirements of the MSC Planning Scheme specifies the car parking rates for developments within the Centre Zone. The applicable parking rates for the proposed land uses are presented in **Table 5**.

Table 5 Schedule 7 Car Parking Rates – Centre Requirement

Land Use	Yield (GFA)	Car Parking Rate (inside the Centre Zone)	Requirement
Shopping Centre	4,945m²	One space per 50m² or part thereof of GFA up to 400m² GFA and one space per 25m² or part thereof of GFA above 400m²	190 spaces
Food and Drink Outlet	270m²	One space per 50m² or part thereof of GFA up to 400m² GFA	6 spaces
Total			**196 spaces**

Given that the development proposes to provide a total of 253 car parking spaces (a 57-space surplus), the development is considered to have met the minimum car parking requirements of MSC's Planning Scheme.

It is noted that an additional 4 motorcycle bays are also provided onsite.

4.2 PWD Car Parking Provision

The Building Code of Australia (BCA) stipulates the People with Disability (PWD) car parking requirements for a building based on the class of building. The BCA requirements for each class of building proposed as part of the development are as follows:

- Shop (Class 6) buildings require one PWD space for every 50 car parking spaces or part thereof.

The PWD car parking requirement in accordance with the BCA has therefore been calculated using a rate of one PWD space for every 50 car parking spaces or part thereof. The parking requirement of 196 spaces results in the need to provide four (4) PWD spaces.

It is proposed that four (4) PWD parking spaces will be provided in front of the shopping centre and another in front of the fast food building, resulting in a total of five (5) PWD spaces across the site. The development therefore exceeds the BCA requirement with respect to PWD car parking provision when based on the required overall car parking rate.

The locations of the PWD spaces have been designed to provide ease of access to/from the entry (doorways) of the relevant buildings.

4.3 Caravan and Recreational Vehicle Parking

It is noted that there is existing caravan and recreational vehicle (RV) parking provided in the road reserve along the sites Byrnes Street frontage. Through the development of the site, it is not feasible to retain this facility whilst also enabling access to the proposed development.

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It is understood that this issue has been discussed with Council officers who identified the desirable provision of some caravan or RV parking within the site.

Whilst the current development plans, included in **Appendix A**, do not provide caravan parking within the site, given the parking surplus currently achieved, there may be provision to modify the plans to provide some caravan or RV parking onsite should MSC require it. One caravan/RV space would likely require the consolidation of two typical passenger vehicle parking spaces.

4.4 Taxi Facilities

It is proposed that a taxi bay of sufficient size to accommodate two taxis will be provided on site. The provision of taxi facilities is provided in line with the requirement outlined in State Code 6.

The taxi bay is located close to the front entrance of the shopping centre building (i.e. supermarket and adjacent shops), with direct access to the footpath. Passengers using the taxi bay do not need to cross any vehicle circulating aisles to access the supermarket area.

The taxi bay is located reasonably close to the site exit so that taxis exiting the site from taxi bay are able to do so with minimum delays.

The design of the taxi bay enables taxis to stand parallel to the kerb, allowing taxis at the front of the bay to exit easily and for taxi behind to move forward. The design allows for taxis to move in a forward direction at all times (no reverse movements). The width of the bay enables a taxi at the rear of the bay to pass a taxi propped at the front of the bay.

4.5 Bicycle Parking

Table 9.4.3.3D – Bicycle Parking and End of Trip Facility Requirements of the MSC Planning Scheme specifies the bicycle parking rates for proposed land uses. The bicycle provision specified is presented in **Table 6**.

Table 6 Bicycle Parking Requirement

Land Use		Yield	Bicycle Parking Rate	Requirement
Shopping Centre	Employee	80 Staff	Secure bicycle storage for 8% of building staff (based on one person per 60m² GLA).	7 bicycle parking spaces
	Visitors	4,863m² GLFA	One space per 500m² GLA or part thereof for centres under 30,000m²	10 bicycle parking spaces
Food & Drink Outlet		270m² GFA	One space per 100m² GFA.	3 bicycle parking spaces

20 bicycle racks will be provided across the site. This includes the following provision:

- 7 secured bicycle parking spaces for staff.
- 13 publicly accessible spaces for the use of visitors.

This provision is in accordance with the bicycle parking requirements of MSC's Planning Scheme.

4.5.1 End of Trip Facilities

Table 9.4.3.3D – Bicycle Parking and End of Trip Facility Requirements of the MSC Planning Scheme also specifies the requirement for end of trip facilities for shopping centres,

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including the number of showers and lockers. The end of trip facility requirements of MSC is presented in **Table 7**.

Table 7 End of Trip Facility Requirements

EOT Facility	Yield	Rate	Requirement
Showers	7 bicycle parking spaces	Accessible showers at the rate of one shower per 10 bicycle spaces provided or part thereof	1 Accessible Shower
Lockers	80 Staff	20% of building staff (based on one person per 60m² GLA to cater for walkers, cyclists and other active users.	20 Lockers

It is proposed that lockers will be provided within the individual tenancies for the use of staff, with an accessible shower provided within the onsite amenities.

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5.0 Servicing Provisions

5.1 Statutory Requirements

The servicing provisions proposed as part of the development have been designed in accordance with the MSC Planning Scheme, and are summarised below in **Table 8**:

Table 8 Service Vehicle Provisions

Land Use	MSC Requirement	
Shopping Centre	One AV space per 1,000m²; and one SRV space per 500m²; or one SRV space per every 2 specialty uses, whichever the greater.	5 x AV spaces 10 x SRV spaces
Food & Drink Outlet	One HRV space.	1 x HRV Space

Given the proposed tenancy breakdown of the development, the above servicing provision for the shopping centre component is considered excessive for the expected servicing demands. Servicing for the development has been provided based on the anticipated demands for the proposed development.

It is proposed that servicing for the shopping centre will primarily occur within a central loading area located in the south-eastern corner of the site. This will be accessed via the 'service vehicle only' crossover to Byrnes Street.

Based on the size of the tenancies proposed, service for vehicles an AV in size will occur solely for the supermarket component of the shopping centre. As outlined previously, the tenant for the proposed shopping centre will be Woolworths. Woolworths have confirmed that a single AV loading bay is required to service the development, with servicing to be scheduled. This will ensure that the supermarket loading dock is capable of catering for all servicing requirements (deliveries, refuse collection etc) for the supermarket.

It is proposed that servicing will occur with vehicles up to a Small Rigid Vehicle (**SRV**) in size for the remaining retail tenancies. Within the centralised loading area, provision has been made for two SRV's to stand at one time, which is considered suitable to cater for the 'specialty' retail tenancies within the shopping centre.

The centralised loading area within the south-eastern corner will be separated from the 'Direct to Boot' circulation area using bollards and line marking. This will ensure that the primary servicing area will operate separate to the public parking area with passenger vehicles unable to enter the loading area.

For the food & drink outlet, servicing for vehicles up to a HRV has been catered for. Due to the spatial requirements of the HRV swept path, it is proposed that servicing for vehicles for HRV's will occur outside of peak operational periods to ensure they are able to manoeuvre into the loading bay.

Based on the provisions above, it is considered that the development adequately caters for the servicing requirements of each land use within the site.

Swept path assessments have been included in **Appendix B** which demonstrate how service vehicles access, circulate and manoeuvre within the development. These confirm that the swept path of each design vehicle can be adequately accommodated.

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5.2 Refuse Collection

For the supermarket tenancy within the Shopping Centre, it is proposed that refuse collection will occur at the dedicated loading dock. For the remaining retail tenancies, refuse collection will occur within the dedicated loading areas identified in the development plans.

For the food & drink outlet, refuse collection will occur in the dedicated loading area adjacent to the tenancy.

Swept path assessments have been included in **Appendix B**, which show the refuse collection manoeuvres.

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6.0 Design Considerations

6.1 Overview

A review of the proposed internal site layout was undertaken against the following relevant documents:

- Australian Standard for Parking Facilities Part 1: Off-street car parking (AS2890.1).
- Australian Standard for Parking Facilities Part 2: Off-street commercial vehicle facilities (AS2890.2).
- Australian Standards for Parking Facilities Part 6: Off-street parking for people with disabilities (AS2890.6).
- Austroads Guide to Road Design Part4A: Unsignalized and Signalised Intersections (AGRD4A).

6.2 Vehicular Access

Vehicular access to/from the development will be provided via driveway crossovers to both Rankin Street and Byrnes Street the form of the following:

- Access 1: Byrnes Steet
  - Priority controlled intersection which is restricted to a left-in, left out access.
  - The form of the intersection including the driveway design has been based on the swept path requirements of B99 passenger vehicles, taking into consideration the design requirements outlined in AS2890.1.
  - The length and taper of the auxiliary left-turn lane into the site has been designed in accordance with the *Austroads Guide to Road Design* (AGRD4A), which provides a total lane length of 50m.
- Access 2: Byrnes Steet
  - Priority controlled intersection which is restricted to left-in, left out access.
  - The form of the intersection including the driveway design has been based on the swept path requirements of an Articulated Vehicle, taking into consideration the design requirements outlined in AS2890.2.
- Access 3: Rankin Street
  - Priority controlled intersection which is restricted to a left-in, all movements out access.
  - The form of the intersection including the driveway design has been based on the swept path requirements of a HRV, taking into consideration the design requirements outlined in AS2890.2.
  - The length and taper of the auxiliary left-turn lane into the site has been designed in accordance with the Austroads Guide to Road Design (AGRD4A), which provides a total lane length of 22m.
  - The access to Rankin Street provides sufficient separation to the rail line to the west. From the access there is approx. 26m of queueing available, which is sufficient to cater for vehicles up to a b-double in size to queue clear of the

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access. As no right turn is proposed into the access, there will be no queueing from the site access back towards the rail line.

The following sections report the results of a detailed sight distance assessment and turn warrants assessment for the proposed site accesses.

6.2.1 Sight Distance Assessment

SLR has undertaken a review of the available sight distance at the proposed site accesses against the requirements described within Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD4A). **Table 9**, **Table 10** and **Table 11** summarise the inputs and results of the sight distance assessment, with **Figure 5** showing the extent of sight distance at the two Byrnes Street and Rankin Street access driveway locations, as well as viewing ranges in each direction.

It is noted that the northern approach for both the Byrnes Street accesses are not required as the development does not propose any right-out movements at these locations.

Table 9 Sight Distance Assessment Summary – Byrnes Street Site Access (Passenger Vehicles Only)

Parameter	Southern Approach	Northern Approach
Critical Requirement	Safe Intersection Sight Distance (SISD)	**N/A– No Right Turn Out**
Posted Speed	60km/hr	
Offset to Roadway	5m	
Based SISD Requirement	123m Standard	
Available Sight Distance	Over 150m	
Compliance Achieved	**Yes**	

Table 10 Sight Distance Assessment Summary – Byrnes Street Site Access (Service Vehicles Only)

Parameter	Southern Approach	Northern Approach
Critical Requirement	Safe Intersection Sight Distance (SISD)	**N/A– No Right Turn Out**
Posted Speed	60km/hr	
Offset to Roadway	5m	
Based SISD Requirement	123m Standard	
Available Sight Distance	Over 150m	
Compliance Achieved	**Yes**	

Table 11 Sight Distance Assessment Summary – Rankin Street Site Access

Parameter	Eastern Approach	Western Approach
Critical Requirement	Safe Intersection Sight Distance (SISD)	
Posted Speed	40km/hr	
Offset to Roadway	5m	
Based SISD Requirement	73m Standard	73m Standard

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Parameter	Eastern Approach	Western Approach
Available Sight Distance	Over 100m	Over 100m
Compliance Achieved	**Yes**	**Yes**

Figure 5 Site Accesses – Available Sight Distances

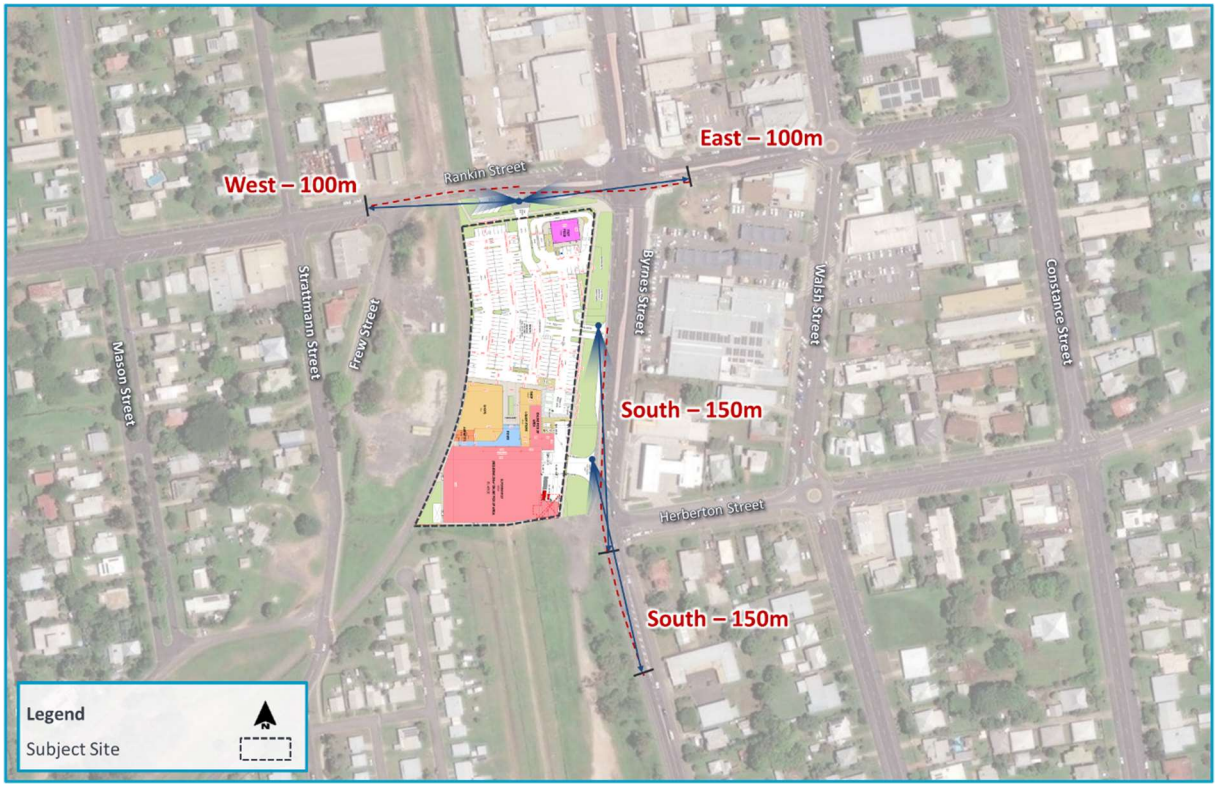


Table 9, **Table 10** and **Table 11** show that the proposed site accesses will allow for the required SISD in all directions. Therefore, the proposed locations for the driveways are deemed to be safe.

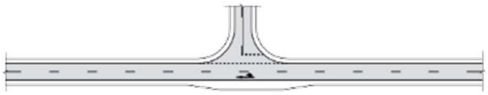
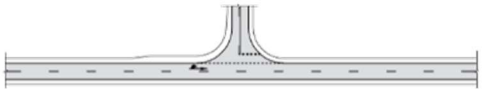
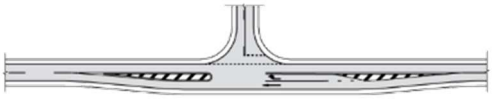
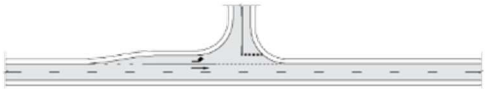
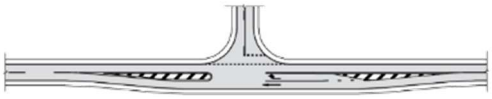
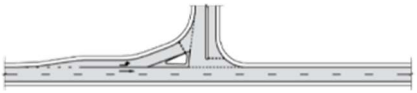
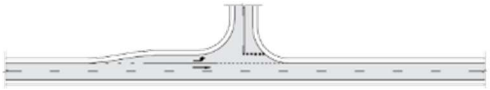
6.2.2 Turn Warrant Assessments

Turn warrant assessments have been undertaken to establish the desirable form of both the Byrnes Street and Rankin Street accesses in accordance with the industry research summarised within the *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing Management* (AGTM66-20).

The warrants provide guidance where turning lanes should be provided based on design traffic volumes. A pictorial description of the various turn treatments considered is provided on **Figure 6** and **Figure 7** to assist with reader interpretation of this assessment.

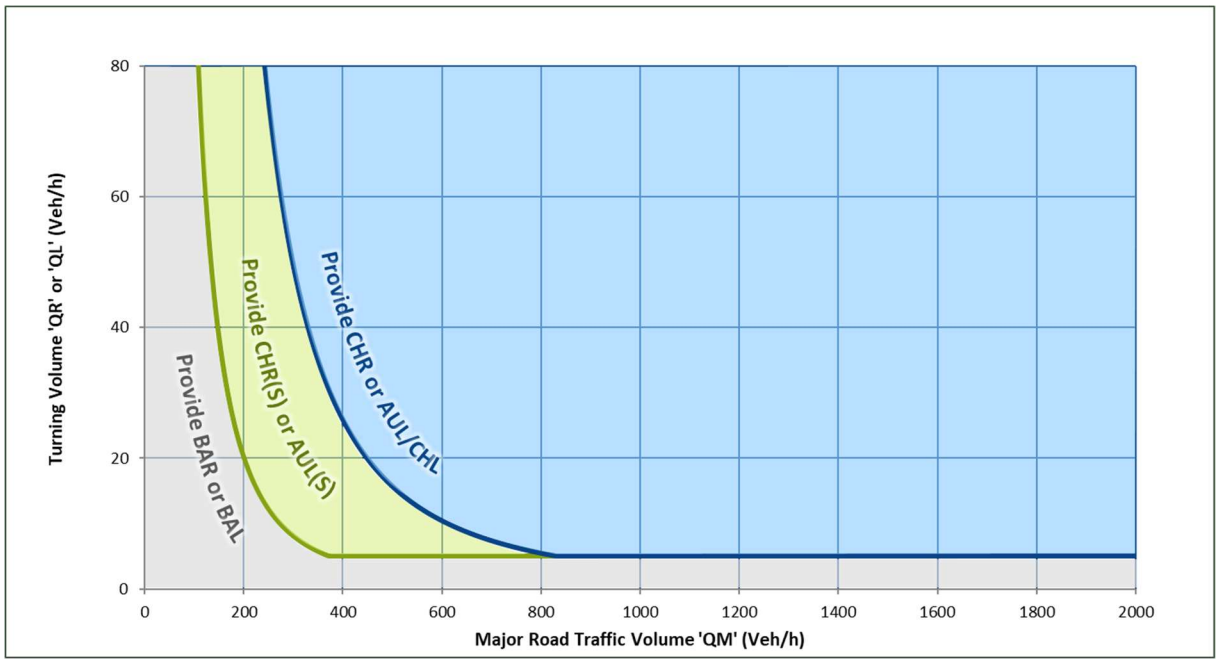
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Figure 6 Turn Treatment Types

Acronym	Right Turn Treatment	Left Turn Treatment
BAR or BAL	 BAR (Basic Right Turn)	 BAL (Basic Left Turn)
CHR(S) or AUL(S)	 CHR(S) (Channelised Right Turn [Short])	 AUL(S) (Auxiliary Left Turn [Short])
CHR or AUL/CHL	 CHR (Channelised Right Turn)	 CHL (Channelised Left Turn)
		 AUL (Auxiliary Left Turn)

*Source: AGTM6-20

Figure 7 Turn Treatment Types and Volume Criteria



6.2.2.1 Byrnes Street/Site Access

Figure 8, **Figure 9** and **Figure 10** summarise the turn warrant assessments undertaken for the proposed Byrnes Street site access intersection at the 2037 design horizon for the 'With Development' traffic scenario during the Thursday AM, Thursday PM, and Saturday peak hour periods respectively. The assessment is based on the following criteria:

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- Design Domain – Normal Design Domain.
- Design Speed – <70km/h (Posted 60km/h).
- Left Turn Splitter Island – Not Applicable.

Figure 8 Byrnes Street/Site Access Turn Warrant Assessment – 2037 AM

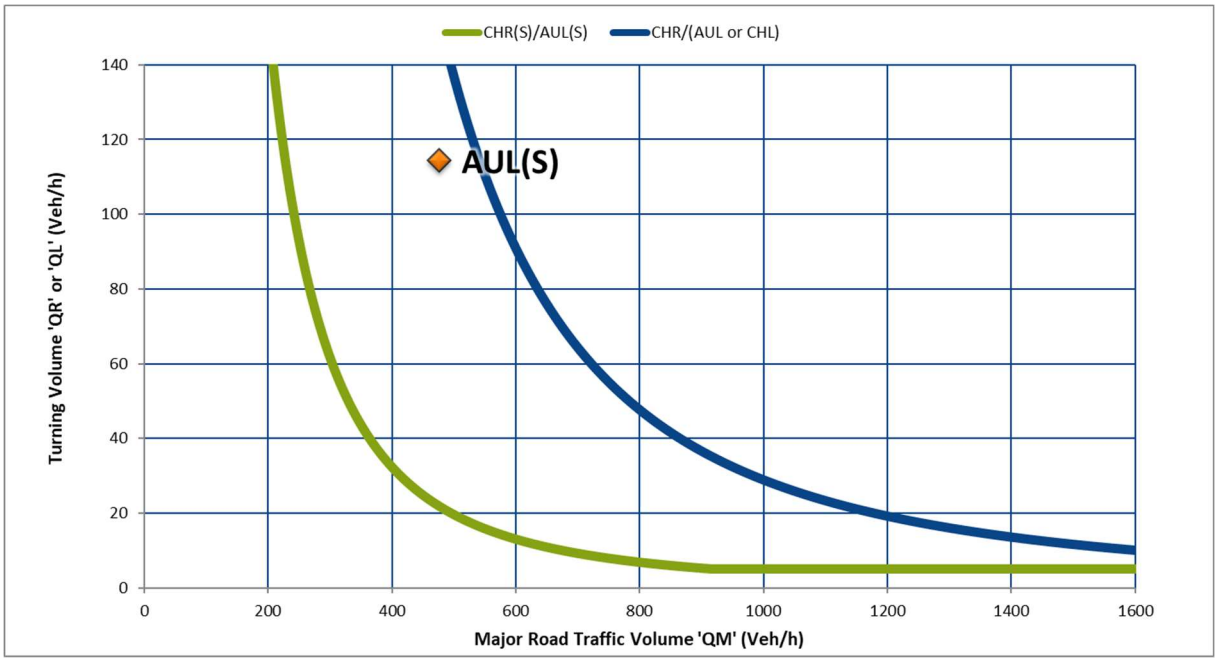
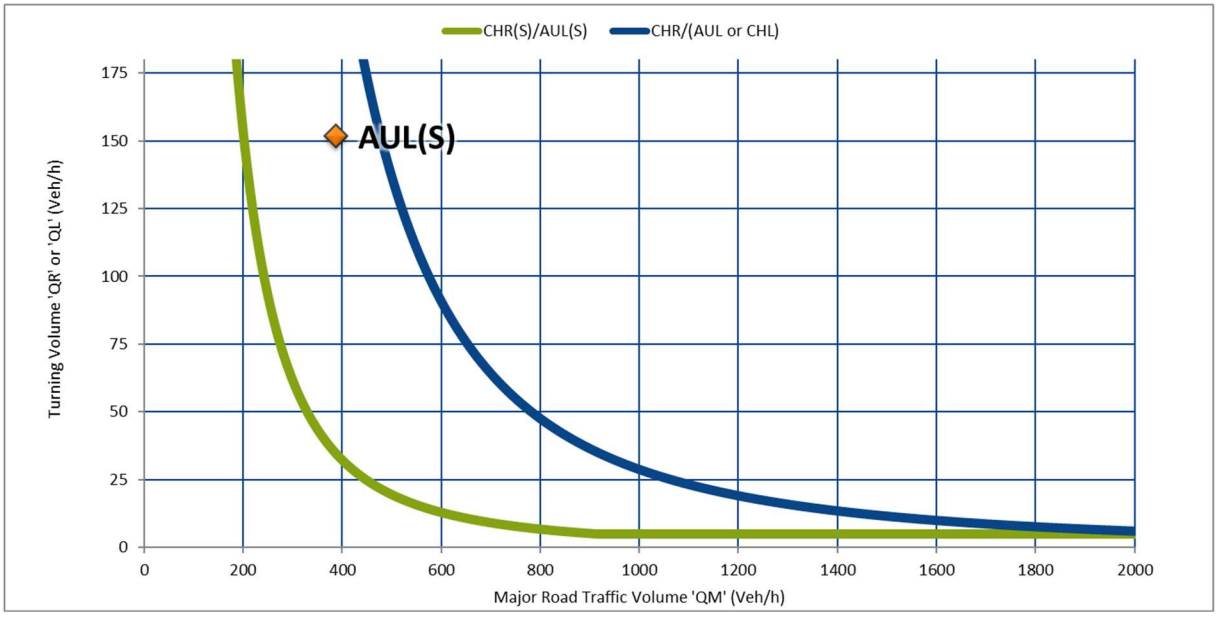


Figure 9 Byrnes Street/Site Access Turn Warrant Assessment – 2037 PM



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Figure 10 Byrnes Street/Site Access Turn Warrant Assessment – 2037 Saturday

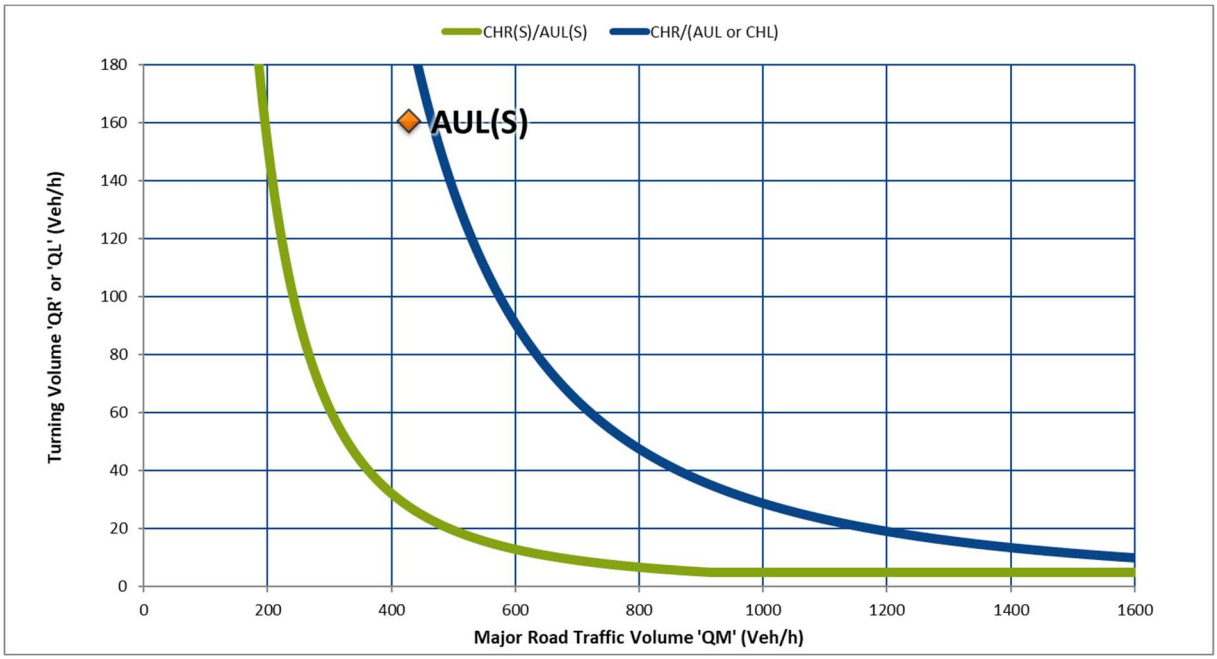


Figure 8, **Figure 9** and **Figure 10** indicate that AUL(s) treatment is required for the left turn into the site. The design of the left turn has been provided in accordance with the standards outlined in *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD044-21) for an AUL.

6.2.2.2 Rankin Street/Site Access

Figure 11, **Figure 12** and **Figure 13** summarise the turn warrant assessments undertaken for the proposed Rankin Street site access intersection at the 2037 design horizon for the 'With Development' traffic scenario during the Thursday AM, Thursday PM, and Saturday peak hour periods respectively. The assessment is based on the following criteria:

- Design Domain – Normal Design Domain
- Design Speed – <70km/h (Posted 40km/h)
- Left Turn Splitter Island – Not Applicable

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Figure 11 Rankin Street/Site Access Turn Warrant Assessment – 2037 AM

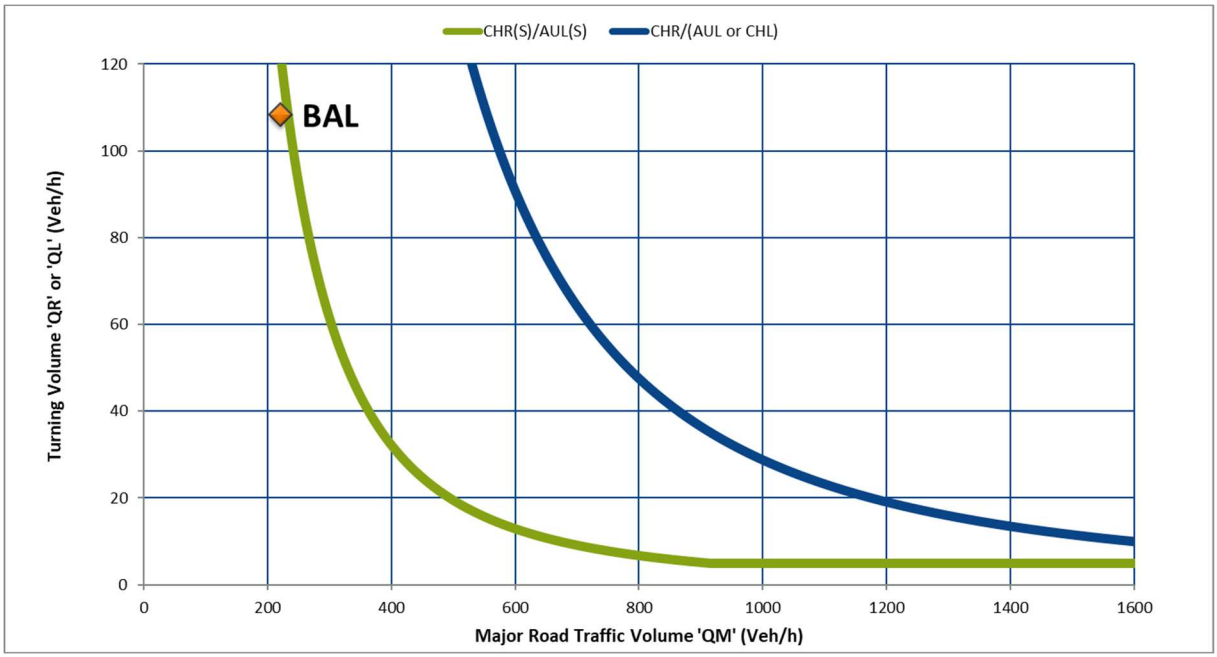
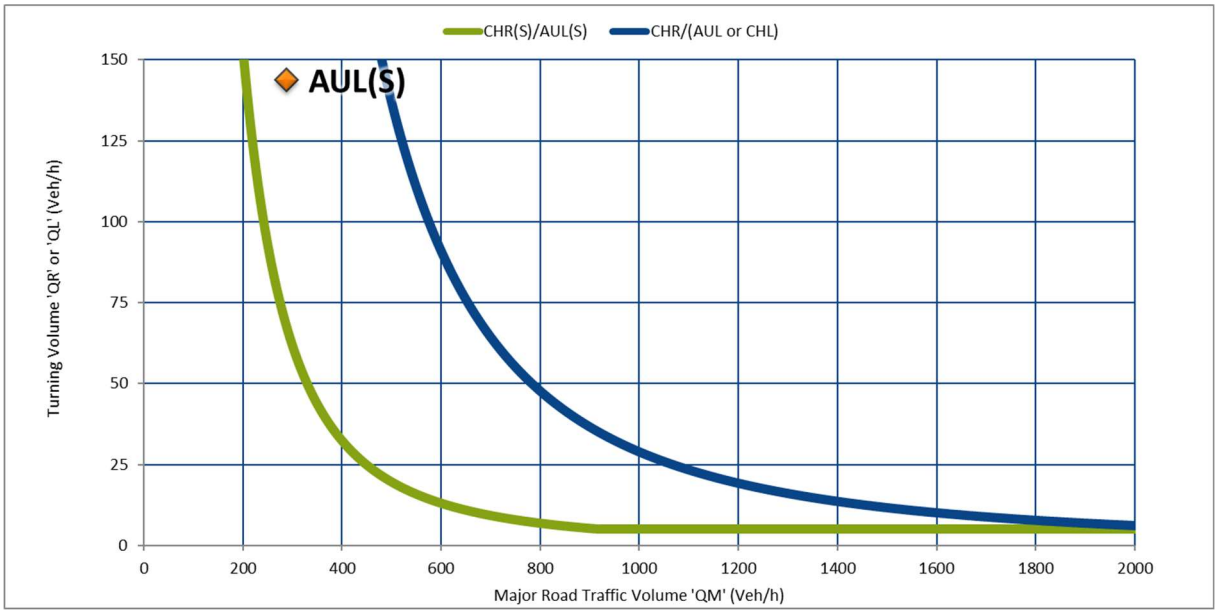


Figure 12 Rankin Street/Site Access Turn Warrant Assessment – 2037 PM



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Figure 13 Rankin Street/Site Access Turn Warrant Assessment – 2037 Saturday

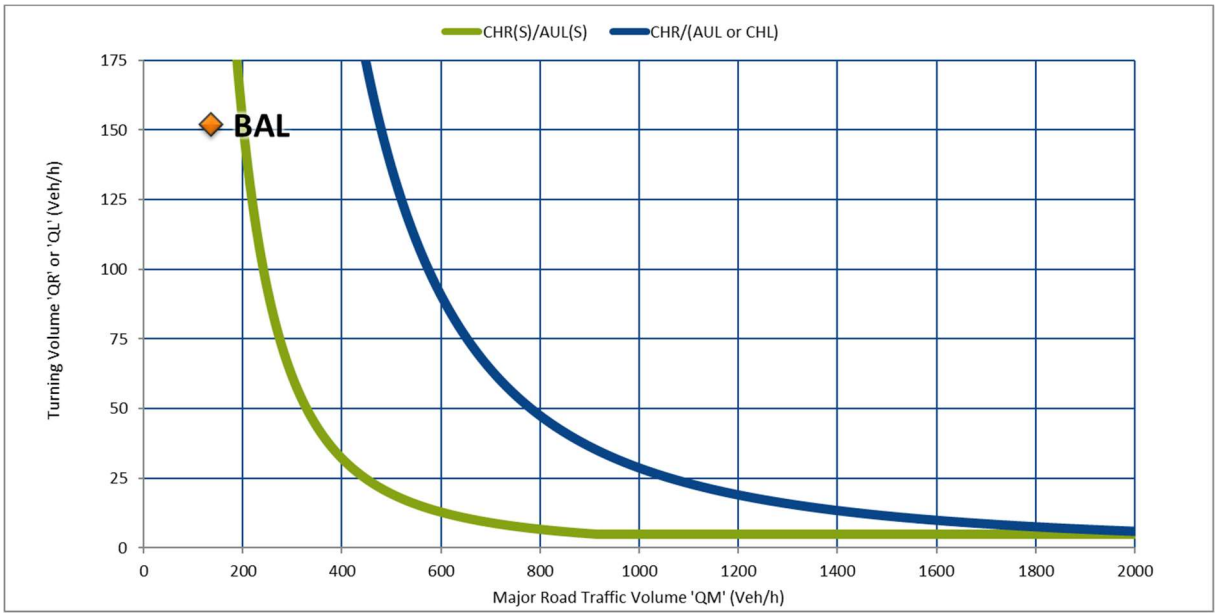


Figure 11, **Figure 12** and **Figure 13** indicate that AUL(s) treatment is required for the left turn into the site. The design of the left turn has been provided in accordance with the standards outlined in *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD044-21) for an AUL.

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6.3 Queuing Provisions

The following is noted with respect to the proposed vehicle queuing provisions across the development:

- The Australian Standard AS2890.1 specified that for a car park with capacity of more than 100 cars, that queue storage be provided that is:
  - 1st 100 cars: 3% of capacity;
  - 2nd 100 cars: 2% capacity;
  - Additional cars: 1% of capacity;
  - A minimum queueing length of 3 cars/lane.
- Based on AS2890.1, the proposed car park for the development with a capacity for 253 cars would require queue storage for six (6) cars in total divided between two driveways into the site.
- The proposed car park for the development provides queue storage for approximately four (4) car lengths from Byrnes Street plus approximately five (5) car lengths from Rankin Street. In total, over nine (9) car length of internal queueing is provided across the development, which is compliant with AS2890.1.

6.4 Car Parking and Circulation

The design of the proposed car parking and circulation arrangements have been assessed against the requirements of AS2890.1. A summary of the assessment is presented in **Table 12**.

Table 12 Car Parking Area and Circulation Compliance Review

Element	Proposed Design	AS2890.1 Compliant
90’ Car Parking Space Dimensions (User Class 3A)	2.6m x 5.4m	Yes
Parking Aisle (User Class 3A)	6.6m min	Yes
Circulating Roadway Width: One Way Two Way	 3.0m min 7.0m min	 Yes Yes
Motorcycle Parking Spaces	1.2m x 2.5m	Yes

As demonstrated within **Table 12**, the dimensions for car parking and circulation roads are compliant with AS2890.1.

6.5 Public Transport Provision

Outlined in prelodgement meetings held with TMR, it was noted that there may be a future requirement for a bus stop to be provided along the site frontage to Byrnes Street. Whilst it is not proposed that the bus stop will be provided as part of the development, the design of the accesses to Byrnes Street as taken into consideration the spatial requirements of a bus stop.

A concept drawing has been prepared showing the provision of an indented bus stop along the site frontage suitable to facilitate a 14.5m rigid bus, and is included in **Appendix F**. It is noted however that an in-line kerb bus stop would be reasonable given the very low demand and forecast dwell time.

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7.0 Assessed Traffic Demands

7.1 Existing Traffic Demands

In order to ascertain the existing traffics demands on the road network surrounding the site, SLR obtained traffic count data for the following intersections:

- Byrnes Street / Lloyd Street.
- Byrnes Street / Rankin Street.
- Byrnes Street / Herberton Street.
- Byrnes Street / Basalt Street.
- Byrnes Street / Kenneally Street / Costin Street.

Traffic count data for the above intersections was obtained by commissioning Austraffic to conduct traffic surveys for the Thursday AM (AM), Thursday PM (PM) and Saturday (SAT) peak periods. The traffic surveys, undertaken on Thursday 5 May 2022 and Saturday 7 May 2022, established the following peak hour periods (at the site frontage):

- AM Peak Hour: 8:00am-9:00am.
- PM Peak Hour: 4:30pm-5:30pm.
- SAT Peak Hour: 11:00am-12:00pm.

The traffic volumes surveyed during the network peak hour periods are included within the traffic network diagrams included in **Appendix C**, along with the assessed traffic volumes reflecting all the assumptions below.

7.2 Development Traffic Demands

Peak hour traffic demand has been forecast for the subject development based upon survey data provided in the following sources:

- *Trip Generation Surveys Small Suburban Shopping Centres Analysis Report* (Bitzios, 2018). (Bitzios)
- *Guide to Traffic Generating Developments* (RTA, 2002). (RTA GTGD).

Table 13 describes the data sources and categories used for each of the corresponding land uses within the development.

Table 13 Data Sources for Trip Generation

Land Use	Data Source	Category/Trip Generation
Shopping Centre	Bitzios	Using the average vehicle trips per 100m² GLFA rates for each of the respective peak periods. Found in Section 4.3 of the report prepared by Bitzios.
Fast Food Outlet	RTA GTGD	It is noted that there is already a McDonalds located within the vicinity of the site, and as such the application of the higher rate (representative of a McDonalds) is not necessary, with the lower generation rate applied. For the Thursday AM Peak, it has been assumed that the fast-food tenancy will generate 80% of the PM Peak demand.

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The adopted peak hour traffic generation rates for the development are presented in **Table 14**, which also outlines the reduction factors where applicable to account for any anticipated cross utilisation of trips within the site (i.e., where a customer visits more than one tenancy within the site).

Table 14 Development Trip Generation Rates

Land Use	Yield	Trip Rates			Cross Utilisation Reduction
		AM Peak	PM Peak	SAT Peak	
Supermarket	4,863m² GLFA	7.76vph/100m²	10.41vph/100m²	11.11vph/100m²	0%
Fast Food	1 site	80vph/site	100vph/site	100vph/site	15%

The resultant traffic demands based on the traffic generation rates above are outlined in **Table 15**.

Table 15 Development Trip Demand Forecast

Land Use	Trip Generation (In/Out)		
	AM Peak	PM Peak	SAT Peak
Supermarket	377vph	506vph	540vph
Fast Food	68vph	85vph	85vph
Total	**445vph**	**591vph**	**625vph**

The proportions of 'new' trips (including diverted drop-in trips from outside the local road network) and 'drop-in' trips (undiverted drop-in trips from within the local road network) for development generated traffic during the network peak hour periods have been adopted as presented in **Table 16**.

Table 16 Development Trip Demand Forecast

Land Use	New Trips (New Trips and Diverted Drop-in Trips)	Drop-In Trips (Undiverted Drop-in Trips)
Supermarket	75%	25%
Fast Food	50%	50%

7.3 Traffic Distribution

7.3.1 Directional Split

The following inbound/outbound trip directional splits have been adopted for each assessed land use:

- All uses: 50% inbound / 50% outbound.

7.3.2 External Traffic Distribution – New Trips

The distribution of new trips to the external road network has been assigned according to that presented in **Table 17**. These proportions were based on a review of the scale of catchment areas local to the development in the absence of any economic studies for the proposed development.

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Table 17 External Traffic Distribution – New Trips

Direction	Via	Proportion of New Trips
South	Byrnes Street	10%
South-East	Byrnes Street, Kenneally Road	10%
South-West	Byrnes Street, Costin Street	10%
East	Rankin Street, Herberton Street	25%
North	Byrnes Street	30%
West	Rankin Street	15%

7.3.3 External Traffic Distribution - Drop-in Trips

The distribution of drop-in trips through the development (which are a diversion of existing trips on the local road network into the development and back onto the external road network) take into consideration the major movements on the adjacent road network. They also take into consideration the restrictions regarding the allowable turns at the accesses and the ease of access for a 'drop-in' trip. This distribution, or routing of trips, is presented in **Table 18**.

Table 18 External Traffic Distribution - Drop-In Trips

Origin	Destination	Proportion of Drop-in Trips
South	East	0%
	North	30%
	West	5%
East	South	0%
	North	15%
	West	0%
North	South	30%
	East	15%
	West	5%
West^		0%

^ Due to the restriction on movements entering the development on Rankin Street (no right turns in) and the additional routing that would be required, it is assumed that vehicles travelling from the west will not access the development as a 'drop-in' trip.

7.4 Background Traffic Growth

An annual growth rate of 1.59% has been applied to background traffic movements to project future background traffic volumes. This growth rate was taken from TMR's 10-year growth rate in AADT along the site frontage.

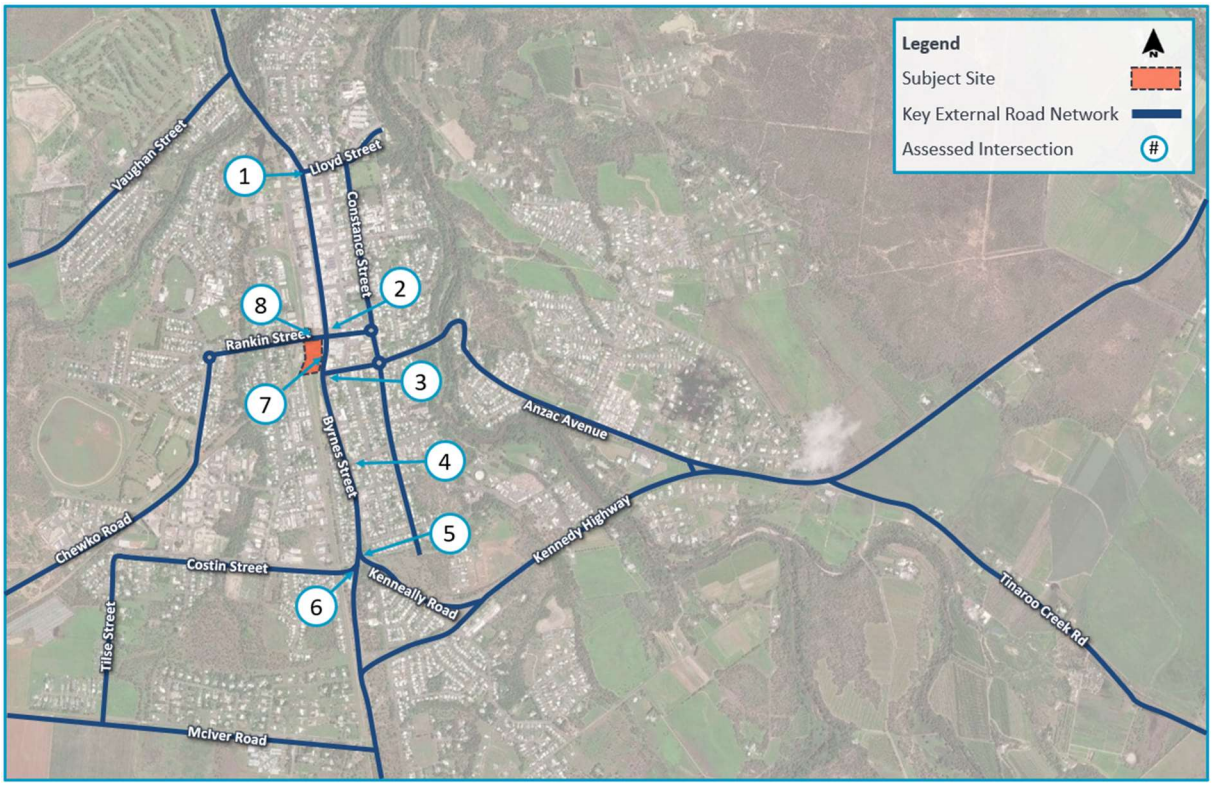
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8.0 Operational Assessment

8.1 Study Intersections

A detailed analysis of the potential traffic impacts of the proposed development on the operation of the external road network has been undertaken at the eight (8) locations identified on **Figure 14**.

Figure 14 Study Intersections



ID	Intersection	Existing Form	Future Form	Authority
1	Byrnes Street / Lloyd Street			TMR
2	Byrnes Street / Rankin Street			TMR
3	Byrnes Street / Herberton Street			TMR
4	Byrnes Street / Basalt Street			TMR
5	Byrnes Street / Keneally Road			TMR
6	Byrnes Street / Costin Street			TMR
7	Byrnes Street / Site Access	-		TMR
8	Rankin Street / Site Access	-		MSC

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8.2 Assessment Scenarios

It has been assumed that the proposed development would be completed and fully operational by 2027. Reflective of this, the following assessment scenarios have been assessed:

- State-controlled intersections:
  - **2022 'Background':** To establish existing operational conditions.
  - **2027 'Background':** To establish the year of opening baseline operating conditions in the absence of the subject development.
  - **2027 'With Development':** To identify the incremental impact of development traffic on operating conditions at the year of opening.
- Site access intersections:
  - **2027 'With Development':** To identify the incremental impact of development traffic on operating conditions at the year of opening.
  - **2037 'With Development':** To identify the incremental impact of development traffic on operating conditions at the 10-year design horizon.

The operation of the road network during the Thursday AM (AM), Thursday PM (PM) and Saturday (SAT) peak hour periods was assessed for all of the above scenarios.

8.3 Performance Criteria

8.3.1 Intersection Performance

The maximum DOS thresholds identified by AGTM12-20 for each intersection type are reproduced in **Table 19**. These parameters are considered to be relevant and appropriate for assessing the capacity and performance of an intersection, particularly for new intersections.

Table 19 Degree of Saturation Thresholds

Intersection Type	DOS Threshold
Signalised intersections	Less than or equal to 0.90
Roundabouts	Less than or equal to 0.85
Priority controlled intersections	Less than or equal to 0.80

DOS values exceeding those presented in **Table 19** indicate that an intersection is nearing is practical capacity and upgrade works may be required. Above these threshold values, users of the intersection are likely to experience increasing delays and queuing.

8.3.2 Critical Delay

The RMS (now TfNSW) Guide to Traffic Generating Developments (2002) recommends that the average delay statistic for the critical movement provides a better indication of intersection performance and safety for roundabouts and priority-controlled intersections than DOS. A summary of the delay thresholds recommended by TfNSW is provided in **Table 20**.

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Table 20 Critical Delay Thresholds

LOS	Description	Critical Delay (sec/vehicle)
A	Good operation	< 14 sec
B	Acceptable delays and spare capacity	15 – 28 sec
C	Satisfactory	29 – 42 sec
D	Near capacity	43 – 56 sec
E	At capacity, requires other control mode	57 – 70 sec

8.3.2.1 Net Worsening of Intersection Delay

The GTIA introduced a 'no net worsening' methodology for intersection delay, whereby the impact of development generated traffic requires mitigation should the increase in intersection delay under 'with-development' conditions increase by 5% or more compared with that of the 'base case' conditions. Intersection delay is calculated using the below equation at state-controlled intersections.

$$ID = \sum_{i=1}^{n} WD - \sum_{i=1}^{n} BC$$

Where: ***ID*** is the aggregate intersection-delay impact in vehicle-minutes;

WD is with-development intersection vehicle-minutes for the design peak periods. This is calculated by multiplying the with-development average delay by movement to the base case volume on each movement, thus not counting the impact as delays to development traffic, but rather only to pre-existing traffic that is affected by the additional delays;

BC is the base case intersection vehicle-minutes for the design peak periods;

n is the number of study intersections; and

i is each study intersection.

It is noted that Section 11.3.1 of the GTIA states that, where traffic generated by the subject development increases the delay to base traffic by less than 5% in aggregate, no mitigation works are required.

8.4 Intersection Assessment

For the intersection assessment undertaken with SIDRA, to capture the interactions between the intersections along the assessed corridor, the intersections were networked within SIDRA. This was considered particularly critical to capture any interaction between the signalised intersection of Byrnes Street/Rankin Street and the proposed site accesses. It also allowed for the interaction between the priority-controlled intersections of Byrnes Street/Kenneally Road, and Byrnes Street/Costin Street given there very small separation and the provision of short lanes extending between the two.

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8.4.1 Intersection 1 – Byrnes Street / Lloyd Street

The Byrnes Street / Lloyd Street intersection is currently formed as a three-legged roundabout. The existing layout and the assessed SIDRA intersection form are shown on **Figure 15**. The results of the SIDRA assessment are presented in **Table 21**. Detailed SIDRA outputs are provided at **Appendix D**.

Figure 15 Byrnes Street / Lloyd Street – Intersection Form

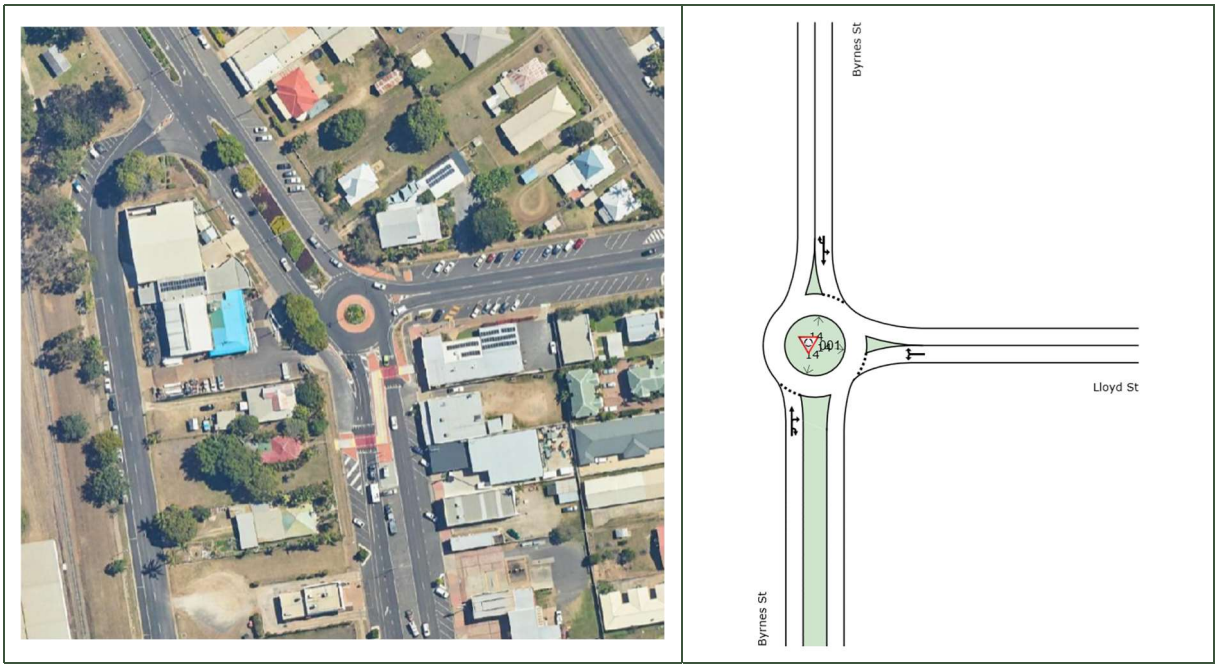


Table 21 SIDRA Outputs: Byrnes Street / Lloyd Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.43	12s	24m	0.34	12s	18m	0.31	11s	16m
2027 Background	0.47	12s	28m	0.38	12s	21m	0.2	12s	18m
With Development									
2027 With Development	0.51	12s	32m	0.43	12s	25m	0.39	12s	22m

The SIDRA analysis summarised in **Table 21** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.2 Intersection 2 – Byrnes Street / Rankin Street Intersection

The Byrnes Street / Rankin Street intersection is currently a traffic signal controlled four-way intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 16**.

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The cycle time for the three assessment periods was derived from the existing operations as observed in the Austraffic survey footage. To undertake the net delay assessment as required, to accurately compare the two scenarios (without and with development traffic) in 2027, phase times are required to be set.

Due to existing limitations within SIDRA, to run set phase times, the minimum pedestrian crossing time had to be taken into consideration. A phase time lower than the minimum pedestrian crossing time could not be applied in the timing data. This results in some ‘minor’ phases running with higher average times than what was observed.

Given the continual growth of traffic through the intersection, it is also anticipated that the phase times currently experienced will adjust over time, irrespective of the proposed development. With the signalised intersection running in isolation (no coordination along the corridor), when the demand on an approach increases, so will the respective phase times. The incremental development traffic demand on some intersection movements, i.e. right turn from north-to-west will naturally ‘call’ more green time compared to the existing Background situation.

To provide consistent phase times between the 2027 ‘Background’ and ‘With Development’, phase times that did not prejudice either scenario were utilised to provide a comparative assessment. This in turn allows for the minimum pedestrian crossing phase times to be input and run in SIDRA.

The results of the SIDRA assessment are presented in **Table 22**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 16 Byrnes Street / Rankin Street – Intersection Form

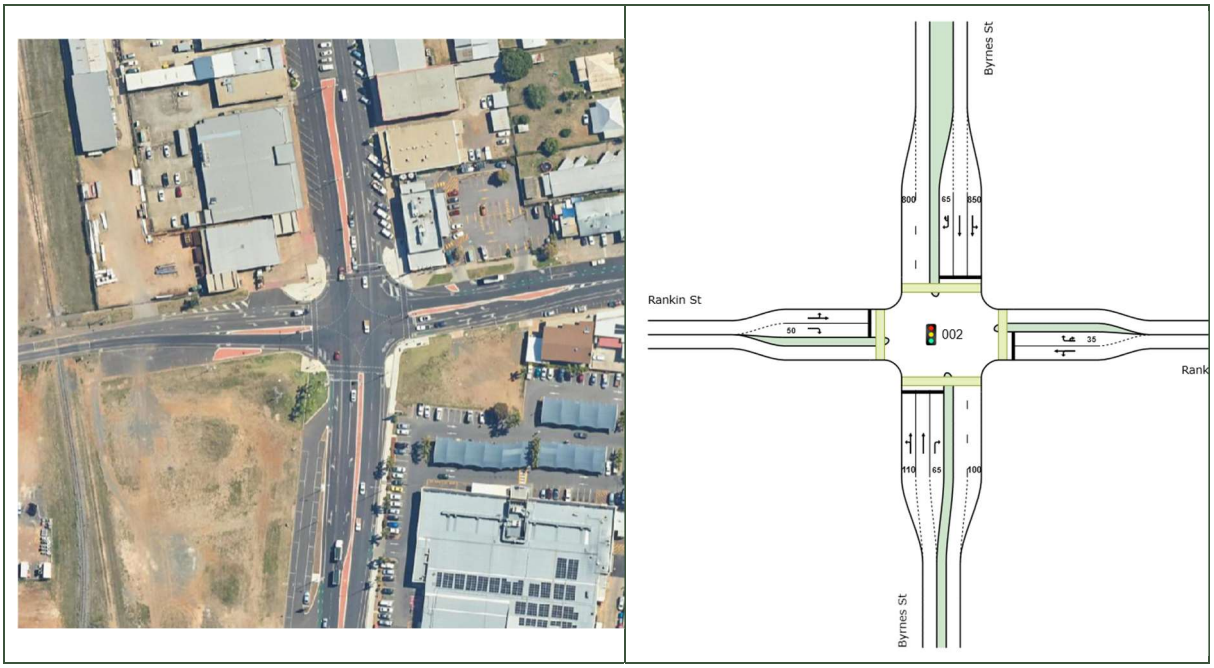


Table 22 SIDRA Outputs: Byrnes Street / Rankin Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Average Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.47	43s	116m	0.53	45s	129m	0.55	40s	130m
2027 Background	0.58	48s	137m	0.75	54s	164m	0.79	48s	170m
With Development									
2027 With Development	0.86	43s	94m	0.81	55s	109m	0.67	46s	110m

The SIDRA analysis summarised in **Table 22** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

The reduction in the 95%tile queue experienced at the intersection is attributed to the existing traffic passing the site that will become ‘drop-in’ trips to the centre. This reallocation of existing traffic will result in a redistribution on the existing network and the reduction of the critical queue lengths.

8.4.3 Intersection 3 – Byrnes Street / Herberton Street Intersection

The Byrnes Street / Herberton Street intersection is currently a priority-controlled intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 17**. The results of the SIDRA assessment are presented in **Table 23**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 17 Byrnes Street / Herberton Street – Intersection Form

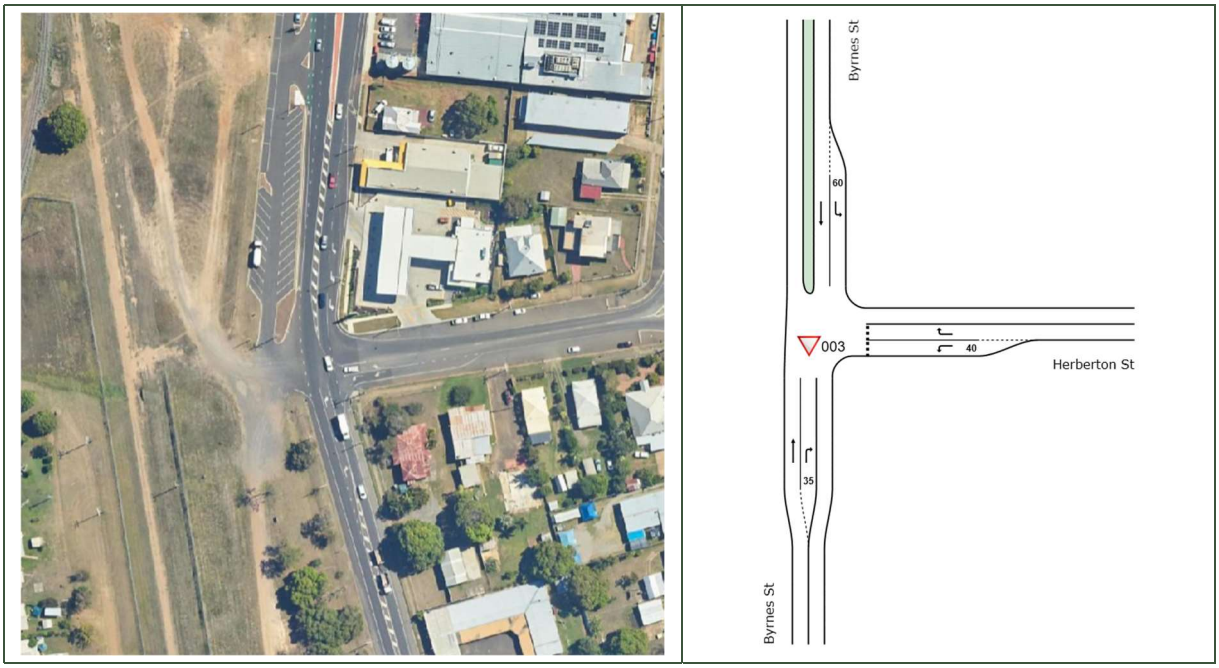


Table 23 SIDRA Outputs: Byrnes Street / Herberton Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.31	21s	12m	0.26	19s	9m	0.22	18s	7m
2027 Background	0.35	24s	15m	0.29	21s	11m	0.24	20s	8m
With Development									
2027 With Development	0.42	43s	18m	0.61	49s	15m	0.60	43s	16m

The SIDRA analysis summarised in **Table 23** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.4 Intersection 4 – Byrnes Street / Basalt Street Intersection

The Byrnes Street / Basalt Street intersection is currently a priority-controlled four-way intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 18**. The results of the SIDRA assessment are presented in **Table 24**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 18 Byrnes Street / Basalt Street – Intersection Form

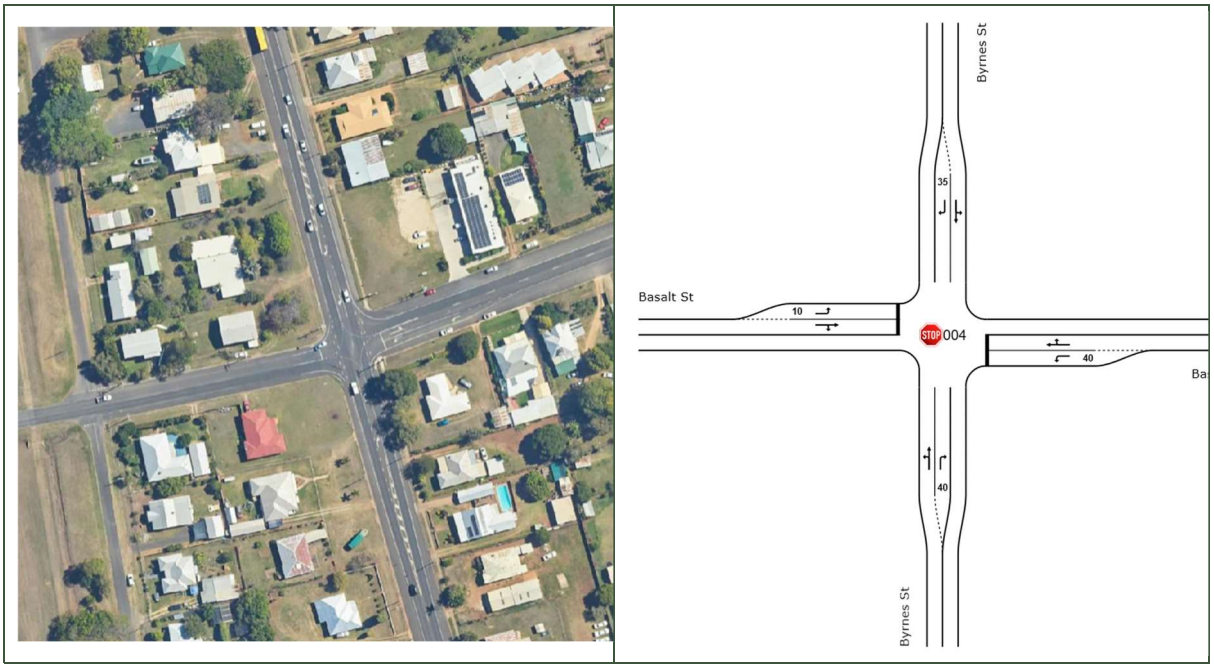


Table 24 SIDRA Outputs: Byrnes Street / Basalt Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.22	16s	3m	0.31	20s	4m	0.24	17s	4m
2027 Background	0.24	17s	3m	0.34	23s	4m	0.26	19s	4m
With Development									
2027 With Development	0.27	19s	3m	0.37	28s	5m	0.30	22s	5m

The SIDRA analysis summarised in **Table 24** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.5 Intersection 5 – Byrnes Street / Kenneally Road Intersection

The Byrnes Street / Kenneally Road intersection is currently a priority-controlled T-intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 19**. As outlined above, the intersections were networked for the assessment. The provision of 'full lanes' in the SIDRA layout represent the portion of the short turn lanes attributed to the Byrnes Street/Kenneally Road intersection, with the remainder of the short turn lane provided within the Byrnes Street/Costin Street SIDRA layout.

The results of the SIDRA assessment are presented in **Table 25**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 19 Byrnes Street / Kenneally Road – Intersection Form

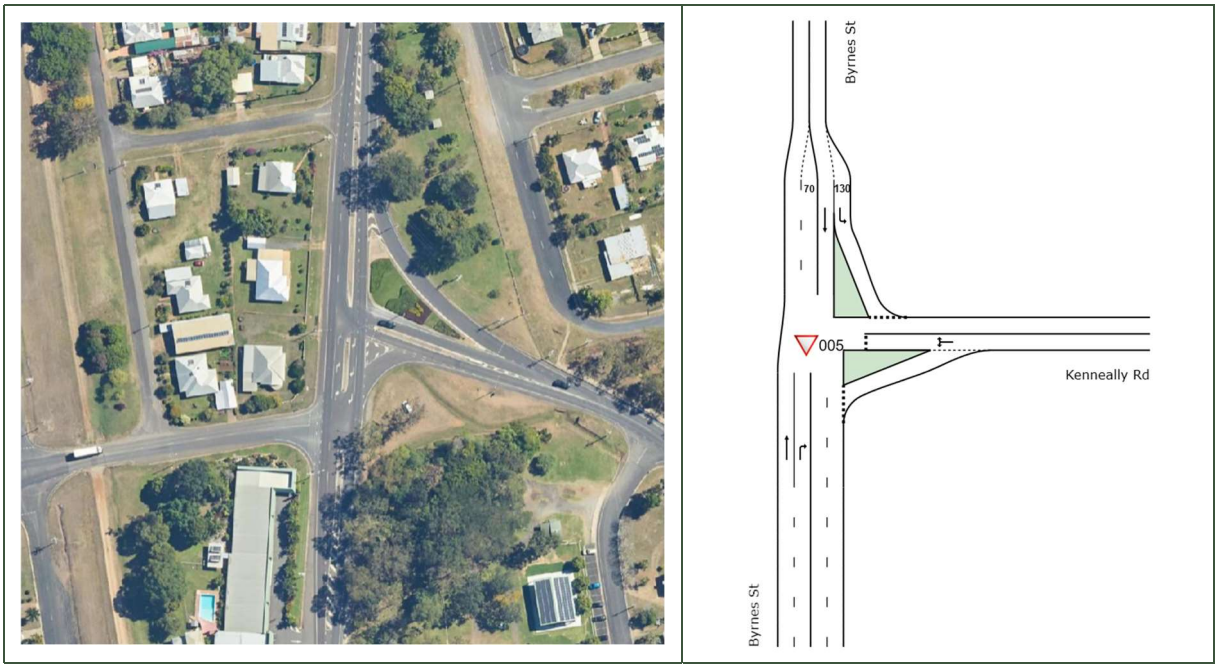


Table 25 SIDRA Outputs: Byrnes Street / Kenneally Road Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.50	50s	17m	0.29	23s	8m	0.30	16s	9m
2027 Background	0.65	65s	24m	0.36	28s	10m	0.36	19s	12m
With Development									
2027 With Development	0.88	88s	46m	0.57	37s	18m	0.51	24s	18m

The SIDRA analysis summarised in **Table 25** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.6 Intersection 6 – Byrnes Street / Costin Street Intersection

The Byrnes Street / Costin Street intersection is currently a priority-controlled T-intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 20**. The results of the SIDRA assessment are presented in **Table 26**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 20 Byrnes Street / Costin Street – Intersection Form

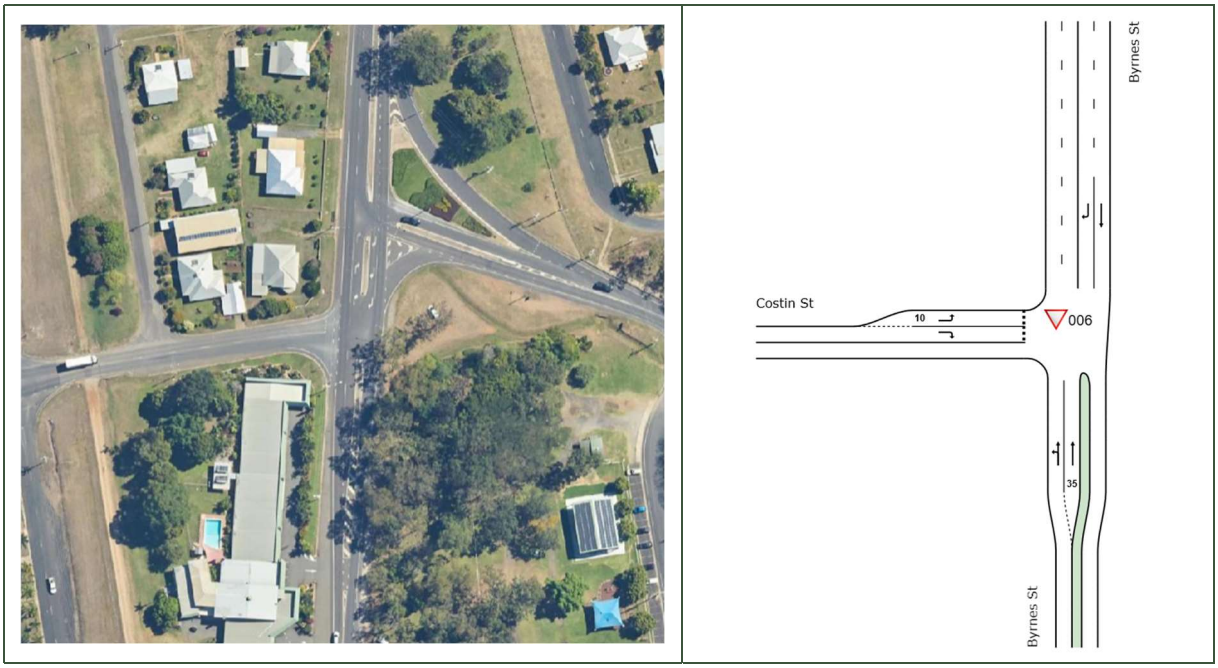


Table 26 SIDRA Outputs: Byrnes Street / Costin Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.33	25s	6m	0.24	16s	4m	0.18	12s	3m
2027 Background	0.36	30s	7m	0.26	18s	5m	0.19	13s	3m
With Development									
2027 With Development	0.36	34s	8m	0.27	21s	6m	0.20	14s	4m

The SIDRA analysis summarised in **Table 26** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.7 Intersection 7 – Byrnes Street / Site Access

The Byrnes Street / Site Access intersection is proposed as a priority-controlled t-intersection restricted to left-in, left-out movements. The SIDRA layout of the proposed intersection form is shown on **Figure 21**. The results of the SIDRA assessment are presented in **Table 27**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 21 Byrnes Street / Site Access – Intersection Form

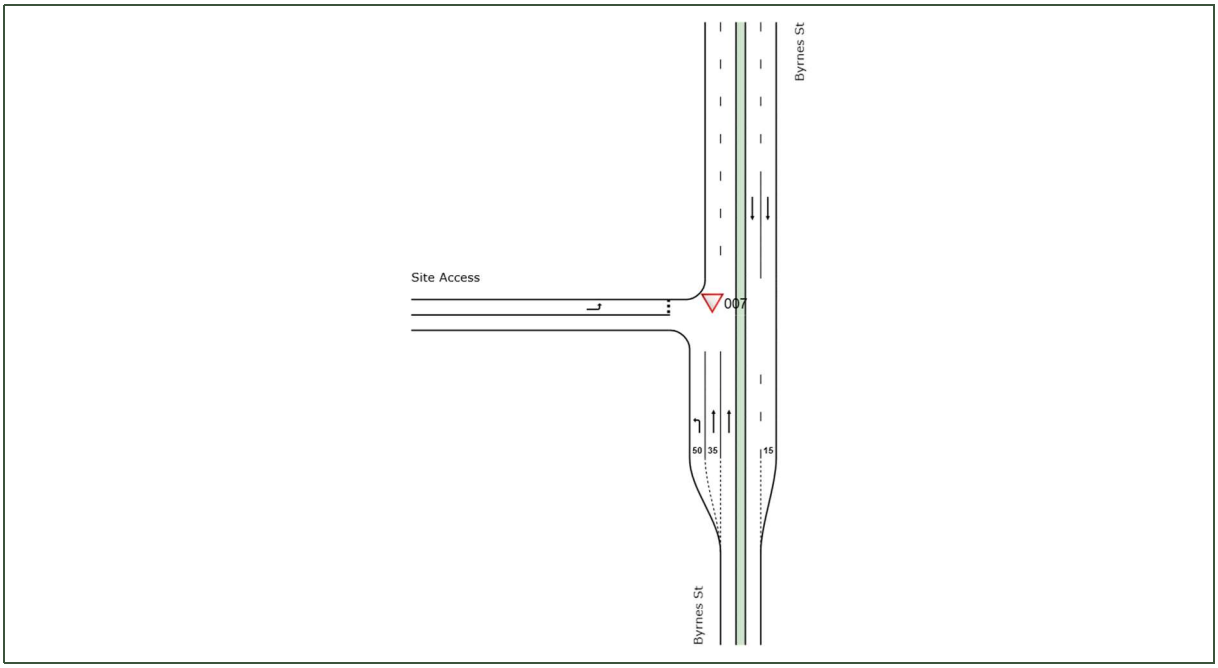


Table 27 SIDRA Outputs: Byrnes Street / Site Access

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
With Development									
2027 With Development	0.27	6s	2m	0.34	6s	2m	0.31	6s	3m
2037 With Development	0.31	6s	2m	0.38	6s	3m	0.35	6s	3m

The SIDRA analysis summarised in **Table 27** identifies that the proposed site access will operate at an acceptable performance level, with spare capacity, through to and beyond 2037. Given the provision of the access as left-in, left-out, no queueing external to the site will occur due to the operation of the site access. The queueing that occurs internal to the development will not extend into the car park circulation area and will not impact internal circulation.

8.4.8 Intersection 8 – Rankin Street / Site Access

The Rankin Street / Site Access intersection is proposed as a priority-controlled t-intersection restricted to left-in, all movements out. The SIDRA layout of the proposed intersection form is shown on **Figure 22**. The results of the SIDRA assessment are presented in **Table 28**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 22 Rankin Street / Site Access – Intersection Form

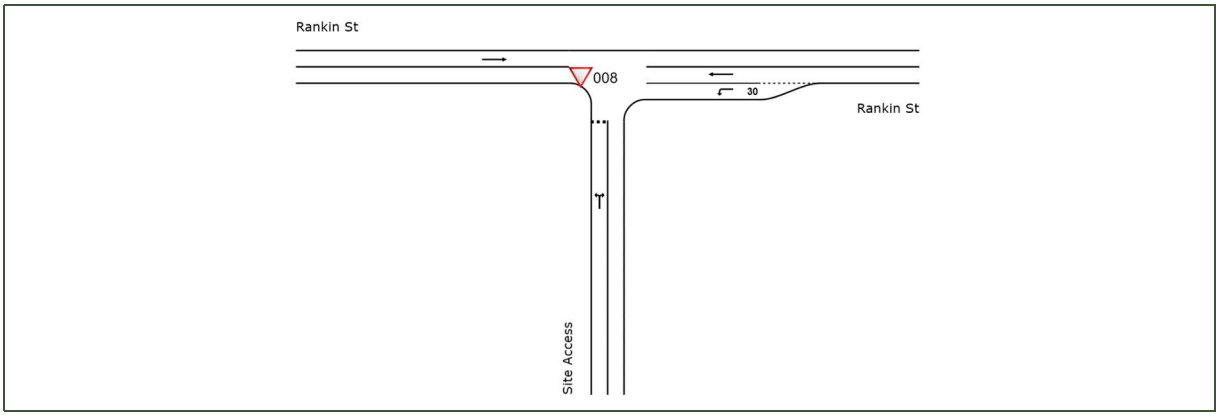


Table 28 SIDRA Outputs: Rankin Street / Site Access

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
With Development									
2027 With Development	0.47	9s	17m	0.69	13s	24m	0.56	9s	21m
2037 With Development	0.50	10s	41m	0.75	15s	27m	0.61	10s	23m

The SIDRA analysis summarised in **Table 28** identifies that the proposed site access will operate at an acceptable performance level, with spare capacity, through to and beyond 2037. As the site access does not allow for a right turn into the site, no additional queueing along Rankin Street will occur beyond that capture in the Byrnes Street/Rankin Street results. The queueing that occurs internal to the development will not extend into the car park circulation area and will not impact internal circulation.

8.5 Net Worsening Assessment

The results of the net worsening assessment are summarised within **Table 29**, with the detailed net worsening assessment spreadsheet provided in **Appendix E**.

Table 29 Net Worsening Assessment Outputs

Peak Period	ΣBC (Total Base Case Delays)	ΣWD (Total With-Development Delays)	ID = ΣWD - ΣBC	
			Δ	%
AM	1,693min	1,832min	139min	+8.2%
PM	1,756min	1,776min	19min	+1.1%
SAT	1,511min	1,443min	67min	-4.5%
Total	**4,960min**	**5,051min**	**91min**	**+1.8%**

The results presented in **Table 29** indicates that an increase in the net delay metric of less than 5% is reported to occur during the Thursday AM, Thursday PM peak and Saturday midday peak periods. As such, no mitigation works are warranted in accordance with the

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GTIA which identified 5% as a threshold defining a significant impact that should be mitigated.

Accordingly, no capacity upgrades beyond those proposed at the site access locations have been assessed or are proposed at this time.

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9.0 Safety Assessment

9.1 Overview

Section 6 of the GTIA requires an assessment of the impacts of a proposed development on the safety of the state-controlled road network.

The following activities were undertaken as part of the road safety assessment:

- Review of existing crash data, aerial imagery and a site inspection to identify any existing safety deficiencies along either of the study corridors within the vicinity of the subject site; and
- A risk assessment to establish a risk scope for any existing safety risks, the level of impact of the subject development on these existing safety risks, as well as any additional risks introduced by the proposal.

9.2 Risk Assessment

A risk assessment was undertaken to evaluate the severity of any safety risks introduced or exacerbated by the proposed development of the subject site. This has been conducted using the safety risk score matrix detailed within Figure 9.3.2(a) of the GTIA, which has been reproduced in **Figure 23** for reference.

Figure 23 GTIA Safety Risk Score Matrix

		Potential Consequence				
		1. Property damage	2. Minor injury	3. Medical treatment	4. Hospitalisation	5. Fatality
Potential	5. Almost certain	M	M	H	H	H
	4. Likely	M	M	M	H	H
	3. Moderate	L	M	M	M	H
	2. Unlikely	L	L	M	M	M
	1. Rare	L	L	L	M	M

L = low risk, M = medium risk, H = high risk

The purpose of the road safety risk assessment as defined within the GTIA is to ensure that the subject development does not 'significantly' worsen road safety and/or mitigate any existing safety hazards. In this case a 'significant' worsening is defined as a change in the safety risk rating (for example from 'low' to 'medium'), with the following criteria provided for the mitigation of safety risks:

- The aim of the assessment is to return the 'with development' risk score to the 'without development' score and below the 'high' category in all scenarios with mitigation measures in place; and
- Any risk item classified as 'high' risk required mitigation regardless of whether this risk is pre-existing or introduced by the development.

Given the above considerations, a summary of the safety risk assessment for the subject development provided in **Table 30**.

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Table 30 Safety Risk Assessment

Potential Risk	Without Development			With Development			Mitigation Measures	With Development & Mitigation		
	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Increased demand for turning movements at the surrounding intersections which may result in increased rear-end and angle crashes	2	4	**M**	3	4	**M**	As documented in the operation assessment, the intersections within the study area will continue to operate at an acceptable level with the addition of the development traffic. The operation of the intersections with the addition of the development traffic is unlikely to promote an increase in risky driver behaviour, and therefore an increased likelihood of accidents. No mitigation required.			
Queues extending back into intersections – risk of vehicles stopping in vulnerable locations (such as the middle of intersections) and obstructing vehicle movements.	2	3	**M**	2	3	**M**	No mitigation required.			
The queue along the Rankin Street frontage will queue beyond the rail line crossing increasing the chance a car will queue on the crossing.	1	5	**M**	2	5	**M**	Documented in the SIDRA results, queues along the Rankin Street frontage of the site will be contained within the available approach distance from the rail line crossing. The addition of the development traffic will not cause the queue length to extend beyond the rail crossing. No mitigation required.			
Increase in pedestrian demand travelling along the site frontage.	1	4	**M**	3	4	**M**	A footpath in the verges would reduce the likelihood of crashes resulting from pedestrians not having any dedicated facility.	1	4	**M**

The risk assessment summarised above suggests that the subject development is unlikely to have a material impact on road safety with the study area and therefore no mitigation treatments are justified.

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10.0 Code Assessment

The traffic and transport aspects of the proposed development have been assessed against the relevant requirements of the following state codes:

- State code 1: Development in a state-controlled road environment; and
- State code 6: Protection of state transport networks.

Responses to these codes regarding the traffic and transport aspects have been prepared by SLR and are included within the planning reporting prepared by Urban Sync.

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11.0 Summary and Conclusions

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Girgenti Group to prepare a Traffic Impact Assessment (TIA) for the proposed mixed-use development located at 232 Byrnes Street, Mareeba. Plans for the development, as prepared by Thomson Adsett, are included in **Appendix A**.

Based on the analysis and discussion documented herein, the following is concluded:

- The proposed development seeks to develop the existing site to include a shopping centre (including a Woolworths supermarket), a food & drink outlet and shop land uses.
- It is proposed that access to the site be via three new driveways, which are:
  - A left-in, left-out driveway on Byrnes Street for passenger vehicle only.
  - A left-in, left-out driveway on Byrnes Street for service vehicles only, facilitating vehicles up to the size of an Articulated Vehicle.
  - A left-in, all movements out driveway to Rankin Street, facilitating access for passenger vehicles and service vehicles up to the size of a Heavy Rigid Vehicle.
- The proposed car park with a capacity of 253 parking spaces (including 3 PWD spaces) exceeds the requirements of the MSC Planning Scheme.
- The proposed bicycle parking and end of trip facilities will be provided in accordance with the requirements outlined in the MSC Planning Scheme.
- All servicing is proposed to occur within the site within dedicated service areas/loading bays. Waste collection is to occur via the same service areas/loading bays as for deliveries. Swept path assessments of these facilities have confirmed that the design vehicles can be accommodated.
- All elements of the car park, circulation roadways and driveways are compliant with Australian Standards.
- The intersection assessments have identified the following:
  - The state-controlled intersections assessed will operate acceptably with the inclusion of the development at the opening year of 2027.
  - The site access intersections will operate acceptably up to and beyond the 2037 design horizon.
- The net delay assessment found that an increase in the net delay metric of less than 5% occurs across the three assessed peak periods.

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12.0 RPEQ Certification

This assessment and report have been prepared under the direction of a Registered Professional Engineer of Queensland (RPEQ) who is experienced in traffic engineering and transport planning. They are endorsed by that RPEQ accordingly.

Regards,

SLR Consulting Australia



Raymond Logan, RPEQ No. 27227
Principal – Transport Advisory

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Appendix A Development Plan

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MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

DRAWING LIST - CONCEPT		
A	0.00	COVER SHEET
A	0.10	SITE CONTEXT PLAN
A	1.01A	SITE PLAN
A	1.02A	DEVELOPMENT PLAN
A	2.01	GROUND FLOOR PLAN - SUPERMARKET
A	2.02	ROOF PLAN - SUPERMARKET
A	2.03	ELEVATIONS - SUPERMARKET
A	2.04	ELEVATIONS - SUPERMARKET
A	2.05	SECTIONS - SUPERMARKET
A	4.01	GROUND FLOOR PLAN - FAST FOOD
A	4.02	ELEVATIONS - FAST FOOD
A	5.01	3D VIEWS
A	5.02	3D VIEWS





EXISTING VIEW FROM CORNER OF BYRNES & RANKIN STREET

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

REEDLODGE PTY LTD.

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TA # 19.0298.17

COVER SHEET

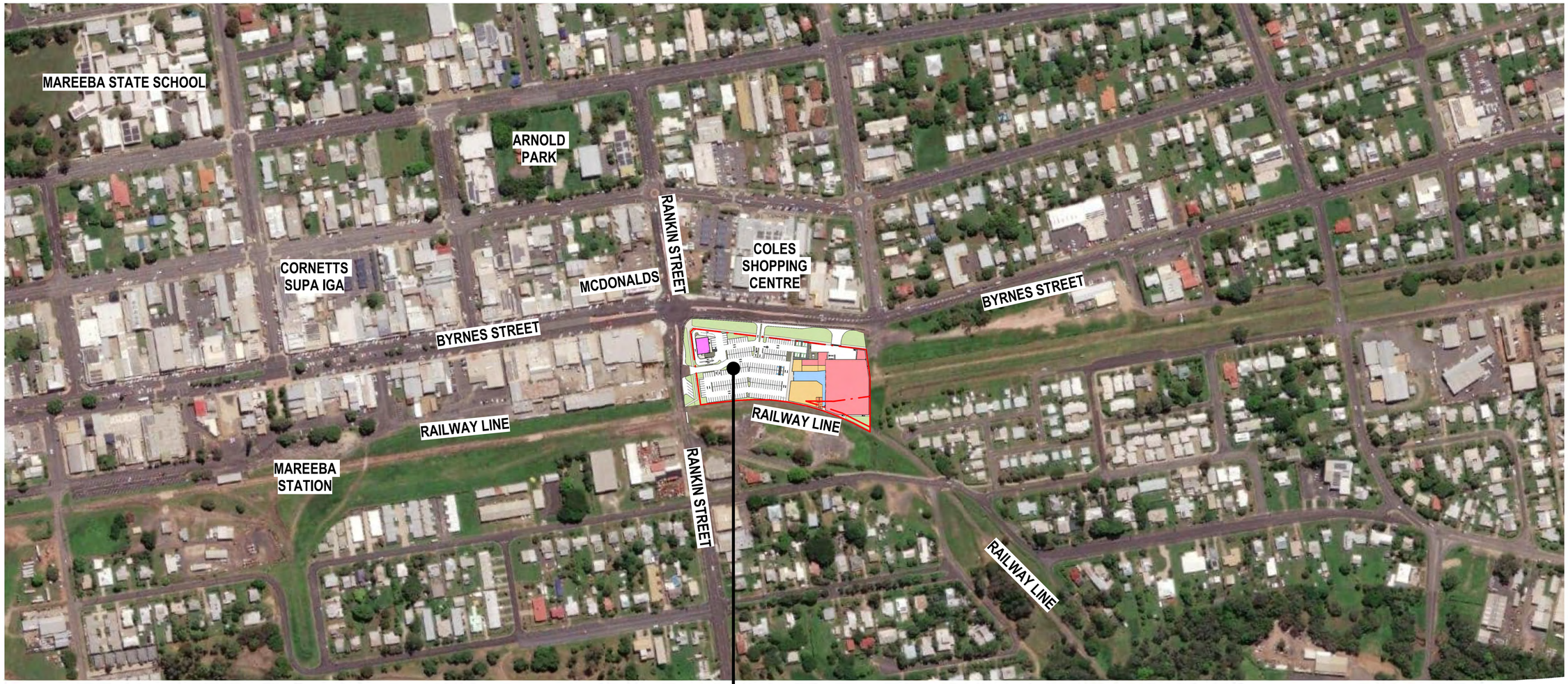
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2025-06-24

A0.00

rev. 9

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1 SITE CONTEXT PLAN
1 : 2500

DEVELOPMENT APPLICATION

0 25 50 75 125 250 m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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SITE CONTEXT PLAN

1 : 2500 @ A1 2025-06-24

A0.10 **rev. 10**

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DEVELOPMENT SCHEDULE

PROPOSED USES	GFA	GLAR
SUPERMARKET	3655m^2	3603m^2
SHOPS	1290m^2	1260m^2
FAST FOOD	270m^2	270m^2
AMENITIES	90m^2	
TOTAL CENTRE	**5305m^2**	**5133m^2**

CAR PARKING SCHEDULE

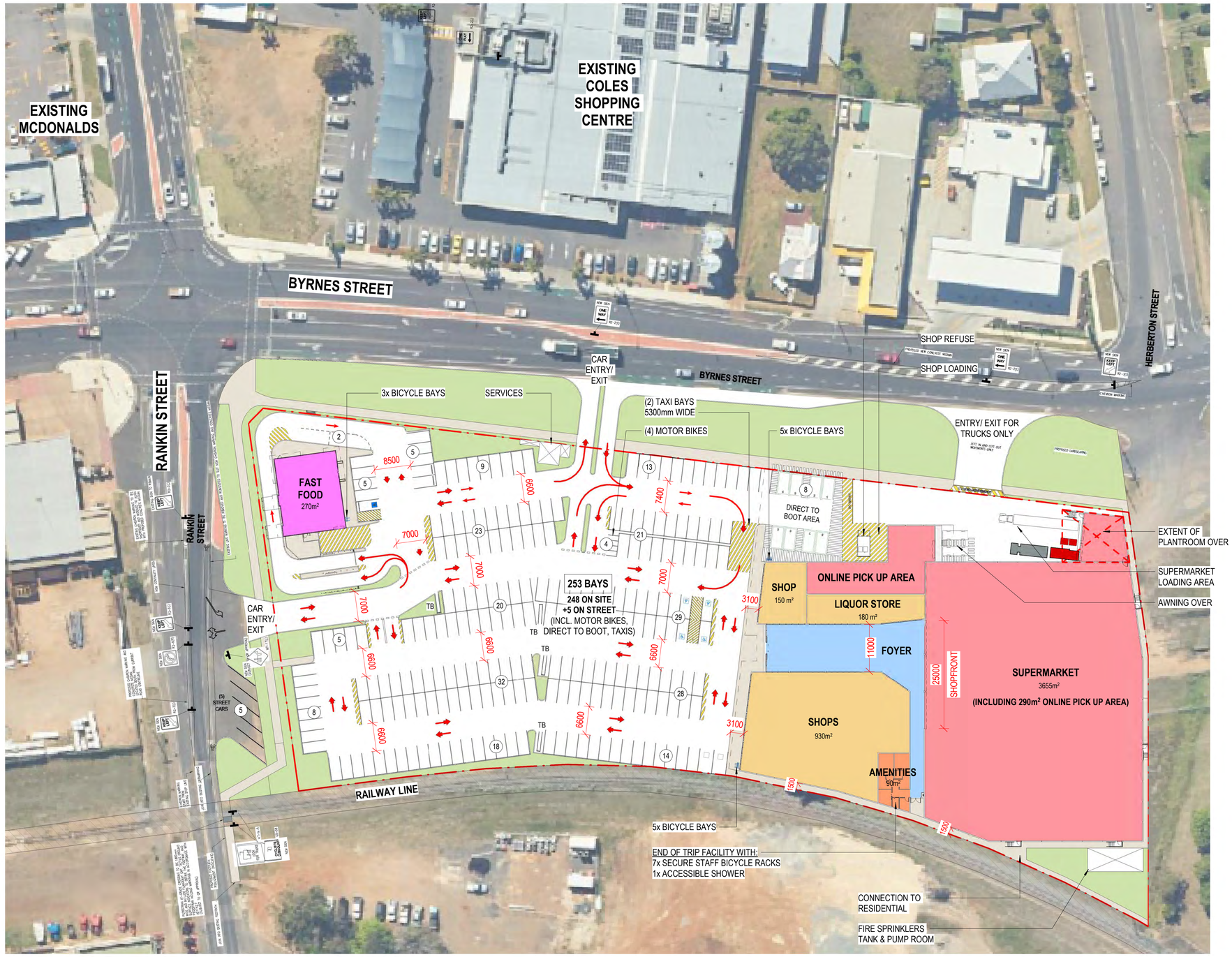
CARS CENTRE (ON SITE) (INCL. MOTOR BIKES, DIRECT TO BOOT + TAXIS)	248
STREET CARS	5
TOTAL CARS PROVIDED	**253** (4.93/100m^2 GLAR)
TOTAL CARS REQUIRED	205

NOTE:
CARS REQUIRED IS BASED ON:
1/50 UP TO 400m^2 GFA
1/25 ABOVE 400m^2 GFA

NOTE: SUPERMARKET GLAR EXCLUDES EXTERNAL WALLS AND LOADING DOCK

COVERED CARPARKS

AREA OF FOYER / PASSAGE - 522m^2



1 SITE PLAN - OPTION 6
1 : 500

DEVELOPMENT APPLICATION

0 5 10 15 25 50 m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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TA # 19.0298.17

SITE PLAN

As indicated @ A1 | 2025-06-24

A1.01A | **rev. 27**

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3x BICYCLE BAYS
ELECTRIC PAD MOUNT TRANSFORMER
FIRE METER + BOOSTERS
5x BICYCLE BAYS
SCREENED SHOP REFUSE
SHOP LOADING
HOME DELIVERY LOADING AREA
WAITING BAYS
ELECTRICAL SERVICES (MSB/COMMS)
CAR ENTRY/ EXIT
BYRNES STREET
ENTRY/ EXIT FOR TRUCKS ONLY
RANKIN STREET
SUPERMARKET LOADING AREA
REFUSE BINS
EXTENT OF PLANTROOM OVER
COMPACTOR
ESCAPE STAIR
FAST FOOD 270m²
LOADING
DIRECT TO BOOT AREA
TAXI BAYS
(4) MOTOR BIKES
253 BAYS
248 ON SITE
+5 ON STREET
(INCL. MOTOR BIKES, DIRECT TO BOOT, TAXIS)
TB
CAR ENTRY/ EXIT
(5) STREET CARS
ONLINE PICK UP AREA
SHOP 150 m²
LIQUOR STORE 180 m²
FOYER
SUPERMARKET 3655m²
(INCLUDING 290m² ONLINE PICK UP AREA)
RL 409.20
SHOPS 930m²
AMENITIES 91 m²
RL 408.50
ESCAPE STAIR
5x BICYCLE BAYS
END OF TRIP FACILITY WITH:
7x SECURE STAFF BICYCLE RACKS
1x ACCESSIBLE SHOWER
ESCAPE STAIR
FIRE SPRINKLERS TANK & PUMP ROOM
CONNECTION TO RESIDENTIAL
RAILWAY LINE
EXISTING BUILDING

1 DEVELOPMENT PLAN - OPTION 6
1 : 300

DEVELOPMENT APPLICATION

0 3 6 9 15 30 m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE
232 BYRNES STREET, MAREEBA

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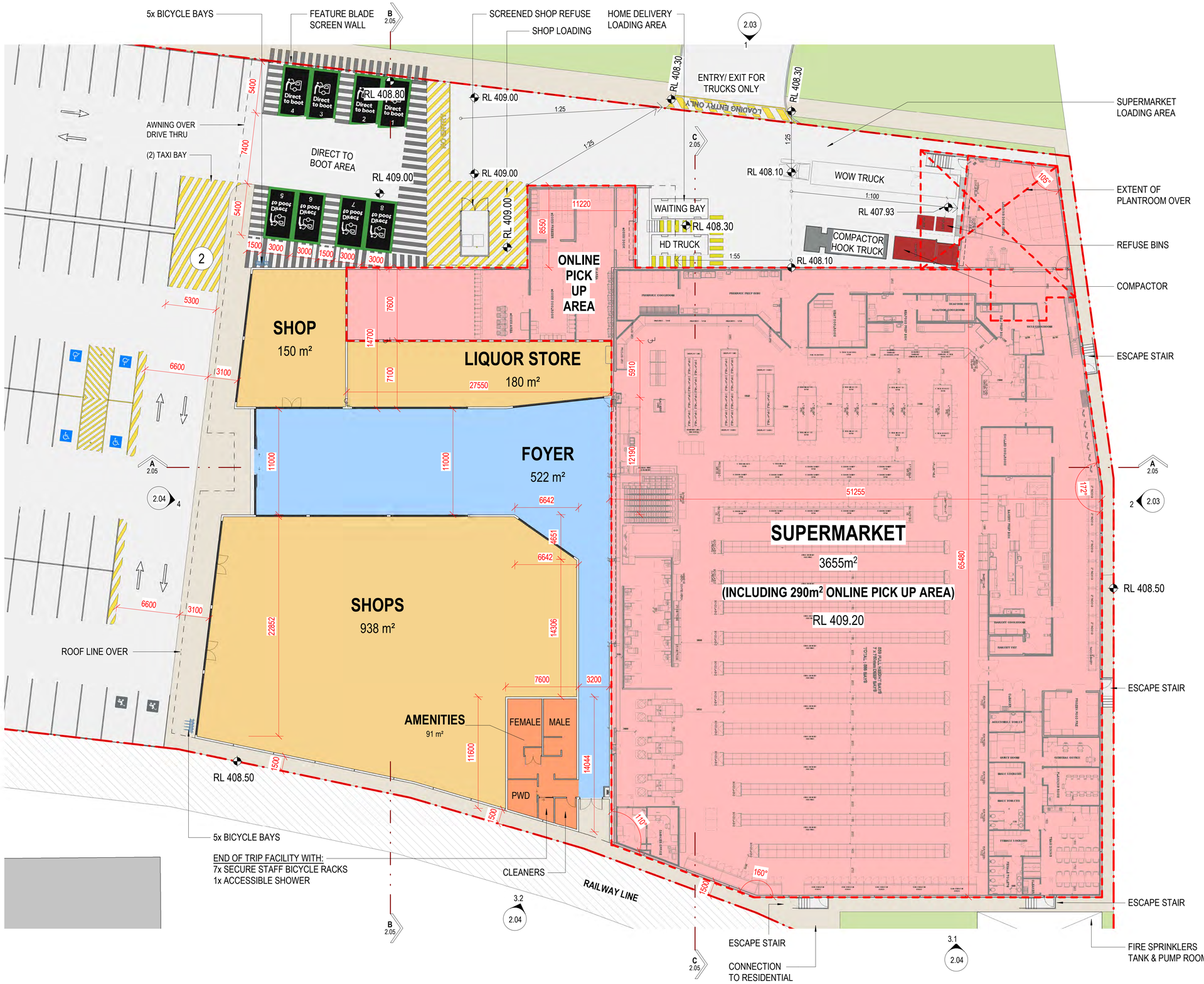
TA # 19.0298.17

DEVELOPMENT PLAN

1 : 300 @ A1 | 2025-06-24

A1.02A | **rev. 21**

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 FLOOR PLAN - SUPERMARKET
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

REEDLODGE PTY LTD.

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Qld 4006 Australia
thomsonadsett.com

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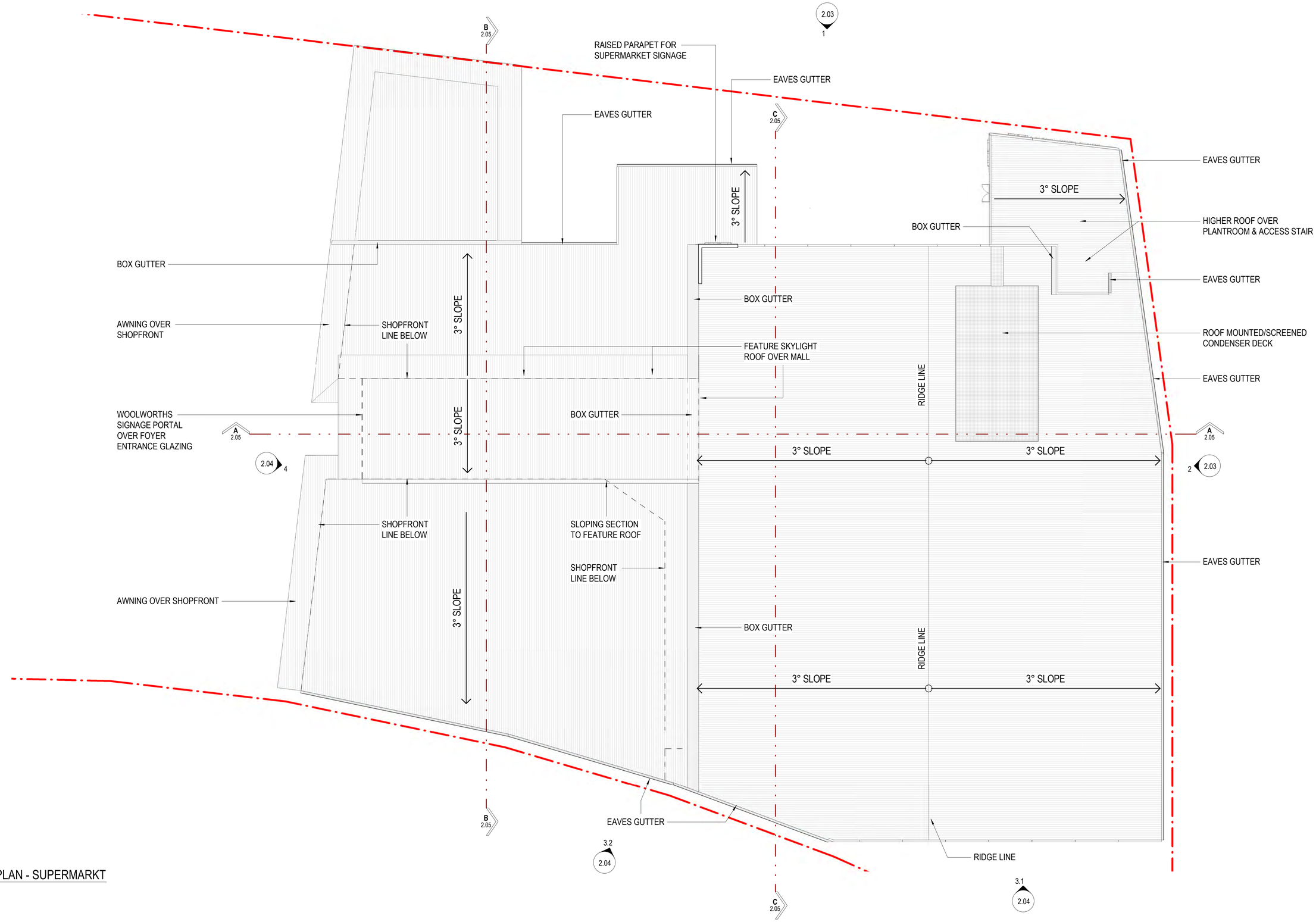
TA # 19.0298.17

GROUND FLOOR PLAN - SUPERMARKET

1 : 200 @ A1 | 2025-06-24

A2.01 | rev. 15

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 ROOF PLAN - SUPERMARKT
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

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TA # 19.0298.17

ROOF PLAN - SUPERMARKET

1 : 200 @ A1 | 2025-06-24

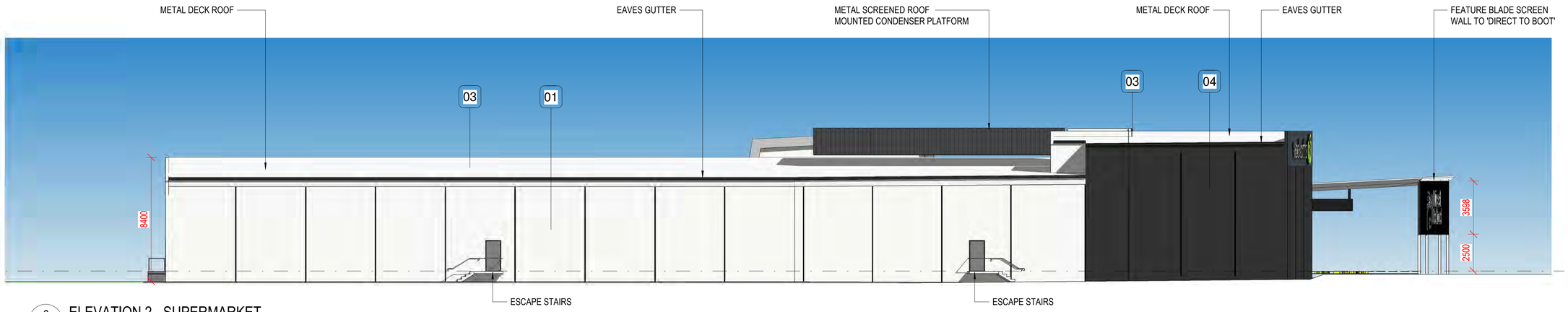
A2.02 | **rev. 9**

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 / 2.01 ELEVATION 1 - SUPERMARKET

1 : 150



2 / 2.01 ELEVATION 2 - SUPERMARKET

1 : 150

1	PRECAST CONCRETE PANEL PAINTED DULUX 'VIVID WHITE'	3	LONGLINE METAL SHEETING DULUX 'MONUMENT'	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX 'MONUMENT'
2	FC CLADDING PAINTED DULUX 'VIVID WHITE'	4	PRECAST CONCRETE PANEL PAINTED DULUX 'MONUMENT'	6	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER. PAINTED DULUX 'MONUMENT'

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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ELEVATIONS - SUPERMARKET

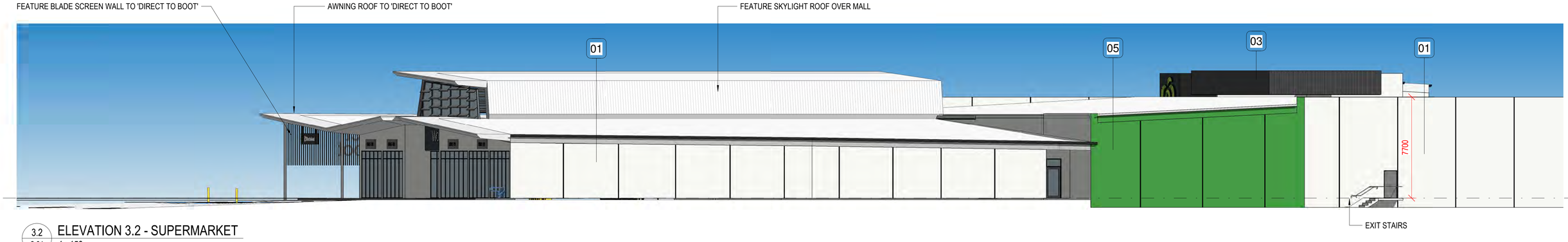
As indicated @ A1 2025-06-24

A2.03 **rev. 9**

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



3.1 / 2.01 ELEVATION 3.1 - SUPERMARKET
1 : 150



3.2 / 2.01 ELEVATION 3.2 - SUPERMARKET
1 : 150



4 / 2.01 ELEVATION 4 - SUPERMARKET
1 : 150

1	PRECAST CONCRETE PANEL PAINTED DULUX 'VIVID WHITE'	3	LONGLINE METAL SHEETING DULUX 'MONUMENT'	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX 'MONUMENT'
2	FC CLADDING PAINTED DULUX 'VIVID WHITE'	4	PRECAST CONCRETE PANEL PAINTED DULUX 'MONUMENT'	6	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER. PAINTED DULUX 'MONUMENT'

NOTE:
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DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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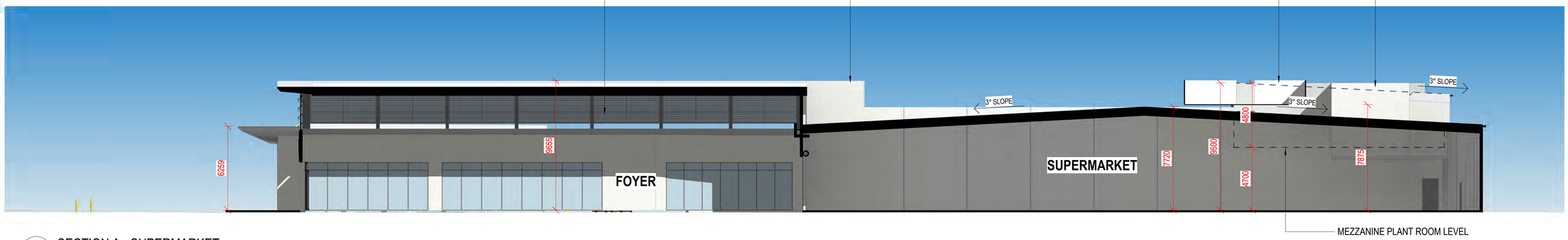
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ELEVATIONS - SUPERMARKET

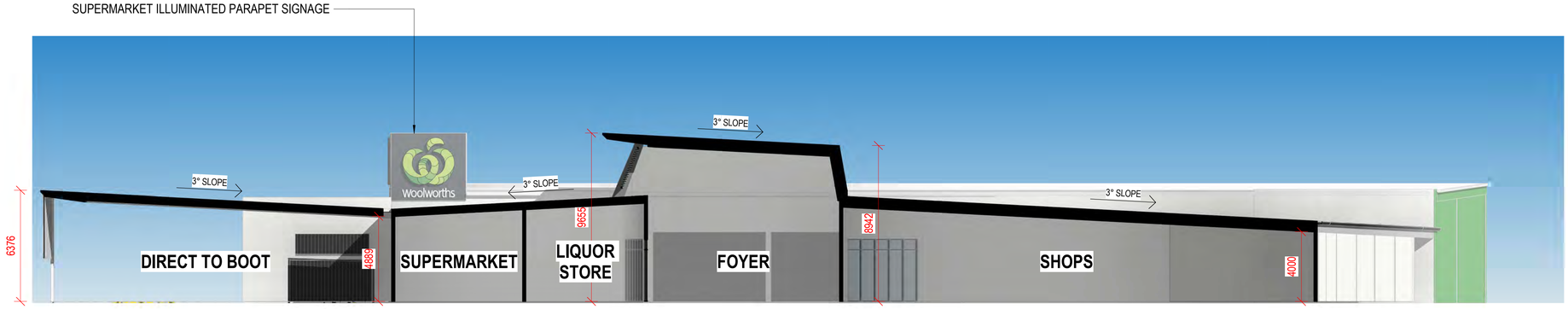
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A2.04 | **rev. 9**

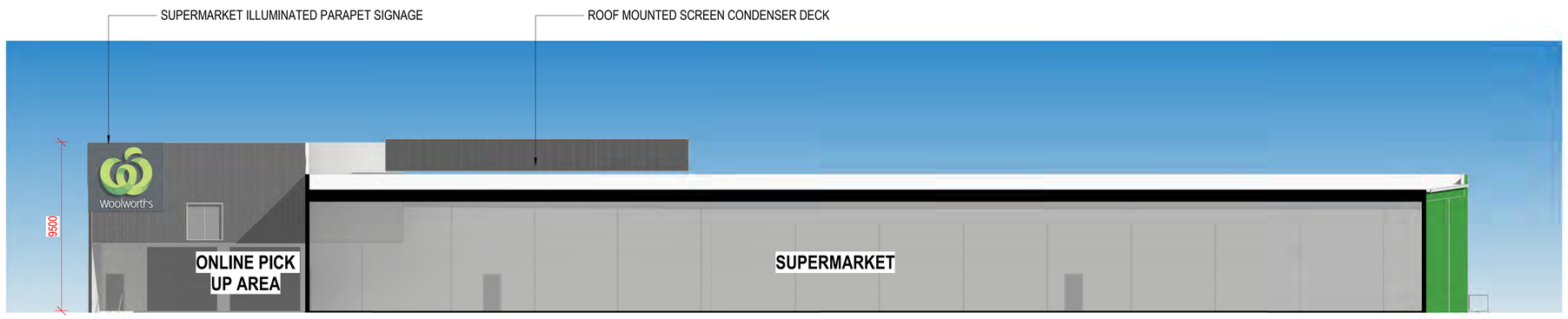
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



A 2.01 SECTION A - SUPERMARKET
1 : 150



B 2.01 SECTION B - SUPERMARKET
1 : 150



C 2.01 SECTION C - SUPERMARKET
1 : 150

NOTE:
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DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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232 BYRNES STREET, MAREEBA

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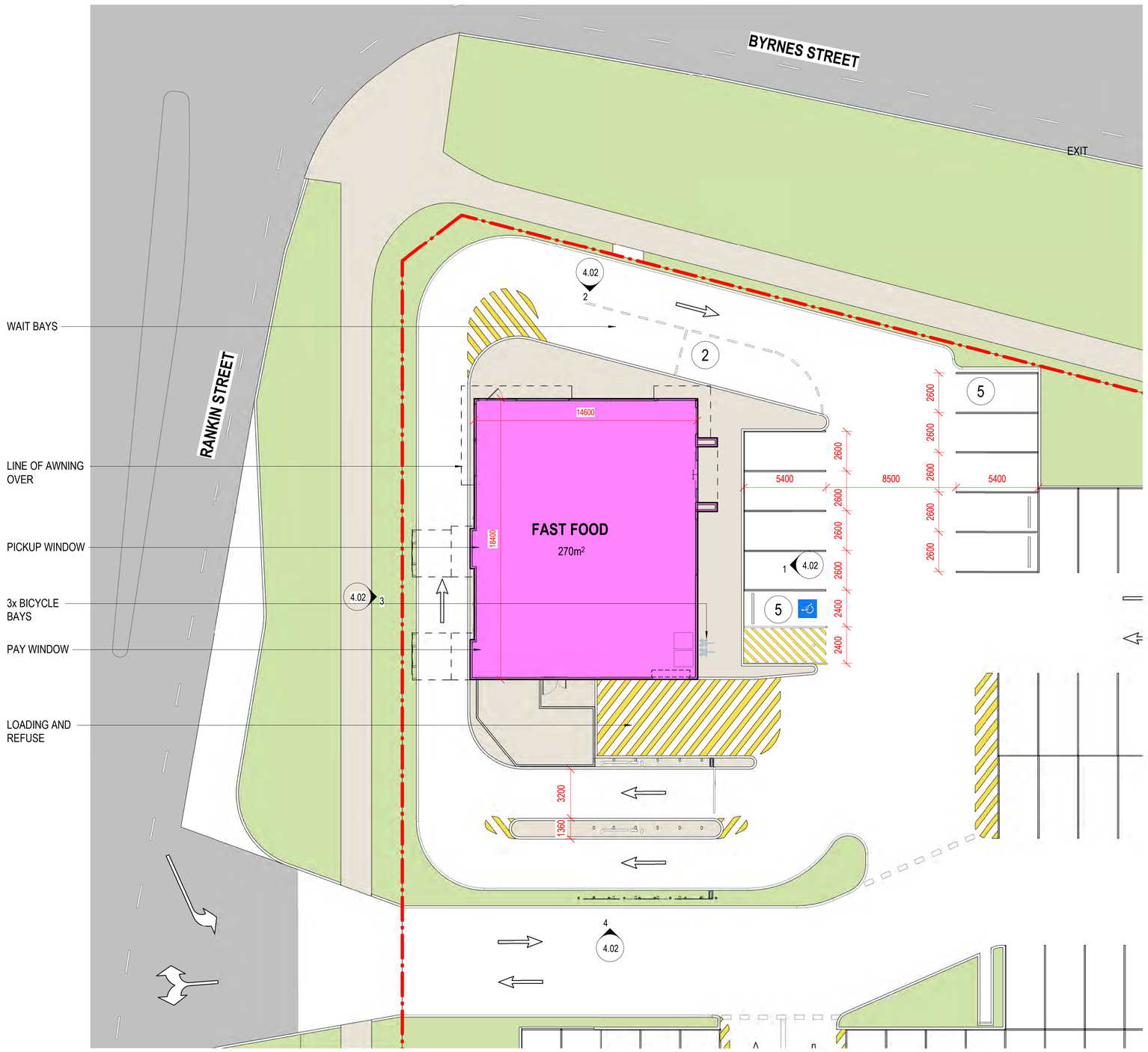
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SECTIONS - SUPERMARKET

1 : 150 @ A1 2025-06-24

TA # 19.0298.17 **A2.05** **rev. 9**

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Version: 1, Version Date: 25/07/2025



1 FLOOR PLAN - FAST FOOD
1 : 150

DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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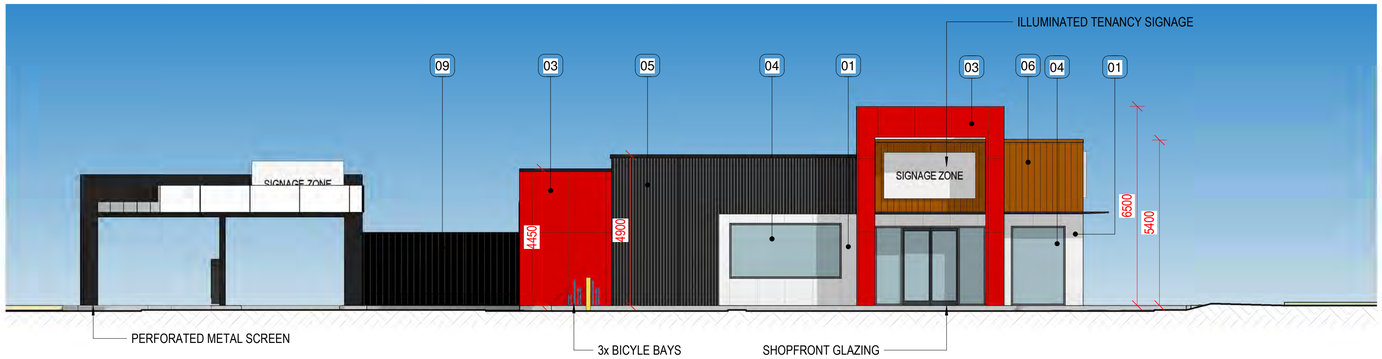
TA # 19.0298.17

GROUND FLOOR PLAN - FAST FOOD

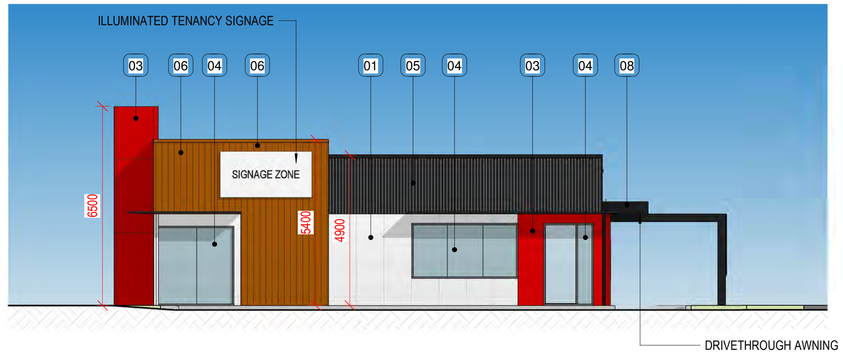
1 : 150 @ A1 | 2025-06-24

A4.01 | **rev. 7**

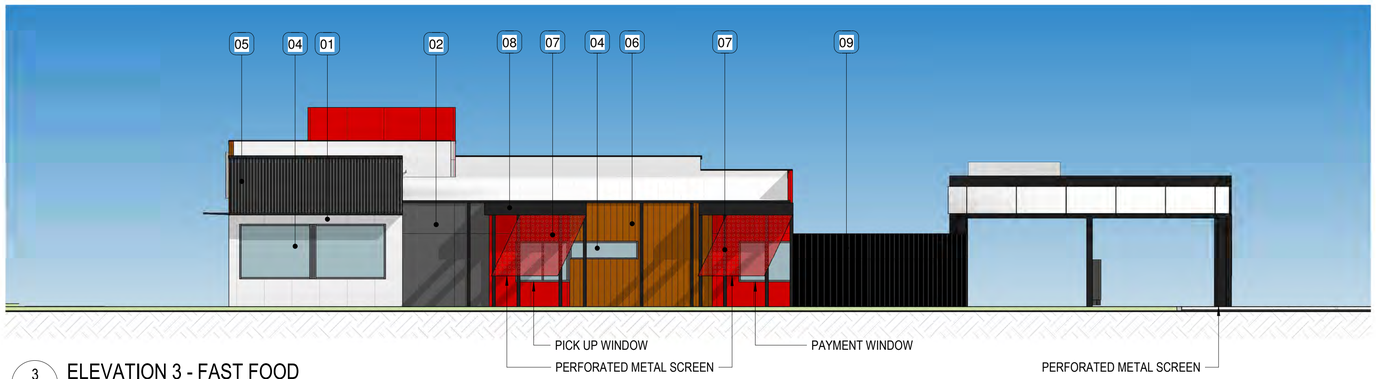
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 / 3.01 ELEVATION 1 - FAST FOOD
1 : 100



2 / 4.01 ELEVATION 2 - FAST FOOD
1 : 100



3 / 4.01 ELEVATION 3 - FAST FOOD
1 : 100



4 / 3.01 ELEVATION 4 - FAST FOOD
1 : 100

01	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED WHITE	03	CFC SHEETING WITH EXPRESSED JOINTS TENANT CORPORATE COLOUR RED	05	LONGLINE 305 METAL WALL SHEETING COLORBOND 'MONUMENT' (MID GREY)	07	PERFERATED MESH SCREEN LOCKERGROUP POWDERCOAT "RED" R03341
09	COLORBOND CORRUGATED METAL WALL SHEETING BLACK	02	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED DULUX 'DARK GREY'	04	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	06	TIMBER-LOOK ALUMINIUM CLADDING - KNOTWOOD DRIFTWOOD
08	POWDERCOATED METAL CAPPINGS, GUTTERS & DOWNPIPES. PAINTED DULUX 'MONUMENT'						

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1 2 3 5 10m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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ELEVATIONS - FAST FOOD

1 : 100 @ A1 2025-06-24

A4.02 **rev. 6**

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ARIAL VIEW



SUPERMARKET VIEW FROM CARPARK

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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3D VIEWS

@ A1

2025-06-24

A5.01

rev. 9

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



BYRNES STREET - SITE EXIT



BYRNES STREET - TRUCK & LOADING ENTRANCE

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

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3D VIEWS

@ A1

2025-06-24

A5.02

rev. 9

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Appendix B Swept Path Assessment

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

DIRECT TO BOOT AREA

TAXI BAYS

ONLINE PICK UP

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OVER

COMPACTOR

FIRE METER + BOOSTERS

SCREENED SHOP REFUSE

SHOP LOADING

HOME DELIVERY LOADING AREA

CAR ENTRY/ EXIT

13 x 2600mm PARKING SPACE

11 x 2600mm PARKING SPACE

LEVEL 16, 175 EAGLE ST
BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

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Drawn by:	JH
Certified by:	-
Sheet Size:	A3
Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels

AV

meters			
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 28.3
Tractor Track	: 2.50	Articulating Angle	: 72.0
Trailer Track	: 2.50		

SCALE 1:400

Girgenti Group

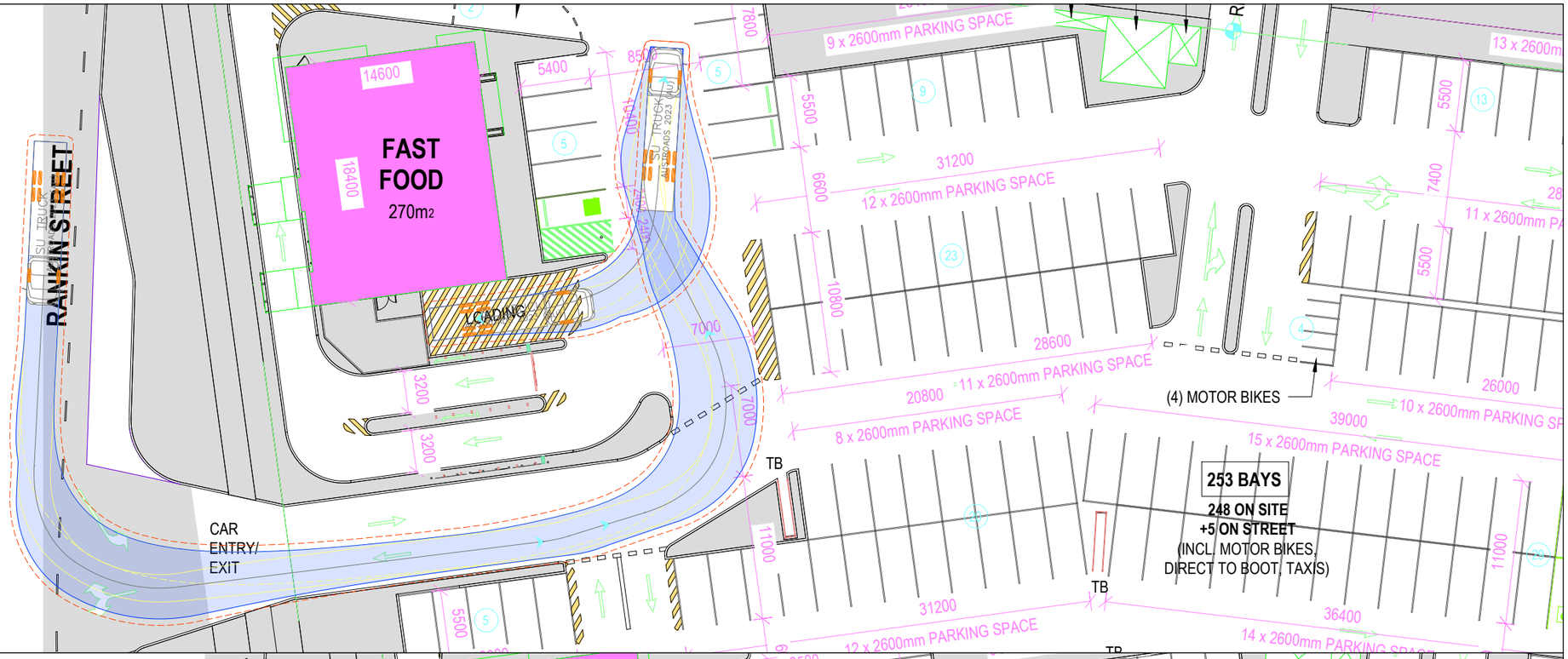
Mareeba Shopping Centre

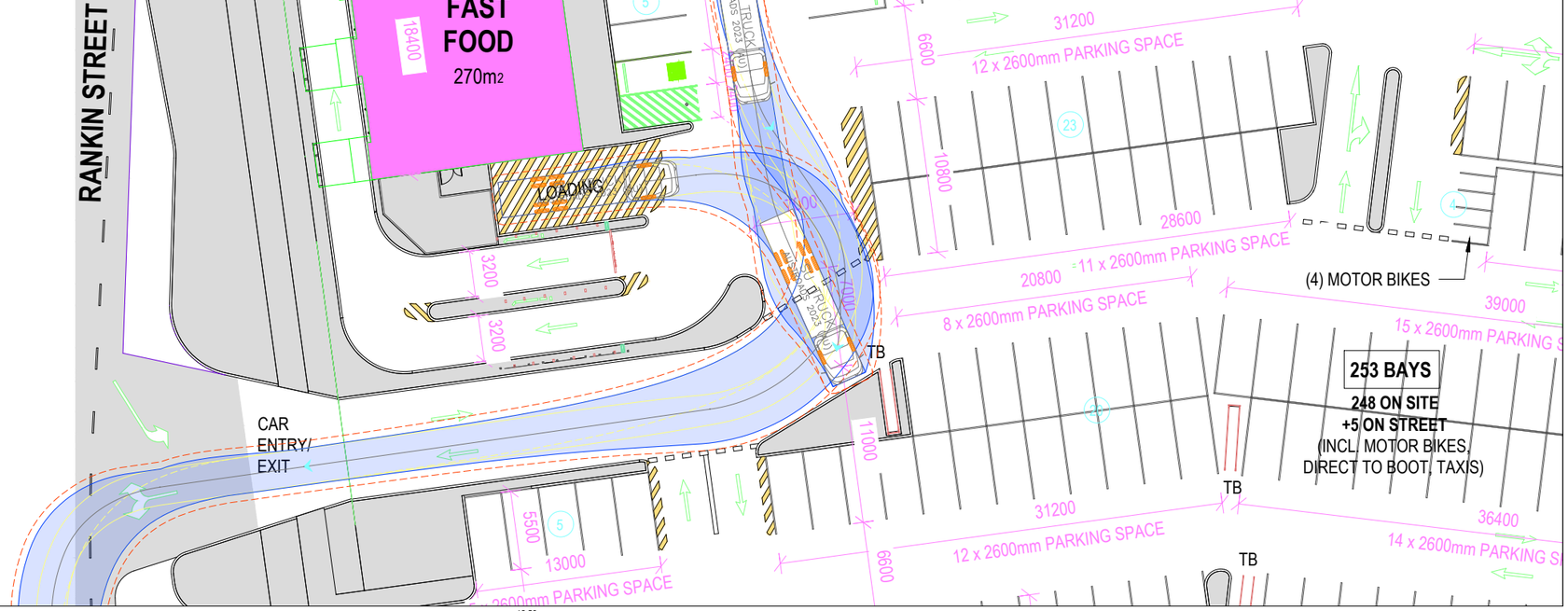
Swept Path Assessment - AV

SK01

Document Set ID: 4528952
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CONCEPT ONLY





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QUEENSLAND 4000
AUSTRALIA
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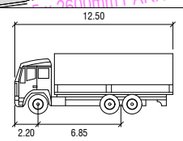
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Drawn by:	JH
Certified by:	-
Sheet Size:	A3
Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



SU TRUCK

meters	
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

Swept Path Assessment - HRV

SK02

Document Set ID: 4528932
Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

33800

13 x 2600mm PARKING SPACE

1500 6000 1500 6000 1500

5500

7400

28600

11 x 2600mm PARKING SPACE

5400

1500

DIRECT TO BOOT AREA

NO ENTRY

RL 408.80

RL 409.00

RL 409.00

RL 409.00

RL 409.00

1:25

RL 408.30

RL 408.30

ONE WAY TRAFFIC ONLY

RORO Compactor

RL 408.10

1:100

RL 407.93

RL 408.30

RL 408.10

11220

8550

TAXI BAYS

26000

39000

10 x 2600mm PARKING SPACE

5300

10033

ONLINE PICK UP

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OVER

COMPACTOR

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

33800

13 x 2600mm PARKING SPACE

1500 6000 1500 6000 1500

5500

7400

28600

11 x 2600mm PARKING SPACE

5400

1500

DIRECT TO BOOT AREA

NO ENTRY

RL 408.80

RL 409.00

RL 409.00

RL 409.00

RL 409.00

1:25

RL 408.30

RL 408.30

ONE WAY TRAFFIC ONLY

RORO Compactor

RL 408.10

1:100

RL 407.93

RL 408.30

RL 408.10

11220

8550

TAXI BAYS

26000

39000

10 x 2600mm PARKING SPACE

5300

10033

ONLINE PICK UP

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OVER

COMPACTOR

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BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

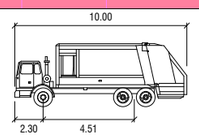
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Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



RORO Compactor

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 27.0

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

Swept Path Assessment - RORO Compactor

SK03

Document Set ID: 2529932
Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT
FOR TRUCKS
ONLY

SUPERMARKET
LOADING AREA

REFUSE BINS

EXTENT OF
PLANTROOM OV

COMPACTOR

DIRECT TO
BOOT AREA

TAXI
BAYS

ONLINE PICK UP

RL 409.00
RL 408.80
RL 408.30
RL 408.10
RL 407.93

Front Load RCV (ACCO 2350)
Custom

11220
8550
1500
6000
5400
7400
10033

LEVEL 16, 175 EAGLE ST
BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

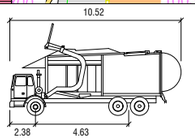
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Certified by:	-
Sheet Size:	A3
Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



Front Load RCV (ACCO 2350)

meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 28.0

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

Swept Path Assessment - Front Load RCV

SK04

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OV

COMPACTOR

DIRECT TO BOOT AREA

ONLINE PICK UP

TAXI BAYS

RL 408.30
RL 409.00
RL 408.10
RL 407.93
RL 408.80
RL 409.00
RL 408.30
RL 408.10
RL 409.00
RL 409.00
RL 408.30
RL 408.10
RL 409.00
RL 409.00
RL 408.80
RL 409.00
RL 409.00
RL 408.10
RL 408.30
RL 408.10
RL 407.93

11220
8550
10033
6000
1500
5400
7400
1:25
1:100
1:35

SRV STANDARDS 2018 (AU)

SLR

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BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

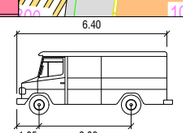
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Drawn by:	JH
Certified by:	-
Sheet Size:	A3
Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



SRV

	meters
Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.0
Steering Angle	: 38.1

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

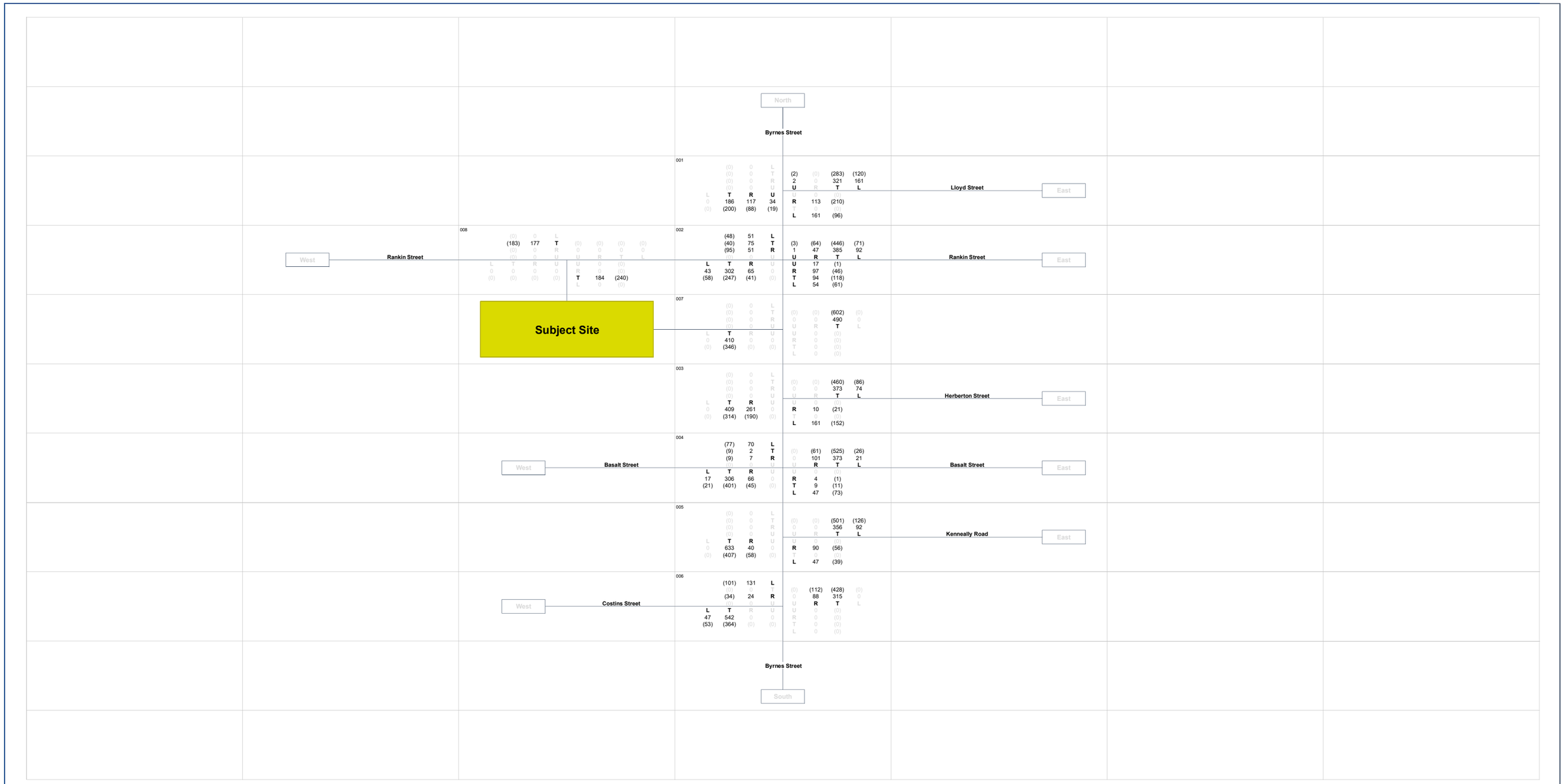
Swept Path Assessment - SRV

SK05

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Appendix C Traffic Network Diagrams

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



SLR

C1

2022 Surveyed Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

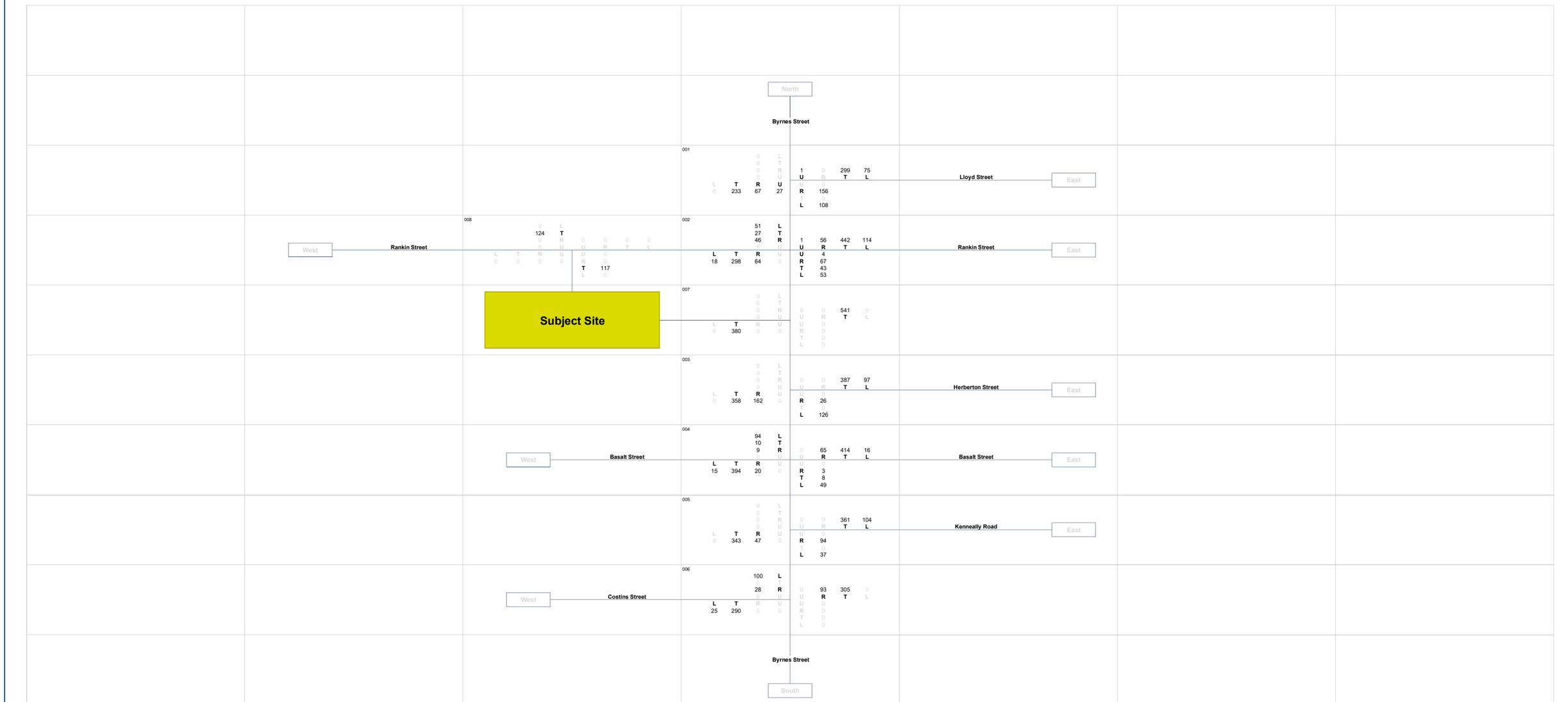
Legend

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



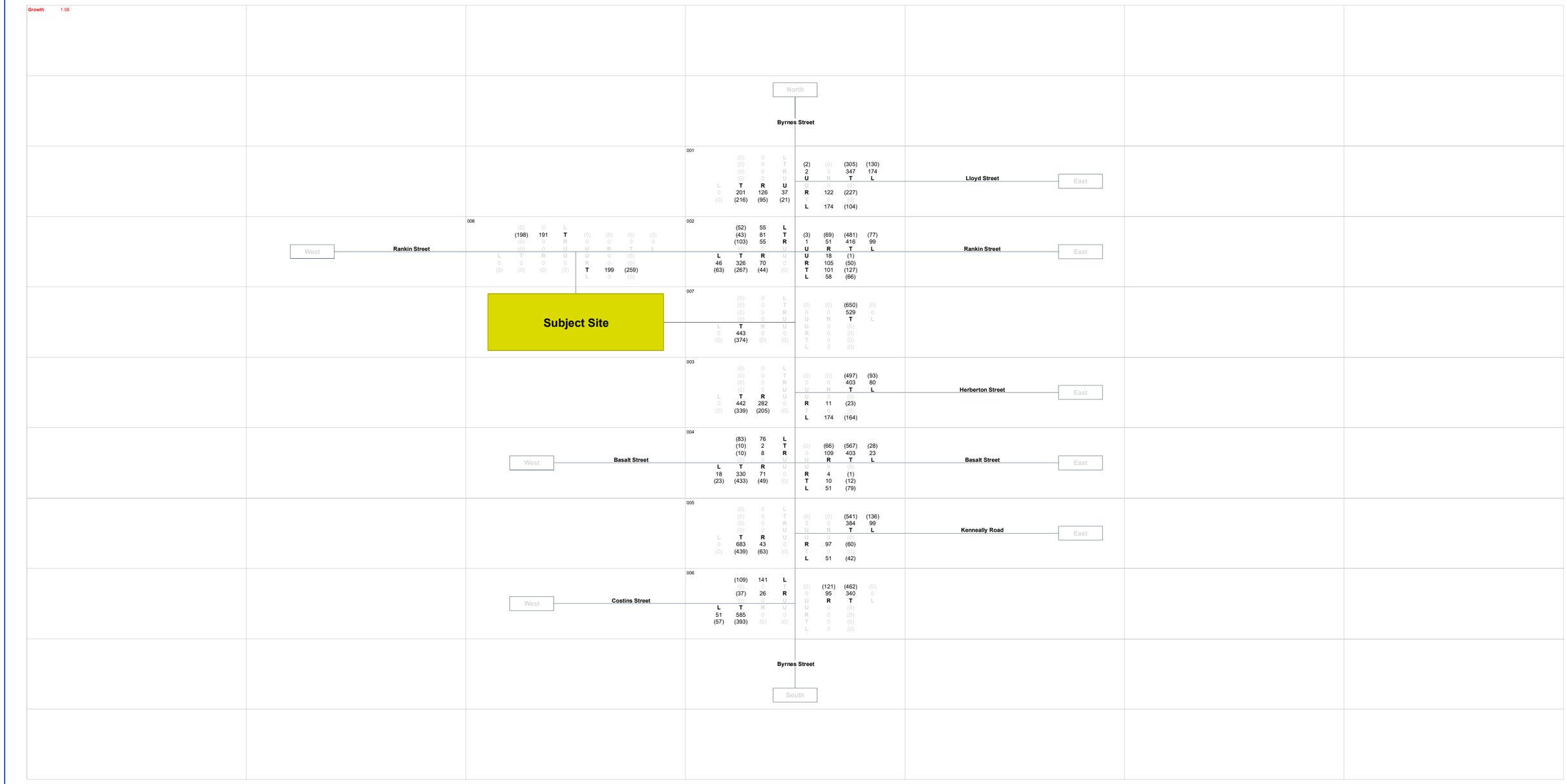
C2
2022 Surveyed Traffic Volumes (Sat Peak)
620.041936
Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend
00 Saturday Midday Peak Hour Volumes
Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Growth 1.08



C3

2027 Background Traffic Volumes (AM & PM Peaks)

620.041936

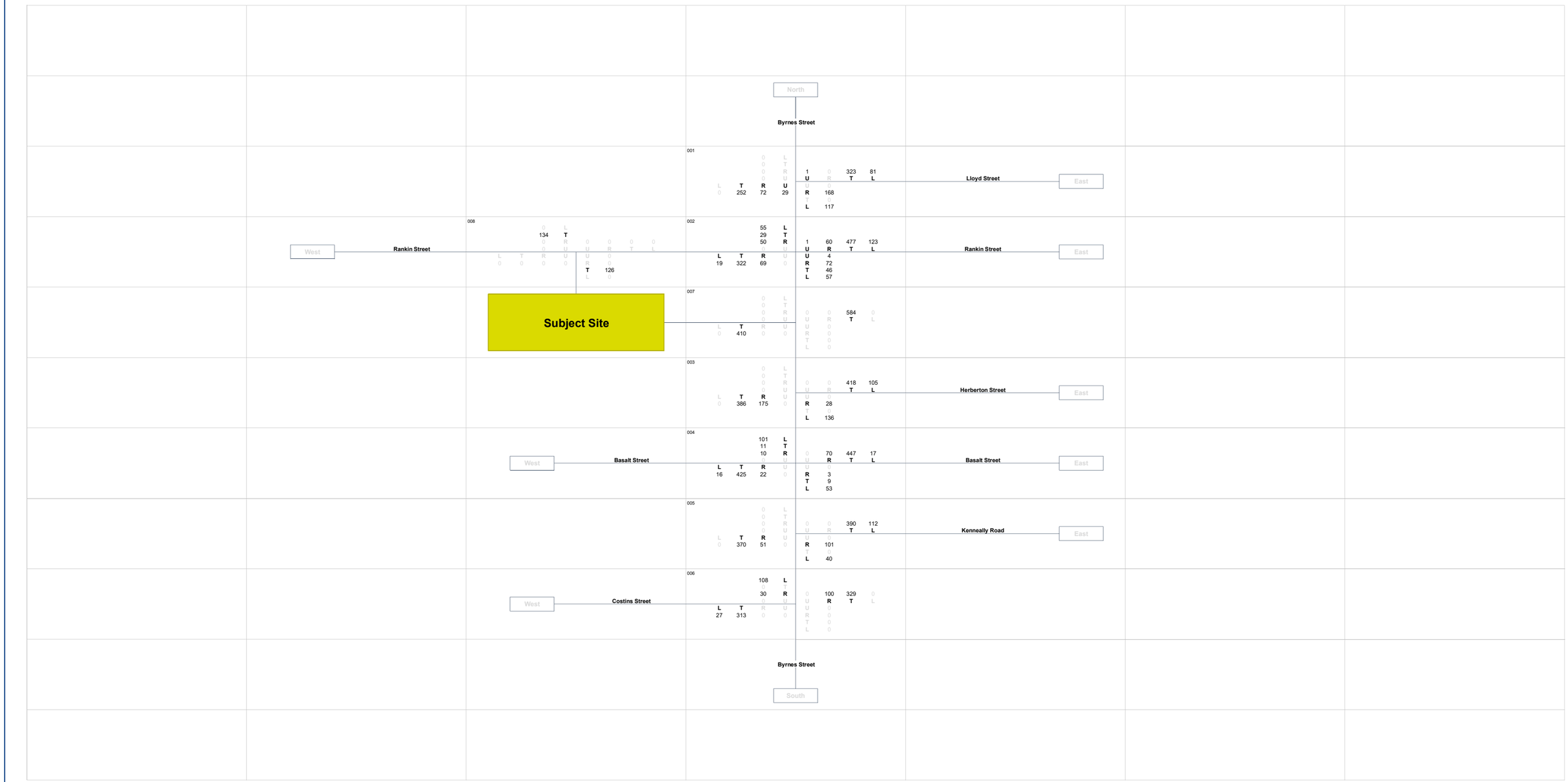
Mareeba Shopping Centre

Legend

L Left Turn
T Through
R Right Turn
U U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes
Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C4

2027 Background Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

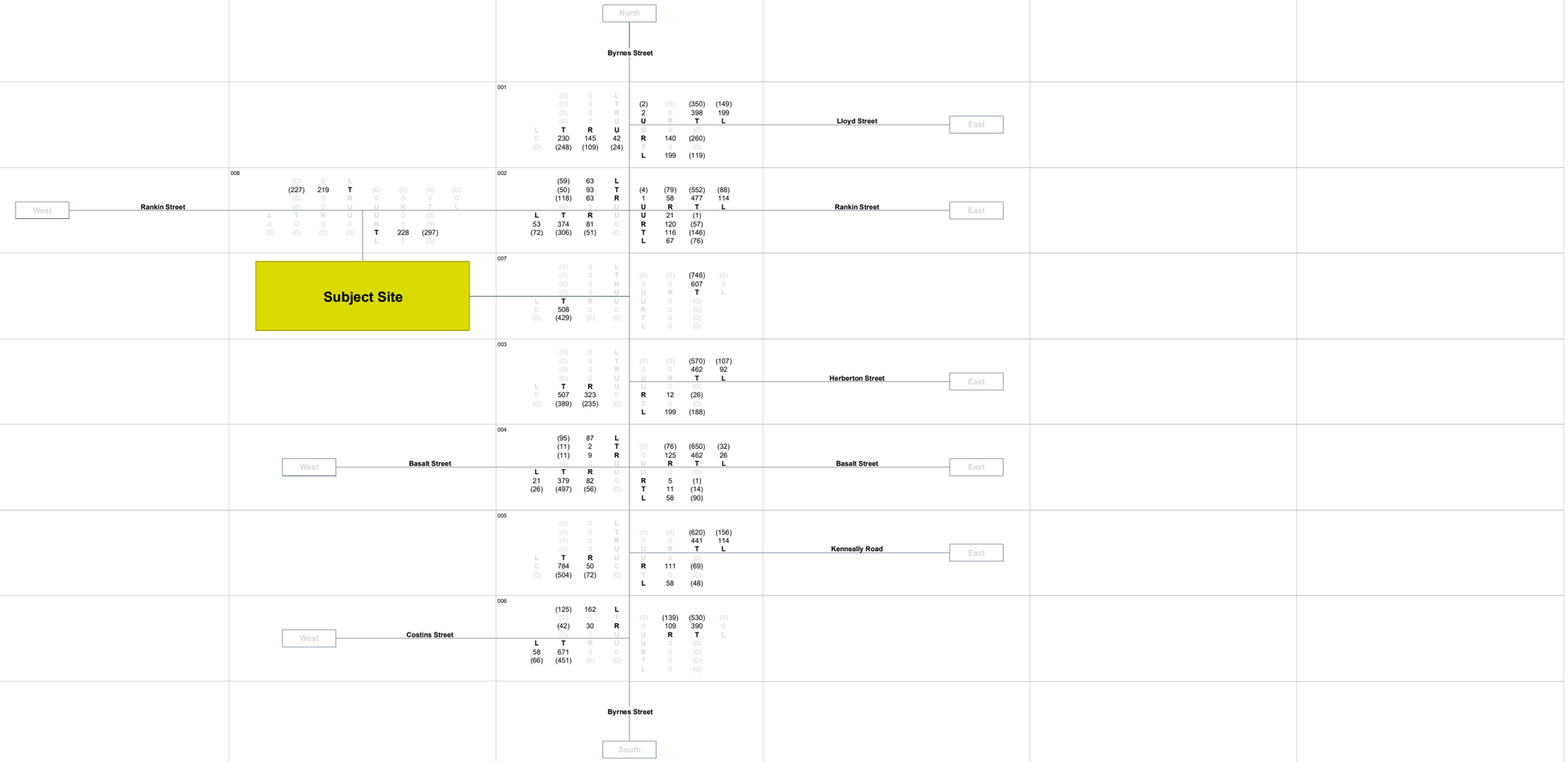
Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Growth 1.24



C5

2037 Background Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

Legend

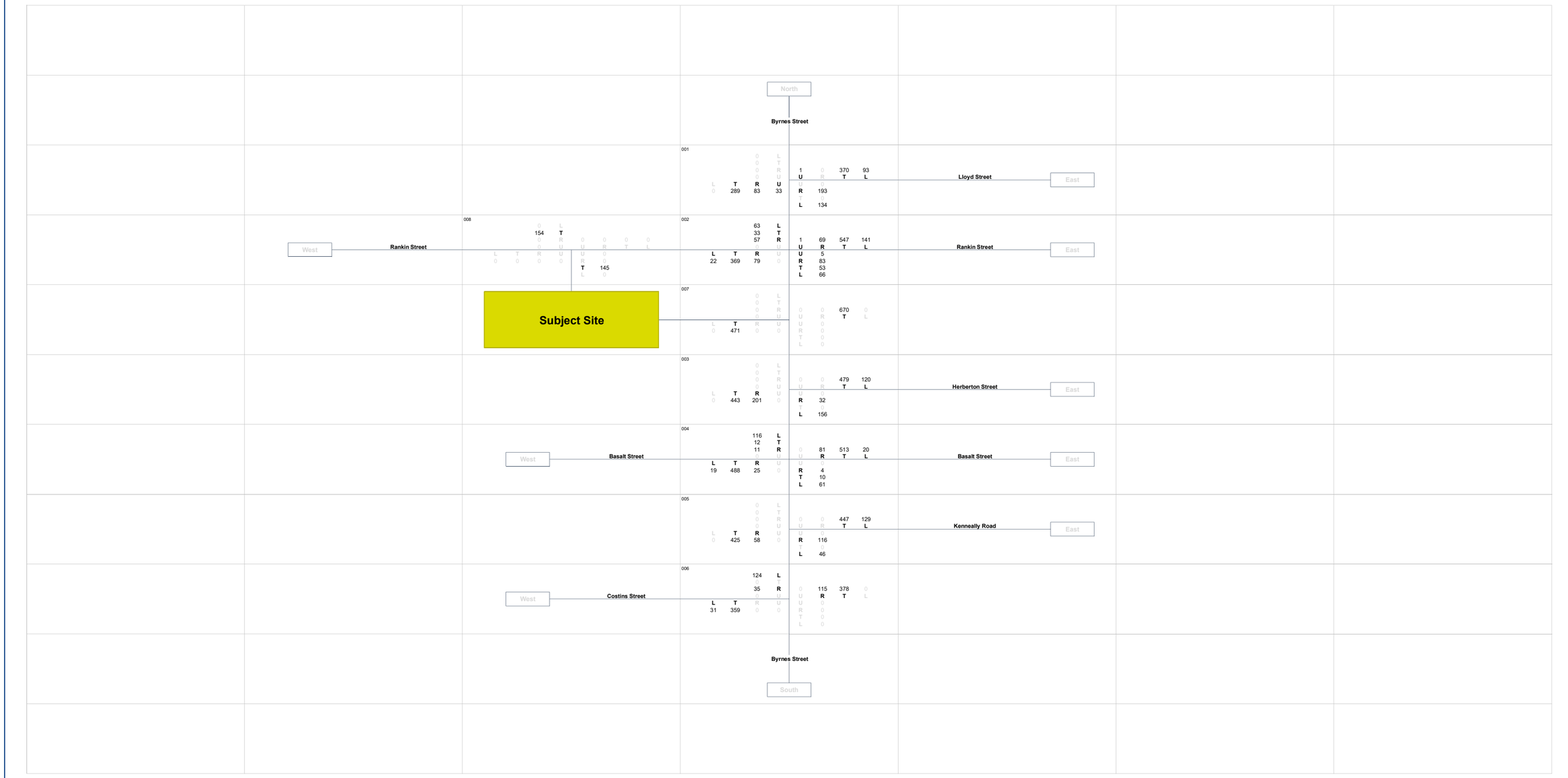
00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

L Left Turn
T Through
R Right Turn
U U-Turn

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C6

2037 Background Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

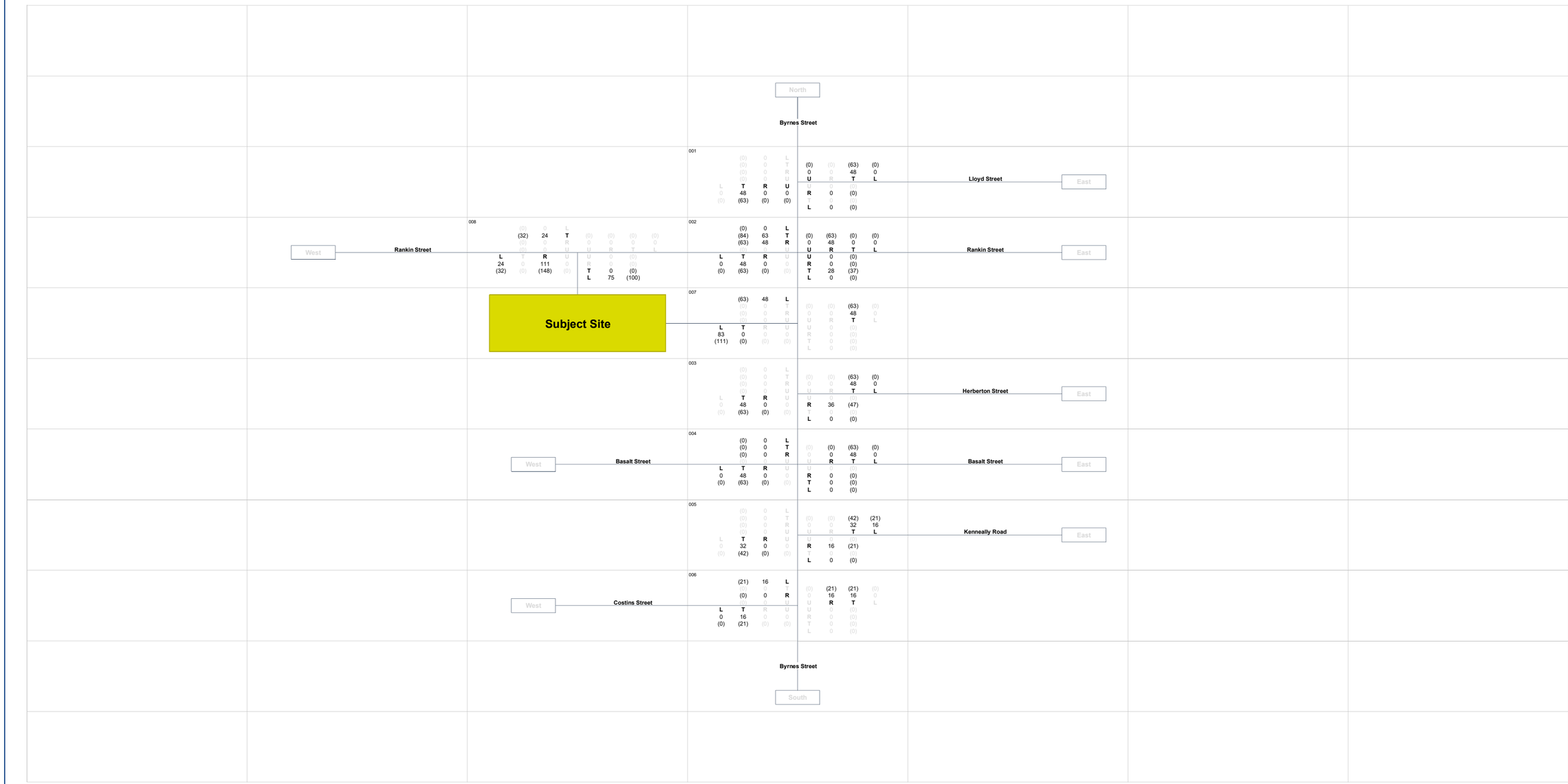
L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C7

New Development Trips (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

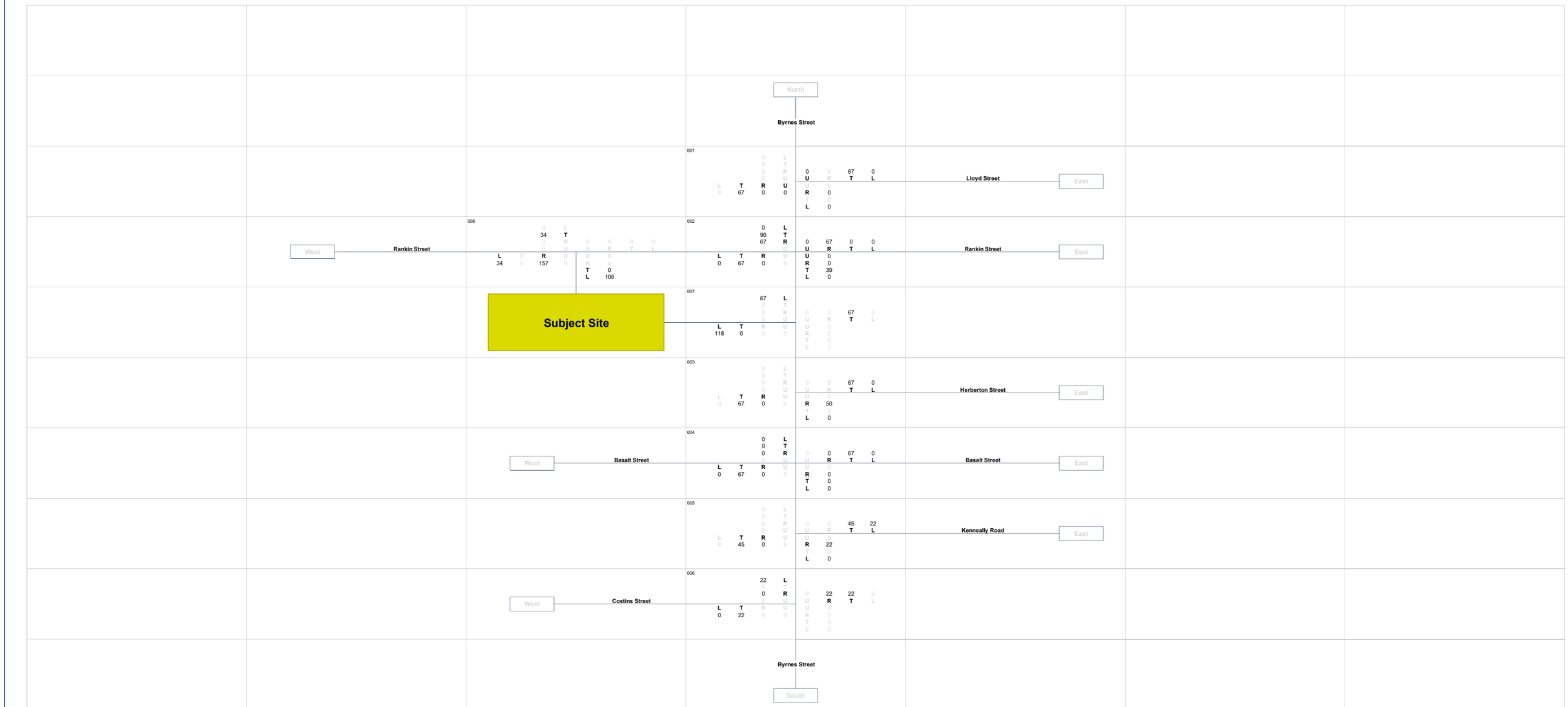
Legend

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C8

New Development Trips (Sat Peak)

620.041936

Mareeba Shopping Centre

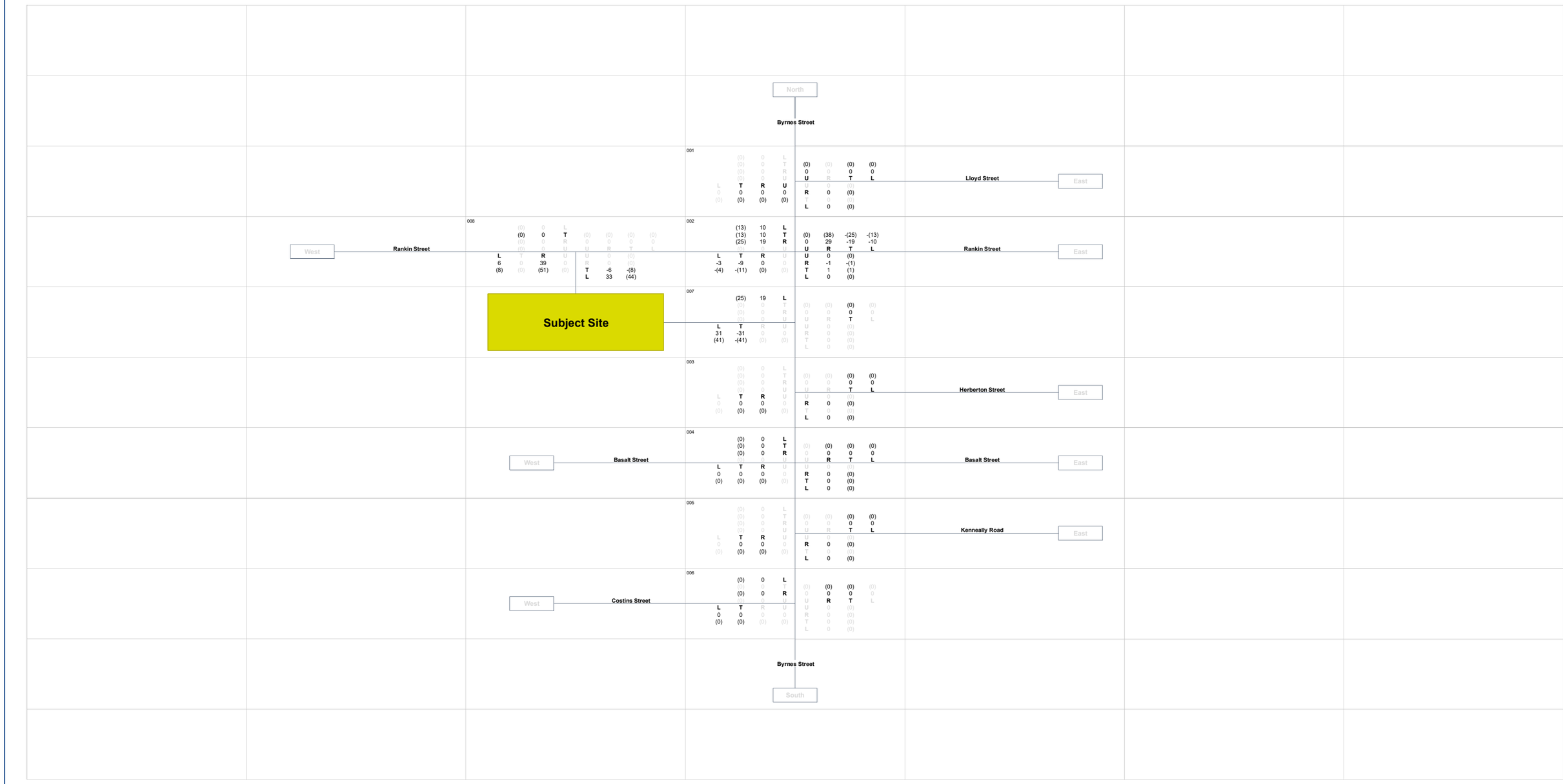
L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C9

Drop-in Trips Total (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

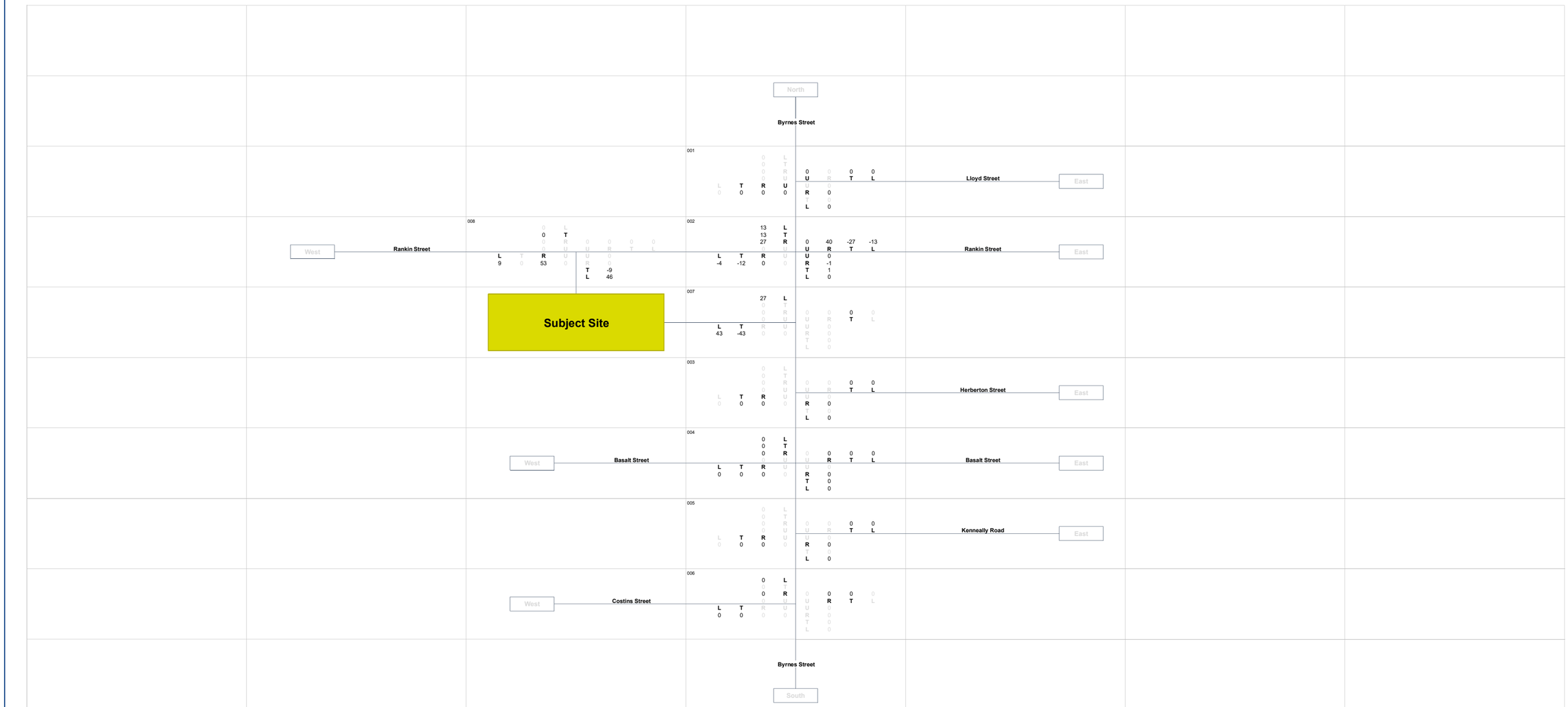
Legend

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

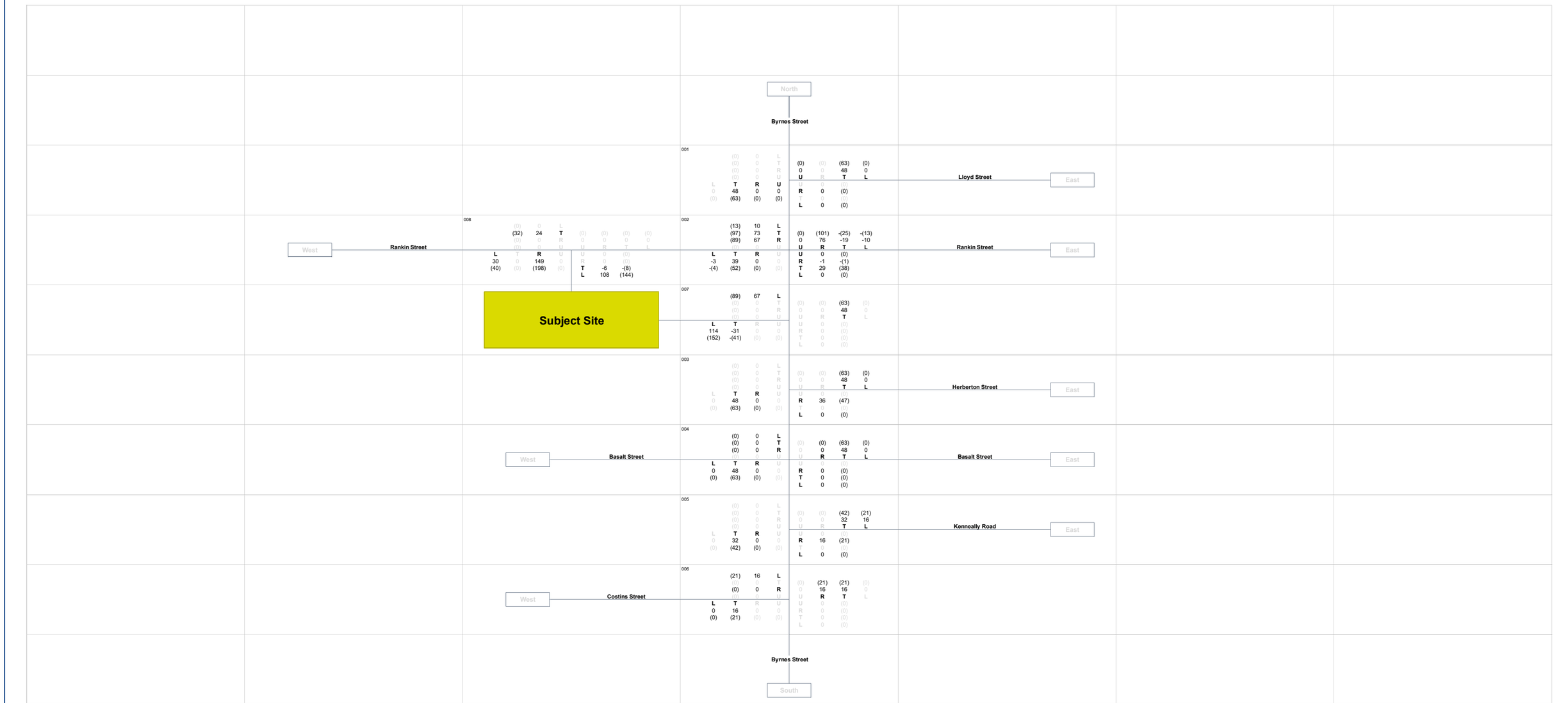


C10
Drop-in Trips Total (Sat Peak)
620.041936
Mareeba Shopping Centre

L Left Turn
T Through
R Right Turn
U U-Turn

Legend
00 Saturday Midday Peak Hour Volumes
Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C11

Development Traffic Volumes (New + Drop-in) (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

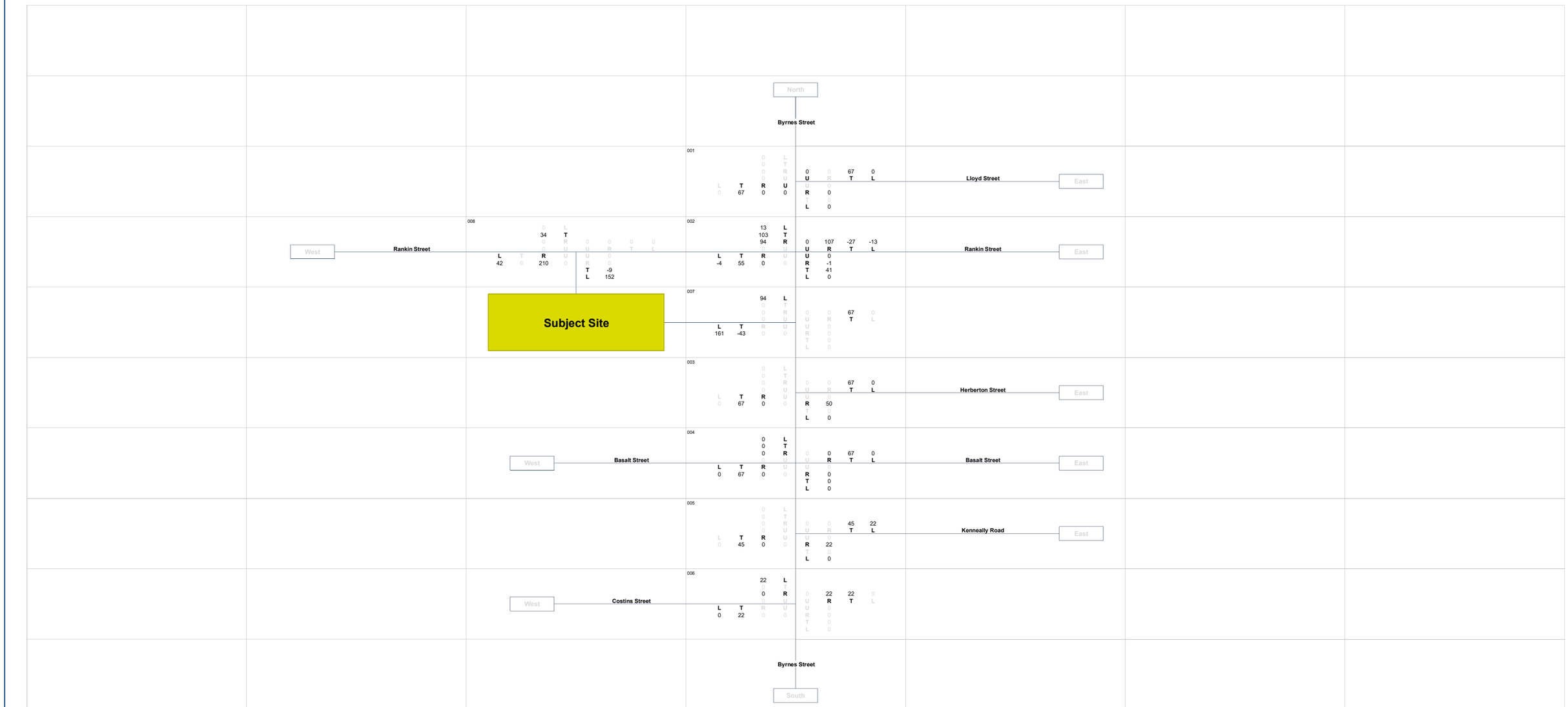
Legend

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C12

Development Traffic Volumes (New + Drop-in) (Sat Peak)

620.041936

Mareeba Shopping Centre

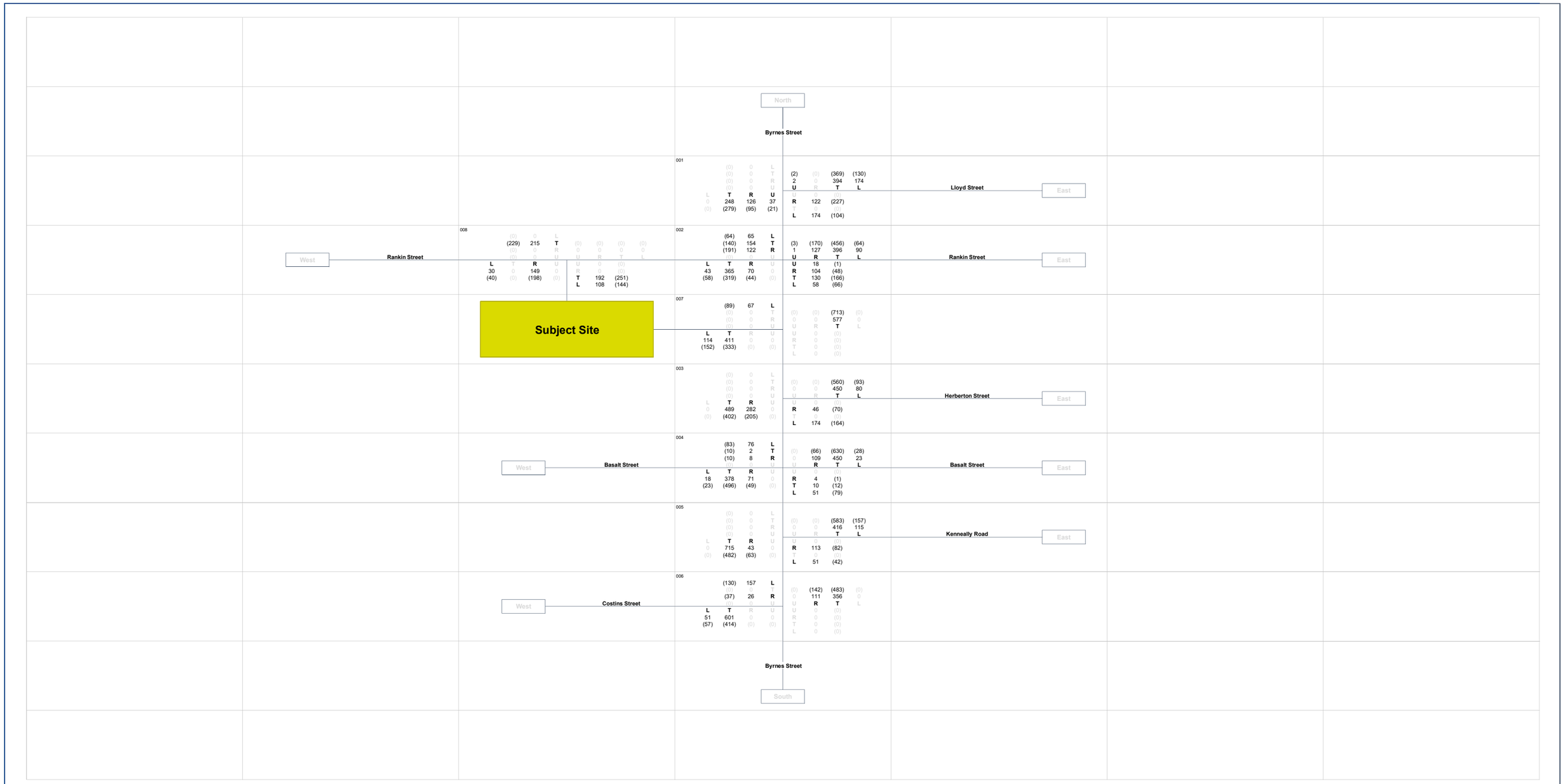
L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



SLR

C13

2027 Background + Development Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

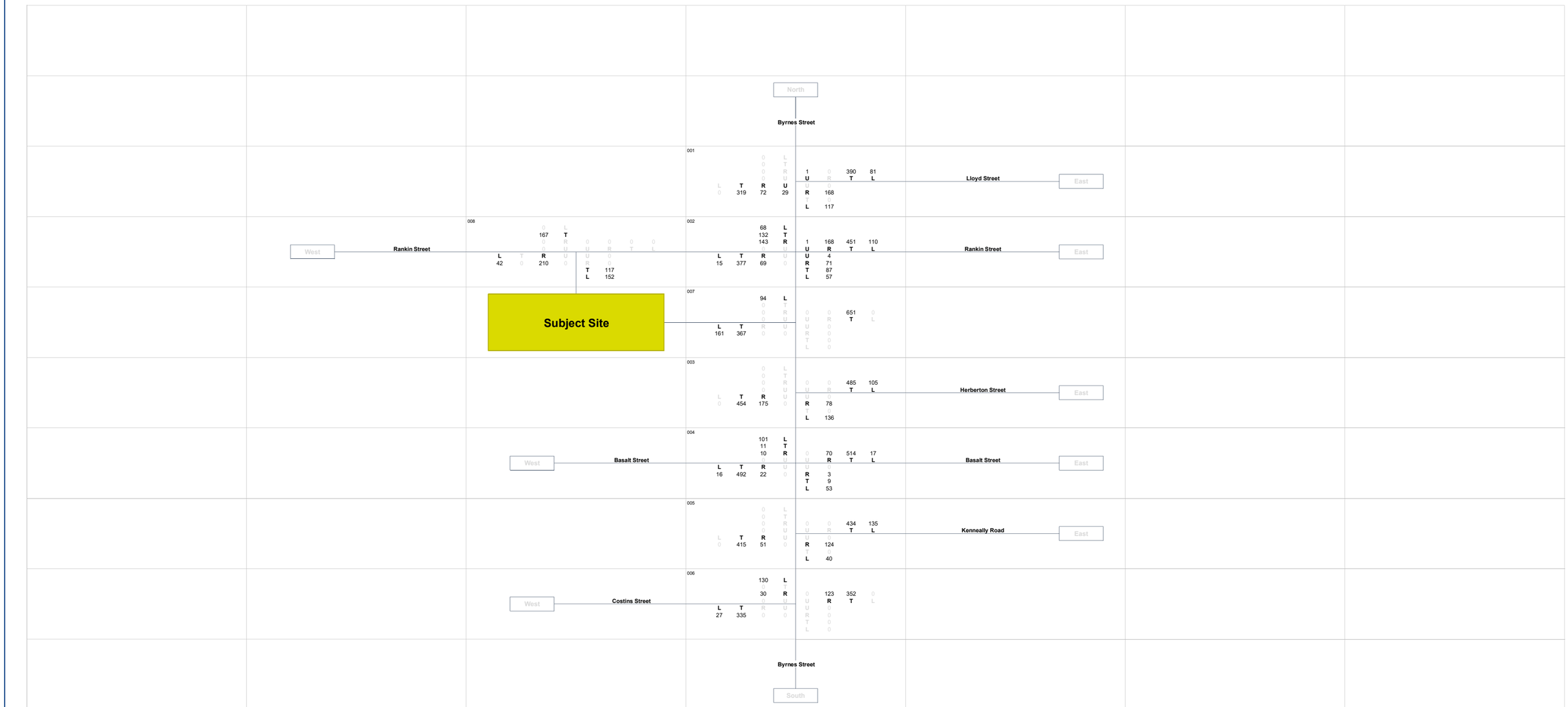
Legend

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C14

2027 Background + Development Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

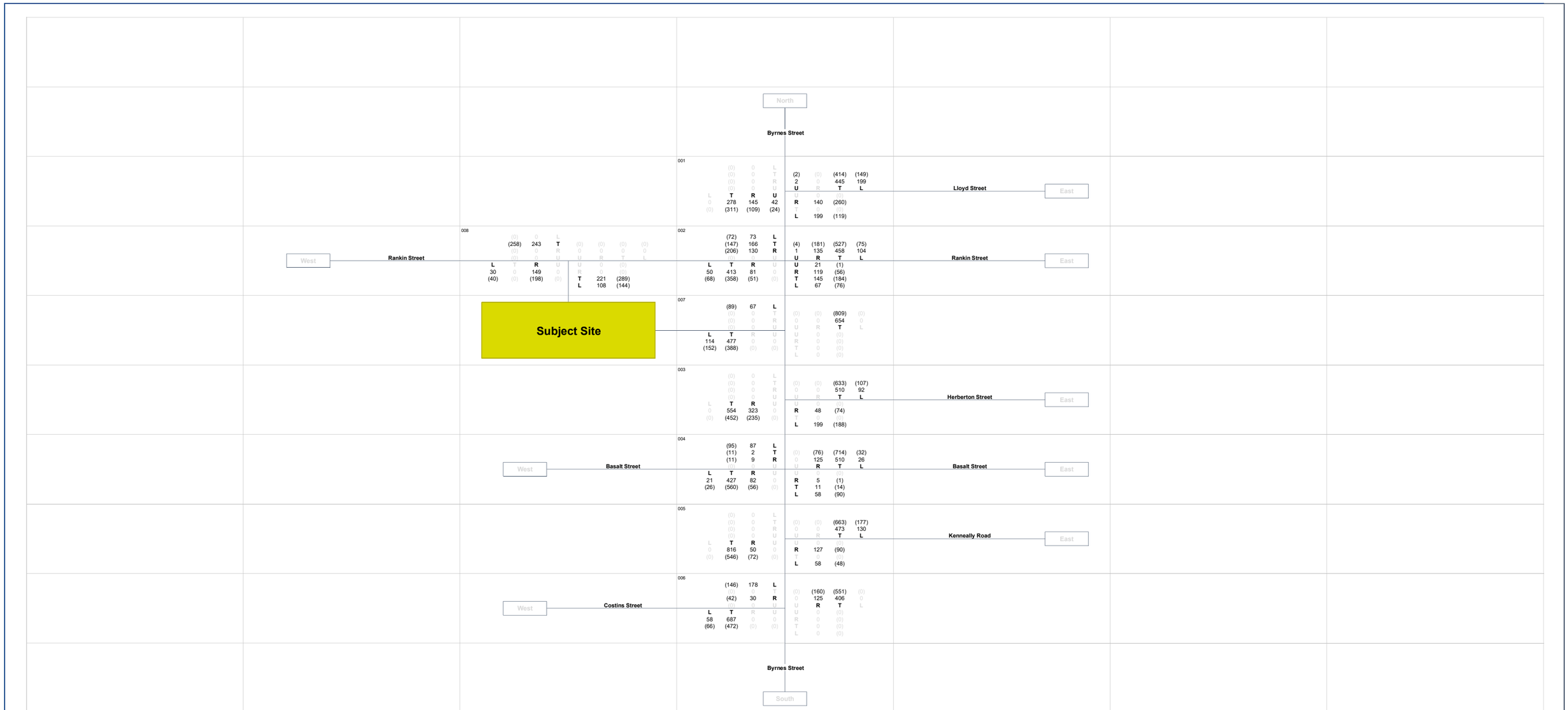
Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

L Left Turn
T Through
R Right Turn
U U-Turn

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



SLR

C15

2037 Background + Development Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

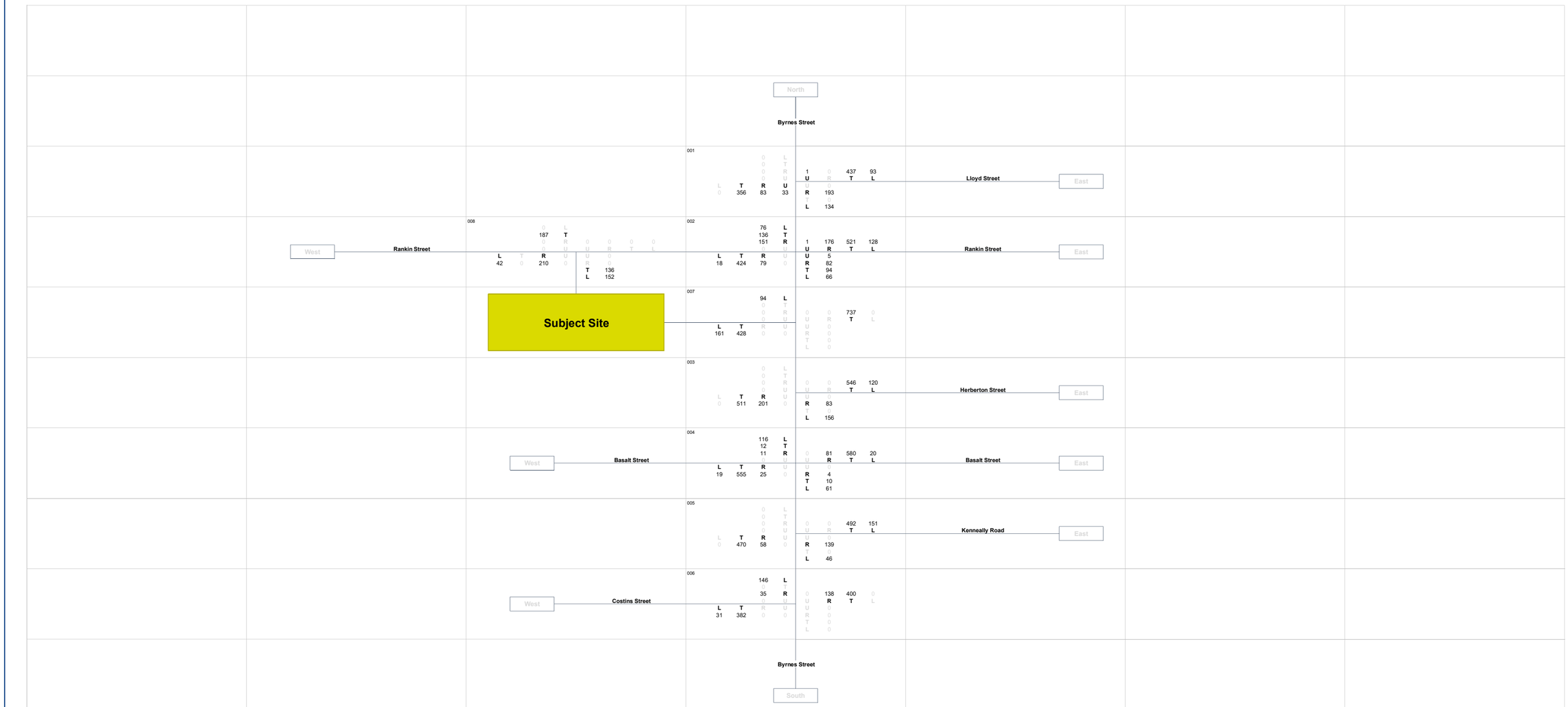
Legend

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C16

2037 Background + Development Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Appendix D Detailed Sidra Outputs

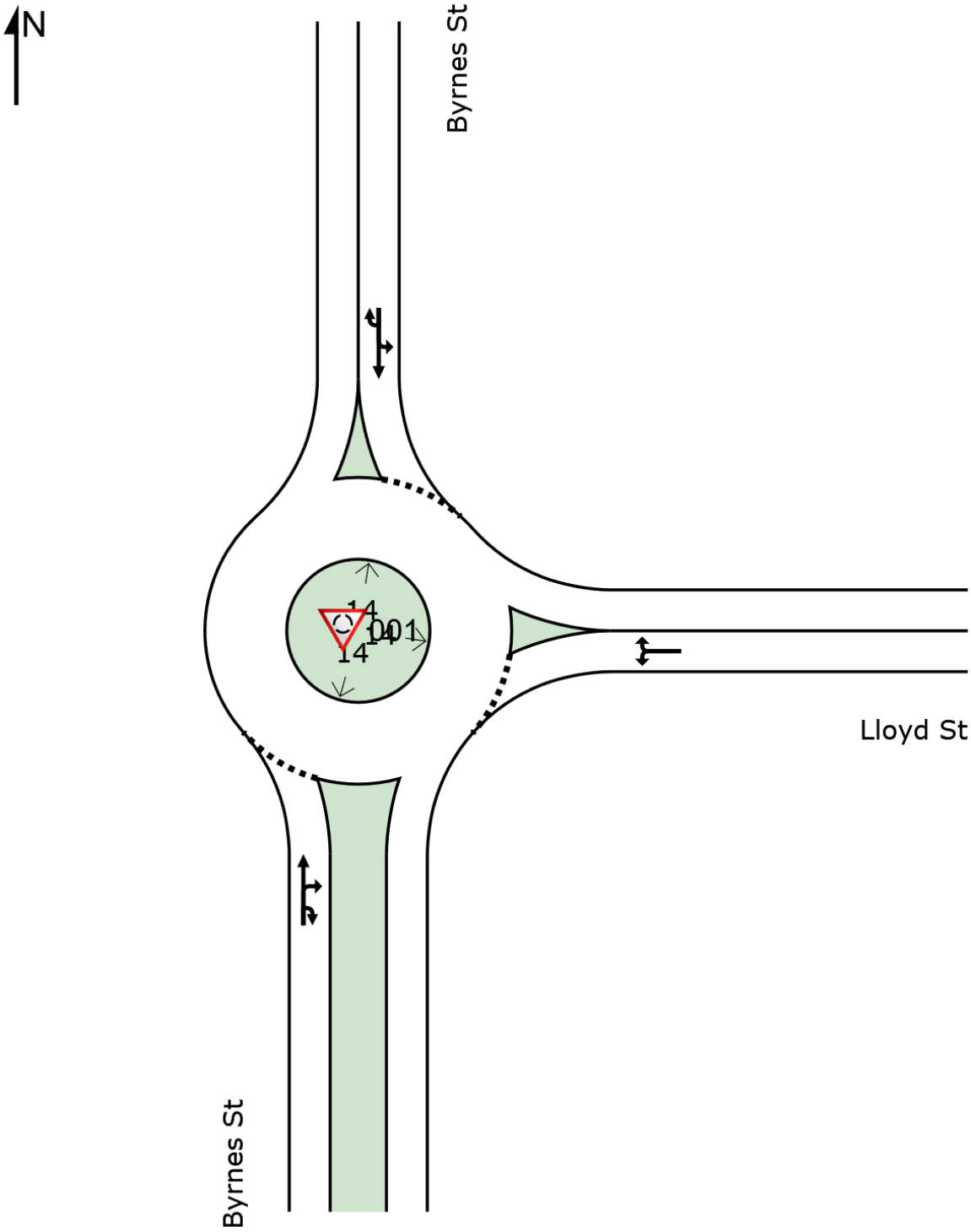
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 001 [1_2022 Survey AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 001 [1_2022 Survey AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	196	7.0	196	7.0	0.295	5.3	LOS A	2.0	14.7	0.38	0.54	0.38	53.8
3	R2	All MCs	123	7.0	123	7.0	0.295	9.2	LOS A	2.0	14.7	0.38	0.54	0.38	34.0
3u	U	All MCs	36	7.0	36	7.0	0.295	11.1	LOS B	2.0	14.7	0.38	0.54	0.38	54.5
Approach			355	7.0	355	7.0	0.295	7.2	LOS A	2.0	14.7	0.38	0.54	0.38	46.5
East: Lloyd St															
4	L2	All MCs	169	7.0	169	7.0	0.318	6.9	LOS A	2.0	14.7	0.62	0.66	0.62	51.0
6	R2	All MCs	119	7.0	119	7.0	0.318	11.0	LOS B	2.0	14.7	0.62	0.66	0.62	46.0
Approach			288	7.0	288	7.0	0.318	8.6	LOS A	2.0	14.7	0.62	0.66	0.62	49.4
North: Byrnes St															
7	L2	All MCs	169	7.0	169	7.0	0.434	5.5	LOS A	3.2	23.5	0.47	0.51	0.47	48.4
8	T1	All MCs	338	7.0	338	7.0	0.434	5.8	LOS A	3.2	23.5	0.47	0.51	0.47	54.5
9u	U	All MCs	2	7.0	2	7.0	0.434	11.5	LOS B	3.2	23.5	0.47	0.51	0.47	51.8
Approach			509	7.0	509	7.0	0.434	5.7	LOS A	3.2	23.5	0.47	0.51	0.47	53.3
All Vehicles			1153	7.0	1153	7.0	0.434	6.9	LOS A	3.2	23.5	0.48	0.56	0.48	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2022 Survey PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	211	7.0	211	7.0	0.308	6.1	LOS A	2.0	14.8	0.51	0.58	0.51	53.7
3	R2	All MCs	93	7.0	93	7.0	0.308	10.0	LOS A	2.0	14.8	0.51	0.58	0.51	33.9
3u	U	All MCs	20	7.0	20	7.0	0.308	11.8	LOS B	2.0	14.8	0.51	0.58	0.51	54.4
Approach			323	7.0	323	7.0	0.308	7.5	LOS A	2.0	14.8	0.51	0.58	0.51	47.5
East: Lloyd St															
4	L2	All MCs	101	7.0	101	7.0	0.335	6.6	LOS A	2.1	15.5	0.58	0.66	0.58	50.5
6	R2	All MCs	221	7.0	221	7.0	0.335	10.7	LOS B	2.1	15.5	0.58	0.66	0.58	45.4
Approach			322	7.0	322	7.0	0.335	9.4	LOS A	2.1	15.5	0.58	0.66	0.58	47.4
North: Byrnes St															
7	L2	All MCs	126	7.0	126	7.0	0.345	5.0	LOS A	2.4	17.8	0.38	0.47	0.38	48.8
8	T1	All MCs	298	7.0	298	7.0	0.345	5.3	LOS A	2.4	17.8	0.38	0.47	0.38	54.8
9u	U	All MCs	2	7.0	2	7.0	0.345	11.0	LOS B	2.4	17.8	0.38	0.47	0.38	52.1
Approach			426	7.0	426	7.0	0.345	5.3	LOS A	2.4	17.8	0.38	0.47	0.38	53.7
All Vehicles			1072	7.0	1072	7.0	0.345	7.2	LOS A	2.4	17.8	0.48	0.56	0.48	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2022 Survey SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	245	7.0	245	7.0	0.304	5.6	LOS A	2.0	14.8	0.44	0.54	0.44	53.9
3	R2	All MCs	71	7.0	71	7.0	0.304	9.5	LOS A	2.0	14.8	0.44	0.54	0.44	34.0
3u	U	All MCs	28	7.0	28	7.0	0.304	11.4	LOS B	2.0	14.8	0.44	0.54	0.44	54.6
Approach			344	7.0	344	7.0	0.304	6.9	LOS A	2.0	14.8	0.44	0.54	0.44	49.5
East: Lloyd St															
4	L2	All MCs	114	7.0	114	7.0	0.294	6.6	LOS A	1.8	13.1	0.57	0.66	0.57	50.7
6	R2	All MCs	164	7.0	164	7.0	0.294	10.8	LOS B	1.8	13.1	0.57	0.66	0.57	45.6
Approach			278	7.0	278	7.0	0.294	9.1	LOS A	1.8	13.1	0.57	0.66	0.57	48.2
North: Byrnes St															
7	L2	All MCs	79	7.0	79	7.0	0.313	4.9	LOS A	2.1	15.5	0.34	0.46	0.34	49.0
8	T1	All MCs	315	7.0	315	7.0	0.313	5.2	LOS A	2.1	15.5	0.34	0.46	0.34	54.9
9u	U	All MCs	1	7.0	1	7.0	0.313	10.9	LOS B	2.1	15.5	0.34	0.46	0.34	52.2
Approach			395	7.0	395	7.0	0.313	5.1	LOS A	2.1	15.5	0.34	0.46	0.34	54.2
All Vehicles			1017	7.0	1017	7.0	0.313	6.8	LOS A	2.1	15.5	0.44	0.54	0.44	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	202	7.0	202	7.0	0.306	5.4	LOS A	2.1	15.4	0.39	0.55	0.39	53.8
3	R2	All MCs	127	7.0	127	7.0	0.306	9.2	LOS A	2.1	15.4	0.39	0.55	0.39	33.9
3u	U	All MCs	37	7.0	37	7.0	0.306	11.1	LOS B	2.1	15.4	0.39	0.55	0.39	54.5
Approach			366	7.0	366	7.0	0.306	7.3	LOS A	2.1	15.4	0.39	0.55	0.39	46.5
East: Lloyd St															
4	L2	All MCs	175	7.0	175	7.0	0.332	7.0	LOS A	2.1	15.6	0.63	0.67	0.63	50.9
6	R2	All MCs	123	7.0	123	7.0	0.332	11.2	LOS B	2.1	15.6	0.63	0.67	0.63	45.8
Approach			298	7.0	298	7.0	0.332	8.7	LOS A	2.1	15.6	0.63	0.67	0.63	49.3
North: Byrnes St															
7	L2	All MCs	175	7.0	175	7.0	0.450	5.6	LOS A	3.3	24.8	0.49	0.51	0.49	48.3
8	T1	All MCs	349	7.0	349	7.0	0.450	5.8	LOS A	3.3	24.8	0.49	0.51	0.49	54.5
9u	U	All MCs	2	7.0	2	7.0	0.450	11.6	LOS B	3.3	24.8	0.49	0.51	0.49	51.7
Approach			526	7.0	526	7.0	0.450	5.8	LOS A	3.3	24.8	0.49	0.51	0.49	53.2
All Vehicles			1189	7.0	1189	7.0	0.450	7.0	LOS A	3.3	24.8	0.50	0.56	0.50	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	217	7.0	217	7.0	0.320	6.1	LOS A	2.1	15.6	0.52	0.58	0.52	53.6
3	R2	All MCs	96	7.0	96	7.0	0.320	10.0	LOS B	2.1	15.6	0.52	0.58	0.52	33.8
3u	U	All MCs	21	7.0	21	7.0	0.320	11.9	LOS B	2.1	15.6	0.52	0.58	0.52	54.4
Approach			333	7.0	333	7.0	0.320	7.6	LOS A	2.1	15.6	0.52	0.58	0.52	47.5
East: Lloyd St															
4	L2	All MCs	104	7.0	104	7.0	0.349	6.7	LOS A	2.2	16.4	0.59	0.66	0.59	50.4
6	R2	All MCs	228	7.0	228	7.0	0.349	10.8	LOS B	2.2	16.4	0.59	0.66	0.59	45.3
Approach			332	7.0	332	7.0	0.349	9.5	LOS A	2.2	16.4	0.59	0.66	0.59	47.3
North: Byrnes St															
7	L2	All MCs	130	7.0	130	7.0	0.357	5.1	LOS A	2.5	18.7	0.39	0.48	0.39	48.8
8	T1	All MCs	307	7.0	307	7.0	0.357	5.3	LOS A	2.5	18.7	0.39	0.48	0.39	54.7
9u	U	All MCs	2	7.0	2	7.0	0.357	11.1	LOS B	2.5	18.7	0.39	0.48	0.39	52.0
Approach			440	7.0	440	7.0	0.357	5.3	LOS A	2.5	18.7	0.39	0.48	0.39	53.7
All Vehicles			1106	7.0	1106	7.0	0.357	7.3	LOS A	2.5	18.7	0.49	0.56	0.49	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	253	7.0	253	7.0	0.315	5.7	LOS A	2.1	15.6	0.45	0.54	0.45	53.9
3	R2	All MCs	73	7.0	73	7.0	0.315	9.6	LOS A	2.1	15.6	0.45	0.54	0.45	34.0
3u	U	All MCs	29	7.0	29	7.0	0.315	11.4	LOS B	2.1	15.6	0.45	0.54	0.45	54.6
Approach			355	7.0	355	7.0	0.315	7.0	LOS A	2.1	15.6	0.45	0.54	0.45	49.5
East: Lloyd St															
4	L2	All MCs	117	7.0	117	7.0	0.306	6.7	LOS A	1.9	13.8	0.59	0.66	0.59	50.6
6	R2	All MCs	169	7.0	169	7.0	0.306	10.9	LOS B	1.9	13.8	0.59	0.66	0.59	45.5
Approach			287	7.0	287	7.0	0.306	9.2	LOS A	1.9	13.8	0.59	0.66	0.59	48.1
North: Byrnes St															
7	L2	All MCs	81	7.0	81	7.0	0.325	5.0	LOS A	2.2	16.2	0.35	0.46	0.35	48.9
8	T1	All MCs	325	7.0	325	7.0	0.325	5.2	LOS A	2.2	16.2	0.35	0.46	0.35	54.8
9u	U	All MCs	1	7.0	1	7.0	0.325	10.9	LOS B	2.2	16.2	0.35	0.46	0.35	52.2
Approach			407	7.0	407	7.0	0.325	5.2	LOS A	2.2	16.2	0.35	0.46	0.35	54.2
All Vehicles			1049	7.0	1049	7.0	0.325	6.9	LOS A	2.2	16.2	0.45	0.54	0.45	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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: 001 [1_2027 BG+D AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	252	7.0	252	7.0	0.346	5.4	LOS A	2.5	18.3	0.41	0.54	0.41	53.8
3	R2	All MCs	127	7.0	127	7.0	0.346	9.3	LOS A	2.5	18.3	0.41	0.54	0.41	34.0
3u	U	All MCs	37	7.0	37	7.0	0.346	11.1	LOS B	2.5	18.3	0.41	0.54	0.41	54.5
Approach			416	7.0	416	7.0	0.346	7.1	LOS A	2.5	18.3	0.41	0.54	0.41	47.4
East: Lloyd St															
4	L2	All MCs	175	7.0	175	7.0	0.348	7.4	LOS A	2.2	16.6	0.68	0.68	0.68	50.6
6	R2	All MCs	123	7.0	123	7.0	0.348	11.6	LOS B	2.2	16.6	0.68	0.68	0.68	45.5
Approach			298	7.0	298	7.0	0.348	9.2	LOS A	2.2	16.6	0.68	0.68	0.68	48.9
North: Byrnes St															
7	L2	All MCs	175	7.0	175	7.0	0.491	5.6	LOS A	3.8	28.5	0.51	0.52	0.51	48.1
8	T1	All MCs	399	7.0	399	7.0	0.491	5.9	LOS A	3.8	28.5	0.51	0.52	0.51	54.4
9u	U	All MCs	2	7.0	2	7.0	0.491	11.6	LOS B	3.8	28.5	0.51	0.52	0.51	51.6
Approach			576	7.0	576	7.0	0.491	5.8	LOS A	3.8	28.5	0.51	0.52	0.51	53.2
All Vehicles			1289	7.0	1289	7.0	0.491	7.0	LOS A	3.8	28.5	0.52	0.56	0.52	50.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG+D PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	284	7.0	284	7.0	0.383	6.2	LOS A	2.7	20.0	0.56	0.58	0.56	53.6
3	R2	All MCs	96	7.0	96	7.0	0.383	10.1	LOS B	2.7	20.0	0.56	0.58	0.56	33.8
3u	U	All MCs	21	7.0	21	7.0	0.383	12.0	LOS B	2.7	20.0	0.56	0.58	0.56	54.4
Approach			400	7.0	400	7.0	0.383	7.5	LOS A	2.7	20.0	0.56	0.58	0.56	48.5
East: Lloyd St															
4	L2	All MCs	104	7.0	104	7.0	0.372	7.2	LOS A	2.4	17.8	0.65	0.69	0.65	50.1
6	R2	All MCs	228	7.0	228	7.0	0.372	11.3	LOS B	2.4	17.8	0.65	0.69	0.65	44.8
Approach			332	7.0	332	7.0	0.372	10.0	LOS B	2.4	17.8	0.65	0.69	0.65	46.9
North: Byrnes St															
7	L2	All MCs	130	7.0	130	7.0	0.409	5.1	LOS A	3.1	22.9	0.41	0.48	0.41	48.6
8	T1	All MCs	374	7.0	374	7.0	0.409	5.4	LOS A	3.1	22.9	0.41	0.48	0.41	54.6
9u	U	All MCs	2	7.0	2	7.0	0.409	11.1	LOS B	3.1	22.9	0.41	0.48	0.41	51.9
Approach			507	7.0	507	7.0	0.409	5.3	LOS A	3.1	22.9	0.41	0.48	0.41	53.7
All Vehicles			1239	7.0	1239	7.0	0.409	7.3	LOS A	3.1	22.9	0.52	0.57	0.52	50.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG+D SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	324	7.0	324	7.0	0.376	5.8	LOS A	2.7	20.0	0.49	0.54	0.49	53.9
3	R2	All MCs	73	7.0	73	7.0	0.376	9.6	LOS A	2.7	20.0	0.49	0.54	0.49	34.0
3u	U	All MCs	29	7.0	29	7.0	0.376	11.5	LOS B	2.7	20.0	0.49	0.54	0.49	54.6
Approach			426	7.0	426	7.0	0.376	6.8	LOS A	2.7	20.0	0.49	0.54	0.49	50.2
East: Lloyd St															
4	L2	All MCs	117	7.0	117	7.0	0.328	7.3	LOS A	2.0	15.0	0.65	0.69	0.65	50.2
6	R2	All MCs	169	7.0	169	7.0	0.328	11.4	LOS B	2.0	15.0	0.65	0.69	0.65	45.0
Approach			287	7.0	287	7.0	0.328	9.8	LOS A	2.0	15.0	0.65	0.69	0.65	47.6
North: Byrnes St															
7	L2	All MCs	81	7.0	81	7.0	0.378	5.0	LOS A	2.7	20.3	0.37	0.46	0.37	48.8
8	T1	All MCs	395	7.0	395	7.0	0.378	5.3	LOS A	2.7	20.3	0.37	0.46	0.37	54.7
9u	U	All MCs	1	7.0	1	7.0	0.378	11.0	LOS B	2.7	20.3	0.37	0.46	0.37	52.0
Approach			478	7.0	478	7.0	0.378	5.2	LOS A	2.7	20.3	0.37	0.46	0.37	54.2
All Vehicles			1191	7.0	1191	7.0	0.378	6.9	LOS A	2.7	20.3	0.48	0.54	0.48	51.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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: 001 [1_2037 BG+D AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	283	7.0	283	7.0	0.403	5.6	LOS A	3.1	22.8	0.47	0.55	0.47	53.7
3	R2	All MCs	147	7.0	147	7.0	0.403	9.5	LOS A	3.1	22.8	0.47	0.55	0.47	33.9
3u	U	All MCs	43	7.0	43	7.0	0.403	11.3	LOS B	3.1	22.8	0.47	0.55	0.47	54.4
Approach			472	7.0	472	7.0	0.403	7.3	LOS A	3.1	22.8	0.47	0.55	0.47	47.1
East: Lloyd St															
4	L2	All MCs	202	7.0	202	7.0	0.432	8.2	LOS A	3.0	22.3	0.76	0.72	0.77	50.1
6	R2	All MCs	142	7.0	142	7.0	0.432	12.4	LOS B	3.0	22.3	0.76	0.72	0.77	44.8
Approach			343	7.0	343	7.0	0.432	10.0	LOS A	3.0	22.3	0.76	0.72	0.77	48.3
North: Byrnes St															
7	L2	All MCs	202	7.0	202	7.0	0.576	6.0	LOS A	5.0	37.1	0.61	0.55	0.61	47.6
8	T1	All MCs	452	7.0	452	7.0	0.576	6.3	LOS A	5.0	37.1	0.61	0.55	0.61	54.1
9u	U	All MCs	3	7.0	3	7.0	0.576	12.0	LOS B	5.0	37.1	0.61	0.55	0.61	51.2
Approach			657	7.0	657	7.0	0.576	6.2	LOS A	5.0	37.1	0.61	0.55	0.61	52.9
All Vehicles			1473	7.0	1473	7.0	0.576	7.4	LOS A	5.0	37.1	0.60	0.59	0.60	49.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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: 001 [1_2037 BG+D PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	317	7.0	317	7.0	0.450	6.6	LOS A	3.4	25.0	0.63	0.61	0.63	53.4
3	R2	All MCs	110	7.0	110	7.0	0.450	10.5	LOS B	3.4	25.0	0.63	0.61	0.63	33.7
3u	U	All MCs	24	7.0	24	7.0	0.450	12.4	LOS B	3.4	25.0	0.63	0.61	0.63	54.2
Approach			451	7.0	451	7.0	0.450	7.9	LOS A	3.4	25.0	0.63	0.61	0.63	48.2
East: Lloyd St															
4	L2	All MCs	120	7.0	120	7.0	0.452	7.9	LOS A	3.2	23.5	0.73	0.72	0.74	49.6
6	R2	All MCs	263	7.0	263	7.0	0.452	12.1	LOS B	3.2	23.5	0.73	0.72	0.74	44.2
Approach			384	7.0	384	7.0	0.452	10.8	LOS B	3.2	23.5	0.73	0.72	0.74	46.3
North: Byrnes St															
7	L2	All MCs	150	7.0	150	7.0	0.474	5.3	LOS A	3.9	28.8	0.48	0.49	0.48	48.2
8	T1	All MCs	421	7.0	421	7.0	0.474	5.6	LOS A	3.9	28.8	0.48	0.49	0.48	54.4
9u	U	All MCs	3	7.0	3	7.0	0.474	11.3	LOS B	3.9	28.8	0.48	0.49	0.48	51.7
Approach			574	7.0	574	7.0	0.474	5.6	LOS A	3.9	28.8	0.48	0.49	0.48	53.5
All Vehicles			1409	7.0	1409	7.0	0.474	7.7	LOS A	3.9	28.8	0.60	0.59	0.60	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2037 BG+D SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	363	7.0	363	7.0	0.438	6.1	LOS A	3.3	24.8	0.55	0.56	0.55	53.7
3	R2	All MCs	84	7.0	84	7.0	0.438	9.9	LOS A	3.3	24.8	0.55	0.56	0.55	33.9
3u	U	All MCs	34	7.0	34	7.0	0.438	11.8	LOS B	3.3	24.8	0.55	0.56	0.55	54.4
Approach			481	7.0	481	7.0	0.438	7.1	LOS A	3.3	24.8	0.55	0.56	0.55	49.9
East: Lloyd St															
4	L2	All MCs	135	7.0	135	7.0	0.399	8.0	LOS A	2.6	19.5	0.72	0.71	0.72	49.8
6	R2	All MCs	196	7.0	196	7.0	0.399	12.1	LOS B	2.6	19.5	0.72	0.71	0.72	44.5
Approach			331	7.0	331	7.0	0.399	10.4	LOS B	2.6	19.5	0.72	0.71	0.72	47.1
North: Byrnes St															
7	L2	All MCs	94	7.0	94	7.0	0.436	5.2	LOS A	3.4	25.2	0.43	0.48	0.43	48.5
8	T1	All MCs	445	7.0	445	7.0	0.436	5.4	LOS A	3.4	25.2	0.43	0.48	0.43	54.6
9u	U	All MCs	1	7.0	1	7.0	0.436	11.2	LOS B	3.4	25.2	0.43	0.48	0.43	51.8
Approach			541	7.0	541	7.0	0.436	5.4	LOS A	3.4	25.2	0.43	0.48	0.43	54.0
All Vehicles			1352	7.0	1352	7.0	0.438	7.2	LOS A	3.4	25.2	0.54	0.56	0.54	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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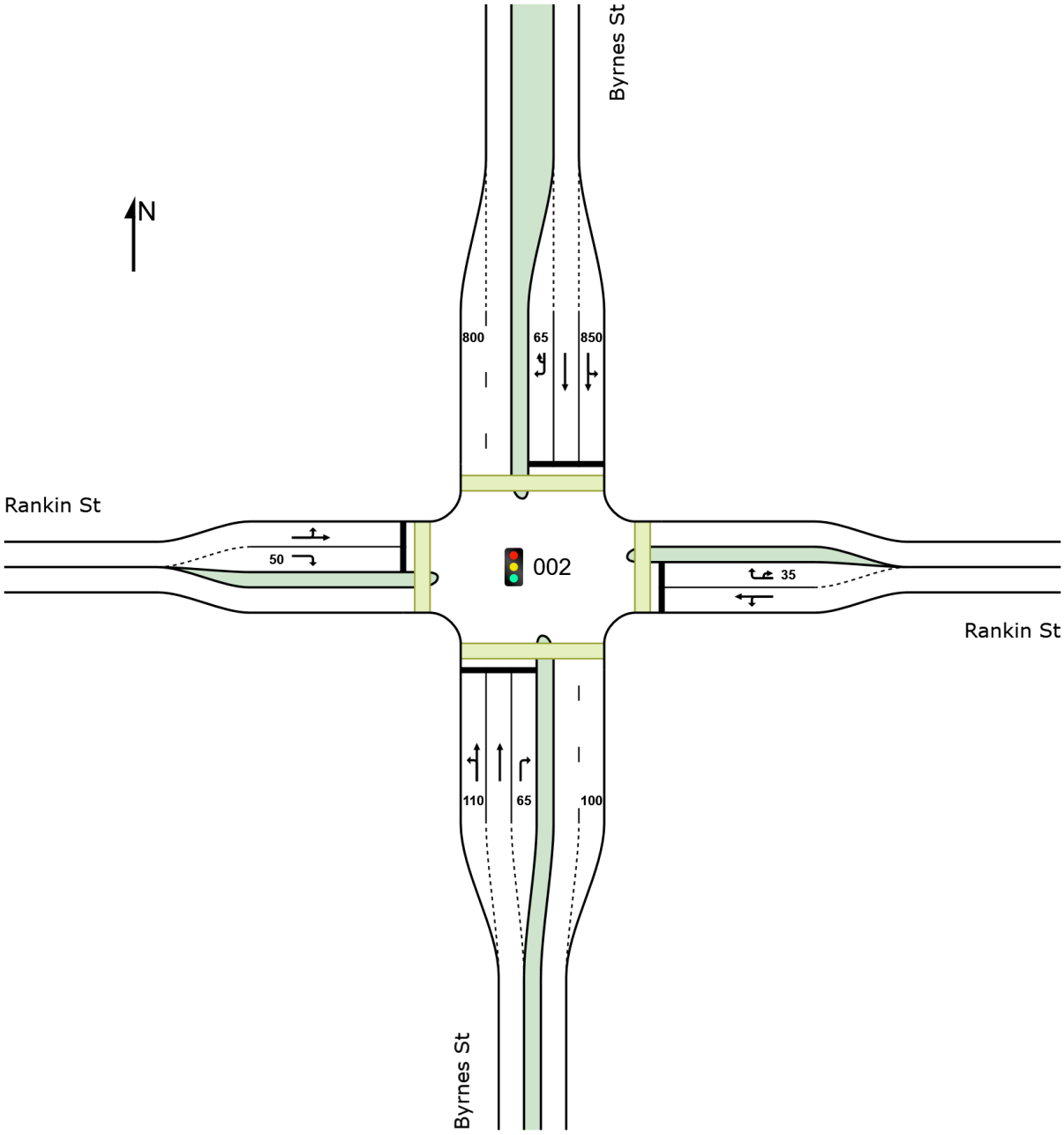
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 002 [2_2022 Survey AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

PHASING SUMMARY

Site: 002 [2_2022 Survey AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

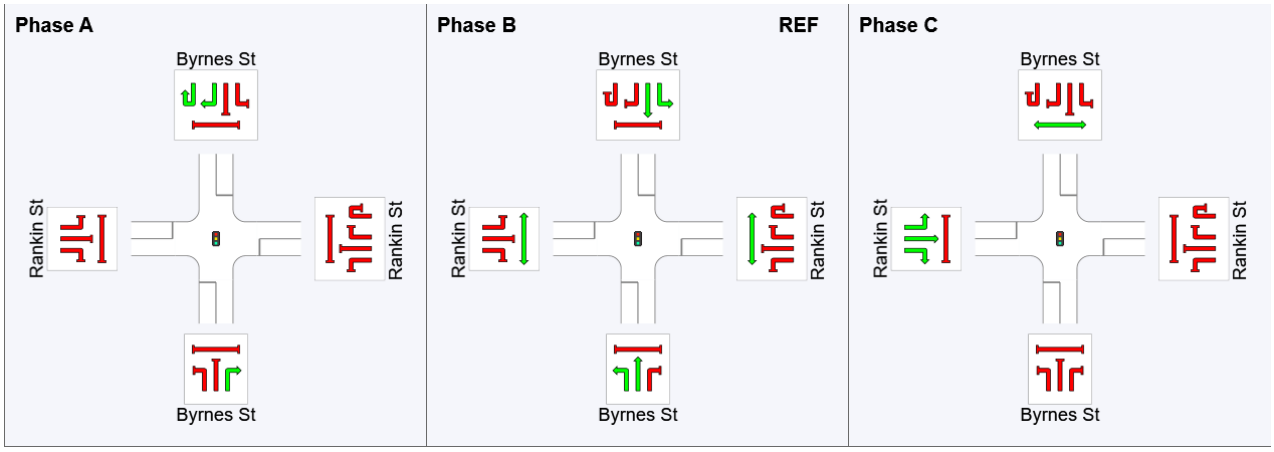
Phase Timing Summary

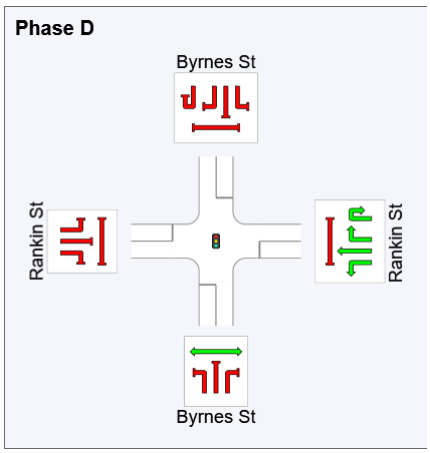
Phase	A	B	C	D
Phase Change Time (sec)	113	0	55	82
Green Time (sec)	11	49	21	25
Phase Time (sec)	17	55	27	31
Phase Split	13%	42%	21%	24%
Phase Frequency (%)	100.0[4]	100.0[4]	100.0[4]	100.0[4]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

4 Phase Frequency specified by the user (phase times not specified).

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

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Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2022 Survey AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	45	7.0	45	7.0	0.261	35.9	LOS D	7.8	57.8	0.73	0.65	0.73	10.6
2	T1	All MCs	318	7.0	318	7.0	0.261	29.9	LOS C	7.9	58.8	0.73	0.63	0.73	41.3
3	R2	All MCs	68	7.0	68	7.0	* 0.457	69.4	LOS E	4.3	32.0	0.99	0.76	0.99	12.6
Approach			432	7.0	432	7.0	0.457	36.8	LOS D	7.9	58.8	0.77	0.65	0.77	33.5
East: Rankin St															
4	L2	All MCs	57	7.0	57	7.0	* 0.469	60.1	LOS E	8.9	65.8	0.94	0.78	0.94	15.3
5	T1	All MCs	99	7.0	99	7.0	0.469	52.8	LOS D	8.9	65.8	0.94	0.78	0.94	12.0
6	R2	All MCs	102	7.0	102	7.0	0.370	57.7	LOS E	6.7	49.7	0.92	0.79	0.92	30.7
6u	U	All MCs	18	7.0	18	7.0	0.370	58.9	LOS E	6.7	49.7	0.92	0.79	0.92	10.9
Approach			276	7.0	276	7.0	0.469	56.5	LOS E	8.9	65.8	0.93	0.78	0.93	21.3
North: Byrnes St															
7	L2	All MCs	97	7.0	97	7.0	0.257	35.7	LOS D	7.5	55.8	0.73	0.70	0.73	33.7
8	T1	All MCs	405	7.0	405	7.0	* 0.468	32.8	LOS C	15.6	115.8	0.79	0.70	0.79	40.3
9	R2	All MCs	49	7.0	49	7.0	0.340	69.2	LOS E	3.1	23.3	0.98	0.75	0.98	21.7
9u	U	All MCs	1	7.0	1	7.0	0.340	70.6	LOS E	3.1	23.3	0.98	0.75	0.98	36.2
Approach			553	7.0	553	7.0	0.468	36.6	LOS D	15.6	115.8	0.80	0.70	0.80	36.3
West: Rankin St															
10	L2	All MCs	54	7.0	54	7.0	0.457	60.8	LOS E	7.7	57.5	0.95	0.78	0.95	30.5
11	T1	All MCs	79	7.0	79	7.0	* 0.457	53.6	LOS D	7.7	57.5	0.95	0.78	0.95	11.4
12	R2	All MCs	54	7.0	54	7.0	0.188	56.9	LOS E	3.0	22.1	0.90	0.74	0.90	14.5
Approach			186	7.0	186	7.0	0.457	56.6	LOS E	7.7	57.5	0.94	0.77	0.94	19.8
All Vehicles			1446	7.0	1446	7.0	0.469	43.1	LOS D	15.6	115.8	0.83	0.71	0.83	31.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2022 Survey PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

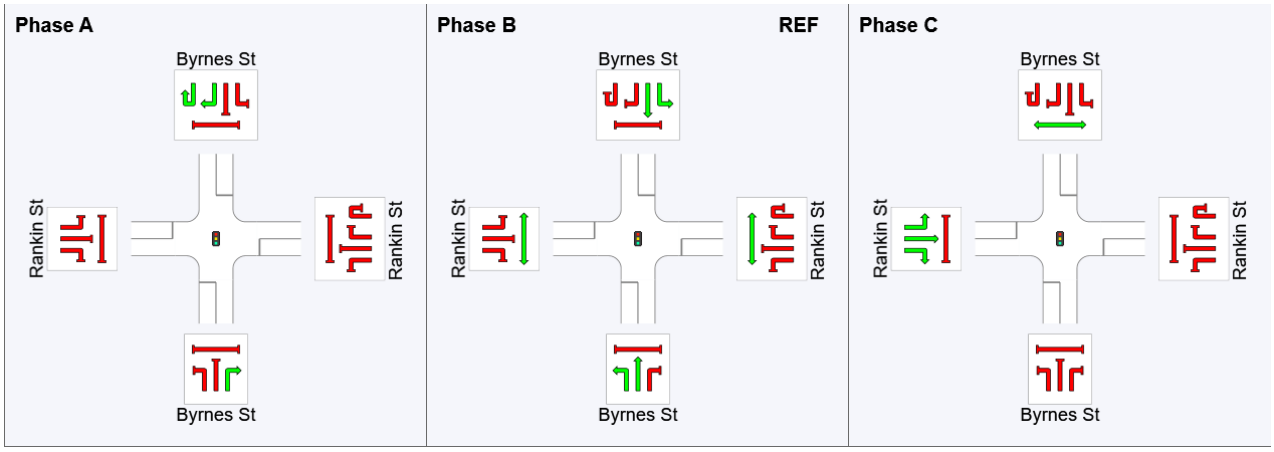
Phase Timing Summary

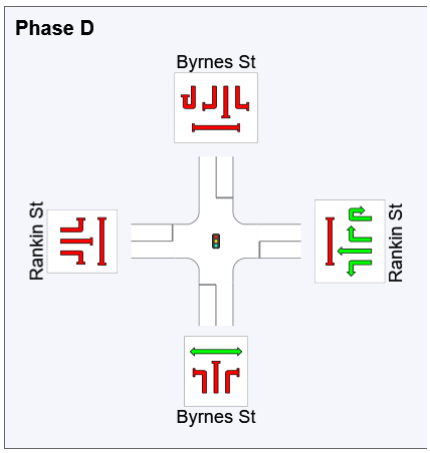
Phase	A	B	C	D
Phase Change Time (sec)	113	0	57	78
Green Time (sec)	11	51	15	29
Phase Time (sec)	17	57	21	35
Phase Split	13%	44%	16%	27%
Phase Frequency (%)	100.0[4]	100.0[4]	100.0[4]	100.0[4]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

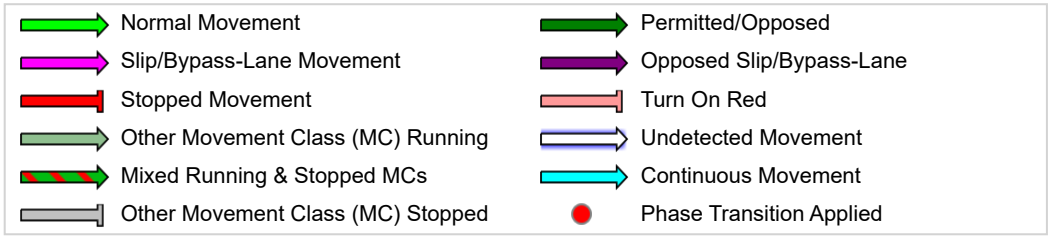
4 Phase Frequency specified by the user (phase times not specified).

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2022 Survey PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	61	7.0	61	7.0	0.222	34.0	LOS C	6.6	49.0	0.71	0.65	0.71	10.7
2	T1	All MCs	260	7.0	260	7.0	0.222	28.0	LOS C	6.8	50.2	0.71	0.61	0.71	42.0
3	R2	All MCs	43	7.0	43	7.0	0.288	68.1	LOS E	2.7	19.8	0.98	0.74	0.98	12.8
Approach			364	7.0	364	7.0	0.288	33.7	LOS C	6.8	50.2	0.74	0.63	0.74	33.0
East: Rankin St															
4	L2	All MCs	64	7.0	64	7.0	* 0.491	63.9	LOS E	10.5	77.9	0.92	0.78	0.92	15.9
5	T1	All MCs	124	7.0	124	7.0	0.491	56.2	LOS E	10.5	77.9	0.92	0.78	0.92	12.6
6	R2	All MCs	48	7.0	48	7.0	0.126	57.8	LOS E	2.5	18.6	0.84	0.73	0.84	32.5
6u	U	All MCs	1	7.0	1	7.0	0.126	58.9	LOS E	2.5	18.6	0.84	0.73	0.84	12.0
Approach			238	7.0	238	7.0	0.491	58.6	LOS E	10.5	77.9	0.91	0.77	0.91	17.5
North: Byrnes St															
7	L2	All MCs	75	7.0	75	7.0	0.269	34.6	LOS C	8.1	60.5	0.72	0.67	0.72	34.3
8	T1	All MCs	469	7.0	469	7.0	* 0.490	32.9	LOS C	16.7	123.6	0.78	0.69	0.78	40.8
9	R2	All MCs	67	7.0	67	7.0	* 0.478	72.0	LOS E	4.5	33.1	1.00	0.77	1.00	21.5
9u	U	All MCs	3	7.0	3	7.0	0.478	73.3	LOS E	4.5	33.1	1.00	0.77	1.00	35.9
Approach			615	7.0	615	7.0	0.490	37.6	LOS D	16.7	123.6	0.80	0.70	0.80	36.1
West: Rankin St															
10	L2	All MCs	51	7.0	51	7.0	0.457	66.1	LOS E	5.7	42.0	0.98	0.77	0.98	28.9
11	T1	All MCs	42	7.0	42	7.0	0.457	59.0	LOS E	5.7	42.0	0.98	0.77	0.98	10.4
12	R2	All MCs	100	7.0	100	7.0	* 0.490	65.5	LOS E	6.1	45.5	0.98	0.78	0.98	13.1
Approach			193	7.0	193	7.0	0.490	64.2	LOS E	6.1	45.5	0.98	0.78	0.98	18.1
All Vehicles			1409	7.0	1409	7.0	0.491	43.8	LOS D	16.7	123.6	0.83	0.70	0.83	30.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2022 Survey SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

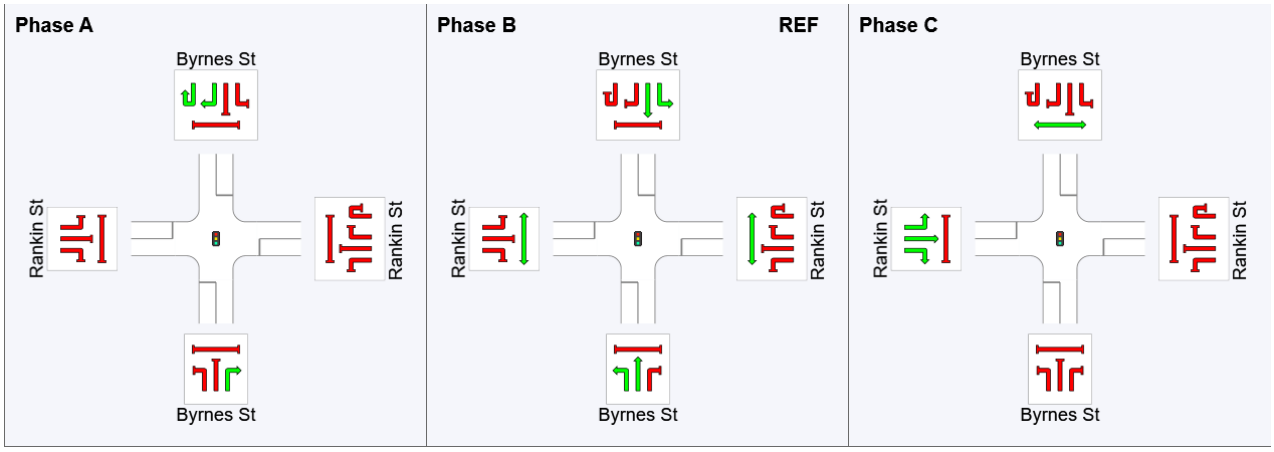
Phase Timing Summary

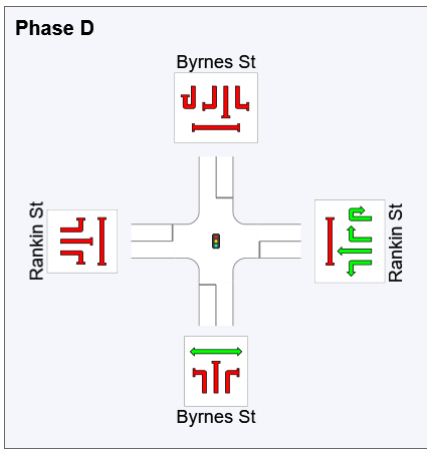
Phase	A	B	C	D
Phase Change Time (sec)	103	0	62	81
Green Time (sec)	11	56	13	16
Phase Time (sec)	17	62	19	22
Phase Split	14%	52%	16%	18%
Phase Frequency (%)	100.0[4]	100.0[4]	100.0[4]	100.0[4]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

4 Phase Frequency specified by the user (phase times not specified).

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2022 Survey SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	19	7.0	19	7.0	0.192	26.0	LOS C	5.6	41.5	0.62	0.54	0.62	11.8
2	T1	All MCs	314	7.0	314	7.0	0.192	20.0	LOS C	5.6	41.8	0.62	0.53	0.62	46.1
3	R2	All MCs	67	7.0	67	7.0	* 0.415	63.5	LOS E	3.9	28.9	0.99	0.76	0.99	13.5
Approach			400	7.0	400	7.0	0.415	27.6	LOS C	5.6	41.8	0.68	0.57	0.68	38.9
East: Rankin St															
4	L2	All MCs	56	7.0	56	7.0	0.431	60.0	LOS E	5.6	41.5	0.96	0.77	0.96	14.6
5	T1	All MCs	45	7.0	45	7.0	* 0.431	52.4	LOS D	5.6	41.5	0.96	0.77	0.96	11.4
6	R2	All MCs	71	7.0	71	7.0	0.323	57.6	LOS E	4.1	30.2	0.95	0.77	0.95	30.2
6u	U	All MCs	4	7.0	4	7.0	0.323	58.8	LOS E	4.1	30.2	0.95	0.77	0.95	10.6
Approach			176	7.0	176	7.0	0.431	57.1	LOS E	5.6	41.5	0.96	0.77	0.96	22.0
North: Byrnes St															
7	L2	All MCs	120	7.0	120	7.0	0.242	26.3	LOS C	7.0	52.0	0.64	0.67	0.64	36.7
8	T1	All MCs	465	7.0	465	7.0	* 0.440	22.5	LOS C	14.9	110.4	0.71	0.64	0.71	44.7
9	R2	All MCs	59	7.0	59	7.0	0.372	63.2	LOS E	3.4	25.6	0.98	0.76	0.98	22.4
9u	U	All MCs	1	7.0	1	7.0	0.372	64.6	LOS E	3.4	25.6	0.98	0.76	0.98	37.2
Approach			645	7.0	645	7.0	0.440	27.0	LOS C	14.9	110.4	0.72	0.65	0.72	39.8
West: Rankin St															
10	L2	All MCs	54	7.0	54	7.0	0.439	62.4	LOS E	4.7	34.7	0.98	0.77	0.98	29.6
11	T1	All MCs	28	7.0	28	7.0	* 0.439	55.3	LOS E	4.7	34.7	0.98	0.77	0.98	10.8
12	R2	All MCs	48	7.0	48	7.0	0.253	60.1	LOS E	2.7	19.9	0.95	0.74	0.95	13.9
Approach			131	7.0	131	7.0	0.439	60.0	LOS E	4.7	34.7	0.97	0.76	0.97	21.6
All Vehicles			1352	7.0	1352	7.0	0.440	34.3	LOS C	14.9	110.4	0.76	0.65	0.76	35.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

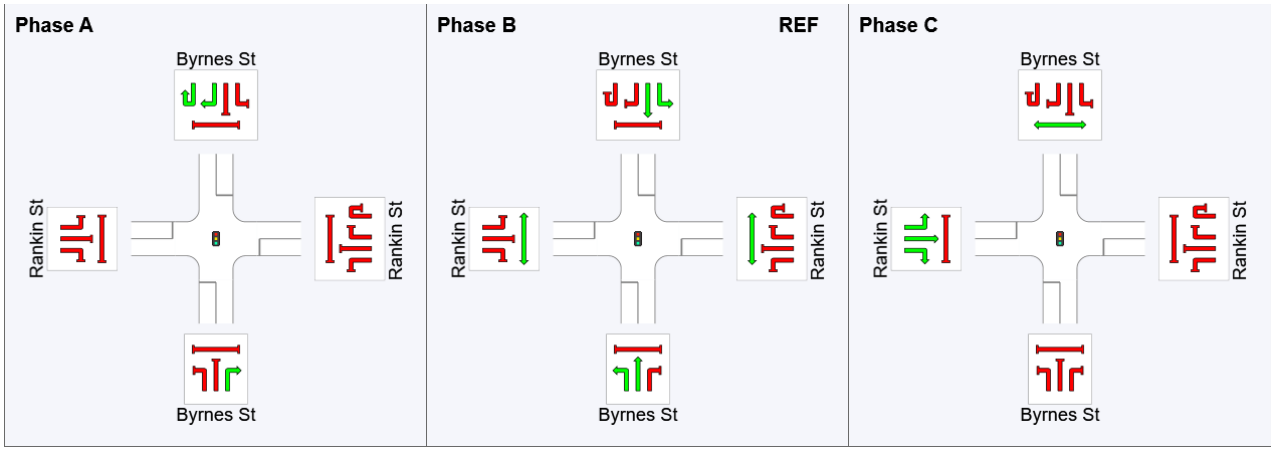
Phase Timing Summary

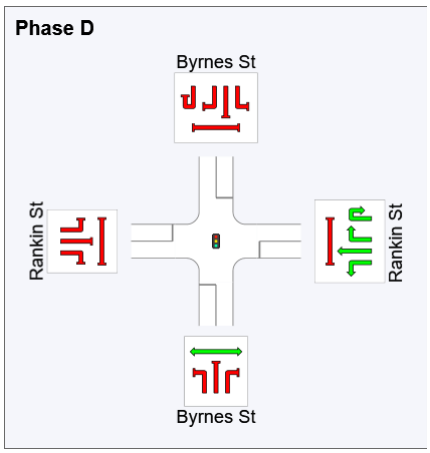
Phase	A	B	C	D
Phase Change Time (sec)	107	0	49	76
Green Time (sec)	17	43	21	25
Phase Time (sec)	23	49	27	31
Phase Split	18%	38%	21%	24%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

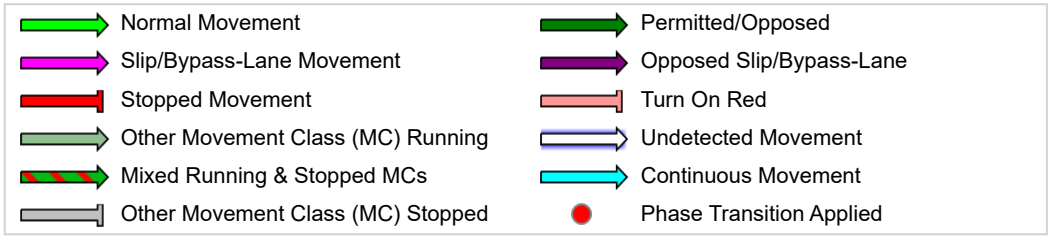
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	49	7.0	49	7.0	0.321	41.0	LOS D	9.2	67.9	0.79	0.70	0.79	10.1
2	T1	All MCs	343	7.0	343	7.0	0.321	35.0	LOS C	9.3	69.1	0.79	0.68	0.79	39.3
3	R2	All MCs	74	7.0	74	7.0	* 0.319	62.1	LOS E	4.3	32.2	0.95	0.77	0.95	13.7
Approach			466	7.0	466	7.0	0.321	39.9	LOS D	9.3	69.1	0.82	0.69	0.82	32.5
East: Rankin St															
4	L2	All MCs	61	7.0	61	7.0	0.539	64.7	LOS E	9.7	72.2	0.95	0.79	0.95	15.1
5	T1	All MCs	107	7.0	107	7.0	* 0.539	57.2	LOS E	9.7	72.2	0.95	0.79	0.95	11.9
6	R2	All MCs	110	7.0	110	7.0	0.399	61.7	LOS E	7.3	54.0	0.92	0.79	0.92	30.6
6u	U	All MCs	19	7.0	19	7.0	0.399	62.9	LOS E	7.3	54.0	0.92	0.79	0.92	10.9
Approach			298	7.0	298	7.0	0.539	60.8	LOS E	9.7	72.2	0.94	0.79	0.94	21.8
North: Byrnes St															
7	L2	All MCs	105	7.0	105	7.0	0.321	40.8	LOS D	9.0	66.6	0.79	0.73	0.79	32.2
8	T1	All MCs	437	7.0	437	7.0	* 0.585	42.8	LOS D	18.4	136.7	0.87	0.76	0.87	38.1
9	R2	All MCs	53	7.0	53	7.0	0.237	67.2	LOS E	3.2	23.5	0.94	0.75	0.94	22.6
9u	U	All MCs	1	7.0	1	7.0	0.237	68.6	LOS E	3.2	23.5	0.94	0.75	0.94	37.7
Approach			597	7.0	597	7.0	0.585	44.7	LOS D	18.4	136.7	0.86	0.75	0.86	35.0
West: Rankin St															
10	L2	All MCs	58	7.0	58	7.0	0.493	61.3	LOS E	8.4	62.5	0.96	0.79	0.96	30.4
11	T1	All MCs	85	7.0	85	7.0	* 0.493	54.0	LOS D	8.4	62.5	0.96	0.79	0.96	11.3
12	R2	All MCs	58	7.0	58	7.0	0.203	57.0	LOS E	3.2	23.9	0.91	0.75	0.91	14.5
Approach			201	7.0	201	7.0	0.493	57.0	LOS E	8.4	62.5	0.94	0.78	0.94	19.7
All Vehicles			1561	7.0	1561	7.0	0.585	47.9	LOS D	18.4	136.7	0.87	0.75	0.87	30.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

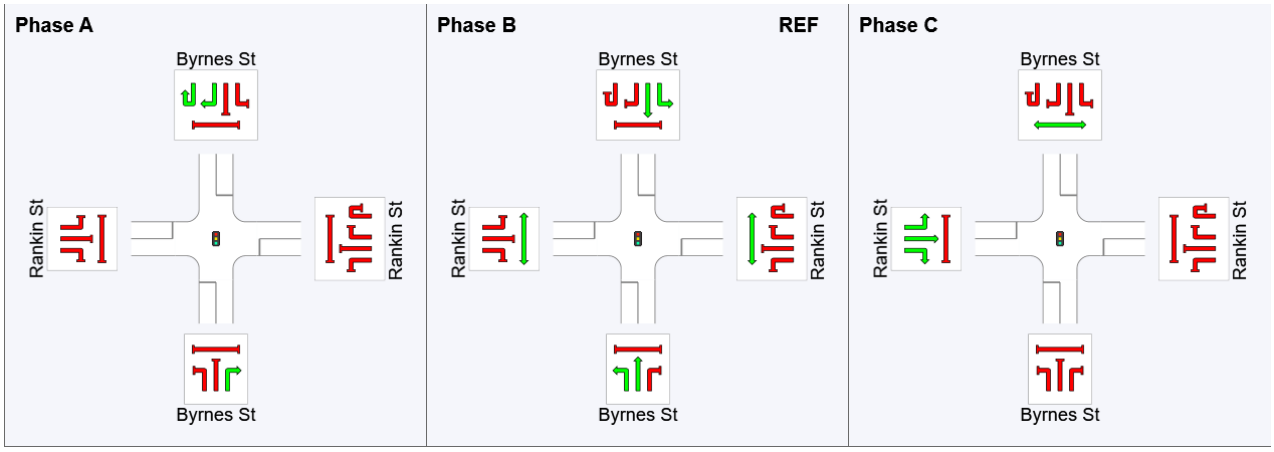
Phase Timing Summary

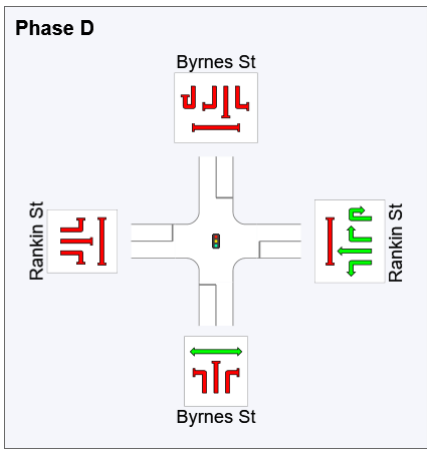
Phase	A	B	C	D
Phase Change Time (sec)	104	0	43	70
Green Time (sec)	20	37	21	28
Phase Time (sec)	26	43	27	34
Phase Split	20%	33%	21%	26%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	66	7.0	66	7.0	0.331	45.6	LOS D	8.5	63.3	0.84	0.73	0.84	9.7
2	T1	All MCs	281	7.0	281	7.0	0.331	39.4	LOS D	8.8	65.1	0.84	0.71	0.84	37.5
3	R2	All MCs	47	7.0	47	7.0	0.171	57.7	LOS E	2.6	19.3	0.91	0.74	0.91	14.5
Approach			393	7.0	393	7.0	0.331	42.6	LOS D	8.8	65.1	0.84	0.71	0.84	30.2
East: Rankin St															
4	L2	All MCs	69	7.0	69	7.0	0.560	69.3	LOS E	11.6	86.1	0.94	0.80	0.94	15.6
5	T1	All MCs	134	7.0	134	7.0	* 0.560	61.5	LOS E	11.6	86.1	0.94	0.80	0.94	12.3
6	R2	All MCs	52	7.0	52	7.0	0.141	62.5	LOS E	2.7	20.3	0.85	0.74	0.85	32.2
6u	U	All MCs	1	7.0	1	7.0	0.141	63.6	LOS E	2.7	20.3	0.85	0.74	0.85	11.8
Approach			257	7.0	257	7.0	0.560	63.8	LOS E	11.6	86.1	0.92	0.78	0.92	19.1
North: Byrnes St															
7	L2	All MCs	81	7.0	81	7.0	0.411	46.7	LOS D	10.9	80.8	0.86	0.75	0.86	30.9
8	T1	All MCs	507	7.0	507	7.0	* 0.749	53.9	LOS D	22.0	163.4	0.94	0.83	0.96	35.7
9	R2	All MCs	73	7.0	73	7.0	* 0.284	70.6	LOS E	4.3	32.2	0.93	0.76	0.93	23.0
9u	U	All MCs	3	7.0	3	7.0	0.284	72.0	LOS E	4.3	32.2	0.93	0.76	0.93	38.2
Approach			664	7.0	664	7.0	0.749	55.0	LOS D	22.0	163.4	0.93	0.82	0.94	33.3
West: Rankin St															
10	L2	All MCs	55	7.0	55	7.0	0.349	59.4	LOS E	5.7	42.5	0.93	0.76	0.93	30.5
11	T1	All MCs	45	7.0	45	7.0	0.349	52.4	LOS D	5.7	42.5	0.93	0.76	0.93	11.4
12	R2	All MCs	108	7.0	108	7.0	* 0.378	58.8	LOS E	6.2	46.1	0.94	0.78	0.94	14.2
Approach			208	7.0	208	7.0	0.378	57.6	LOS E	6.2	46.1	0.94	0.77	0.94	19.5
All Vehicles			1522	7.0	1522	7.0	0.749	53.6	LOS D	22.0	163.4	0.91	0.78	0.91	29.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

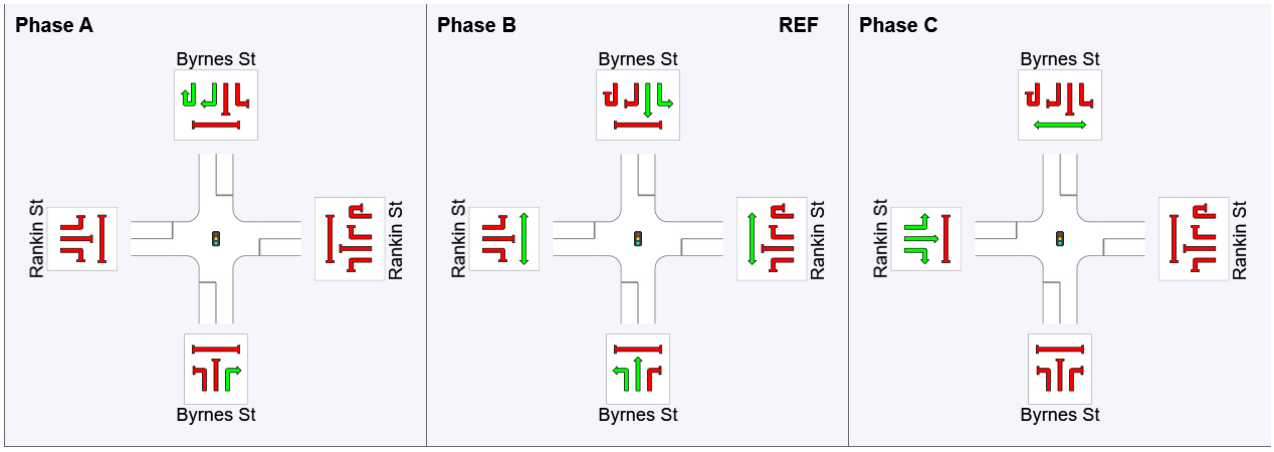
Phase Timing Summary

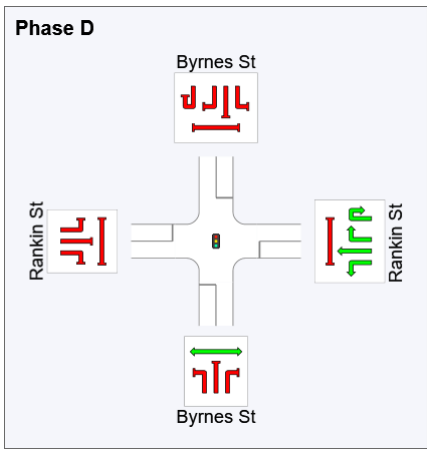
Phase	A	B	C	D
Phase Change Time (sec)	95	0	41	68
Green Time (sec)	19	35	21	21
Phase Time (sec)	25	41	27	27
Phase Split	21%	34%	23%	23%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

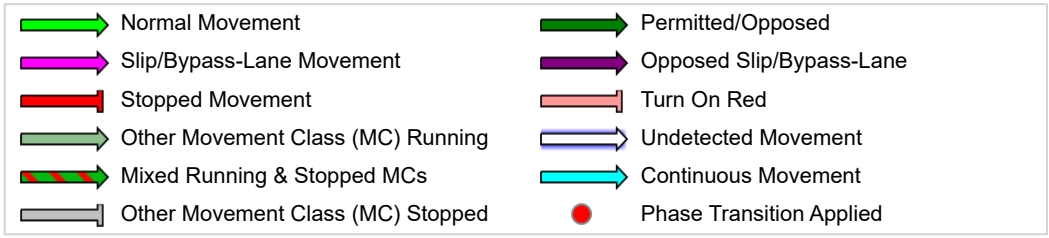
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	20	7.0	20	7.0	0.331	42.2	LOS D	8.2	60.8	0.83	0.70	0.83	10.1
2	T1	All MCs	339	7.0	339	7.0	0.331	36.0	LOS D	8.3	61.3	0.83	0.69	0.83	39.0
3	R2	All MCs	73	7.0	73	7.0	* 0.260	54.2	LOS D	3.8	28.2	0.92	0.76	0.92	15.1
Approach			432	7.0	432	7.0	0.331	39.4	LOS D	8.3	61.3	0.84	0.70	0.84	34.3
East: Rankin St															
4	L2	All MCs	60	7.0	60	7.0	0.352	54.7	LOS D	5.7	42.4	0.92	0.76	0.92	15.7
5	T1	All MCs	49	7.0	49	7.0	* 0.352	47.1	LOS D	5.7	42.4	0.92	0.76	0.92	12.3
6	R2	All MCs	76	7.0	76	7.0	0.265	52.4	LOS D	4.1	30.8	0.91	0.76	0.91	31.5
6u	U	All MCs	5	7.0	5	7.0	0.265	53.5	LOS D	4.1	30.8	0.91	0.76	0.91	11.4
Approach			190	7.0	190	7.0	0.352	51.8	LOS D	5.7	42.4	0.92	0.76	0.92	23.4
North: Byrnes St															
7	L2	All MCs	130	7.0	130	7.0	0.431	43.1	LOS D	10.7	79.1	0.86	0.77	0.86	31.5
8	T1	All MCs	502	7.0	502	7.0	* 0.785	52.6	LOS D	22.9	169.9	0.96	0.88	1.01	36.2
9	R2	All MCs	64	7.0	64	7.0	0.233	65.2	LOS E	3.4	25.0	0.91	0.75	0.91	23.7
9u	U	All MCs	1	7.0	1	7.0	0.233	66.5	LOS E	3.4	25.0	0.91	0.75	0.91	39.3
Approach			697	7.0	697	7.0	0.785	52.0	LOS D	22.9	169.9	0.94	0.85	0.97	33.8
West: Rankin St															
10	L2	All MCs	58	7.0	58	7.0	0.289	53.5	LOS D	4.6	34.0	0.91	0.75	0.91	31.9
11	T1	All MCs	31	7.0	31	7.0	* 0.289	46.4	LOS D	4.6	34.0	0.91	0.75	0.91	12.3
12	R2	All MCs	52	7.0	52	7.0	0.169	51.4	LOS D	2.6	19.5	0.89	0.74	0.89	15.6
Approach			141	7.0	141	7.0	0.289	51.1	LOS D	4.6	34.0	0.90	0.75	0.90	23.8
All Vehicles			1459	7.0	1459	7.0	0.785	48.1	LOS D	22.9	169.9	0.90	0.78	0.92	32.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

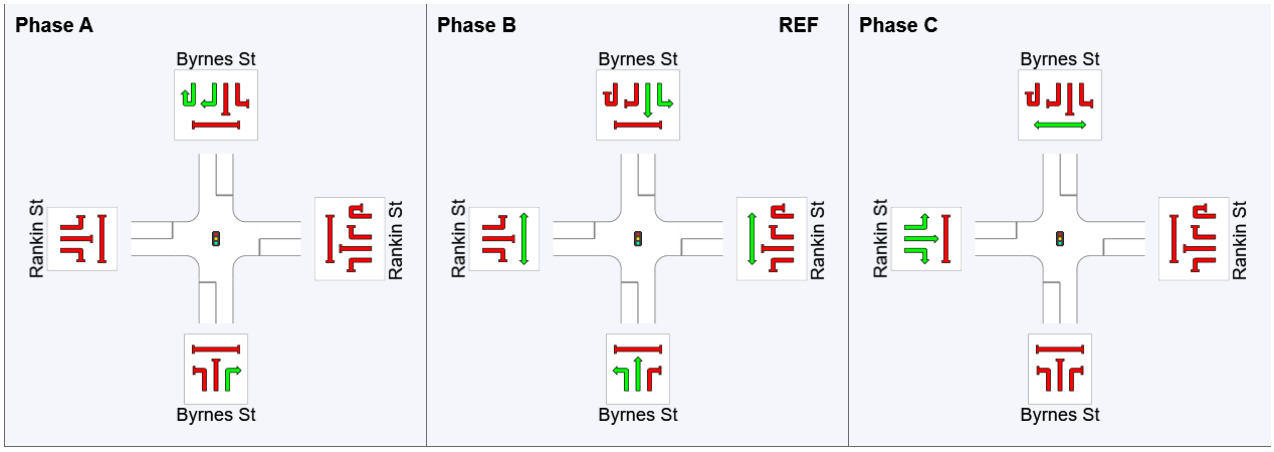
Phase Timing Summary

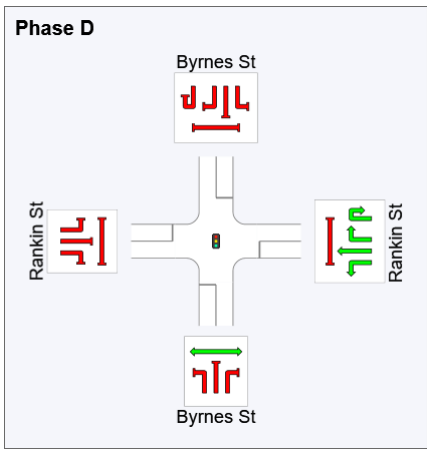
Phase	A	B	C	D
Phase Change Time (sec)	107	0	49	76
Green Time (sec)	17	43	21	25
Phase Time (sec)	23	49	27	31
Phase Split	18%	38%	21%	24%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

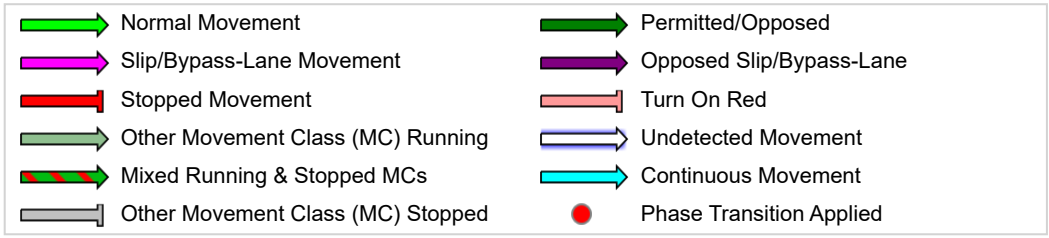
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	45	7.0	45	7.0	0.351	41.2	LOS D	10.2	75.4	0.80	0.70	0.80	5.5
2	T1	All MCs	384	7.0	384	7.0	0.351	35.5	LOS D	10.3	76.5	0.80	0.69	0.80	37.6
3	R2	All MCs	74	7.0	74	7.0	0.319	61.8	LOS E	4.3	32.2	0.95	0.76	0.95	9.6
Approach			503	7.0	503	7.0	0.351	39.8	LOS D	10.3	76.5	0.83	0.70	0.83	31.1
East: Rankin St															
4	L2	All MCs	61	7.0	61	7.0	0.684	73.6	LOS E	12.0	88.9	0.98	0.84	1.01	10.4
5	T1	All MCs	137	7.0	137	7.0	* 0.684	67.0	LOS E	12.0	88.9	0.98	0.84	1.01	9.5
6	R2	All MCs	109	7.0	109	7.0	0.396	69.0	LOS E	7.2	53.6	0.92	0.79	0.92	30.6
6u	U	All MCs	19	7.0	19	7.0	0.396	70.1	LOS E	7.2	53.6	0.92	0.79	0.92	10.9
Approach			327	7.0	327	7.0	0.684	69.1	LOS E	12.0	88.9	0.96	0.82	0.98	19.6
North: Byrnes St															
7	L2	All MCs	94	7.0	94	7.0	* 0.420	42.3	LOS D	12.4	91.8	0.83	0.74	0.83	34.1
8	T1	All MCs	417	7.0	417	7.0	0.420	36.1	LOS D	12.7	94.2	0.83	0.72	0.83	37.1
9	R2	All MCs	134	7.0	134	7.0	* 0.585	64.5	LOS E	8.3	61.5	0.99	0.80	0.99	21.6
9u	U	All MCs	1	7.0	1	7.0	0.585	65.9	LOS E	8.3	61.5	0.99	0.80	0.99	37.0
Approach			647	7.0	647	7.0	0.585	42.9	LOS D	12.7	94.2	0.86	0.74	0.86	32.1
West: Rankin St															
10	L2	All MCs	68	7.0	68	7.0	0.860	80.6	LOS F	15.9	118.0	1.00	1.00	1.23	27.1
11	T1	All MCs	162	7.0	162	7.0	* 0.860	74.6	LOS E	15.9	118.0	1.00	1.00	1.23	8.0
12	R2	All MCs	128	7.0	128	7.0	0.449	66.4	LOS E	7.5	55.6	0.95	0.79	0.95	8.2
Approach			358	7.0	358	7.0	0.860	72.8	LOS E	15.9	118.0	0.98	0.93	1.13	13.6
All Vehicles			1835	7.0	1835	7.0	0.860	52.6	LOS D	15.9	118.0	0.89	0.78	0.92	26.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

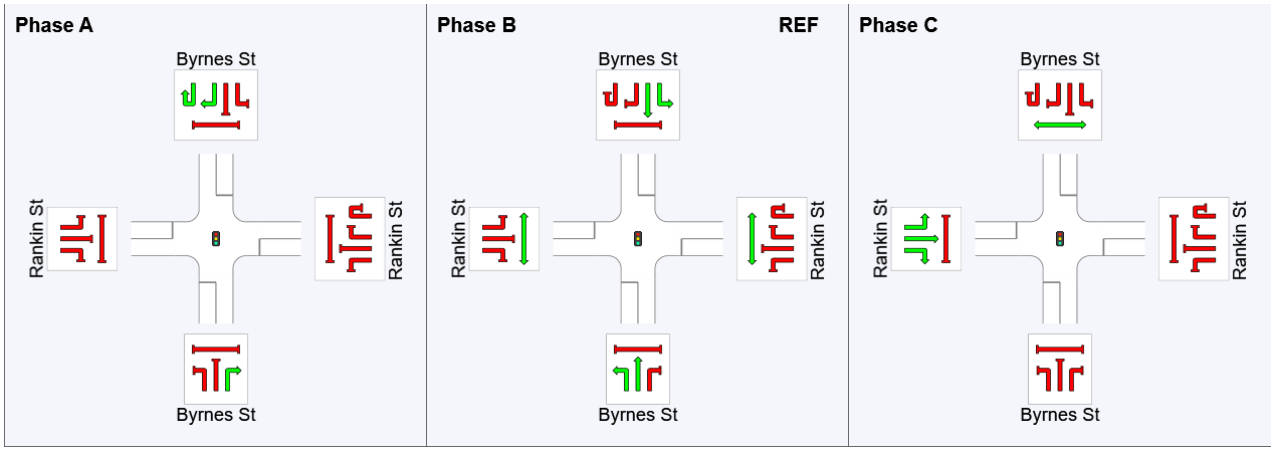
Phase Timing Summary

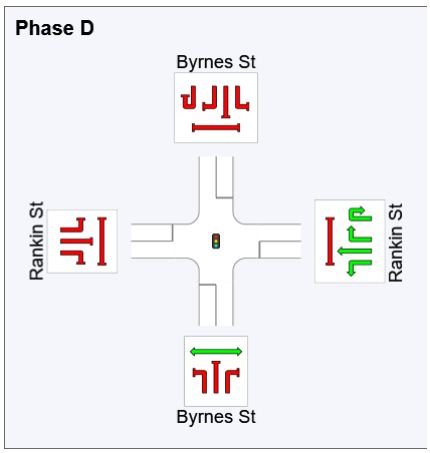
Phase	A	B	C	D
Phase Change Time (sec)	104	0	43	70
Green Time (sec)	20	37	21	28
Phase Time (sec)	26	43	27	34
Phase Split	20%	33%	21%	26%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

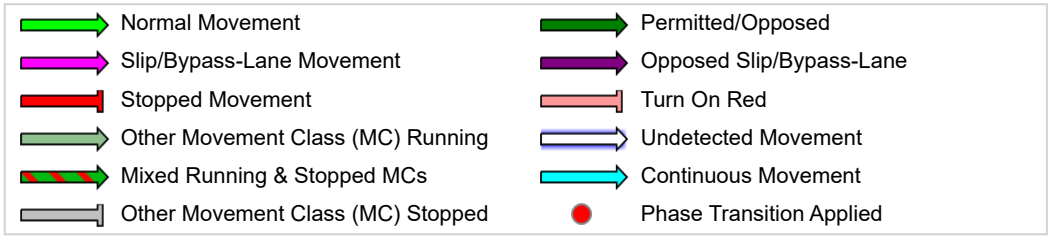
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	61	7.0	61	7.0	0.378	46.0	LOS D	9.9	73.8	0.85	0.74	0.85	5.2
2	T1	All MCs	335	7.0	335	7.0	0.378	40.1	LOS D	10.2	75.5	0.85	0.72	0.85	35.8
3	R2	All MCs	47	7.0	47	7.0	0.171	57.4	LOS E	2.6	19.3	0.91	0.74	0.91	10.1
Approach			443	7.0	443	7.0	0.378	42.8	LOS D	10.2	75.5	0.86	0.72	0.86	29.2
East: Rankin St															
4	L2	All MCs	69	7.0	69	7.0	* 0.678	76.5	LOS E	14.4	106.7	0.97	0.83	0.98	10.9
5	T1	All MCs	174	7.0	174	7.0	0.678	69.9	LOS E	14.4	106.7	0.97	0.83	0.98	10.0
6	R2	All MCs	51	7.0	51	7.0	0.138	69.1	LOS E	2.7	19.8	0.84	0.74	0.84	32.2
6u	U	All MCs	1	7.0	1	7.0	0.138	70.2	LOS E	2.7	19.8	0.84	0.74	0.84	11.9
Approach			296	7.0	296	7.0	0.678	71.3	LOS E	14.4	106.7	0.95	0.81	0.96	16.2
North: Byrnes St															
7	L2	All MCs	67	7.0	67	7.0	* 0.520	48.3	LOS D	14.4	107.2	0.89	0.78	0.89	32.6
8	T1	All MCs	480	7.0	480	7.0	0.520	41.9	LOS D	14.7	109.1	0.89	0.77	0.89	35.1
9	R2	All MCs	179	7.0	179	7.0	* 0.676	63.5	LOS E	11.3	83.9	1.00	0.83	1.03	21.8
9u	U	All MCs	3	7.0	3	7.0	0.676	64.8	LOS E	11.3	83.9	1.00	0.83	1.03	37.2
Approach			730	7.0	730	7.0	0.676	47.9	LOS D	14.7	109.1	0.92	0.78	0.93	30.4
West: Rankin St															
10	L2	All MCs	68	7.0	68	7.0	0.808	72.6	LOS E	14.2	105.7	1.00	0.94	1.15	28.0
11	T1	All MCs	148	7.0	148	7.0	* 0.808	66.9	LOS E	14.2	105.7	1.00	0.94	1.15	8.5
12	R2	All MCs	201	7.0	201	7.0	0.722	67.3	LOS E	12.6	93.8	1.00	0.86	1.06	7.7
Approach			417	7.0	417	7.0	0.808	68.0	LOS E	14.2	105.7	1.00	0.90	1.11	13.0
All Vehicles			1886	7.0	1886	7.0	0.808	54.8	LOS D	14.7	109.1	0.93	0.80	0.96	25.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

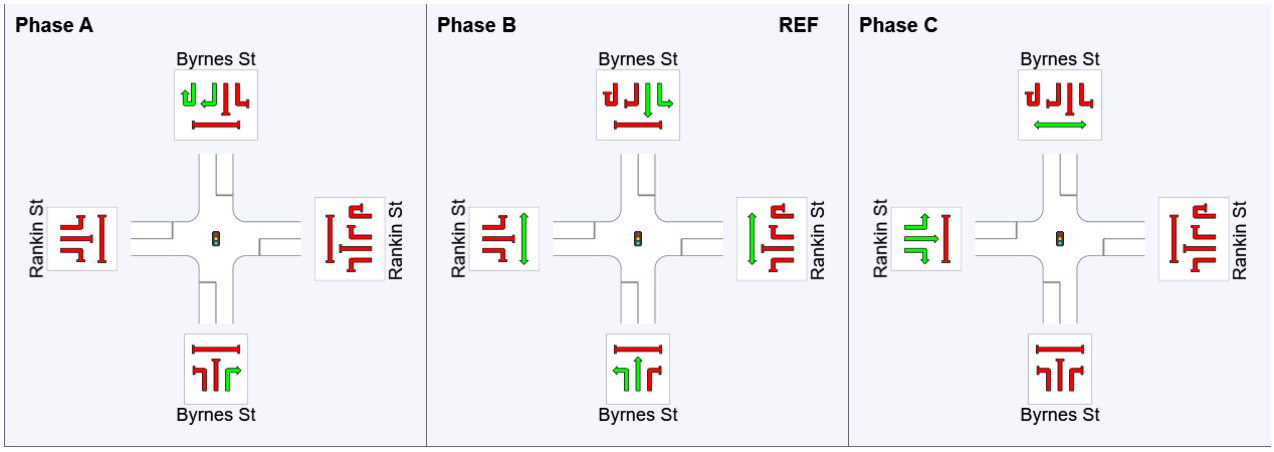
Phase Timing Summary

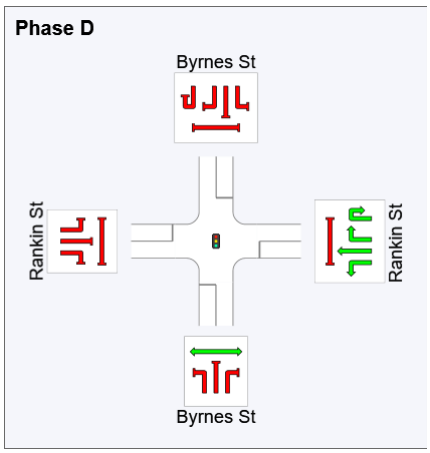
Phase	A	B	C	D
Phase Change Time (sec)	95	0	41	68
Green Time (sec)	19	35	21	21
Phase Time (sec)	25	41	27	27
Phase Split	21%	34%	23%	23%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

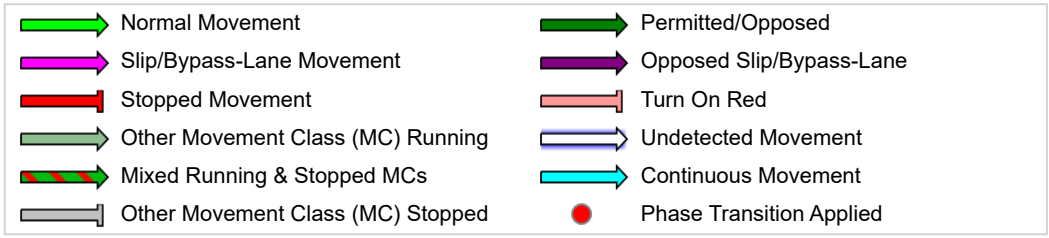
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.380	42.6	LOS D	9.6	71.1	0.84	0.71	0.84	5.4
2	T1	All MCs	397	7.0	397	7.0	0.380	36.7	LOS D	9.6	71.5	0.84	0.71	0.84	37.3
3	R2	All MCs	73	7.0	73	7.0	0.260	53.9	LOS D	3.8	28.2	0.92	0.76	0.92	10.7
Approach			485	7.0	485	7.0	0.380	39.5	LOS D	9.6	71.5	0.86	0.72	0.86	33.2
East: Rankin St															
4	L2	All MCs	60	7.0	60	7.0	0.482	55.1	LOS E	8.2	60.5	0.95	0.78	0.95	11.1
5	T1	All MCs	91	7.0	91	7.0	* 0.482	48.5	LOS D	8.2	60.5	0.95	0.78	0.95	10.2
6	R2	All MCs	75	7.0	75	7.0	0.261	52.3	LOS D	4.1	30.2	0.91	0.76	0.91	31.5
6u	U	All MCs	5	7.0	5	7.0	0.261	53.5	LOS D	4.1	30.2	0.91	0.76	0.91	11.4
Approach			231	7.0	231	7.0	0.482	51.6	LOS D	8.2	60.5	0.93	0.78	0.93	20.4
North: Byrnes St															
7	L2	All MCs	116	7.0	116	7.0	* 0.550	44.9	LOS D	14.4	106.8	0.90	0.79	0.90	33.3
8	T1	All MCs	474	7.0	474	7.0	0.550	38.5	LOS D	14.8	109.9	0.90	0.78	0.90	36.2
9	R2	All MCs	176	7.0	176	7.0	* 0.635	57.9	LOS E	10.0	74.2	0.99	0.82	0.99	22.5
9u	U	All MCs	1	7.0	1	7.0	0.635	59.3	LOS E	10.0	74.2	0.99	0.82	0.99	38.4
Approach			767	7.0	767	7.0	0.635	44.0	LOS D	14.8	109.9	0.92	0.79	0.92	31.5
West: Rankin St															
10	L2	All MCs	72	7.0	72	7.0	0.667	56.6	LOS E	11.8	87.9	0.99	0.83	1.00	30.8
11	T1	All MCs	139	7.0	139	7.0	* 0.667	50.8	LOS D	11.8	87.9	0.99	0.83	1.00	10.0
12	R2	All MCs	151	7.0	151	7.0	0.488	53.2	LOS D	8.1	60.3	0.95	0.80	0.95	8.8
Approach			362	7.0	362	7.0	0.667	52.9	LOS D	11.8	87.9	0.97	0.82	0.98	15.9
All Vehicles			1845	7.0	1845	7.0	0.667	45.5	LOS D	14.8	109.9	0.91	0.77	0.92	28.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2037 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

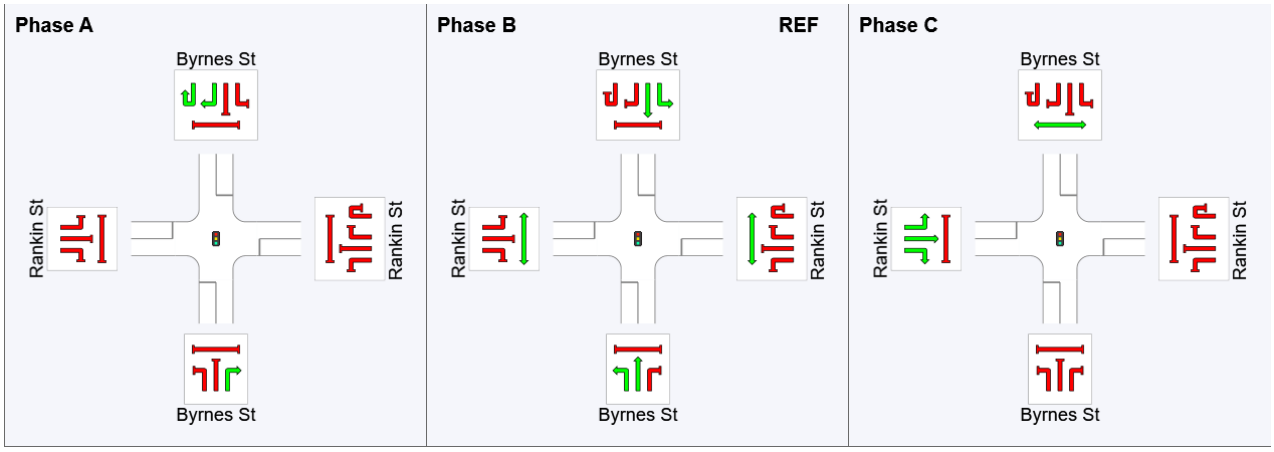
Phase Timing Summary

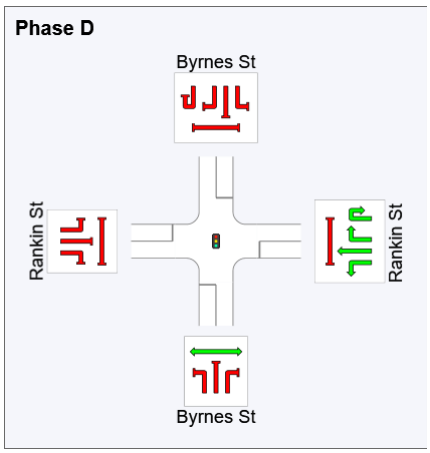
Phase	A	B	C	D
Phase Change Time (sec)	107	0	49	76
Green Time (sec)	17	43	21	25
Phase Time (sec)	23	49	27	31
Phase Split	18%	38%	21%	24%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

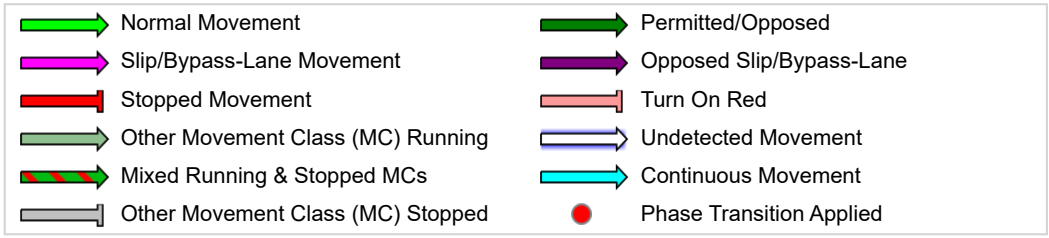
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2037 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	53	7.0	53	7.0	0.398	41.9	LOS D	11.7	87.2	0.82	0.72	0.82	5.4
2	T1	All MCs	435	7.0	435	7.0	0.398	36.2	LOS D	11.9	88.5	0.82	0.71	0.82	37.4
3	R2	All MCs	85	7.0	85	7.0	0.366	62.2	LOS E	5.0	37.3	0.96	0.77	0.96	9.5
Approach			572	7.0	572	7.0	0.398	40.6	LOS D	11.9	88.5	0.84	0.72	0.84	30.8
East: Rankin St															
4	L2	All MCs	70	7.0	70	7.0	* 0.816	85.4	LOS F	14.8	109.5	1.00	0.95	1.16	9.5
5	T1	All MCs	153	7.0	153	7.0	0.816	78.8	LOS E	14.8	109.5	1.00	0.95	1.16	8.6
6	R2	All MCs	125	7.0	125	7.0	0.455	74.7	LOS E	8.4	62.4	0.93	0.80	0.93	30.5
6u	U	All MCs	22	7.0	22	7.0	0.455	75.8	LOS E	8.4	62.4	0.93	0.80	0.93	10.8
Approach			371	7.0	371	7.0	0.816	78.5	LOS E	14.8	109.5	0.97	0.89	1.07	18.8
North: Byrnes St															
7	L2	All MCs	110	7.0	110	7.0	* 0.486	43.3	LOS D	14.7	109.0	0.85	0.76	0.85	33.8
8	T1	All MCs	482	7.0	482	7.0	0.486	37.0	LOS D	15.1	111.9	0.85	0.74	0.85	36.8
9	R2	All MCs	142	7.0	142	7.0	* 0.620	64.9	LOS E	8.8	65.6	1.00	0.81	1.00	21.6
9u	U	All MCs	1	7.0	1	7.0	0.620	66.3	LOS E	8.8	65.6	1.00	0.81	1.00	36.9
Approach			734	7.0	734	7.0	0.620	43.4	LOS D	15.1	111.9	0.88	0.76	0.88	32.1
West: Rankin St															
10	L2	All MCs	77	7.0	77	7.0	0.979	113.0	LOS F	21.1	156.4	1.00	1.20	1.52	22.3
11	T1	All MCs	175	7.0	175	7.0	* 0.979	106.8	LOS F	21.1	156.4	1.00	1.20	1.52	5.9
12	R2	All MCs	137	7.0	137	7.0	0.479	71.3	LOS E	8.0	59.6	0.96	0.80	0.96	8.1
Approach			388	7.0	388	7.0	0.979	95.5	LOS F	21.1	156.4	0.98	1.06	1.32	11.4
All Vehicles			2065	7.0	2065	7.0	0.979	58.7	LOS E	21.1	156.4	0.90	0.83	0.99	25.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2037 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

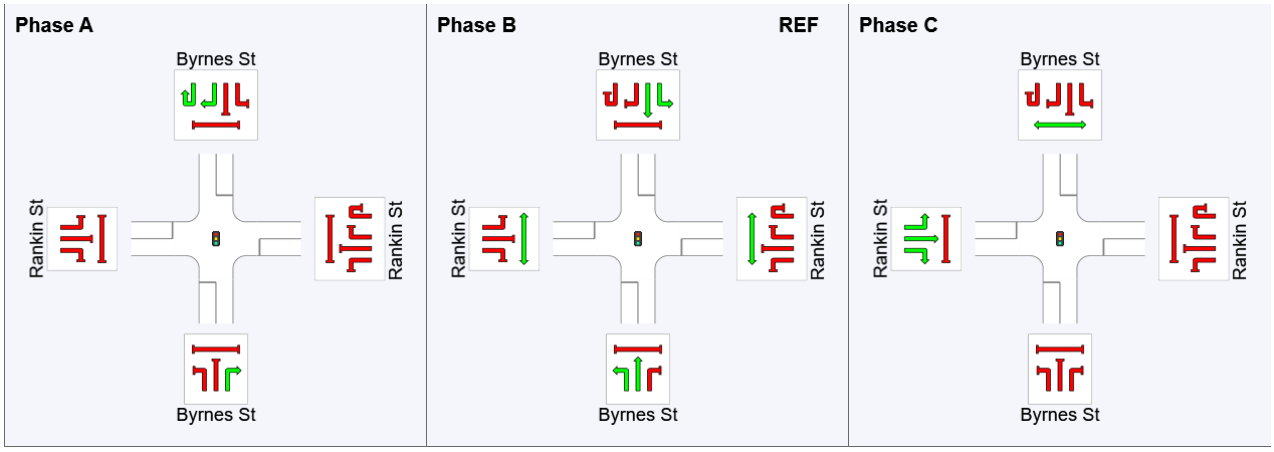
Phase Timing Summary

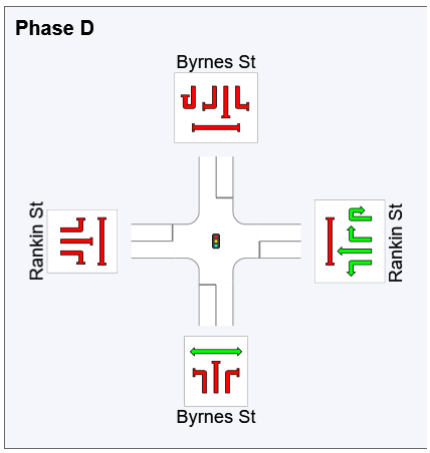
Phase	A	B	C	D
Phase Change Time (sec)	104	0	43	70
Green Time (sec)	20	37	21	28
Phase Time (sec)	26	43	27	34
Phase Split	20%	33%	21%	26%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

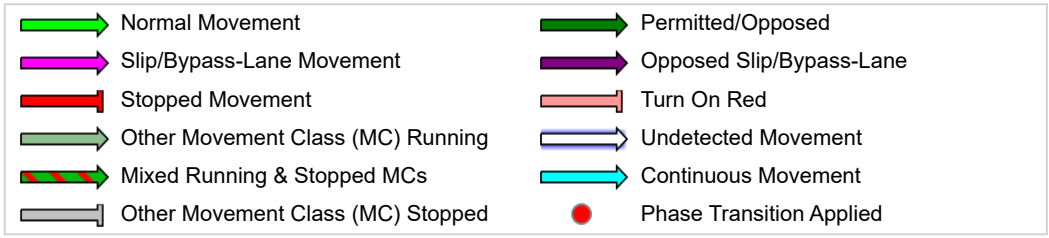
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2037 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	71	7.0	71	7.0	0.427	46.6	LOS D	11.4	84.7	0.86	0.75	0.86	5.2
2	T1	All MCs	377	7.0	377	7.0	0.427	40.8	LOS D	11.7	86.7	0.86	0.74	0.86	35.5
3	R2	All MCs	53	7.0	53	7.0	0.196	57.7	LOS E	3.0	22.2	0.91	0.75	0.91	10.1
Approach			501	7.0	501	7.0	0.427	43.5	LOS D	11.7	86.7	0.87	0.74	0.87	28.8
East: Rankin St															
4	L2	All MCs	80	7.0	80	7.0	* 0.775	84.7	LOS F	17.2	127.6	1.00	0.91	1.08	10.3
5	T1	All MCs	194	7.0	194	7.0	0.775	78.1	LOS E	17.2	127.6	1.00	0.91	1.08	9.4
6	R2	All MCs	59	7.0	59	7.0	0.158	73.4	LOS E	3.1	22.9	0.85	0.74	0.85	32.1
6u	U	All MCs	1	7.0	1	7.0	0.158	74.6	LOS E	3.1	22.9	0.85	0.74	0.85	11.8
Approach			334	7.0	334	7.0	0.775	78.8	LOS E	17.2	127.6	0.97	0.88	1.04	15.5
North: Byrnes St															
7	L2	All MCs	79	7.0	79	7.0	* 0.619	49.8	LOS D	17.8	132.0	0.93	0.81	0.93	32.1
8	T1	All MCs	555	7.0	555	7.0	0.619	45.5	LOS D	17.8	132.0	0.93	0.80	0.93	34.6
9	R2	All MCs	190	7.0	190	7.0	* 0.718	68.4	LOS E	12.2	90.7	1.00	0.86	1.06	21.6
9u	U	All MCs	4	7.0	4	7.0	0.718	69.8	LOS E	12.2	90.7	1.00	0.86	1.06	36.9
Approach			828	7.0	828	7.0	0.718	51.3	LOS D	17.8	132.0	0.94	0.81	0.96	30.3
West: Rankin St															
10	L2	All MCs	76	7.0	76	7.0	0.923	90.8	LOS F	17.3	128.4	1.00	1.09	1.37	25.1
11	T1	All MCs	154	7.0	154	7.0	* 0.923	85.0	LOS F	17.3	128.4	1.00	1.09	1.37	7.1
12	R2	All MCs	217	7.0	217	7.0	0.852	78.8	LOS E	14.9	110.8	1.00	0.95	1.22	7.0
Approach			448	7.0	448	7.0	0.923	83.0	LOS F	17.3	128.4	1.00	1.02	1.30	11.6
All Vehicles			2110	7.0	2110	7.0	0.923	60.5	LOS E	17.8	132.0	0.94	0.85	1.02	24.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2037 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

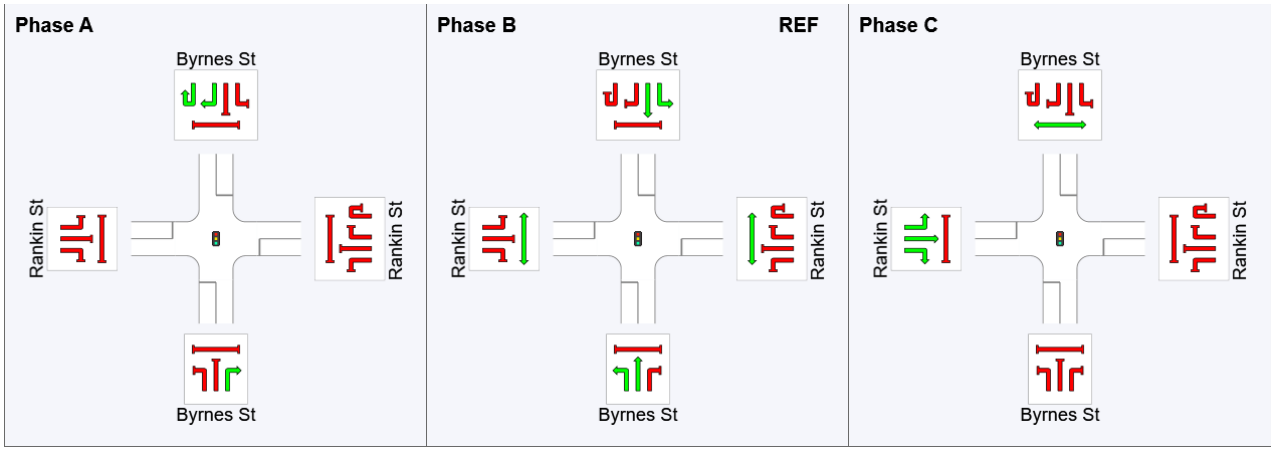
Phase Timing Summary

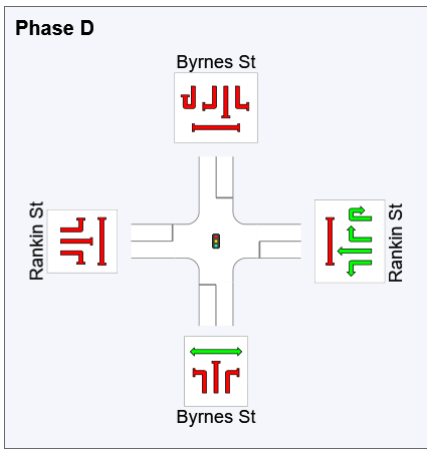
Phase	A	B	C	D
Phase Change Time (sec)	95	0	41	68
Green Time (sec)	19	35	21	21
Phase Time (sec)	25	41	27	27
Phase Split	21%	34%	23%	23%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

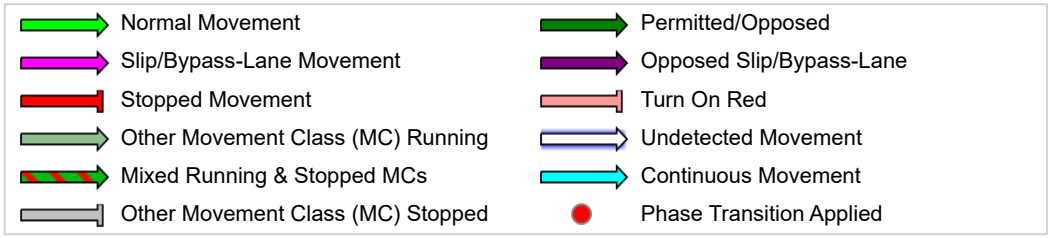
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2037 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	19	7.0	19	7.0	0.429	43.2	LOS D	11.0	81.6	0.86	0.73	0.86	5.4
2	T1	All MCs	447	7.0	447	7.0	0.429	37.4	LOS D	11.1	82.1	0.86	0.73	0.86	37.0
3	R2	All MCs	83	7.0	83	7.0	0.298	54.3	LOS D	4.4	32.6	0.93	0.77	0.93	10.6
Approach			549	7.0	549	7.0	0.429	40.1	LOS D	11.1	82.1	0.87	0.73	0.87	32.8
East: Rankin St															
4	L2	All MCs	69	7.0	69	7.0	0.557	59.1	LOS E	9.2	67.9	0.96	0.80	0.96	11.0
5	T1	All MCs	99	7.0	99	7.0	* 0.557	52.6	LOS D	9.2	67.9	0.96	0.80	0.96	10.1
6	R2	All MCs	86	7.0	86	7.0	0.300	56.0	LOS E	4.7	35.0	0.91	0.77	0.91	31.4
6u	U	All MCs	5	7.0	5	7.0	0.300	57.2	LOS E	4.7	35.0	0.91	0.77	0.91	11.4
Approach			259	7.0	259	7.0	0.557	55.6	LOS E	9.2	67.9	0.95	0.79	0.95	20.4
North: Byrnes St															
7	L2	All MCs	135	7.0	135	7.0	* 0.654	46.4	LOS D	17.8	131.8	0.93	0.82	0.93	32.9
8	T1	All MCs	548	7.0	548	7.0	0.654	42.3	LOS D	17.8	131.8	0.93	0.81	0.93	35.6
9	R2	All MCs	186	7.0	186	7.0	* 0.669	62.4	LOS E	10.7	79.2	0.99	0.83	1.02	22.4
9u	U	All MCs	1	7.0	1	7.0	0.669	63.8	LOS E	10.7	79.2	0.99	0.83	1.02	38.2
Approach			870	7.0	870	7.0	0.669	47.3	LOS D	17.8	131.8	0.95	0.82	0.95	31.4
West: Rankin St															
10	L2	All MCs	81	7.0	81	7.0	0.733	60.7	LOS E	13.0	96.5	1.00	0.88	1.07	30.2
11	T1	All MCs	143	7.0	143	7.0	* 0.733	54.8	LOS D	13.0	96.5	1.00	0.88	1.07	9.7
12	R2	All MCs	159	7.0	159	7.0	0.513	55.4	LOS E	8.6	63.7	0.96	0.80	0.96	8.8
Approach			383	7.0	383	7.0	0.733	56.3	LOS E	13.0	96.5	0.98	0.85	1.02	15.9
All Vehicles			2060	7.0	2060	7.0	0.733	48.1	LOS D	17.8	131.8	0.93	0.80	0.94	28.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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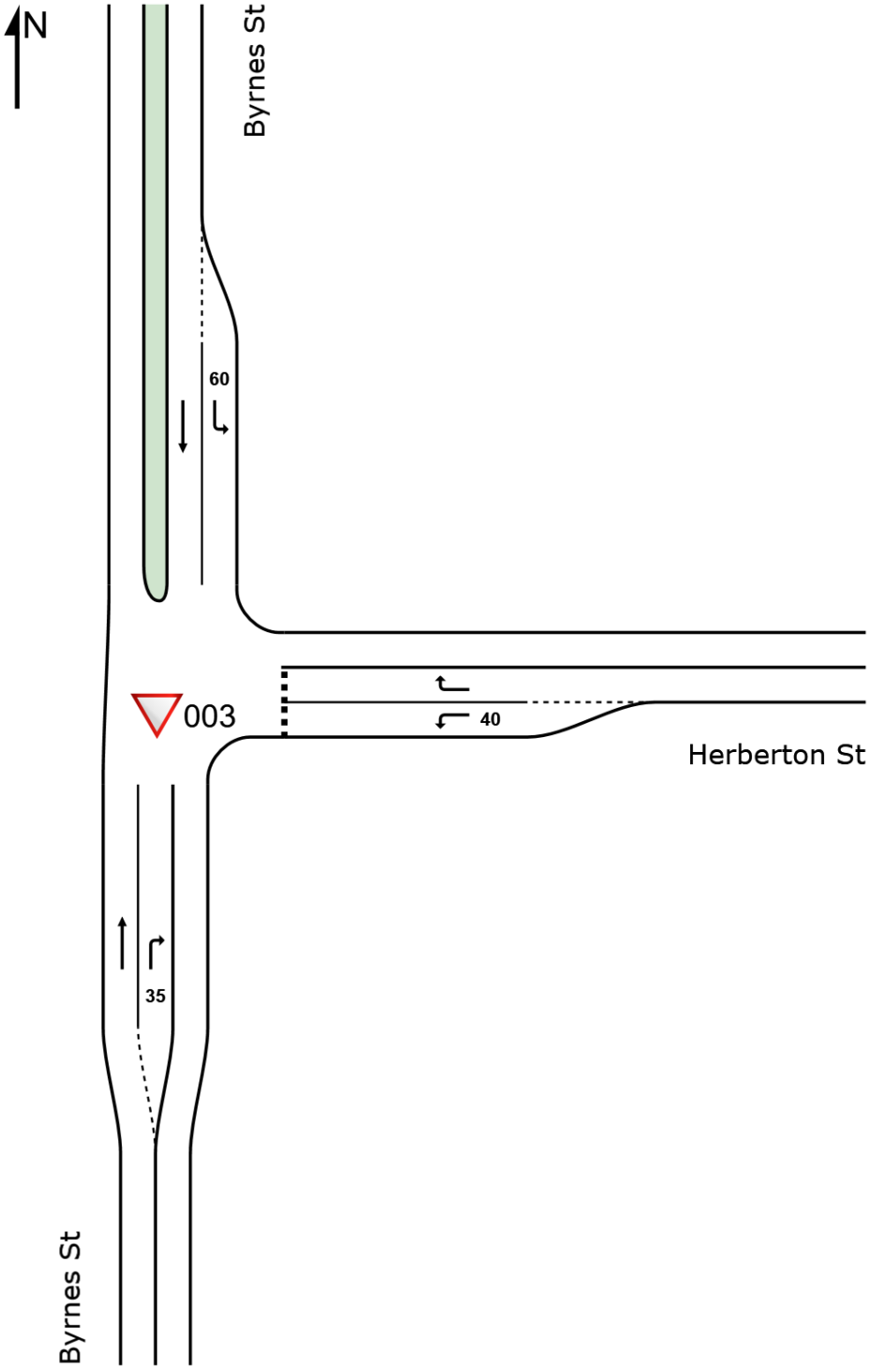
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 003 [3_2022 Survey AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 003 [3_2022 Survey AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	431	7.0	431	7.0	0.231	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	275	7.0	275	7.0	0.317	8.7	LOS A	1.6	12.2	0.56	0.74	0.60	37.5
Approach			705	7.0	705	7.0	0.317	3.4	NA	1.6	12.2	0.22	0.29	0.24	49.9
East: Herberton St															
4	L2	All MCs	169	7.0	169	7.0	0.196	7.9	LOS A	0.8	6.1	0.47	0.68	0.47	38.2
6	R2	All MCs	11	7.0	11	7.0	0.053	21.4	LOS C	0.1	1.1	0.79	0.91	0.79	26.6
Approach			180	7.0	180	7.0	0.196	8.7	LOS A	0.8	6.1	0.49	0.69	0.49	37.2
North: Byrnes St															
7	L2	All MCs	78	7.0	78	7.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	393	7.0	393	7.0	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			471	7.0	471	7.0	0.211	1.0	NA	0.0	0.0	0.00	0.10	0.00	56.6
All Vehicles			1356	7.0	1356	7.0	0.317	3.3	NA	1.6	12.2	0.18	0.27	0.19	50.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2022 Survey PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	331	7.0	331	7.0	0.177	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	200	7.0	200	7.0	0.262	9.3	LOS A	1.2	8.8	0.59	0.77	0.60	36.8
Approach			531	7.0	531	7.0	0.262	3.5	NA	1.2	8.8	0.22	0.29	0.23	49.8
East: Herberton St															
4	L2	All MCs	160	7.0	160	7.0	0.208	8.7	LOS A	0.9	6.3	0.53	0.73	0.53	37.3
6	R2	All MCs	22	7.0	22	7.0	0.096	19.5	LOS C	0.3	2.1	0.77	0.90	0.77	27.8
Approach			182	7.0	182	7.0	0.208	10.0	LOS A	0.9	6.3	0.56	0.75	0.56	35.8
North: Byrnes St															
7	L2	All MCs	91	7.0	91	7.0	0.051	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	484	7.0	484	7.0	0.260	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			575	7.0	575	7.0	0.260	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.7
All Vehicles			1287	7.0	1287	7.0	0.262	3.3	NA	1.2	8.8	0.17	0.27	0.17	50.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2022 Survey SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	377	7.0	377	7.0	0.202	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	171	7.0	171	7.0	0.205	8.5	LOS A	0.9	6.7	0.54	0.72	0.54	37.7
Approach			547	7.0	547	7.0	0.205	2.7	NA	0.9	6.7	0.17	0.23	0.17	51.8
East: Herberton St															
4	L2	All MCs	133	7.0	133	7.0	0.156	7.9	LOS A	0.6	4.7	0.47	0.68	0.47	38.2
6	R2	All MCs	27	7.0	27	7.0	0.108	18.1	LOS C	0.3	2.4	0.75	0.90	0.75	28.8
Approach			160	7.0	160	7.0	0.156	9.7	LOS A	0.6	4.7	0.52	0.72	0.52	36.1
North: Byrnes St															
7	L2	All MCs	102	7.0	102	7.0	0.058	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	407	7.0	407	7.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			509	7.0	509	7.0	0.218	1.1	NA	0.0	0.0	0.00	0.12	0.00	55.9
All Vehicles			1217	7.0	1217	7.0	0.218	3.0	NA	0.9	6.7	0.14	0.24	0.14	50.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	444	7.0	444	7.0	0.238	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	283	7.0	283	7.0	0.333	9.0	LOS A	1.8	13.3	0.58	0.76	0.64	37.2
Approach			728	7.0	728	7.0	0.333	3.5	NA	1.8	13.3	0.22	0.29	0.25	49.7
East: Herberton St															
4	L2	All MCs	175	7.0	175	7.0	0.206	8.0	LOS A	0.9	6.4	0.48	0.68	0.48	38.0
6	R2	All MCs	11	7.0	11	7.0	0.058	22.6	LOS C	0.2	1.2	0.81	0.92	0.81	25.9
Approach			186	7.0	186	7.0	0.206	8.9	LOS A	0.9	6.4	0.50	0.70	0.50	37.0
North: Byrnes St															
7	L2	All MCs	80	7.0	80	7.0	0.045	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	405	7.0	405	7.0	0.217	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			485	7.0	485	7.0	0.217	1.0	NA	0.0	0.0	0.00	0.10	0.00	56.6
All Vehicles			1399	7.0	1399	7.0	0.333	3.3	NA	1.8	13.3	0.18	0.28	0.20	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	341	7.0	341	7.0	0.183	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	206	7.0	206	7.0	0.277	9.6	LOS A	1.3	9.6	0.60	0.79	0.64	36.4
Approach			547	7.0	547	7.0	0.277	3.6	NA	1.3	9.6	0.23	0.30	0.24	49.6
East: Herberton St															
4	L2	All MCs	165	7.0	165	7.0	0.219	8.8	LOS A	0.9	6.7	0.54	0.73	0.54	37.1
6	R2	All MCs	23	7.0	23	7.0	0.106	20.6	LOS C	0.3	2.3	0.79	0.91	0.79	27.1
Approach			188	7.0	188	7.0	0.219	10.3	LOS B	0.9	6.7	0.57	0.76	0.57	35.5
North: Byrnes St															
7	L2	All MCs	93	7.0	93	7.0	0.053	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	500	7.0	500	7.0	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			593	7.0	593	7.0	0.268	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.7
All Vehicles			1328	7.0	1328	7.0	0.277	3.4	NA	1.3	9.6	0.17	0.27	0.18	50.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2027 BG SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	389	7.0	389	7.0	0.208	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	176	7.0	176	7.0	0.216	8.7	LOS A	1.0	7.0	0.55	0.73	0.55	37.5
Approach			565	7.0	565	7.0	0.216	2.7	NA	1.0	7.0	0.17	0.23	0.17	51.7
East: Herberton St															
4	L2	All MCs	137	7.0	137	7.0	0.164	8.0	LOS A	0.7	5.0	0.48	0.69	0.48	38.0
6	R2	All MCs	28	7.0	28	7.0	0.118	19.0	LOS C	0.4	2.6	0.77	0.90	0.77	28.2
Approach			165	7.0	165	7.0	0.164	9.9	LOS A	0.7	5.0	0.53	0.72	0.53	35.9
North: Byrnes St															
7	L2	All MCs	105	7.0	105	7.0	0.060	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	420	7.0	420	7.0	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			526	7.0	526	7.0	0.225	1.1	NA	0.0	0.0	0.00	0.12	0.00	55.9
All Vehicles			1256	7.0	1256	7.0	0.225	3.0	NA	1.0	7.0	0.15	0.25	0.15	50.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2027 BG+D AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	494	7.0	494	7.0	0.265	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	283	7.0	283	7.0	0.354	9.7	LOS A	2.0	14.8	0.61	0.80	0.72	36.4
Approach			778	7.0	778	7.0	0.354	3.6	NA	2.0	14.8	0.22	0.29	0.26	48.4
East: Herberton St															
4	L2	All MCs	175	7.0	175	7.0	0.219	8.5	LOS A	0.9	6.8	0.52	0.71	0.52	37.5
6	R2	All MCs	48	7.0	48	7.0	0.314	31.2	LOS D	1.0	7.2	0.88	0.99	1.03	18.0
Approach			223	7.0	223	7.0	0.314	13.4	LOS B	1.0	7.2	0.59	0.77	0.63	31.7
North: Byrnes St															
7	L2	All MCs	80	7.0	80	7.0	0.045	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	455	7.0	455	7.0	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			536	7.0	536	7.0	0.244	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.1
All Vehicles			1537	7.0	1537	7.0	0.354	4.0	NA	2.0	14.8	0.20	0.29	0.22	47.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG+D PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	408	7.0	408	7.0	0.219	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	206	7.0	206	7.0	0.304	10.6	LOS B	1.5	11.0	0.63	0.84	0.73	35.4
Approach			614	7.0	614	7.0	0.304	3.6	NA	1.5	11.0	0.21	0.28	0.24	48.6
East: Herberton St															
4	L2	All MCs	165	7.0	165	7.0	0.240	9.5	LOS A	1.0	7.2	0.57	0.77	0.58	36.3
6	R2	All MCs	73	7.0	73	7.0	0.437	32.2	LOS D	1.5	11.0	0.89	1.03	1.17	17.7
Approach			238	7.0	238	7.0	0.437	16.5	LOS C	1.5	11.0	0.67	0.85	0.76	28.8
North: Byrnes St															
7	L2	All MCs	93	7.0	93	7.0	0.053	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	566	7.0	566	7.0	0.304	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			660	7.0	660	7.0	0.304	0.8	NA	0.0	0.0	0.00	0.08	0.00	56.3
All Vehicles			1512	7.0	1512	7.0	0.437	4.4	NA	1.5	11.0	0.19	0.28	0.22	46.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG+D SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	460	7.0	460	7.0	0.246	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	176	7.0	176	7.0	0.237	9.3	LOS A	1.0	7.6	0.59	0.77	0.59	36.8
Approach			635	7.0	635	7.0	0.246	2.6	NA	1.0	7.6	0.16	0.21	0.16	51.0
East: Herberton St															
4	L2	All MCs	137	7.0	137	7.0	0.179	8.7	LOS A	0.7	5.4	0.52	0.73	0.52	37.3
6	R2	All MCs	81	7.0	81	7.0	0.442	29.8	LOS D	1.6	11.5	0.88	1.02	1.18	18.6
Approach			218	7.0	218	7.0	0.442	16.5	LOS C	1.6	11.5	0.65	0.84	0.76	28.5
North: Byrnes St															
7	L2	All MCs	105	7.0	105	7.0	0.060	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	491	7.0	491	7.0	0.263	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			596	7.0	596	7.0	0.263	1.0	NA	0.0	0.0	0.00	0.10	0.00	55.4
All Vehicles			1450	7.0	1450	7.0	0.442	4.0	NA	1.6	11.5	0.17	0.26	0.19	47.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
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MOVEMENT SUMMARY

Site: 003 [3_2037 BG+D AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	563	7.0	563	7.0	0.302	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	327	7.0	327	7.0	0.450	11.4	LOS B	2.9	21.6	0.67	0.91	0.94	34.5
Approach			890	7.0	890	7.0	0.450	4.2	NA	2.9	21.6	0.25	0.33	0.35	47.1
East: Herberton St															
4	L2	All MCs	202	7.0	202	7.0	0.274	9.3	LOS A	1.2	9.0	0.56	0.76	0.59	36.6
6	R2	All MCs	50	7.0	50	7.0	0.469	47.8	LOS E	1.4	10.5	0.93	1.04	1.21	13.5
Approach			252	7.0	252	7.0	0.469	16.9	LOS C	1.4	10.5	0.64	0.82	0.71	28.9
North: Byrnes St															
7	L2	All MCs	93	7.0	93	7.0	0.052	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	518	7.0	518	7.0	0.278	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			610	7.0	610	7.0	0.278	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.0
All Vehicles			1752	7.0	1752	7.0	0.469	4.9	NA	2.9	21.6	0.22	0.32	0.28	45.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
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MOVEMENT SUMMARY

Site: 003 [3_2037 BG+D PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	460	7.0	460	7.0	0.247	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	238	7.0	238	7.0	0.399	12.8	LOS B	2.2	16.1	0.69	0.95	0.93	33.2
Approach			698	7.0	698	7.0	0.399	4.4	NA	2.2	16.1	0.23	0.32	0.32	47.0
East: Herberton St															
4	L2	All MCs	191	7.0	191	7.0	0.310	11.1	LOS B	1.4	10.5	0.62	0.86	0.74	34.6
6	R2	All MCs	76	7.0	76	7.0	0.648	52.5	LOS F	2.3	16.9	0.95	1.11	1.49	12.6
Approach			267	7.0	267	7.0	0.648	23.0	LOS C	2.3	16.9	0.72	0.93	0.95	24.7
North: Byrnes St															
7	L2	All MCs	108	7.0	108	7.0	0.061	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	643	7.0	643	7.0	0.345	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			751	7.0	751	7.0	0.345	0.8	NA	0.0	0.0	0.00	0.08	0.00	56.2
All Vehicles			1716	7.0	1716	7.0	0.648	5.7	NA	2.3	16.9	0.21	0.31	0.28	44.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2037 BG+D SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	537	7.0	537	7.0	0.288	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	211	7.0	211	7.0	0.327	11.3	LOS B	1.6	12.1	0.65	0.87	0.78	34.7
Approach			749	7.0	749	7.0	0.327	3.2	NA	1.6	12.1	0.18	0.25	0.22	49.7
East: Herberton St															
4	L2	All MCs	164	7.0	164	7.0	0.242	9.7	LOS A	1.0	7.3	0.58	0.78	0.59	36.2
6	R2	All MCs	87	7.0	87	7.0	0.715	55.8	LOS F	2.7	20.1	0.96	1.16	1.67	12.0
Approach			251	7.0	251	7.0	0.715	25.6	LOS D	2.7	20.1	0.71	0.91	0.96	23.1
North: Byrnes St															
7	L2	All MCs	126	7.0	126	7.0	0.071	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	575	7.0	575	7.0	0.308	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			702	7.0	702	7.0	0.308	1.0	NA	0.0	0.0	0.00	0.10	0.00	55.3
All Vehicles			1701	7.0	1701	7.0	0.715	5.6	NA	2.7	20.1	0.19	0.29	0.24	44.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

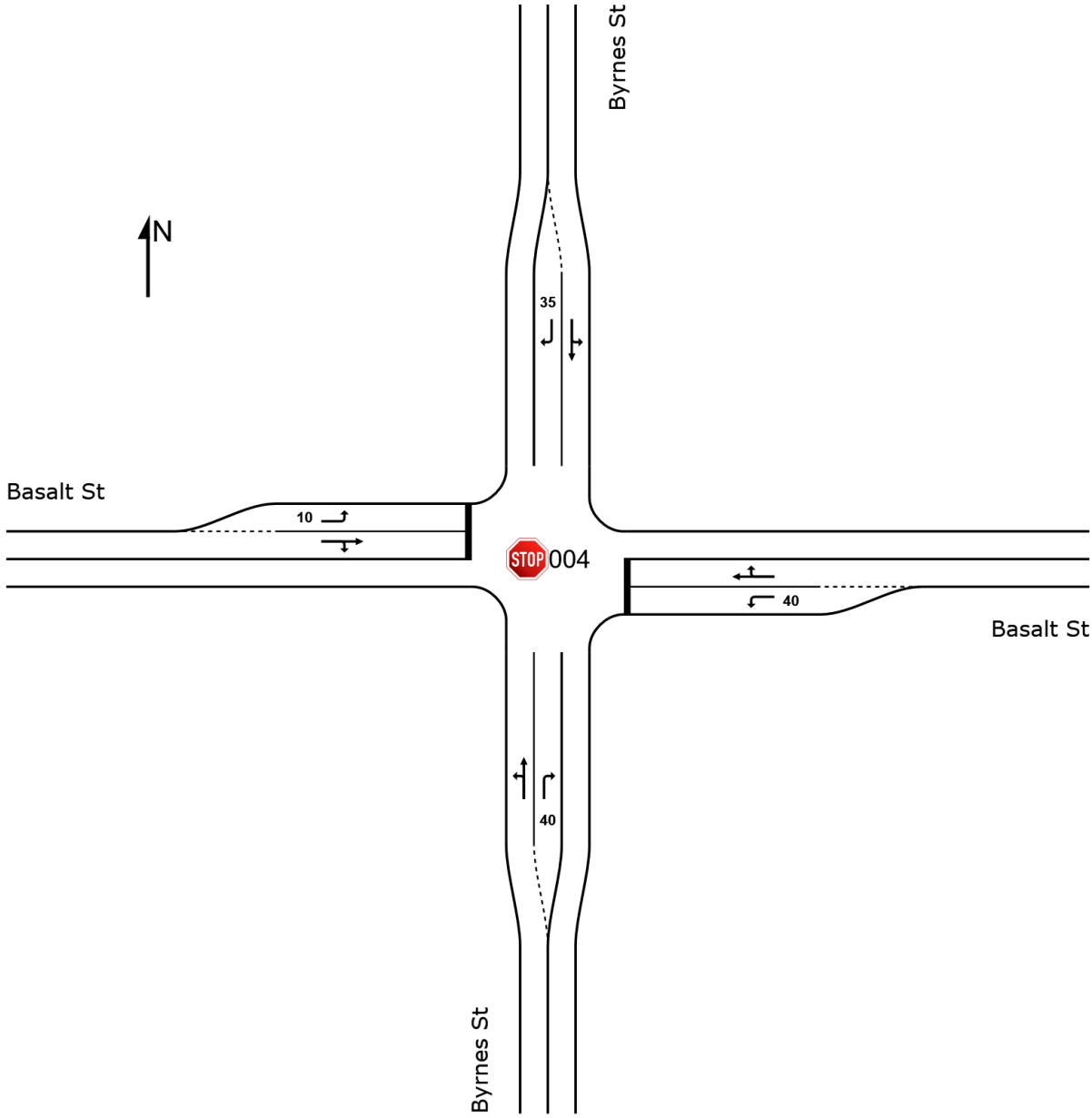
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SITE LAYOUT

Site: 004 [4_2022 Survey AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 004 [4_2022 Survey AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	18	7.0	18	7.0	0.183	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	322	7.0	322	7.0	0.183	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	69	7.0	69	7.0	0.061	7.3	LOS A	0.3	2.0	0.47	0.64	0.47	51.2
Approach			409	7.0	409	7.0	0.183	1.5	NA	0.3	2.0	0.08	0.13	0.08	57.3
East: Basalt St															
4	L2	All MCs	49	7.0	49	7.0	0.068	10.9	LOS B	0.2	1.8	0.46	0.91	0.46	49.7
5	T1	All MCs	9	7.0	9	7.0	0.030	14.3	LOS B	0.1	0.8	0.66	0.95	0.66	47.5
6	R2	All MCs	4	7.0	4	7.0	0.030	15.2	LOS C	0.1	0.8	0.66	0.95	0.66	43.2
Approach			63	7.0	63	7.0	0.068	11.7	LOS B	0.2	1.8	0.50	0.92	0.50	49.0
North: Byrnes St															
7	L2	All MCs	22	7.0	22	7.0	0.223	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	393	7.0	393	7.0	0.223	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	106	7.0	106	7.0	0.087	7.0	LOS A	0.3	2.6	0.39	0.63	0.39	48.4
Approach			521	7.0	521	7.0	0.223	1.7	NA	0.3	2.6	0.08	0.15	0.08	56.7
West: Basalt St															
10	L2	All MCs	74	7.0	74	7.0	0.095	10.4	LOS B	0.3	2.5	0.42	0.92	0.42	46.3
11	T1	All MCs	2	7.0	2	7.0	0.021	14.3	LOS B	0.1	0.5	0.67	0.93	0.67	47.4
12	R2	All MCs	7	7.0	7	7.0	0.021	14.8	LOS B	0.1	0.5	0.67	0.93	0.67	47.4
Approach			83	7.0	83	7.0	0.095	10.9	LOS B	0.3	2.5	0.45	0.92	0.45	46.4
All Vehicles			1077	7.0	1077	7.0	0.223	2.9	NA	0.3	2.6	0.13	0.25	0.13	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2022 Survey PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	22	7.0	22	7.0	0.239	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	422	7.0	422	7.0	0.239	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	47	7.0	47	7.0	0.052	8.4	LOS A	0.2	1.6	0.55	0.70	0.55	50.6
Approach			492	7.0	492	7.0	0.239	1.1	NA	0.2	1.6	0.05	0.09	0.05	58.0
East: Basalt St															
4	L2	All MCs	77	7.0	77	7.0	0.137	12.9	LOS B	0.5	3.6	0.56	0.99	0.56	48.6
5	T1	All MCs	12	7.0	12	7.0	0.038	17.8	LOS C	0.1	0.9	0.76	1.00	0.76	45.7
6	R2	All MCs	1	7.0	1	7.0	0.038	19.3	LOS C	0.1	0.9	0.76	1.00	0.76	41.1
Approach			89	7.0	89	7.0	0.137	13.6	LOS B	0.5	3.6	0.59	0.99	0.59	48.1
North: Byrnes St															
7	L2	All MCs	27	7.0	27	7.0	0.312	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	553	7.0	553	7.0	0.312	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	64	7.0	64	7.0	0.060	7.5	LOS A	0.2	1.7	0.44	0.66	0.44	48.1
Approach			644	7.0	644	7.0	0.312	1.0	NA	0.2	1.7	0.04	0.09	0.04	57.9
West: Basalt St															
10	L2	All MCs	81	7.0	81	7.0	0.121	11.5	LOS B	0.4	3.2	0.49	0.96	0.49	45.5
11	T1	All MCs	9	7.0	9	7.0	0.060	18.0	LOS C	0.2	1.4	0.77	1.00	0.77	45.2
12	R2	All MCs	9	7.0	9	7.0	0.060	19.3	LOS C	0.2	1.4	0.77	1.00	0.77	45.3
Approach			100	7.0	100	7.0	0.121	12.8	LOS B	0.4	3.2	0.55	0.97	0.55	45.5
All Vehicles			1325	7.0	1325	7.0	0.312	2.8	NA	0.5	3.6	0.12	0.22	0.12	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2022 Survey SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.231	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	415	7.0	415	7.0	0.231	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	21	7.0	21	7.0	0.019	7.4	LOS A	0.1	0.6	0.48	0.62	0.48	51.2
Approach			452	7.0	452	7.0	0.231	0.6	NA	0.1	0.6	0.02	0.05	0.02	58.8
East: Basalt St															
4	L2	All MCs	52	7.0	52	7.0	0.076	11.4	LOS B	0.3	2.0	0.49	0.93	0.49	49.5
5	T1	All MCs	8	7.0	8	7.0	0.027	14.9	LOS B	0.1	0.7	0.69	0.96	0.69	47.1
6	R2	All MCs	3	7.0	3	7.0	0.027	16.4	LOS C	0.1	0.7	0.69	0.96	0.69	42.8
Approach			63	7.0	63	7.0	0.076	12.1	LOS B	0.3	2.0	0.52	0.93	0.52	48.9
North: Byrnes St															
7	L2	All MCs	17	7.0	17	7.0	0.243	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	436	7.0	436	7.0	0.243	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
9	R2	All MCs	68	7.0	68	7.0	0.063	7.4	LOS A	0.2	1.8	0.43	0.65	0.43	48.1
Approach			521	7.0	521	7.0	0.243	1.2	NA	0.2	1.8	0.06	0.11	0.06	57.7
West: Basalt St															
10	L2	All MCs	99	7.0	99	7.0	0.146	11.5	LOS B	0.5	3.9	0.50	0.96	0.50	45.6
11	T1	All MCs	11	7.0	11	7.0	0.047	15.1	LOS C	0.2	1.2	0.69	0.99	0.69	47.0
12	R2	All MCs	9	7.0	9	7.0	0.047	15.8	LOS C	0.2	1.2	0.69	0.99	0.69	47.1
Approach			119	7.0	119	7.0	0.146	12.1	LOS B	0.5	3.9	0.53	0.96	0.53	45.9
All Vehicles			1155	7.0	1155	7.0	0.243	2.7	NA	0.5	3.9	0.12	0.22	0.12	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2027 BG AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	18	7.0	18	7.0	0.189	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	332	7.0	332	7.0	0.189	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	72	7.0	72	7.0	0.064	7.4	LOS A	0.3	2.1	0.48	0.65	0.48	51.2
Approach			422	7.0	422	7.0	0.189	1.5	NA	0.3	2.1	0.08	0.14	0.08	57.3
East: Basalt St															
4	L2	All MCs	51	7.0	51	7.0	0.072	11.0	LOS B	0.3	1.9	0.47	0.92	0.47	49.7
5	T1	All MCs	10	7.0	10	7.0	0.032	14.7	LOS B	0.1	0.8	0.68	0.96	0.68	47.3
6	R2	All MCs	4	7.0	4	7.0	0.032	15.7	LOS C	0.1	0.8	0.68	0.96	0.68	43.0
Approach			65	7.0	65	7.0	0.072	11.9	LOS B	0.3	1.9	0.51	0.93	0.51	48.9
North: Byrnes St															
7	L2	All MCs	23	7.0	23	7.0	0.230	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	405	7.0	405	7.0	0.230	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	110	7.0	110	7.0	0.091	7.0	LOS A	0.4	2.7	0.40	0.63	0.40	48.4
Approach			538	7.0	538	7.0	0.230	1.7	NA	0.4	2.7	0.08	0.15	0.08	56.7
West: Basalt St															
10	L2	All MCs	76	7.0	76	7.0	0.099	10.5	LOS B	0.4	2.6	0.43	0.92	0.43	46.2
11	T1	All MCs	2	7.0	2	7.0	0.023	14.7	LOS B	0.1	0.6	0.68	0.94	0.68	47.2
12	R2	All MCs	8	7.0	8	7.0	0.023	15.2	LOS C	0.1	0.6	0.68	0.94	0.68	47.2
Approach			86	7.0	86	7.0	0.099	11.1	LOS B	0.4	2.6	0.46	0.92	0.46	46.3
All Vehicles			1111	7.0	1111	7.0	0.230	3.0	NA	0.4	2.7	0.14	0.25	0.14	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2027 BG PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	23	7.0	23	7.0	0.246	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	436	7.0	436	7.0	0.246	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	49	7.0	49	7.0	0.055	8.5	LOS A	0.2	1.7	0.56	0.71	0.56	50.5
Approach			507	7.0	507	7.0	0.246	1.1	NA	0.2	1.7	0.05	0.10	0.05	58.0
East: Basalt St															
4	L2	All MCs	79	7.0	79	7.0	0.145	13.2	LOS B	0.5	3.8	0.57	1.00	0.57	48.4
5	T1	All MCs	12	7.0	12	7.0	0.042	18.5	LOS C	0.1	1.0	0.77	1.00	0.77	45.3
6	R2	All MCs	1	7.0	1	7.0	0.042	20.2	LOS C	0.1	1.0	0.77	1.00	0.77	40.6
Approach			92	7.0	92	7.0	0.145	14.0	LOS B	0.5	3.8	0.60	1.00	0.60	47.9
North: Byrnes St															
7	L2	All MCs	28	7.0	28	7.0	0.322	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	570	7.0	570	7.0	0.322	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
9	R2	All MCs	66	7.0	66	7.0	0.063	7.6	LOS A	0.2	1.8	0.45	0.66	0.45	48.0
Approach			665	7.0	665	7.0	0.322	1.0	NA	0.2	1.8	0.04	0.09	0.04	57.9
West: Basalt St															
10	L2	All MCs	84	7.0	84	7.0	0.128	11.6	LOS B	0.4	3.3	0.50	0.96	0.50	45.4
11	T1	All MCs	10	7.0	10	7.0	0.066	18.8	LOS C	0.2	1.6	0.79	1.00	0.79	44.8
12	R2	All MCs	10	7.0	10	7.0	0.066	20.2	LOS C	0.2	1.6	0.79	1.00	0.79	44.8
Approach			103	7.0	103	7.0	0.128	13.1	LOS B	0.4	3.3	0.56	0.97	0.56	45.3
All Vehicles			1367	7.0	1367	7.0	0.322	2.9	NA	0.5	3.8	0.12	0.22	0.12	55.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 004 [4_2027 BG SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.239	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	428	7.0	428	7.0	0.239	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	22	7.0	22	7.0	0.020	7.5	LOS A	0.1	0.6	0.49	0.62	0.49	51.1
Approach			466	7.0	466	7.0	0.239	0.6	NA	0.1	0.6	0.02	0.05	0.02	58.8
East: Basalt St															
4	L2	All MCs	53	7.0	53	7.0	0.080	11.5	LOS B	0.3	2.1	0.49	0.93	0.49	49.4
5	T1	All MCs	9	7.0	9	7.0	0.030	15.4	LOS C	0.1	0.7	0.70	0.97	0.70	46.8
6	R2	All MCs	3	7.0	3	7.0	0.030	17.0	LOS C	0.1	0.7	0.70	0.97	0.70	42.4
Approach			65	7.0	65	7.0	0.080	12.3	LOS B	0.3	2.1	0.53	0.94	0.53	48.8
North: Byrnes St															
7	L2	All MCs	17	7.0	17	7.0	0.251	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	450	7.0	450	7.0	0.251	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
9	R2	All MCs	71	7.0	71	7.0	0.066	7.5	LOS A	0.3	1.9	0.44	0.66	0.44	48.1
Approach			538	7.0	538	7.0	0.251	1.2	NA	0.3	1.9	0.06	0.11	0.06	57.7
West: Basalt St															
10	L2	All MCs	102	7.0	102	7.0	0.154	11.6	LOS B	0.6	4.1	0.51	0.96	0.51	45.4
11	T1	All MCs	11	7.0	11	7.0	0.051	15.5	LOS C	0.2	1.3	0.71	1.00	0.71	46.8
12	R2	All MCs	10	7.0	10	7.0	0.051	16.3	LOS C	0.2	1.3	0.71	1.00	0.71	46.8
Approach			123	7.0	123	7.0	0.154	12.4	LOS B	0.6	4.1	0.54	0.97	0.54	45.7
All Vehicles			1191	7.0	1191	7.0	0.251	2.7	NA	0.6	4.1	0.12	0.22	0.12	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 004 [4_2027 BG+D AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	18	7.0	18	7.0	0.215	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.9
2	T1	All MCs	382	7.0	382	7.0	0.215	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	72	7.0	72	7.0	0.068	7.7	LOS A	0.3	2.2	0.51	0.67	0.51	51.0
Approach			473	7.0	473	7.0	0.215	1.4	NA	0.3	2.2	0.08	0.12	0.08	57.5
East: Basalt St															
4	L2	All MCs	51	7.0	51	7.0	0.078	11.6	LOS B	0.3	2.1	0.50	0.93	0.50	49.4
5	T1	All MCs	10	7.0	10	7.0	0.038	16.2	LOS C	0.1	0.9	0.72	0.99	0.72	46.4
6	R2	All MCs	4	7.0	4	7.0	0.038	17.4	LOS C	0.1	0.9	0.72	0.99	0.72	41.9
Approach			65	7.0	65	7.0	0.078	12.6	LOS B	0.3	2.1	0.55	0.95	0.55	48.5
North: Byrnes St															
7	L2	All MCs	23	7.0	23	7.0	0.257	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	455	7.0	455	7.0	0.257	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	110	7.0	110	7.0	0.097	7.3	LOS A	0.4	2.8	0.43	0.66	0.43	48.2
Approach			588	7.0	588	7.0	0.257	1.6	NA	0.4	2.8	0.08	0.15	0.08	56.9
West: Basalt St															
10	L2	All MCs	76	7.0	76	7.0	0.107	11.0	LOS B	0.4	2.8	0.47	0.94	0.47	45.9
11	T1	All MCs	2	7.0	2	7.0	0.027	16.2	LOS C	0.1	0.6	0.73	0.97	0.73	46.3
12	R2	All MCs	8	7.0	8	7.0	0.027	16.9	LOS C	0.1	0.6	0.73	0.97	0.73	46.3
Approach			86	7.0	86	7.0	0.107	11.7	LOS B	0.4	2.8	0.50	0.94	0.50	45.9
All Vehicles			1211	7.0	1211	7.0	0.257	2.9	NA	0.4	2.8	0.13	0.24	0.13	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2027 BG+D PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	23	7.0	23	7.0	0.282	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	502	7.0	502	7.0	0.282	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	49	7.0	49	7.0	0.061	9.1	LOS A	0.2	1.8	0.59	0.75	0.59	50.1
Approach			574	7.0	574	7.0	0.282	1.1	NA	0.2	1.8	0.05	0.09	0.05	58.1
East: Basalt St															
4	L2	All MCs	79	7.0	79	7.0	0.164	14.3	LOS B	0.6	4.2	0.62	1.00	0.62	47.8
5	T1	All MCs	12	7.0	12	7.0	0.053	21.8	LOS C	0.2	1.2	0.82	1.00	0.82	43.5
6	R2	All MCs	1	7.0	1	7.0	0.053	24.1	LOS C	0.2	1.2	0.82	1.00	0.82	38.6
Approach			92	7.0	92	7.0	0.164	15.4	LOS C	0.6	4.2	0.64	1.00	0.64	47.1
North: Byrnes St															
7	L2	All MCs	28	7.0	28	7.0	0.357	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	637	7.0	637	7.0	0.357	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
9	R2	All MCs	66	7.0	66	7.0	0.069	8.1	LOS A	0.3	1.9	0.48	0.70	0.48	47.6
Approach			731	7.0	731	7.0	0.357	1.0	NA	0.3	1.9	0.04	0.09	0.04	58.0
West: Basalt St															
10	L2	All MCs	84	7.0	84	7.0	0.143	12.5	LOS B	0.5	3.7	0.54	0.99	0.54	44.8
11	T1	All MCs	10	7.0	10	7.0	0.084	22.2	LOS C	0.3	1.9	0.83	1.00	0.83	42.9
12	R2	All MCs	10	7.0	10	7.0	0.084	24.0	LOS C	0.3	1.9	0.83	1.00	0.83	43.0
Approach			103	7.0	103	7.0	0.143	14.5	LOS B	0.5	3.7	0.60	0.99	0.60	44.3
All Vehicles			1501	7.0	1501	7.0	0.357	2.8	NA	0.6	4.2	0.12	0.21	0.12	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2027 BG+D SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.277	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	499	7.0	499	7.0	0.277	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	22	7.0	22	7.0	0.022	8.0	LOS A	0.1	0.7	0.53	0.65	0.53	50.8
Approach			537	7.0	537	7.0	0.277	0.6	NA	0.1	0.7	0.02	0.04	0.02	58.9
East: Basalt St															
4	L2	All MCs	53	7.0	53	7.0	0.090	12.3	LOS B	0.3	2.3	0.53	0.96	0.53	48.9
5	T1	All MCs	9	7.0	9	7.0	0.037	17.8	LOS C	0.1	0.9	0.76	1.00	0.76	45.4
6	R2	All MCs	3	7.0	3	7.0	0.037	19.9	LOS C	0.1	0.9	0.76	1.00	0.76	40.8
Approach			65	7.0	65	7.0	0.090	13.4	LOS B	0.3	2.3	0.57	0.97	0.57	48.1
North: Byrnes St															
7	L2	All MCs	17	7.0	17	7.0	0.289	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	520	7.0	520	7.0	0.289	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
9	R2	All MCs	71	7.0	71	7.0	0.073	8.0	LOS A	0.3	2.0	0.48	0.69	0.48	47.6
Approach			608	7.0	608	7.0	0.289	1.1	NA	0.3	2.0	0.06	0.10	0.06	57.8
West: Basalt St															
10	L2	All MCs	102	7.0	102	7.0	0.174	12.6	LOS B	0.6	4.5	0.55	0.99	0.55	44.8
11	T1	All MCs	11	7.0	11	7.0	0.064	18.0	LOS C	0.2	1.5	0.77	1.00	0.77	45.3
12	R2	All MCs	10	7.0	10	7.0	0.064	19.0	LOS C	0.2	1.5	0.77	1.00	0.77	45.4
Approach			123	7.0	123	7.0	0.174	13.5	LOS B	0.6	4.5	0.59	0.99	0.59	44.9
All Vehicles			1333	7.0	1333	7.0	0.289	2.6	NA	0.6	4.5	0.12	0.20	0.12	56.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2037 BG+D AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	21	7.0	21	7.0	0.245	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	434	7.0	434	7.0	0.245	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	83	7.0	83	7.0	0.086	8.2	LOS A	0.4	2.8	0.55	0.71	0.55	50.7
Approach			538	7.0	538	7.0	0.245	1.5	NA	0.4	2.8	0.08	0.13	0.08	57.4
East: Basalt St															
4	L2	All MCs	59	7.0	59	7.0	0.099	12.3	LOS B	0.3	2.6	0.53	0.96	0.53	48.9
5	T1	All MCs	11	7.0	11	7.0	0.055	19.0	LOS C	0.2	1.3	0.78	1.00	0.78	44.8
6	R2	All MCs	5	7.0	5	7.0	0.055	20.8	LOS C	0.2	1.3	0.78	1.00	0.78	40.1
Approach			75	7.0	75	7.0	0.099	13.9	LOS B	0.3	2.6	0.59	0.97	0.59	47.7
North: Byrnes St															
7	L2	All MCs	26	7.0	26	7.0	0.292	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	518	7.0	518	7.0	0.292	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	127	7.0	127	7.0	0.120	7.7	LOS A	0.5	3.5	0.46	0.69	0.46	47.9
Approach			671	7.0	671	7.0	0.292	1.7	NA	0.5	3.5	0.09	0.15	0.09	56.7
West: Basalt St															
10	L2	All MCs	88	7.0	88	7.0	0.134	11.6	LOS B	0.5	3.5	0.50	0.96	0.50	45.4
11	T1	All MCs	3	7.0	3	7.0	0.039	19.0	LOS C	0.1	0.9	0.79	1.00	0.79	44.6
12	R2	All MCs	9	7.0	9	7.0	0.039	20.0	LOS C	0.1	0.9	0.79	1.00	0.79	44.7
Approach			99	7.0	99	7.0	0.134	12.6	LOS B	0.5	3.5	0.54	0.97	0.54	45.3
All Vehicles			1382	7.0	1382	7.0	0.292	3.1	NA	0.5	3.5	0.15	0.25	0.15	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2037 BG+D PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	26	7.0	26	7.0	0.320	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	569	7.0	569	7.0	0.320	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	56	7.0	56	7.0	0.082	10.1	LOS B	0.3	2.4	0.63	0.81	0.63	49.4
Approach			652	7.0	652	7.0	0.320	1.2	NA	0.3	2.4	0.05	0.09	0.05	57.9
East: Basalt St															
4	L2	All MCs	92	7.0	92	7.0	0.226	16.5	LOS C	0.8	6.0	0.70	1.02	0.75	46.6
5	T1	All MCs	14	7.0	14	7.0	0.087	28.1	LOS D	0.2	1.8	0.87	1.00	0.87	40.4
6	R2	All MCs	1	7.0	1	7.0	0.087	32.2	LOS D	0.2	1.8	0.87	1.00	0.87	35.3
Approach			107	7.0	107	7.0	0.226	18.2	LOS C	0.8	6.0	0.72	1.02	0.76	45.6
North: Byrnes St															
7	L2	All MCs	33	7.0	33	7.0	0.407	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	55.5
8	T1	All MCs	725	7.0	725	7.0	0.407	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
9	R2	All MCs	76	7.0	76	7.0	0.089	8.7	LOS A	0.3	2.4	0.52	0.74	0.52	47.1
Approach			834	7.0	834	7.0	0.407	1.1	NA	0.3	2.4	0.05	0.09	0.05	57.9
West: Basalt St															
10	L2	All MCs	97	7.0	97	7.0	0.187	13.6	LOS B	0.6	4.8	0.59	1.00	0.59	44.0
11	T1	All MCs	11	7.0	11	7.0	0.140	28.8	LOS D	0.4	2.9	0.89	1.00	0.89	39.6
12	R2	All MCs	11	7.0	11	7.0	0.140	32.1	LOS D	0.4	2.9	0.89	1.00	0.89	39.6
Approach			119	7.0	119	7.0	0.187	16.8	LOS C	0.6	4.8	0.65	1.00	0.65	42.8
All Vehicles			1711	7.0	1711	7.0	0.407	3.3	NA	0.8	6.0	0.13	0.21	0.14	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2037 BG+D SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	19	7.0	19	7.0	0.313	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	565	7.0	565	7.0	0.313	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	25	7.0	25	7.0	0.029	8.5	LOS A	0.1	0.9	0.56	0.69	0.56	50.4
Approach			608	7.0	608	7.0	0.313	0.6	NA	0.1	0.9	0.02	0.05	0.02	58.8
East: Basalt St															
4	L2	All MCs	61	7.0	61	7.0	0.117	13.4	LOS B	0.4	3.0	0.57	1.00	0.57	48.3
5	T1	All MCs	10	7.0	10	7.0	0.057	21.3	LOS C	0.2	1.3	0.82	1.00	0.82	43.4
6	R2	All MCs	4	7.0	4	7.0	0.057	24.6	LOS C	0.2	1.3	0.82	1.00	0.82	38.5
Approach			75	7.0	75	7.0	0.117	15.0	LOS B	0.4	3.0	0.62	1.00	0.62	47.2
North: Byrnes St															
7	L2	All MCs	20	7.0	20	7.0	0.327	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	590	7.0	590	7.0	0.327	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
9	R2	All MCs	81	7.0	81	7.0	0.093	8.6	LOS A	0.3	2.5	0.51	0.74	0.51	47.1
Approach			691	7.0	691	7.0	0.327	1.2	NA	0.3	2.5	0.06	0.10	0.06	57.7
West: Basalt St															
10	L2	All MCs	118	7.0	118	7.0	0.226	13.8	LOS B	0.8	6.1	0.60	1.01	0.63	43.9
11	T1	All MCs	13	7.0	13	7.0	0.097	21.7	LOS C	0.3	2.2	0.83	1.00	0.83	43.3
12	R2	All MCs	11	7.0	11	7.0	0.097	23.1	LOS C	0.3	2.2	0.83	1.00	0.83	43.4
Approach			142	7.0	142	7.0	0.226	15.2	LOS C	0.8	6.1	0.64	1.01	0.66	43.8
All Vehicles			1516	7.0	1516	7.0	0.327	3.0	NA	0.8	6.1	0.13	0.21	0.13	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

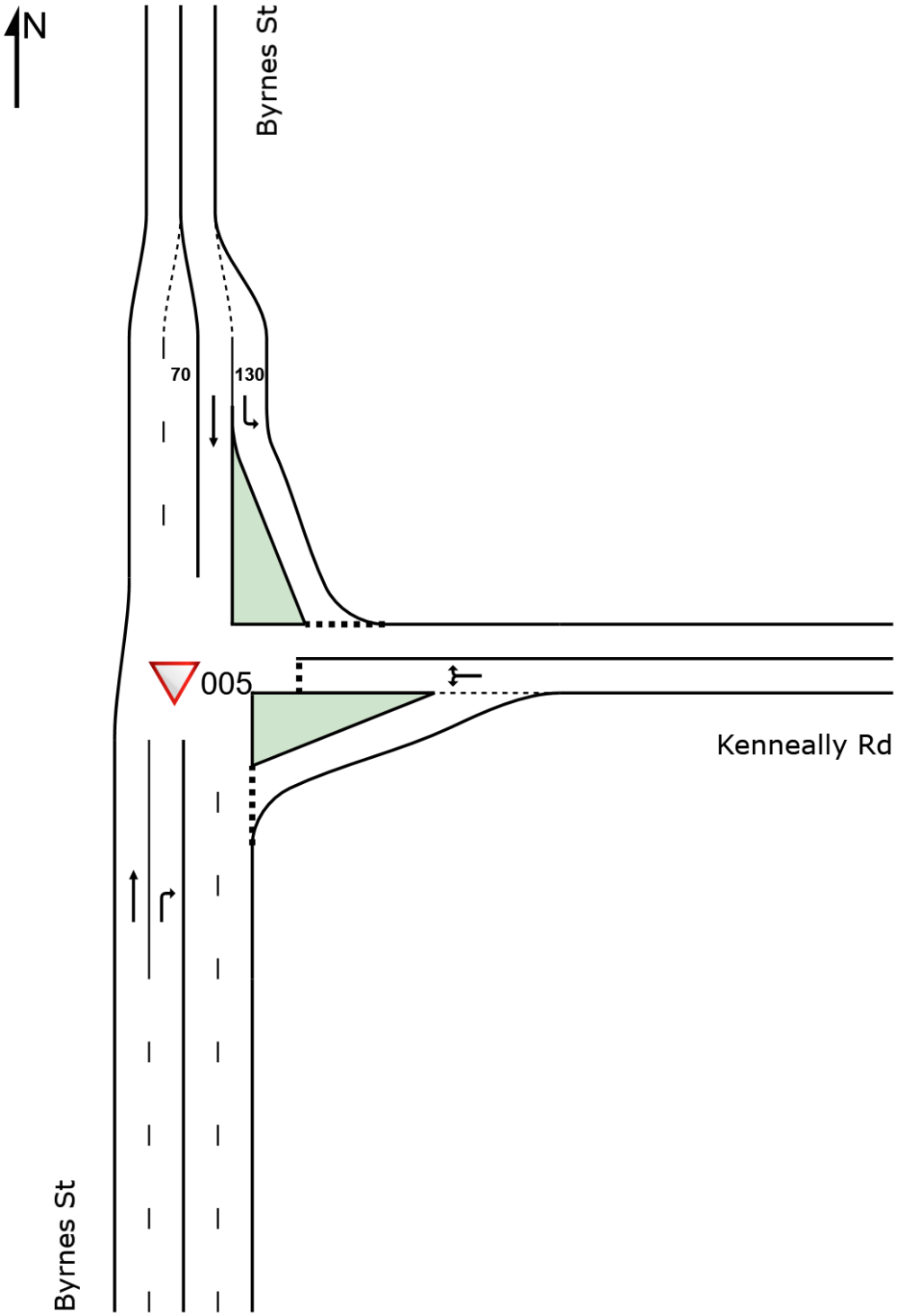
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SITE LAYOUT

Site: 005 [5_2022 Survey AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 005 [5_2022 Survey AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	666	7.0	666	7.0	0.357	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	42	7.0	42	7.0	0.036	4.3	LOS A	0.2	1.1	0.44	0.58	0.44	48.7
Approach			708	7.0	708	7.0	0.357	0.3	NA	0.2	1.1	0.03	0.03	0.03	59.0
East: Kenneally Rd															
4	L2	All MCs	49	7.0	49	7.0	0.502	10.7	LOS B	2.3	16.8	0.81	1.04	1.27	34.3
6	R2	All MCs	95	7.0	95	7.0	0.502	31.2	LOS D	2.3	16.8	0.81	1.04	1.27	42.1
Approach			144	7.0	144	7.0	0.502	24.2	LOS C	2.3	16.8	0.81	1.04	1.27	40.1
North: Byrnes St															
7	L2	All MCs	97	7.0	97	7.0	0.064	5.8	LOS A	0.3	1.9	0.12	0.52	0.12	52.6
8	T1	All MCs	375	7.0	375	7.0	0.201	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			472	7.0	472	7.0	0.201	1.2	LOS A	0.3	1.9	0.02	0.11	0.02	57.3
All Vehicles			1324	7.0	1324	7.0	0.502	3.2	NA	2.3	16.8	0.11	0.17	0.16	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2022 Survey PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	428	7.0	428	7.0	0.230	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	61	7.0	61	7.0	0.064	5.3	LOS A	0.3	1.9	0.53	0.68	0.53	47.5
Approach			489	7.0	489	7.0	0.230	0.7	NA	0.3	1.9	0.07	0.08	0.07	58.0
East: Kenneally Rd															
4	L2	All MCs	41	7.0	41	7.0	0.286	8.7	LOS A	1.1	7.8	0.72	0.92	0.86	38.7
6	R2	All MCs	59	7.0	59	7.0	0.286	22.8	LOS C	1.1	7.8	0.72	0.92	0.86	45.5
Approach			100	7.0	100	7.0	0.286	17.0	LOS C	1.1	7.8	0.72	0.92	0.86	43.5
North: Byrnes St															
7	L2	All MCs	133	7.0	133	7.0	0.089	5.9	LOS A	0.4	2.8	0.15	0.52	0.15	52.5
8	T1	All MCs	527	7.0	527	7.0	0.283	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			660	7.0	660	7.0	0.283	1.3	LOS A	0.4	2.8	0.03	0.10	0.03	57.2
All Vehicles			1249	7.0	1249	7.0	0.286	2.3	NA	1.1	7.8	0.10	0.16	0.11	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2022 Survey SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	361	7.0	361	7.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	49	7.0	49	7.0	0.043	4.3	LOS A	0.2	1.3	0.45	0.59	0.45	48.7
Approach			411	7.0	411	7.0	0.194	0.5	NA	0.2	1.3	0.05	0.07	0.05	58.3
East: Kenneally Rd															
4	L2	All MCs	39	7.0	39	7.0	0.297	7.7	LOS A	1.2	9.1	0.66	0.87	0.79	41.3
6	R2	All MCs	99	7.0	99	7.0	0.297	16.4	LOS C	1.2	9.1	0.66	0.87	0.79	47.3
Approach			138	7.0	138	7.0	0.297	13.9	LOS B	1.2	9.1	0.66	0.87	0.79	46.2
North: Byrnes St															
7	L2	All MCs	109	7.0	109	7.0	0.072	5.8	LOS A	0.3	2.2	0.13	0.52	0.13	52.5
8	T1	All MCs	380	7.0	380	7.0	0.204	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			489	7.0	489	7.0	0.204	1.4	LOS A	0.3	2.2	0.03	0.12	0.03	57.1
All Vehicles			1038	7.0	1038	7.0	0.297	2.7	NA	1.2	9.1	0.12	0.20	0.14	55.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2027 BG AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	688	7.0	688	7.0	0.369	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	43	7.0	43	7.0	0.038	4.3	LOS A	0.2	1.2	0.45	0.59	0.45	48.7
Approach			731	7.0	731	7.0	0.369	0.3	NA	0.2	1.2	0.03	0.04	0.03	59.0
East: Kenneally Rd															
4	L2	All MCs	51	7.0	51	7.0	0.557	12.0	LOS B	2.6	19.2	0.83	1.09	1.39	32.8
6	R2	All MCs	98	7.0	98	7.0	0.557	34.6	LOS D	2.6	19.2	0.83	1.09	1.39	40.9
Approach			149	7.0	149	7.0	0.557	26.8	LOS D	2.6	19.2	0.83	1.09	1.39	38.9
North: Byrnes St															
7	L2	All MCs	100	7.0	100	7.0	0.066	5.8	LOS A	0.3	2.0	0.12	0.52	0.12	52.6
8	T1	All MCs	387	7.0	387	7.0	0.207	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			487	7.0	487	7.0	0.207	1.2	LOS A	0.3	2.0	0.03	0.11	0.03	57.3
All Vehicles			1366	7.0	1366	7.0	0.557	3.5	NA	2.6	19.2	0.11	0.18	0.17	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2027 BG PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	442	7.0	442	7.0	0.237	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	63	7.0	63	7.0	0.068	5.4	LOS A	0.3	2.0	0.54	0.69	0.54	47.4
Approach			505	7.0	505	7.0	0.237	0.7	NA	0.3	2.0	0.07	0.09	0.07	58.0
East: Kenneally Rd															
4	L2	All MCs	42	7.0	42	7.0	0.314	9.1	LOS A	1.2	8.7	0.75	0.95	0.92	37.9
6	R2	All MCs	61	7.0	61	7.0	0.314	24.5	LOS C	1.2	8.7	0.75	0.95	0.92	44.9
Approach			103	7.0	103	7.0	0.314	18.2	LOS C	1.2	8.7	0.75	0.95	0.92	42.8
North: Byrnes St															
7	L2	All MCs	137	7.0	137	7.0	0.092	5.9	LOS A	0.4	2.9	0.16	0.52	0.16	52.4
8	T1	All MCs	544	7.0	544	7.0	0.292	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			681	7.0	681	7.0	0.292	1.3	LOS A	0.4	2.9	0.03	0.10	0.03	57.2
All Vehicles			1289	7.0	1289	7.0	0.314	2.4	NA	1.2	8.7	0.10	0.16	0.12	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2027 BG SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	373	7.0	373	7.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	51	7.0	51	7.0	0.045	4.4	LOS A	0.2	1.4	0.46	0.60	0.46	48.6
Approach			424	7.0	424	7.0	0.200	0.5	NA	0.2	1.4	0.05	0.07	0.05	58.3
East: Kenneally Rd															
4	L2	All MCs	40	7.0	40	7.0	0.319	7.9	LOS A	1.3	9.9	0.68	0.89	0.84	40.7
6	R2	All MCs	102	7.0	102	7.0	0.319	17.2	LOS C	1.3	9.9	0.68	0.89	0.84	46.9
Approach			142	7.0	142	7.0	0.319	14.6	LOS B	1.3	9.9	0.68	0.89	0.84	45.7
North: Byrnes St															
7	L2	All MCs	113	7.0	113	7.0	0.075	5.8	LOS A	0.3	2.3	0.14	0.52	0.14	52.5
8	T1	All MCs	392	7.0	392	7.0	0.210	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			505	7.0	505	7.0	0.210	1.4	LOS A	0.3	2.3	0.03	0.12	0.03	57.1
All Vehicles			1071	7.0	1071	7.0	0.319	2.8	NA	1.3	9.9	0.13	0.20	0.15	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2027 BG+D AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	721	7.0	721	7.0	0.387	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	43	7.0	43	7.0	0.039	4.5	LOS A	0.2	1.2	0.47	0.61	0.47	48.4
Approach			764	7.0	764	7.0	0.387	0.3	NA	0.2	1.2	0.03	0.03	0.03	59.0
East: Kenneally Rd															
4	L2	All MCs	51	7.0	51	7.0	0.750	19.9	LOS C	4.1	30.5	0.91	1.30	2.03	27.3
6	R2	All MCs	114	7.0	114	7.0	0.750	47.6	LOS E	4.1	30.5	0.91	1.30	2.03	36.1
Approach			165	7.0	165	7.0	0.750	39.1	LOS E	4.1	30.5	0.91	1.30	2.03	34.0
North: Byrnes St															
7	L2	All MCs	117	7.0	117	7.0	0.077	5.8	LOS A	0.3	2.4	0.12	0.52	0.12	52.6
8	T1	All MCs	420	7.0	420	7.0	0.225	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			537	7.0	537	7.0	0.225	1.3	LOS A	0.3	2.4	0.03	0.11	0.03	57.1
All Vehicles			1466	7.0	1466	7.0	0.750	5.0	NA	4.1	30.5	0.13	0.21	0.25	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2027 BG+D PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	486	7.0	486	7.0	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	63	7.0	63	7.0	0.073	5.8	LOS A	0.3	2.1	0.56	0.71	0.56	47.0
Approach			549	7.0	549	7.0	0.261	0.7	NA	0.3	2.1	0.06	0.08	0.06	58.0
East: Kenneally Rd															
4	L2	All MCs	42	7.0	42	7.0	0.495	12.1	LOS B	2.0	14.9	0.85	1.06	1.26	33.2
6	R2	All MCs	83	7.0	83	7.0	0.495	32.4	LOS D	2.0	14.9	0.85	1.06	1.26	41.3
Approach			125	7.0	125	7.0	0.495	25.5	LOS D	2.0	14.9	0.85	1.06	1.26	39.3
North: Byrnes St															
7	L2	All MCs	159	7.0	159	7.0	0.106	5.9	LOS A	0.5	3.4	0.16	0.52	0.16	52.4
8	T1	All MCs	589	7.0	589	7.0	0.316	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			748	7.0	748	7.0	0.316	1.3	LOS A	0.5	3.4	0.03	0.11	0.03	57.1
All Vehicles			1423	7.0	1423	7.0	0.495	3.2	NA	2.0	14.9	0.12	0.18	0.15	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2027 BG+D SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	420	7.0	420	7.0	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	51	7.0	51	7.0	0.048	4.7	LOS A	0.2	1.5	0.48	0.62	0.48	48.3
Approach			471	7.0	471	7.0	0.225	0.5	NA	0.2	1.5	0.05	0.07	0.05	58.4
East: Kenneally Rd															
4	L2	All MCs	40	7.0	40	7.0	0.456	9.7	LOS A	2.1	15.6	0.76	1.01	1.13	37.3
6	R2	All MCs	126	7.0	126	7.0	0.456	22.1	LOS C	2.1	15.6	0.76	1.01	1.13	44.5
Approach			166	7.0	166	7.0	0.456	19.1	LOS C	2.1	15.6	0.76	1.01	1.13	43.3
North: Byrnes St															
7	L2	All MCs	137	7.0	137	7.0	0.090	5.9	LOS A	0.4	2.8	0.14	0.52	0.14	52.5
8	T1	All MCs	439	7.0	439	7.0	0.235	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			576	7.0	576	7.0	0.235	1.4	LOS A	0.4	2.8	0.03	0.12	0.03	56.9
All Vehicles			1212	7.0	1212	7.0	0.456	3.5	NA	2.1	15.6	0.14	0.22	0.19	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2037 BG+D AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	827	7.0	827	7.0	0.443	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	50	7.0	50	7.0	0.049	4.9	LOS A	0.2	1.5	0.51	0.64	0.51	48.0
Approach			877	7.0	877	7.0	0.443	0.3	NA	0.2	1.5	0.03	0.04	0.03	58.9
East: Kenneally Rd															
4	L2	All MCs	59	7.0	59	7.0	1.301	294.8	LOS F	31.6	234.8	1.00	3.57	9.78	5.5
6	R2	All MCs	129	7.0	129	7.0	1.301	337.9	LOS F	31.6	234.8	1.00	3.57	9.78	9.5
Approach			188	7.0	188	7.0	1.301	324.4	LOS F	31.6	234.8	1.00	3.57	9.78	8.3
North: Byrnes St															
7	L2	All MCs	132	7.0	132	7.0	0.087	5.8	LOS A	0.4	2.7	0.14	0.52	0.14	52.5
8	T1	All MCs	480	7.0	480	7.0	0.257	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			612	7.0	612	7.0	0.257	1.3	LOS A	0.4	2.7	0.03	0.11	0.03	57.1
All Vehicles			1677	7.0	1677	7.0	1.301	37.1	NA	31.6	234.8	0.14	0.46	1.12	29.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2037 BG+D PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	555	7.0	555	7.0	0.297	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	73	7.0	73	7.0	0.096	6.6	LOS A	0.4	2.8	0.60	0.77	0.60	46.0
Approach			627	7.0	627	7.0	0.297	0.8	NA	0.4	2.8	0.07	0.09	0.07	57.8
East: Kenneally Rd															
4	L2	All MCs	49	7.0	49	7.0	0.792	27.1	LOS D	3.9	29.0	0.95	1.31	2.13	24.1
6	R2	All MCs	92	7.0	92	7.0	0.792	58.7	LOS F	3.9	29.0	0.95	1.31	2.13	33.1
Approach			141	7.0	141	7.0	0.792	47.8	LOS E	3.9	29.0	0.95	1.31	2.13	30.6
North: Byrnes St															
7	L2	All MCs	180	7.0	180	7.0	0.122	5.9	LOS A	0.5	3.9	0.17	0.52	0.17	52.4
8	T1	All MCs	672	7.0	672	7.0	0.361	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			853	7.0	853	7.0	0.361	1.4	LOS A	0.5	3.9	0.04	0.11	0.04	57.1
All Vehicles			1621	7.0	1621	7.0	0.792	5.2	NA	3.9	29.0	0.13	0.21	0.23	51.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2037 BG+D SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	477	7.0	477	7.0	0.256	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	59	7.0	59	7.0	0.060	5.1	LOS A	0.2	1.8	0.52	0.66	0.52	47.8
Approach			536	7.0	536	7.0	0.256	0.6	NA	0.2	1.8	0.06	0.07	0.06	58.3
East: Kenneally Rd															
4	L2	All MCs	46	7.0	46	7.0	0.650	14.3	LOS B	3.4	25.2	0.87	1.17	1.63	32.3
6	R2	All MCs	141	7.0	141	7.0	0.650	31.7	LOS D	3.4	25.2	0.87	1.17	1.63	40.5
Approach			188	7.0	188	7.0	0.650	27.4	LOS D	3.4	25.2	0.87	1.17	1.63	39.0
North: Byrnes St															
7	L2	All MCs	154	7.0	154	7.0	0.103	5.9	LOS A	0.4	3.2	0.15	0.52	0.15	52.5
8	T1	All MCs	500	7.0	500	7.0	0.268	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			654	7.0	654	7.0	0.268	1.4	LOS A	0.4	3.2	0.04	0.12	0.04	56.9
All Vehicles			1377	7.0	1377	7.0	0.650	4.6	NA	3.4	25.2	0.16	0.25	0.26	52.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

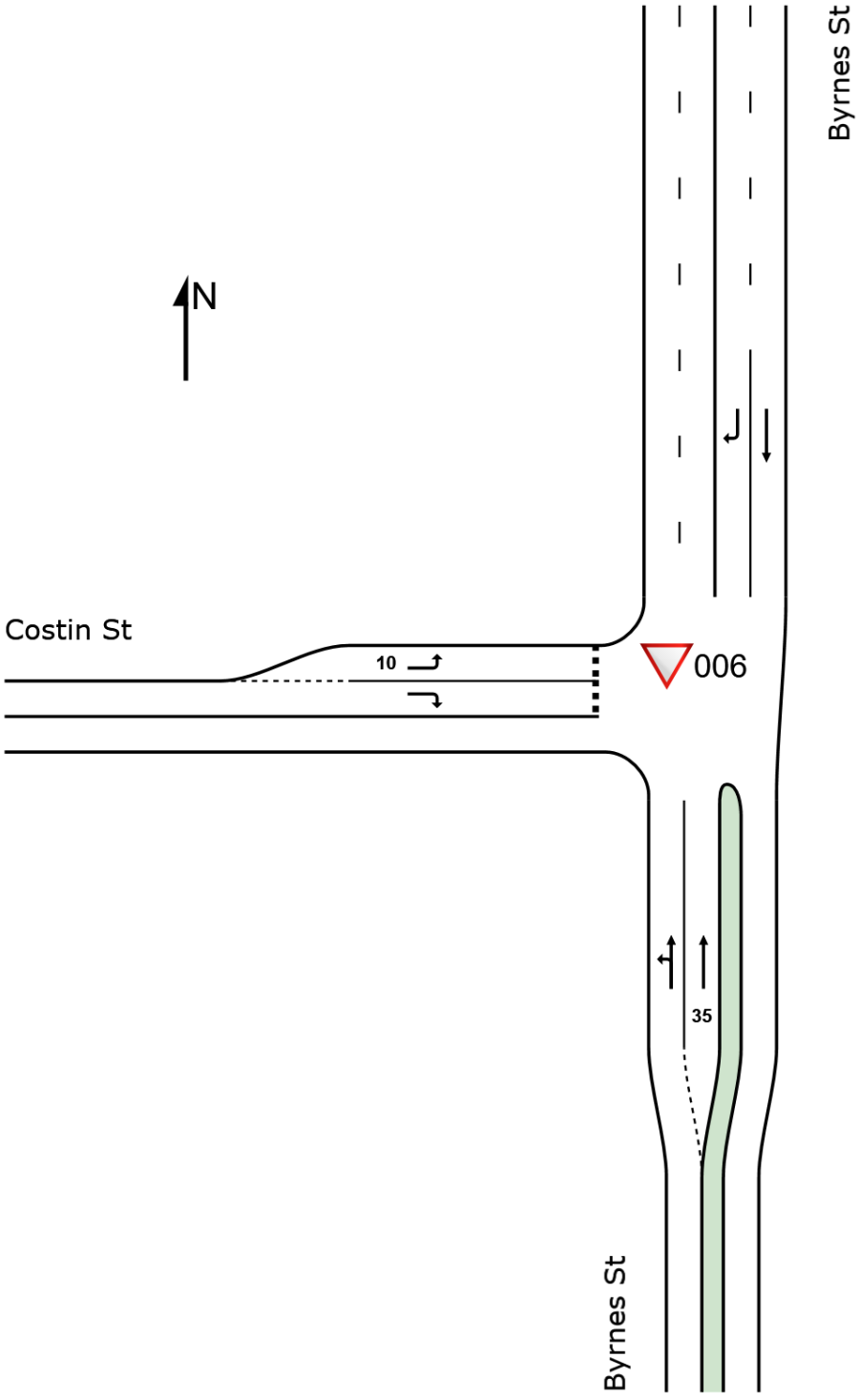
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SITE LAYOUT

Site: 006 [6_2022 Survey AM Peak_Byrnes St/Costin St (Site Folder: General)]

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 006 [6_2022 Survey AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	49	7.0	49	7.0	0.330	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.6
2	T1	All MCs	571	7.0	571	7.0	0.330	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.0
Approach			620	7.0	620	7.0	0.330	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.6
North: Byrnes St															
8	T1	All MCs	332	7.0	332	7.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	93	7.0	93	7.0	0.149	7.4	LOS A	0.5	4.0	0.59	0.80	0.59	45.4
Approach			424	7.0	424	7.0	0.178	1.6	NA	0.5	4.0	0.13	0.17	0.13	56.0
West: Costin St															
10	L2	All MCs	138	7.0	138	7.0	0.214	9.7	LOS A	0.8	5.7	0.56	0.80	0.56	44.5
12	R2	All MCs	25	7.0	25	7.0	0.139	24.9	LOS C	0.4	3.1	0.84	0.93	0.84	41.1
Approach			163	7.0	163	7.0	0.214	12.0	LOS B	0.8	5.7	0.61	0.82	0.61	43.6
All Vehicles			1207	7.0	1207	7.0	0.330	2.5	NA	0.8	5.7	0.13	0.20	0.13	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2022 Survey PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	56	7.0	56	7.0	0.231	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	56.4
2	T1	All MCs	383	7.0	383	7.0	0.231	0.1	LOS A	0.0	0.0	0.00	0.08	0.00	58.6
Approach			439	7.0	439	7.0	0.231	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.1
North: Byrnes St															
8	T1	All MCs	451	7.0	451	7.0	0.242	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	118	7.0	118	7.0	0.142	5.5	LOS A	0.6	4.1	0.51	0.69	0.51	47.5
Approach			568	7.0	568	7.0	0.242	1.1	NA	0.6	4.1	0.10	0.14	0.10	56.8
West: Costin St															
10	L2	All MCs	106	7.0	106	7.0	0.125	7.7	LOS A	0.5	3.4	0.44	0.68	0.44	46.5
12	R2	All MCs	36	7.0	36	7.0	0.119	16.4	LOS C	0.4	2.8	0.75	0.90	0.75	45.5
Approach			142	7.0	142	7.0	0.125	9.9	LOS A	0.5	3.4	0.52	0.74	0.52	46.1
All Vehicles			1149	7.0	1149	7.0	0.242	2.1	NA	0.6	4.1	0.12	0.19	0.12	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2022 Survey SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	26	7.0	26	7.0	0.176	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.7
2	T1	All MCs	305	7.0	305	7.0	0.176	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.1
Approach			332	7.0	332	7.0	0.176	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.8
North: Byrnes St															
8	T1	All MCs	321	7.0	321	7.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	98	7.0	98	7.0	0.102	4.6	LOS A	0.4	3.0	0.43	0.62	0.43	48.5
Approach			419	7.0	419	7.0	0.172	1.1	NA	0.4	3.0	0.10	0.14	0.10	56.8
West: Costin St															
10	L2	All MCs	105	7.0	105	7.0	0.113	7.2	LOS A	0.4	3.1	0.39	0.64	0.39	47.1
12	R2	All MCs	29	7.0	29	7.0	0.065	11.7	LOS B	0.2	1.6	0.62	0.83	0.62	48.3
Approach			135	7.0	135	7.0	0.113	8.2	LOS A	0.4	3.1	0.44	0.68	0.44	47.5
All Vehicles			885	7.0	885	7.0	0.176	1.9	NA	0.4	3.1	0.11	0.19	0.11	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2027 BG AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	51	7.0	51	7.0	0.340	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.6
2	T1	All MCs	589	7.0	589	7.0	0.340	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.0
Approach			640	7.0	640	7.0	0.340	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.6
North: Byrnes St															
8	T1	All MCs	342	7.0	342	7.0	0.183	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	96	7.0	96	7.0	0.159	7.7	LOS A	0.6	4.3	0.60	0.81	0.60	45.1
Approach			438	7.0	438	7.0	0.183	1.7	NA	0.6	4.3	0.13	0.18	0.13	55.9
West: Costin St															
10	L2	All MCs	142	7.0	142	7.0	0.227	10.0	LOS A	0.8	6.2	0.58	0.82	0.59	44.1
12	R2	All MCs	26	7.0	26	7.0	0.155	26.7	LOS D	0.5	3.4	0.85	0.94	0.85	40.3
Approach			168	7.0	168	7.0	0.227	12.6	LOS B	0.8	6.2	0.62	0.84	0.63	43.1
All Vehicles			1246	7.0	1246	7.0	0.340	2.6	NA	0.8	6.2	0.13	0.20	0.13	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2027 BG PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	58	7.0	58	7.0	0.239	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	56.4
2	T1	All MCs	395	7.0	395	7.0	0.239	0.1	LOS A	0.0	0.0	0.00	0.08	0.00	58.6
Approach			453	7.0	453	7.0	0.239	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.1
North: Byrnes St															
8	T1	All MCs	465	7.0	465	7.0	0.249	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	122	7.0	122	7.0	0.150	5.7	LOS A	0.6	4.3	0.51	0.70	0.51	47.3
Approach			586	7.0	586	7.0	0.249	1.2	NA	0.6	4.3	0.11	0.15	0.11	56.7
West: Costin St															
10	L2	All MCs	110	7.0	110	7.0	0.131	7.8	LOS A	0.5	3.5	0.45	0.69	0.45	46.4
12	R2	All MCs	37	7.0	37	7.0	0.130	17.2	LOS C	0.4	3.0	0.77	0.90	0.77	45.1
Approach			147	7.0	147	7.0	0.131	10.2	LOS B	0.5	3.5	0.53	0.75	0.53	45.9
All Vehicles			1186	7.0	1186	7.0	0.249	2.1	NA	0.6	4.3	0.12	0.19	0.12	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 006 [6_2027 BG SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	27	7.0	27	7.0	0.181	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.7
2	T1	All MCs	315	7.0	315	7.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.1
Approach			342	7.0	342	7.0	0.181	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.8
North: Byrnes St															
8	T1	All MCs	331	7.0	331	7.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	101	7.0	101	7.0	0.107	4.7	LOS A	0.4	3.1	0.44	0.63	0.44	48.4
Approach			432	7.0	432	7.0	0.178	1.1	NA	0.4	3.1	0.10	0.15	0.10	56.8
West: Costin St															
10	L2	All MCs	109	7.0	109	7.0	0.118	7.3	LOS A	0.4	3.2	0.40	0.65	0.40	47.1
12	R2	All MCs	30	7.0	30	7.0	0.070	12.1	LOS B	0.2	1.7	0.63	0.84	0.63	48.1
Approach			139	7.0	139	7.0	0.118	8.3	LOS A	0.4	3.2	0.45	0.69	0.45	47.4
All Vehicles			913	7.0	913	7.0	0.181	2.0	NA	0.4	3.2	0.12	0.19	0.12	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 006 [6_2027 BG+D AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	51	7.0	51	7.0	0.349	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.6
2	T1	All MCs	605	7.0	605	7.0	0.349	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.0
Approach			656	7.0	656	7.0	0.349	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.7
North: Byrnes St															
8	T1	All MCs	359	7.0	359	7.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	112	7.0	112	7.0	0.193	8.0	LOS A	0.7	5.2	0.62	0.82	0.62	44.8
Approach			471	7.0	471	7.0	0.193	1.9	NA	0.7	5.2	0.15	0.20	0.15	55.4
West: Costin St															
10	L2	All MCs	159	7.0	159	7.0	0.261	10.5	LOS B	1.0	7.5	0.59	0.85	0.65	43.7
12	R2	All MCs	26	7.0	26	7.0	0.173	29.8	LOS D	0.5	3.8	0.87	0.95	0.89	39.0
Approach			185	7.0	185	7.0	0.261	13.2	LOS B	1.0	7.5	0.63	0.86	0.69	42.5
All Vehicles			1313	7.0	1313	7.0	0.349	2.8	NA	1.0	7.5	0.14	0.21	0.15	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2027 BG+D PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	58	7.0	58	7.0	0.250	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	56.4
2	T1	All MCs	418	7.0	418	7.0	0.250	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
Approach			475	7.0	475	7.0	0.250	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.2
North: Byrnes St															
8	T1	All MCs	487	7.0	487	7.0	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	144	7.0	144	7.0	0.183	5.9	LOS A	0.7	5.4	0.54	0.72	0.54	47.0
Approach			631	7.0	631	7.0	0.261	1.4	NA	0.7	5.4	0.12	0.16	0.12	56.3
West: Costin St															
10	L2	All MCs	132	7.0	132	7.0	0.163	8.1	LOS A	0.6	4.4	0.47	0.71	0.47	46.2
12	R2	All MCs	37	7.0	37	7.0	0.146	18.9	LOS C	0.4	3.3	0.80	0.91	0.80	44.1
Approach			169	7.0	169	7.0	0.163	10.4	LOS B	0.6	4.4	0.54	0.75	0.54	45.4
All Vehicles			1275	7.0	1275	7.0	0.261	2.3	NA	0.7	5.4	0.13	0.21	0.13	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 006 [6_2027 BG+D SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	27	7.0	27	7.0	0.194	5.7	LOS A	0.0	0.0	0.00	0.04	0.00	56.7
2	T1	All MCs	339	7.0	339	7.0	0.194	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.1
Approach			366	7.0	366	7.0	0.194	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.8
North: Byrnes St															
8	T1	All MCs	355	7.0	355	7.0	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	125	7.0	125	7.0	0.136	4.9	LOS A	0.5	4.0	0.46	0.65	0.46	48.2
Approach			479	7.0	479	7.0	0.190	1.3	NA	0.5	4.0	0.12	0.17	0.12	56.3
West: Costin St															
10	L2	All MCs	132	7.0	132	7.0	0.148	7.5	LOS A	0.6	4.1	0.42	0.67	0.42	46.8
12	R2	All MCs	30	7.0	30	7.0	0.078	13.2	LOS B	0.3	1.9	0.67	0.86	0.67	47.4
Approach			163	7.0	163	7.0	0.148	8.5	LOS A	0.6	4.1	0.47	0.70	0.47	47.0
All Vehicles			1008	7.0	1008	7.0	0.194	2.2	NA	0.6	4.1	0.13	0.21	0.13	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2037 BG+D AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	59	7.0	59	7.0	0.402	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.5
2	T1	All MCs	696	7.0	696	7.0	0.402	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	58.9
Approach			755	7.0	755	7.0	0.402	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.6
North: Byrnes St															
8	T1	All MCs	412	7.0	412	7.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	127	7.0	127	7.0	0.263	10.2	LOS B	1.0	7.6	0.71	0.89	0.80	42.6
Approach			539	7.0	539	7.0	0.263	2.4	NA	1.0	7.6	0.17	0.21	0.19	54.6
West: Costin St															
10	L2	All MCs	181	7.0	181	7.0	0.347	12.6	LOS B	1.5	10.9	0.68	0.92	0.87	41.7
12	R2	All MCs	30	7.0	30	7.0	0.303	47.1	LOS E	0.9	6.5	0.92	1.00	1.05	32.9
Approach			211	7.0	211	7.0	0.347	17.5	LOS C	1.5	10.9	0.72	0.93	0.89	39.2
All Vehicles			1504	7.0	1504	7.0	0.402	3.6	NA	1.5	10.9	0.16	0.23	0.19	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2037 BG+D PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	66	7.0	66	7.0	0.287	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	56.4
2	T1	All MCs	478	7.0	478	7.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	58.6
Approach			545	7.0	545	7.0	0.287	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.1
North: Byrnes St															
8	T1	All MCs	559	7.0	559	7.0	0.300	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	163	7.0	163	7.0	0.230	6.8	LOS A	0.9	6.7	0.58	0.77	0.58	46.1
Approach			721	7.0	721	7.0	0.300	1.5	NA	0.9	6.7	0.13	0.17	0.13	56.0
West: Costin St															
10	L2	All MCs	149	7.0	149	7.0	0.199	8.7	LOS A	0.7	5.5	0.52	0.75	0.52	45.5
12	R2	All MCs	43	7.0	43	7.0	0.228	25.6	LOS D	0.7	5.1	0.86	0.96	0.94	40.8
Approach			191	7.0	191	7.0	0.228	12.4	LOS B	0.7	5.5	0.59	0.79	0.61	43.8
All Vehicles			1458	7.0	1458	7.0	0.300	2.7	NA	0.9	6.7	0.14	0.22	0.15	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2037 BG+D SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	31	7.0	31	7.0	0.222	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.7
2	T1	All MCs	387	7.0	387	7.0	0.222	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.1
Approach			418	7.0	418	7.0	0.222	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.8
North: Byrnes St															
8	T1	All MCs	406	7.0	406	7.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	140	7.0	140	7.0	0.165	5.4	LOS A	0.7	4.9	0.50	0.68	0.50	47.6
Approach			546	7.0	546	7.0	0.218	1.4	NA	0.7	4.9	0.13	0.18	0.13	56.2
West: Costin St															
10	L2	All MCs	149	7.0	149	7.0	0.177	7.9	LOS A	0.7	4.9	0.46	0.70	0.46	46.4
12	R2	All MCs	35	7.0	35	7.0	0.109	15.5	LOS C	0.3	2.6	0.73	0.89	0.73	46.0
Approach			184	7.0	184	7.0	0.177	9.3	LOS A	0.7	4.9	0.51	0.73	0.51	46.3
All Vehicles			1148	7.0	1148	7.0	0.222	2.3	NA	0.7	4.9	0.14	0.22	0.14	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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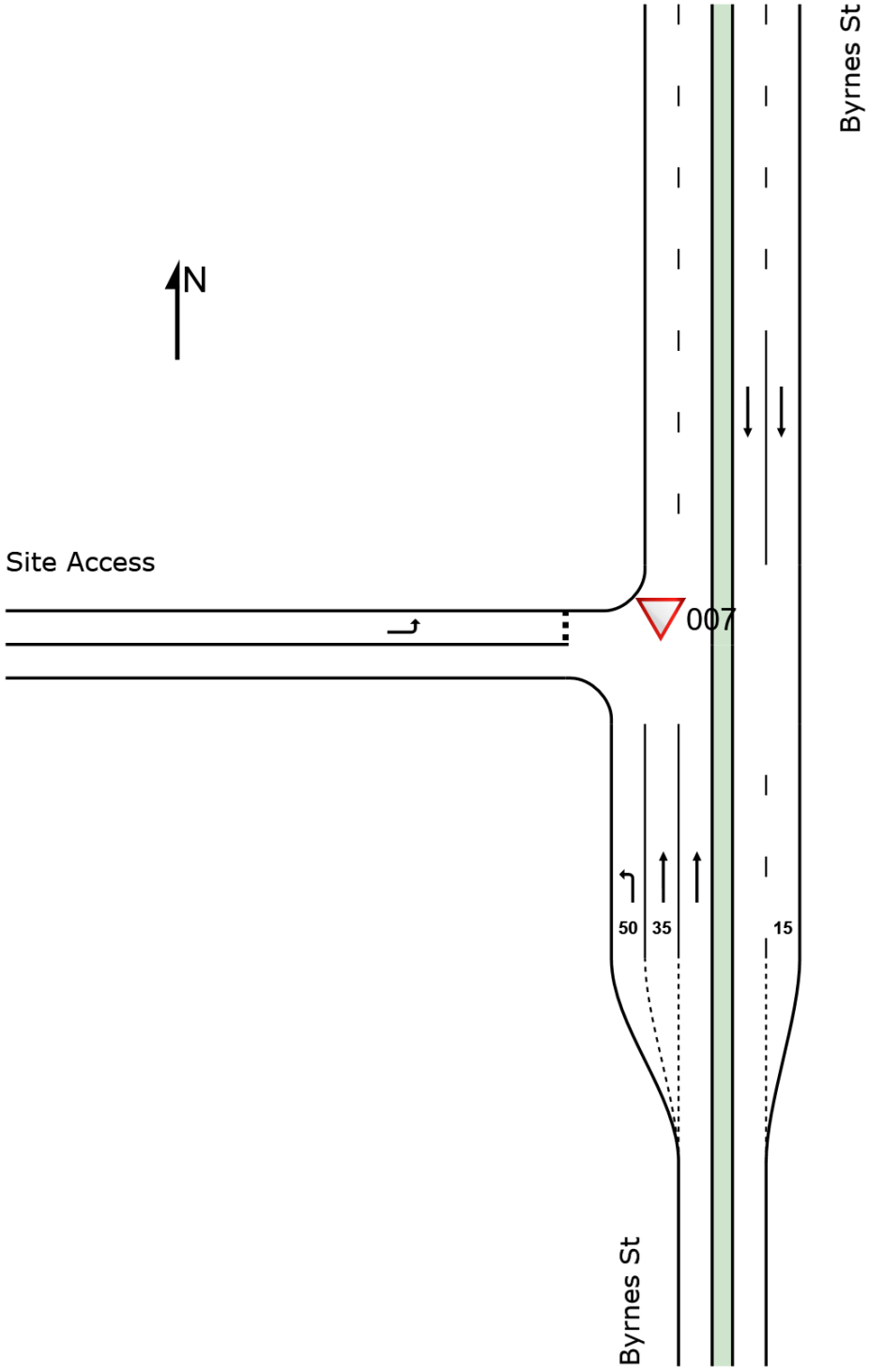
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 007 [7_2027 BG+D AM Peak_Byrnes St/Site Access (Site Folder: General)]

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 007 [7_2027 BG+D AM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	120	7.0	120	7.0	0.068	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	413	7.0	413	7.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			533	7.0	533	7.0	0.111	1.3	NA	0.0	0.0	0.00	0.13	0.00	52.8
North: Byrnes St															
8	T1	All MCs	582	7.0	582	7.0	0.260	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			582	7.0	582	7.0	0.260	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Site Access															
10	L2	All MCs	70	7.0	70	7.0	0.068	3.6	LOS A	0.2	1.8	0.31	0.54	0.31	31.7
Approach			70	7.0	70	7.0	0.068	3.6	LOS A	0.2	1.8	0.31	0.54	0.31	31.7
All Vehicles			1185	7.0	1185	7.0	0.260	0.9	NA	0.2	1.8	0.02	0.09	0.02	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2027 BG+D PM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	160	7.0	160	7.0	0.090	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	333	7.0	333	7.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			492	7.0	492	7.0	0.090	1.8	NA	0.0	0.0	0.00	0.19	0.00	50.0
North: Byrnes St															
8	T1	All MCs	720	7.0	720	7.0	0.322	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			720	7.0	720	7.0	0.322	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	93	7.0	93	7.0	0.086	3.4	LOS A	0.3	2.3	0.28	0.53	0.28	32.1
Approach			93	7.0	93	7.0	0.086	3.4	LOS A	0.3	2.3	0.28	0.53	0.28	32.1
All Vehicles			1306	7.0	1306	7.0	0.322	1.1	NA	0.3	2.3	0.02	0.11	0.02	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2027 BG+D SAT Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	169	7.0	169	7.0	0.096	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	367	7.0	367	7.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			536	7.0	536	7.0	0.098	1.8	NA	0.0	0.0	0.00	0.18	0.00	50.2
North: Byrnes St															
8	T1	All MCs	658	7.0	658	7.0	0.294	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			658	7.0	658	7.0	0.294	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	99	7.0	99	7.0	0.093	3.5	LOS A	0.3	2.5	0.29	0.54	0.29	31.9
Approach			99	7.0	99	7.0	0.093	3.5	LOS A	0.3	2.5	0.29	0.54	0.29	31.9
All Vehicles			1293	7.0	1293	7.0	0.294	1.1	NA	0.3	2.5	0.02	0.12	0.02	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2037 BG+D AM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	120	7.0	120	7.0	0.068	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	481	7.0	481	7.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			602	7.0	602	7.0	0.129	1.1	NA	0.0	0.0	0.00	0.11	0.00	53.6
North: Byrnes St															
8	T1	All MCs	664	7.0	664	7.0	0.297	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			664	7.0	664	7.0	0.297	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	70	7.0	70	7.0	0.070	3.8	LOS A	0.3	1.9	0.34	0.56	0.34	31.2
Approach			70	7.0	70	7.0	0.070	3.8	LOS A	0.3	1.9	0.34	0.56	0.34	31.2
All Vehicles			1336	7.0	1336	7.0	0.297	0.8	NA	0.3	1.9	0.02	0.08	0.02	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2037 BG+D PM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	160	7.0	160	7.0	0.090	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	391	7.0	391	7.0	0.105	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			550	7.0	550	7.0	0.105	1.6	NA	0.0	0.0	0.00	0.17	0.00	50.9
North: Byrnes St															
8	T1	All MCs	821	7.0	821	7.0	0.367	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			821	7.0	821	7.0	0.367	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	93	7.0	93	7.0	0.089	3.6	LOS A	0.3	2.4	0.30	0.54	0.30	31.7
Approach			93	7.0	93	7.0	0.089	3.6	LOS A	0.3	2.4	0.30	0.54	0.30	31.7
All Vehicles			1465	7.0	1465	7.0	0.367	1.0	NA	0.3	2.4	0.02	0.10	0.02	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2037 BG+D SAT Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	169	7.0	169	7.0	0.096	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	431	7.0	431	7.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			600	7.0	600	7.0	0.116	1.6	NA	0.0	0.0	0.00	0.16	0.00	51.2
North: Byrnes St															
8	T1	All MCs	749	7.0	749	7.0	0.335	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			749	7.0	749	7.0	0.335	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	99	7.0	99	7.0	0.096	3.7	LOS A	0.4	2.6	0.32	0.55	0.32	31.5
Approach			99	7.0	99	7.0	0.096	3.7	LOS A	0.4	2.6	0.32	0.55	0.32	31.5
All Vehicles			1448	7.0	1448	7.0	0.335	1.1	NA	0.4	2.6	0.02	0.10	0.02	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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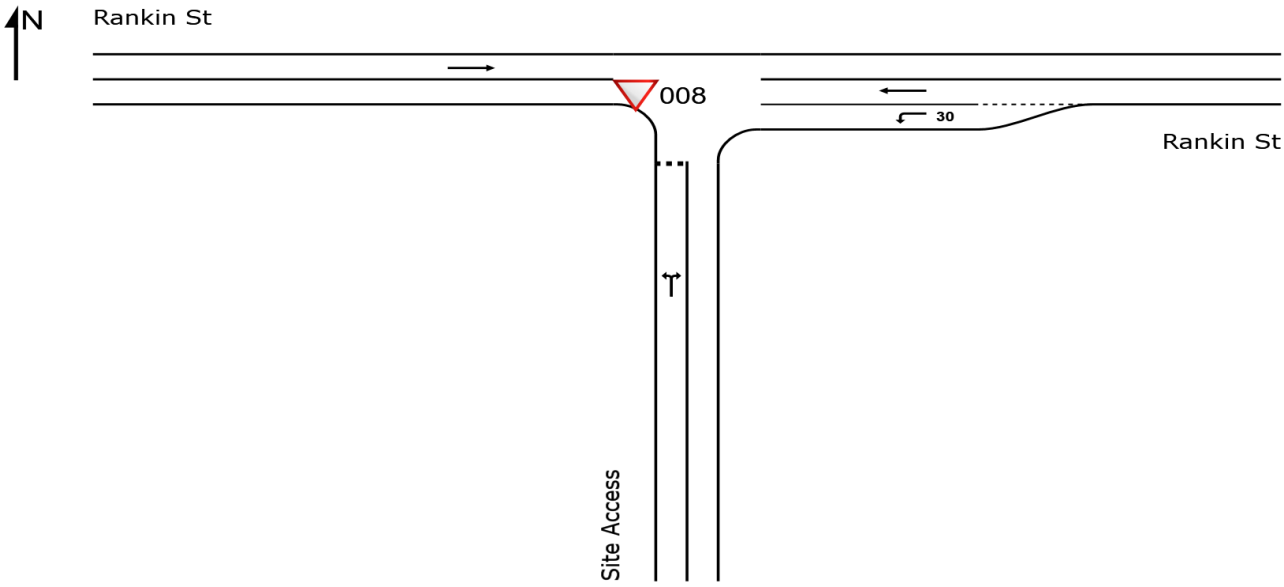
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 008 [8_2027 BG+D AM Peak_Rankin St/Site Access (Site Folder: General)]

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 008 [8_2027 BG+D AM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	32	7.0	32	7.0	0.255	4.7	LOS A	1.1	8.4	0.52	0.67	0.52	23.5
3	R2	All MCs	157	7.0	157	7.0	0.255	7.6	LOS A	1.1	8.4	0.52	0.67	0.52	25.2
Approach			189	7.0	189	7.0	0.255	7.1	LOS A	1.1	8.4	0.52	0.67	0.52	24.9
East: Rankin St															
4	L2	All MCs	114	7.0	114	7.0	0.064	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	193	7.0	193	7.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			307	7.0	307	7.0	0.104	1.5	NA	0.0	0.0	0.00	0.20	0.00	43.5
West: Rankin St															
11	T1	All MCs	217	7.0	217	7.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			217	7.0	217	7.0	0.116	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			714	7.0	714	7.0	0.255	2.5	NA	1.1	8.4	0.14	0.27	0.14	38.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 008 [8_2027 BG+D PM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	42	7.0	42	7.0	0.376	5.9	LOS A	2.2	16.0	0.62	0.79	0.76	20.7
3	R2	All MCs	209	7.0	209	7.0	0.376	9.7	LOS A	2.2	16.0	0.62	0.79	0.76	22.6
Approach			251	7.0	251	7.0	0.376	9.1	LOS A	2.2	16.0	0.62	0.79	0.76	22.3
East: Rankin St															
4	L2	All MCs	151	7.0	151	7.0	0.086	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	252	7.0	252	7.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			403	7.0	403	7.0	0.135	1.5	NA	0.0	0.0	0.00	0.21	0.00	43.4
West: Rankin St															
11	T1	All MCs	232	7.0	232	7.0	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			232	7.0	232	7.0	0.124	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			886	7.0	886	7.0	0.376	3.3	NA	2.2	16.0	0.17	0.32	0.22	35.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 008 [8_2027 BG+D SAT Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	45	7.0	45	7.0	0.318	4.4	LOS A	1.6	11.6	0.48	0.62	0.48	24.5
3	R2	All MCs	221	7.0	221	7.0	0.318	6.8	LOS A	1.6	11.6	0.48	0.62	0.48	26.2
Approach			266	7.0	266	7.0	0.318	6.4	LOS A	1.6	11.6	0.48	0.62	0.48	26.0
East: Rankin St															
4	L2	All MCs	160	7.0	160	7.0	0.090	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	118	7.0	118	7.0	0.063	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			278	7.0	278	7.0	0.090	2.4	NA	0.0	0.0	0.00	0.32	0.00	38.3
West: Rankin St															
11	T1	All MCs	170	7.0	170	7.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			170	7.0	170	7.0	0.091	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			714	7.0	714	7.0	0.318	3.3	NA	1.6	11.6	0.18	0.35	0.18	34.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 008 [8_2037 BG+D AM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	32	7.0	32	7.0	0.275	4.9	LOS A	1.2	9.1	0.56	0.71	0.57	22.5
3	R2	All MCs	157	7.0	157	7.0	0.275	8.3	LOS A	1.2	9.1	0.56	0.71	0.57	24.2
Approach			189	7.0	189	7.0	0.275	7.8	LOS A	1.2	9.1	0.56	0.71	0.57	24.0
East: Rankin St															
4	L2	All MCs	114	7.0	114	7.0	0.064	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	224	7.0	224	7.0	0.120	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			338	7.0	338	7.0	0.120	1.4	NA	0.0	0.0	0.00	0.19	0.00	44.5
West: Rankin St															
11	T1	All MCs	247	7.0	247	7.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			247	7.0	247	7.0	0.132	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			774	7.0	774	7.0	0.275	2.5	NA	1.2	9.1	0.14	0.25	0.14	38.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 008 [8_2037 BG+D PM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	42	7.0	42	7.0	0.412	6.5	LOS A	2.4	18.1	0.66	0.85	0.88	19.3
3	R2	All MCs	209	7.0	209	7.0	0.412	11.2	LOS B	2.4	18.1	0.66	0.85	0.88	21.1
Approach			251	7.0	251	7.0	0.412	10.4	LOS B	2.4	18.1	0.66	0.85	0.88	20.8
East: Rankin St															
4	L2	All MCs	151	7.0	151	7.0	0.086	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	292	7.0	292	7.0	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			443	7.0	443	7.0	0.157	1.4	NA	0.0	0.0	0.00	0.19	0.00	44.4
West: Rankin St															
11	T1	All MCs	263	7.0	263	7.0	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			263	7.0	263	7.0	0.141	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			957	7.0	957	7.0	0.412	3.4	NA	2.4	18.1	0.17	0.31	0.23	35.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 008 [8_2037 BG+D SAT Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	45	7.0	45	7.0	0.333	4.6	LOS A	1.7	12.6	0.51	0.65	0.53	23.8
3	R2	All MCs	221	7.0	221	7.0	0.333	7.4	LOS A	1.7	12.6	0.51	0.65	0.53	25.5
Approach			266	7.0	266	7.0	0.333	6.9	LOS A	1.7	12.6	0.51	0.65	0.53	25.2
East: Rankin St															
4	L2	All MCs	160	7.0	160	7.0	0.090	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	137	7.0	137	7.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			297	7.0	297	7.0	0.090	2.2	NA	0.0	0.0	0.00	0.30	0.00	39.1
West: Rankin St															
11	T1	All MCs	191	7.0	191	7.0	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			191	7.0	191	7.0	0.102	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			754	7.0	754	7.0	0.333	3.3	NA	1.7	12.6	0.18	0.35	0.19	34.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Appendix E Detailed Net Delay Table

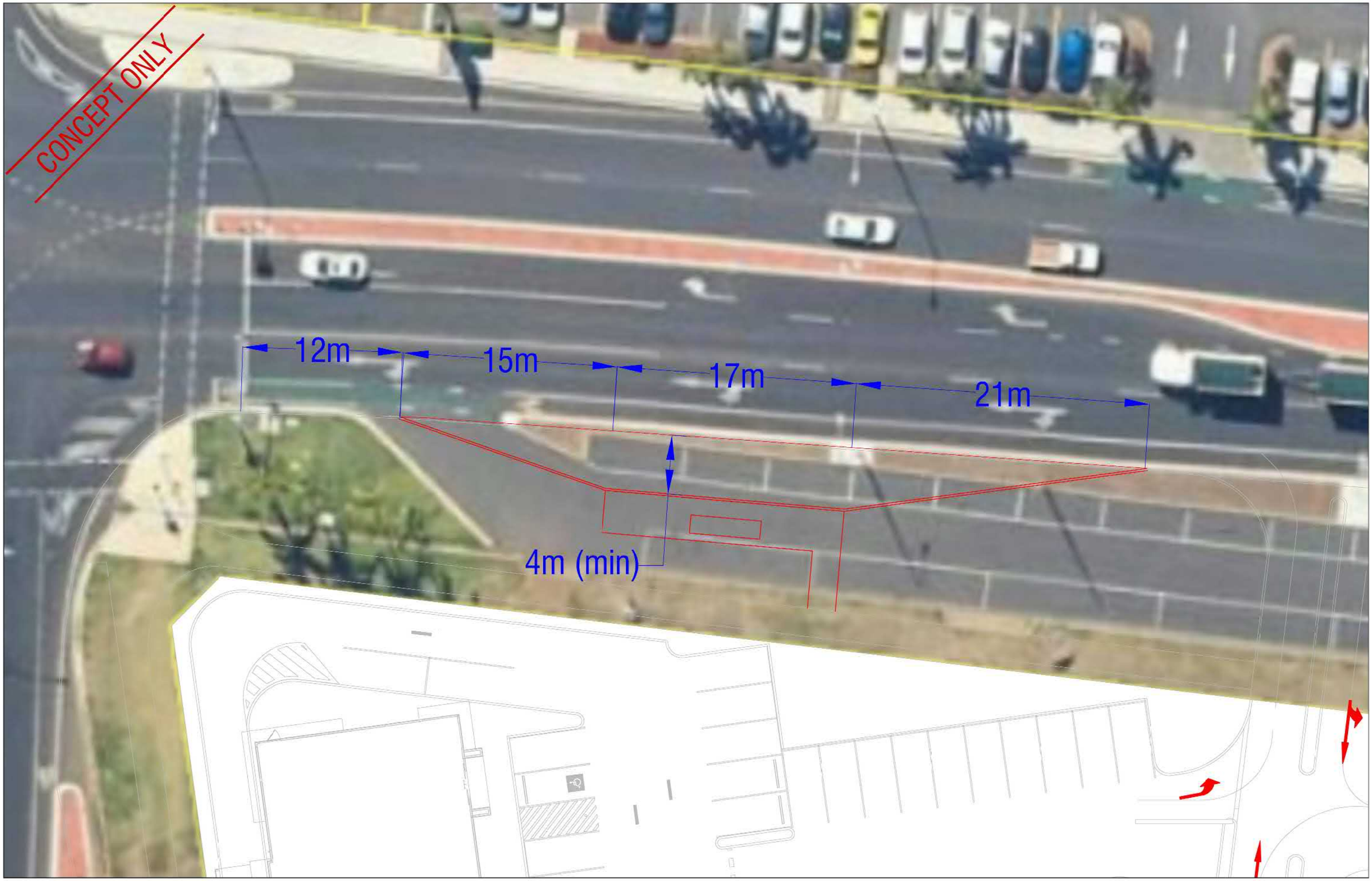
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Peak Period	Intersection	ΣBC (Total Base Case Delays)	ΣWD (Total With-Development Delays)	ID = ΣWD - ΣBC	
				Δ	%
AM Peak	1	147	150	3	2.2%
	2	1,247	1,300	53	4.2%
	3	83	98	15	17.9%
	4	59	62	3	5.2%
	5	98	159	62	63.0%
	6	60	63	4	6.3%
	Sub-Total	**1,693**	**1,832**	**139**	**8.2%**
PM Peak	1	142	146	4	3.0%
	2	1,360	1,326	-34	-2.5%
	3	79	104	25	32.1%
	4	72	79	7	10.0%
	5	58	72	14	24.4%
	6	46	48	2	5.4%
	Sub-Total	**1,756**	**1,776**	**19**	**1.1%**
SAT Peak	1	127	131	4	2.9%
	2	1,171	1,061	-109	-9.4%
	3	67	86	20	29.4%
	4	59	64	5	9.2%
	5	55	67	12	21.3%
	6	32	34	1	4.6%
	Sub-Total	**1,511**	**1,443**	**-67**	**-4.5%**
All Peaks	1	416	427	11	2.7%
	2	3,778	3,687	-90	-2.4%
	3	229	289	60	26.2%
	4	189	205	16	8.3%
	5	210	298	87	41.5%
	6	138	145	8	5.6%
	Total	**4,960**	**5,051**	**91**	**1.8%**

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Appendix F Conceptual Bus Stop Plans

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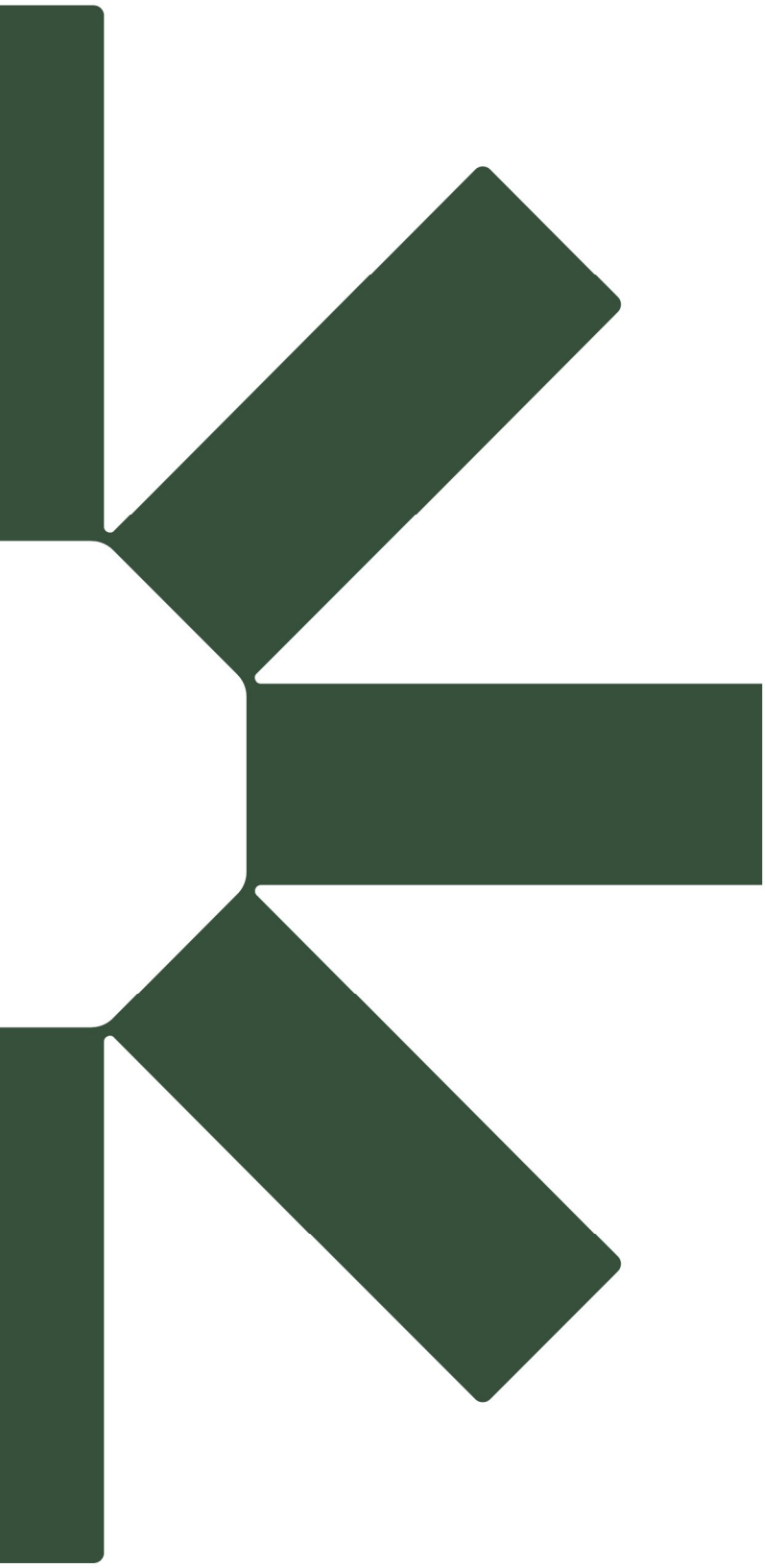
Wilcon Projects

Mareeba Byrnes St Supermarket

Concept Drawing
Indented Bus Stop

FIGURE D0207

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Making Sustainability Happen

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State code 1: Development in a state-controlled road environment

Table 1.1 Development in general

Performance outcomes	Acceptable outcomes	Response
Buildings, structures, infrastructure, services and utilities		
PO1 The location of the development does not create a safety hazard for users of the **state-controlled road.**	**AO1.1** Development is not located in a **state-controlled road**. AND **AO1.2** Development can be maintained without requiring access to a **state-controlled road**.	**Complies with AO1.1 & AO1.2** Buildings, structures, infrastructure, services and utilities are not located in, or in proximity to the road reserve of a state-controlled road and can be maintained without accessing a state-controlled road.
PO2 The design and construction of the development does not adversely impact the **structural integrity** or physical condition of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO2** The design and construction of the development will not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure.
PO3 The location of the development does not obstruct **road transport infrastructure** or adversely impact the operating performance of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO3** The location of the development does not obstruct road transport infrastructure or adversely impact the operating performance of the state-controlled road. Refer to Section 8 of the Traffic Impact Assessment prepared by SLR.
PO4 The location, placement, design and operation of advertising devices, visible from the **state-controlled road**, do not create a safety hazard for users of the **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO5 The design and construction of buildings and **structures** does not create a safety hazard by distracting users of the **state-controlled road**.	**AO5.1** Facades of buildings and **structures** fronting the **state-controlled road** are made of non-reflective materials. AND **AO5.2** Facades of buildings and **structures** do not direct or reflect point light sources into the face of oncoming traffic on the **state-controlled road**. AND **AO5.3** External lighting of buildings and **structures** is not directed into the face of oncoming traffic on the **state-controlled road**. AND **AO5.4** External lighting of buildings and **structures** does not involve flashing or laser lights.	To be addressed by other Consultants
PO6 Road, pedestrian and bikeway bridges over a **state-controlled road** are designed and constructed to prevent projectiles from being thrown onto the **state-controlled road**.	**AO6.1** Road, pedestrian and bikeway bridges over the **state-controlled road** include throw protection screens in accordance with section 4.11 of the Design Criteria for Bridges and Other Structures Manual, Department of Transport and Main Roads, 2020.	**Not Applicable**
Landscaping		
PO7 The location of landscaping does not create a safety hazard for users of the **state-controlled road**.	**AO7.1** Landscaping is not located in a **state-controlled road**. AND **AO7.2** Landscaping can be maintained without requiring access to a **state-controlled road**.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AND **AO7.3** Landscaping does not block or obscure the sight lines for vehicular access to a **state-controlled road**.	
Stormwater and overland flow		
PO8 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of the **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO9 Stormwater run-off or overland flow from the development site does not result in a material worsening of the operating performance of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO10 Stormwater run-off or overland flow from the development site does not adversely impact the **structural integrity** or physical condition of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO11 Development ensures that stormwater is lawfully discharged.	**AO11.1** Development does not create any new points of discharge to a **state-controlled road.** AND **AO11.2** Development does not concentrate flows to a **state-controlled road**. AND **AO11.3** Stormwater run-off is discharged to a **lawful point of discharge**. AND	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO11.4 Development does not worsen the condition of an existing **lawful point of discharge** to the **state-controlled road**.	
Flooding		
PO12 Development does not result in a material worsening of flooding impacts within a **state-controlled road**.	**AO12.1** For all flood events up to 1% **annual exceedance probability**, development results in negligible impacts (within +/- 10mm) to existing flood levels within a **state-controlled road**. AND **AO12.2** For all flood events up to 1% **annual exceedance probability**, development results in negligible impacts (up to a 10% increase) to existing peak velocities within a **state-controlled road**. AND **AO12.3** For all flood events up to 1% **annual exceedance probability**, development results in negligible impacts (up to a 10% increase) to existing time of submergence of a **state-controlled road**.	To be addressed by other Consultants
Drainage Infrastructure		
PO13 Drainage infrastructure does not create a safety hazard for users in the **state-controlled road**.	**AO13.1** Drainage infrastructure is wholly contained within the development site, except at the **lawful point of discharge**. AND	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO13.2 Drainage infrastructure can be maintained without requiring access to a **state-controlled road**.	
PO14 Drainage infrastructure associated with, or within, a **state-controlled road** is constructed, and designed to ensure the **structural integrity** and physical condition of existing drainage infrastructure and the surrounding drainage network.	No acceptable outcome is prescribed.	To be addressed by other Consultants

Table 1.2 Vehicular access, road layout and local roads

Performance outcomes	Acceptable outcomes	Response
Vehicular access to a state-controlled road or within 100 metres of a state-controlled road intersection		
PO15 The location, design and operation of a **new or changed access** to a **state-controlled road** does not compromise the safety of users of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO15** The location, design and operation of the new accesses to the state-controlled road do not compromise the safety of users of the state-controlled road.
PO16 The location, design and operation of a **new or changed access** does not adversely impact the **functional requirements** of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO16** The location, design and operation of the new accesses do not adversely impact the functional requirements of the state-controlled road.
PO17 The location, design and operation of a **new or changed access** is consistent with the **future intent** of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO17** The location, design and operation of the new accesses are consistent with the future intent of the state-controlled road.
PO18 New or changed access is consistent with the access for the relevant **limited access road policy**: 1. **LAR 1** where direct access is prohibited; or 2. **LAR 2** where access may be permitted, subject to assessment.	No acceptable outcome is prescribed.	**Not Applicable**
PO19 New or changed access to a **local road** within 100 metres of an intersection with a **state-**	No acceptable outcome is prescribed.	**Complies with PO19** The proposed access to the development has been designed in accordance with the relevant

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Performance outcomes	Acceptable outcomes	Response
controlled road does not compromise the safety of users of the **state-controlled road**.		standards outlined in Austroads and Australian Standards. Refer to Section 6.2 of the Traffic Impact Assessment prepared by SLR.
PO20 New or changed access to a **local road** within 100 metres of an intersection with a **state-controlled road** does not adversely impact on the operating performance of the intersection.	No acceptable outcome is prescribed.	**Complies with PO20** Refer to Section 6.2 of the Traffic Impact Assessment prepared by SLR.
Public passenger transport and active transport		
PO21 Development does not compromise the safety of users of **public passenger transport infrastructure**, **public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO21** The development does not compromise the safety of users of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO22 Development maintains the ability for people to access **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO22** The development maintains the ability for people to access public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO23 Development does not adversely impact the operating performance of **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO23** The development does not adversely impact the operating performance of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO24 Development does not adversely impact the **structural integrity** or physical condition of **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO24** The development does not adversely impact the structural integrity or physical condition of public passenger transport infrastructure and active transport infrastructure.

Table 1.3 Network impacts

Performance outcomes	Acceptable outcomes	Response
PO25 Development does not compromise the safety of users of the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO25** The development does not compromise the safety of users of the state-controlled road network.

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Performance outcomes	Acceptable outcomes	Response
PO26 Development ensures **no net worsening** of the operating performance of the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO26** The development ensures no net worsening of the operating performance of the state-controlled road network. Refer to Section 8.5 of the Traffic Impact Assessment prepared by SLR.
PO27 Traffic movements are not directed onto a **state-controlled road** where they can be accommodated on the **local road** network.	No acceptable outcome is prescribed.	**Complies with PO27** Due to the nature of the development as a 'major' development, access to the state-controlled road is required. The development traffic could not be solely accommodated on the local road network.
PO28 Development involving haulage exceeding 10,000 tonnes per year does not adversely impact the pavement of a **state-controlled road**.	No acceptable outcome is prescribed.	**Not Applicable**
PO29 Development does not impede delivery of **planned upgrades** of **state-controlled roads**.	No acceptable outcome is prescribed.	**Complies with PO29** No planned upgrades of the state-controlled network are proposed within the vicinity of the site.
PO30 Development does not impede delivery of **corridor improvements** located entirely within the **state-controlled road corridor**.	No acceptable outcome is prescribed.	**Complies with PO30** No planned corridor improvements are proposed within the vicinity of the site.

Table 1.4 Filling, excavation, building foundations and retaining structures

Performance outcomes	Acceptable outcomes	Response
PO31 Development does not create a safety hazard for users of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO32 Development does not adversely impact the operating performance of the **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO33 Development does not undermine, damage or cause subsidence of a **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO34 Development does not cause ground water disturbance in a **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO35 Excavation, boring, piling, blasting and fill compaction do not adversely impact the physical condition or **structural integrity** of a **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO36 Filling and excavation associated with the construction of **new or changed access** do not compromise the operation or capacity of existing drainage infrastructure for a **state-controlled road.**	No acceptable outcome is prescribed.	To be addressed by other Consultants

Table 1.5 Environmental emissions

Statutory note: Where a **state-controlled road** is co-located in the same transport corridor as a railway, the development should instead comply with Environmental emissions in State code 2: Development in a railway environment.

Performance outcomes	Acceptable outcomes	Response
Reconfiguring a lot		
Involving the creation of 5 or fewer new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO37 Development minimises free field noise intrusion from a **state-controlled road.**	**AO37.1** Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	OR **AO37.2** Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound. OR **AO37.3** Development provides a **solid gap-free fence** or other **solid gap-free structure** along the full extent of the boundary closest to the **state-controlled road**.	
Involving the creation of 6 or more new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO38 Reconfiguring a lot minimises free field noise intrusion from a **state-controlled road.**	**AO38.1** Development provides noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO38.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	
Material change of use (accommodation activity)		
Ground floor level requirements adjacent to a state-controlled road or type 1 multi-modal corridor		
PO39 Development minimises noise intrusion from a **state-controlled road** in **private open space**.	**AO39.1** Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.2) for **private open space** at the ground floor level; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR **AO39.2** Development achieves the maximum free field acoustic level in reference table 2 (item 2.2) for **private open space** by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO40 Development (excluding a **relevant residential building** or **relocated building)** minimises noise intrusion from a **state-controlled road** in **habitable rooms** at the facade.	**AO40.1** Development (excluding a **relevant residential building** or **relocated building**) provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum building façade acoustic level in reference table 1 (item 1.1) for **habitable rooms**; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR **AO40.2** Development (excluding a **relevant residential building** or **relocated building**) achieves the maximum building façade acoustic level in reference table 1 (item 1.1) for **habitable rooms** by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	To be addressed by other Consultants
PO41 Habitable rooms (excluding a **relevant residential building** or **relocated building**) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	To be addressed by other Consultants
Above ground floor level requirements (accommodation activity) adjacent to a state-controlled road or type 1 multi-modal corridor		

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Performance outcomes	Acceptable outcomes	Response
PO42 Balconies, podiums, and roof decks include: 1. a continuous **solid gap-free structure** or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); 2. highly acoustically absorbent material treatment for the total area of the soffit above balconies, podiums, and roof decks.	No acceptable outcome is provided.	To be addressed by other Consultants
PO43 Habitable rooms (excluding a **relevant residential building** or **relocated building**) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	To be addressed by other Consultants
Material change of use (other uses)		
Ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO44 Development: 1. provides a noise barrier or earth mound that is designed, sited and constructed: a. to achieve the maximum free field acoustic level in reference table 2 (item 2.3) for all **outdoor education areas** and **outdoor play areas**; b. in accordance with: i. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; ii. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; iii. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or	No acceptable outcome is provided.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
2. achieves the maximum free field acoustic level in reference table 2 (item 2.3) for all **outdoor education areas** and **outdoor play areas** by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.		
PO45 Development involving a **childcare centre** or **educational establishment**: 1. provides a noise barrier or earth mound that is designed, sited and constructed: 2. to achieve the maximum building facade acoustic level in reference table 1 (item 1.2); 3. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or 4. achieves the maximum building facade acoustic level in reference table 1 (item 1.2) by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	No acceptable outcome is provided.	To be addressed by other Consultants
PO46 Development involving: 1. **indoor education areas** and **indoor play areas**; or 2. sleeping rooms in a **childcare centre**; or	No acceptable outcome is provided.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
3. **patient care areas** in a **hospital** achieves the maximum internal acoustic level in reference table 3 (items 3.2-3.4).		
Above ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO47 Development involving a **childcare centre** or **educational establishment** which have balconies, podiums or elevated **outdoor play areas** predicted to exceed the maximum free field acoustic level in reference table 2 (item 2.3) due to noise from a **state-controlled road** are provided with: 1. a continuous **solid gap-free structure** or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); 2. highly acoustically absorbent material treatment for the total area of the soffit above balconies or elevated **outdoor play areas**.	No acceptable outcome is provided.	To be addressed by other Consultants
PO48 Development including: 1. **indoor education areas** and **indoor play areas** in a **childcare centre** or **educational establishment**; or 2. sleeping rooms in a **childcare centre**; or 3. **patient care areas** in a **hospital** located above ground level, is designed and constructed to achieve the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.	To be addressed by other Consultants
Air, light and vibration		

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Performance outcomes	Acceptable outcomes	Response
PO49 Private open space, **outdoor education areas** and **outdoor play areas** are protected from air quality impacts from a **state-controlled road**.	**AO49.1** Each dwelling or unit has access to a **private open space** which is shielded from a **state-controlled road** by a building, **solid gap-free fence**, or other **solid gap-free structure**. OR **AO49.2** Each **outdoor education area** and **outdoor play area** is shielded from a **state-controlled road** by a building, **solid gap-free fence,** or other **solid gap-free structure**.	To be addressed by other Consultants
PO50 Patient care areas within **hospitals** are protected from vibration impacts from a **state-controlled road** or **type 1 multi-modal corridor**.	**AO50.1 Hospitals** are designed and constructed to ensure vibration in the patient treatment area does not exceed a vibration dose value of $0.1m/s^{1.75}$. AND **AO50.2 Hospitals** are designed and constructed to ensure vibration in the ward of a **patient care area** does not exceed a vibration dose value of $0.4m/s^{1.75}$.	To be addressed by other Consultants
PO51 Development is designed and sited to ensure light from infrastructure within, and from users of, a **state-controlled road** or **type 1 multi-modal corridor**, does not: 1. intrude into buildings during night hours (10pm to 6am); 2. create unreasonable disturbance during evening hours (6pm to 10pm).	No acceptable outcomes are prescribed.	To be addressed by other Consultants

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Table 1.6: Development in a future state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
PO52 Development does not impede delivery of a **future state-controlled road**.	**AO52.1** Development is not located in a **future state-controlled road**. OR ALL OF THE FOLLOWING APPLY: **AO52.2** Development does not involve filling and excavation of, or material changes to, a **future state-controlled road**. AND **AO52.3** The intensification of lots does not occur within a **future state-controlled road**. AND **AO52.4** Development does not result in the landlocking of parcels once a **future state-controlled road** is delivered.	**Complies with PO52 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO53 The location and design of **new or changed access** does not create a safety hazard for users of a **future state-controlled road**.	**AO53.1** Development does not include **new or changed access** to a **future state-controlled road**.	**Complies with PO53 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO54 Filling, excavation, building foundations and **retaining structures** do not undermine, damage or cause subsidence of a **future state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO54 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO55 Development does not result in a material worsening of stormwater, flooding, overland flow or drainage impacts in a **future state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO55 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO56 Development ensures that stormwater is lawfully discharged.	**AO56.1** Development does not create any new points of discharge to a **future state-controlled road**.	**Complies with PO56 –** No future state-controlled roads are proposed within the vicinity of the subject site

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Performance outcomes	Acceptable outcomes	Response
	AND **AO56.2** Development does not concentrate flows to a **future state-controlled road**. AND **AO56.3** Stormwater run-off is discharged to a **lawful point of discharge**. AND **AO56.4** Development does not worsen the condition of an existing **lawful point of discharge** to the **future state-controlled road**.	

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State code 6: Protection of state transport networks

Table 6.2 Development in general

Performance outcomes	Acceptable outcomes	Response
Network impacts		
PO1 Development does not compromise the safety of users of the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO1** The development does not compromise the safety of users of the state-controlled road network.
PO2 Development does not adversely impact the structural integrity or physical condition of a **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO2** The design and construction of the development will not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure.
PO3 Development ensures **no net worsening** of the operating performance the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO3** The development ensures no net worsening of the operating performance of the state-controlled road network. Refer to Section 8.5 of the Traffic Impact Assessment prepared by SLR.
PO4 Traffic movements are not directed onto a **state-controlled road** where they can be accommodated on the **local road** network.	No acceptable outcome is prescribed.	**Complies with PO4** Due to the nature of the development as a 'major' development, access to the state-controlled road is required. The development traffic could not be solely accommodated on the local road network.
PO5 Development involving haulage exceeding 10,000 tonnes per year does not damage the pavement of a **state-controlled road**.	No acceptable outcome is prescribed.	**Not Applicable**
PO6 Development does not require a new **railway** level crossing.	No acceptable outcome is prescribed.	**Complies with PO6** The development does not require a new railway level crossing.
PO7 Development does not adversely impact the operating performance of an existing **railway crossing**.	No acceptable outcome is prescribed.	**Complies with PO7** The development does not adversely impact the operating performance of an existing railway crossing.
PO8 Development does not adversely impact on the safety of an existing **railway crossing**.	No acceptable outcome is prescribed.	**Complies with PO8** The development does not adversely impact on the safety of an existing railway crossing.

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Performance outcomes	Acceptable outcomes	Response
		The location of the Rankin Street access allows for suitable separation and queueing to the railway crossing.
PO9 Development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a **railway crossing**.	No acceptable outcome is prescribed.	**Complies with PO9** The development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a railway crossing.
PO10 Development does not create a safety hazard within the **railway corridor**.	No acceptable outcome is prescribed.	**Complies with PO10** The development does not create a safety hazard within the railway corridor.
PO11 Development does not adversely impact the operating performance of the **railway corridor**.	No acceptable outcome is prescribed.	**Complies with PO11** The development does not adversely impact the operating performance of the railway corridor.
PO12 Development does not interfere with or obstruct the **railway transport infrastructure** or **other rail infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO12** The development does not interfere with or obstruct the railway transport infrastructure or other rail infrastructure.
PO13 Development does not adversely impact the structural integrity or physical condition of a **railway corridor** or **rail transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO13** The development does not adversely impact the structural integrity or physical condition of a railway corridor or rail transport infrastructure.
Stormwater and overland flow		
PO14 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of a **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO15 Stormwater run-off or overland flow from the development site does not result in a material worsening of operating performance of a **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO16 Stormwater run-off or overland flow from the development site does not interfere with the structural integrity or physical condition of the **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO17 Development associated with a **state-controlled road** or **road transport infrastructure** ensures that stormwater is lawfully discharged.	**AO17.1** Development does not create any new points of discharge to a **state transport corridor** or **state transport infrastructure**. AND **AO17.2** Development does not concentrate flows to a **state transport corridor**. AND **AO17.3** Stormwater run-off is discharged to a **lawful point of discharge**. AND **AO17.4** Development does not worsen the condition of an existing **lawful point of discharge** to a **state transport corridor** or **state transport infrastructure**.	To be addressed by other Consultants
Flooding		
PO18 Development does not result in a material worsening of flooding impacts within a **state transport corridor** or **state transport infrastructure**	*For a **state-controlled road** or **road transport infrastructure**, all of the following apply:* **AO18.1** For all flood events up to 1% **annual exceedance probability**, development ensures there are negligible impacts (within +/- 10mm) to existing flood levels within a **state transport corridor**. AND **AO18.2** For all flood events up to 1% **annual exceedance probability**, development ensures there are negligible impacts (up to a 10% increase) to existing peak velocities within a **state transport corridor**. AND	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO18.3 For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (up to a 10% increase) to existing time of submergence of a **state transport corridor**. *No acceptable outcome is prescribed for a **railway corridor** or **rail transport infrastructure**.*	
Drainage infrastructure		
PO19 Drainage infrastructure does not create a safety hazard in a **state transport corridor**.	*For a **state-controlled road** environment, both of the following apply:* **AO19.1** Drainage infrastructure associated with, or in a **state-controlled road** is wholly contained within the development site, except at the **lawful point of discharge**. AND **AO19.2** Drainage infrastructure can be maintained without requiring access to a **state transport corridor**. *For a **railway** environment both of the following apply:* **AO19.3** Drainage infrastructure associated with a **railway corridor** or **rail transport infrastructure** is wholly contained within the development site. AND **AO19.4** Drainage infrastructure can be maintained without requiring access to a **state transport corridor**.	To be addressed by other Consultants
PO20 Drainage infrastructure associated with, or in a **state-controlled road** or **road transport infrastructure** is constructed and designed to	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network is maintained.		
Planned upgrades		
PO21 Development does not impede delivery of **planned upgrades** of **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

Table 6.3 Public passenger transport infrastructure and active transport

Performance outcomes	Acceptable outcomes	Response
PO22 Development does not damage or interfere with **public passenger transport infrastructure**, **active transport infrastructure** or **public passenger services**.	No acceptable outcome is prescribed.	**Complies with PO22** The development does not damage or interfere with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO23 Development does not compromise the safety of **public passenger transport infrastructure**, **public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO23** The development does not compromise the safety of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO24 Development does not adversely impact the operating performance of **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO24** The development does not adversely impact the operating performance of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO25 Development does not adversely impact the structural integrity or physical condition of **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO25** The development does not adversely impact the structural integrity or physical condition of public passenger transport infrastructure and active transport infrastructure.
PO26 Upgraded or new **public passenger transport infrastructure** and **active transport infrastructure** is provided to accommodate the demand for **public passenger transport** and **active transport** generated by the development.	No acceptable outcome is prescribed.	**Not Applicable** The no new public passenger transport infrastructure and active transport infrastructure are proposed as part of the development.

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Performance outcomes	Acceptable outcomes	Response
PO27 Development is designed to ensure the location of **public passenger transport infrastructure** prioritises and enables efficient **public passenger services**.	No acceptable outcome is prescribed.	**Not Applicable** The no new public passenger transport infrastructure is proposed as part of the development.
PO28 Development enables the provision or extension of **public passenger services**, **public passenger transport infrastructure** and **active transport infrastructure** to the development and avoids creating indirect or inefficient routes for **public passenger services**.	No acceptable outcome is prescribed.	**Complies with PO28** The development enables the provision or extension of public passenger services, public passenger transport infrastructure and active transport infrastructure to the development and avoids creating indirect or inefficient routes for public passenger services. As documented in the drawing provided in Appendix F of Traffic Impact Assessment prepared by SLR, the location of the proposed accesses to Byrnes Street does not impede the ability to provide a bus stop along the site frontage in the future if required.
PO29 New or modified road networks are designed to enable development to be serviced by **public passenger services**.	**AO29.1** Roads catering for buses are arterial or **sub-arterial roads**, collector or their equivalent. AND **AO29.2** Roads intended to accommodate buses are designed and constructed in accordance with: 1. Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design; Department of Transport and Main Roads; 2. Supplement to Austroads Guide to Road Design (Parts 3, 4-4C and 6), Department of Transport and Main Roads; 3. Austroads Guide to Road Design (Parts 3, 4-4C and 6); 4. Austroads Design Vehicles and Turning Path Templates; 5. Queensland Manual of Uniform Traffic Control Devices, Part 13: Local Area Traffic Management and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – Local Area Traffic Management;	**Not Applicable** No changes to the state-controlled roads are proposed as part of the development.

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Performance outcomes	Acceptable outcomes	Response
	AND **AO29.3** Traffic calming devices are not installed on roads used for buses in accordance with section 2.3.2 Bus Route Infrastructure, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO30 Development provides safe, direct and convenient access to existing and future **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO30** The development provides safe, direct and convenient access to existing and future public passenger transport infrastructure and active transport infrastructure.
PO31 On-site vehicular circulation ensures the safety of both **public passenger transport services** and pedestrians.	No acceptable outcome is prescribed.	**Complies with PO31** The developments on-site vehicular circulation ensures the safety of both public passenger transport services and pedestrians.
PO32 Taxi facilities are provided to accommodate the demand generated by the development.	No acceptable outcome is prescribed.	**Complies with PO32** The development provides taxi facilities to accommodate the demand generated by the development.
PO33 Facilities are provided to accommodate the demand generated by the development for community transport services, courtesy transport services, and **booked hire services** other than taxis.	No acceptable outcome is prescribed.	**Complies with PO33** The development provides car parking, short-term passenger loading and taxi facilities to accommodate the demand generated by the development
PO34 Taxi facilities are located and designed to provide convenient, safe and equitable access for passengers.	**AO34.1** A **taxi facility** is provided parallel to the kerb and adjacent to the main entrance. AND **AO34.2 Taxi facilities** are designed in accordance with: 1. AS2890.5–1993 Parking facilities – on-street parking and AS1428.1–2009 Design for access and mobility – general requirements for access – new building work; 2. AS1742.11–1999 Parking controls – manual of uniform traffic control devices	**Complies with PO34** The development provides taxi facilities located parallel to the kerb and adjacent to the main entrance of the shopping centre. Taxi facilities are designed in accordance with Chapter 7 of the Public Transport Infrastructure Manual. Refer to Section 4.4 of the Traffic Impact Assessment prepared by SLR.

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Performance outcomes	Acceptable outcomes	Response
	3. AS/NZS 2890.6–2009 Parking facilities –off street parking for people with disabilities; 4. Disability standards for accessible public 5. transport 2002 made under section 31(1) of the Disability Discrimination Act 1992; 6. AS/NZS 1158.3.1 – Lighting for roads and public spaces, Part 3.1: Pedestrian area (category P) lighting – Performance and design requirements; 7. Chapter 7 Taxi Facilities, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO35 Educational establishments are designed to ensure the safe and efficient operation of **public passenger services**, pedestrian and cyclist access and **active transport infrastructure**.	**AO35.1** Educational establishments are designed in accordance with the provisions of the Planning for Safe Transport Infrastructure at Schools, Department of Transport and Main Roads, 2011.	**Not Applicable**

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ATTACHMENT 5

‘CHANGE APPROVAL’ MINOR APPLICATION ISSUED TO STATE ASSESSMENT AND REFERRAL AGENCY

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22 July 2025

Our Ref: 24-1123
Your Ref: 2207-30073 SRA

Department of State Development, Infrastructure, and Planning
PO Box 2358
CAIRNS QLD 4870

Attention: Chief Executive – State Assessment and Referral Agency
Javier Samanes – Manager <javier.samanes@dsdilgp.qld.gov.au>

Dear Javier,

RE: REQUEST FOR A 'MINOR CHANGE' UNDER S78 OF THE PLANNING ACT 2016 TO A DEVELOPMENT APPROVAL OVER LAND AT 232 BYRNES STREET AND PART OF LAND AT CLOSE AVENUE, MAREEBA, MORE FORMALLY DESCRIBED AS LOT 78 ON SP298287 AND LOT 20 ON NR7137.

Reedlodge Pty Ltd (the Applicant) have instructed Urban Sync Pty Ltd (Urban Sync) to apply to the State Assessment and Referral Agency (SARA) to request a 'Change Approval' Minor under s78 of the *Planning Act 2016* (PA) to an existing Development Permit over the above-described land. In support of this application, we include the following to assist with SARA's assessment:

- Planning Act Form 5 – Change Application and Landowners Consent as **Attachment 1**;
- Copy of the Relevant Approval as **Attachment 2**;
- Updated Plans of Development prepared by Thomson Adsett as **Attachment 3**;
- Traffic Impact Assessment prepared by SLR as **Attachment 4**; and
- 'Change Approval' Minor Application Submitted to Council as **Attachment 5**.

In accordance with the *Planning Regulation 2017* (RP) the application fee amounts to **$1,879.00** (1,714 fee units). In accordance with s79 of the PA, as the Applicant is the owner of Lot 78, NO landowners consent for this lot is required. As the Applicant is NOT the owner of Lot 20, landowners' consent has been included in this application for this lot.

We trust this application can now be progressed for assessment. Should you require any further information or clarification on any matters regarding this application, please do not hesitate to contact on office on the email provided below.

Yours faithfully

Matt Ingram
Planning Manager
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FIGURES

Figure 1: The Parent Allotments – 232 Byrnes Street and Close Avenue, Mareeba (Source: Queensland Globe, 2025). 1
Figure 2: Development Site – 232 Byrnes Street and Close Avenue, Mareeba (Source: Queensland Globe, 2025). 2
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Table 1: Test under Schedule 2 of the PA 8
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Limitation: This report has been prepared on behalf of Urban Sync Pty Ltd for our client, Reedlodge Pty Ltd and considers the instructions and requirements of Reedlodge Pty Ltd with regards to the development being proposed. This report should not be relied upon by any third party and Urban Sync Pty Ltd accepts no liability or responsibility for the reliance on this report, or data contained within the report, by any third party.

Reference	Revision	Date	Prepared by	Checked by	Authorised by
24-1123	1.0	22/07/2025	NCD	MDI	MDI

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1 SITE DETAILS

Registered Landowner:	▪ Lot 78: Reedlodge Pty Ltd; and ▪ Lot 20: State Government (with Council as Trustee)
Applicant:	Reedlodge Pty Ltd
Site Location:	232 Byrnes Street and Close Avenue, Mareeba
Lot and Description:	Lot 78 on SP298287 and part of Lot 20 on NR7137
Site Area:	1.62ha (Lot 78: 1.51ha and Part of Lot 20: 1,124m^2)
Tenure:	▪ Lot 78: Freehold ▪ Lot 20: Reserve
Easements/Encumbrances:	▪ Lot 78: Nil ▪ Lot 20: Lease A
Existing Improvements:	Lot 78 is generally unimproved. The portion of Lot 20 to be utilised for the proposed development is also vacant, although the remainder of Lot 20 is improved with aged care housing.



Figure 1: The Parent Allotments – 232 Byrnes Street and Close Avenue, Mareeba (Source: Queensland Globe, 2025).

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Figure 2: Development Site – 232 Byrnes Street and Close Avenue, Mareeba (Source: Queensland Globe, 2025).

2 APPLICATION AND APPROVAL BACKGROUND

The site has an extended approval history with serval approvals being issued dating back to the 1990's. However, the application relevant to this correspondence (the 'application') was lodged in July 2022 by Mareeba 232 Pty Ltd and sought approval for a Material Change of Use to facilitate the construction of a 'Shopping Centre' and a drive thru 'Food & Drink Outlet'. The application was lodged under and assessed against the *Planning Act 2016* and the *Mareeba Shire Council Planning Scheme 2016*, as well as all other relevant legislation.

The application was Impact Assessable and was therefore, required to be assessed against the entire Planning Scheme and undergo a period of public notification. The site is also located on a significant juncture at Byrnes Street (a State-controlled Road) & Rankin Street, meaning that the application was also required to be referred to the Department of Transport and Main Roads via the State Assessment and Referral Agency (SARA). The application was approved by SARA on 24 February 2023 with the formal approval from Council being issued on 16 March 2023. The approval authorised the following aspect of development.

- **Development Permit for Material Change of Use (Shopping Centre and Food and Drink Outlet).**

It is this approval which is the 'relevant' approval over the site, and which is applicable to this Change Application (Minor). For ease of reference, a copy of this approval is included in **Attachment 2**.

The **approved** development included the following key elements (see **Figure 3**):

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- A 3,655m^2 Woolworths supermarket;
- 814m^2 of specialty retail shops located within the 'forecourt mall';
- Amenities located within the 'forecourt mall' comprising a total area of 90m^2;
- A height of approx. 9.6m above ground level;
- A 270m^2 drive through Food and Drink Outlet with a maximum height of approx. 6.5m above ground level and including a dual drive through lane;
- 235 car parking spaces;
- Twelve (12) bicycle spaces;
- End of trip facilities including an accessible shower and seven (7) secure staff bicycle spaces; and
- Landscaping to approximately, 1,200m^2 of the site.

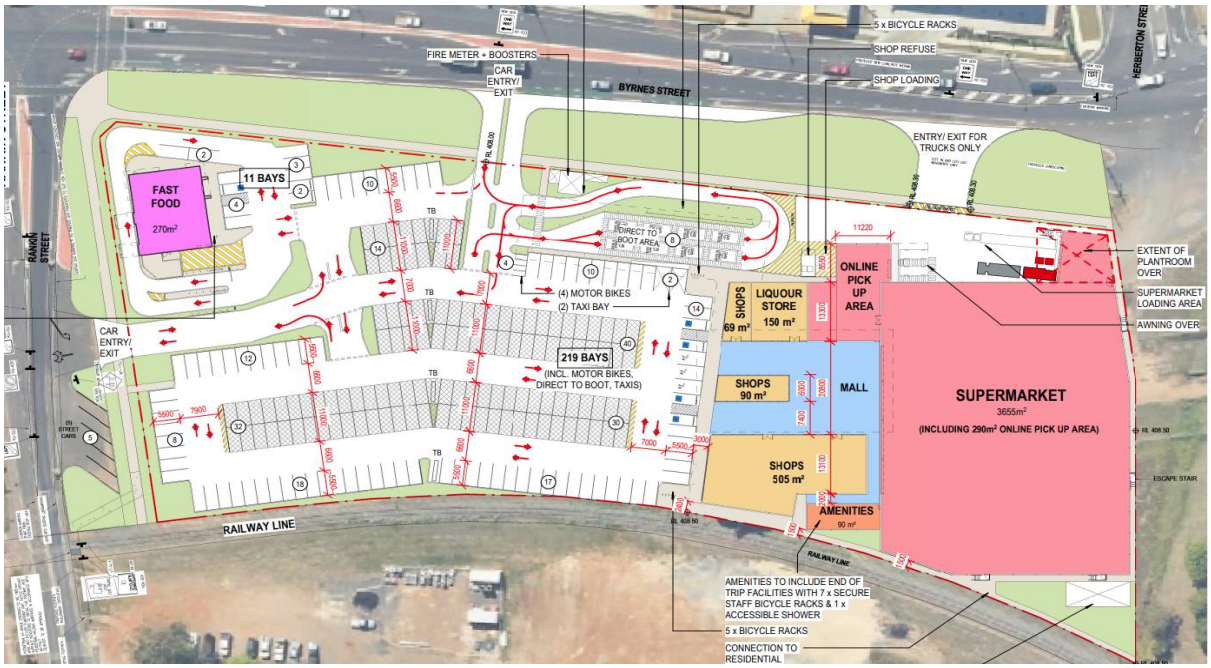


Figure 3: Approved Design Plans (Source: Thomson Adsett, 2022)

3 PROPOSED CHANGES

Since the issuing of the relevant approval, Mareeba 232 Pty Ltd have abandoned the site. The Applicant (Reedlodge Pty Ltd) has recently secured a heads of agreement with Woolworths and now plan to complete the approved development. However, several changes to the approved development are required in order to:

- Address the Applicants preferences and requirements for the approved development;
- Reflect current community needs; and
- Reflect the lead tenant (Woolworths) current needs.

The changes being sought primarily relate to the retail shops, forecourt mall and the site car parking layout, generally as summarised below:

- A 476m^2 increase in Gross Floor Area (GFA) to the 'retail shop' component (814m^2 to 1290m^2);

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- A 115m^2 reduction in the floor area within the 'enclosed mall/foyer/passage area' (637m^2 to 522m^2);
- The above equates to a floor area increase of 361m^2;
- Relocation of the services (fire metre, boosters, etc.) northward of the Byrnes Street crossover;
- Internal modifications throughout the car parking layout;
- Changes to the 'direct to boot' area to remove the drive thru aspect in favour of dedicated parking spaces';
- An additional eighteen (18) car parking spaces, for an increased total of 253 car parking spaces;
- Modification to the taxi-bays to be longer and allow a drive-through function;
- An additional one (1) bicycle space, for an increased total of thirteen (13) bicycle spaces;
- Internal layout changes including arrangements/modifications to the:
    - Enclosed mall/foyer/passage area;
    - Size and orientation of eastern tenancies and adjacent online pick up area;
    - Removal of central shop tenancy;
    - Increase in size of the western most tenancy/tenancies; and
    - Amenities area.

These changes are identified on the updated plans of development in **Attachment 3** and **Figure 4** below. To facilitate these changes, the approved plans as well as all conditions in the relevant approval which reference the now defunct approved plans are required to be changed as part of this Change Application (Minor).

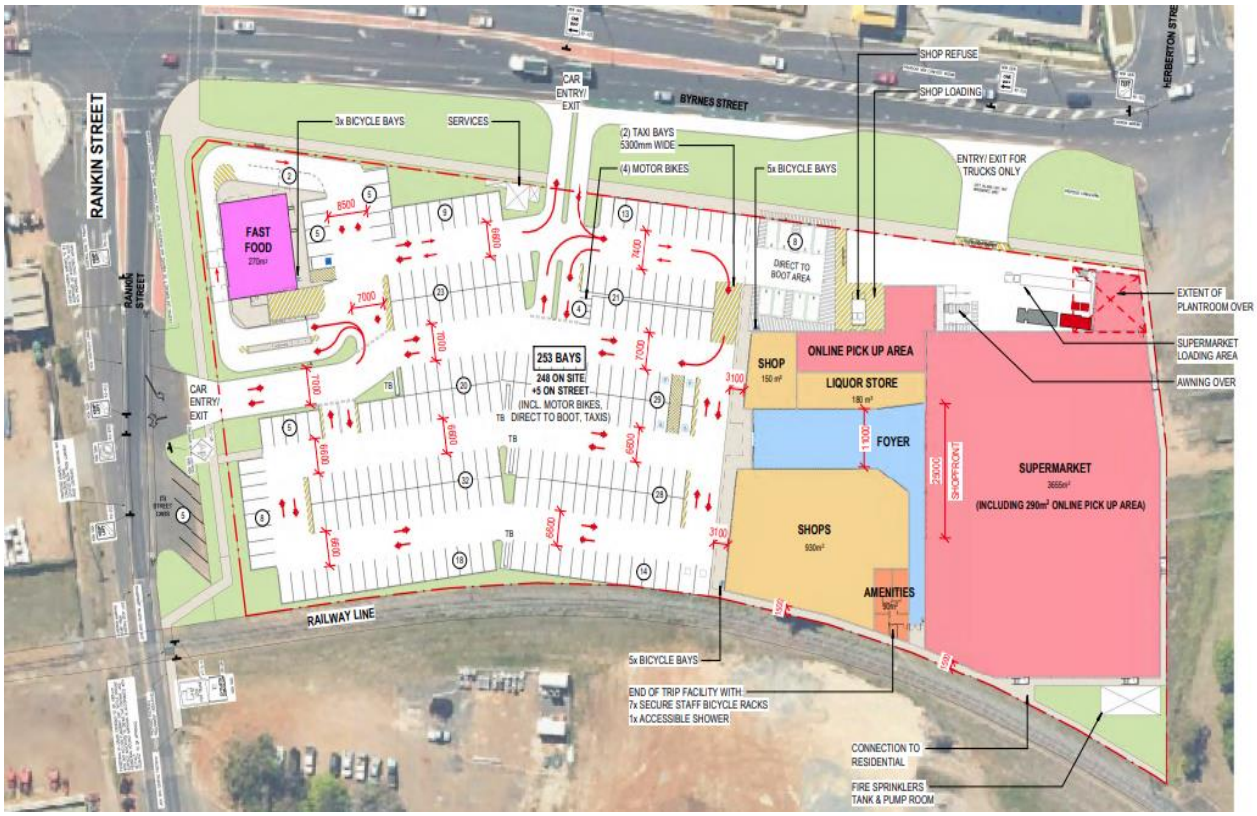


Figure 4: Amended Design Plans (Source: Thomson Adsett, 2025)

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4 REQUESTED CHANGES TO THE RELEVANT APPROVAL

As outlined in **Section 3** above, the proposed changes trigger amendments to the approved plans AND any conditions that reference the approved plans i.e., Conditions 1, 2, 3, 4, as they reference now defunct versions of the approved plans. It is also sought to amend Condition 9 relating to taxi's. With this in mind, Urban Sync requests the following amendments to the existing conditions of approval 2401-38855 SDA noting deletions have been 'struck out' and additions added in **bold** and underlined.

Approved Land Uses:

The approved development no longer includes a separate 'Shop' land use definition as all 'shops' within the development are covered under the 'Shopping Centre' land use definition (as is described in Mareeba Shire Council's Decision Notice). While the Applicant is not formally requesting the approved land use/s to be changed, it is being flagged in case SARA which to address this 'typo'.

Approved Plans

The approved plans are required to be amended to reflect the changes needed to the approved plans for the reasons listed in **Section 3** i.e., to:

- Address the Applicants preferences and requirements for the approved development;
- Reflect current community needs; and
- Reflect the lead tenant (Woolworths) current needs.

With the above in mind, the site plan, Drawing: 19.0298.17 A1.01 Rev 18 needs to be replaced with Rev 27 of the site plan included in **Attachment 3** of this correspondence.

Conditions 1-4

While the proposed changes relate solely to the introduction of updated plans of development, conditions 1-4 of SARA's approval make specific reference to the previously approved site plan. As such, changes will be required to these conditions to reflect the updated site plan, generally per the below:

"*Site Plan, prepared by Thomson Adsett, dated ~~19 December 2022~~* ***24 June 2025****, drawing number A1.01A revision ~~18A~~* ***27***"

Note: We are open to discussing the most suitable wording/referencing these changes with SARA as part of the assessment (if required).

Condition 9

Original Condition

Condition	Amendments	
Railway Level Crossing Safety		
9	(a) Provide a dedicated taxi rank parallel to the kerb within the location shown on the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red). (b) The dedicated taxi rank must be designed and constructed to include the following: (i) A minimum of two (2) taxi parking bays in total in accordance with AS2890.5 – Parking Facilities, Part 5: On-street parking; (ii) Of the taxi bays provided, at least one (1) is to be of a length and width suitable for use by people with disabilities in accordance	(a) & (b) Prior to the commencement of use and to be maintained at all times (c) Prior to the commencement of use

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	with AS1428.1 – Design for access and mobility and AS2890.6 – Parking Facilities, Part 6: Off-street parking for people with disabilities; (iii) Two taxi zone signs R5-21, placed at either end of the rank, and taxi zone line marking in accordance with AS1742.11 – Manual of uniform traffic control devices, Part 11: Parking controls; (iv) Lighting in accordance with AS/NZS 1158.3.1 – Lighting for Roads and Public Spaces, Part 3.1: Pedestrian Area (Category P) Lighting – Performance and Design Requirements; and (v) Accessibility in accordance with the Disability Standards for Accessible Public Transport 2002 made under subsection 31(1) of the *Disability Discrimination Act 1992* and the Department of Transport and Main Roads *Public Transport Infrastructure Manual 2015*. ▪ Provide RPEQ certification, with supporting documentation, to the Program Delivery and Operations Unit, Far North Queensland Region (Far.North.Queensland.IDAS@tmr.qld.gov.au), within the Department of Transport and Main Roads confirming that the development has been constructed in accordance with parts (a) and (b) of this condition.	

Proposed New Condition

Condition	Amendments	
Railway Level Crossing Safety		
9	(a) Provide ***two (2) taxi bays*** ~~a dedicated taxi rank parallel to the kerb~~ within the location shown on the Site Plan, prepared by Thomson Adsett, dated ~~19 December 2022~~ **24 June 2025**, drawing number A1.01. revision ~~18A~~ **27** ~~(as amended in red)~~. (b) The **two (2)** dedicated taxi ~~rank~~ **bays** must be designed and constructed **in accordance with the Disability Standards and relevant Australian Standards included within the Public Transport Infrastructure Manual'** ~~to include the following:~~ ~~(i) A minimum of two (2) taxi parking bays in total in accordance with AS2890.5 – Parking Facilities, Part 5: On-street parking;~~ ~~(ii) Of the taxi bays provided, at least one (1) is to be of a length and width suitable for use by people with disabilities in accordance with AS1428.1 – Design for access and mobility and AS2890.6 – Parking Facilities, Part 6: Off-street parking for people with disabilities;~~ ~~(iii) Two taxi zone signs R5-21, placed at either end of the rank, and taxi zone line marking in accordance with AS1742.11 – Manual of uniform traffic control devices, Part 11: Parking controls;~~ ~~(iv) Lighting in accordance with AS/NZS 1158.3.1 – Lighting for Roads and Public Spaces, Part 3.1: Pedestrian Area (Category P) Lighting – Performance and Design Requirements; and~~ ~~(v) Accessibility in accordance with the Disability Standards for Accessible Public Transport 2002 made under subsection 31(1) of the *Disability Discrimination Act 1992* and the Department of Transport and Main Roads *Public Transport Infrastructure Manual 2015*.~~ ▪ Provide RPEQ certification, with supporting documentation, to the Program Delivery and Operations Unit, Far North Queensland Region (Far.North.Queensland.IDAS@tmr.qld.gov.au), within the Department of Transport and Main Roads confirming that the development has been constructed in accordance with parts (a) and (b) of this condition.	~~(a) & (b)~~ Prior to the commencement of use and to be maintained at all times ~~(c) Prior to the commencement of use~~

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Town Planning Commentary:

AO34.1 of State Code 6 requires that a 'taxi facility' be provided parallel to the kerb and adjacent to the main entrance and we understand this is the assessment benchmark triggering the inclusion of condition 9. The term 'taxi facility' can refer to either 'taxi ranks' or 'taxi bays'. Within the 'Public Transport Infrastructure Manual' (PTIM) these are defined as follows:

- *"**Taxi ranks** are designated pick up and drop off locations for passengers using a licensed taxi service provider, and are exclusively for use by taxis. Taxi ranks are located at specific points on **public road networks where demand warrants**. They provide a safe and identifiable origin and destination location for passengers, and they provide a designated location where taxi operators can service patron needs"; and*

- *"**Taxi bays** are designated bays and/or drop-off/pickup areas (for example, outside hospital entrances, clubs and other large public or private facilities) **rather than an actual rank that is located on the public road network**. There may be joint use of taxi bay facilities by other vehicles for the same drop off/pick-up function".*

Condition 9(a) as worded asks for a 'taxi rank' to be provided adjacent to the entrance of the approved development. As emphasized in the definitions from the PTIM above, 'taxi ranks' are to be located on **public road networks**. The internal of the site will not include any public roads and accordingly, a 'taxi rank' is not an appropriate outcome as the taxi spaces for the proposed development will not be located on a **public road network**. With this in mind, the reference to 'taxi rank' needs to be removed from the condition as only 'Taxi Bays' can be provided for the proposed development.

Due to the low number of taxis in operation in Mareeba (i.e., approximately five (5) taxis in operation in Mareeba with approximately of two (2) or three (3) taxis in use at any one time), there is not sufficient demand to require parallel taxi bays that are located at the direct frontage of the approved development (as SARA required via their amendments in red on the approved plans). Additionally, section 7.4.5 of the PTIM states that:

- Taxi spaces **should preferably** be located parallel (emphasis added). As such, there is no specific requirement that the taxi spaces **must** be parallel, it is just a **preference;** and

- Taxi facilities **should** be located as close as possible to the entrance (emphasis added). Again, there is no strict requirement or standard requiring that taxi spaces **must** be located directly out the front of the main entrance, the wording of this section clearly acknowledges that in some instances, different locations **may** be acceptable.

Notwithstanding the above, the car parking layout has been amended to ensure the taxi bays are now located parallel to the kerb AND **adjacent** to the entrance of the shopping centre. This is the justification for the proposed changes to condition 9(a) and supports the revised taxi bay location (see Attachment 3).

The proposed changes to condition 9(b) are required as the current wording of the condition for the most part, references the standards/requirements needed to be achieved for 'taxi ranks'. In relation to 'taxi bays', Chapter 7 of the PTIM really only states the factors to be considered when deciding on the number of taxi bays to be provided AND that the taxi bays need to comply with the requirements of the Disability Standards and relevant Australian Standards (section 7.5). SLR have confirmed that the taxi bays, as designed on the updated Plans of Development in **Attachment 3**, comply with the relevant disability and Australian standards for 'taxi bays'.

Note: We are open to discussing the most suitable wording/referencing for condition 9(b) with the SARA as part of the assessment (if required).

Finally, there is no strict requirement to comply with AO34 of State Code 6. Non-compliance with an acceptable outcome does not, of itself, establish conflict with the Code. Instead, where there is a conflict with an acceptable outcome, compliance needs to be demonstrated with the higher order sections of the code, in this instance, PO34. PO34 of the Code states:

"PO34 Taxi facilities are located and designed to provide convenient, safe and equitable access for passengers".

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The commentary provided above has demonstrated that there is no need for a parallel taxi rank in this instance, and the taxi bays, as proposed i.e., parallel and adjacent to the entrance, will facilitate convenient, safe and equitable access for passengers. This in turn, demonstrates compliance with PO34 of the Code.

5 REQUEST TO CHANGE (S78) – STATUTORY ASSESSMENT

The 'Minor' Change Application process set out within the *Planning Act 2016* (PA) provides a mechanism to make changes to a development approval without the need for the complexity and delay of a 'fresh' assessment, so long as it would, because of the change, not result in a 'substantially different development'. To assist Council in respect of their consideration and support for this request, an assessment against the relevant statutory and non-statutory requirements set out under the act are provided below in **Tables 1-3**.

Table 1: Test under Schedule 2 of the PA

Tests	Consideration of the proposed change
A minor change, means that -	
*For a **development approval** -*	
Would not result in a substantially different development; and	Please refer to the commentary provided under **Table 2** below which demonstrates the proposed changes do not constitute 'substantially different development'.
If a development application for the development, including the change, were made when the change application is made would not cause –	
(a) The inclusion of prohibited development in the application; or	None of the proposed changes trigger any prohibited development under the PA, nor per Schedule 10, Parts 2-5, Parts 10-11 and Parts 16 and 20, of the *Planning Regulation 2017* (PR).
(b) Referral to a referral agency, other than to the chief executive, if there were no referral agencies for the development application; or	N/A – There were referral agencies for the originating application.
(c) Referral to an extra referral agencies, other than to the chief executive; or	If the original application were resubmitted today including the changes, in accordance with Schedule 10 of the PR, the changes being proposed would not trigger any additional referral agency assessment requirements to the chief executive or otherwise.
(d) A referral agency to assess the application against, or have regard to, matters prescribed under the regulation under section 55(2), other than matters the referral agency must have assessed the application against, or have regard to, when the application was made; or	The original assessment undertaken by the SARA related to a State-controlled Road, State-controlled road intersection and the railway. The proposed changes would not trigger assessment of any other State related matters over and above these matters/those matters which were originally assessed.
(e) Public notification if public notification was not required for the development application.	N/A - The originating application was Impact Assessable.

The Development Assessment Rules under the PA provides further guidance to assist in determining whether a change may constitute 'substantially different development'. The phrase 'substantially different development' is not defined in the PA. Hence, the assessment of whether the effect of a change would, or would not, result in a 'substantially different development' involves matters of fact and degree, which should be considered broadly and fairly. Accordingly, and to determine that the changes do not in fact, result in 'substantially different development',

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an assessment of the changes against the 'substantially different development' criteria listed under Schedule 1 of the DA Rules is provided below in **Table 2**.

Table 2: Substantially Different Development Test

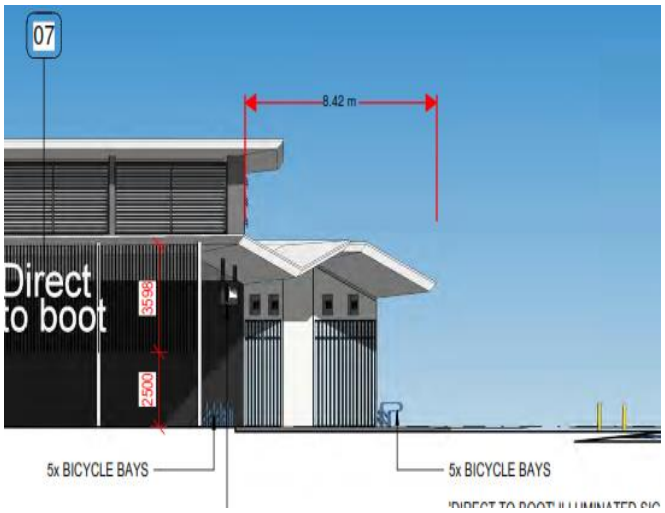
<table>
<tr><th>Tests</th><th>Consideration of the Proposed Change</th></tr>
<tr><td>Involves a new use</td><td>The proposed changes do not seek to introduce any new uses.</td></tr>
<tr><td>Results in the application applying to a new parcel of land</td><td>The proposed changes are entirely contained within the original parcels of land.</td></tr>
<tr><td>Dramatically changes the built form in terms of scale, bulk and appearance</td><td>As outlined in Section 3, the proposed changes predominantly relate to the retail shops, forecourt mall and the site car parking layout. It is reasonable to consider that the changes to the car parking area do not constitute any changes to the scale, bulk or appearance of the development as the car parking area does not involve any actual 'built form' i.e. a structure or raised elements. As such, the scope of the proposed 'built form' changes relate to the shopping centre 'box' and this will be the focus of the below commentary.

The setbacks and height of the 'box' remain generally unchanged. Additional floor area has been provided, and it will be whether this additional floor area has 'dramatically' changed the appearance of the 'box' which will determine compliance with this aspect of the test. We note here that this additional floor area is related solely to the retail shops component of the 'box' with no changes to the supermarket component of the development being proposed.

The table below provides a summary of the changes that have occurred to the dimensions of the 'box':

<table>
<tr><th></th><th>Approved Plan of Development</th><th>Amended Plans of Development</th></tr>
<tr><td>Total Floor Area</td><td>5,466m^2</td><td>5,827m^2</td></tr>
<tr><td>Length (Western Boundary)</td><td>Approx. 87m</td><td>Approx. 96m</td></tr>
<tr><td>Length (Eastern Boundary)</td><td>Approx 87m</td><td>Approx. 96m</td></tr>
<tr><td>Width (Northern boundary)</td><td>Approx. 79m</td><td>Approx. 79m</td></tr>
<tr><td>Width (Southern boundary)</td><td>Approx. 81m</td><td>Approx. 78m</td></tr>
</table>
As is evident from the table above, the proposed changes has resulted in the 'box' becoming an extra, approx. nine (9) meters</td></tr>
</table>

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	wide, while minimal/nil changes to the width of the 'box' have occurred. The additional length is predominantly associated with the additional floor area and changed size/shape etc., of the western most tenancy of the retail component and has occurred as a result of enlarging this western most tenancy via a redesign of the internal layout, the reduction of the enclosed mall area and a minor northern expansion toward the car parking area. It is the latter change which is the driver for the additional length of the 'box'. **Figure 5** below identifies this 'additional' length when viewed facing west from Byrnes Street. Such a minor increase to the dimensions of the 'box' could not reasonably be considered to 'dramatically' change the built form in terms of scale, bulk or appearance.  Figure 5: *Additional Extent of Shopping Center Box – Side View* (Source: Thomson Adsett, 2025)
Changes the ability of the proposal to operate as intended. For example, reducing the size of a retail complex may reduce the capacity of the complex to service the intended catchment	The proposed changes do not affect the ability of the approved development to operate as was originally intended i.e., the approved development will still operate as a 'Shopping Centre' and 'Food and Drink Outlet'. Additionally, as had been outlined in the Economic Needs Report prepared by Foresight Partners and submitted with the original development application: ▪ Retail spending generated by Total Trade Area (TTA) residents in 2021 could support the proposed development (the TTA in the Foresight report included Mareeba, Dimbulah and Kuranda); and ▪ That there would be no adverse impacts on other centre areas. While the proposed changes include a minor increase in floor area, the population of the TTA would also have grown marginally since 2021. This would likely ensure: ▪ The development will still be able to suitably service the TTA; and The development will not have any adverse viability impacts on surrounding retail activities.
Removes a component that is integral to the operation of the development	Not applicable. The proposed changes do not 'remove' any components of the approved development; they seek modifications to the approved development only.

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Significantly impacts on traffic flow and the transport network, such as increasing traffic to the site	As demonstrated in the Traffic Impact Assessment and updated SDAP assessment prepared by SLR (See **Attachment 4**), the proposed changes will not result in any adverse impacts on the surrounding road network.
Introduces new impacts or increases the severity of known impacts	The initial 'impacts' associated with the proposed development have been suitably addressed as part of the original application. That said, traffic is and has always been the key 'issue' with the proposed development. With this in mind, the Traffic Impact Assessment prepared by SLR in **Attachment 4** demonstrates that the proposed changes will not introduce any new, nor any adverse/unacceptable traffic impacts.
Removes an incentive or offset component that would have balanced a negative impact of the development	Not applicable. There were no incentives and/or offsets that supported the original approval.
Impacts on infrastructure provision, location or demand.	As the proposed changes relate to an increase in floor area of circa 361m^2, it is expected that an increased demand for services, such as water and sewer, will be required. However as outlined in the originating development application, specifically the Engineering Report prepared by Trinity Engineering, the local network has the capacity to facilitate this very minor increase in demand. The specifics of this arrangement will be determined during detailed design and be documented in the associated Operational Works Application that is to be submitted to Council. As demonstrated in the Traffic Impact Assessment and updated SDAP assessment prepared by SLR (See **Attachment 4**), the proposed changes will not result in any adverse impacts on the surrounding road network.

In summary, the above assessment and review demonstrates to a suitable standard that the proposed changes will not result in substantially different development and can therefore, be considered a 'Minor Change'. As a result, it would be reasonable and suitable in the circumstances to amend/modify the existing conditions of approval, as sought by **Section 4**.

Section 81 of the PA outlines what the 'Responsible Entity' must consider when assessing a Change Application and **Table 3** below provides commentary against these matters.

Table 3: Commentary Against Section 81 of the PA

Tests	Consideration of the Proposed Change
(2) "In assessing the change application, the responsible entity must consider—"	-
(2)(a) "The information the applicant included with the application"	Please refer to the supporting material included with this Change Application (Minor).
(2)(b) "If the responsible entity is the assessment manager—any properly made submissions about the development application or another change application that was approved"	N/A – The responsible entity for this application is SARA who were not the assessment manager for the originating application.

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(2)(c) Any pre-request response notice or response notice given in relation to the change application"	No pre-request response has been sought.
(2)(d) "If the responsible entity is, under section 78A(3), the Minister—all matters the Minister would or may assess against or have regard to, if the change application were a development application called in by the Minister"	The responsibility entity is not the Minister.
(2)(da) "If paragraph (d) does not apply—all matters the responsible entity would or may assess against or have regard to, if the change application were a development application"	It has been demonstrated within this application and the Traffic Impact Assessment (see Attachment 4) that the proposed changes do not result in any non-compliances with the relevant provisions of State Code 1 & 6 of the State Development Assessment Provisions (see also **Attachment 4**). This is considered to satisfy the matters the SARA would assess the Change Application (Minor) against if it were a new development application.
(2)(e) "Another matter that the responsible entity considers relevant"	Any 'other matters' were suitably considered as part of the original approval. As has been outlined throughout this application, the proposed changes do not introduce any new or increase the severity of any existing impacts that SARA may need to consider in their assessment of this Change Application (Minor).
(3) "Subsections (4) and (5) apply if the responsible entity must, in assessing the change application under subsection (2)(d) or (da), consider— *a) a statutory instrument; or* *b) another document applied, adopted or incorporated (with or without changes) in a statutory instrument"*	See below.
(4) "The responsible entity must consider the statutory instrument, or other document, as in effect when the development application for the development approval was properly made"	As identified above, the proposed changes remain compliant with the relevant provisions of State Code 1 & 6 of the State Development Assessment Provisions (see **Attachment 4**).
(5) "However, the responsible entity may give the weight the responsible entity considers is appropriate, in the circumstances, to— *a) the statutory instrument or other document as in effect when the change application was made; or* *b) if the statutory instrument or other document is amended or replaced after the change application is made but before it is decided—the amended or replacement instrument or document; or* *c) another statutory instrument—* *(i) that comes into effect after the change application is made but before it is decided; and* *(ii) that the responsible entity would have been required to consider if the*	There are no other statutory documents considered relevant to give weight to in the assessment of this Change Application (Minor).

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	instrument had been in effect when the development application for the development approval was properly made"	

6 CONCLUSION

Urban Sync Pty Ltd are submitting this statutory request for a Change Approval (Minor) under s78 of the *Planning Act 2016* on behalf of Reedlodge Pty Ltd over Lot 78 on SP298287 and part of Lot 20 on NR7137 at 232 Byrnes Street and Close Avenue, Mareeba.

Other parties interested in developing the development, have over time, all abandoned the site/development, and the Applicants have now re-established an intent to deliver the development. This application is required to address the Applicants preferences and requirements for the approved development, and better reflect not only the communities, but also, the lead tenant (Woolworths), current needs.

This application has demonstrated that the proposed change will not result in any new impacts and accordingly, the changes will not affect previous SARA assessment or result in a different/worse development outcome on-site, or on adjacent premises, over and above that which has previously been approved.

To confirm the requested changes can in fact, be considered as a 'minor change' this application also undertook an assessment against the relevant statutory tests for a 'Minor Change' in the PA and DA Rules. While the meaning of 'substantially different development' is not fixed or definitive and instead, involves matters of fact and degree, if considered broadly and fairly having regards to the circumstances put forward within this application, it is our view that the changes being proposed are in this instance, not 'substantially different development'. As such, the application has demonstrated the proposed changes are in fact, a 'Minor Change' and as a result, it would be reasonable in this instance, to amend the conditions of approval, as outlined in **Section 4** of this application and issue a new Decision Notice.

We trust this application can now be progressed for assessment. Should you require any further information or clarification on any matters regarding this application, please do not hesitate to contact our office and we can look to co-ordinate a meeting.

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ATTACHMENT I

PLANNING ACT - FORM 5 AND LANDOWNER CONSENT

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Change application form

Planning Act Form 5 (version 1.2 effective 7 February 2020) made under Section 282 of the Planning Act 2016.

This form is to be used for a change application made under section 78 of the *Planning Act 2016*. It is important when making a change application to be aware of whether the application is for a minor change that will be assessed under section 81 of the *Planning Act 2016* or for an other change that will be assessed under section 82 of the *Planning Act 2016*.

An applicant must complete all parts of this form, and provide any supporting information that the form identifies as being required to accompany the change application, unless stated otherwise. Additional pages may be attached if there is insufficient space on the form to complete any part.

***Note**: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).*

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (*individual or company full name*)	Reedlodge Pty Ltd
Contact name *(only applicable for companies)*	Urban Sync Pty Ltd
Postal address *(P.O. Box or street address)*	C/- Urban Sync Pty Ltd, PO Box 2970
Suburb	Cairns
State	Queensland
Postcode	4870
Country	Australia
Email address *(non-mandatory)*	admin@urbansync.com.au
Mobile number *(non-mandatory)*	
Applicant's reference number(s) *(if applicable)*	24-1123

2) Owner's consent - Is written consent of the owner required for this change application?

***Note**: Section 79(1A) of the Planning Act 2016 states the requirements in relation to owner's consent.*

☒ Yes – the written consent of the owner(s) is attached to this change application
☐ No

PART 2 – LOCATION DETAILS

3) Location of the premises *(complete 3.1) or 3.2), and 3.3) as applicable)*

3.1) Street address and lot on plan

☒ Street address **AND** lot on plan (*all lots must be listed*), ***or***
☐ Street address **AND** lot on plan for an adjoining or adjacent property of the premises *(appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).*

a)	Unit No.	Street No.	Street Name and Type	Suburb
		232	Byrnes Street	Mareeba
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4880	78	SP298287	Mareeba Shire Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
			Close Avenue	Mareeba
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4880	20	NR7137	Mareeba Shire Council

Queensland Government

3.2) Coordinates of premises *(appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)*

***Note**: Place each set of coordinates in a separate row.*

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) *(if applicable)*
		☐ WGS84 ☐ GDA94 ☐ Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) *(if applicable)*
		☐ 54 ☐ 55 ☐ 56	☐ WGS84 ☐ GDA94 ☐ Other:	

3.3) Additional premises

☐ Additional premises are relevant to the original development approval and the details of these premises have been attached in a schedule to this application

☒ Not required

PART 3 – RESPONSIBLE ENTITY DETAILS

4) Identify the responsible entity that will be assessing this change application

***Note**: see section 78(3) of the Planning Act 2016*

Mareeba Shire Council

PART 4 – CHANGE DETAILS

5) Provide details of the existing development approval subject to this change application

Approval type	Reference number	Date issued	Assessment manager/approval entity
☒ Development permit ☐ Preliminary approval	MCU/22/0003	16 March 2023	Mareeba Shire Council
☐ Development permit ☐ Preliminary approval			

6) Type of change proposed

6.1) Provide a brief description of the changes proposed to the development approval *(e.g. changing a development approval for a five unit apartment building to provide for a six unit apartment building)*:

Changing the approved development to include additional GFA, a revised car parking layout and other, minor internal changes.

6.2) What type of change does this application propose?

☒ Minor change application – proceed to Part 5

☐ Other change application – proceed to Part 6

PART 5 – MINOR CHANGE APPLICATION REQUIREMENTS

7) Are there any affected entities for this change application

☐ No – proceed to Part 7

☒ Yes – list all affected entities below and proceed to Part 7

***Note**: section 80(1) of the Planning Act 2016 states that the person making the change application must give notice of the proposal and the details of the change to each affected entity as identified in section 80(2) of the Planning Act 2016.*

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Affected entity	Pre-request response provided? (*where a pre-request response notice for the application has been given, a copy of the notice must accompany this change application)*	Date notice given *(where no pre-request response provided)*
State Assessment & Referral Agency (SARA) - Department of State Development, infrastructure. Local Government and Planning	☒ No ☐ Yes – pre-request response is attached to this change application	
	☐ No ☐ Yes – pre-request response is attached to this change application	
	☐ No ☐ Yes – pre-request response is attached to this change application	

PART 6 – OTHER CHANGE APPLICATION REQUIREMENTS

***Note**: To complete this part it will be necessary for you to complete parts of DA Form 1 – Development application details and in some instances parts of DA Form 2 – Building work details, as mentioned below. These forms are available at https://planning.dsdmip.qld.gov.au.*

8) Location details - Are there any additional premises included in this change application that were not part of the original development approval?

☐ No
☐ Yes

9) Development details

9.1) Is there any change to the type of development, approval type, or level of assessment in this change application?

☐ No
☐ Yes – the completed Sections 1 and 2 of Part 3 (Development details) of *DA Form 1 – Development application details* as these sections relate to the new or changed aspects of development are provided with this application.

9.2) Does the change application involve building work?

☐ No
☐ Yes – the completed Part 5 (Building work details) of *DA Form 2 – Building work details* as it relates to the change application is provided with this application.

10) Referral details – Does the change application require referral for any referral requirements?

***Note**: The application must be referred to each referral agency triggered by the change application as if the change application was the original development application including the proposed change.*

☐ No
☐ Yes – the completed Part 5 (Referral details) of *DA Form 1 – Development application details* as it relates to the change application is provided with this application. Where referral is required for matters relating to building work the Referral checklist for building work is also completed.

11) Information request under Part 3 of the DA Rules

☐ I agree to receive an information request if determined necessary for this change application
☐ I do not agree to accept an information request for this change application

***Note**: By not agreeing to accept an information request I, the applicant, acknowledge:*

- *that this change application will be assessed and decided based on the information provided when making this change application and the assessment manager and any referral agencies relevant to the change application are not obligated under the DA Rules to accept any additional information provided by the applicant for the change application unless agreed to by the relevant parties*
- *Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.*

Further advice about information requests is contained in the DA Forms Guide: Forms 1 and 2.

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12) Further details
☐ Part 7 of *DA Form 1 – Development application details* is completed as if the change application was a development application and is provided with this application.

PART 7 – CHECKLIST AND APPLICANT DECLARATION

13) Change application checklist	
I have identified the: • responsible entity in 4); and • for a minor change, any affected entities; and • for an other change all relevant referral requirement(s) in 10) ***Note**: See the Planning Regulation 2017 for referral requirements*	☒ Yes
For an other change application, the relevant sections of *DA Form 1 – Development application details* have been completed and is attached to this application	☐ Yes ☒ Not applicable
For an other change application, where building work is associated with the change application, the relevant sections of *DA Form 2 – Building work details* have been completed and is attached to this application	☐ Yes ☒ Not applicable
Supporting information addressing any applicable assessment benchmarks is attached to this application ***Note**: This includes any templates provided under 23.6 and 23.7 of DA Form 1 – Development application details that are relevant as a result of the change application, a planning report and any technical reports required by the relevant categorising instrument(s) (e.g. the local government planning scheme, State Planning Policy, State Development Assessment Provisions). For further information, see DA Forms Guide: Planning report template.*	☒ Yes
Relevant plans of the development are attached to this development application ***Note**: Relevant plans are required to be submitted for all relevant aspects of this change application. For further information, see DA Forms Guide: Relevant plans.*	☒ Yes

14) Applicant declaration
☒ By making this change application, I declare that all information in this change application is true and correct. ☒ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the responsible entity and any relevant affected entity or referral agency for the change application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*. ***Note**: It is unlawful to intentionally provide false or misleading information.*
Privacy – Personal information collected in this form will be used by the responsible entity and/or chosen assessment manager, any relevant affected entity or referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the change application. All information relating to this change application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website. Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where: • such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or • required by other legislation (including the *Right to Information Act 2009*); or • otherwise required by law. This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

PART 8 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

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Date received:		Reference number(s):	

QLeave notification and payment *Note: For completion by assessment manager if applicable*			
Description of the work			
QLeave project number			
Amount paid ($)		Date paid (dd/mm/yy)	
Date receipted form sighted by assessment manager			
Name of officer who sighted the form			

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Company owner's consent to the making of a development application under the *Planning Act 2016*

I, Jennifer McCarthy

Acting Chief Executive Officer

Of Mareeba Shire Council (ABN: 39 114 383 874)

The body being the trustee of the premises identified as follows:

Lot 20 on NR7137 at Close Avenue, Mareeba

Consent to the making of a development application under the *Planning Act 2016* by:

Reedlodge Pty Ltd C/- Urban Sync Pty Ltd

On the premises described above for:

'Change Approval' Minor under s78 of the Planning Act 2016 to an Approval for a Development Permit for a Material Change of Use for a Shopping Centre & Food and Drink Outlet (MSC Ref: MCU/22/0003).

Company Name and ACN: Mareeba Shire Council (ABN: 39 114 383 874)

.....
Signature of Acting Chief Executive Officer

30 May 2025
.....
Date

The Planning Act 2016 is administered by the Department of Local Government, Infrastructure and Planning, Queensland Government.

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ATTACHMENT 2

RELEVANT APPROVAL

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Queensland Government

SARA reference: 2207-30073 SRA
Council reference: CU/22/0003
Applicant reference: 21-740

24 February 2023

Chief Executive Officer
Mareeba Shire Council
PO Box 154
Mareeba QLD 4880
planning@msc.qld.gov.au

Attention: Carl Ewin

Dear Sir/Madam

SARA referral agency response—232 Byrnes Street, Mareeba and 13 Close Street, Mareeba—Shopping Centre, Food and Drink Outlet and Shop

(Referral agency response given under section 56 of the *Planning Act 2016*)

The development application described below was confirmed as properly referred by the State Assessment and Referral Agency (SARA) on 16 August 2022.

Response

Outcome:	Referral agency response – with conditions
Date of response:	24 February 2023
Conditions:	The conditions in **Attachment 1** must be attached to any development approval
Advice:	Advice to the applicant is in **Attachment 2**
Reasons:	The reasons for the referral agency response are in **Attachment 3**

Development details

Description:	Development permit	Material Change of Use for a Shopping Centre, Food and Drink Outlet and Shop
SARA role:	Referral agency	

Far North Queensland regional office
Ground Floor, Cnr Grafton and Hartley Street, Cairns
PO Box 2358, Cairns QLD 4870

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SARA triggers:	Schedule 10, Part 9, Division 4, Subdivision 1, Table 1 (Planning Regulation 2017) Development application for material change of use impacting on state transport infrastructure and thresholds Schedule 10, Part 9, Division 4, Subdivision 2, Table 4 (Planning Regulation 2017) Development application for material change of use near a state-controlled road, intersection, and railway
SARA reference:	2207-30073 SRA
Assessment manager:	Mareeba Shire Council
Street address:	232 Byrnes Street, Mareeba; 13 Close Street, Mareeba
Real property description:	78SP298287; 20NR7137
Applicant name:	Mareeba 232 Pty Ltd
Applicant contact details:	C/- Urban Sync Pty Ltd, PO Box 2970 Cairns QLD 4870 justin@urbansync.com.au
State-controlled road access permit:	This referral included an application for a road access location, under section 62A(2) of *Transport Infrastructure Act 1994*. Below are the details of the decision: • Approved • Reference: TMR22-037116 • Date: 7 February 2023 If you are seeking further information on the road access permit, please contact the Department of Transport and Main Roads at Far.North.Queensland.IDAS@tmr.qld.gov.au
Human Rights Act 2019 considerations:	A consideration of the 23 fundamental human rights protected under the *Human Right Act 2019* has been undertaken as part of this decision. It has been determined that this decision does not limit human rights.

Representations

An applicant may make representations to a concurrence agency, at any time before the application is decided, about changing a matter in the referral agency response (s.30 Development Assessment Rules). Copies of the relevant provisions are in **Attachment 4**.

A copy of this response has been sent to the applicant for their information.

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For further information please contact Tony Croke, Principal Planner, on 40373205 or via email CairnsSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely



Brett Nancarrow
Manager (Planning)

cc Mareeba 232 Pty Ltd, justin@urbansync.com.au

enc Attachment 1 - Referral agency conditions
Attachment 2 - Advice to the applicant
Attachment 3 - Reasons for referral agency response
Attachment 4 - Representations about a referral agency response provisions
Attachment 5 - Documents referenced in conditions

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Attachment 1—Referral agency conditions

(Under section 56(1)(b)(i) of the *Planning Act 2016* the following conditions must be attached to any development approval relating to this application) (Copies of the documents referenced below are found at **Attachment 5**)

No.	Conditions	Condition timing
Material change of use		
Schedule 10, Part 9, Division 4, Subdivision 1, Table 1 (Planning Regulation 2017)–Material change of use impacting on state transport infrastructure and thresholds and Schedule 10, Part 9, Division 4, Subdivision 2, Table 4 (Planning Regulation 2017) Development application for material change of use near a state-controlled road, intersection, and railway—The chief executive administering the *Planning Act 2016* nominates the Director-General of the Department of Transport and Main Roads to be the enforcement authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following condition(s):		
Railway Corridor		
1.	Locate the shops and supermarket generally in accordance with the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red) to achieve the following minimum setbacks to the railway corridor: (a) Shops – 2.4m (b) Supermarket – 1.5m	Prior to the commencement of use and to be maintained at all times.
2.	Locate the Rankin Street site access generally in accordance with the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red) to achieve a minimum setback of 35m to the railway corridor.	Prior to the commencement of use and to be maintained at all times.
3.	Provide raised kerb wheel stops to all car parking spaces located perpendicular to the railway corridor as shown on the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red).	Prior to the commencement of use and to be maintained at all times
4.	The Mareeba-Dimbulah Road (Byrnes Street) site access must be separated from the Rankin Street / Mareeba-Dimbulah Road (Byrnes Street) signalised pedestrian crossing by 72m generally in accordance with the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red) for potential future public passenger transport.	Prior to the commencement of use and to be maintained at all times.
Fencing		
5.	Provide fencing along the site boundary with the railway corridor, in accordance with the railway manager's standards: (i) Queensland Rail drawing number QR-C-S3230 – 1.8m High Chain Link Security Fence with Without Rails Using 50mm Diamond Mesh General Arrangement; or (ii) Queensland Rail drawing number QR-C-S3231 – Standard	Prior to the commencement of use and to be maintained at all times.

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	Timber Fence 1800mm High Timber Paling Fence.	
Filling and excavation		
6.	Any excavation, filling/backfilling/compaction, retaining structures and other works involving ground disturbance must not encroach or de-stabilise the railway corridor and state-controlled road corridor including all transport infrastructure or the land supporting this infrastructure, or cause similar adverse impacts.	At all times.
Railway level crossing safety		
7.	(a) Road works to prevent right turns into the site at the Rankin Street site access, including a concrete traffic island, signage and line marking, must be provided generally in accordance with the Median Extension Concept, prepared by Trinity Engineering and Consulting, dated 22 December 2022, drawing number 1604-002, revision F as amended in red. (b) The road works in part (a) must be designed and constructed in accordance with: (i) Department of Transport and Main Roads' Road Planning and Design Manual (2nd Edition); and (ii) Manual of Uniform Traffic Control Devices (MUTCD).	Prior to the commencement of use
8.	(a) Locate the pedestrian railway crossing, including pathway connections to the footpath in Rankin Street, generally in accordance with the Median Extension Concept, prepared by Trinity Engineering and Consulting, dated 22 December 2022, drawing number 1604-002, revision F (as amended in red). (b) The pedestrian railway crossing mentioned in part (a) of this condition must be designed and constructed in accordance with: (i) AS1742.7:2016 Manual of uniform traffic control devices, *Part 7: Railway crossings*; and (ii) Queensland Rail Pedestrian Level Crossings, drawing number 10698.	Prior to the commencement of use
9.	(a) Provide a dedicated taxi rank parallel to the kerb within the location shown on the Site Plan, prepared by Thomson Adsett, dated 19 December 2022, drawing number A1.01, revision 18A (as amended in red). (b) The dedicated taxi rank must be designed and constructed to include the following: (i) a minimum of two (2) taxi parking bays in total in accordance with AS2890.5 - Parking facilities, Part 5: On-street parking; (ii) of the taxi bays provided, at least one (1) is to be of a length and width suitable for use by people with disabilities in accordance AS1428.1 - Design for access and mobility and AS2890.6 – Parking Facilities, Part 6: Off-street parking for people with disabilities	(a) & (b) Prior to the commencement of use and to be maintained at all times

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	(iii) two taxi zone signs R5-21, placed at either end of the rank, and taxi zone line marking in accordance with AS1742.11 – Manual of uniform traffic control devices, Part 11: Parking controls (iv) lighting in accordance with AS/NZS 1158.3.1 – Lighting for Roads and Public Spaces, Part 3.1: Pedestrian Area (Category P) Lighting – Performance and Design Requirements and (v) accessibility in accordance with the Disability Standards for Accessible Public Transport 2002 made under subsection 31(1) of the *Disability Discrimination Act 1992* and the Department of Transport and Main Roads *Public Transport. Infrastructure. Manual 2015.* (c) Provide RPEQ certification, with supporting documentation, to the Program Delivery and Operations Unit, Far North Queensland Region (Far.North.Queensland.IDAS@tmr.qld.gov.au), within the Department of Transport and Main Roads confirming that the development has been constructed in accordance with parts (a) and (b) of this condition.	(c) Prior to the commencement of use
Public Passenger Transport		
10.	Any roadworks in Mareeba-Dimbulah Road (Byrnes Street) must be designed and constructed to be in accordance with the following, to accommodate a single unit rigid bus of 12.5m in length: (i) Department of Transport and Main Roads *Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design* (ii) Department of Transport and Main Roads *Supplement to Austroads Guide to Road Design* (Parts 3, 4-4C and 6) (iii) *Austroads Guide to Road Design* (Parts 3, 4-4C and 6) (iv) *Austroads Design Vehicles and Turning Path Templates* (v) Queensland Manual of Uniform Traffic Control Devices, Part 13: *Local Area Traffic Management* and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – *Local Area Traffic Management* and (vi) Chapter 2 - Planning and Design, Section 2.3.2 Bus Route Infrastructure (page 6) of the Department of Transport and Main Roads *Public Transport Infrastructure Manual 2015.*	Prior to the commencement of use

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Stormwater Management		
11.	(a) Stormwater management of the development must not cause worsening to the operating performance of the railway corridor and state-controlled road, such that any works on the land must not: (i) create any new discharge points for stormwater runoff onto the railway corridor and state-controlled road (ii) concentrate or increase the velocity of flows to a railway corridor and a state-controlled road (iii) interfere with and/or cause damage to the existing stormwater drainage on the railway corridor and state-controlled road (iv) surcharge any existing culvert or drain on the railway corridor and state-controlled road (v) reduce the quality of stormwater discharge onto the railway corridor and state-controlled road (vi) impede or interfere with any overland flow or hydraulic conveyance from the railway corridor and state-controlled road (vii) reduce the floodplain immunity of the railway corridor and state-controlled road. (b) Submit RPEQ certification Cairns Corridor Management Unit (Far.North.Queensland.IDAS@tmr.qld.gov.au) within the Department of Transport and Main Roads, confirming that the development has been designed in accordance with part (a) of this condition. (c) Submit RPEQ certification Cairns Corridor Management Unit (Far.North.Queensland.IDAS@tmr.qld.gov.au) within the Department of Transport and Main Roads, confirming that the development has been constructed in accordance with parts (a) and (b) of this condition.	(a) At all times. (b) Prior to obtaining development approval for operational work or building work, whichever occurs first. (c) Within 20 business days of the completion of works.
Roadworks on a state-controlled road		
12.	(a) Road works comprising in the extension of the existing concrete centre median for approximately 75m along Mareeba-Dimbulah Road (Byrnes Street) ending prior to the Herberton Street intersection must be provided. (b) The road works must be designed and constructed in accordance with Department of Transport and Main Roads', Road Planning and Design Manual, 2nd Edition, November 2021, Volume 3 – Guide to Road Design.	Prior to the commencement of use.
Vehicular access to a state-controlled road		
13.	(a) The existing vehicular property accesses located between Lot 78 on SP298287, and Mareeba-Dimbulah Road (Byrnes Street) must be permanently closed and removed. (b) The kerb and channeling between the pavement edge and the property boundary must be reinstated in accordance with Far	Prior to the commencement of use.

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	North Queensland Regional Council Organisation (FNQROC) Concrete Kerb and Channel, Standard Drawing S1000, dated 27/08/20, Revision G at no cost to the Department of Transport and Main Roads'.	
14.	(a) The road access locations on Mareeba-Dimbulah Road (Byrnes Street) are to be located generally in accordance with TMR Layout Plan (664 – 1.60km), prepared by Queensland Government Transport and Main Roads, dated 06/02/2023, Reference TMR22-37116 (500-310), Issue D. (b) Road access works comprising of: (i) a sealed left-in / left-out northern vehicular access (main access) including an auxiliary left-turn lane (AUL) and (ii) a sealed left-in / left-out southern vehicular access (service access) must be provided at the road access locations. (c) The road access works must be designed and constructed generally in accordance with: (i) Austroads Guide to Road Design, Part 4: Intersections and Crossing – General, 2021, Figure 8.6: Urban Auxiliary left-turn treatment (AUL) (ii) Department of Transport and Main Roads' Standard Rural Property Access Drawing, Sheets 1 & 2, Drawing No. 1807, Type C – Rural Property Access, dated 11/2021, Revision B; and (iii) Department of Transport and Main Roads', Road Planning and Design Manual, 2nd Edition, November 2021, Volume 3 – Guide to Road Design.	(a) At all times. (b) and (c): Prior to the commencement of use.

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Attachment 2—Advice to the applicant

General advice	
1.	**Terms and phrases** Terms and phrases used in this document are defined in the *Planning Act 2016*, its regulation or the State Development Assessment Provisions (SDAP) (version 3.0). If a word remains undefined it has its ordinary meaning.
2.	**Advertising device** The shopping centre, food and drink outlet and shops development is proposing to erect an advertising device that will be visible from a state-controlled road. The applicant should seek advice from the Department of Transport and Main Roads (DTMR) to ensure that the advertising device visible from a state-controlled road, and beyond the boundaries of the state-controlled road, is unlikely to create a traffic hazard for the state-controlled road. Note: DTMR has powers under section 139 of *the Transport Operations (Road Use Management - Accreditation and Other Provisions) Regulation 2015* to require removal or modification of an advertising sign and / or a device which is deemed to create a danger to traffic.
3.	Railway Corridor Pursuant to section 255 of the Transport Infrastructure Act 1994, the railway manager's written approval is required to carry out works in or on a railway corridor or otherwise interfere with the railway or its operations. In particular, the pedestrian crossing over the railway and fencing along the railway corridor boundary will require relevant approvals to be obtained from the railway manager. Please be advised that this referral agency response does not constitute an approval under section 255 of the *Transport Infrastructure Act 1994* and that such approvals need to be separately obtained from the relevant railway manager. The applicant should contact Queensland Rail Property Team at PropertyLeasing@qr.com.au in relation to this matter.
4.	**Public Passenger Transport** The existing urban bus route 850 (Atherton Tablelands to Cairns) travels along Byrnes Street and may be impacted on by the development. Urban bus route 850 needs to be able to function during the construction of the development. Accordingly, if any temporary road closures are required, the applicant needs to reach agreement on suitable arrangements with the Department of Transport and Main Roads' TransLink Division (bus_stops@translink.com.au or on 3851 8700) prior to any construction or works commencing.
5.	**Road Works Approval** Under section 33 of the *Transport Infrastructure Act 1994*, written approval is required from the Department of Transport and Main Roads to carry out road works. Please contact the Department of Transport and Main Roads on 4045 7144 to make an application for road works approval. This approval must be obtained prior to commencing any works on the state-controlled road reserve. The approval process may require the approval of engineering designs of the proposed works, certified by a Registered Professional Engineer of Queensland (RPEQ). Please contact the Department of Transport and Main Roads as soon as possible to ensure that gaining approval does not delay construction.
6.	**Road Corridor Permit**

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	An application for a road corridor permit is required for any ancillary works and encroachments on a state-controlled road. Under section 50(2) and Schedule 6 of the *Transport Infrastructure Act 199*4 (TIA) and Part 5 and Schedule 1 of the *Transport Infrastructure (State-Controlled Roads) Regulation 2006*, the applicant must obtain a road corridor permit from the Department of Transport and Main Roads (DTMR) to carry out ancillary and encroachments works on a state-controlled road. The applicant is required to contact the Cairns district office of the Department of Transport and Main Roads on 4045 7144 to make an application for a road corridor permit to carry out ancillary works and encroachments. Ancillary works and encroachments include but are not limited to advertising signs or other advertising devices, paths or bikeways, buildings/shelters/structures, vegetation clearing, landscaping and planting.

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Attachment 3—Reasons for referral agency response

(Given under section 56(7) of the *Planning Act 2016*)

The reasons for the SARA's decision are:

The development complies with State code 1: Development in a state-controlled road environment, State code 2: Development in a railway environment and State code 6: Protection of state transport networks of the State Development Assessment Provisions (SDAP) as:

- The development is not located in the railway corridor or the state-controlled road.
- The vehicular access locations via Mareeba-Dimbulah Road will be required to be upgraded and constructed to the relevant standards.
- The centre median along Mareeba-Dimbulah Road will be extended up to the Herberton Street intersection.
- Additional traffic movements will be directed to Rankin Street, a local council road.
- The proposed development will require drainage infrastructure within the development site.
- The design of the development allows for the provision of a future bus stop and services.
- An on-site taxi set down, parallel to the shopping centre entrance, will be provided. One of the spaces will be accessible for people with a disability.
- Traffic management measures in Rankin Street adequately cater for the railway level crossing.
- Vehicular movements via Mareeba-Dimbulah Road will be via left-in / left-out access locations.
- A minimum setback of the development from the railway corridor will ensure maintenance can be carried out without access to the railway.
- The development is unlikely to cause significant damage to the railway corridor in the event of a train derailment.
- Fencing will be provided along the site boundary to prevent projectiles from being thrown onto the railway and to prevent unauthorised access to the railway by vehicles and pedestrians.

Material used in the assessment of the application:

- the development application material and submitted plans
- *Planning Act 2016*
- Planning Regulation 2017
- the SDAP (version 3.0), as published by SARA
- the Development Assessment Rules
- SARA DA Mapping system
- State Planning Policy mapping system
- section 58 of the *Human Rights Act 2019*

Attachment 4—Representations about a referral agency response provisions

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Development Assessment Rules—Representations about a referral agency response

The following provisions are those set out in sections 28 and 30 of the Development Assessment Rules[1] regarding **representations about a referral agency response**

Part 6: Changes to the application and referral agency responses

28 Concurrence agency changes its response or gives a late response

28.1. Despite part 2, a concurrence agency may, after its referral agency assessment period and any further period agreed ends, change its referral agency response or give a late referral agency response before the application is decided, subject to section 28.2 and 28.3.

28.2. A concurrence agency may change its referral agency response at any time before the application is decided if—

(a) the change is in response to a change which the assessment manager is satisfied is a change under section 26.1; or

(b) the Minister has given the concurrence agency a direction under section 99 of the Act; or

(c) the applicant has given written agreement to the change to the referral agency response.[2]

28.3. A concurrence agency may give a late referral agency response before the application is decided, if the applicant has given written agreement to the late referral agency response.

28.4. If a concurrence agency proposes to change its referral agency response under section 28.2(a), the concurrence agency must—

(a) give notice of its intention to change its referral agency response to the assessment manager and a copy to the applicant within 5 days of receiving notice of the change under section 25.1; and

(b) the concurrence agency has 10 days from the day of giving notice under paragraph (a), or a further period agreed between the applicant and the concurrence agency, to give an amended referral agency response to the assessment manager and a copy to the applicant.

---

1 Pursuant to Section 68 of the *Planning Act 2016*

2 In the instance an applicant has made representations to the concurrence agency under section 30, and the concurrence agency agrees to make the change included in the representations, section 28.2(c) is taken to have been satisfied.

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Part 7: Miscellaneous

30 Representations about a referral agency response

30.1. An applicant may make representations to a concurrence agency at any time before the application is decided, about changing a matter in the referral agency response.[3]

[3] An applicant may elect, under section 32, to stop the assessment manager's decision period in which to take this action. If a concurrence agency wishes to amend their response in relation to representations made under this section, they must do so in accordance with section 28.

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Attachment 5—Documents referenced in conditions

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DEVELOPMENT SCHEDULE

PROPOSED USES	GFA	GLAR
SUPERMARKET	3655m²	3603m²
SHOPS	814m²	796m²
AMENITIES	90m²	
TOTAL CENTRE	**4559m²**	**4399m²**
FAST FOOD	270m²	270m²
TOTAL	**4829m²**	**4669m²** (5/100m2)

CAR PARKING SCHEDULE	
CARS FAST FOOD	11
CARS CENTRE (INCL. MOTOR BIKES, DIRECT TO BOOT + TAXIS)	219
ON SITE CARS	230
STREET CARS	5
TOTAL CARS PROVIDED	**235**
TOTAL CARS REQUIRED	186

NOTE:
CARS REQUIRED IS BASED ON:
1/50 UP TO 400m² GFA
1/25 ABOVE 400m² GFA

NOTE: SUPERMARKET GLAR EXCLUDES EXTERNAL WALLS AND LOADING DOCK

COVERED CARPARKS

AREA OF ENCLOSED MALL / PASSAGE - 637m²

PLAN AMENDED IN RED ON 24 FEBRUARY 2023

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 2207-30073 SRA

Date: 24 February 2022



1 SITE PLAN
1 : 500

DEVELOPMENT APPLICATION

0 25 50 75 125 250 m

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MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

MAREEBA 232 PTY LTD

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ABN 76 105 314 654
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Qld 4006 Australia
thomsonadsett.com

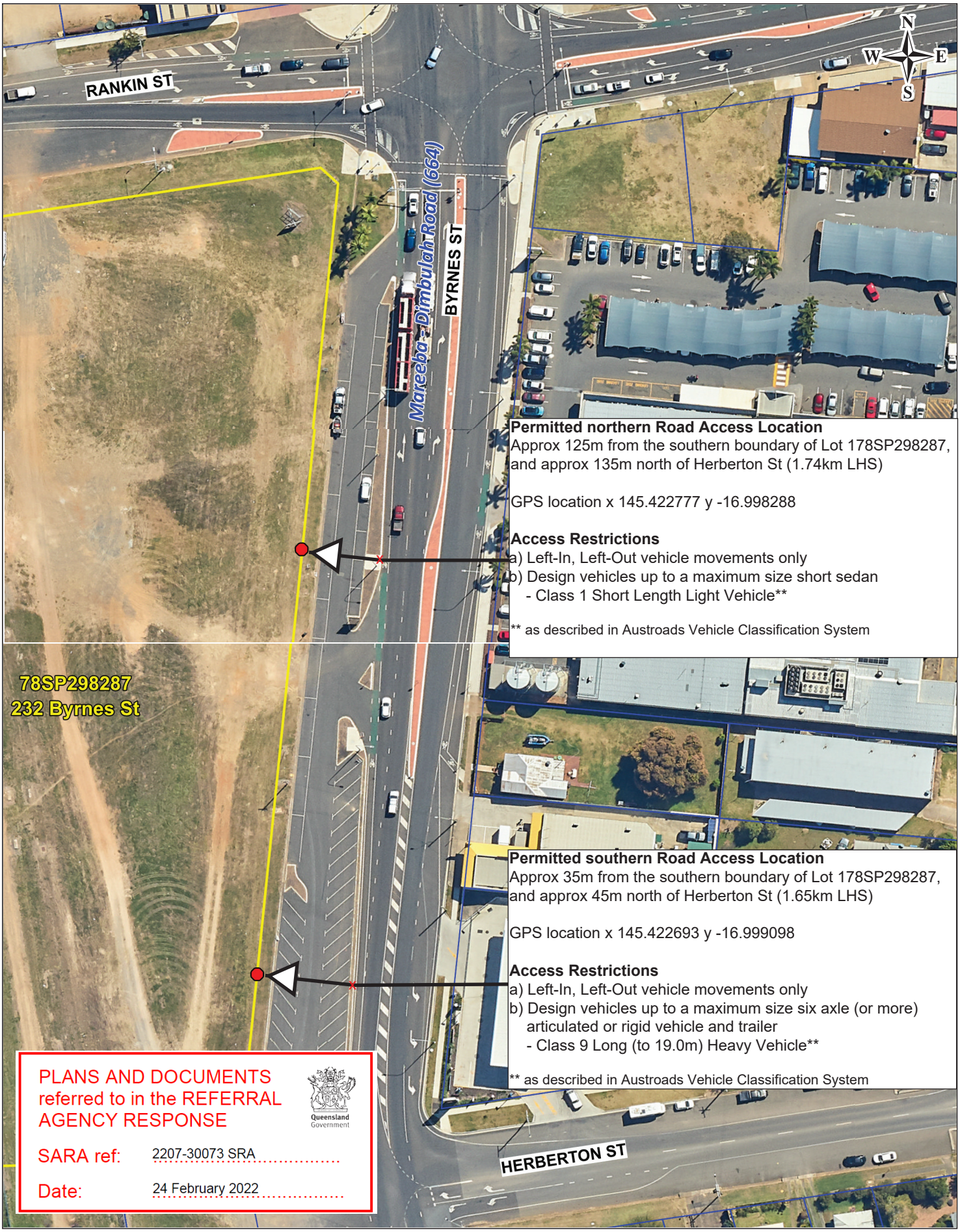
thomson adsett

TA # 19.0298.17

SITE PLAN

As indicated @ A1 | 19/12/2022

A1.01 | **rev. 18A**



Permitted northern Road Access Location
Approx 125m from the southern boundary of Lot 178SP298287, and approx 135m north of Herberton St (1.74km LHS)

GPS location x 145.422777 y -16.998288

Access Restrictions
a) Left-In, Left-Out vehicle movements only
b) Design vehicles up to a maximum size short sedan
- Class 1 Short Length Light Vehicle**

** as described in Austroads Vehicle Classification System

Permitted southern Road Access Location
Approx 35m from the southern boundary of Lot 178SP298287, and approx 45m north of Herberton St (1.65km LHS)

GPS location x 145.422693 y -16.999098

Access Restrictions
a) Left-In, Left-Out vehicle movements only
b) Design vehicles up to a maximum size six axle (or more) articulated or rigid vehicle and trailer
- Class 9 Long (to 19.0m) Heavy Vehicle**

** as described in Austroads Vehicle Classification System

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 2207-30073 SRA

Date: 24 February 2022

Branch/Unit : **Corridor Management / Far North District**

Projection/Datum : Geocentric Datum of Australia (GDA) 2020

Land parcels | Subject land

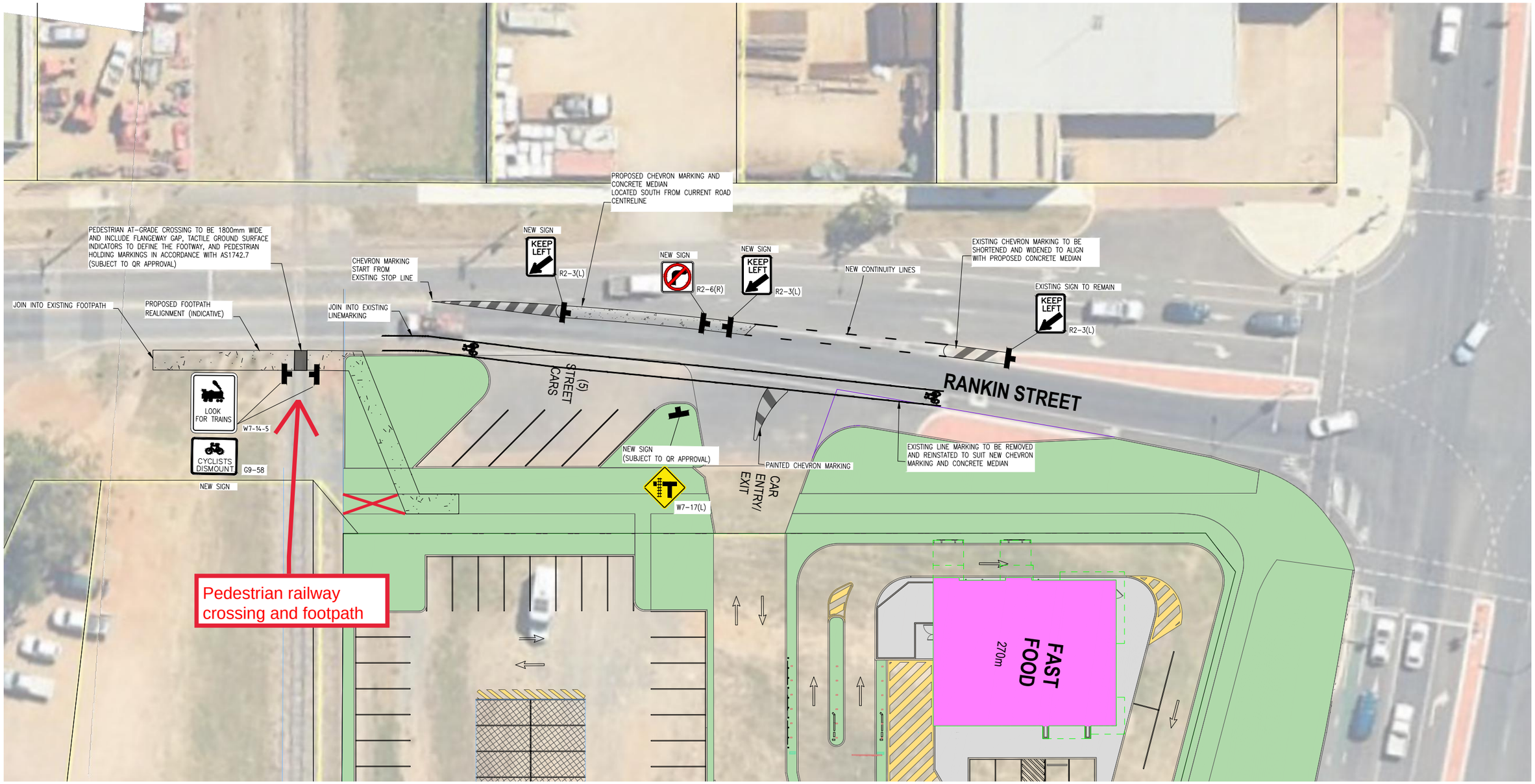
TMR Layout Plan (664 - 1.60km)

Queensland Government
Transport and Main Roads

Plan:	Issue:	Date:
1 / 1	D	6/02/2023
Drawn by: RPK	File ref: TMR22-37116 (500-310)	

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



PLAN
SCALE 1:200

PLAN AMENDED IN RED ON 20 FEBRUARY 2023

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 2207-30073 SRA

Date: 24 February 2022

CONCEPT ONLY

Revisions	No.	Description	Reviewed	Approved	Date
	F	MINOR AMENDMENTS	–	–	22/12/22
	E	MINOR AMENDMENTS	–	–	22/12/22
	D	MINOR AMENDMENTS	–	–	14/12/22
	C	MINOR AMENDMENTS	–	–	13/12/22
	B	MINOR AMENDMENTS	–	–	07/12/22
	A	CONCEPT ISSUE	–	–	02/12/22

0 2 4 6 8 10m
SCALE 1:200 (A1 SIZE)

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Trinity Engineering and Consulting

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21-23 Sheridan Street | PO Box 7963
Cairns QLD 4870
Email: admin@trinityengineering.com.au

Scale (A1 size)	Drawn	Designed	Drawing Check	Design Check	Approved	RPEQ	Date	Drawing No.	Revision
1:200	LB	JC						1604-002	F

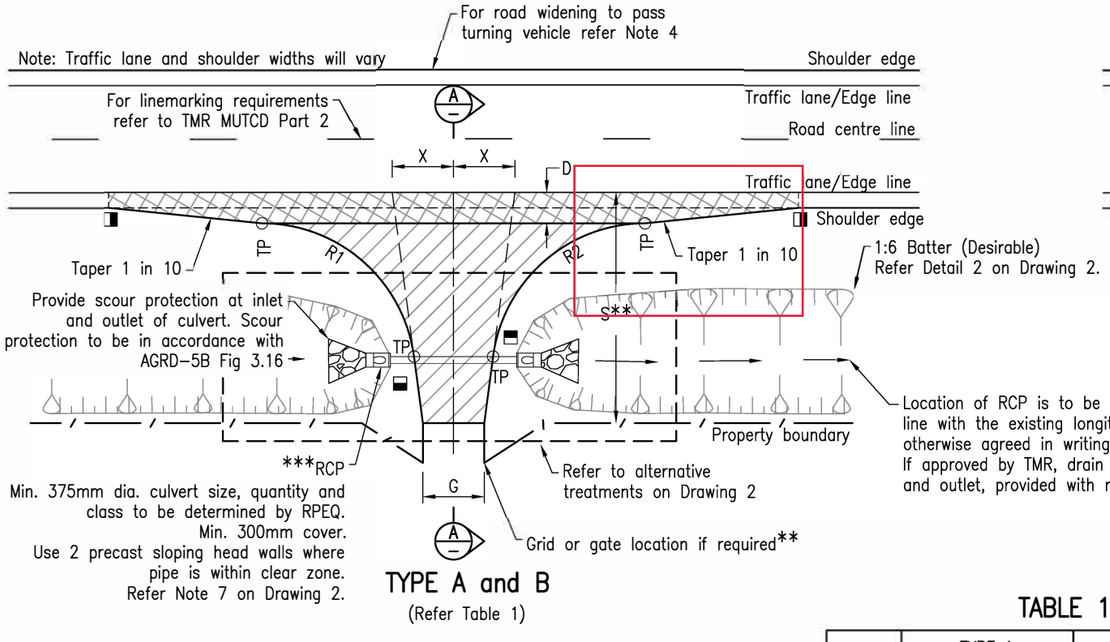
Drawing is not to be used for construction unless approved.

Client: MAREEBA 232 PTY LTD

Project: 232 BYRNES STREET, MAREEBA

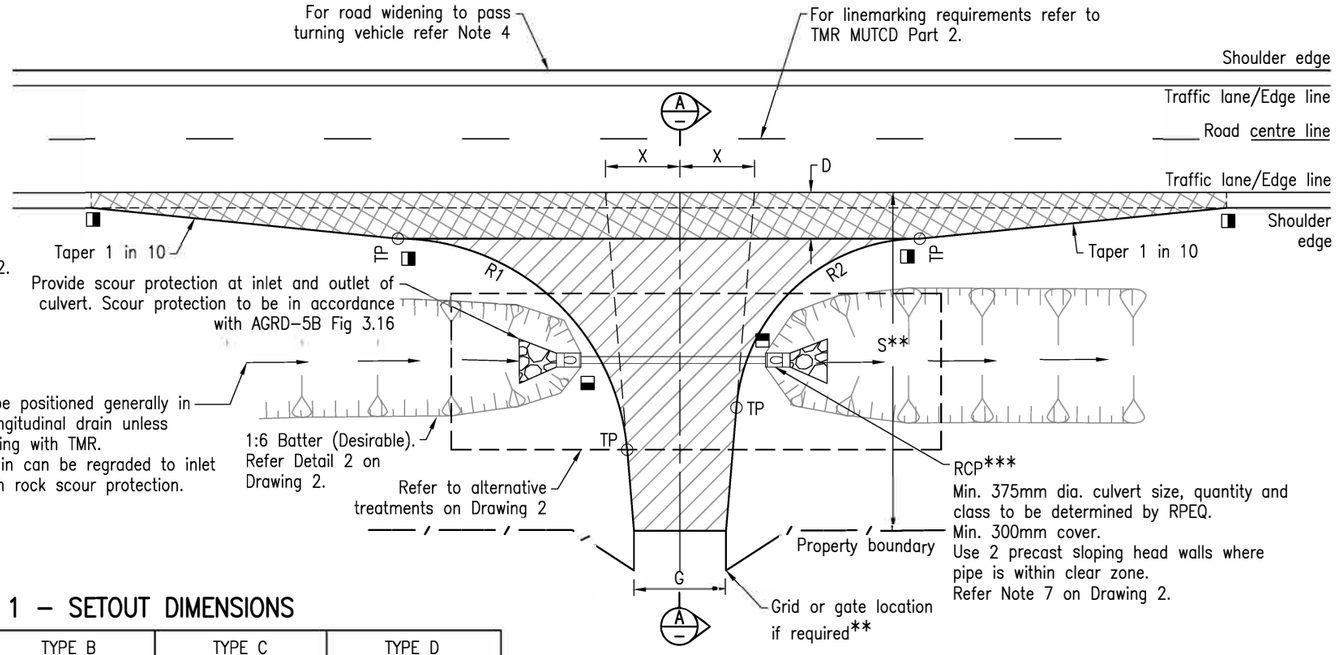
Title: RANKIN STREET MEDIAN EXTENSION CONCEPT

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



TYPE A and B

(Refer Table 1)



TYPE C and D

(Refer Table 1)

LEGEND

Pavement Type 1 – Bitumen surfacing, 2 coat bitumen seal.
Pavement depth and type to match existing or proposed through road pavement. Refer to Table 2 for minimum depths.

Pavement Type 2 – Gravel, unbound pavement. Refer to Table 2 for depths. Access may be required to be sealed for up to 10m width from edge line (to minimise gravel on through road) to be determined by the RPEQ.

* Maintain existing shoulder crossfall and superelevation.

** Length 'S' to property boundary by TMR. Where length 'S' is greater than the road reserve boundary, then fencing and grid/gate shall be recessed at the cost of owner from property boundary to ensure vehicle does not impede through lane.

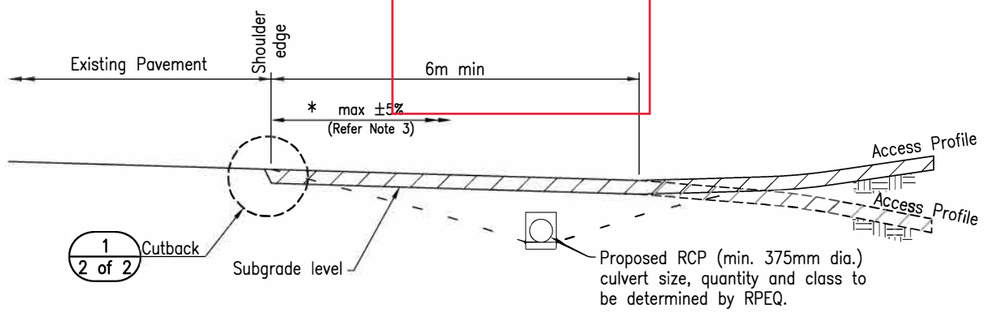
*** RCBC (min. size 600x300) can be used instead of RCP, or invert option where table drain is of insufficient depth for a culvert.

◨ Denotes Road Edge Guide Post
The Filled in portion denotes a red reflector and the open portion a white reflector.

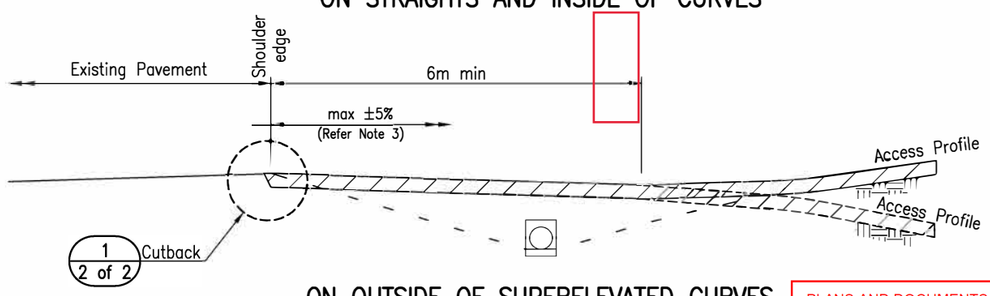
TABLE 1 – SETOUT DIMENSIONS

	TYPE A Residential (Car/Service Vehicle)	TYPE B Commercial (Single Unit Truck/Bus)	TYPE C Special (Articulated Vehicles)	TYPE D Special (Road Train Type 1)
R1	10m	10m	15m	20m
R2	10m	10m	12m	12m
D	2m	2m	3m	3m
X	3m	5m	4m	5m
S	12m	15m	22m	30m**
G	4–6mØ	4–6mØ	6m	6m

Ø 6m Minimum width for two–way two–lane access.



ON STRAIGHTS AND INSIDE OF CURVES



ON OUTSIDE OF SUPERELEVATED CURVES

SECTION A

TABLE 2 – MINIMUM PAVEMENT DETAILS AND DEPTH

	TYPE A Residential (Car/Service Vehicle)	TYPE B Commercial (Single Unit Truck/Bus)	TYPE C & D Special (Articulated Vehicles)
Sealed Pavement Base Course	150mm(Min.) Type 2.2◆or match existing	200mm(Min.) Type 2.2◆or match existing	280mm(Min.) Type 2.2◆or match existing
Unsealed Pavement Base Course	150mm(Min.) Type 2.4◆or match existing	200mm(Min.) Type 2.4◆or match existing	#

NOTE:
1. Pavement to be sealed if through road is sealed to minimum of width 'D' of Table 1.
2. Where access is located on curves, intersections or is Type C, or excessive screwing motion will occur, pavement seal to extend to property boundary at the owner's cost to the engineer's/designer's discretion.

Bitumen sealed pavement only.

◆ Type 3.1 or 4.3 or match existing is permissible if Type 2.2/2.4 is unable to be used.

NOTES:

1. Details shown on this drawing are the minimum layout requirements for a private rural property access. For additional requirements and other design considerations refer to Sections 7.2.1 and 7.2.3 of the AGRD-4 (2009).
2. For sight distance requirements refer to Section 3.4 of the RPDM (2nd Edition) Volume 3 Supplement to AGRD–4A, and Section 3 of the AGRD-4A (2010).
3. Vertical clearance checks to be carried out for proposed vehicle in accordance with AS 2890.2 – Parking Facilities Off–Street Commercial Vehicle Facilities.
4. RPEQ or designer to conduct traffic impact assessment to determine if turning treatments are required. Rural right–turn treatments maybe appropriate, refer to Section 7.5 of the AGRD–4A (2010) for pavement widening requirements. Pavement type to match existing or minimums specified in Table 2 of this drawing.
5. This drawing is to be read in conjunction with Drawing 2 of 2.
6. All dimensions in metres and are minimum unless specified.

REFERENCED DOCUMENTS:

Departmental Standard Drawings:

1243 Precast Culvert Headwalls – Headwall Connections for Culverts
1305 Pipe Culverts - Headwall and Apron for Pipe Diameter 375 to 675
1359 Culverts - Installation, Bedding and Filling/Backfilling Against/Over Culverts

Departmental Documents:

RPDM Road Planning and Design Manual (2nd Edition)
MRTS03 Drainage, Retaining Structures and Protective Treatment

Austroads Guide to Road Design:

AGRD–4 (2009) Part 4: Intersections and Crossings – General (2009)
AGRD–4A (2010) Part 4A: Unsignalised and Signalised Intersections (2010)
AGRD–5B (2013) Part 5B: Drainage – Open Channels, Culverts and Floodways (2013)

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE
SARA ref: 2207-30073 SRA
Date: 24 February 2022

Department of Transport and Main Roads

PROPERTY ACCESS

RURAL PROPERTY ACCESS
DRAWING 1 OF 2

Queensland Government

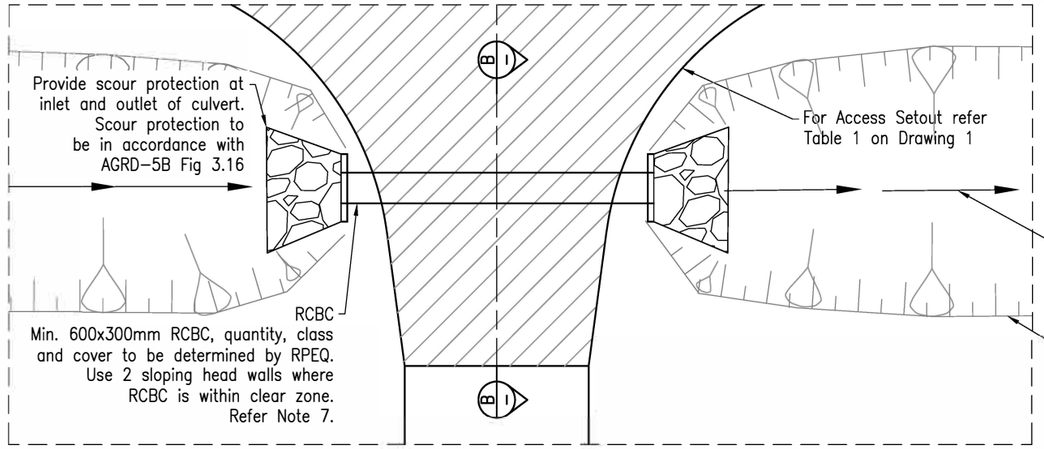
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A3
Not to Scale

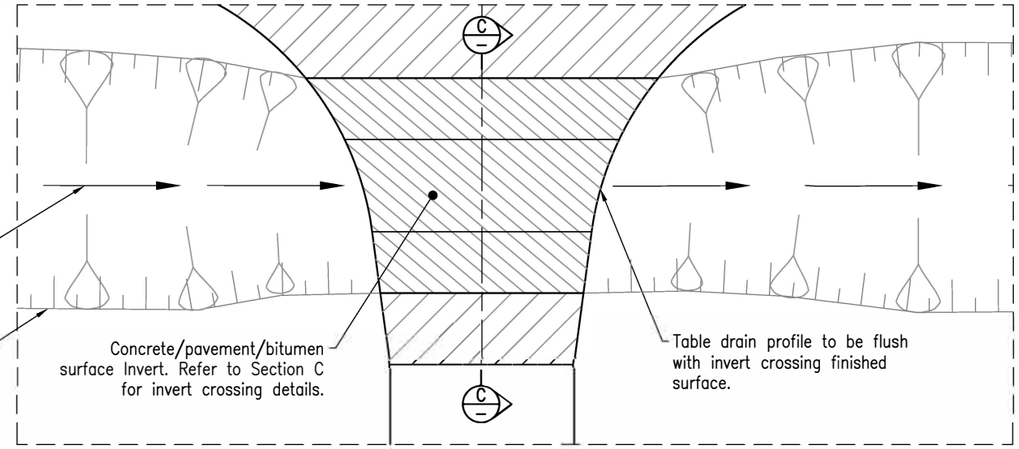
Standard Drawing No 1807
Date 11/2021

A | B

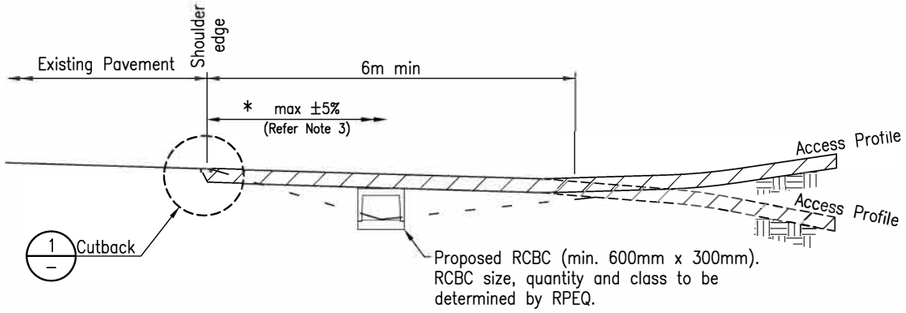
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Version: 1, Version Date: 25/07/2025



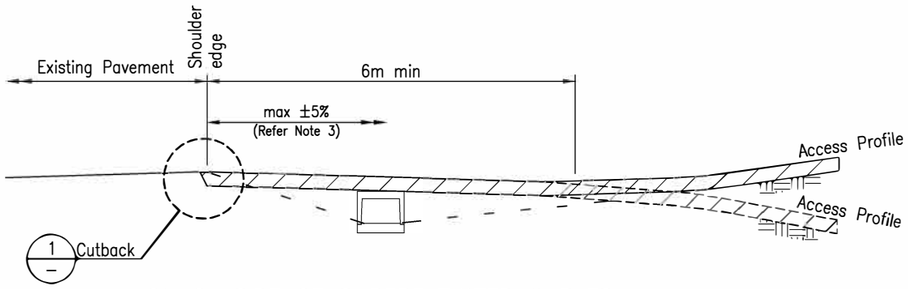
RC BOX CULVERT PLAN VIEW



INVERT CROSSING PLAN VIEW

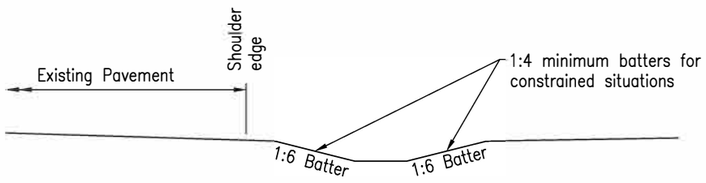


ON STRAIGHTS AND INSIDE OF CURVES



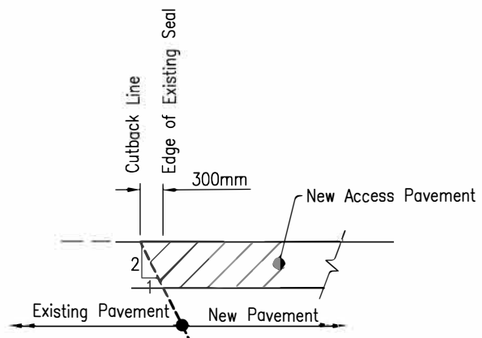
ON OUTSIDE OF SUPERELEVATED CURVES

SECTION B



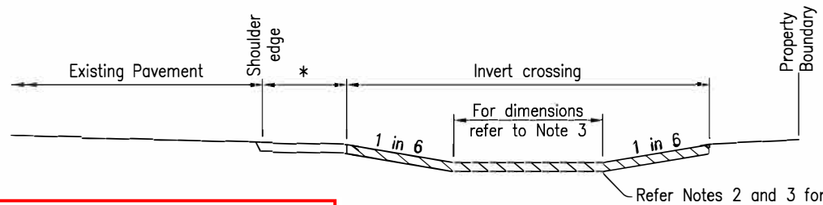
BATTER DETAIL

DETAIL 2



CUTBACK DETAIL

DETAIL 1



INVERT CROSSING

SECTION C

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

Queensland Government

SARA ref: 2207-30073 SRA

Date: 24 February 2022

LEGEND

Pavement Type 2 – Gravel, unbound pavement. Refer to Table 2 of Drawing 1 for depths. Access may be required to be sealed for up to 10m width from edge line (to minimize gravel on through road) to be determined by the RPEQ.

Invert crossing surface

* Maintain existing shoulder crossfall and superelevation.

NOTES:

1. This drawing is to be read in conjunction with Drawing 1 of 2.
2. Minimum longitudinal fall for concrete or bitumen invert is 0.3%.
3. 1 in 6 grade can be further levelled for larger design vehicles. Ensure sufficient area for drainage remains. Dimensions to be based on stormwater flow rate for appropriate design ARI event to ensure invert crossing can meet required capacity. Type 22 and Type 28 inverts can be used if drainage design criteria is met.
4. Vertical clearance checks to be carried out for small rigid vehicle to ensure adequate transition between change in grade. Refer to AS 2890.2.
5. For pavement or bitumen surfacing inverts, refer Table 2 on Drawing 1 for minimum depths.
6. Concrete access to have minimum N32 concrete, 100mm thick on 100mm thick sub–base gravel. Concrete access to be reinforced with SL72 mesh with minimum 40mm top cover.
7. Culvert clear zone varies with location and speed environment. Refer to TMR Road Planning and Design Manual – Supplement to AGRD Part 6, and Austroads Guide to Road Design - Part 6.

REFERENCED DOCUMENTS:

Departmental Standard Drawings:

1260 R C Box Culverts and Slab Link Box Culverts – Culverts Height = 375 To 600

1033 Kerb and Channel – Profiles

Australian Standards Documents:

AS2890.2 Parking Facilities – Off–Street Commercial Vehicle Facilities

Department of Transport and Main Roads

PROPERTY ACCESS

RURAL PROPERTY ACCESS
DRAWING 2 OF 2

Queensland Government

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A3

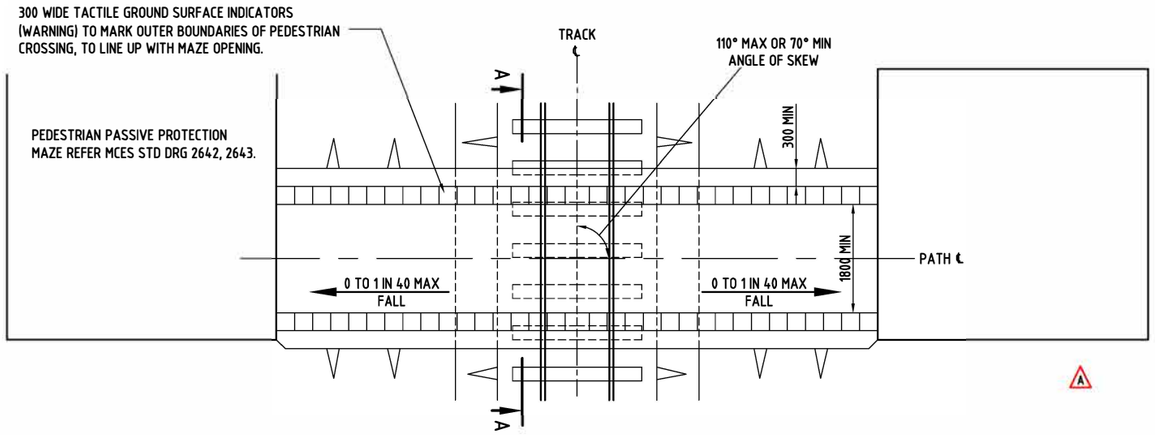
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Standard Drawing No 1807

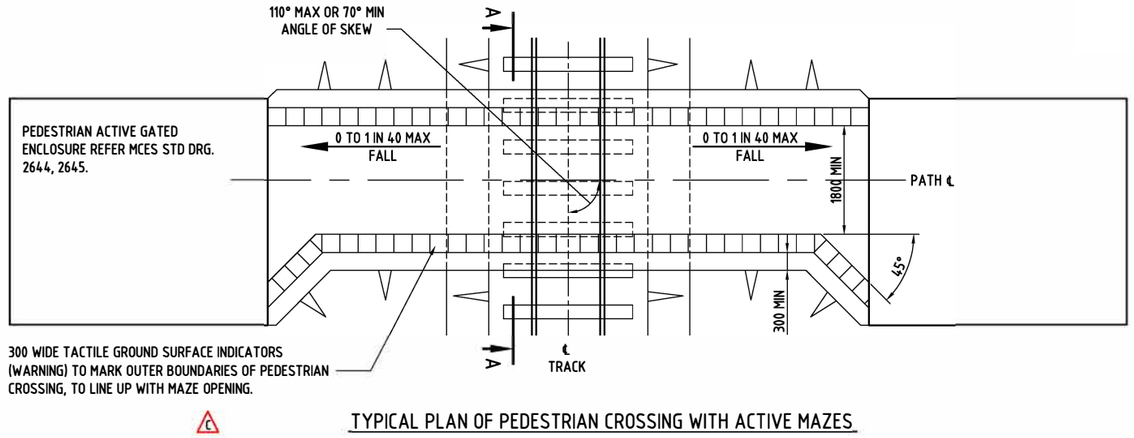
Date 11/2021

A | B

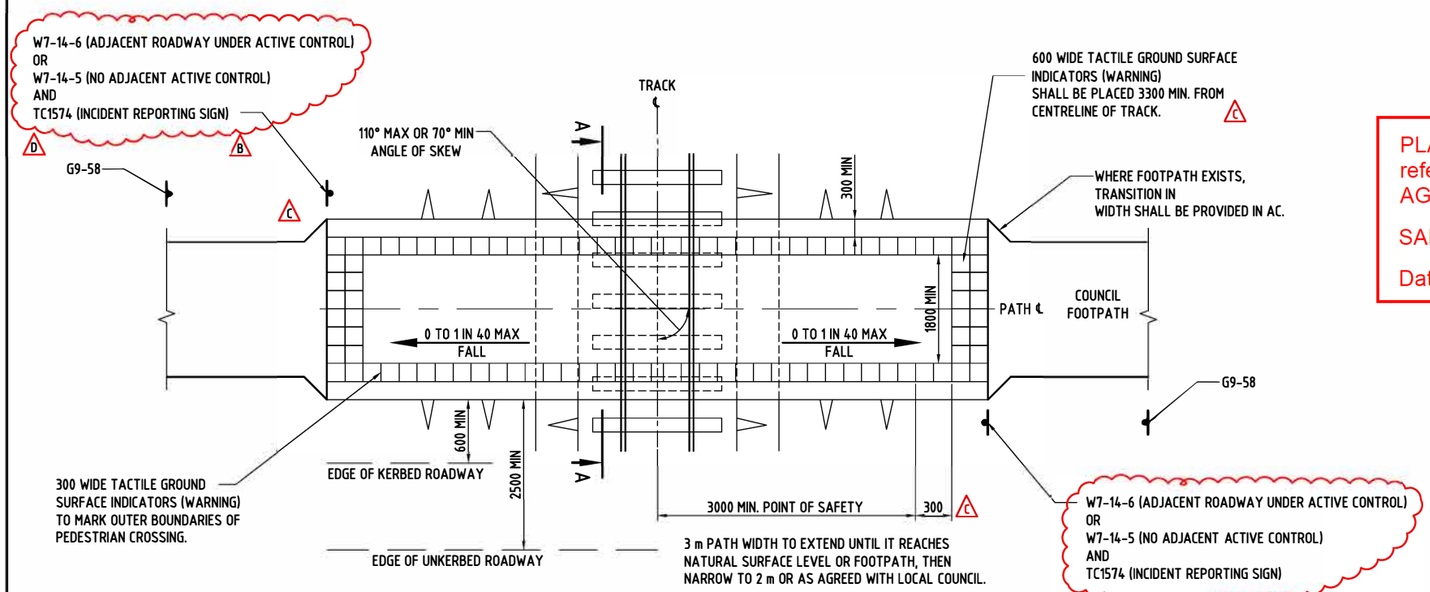
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



TYPICAL PLAN OF PEDESTRIAN CROSSING WITH PASSIVE MAZES



TYPICAL PLAN OF PEDESTRIAN CROSSING WITH ACTIVE MAZES



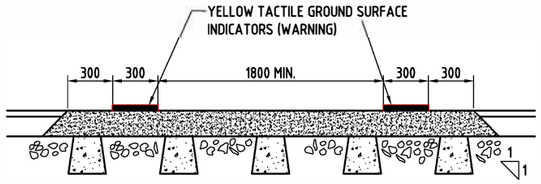
TYPICAL PLAN OF PEDESTRIAN CROSSING WITHOUT MAZES / GATED ENCLOSURES

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

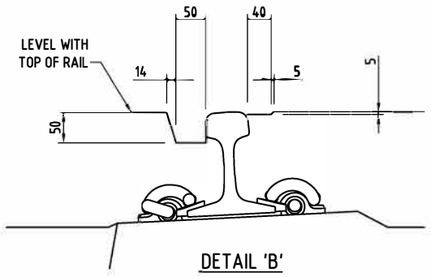
Queensland Government

SARA ref: 2207-30073 SRA

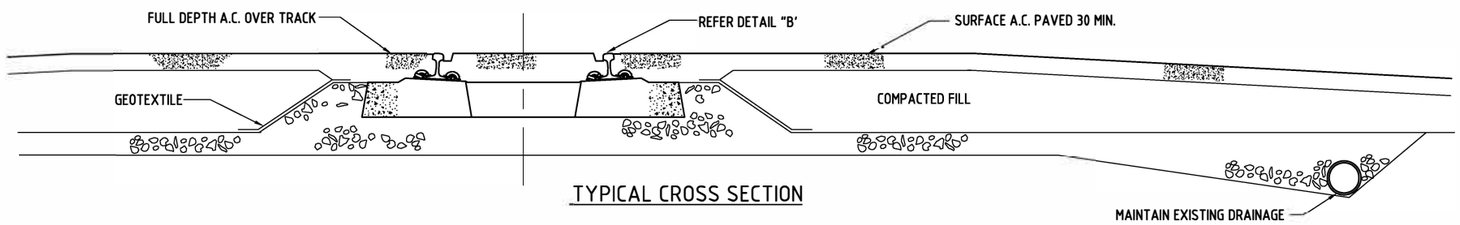
Date: 24 February 2022



SECTION A - A



DETAIL 'B'



TYPICAL CROSS SECTION

NOTES

1. TRACK SHALL BE RECONDITIONED AS REQUIRED BY THE INFRASTRUCTURE MAINTAINER PRIOR TO INSTALLING OR REINSTATING CROSSING.
2. TIMBER OR STEEL SLEEPERS TO BE REPLACED WITH CONCRETE SLEEPERS THROUGH CROSSING WHERE PRACTICABLE.
3. SLEEPERS WITH GALVANIZED SHOULDERS (SAP No. 65026597) AND CLIPS (SAP No. 65026596) ARE PREFERRED THROUGHOUT LEVEL CROSSINGS. ALTERNATIVELY RAIL FASTENERS SHALL BE COATED WITH CORROSION INHIBITOR PRIOR TO PLACING A.C.
4. A.C. SHALL BE PLACED TO TOP OF RAIL, ROLLER COMPACTED, TOPPED UP AND FINISHED WITH ROLLER OR VIBRATING PLATE COMPACTOR LEVEL WITH TOP OF RAIL.
5. PATHWAY SURFACE SHALL BE FIRM, EVEN AND SMOOTH.
6. THE PREFERRED GRADE OF PATHWAY IS LEVEL OR FALLING AWAY FROM THE TRACK AT NO MORE THAN 1 IN 40. (MAX CROSSFALL NO MORE THEN 1 IN 40)
7. LEVELS NOT TO EXCEED ±10 mm IN 1 m FROM THE DESIGN PLANE, STEPS TO BE LESS THAN 5 mm.
8. TACTILE GROUND SURFACE INDICATORS SHOULD BE MADE FROM CORK RUBBER COMPOSITION TACTILE TILE "COMCORK FLOORING TACTILES" OR APPROVED EQUIVALENT .
9. TACTILE GROUND SURFACE INDICATORS SHALL BE INSTALLED USING POLYURETHANE ADHESIVE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION INCLUDING :
   a. ALL SURFACES TO BE BONDED SHALL BE CLEAN, SMOOTH, NON GREASY AREAS.
   b. CONCRETE AND BITUMEN/ASPHALTIC SURFACES SHALL BE DRY AND AT LEAST 40 DAYS OLD.
   c. TILES SHALL NOT BE WALKED ON FOR AT LEAST 24 HOURS AFTER LAYING.

SCALE N.T.S. UNLESS SHOWN OTHERWISE

FILE No.

DRAWING NUMBER 10698 SHEET 1 OF 1 | ISSUE D | ORIGINAL DRAWING SIZE A1

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ALTERATIONS

ISSUE	DESCRIPTION	C'K'D	APPR'D	DATE
A	CROSSING TYPES CLARIFIED. TACTILES AND BSTS ADDED	P.H.	E.M.	9/11/04
	NOTES ALTERED			
B	CROSSING TYPES CLARIFIED. TACTILES AND POSTS ADDED	G.B.	M.B.	6/06/06
	NOTES ALTERED			
C	ACTIVE AND PASSIVE LAYOUTS DEFINED & BOLLARDS REMOVED	M.B.	E.M.	22/08/07
D	INCIDENT REPORTING SIGN ADDED	R.S.	M.B.	21/09/2009

CALCS. & DRAWN	S.B.	5/03/2004
CHECKED	W.B.	5/03/2004
RECOMM.	G.B.	5/03/2004
SIGNATURES ENTERED		

APPROVED E. MCCOMBE 5/03/04 DATE RPEQ No.

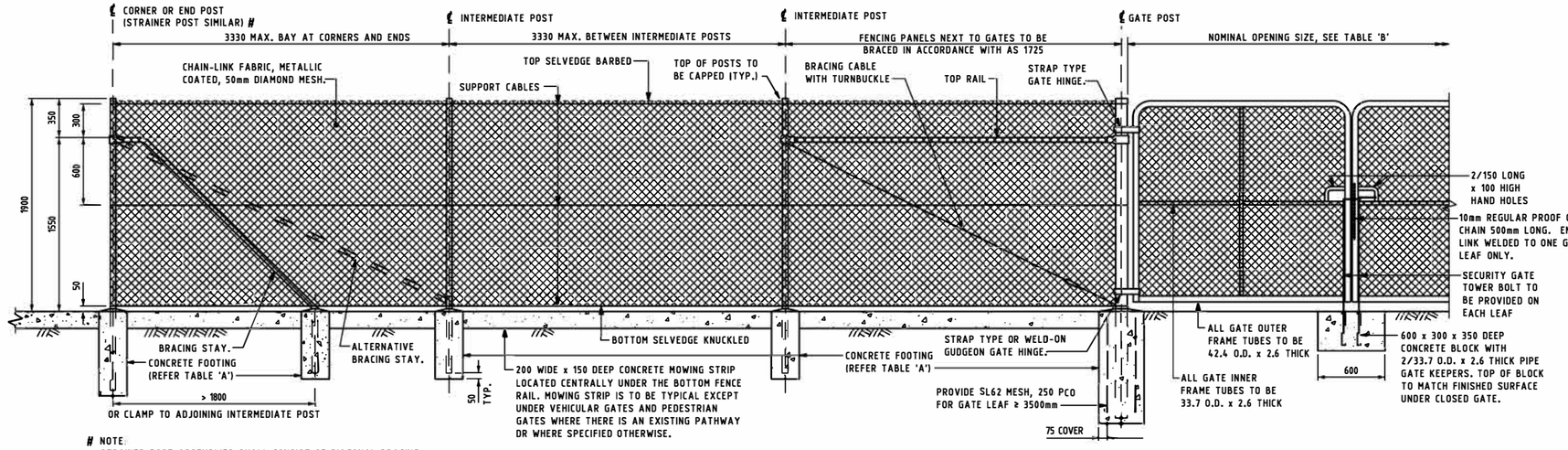
ISSUE AUTHORISED B. HAGAMAN 5/03/04 DATE

PEDESTRIAN LEVEL CROSSINGS
ASPHALTIC CONCRETE (A.C.) PATHWAY

QRNetwork A.C.N. 132 181 116

DRAWING NUMBER 10698 SHEET 1 OF 1 | ISSUE D

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

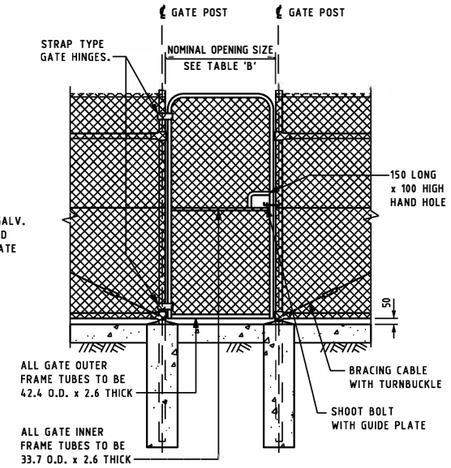


TYPICAL ELEVATION

SCALE 1 : 25

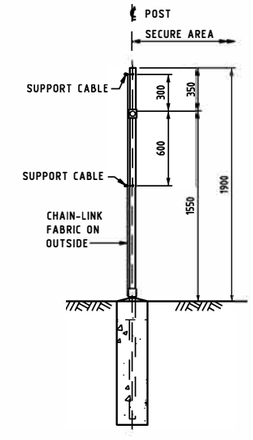
DOUBLE LEAF GATE

SCALE 1 : 25



SINGLE LEAF GATE

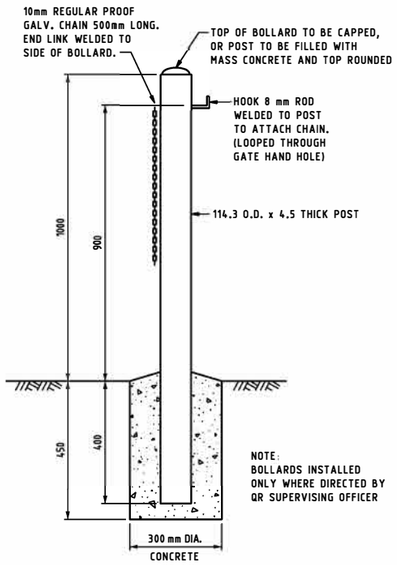
SCALE 1 : 25



TYPICAL SECTION

SCALE 1 : 25

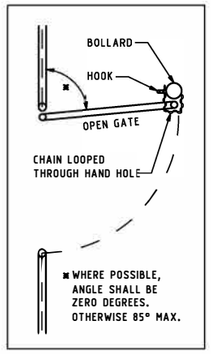
NOTE:
STRAINER POST ASSEMBLIES SHALL CONSIST OF DIAGONAL BRACING STAYS EACH SIDE OF POST AS SHOWN ON CORNER POST DETAIL. STRAINER POSTS SHALL BE INSTALLED AT 150m MAXIMUM INTERVALS ON STRAIGHT LENGTHS AND AT ANY SIGNIFICANT CHANGES IN DIRECTION IN ACCORDANCE WITH AS 1725.



NOTE:
BOLLARDS INSTALLED ONLY WHERE DIRECTED BY QR SUPERVISING OFFICER

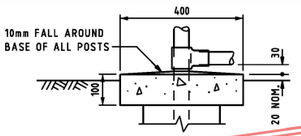
BOLLARD DETAIL

SCALE 1 10



BOLLARD LOCATION RELATIVE TO GATE

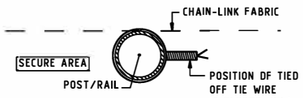
N.T.S.



NOTE: REFER "ORDERING CONSIDERATIONS".
MOWING STRIP SHALL NOT BE INSTALLED UNDER GATES.

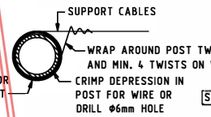
MOWING STRIP

SCALE 1 : 10



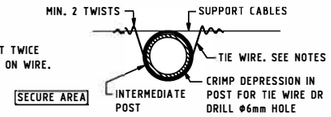
CHAIN-LINK FABRIC TIE-OFF DETAIL

N.T.S.



TIE-OFF DETAIL AT CORNER, END OR STRAINER POSTS

N.T.S.



TIE-OFF DETAIL AT INTERMEDIATE POSTS

N.T.S.

NOTE
THE PURPOSE OF THIS DRAWING IS TO PROVIDE TYPICAL STANDARD DETAILS. THE SUITABILITY OF THIS DRAWING SHALL BE DETERMINED AND CERTIFIED BY A RPEQ ENGINEER FOR THE SPECIFIC PROJECT.

ORDERING CONSIDERATIONS:	
MOWING STRIP	ALWAYS INSTALLED UNLESS SPECIFIED OTHERWISE BY QUEENSLAND RAIL. SIZE OF MOWING STRIP CAN BE MODIFIED TO SUIT SITE SPECIFIC REQUIREMENTS.
PLASTIC COATING	NOT PROVIDED UNLESS SPECIFIED BY QUEENSLAND RAIL INFRASTRUCTURE OWNER. COST SHARING OPTIONS MAY BE NEGOTIATED WHERE ADJOINING OWNERS MAKE SPECIFIC REQUEST FOR PROVISION OF PLASTIC COATED CHAIN-LINK FABRIC. COATING COLOUR PREFERENCE (BLACK OR GREEN) TO BE CONFIRMED WITH QUEENSLAND RAIL INFRASTRUCTURE OWNER AND ADJOINING OWNER.
"LIGHT DUTY" (2.5mm) CHAIN LINK FABRIC	"HEAVY DUTY" (3.15mm) FABRIC MAY BE REPLACED WITH "LIGHT DUTY" (2.5mm) FABRIC ONLY WHERE SPECIFIED BY QUEENSLAND RAIL INFRASTRUCTURE OWNER. NOTE: "LIGHT DUTY" CHAIN-LINK FABRIC PROVIDES FOR ONLY APPROX. 60% OF THE LOAD BEARING CAPACITY OF "HEAVY DUTY" CHAIN-LINK FABRIC.

TABLE 'A'

FENCE MEMBERS AND FOOTINGS SIZES		
TYPE OF MEMBER	TUBE SIZE	CONCRETE FOOTING
END, CORNER AND STRAINER POSTS	60.3 O.D. x 3.6 THICK	Φ250 x 750 DEEP
INTERMEDIATE POSTS	48.3 O.D. x 3.2 THICK	Φ250 x 600 DEEP
TOP RAIL	42.4 O.D. x 3.2 THICK	-
BRACING STAY	42.4 O.D. x 3.2 THICK	Φ250 x 600 DEEP
GATE POSTS FOR GATE LEAF SHOWN		
1800mm AND UNDER	60.3 O.D. x 3.6 THICK	Φ250 x 900 DEEP
2000 UP TO AND INCLUDING 3000mm	88.9 O.D. x 4.0 THICK	Φ300 x 1000 DEEP
3500 UP TO AND INCLUDING 4000mm	114.3 O.D. x 4.5 THICK	Φ400 x 1100 DEEP

TABLE 'B'

GATE TABLE		
LOCATION	NOMINAL OPENING SIZE	LEAF TYPE (NOMINAL SIZE)
PEDESTRIAN - PUBLIC ACCESS	1800	SINGLE 1800 OR DOUBLE 900
PEDESTRIAN - QUEENSLAND RAIL STAFF ONLY	1200	SINGLE 1200
VEHICULAR	3000 MIN. 8000 MAX.	DOUBLE 1500 (MIN.) DOUBLE 4000 (MAX.)

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE

SARA ref: 2207-30073 SRA

Date: 24 February 2022

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL STEEL PLATES SHALL BE GRADE 250 MIN. IN ACCORDANCE WITH AS/NZS 3678.
3. ALL WELDS SHALL BE 5mm CONTINUOUS FILLET WELDS UNLESS NOTED.
4. ALL WELDS SHALL BE IN ACCORDANCE WITH AS 1554.1 WITH ELECTRODES GRADE EXX48 TO AS 1553 UNLESS NOTED OTHERWISE.
5. ALL BOLTS, NUTS SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS/NZS 1214 AND WASHERS TO AS 4680.
6. AREAS WHERE GALVANISING (OR PLASTIC COATING) HAS BEEN REMOVED BY WELDING OR ABRASIONS SHALL BE CLEANED OF FOREIGN MATTER INCLUDING WELDING SLAG AND PAINTED WITH TWO COATS OF AN APPROVED ORGANIC ZINC-RICH PAINT TO PROVIDE A MIN. DRY FILM THICKNESS OF 0.10mm. COLOUR MATCHING SHALL BE ACHIEVED WHERE DIRECTED BY THE INSPECTOR.
7. CONCRETE SHALL BE GRADE N25 (MIN.).
8. "SL" DENOTES GRADE D500N REINFORCING MESH IN ACCORDANCE WITH AS/NZS 4671.

GATE NOTES:

1. GATE FRAME CONFIGURATION, FABRICATION AND INSTALLATION SHALL BE IN ACCORDANCE WITH AS 1725.
2. WHERE STRAP TYPE HINGES ARE USED AT BOTH TOP AND BOTTOM OF GATE, A COLLAR SHALL BE WELDED TO THE GATE FRAME TO PROVIDE A BEARING SURFACE FOR EITHER TOP OR BOTTOM HINGE. BOTH STRAP TYPE AND GUDGEON GATE HINGES SHALL BE WELDED TO GATE POSTS.
3. SINGLE GATES SHALL BE FITTED WITH SHOOT BOLT, DOUBLE GATES SHALL BE FITTED WITH FLAG PIN DROP BOLT AS SHOWN ON THE DRAWING.
4. ALL GATE FRAMES SHALL BE WELDED. FRAMES SHALL BE HOT DIP GALVANISED AFTER FABRICATION IN ACCORDANCE WITH AS/NZS 4680.
5. GATES SHALL BE INSTALLED FOR QUEENSLAND RAIL PURPOSES ONLY. GATES SHALL NOT BE INSTALLED FOR DOMESTIC USE.

FENCING IN ELECTRIFIED AREAS:

1. IN GENERAL THESE FENCES ARE SELF EARTHING, HOWEVER, WHERE FENCING IS ERECTED CLOSER THAN 3000mm TO ELECTRIFICATION MASTS OR OTHER ELECTRICALLY BONDED STEELWORK, EARTHING OR INSULATED SECTIONS MAY BE REQUIRED IN ACCORDANCE WITH QUEENSLAND RAIL PRINCIPAL ENGINEER, TRACTION DISTRIBUTION.
2. GATES AND BOLLARDS SHALL BE POSITIONED TO PREVENT AN OPEN GATE FROM COMING WITHIN 3.0m OF ELECTRIFICATION WIRING EQUIPMENT SUPPORTS OR ANY METALWORK CONNECTED TO THEM.
3. SUPPORT CABLES SHALL BE GALVANISED ONLY (ND PLASTIC COATING).

FENCING NOTES:

1. ALL POSTS AND RAILS SHALL BE STEEL CIRCULAR HOLLOW SECTION (CHS) GRADE C250 IN ACCORDANCE WITH AS/NZS 1163 "STRUCTURAL STEEL HOLLOW SECTIONS".
2. ALL PIPE CLAMP FITTINGS, GATE HINGES, GATE KEEPERS, etc SHALL BE "ODWNEE" OR AN APPROVED EQUIVALENT.
3. EACH RAIL BETWEEN POSTS SHALL BE A CONTINUOUS LENGTH.
4. ALL TUBES, FITTINGS AND FASTENERS SHALL BE HOT DIP GALVANISED AFTER FABRICATION IN ACCORDANCE WITH AS/NZS 4680.
5. FENCING MATERIALS INCLUDING WIRES, BARBED WIRE (WHERE ORDERED) AND CHAIN-LINK FENCING FABRIC SHALL BE MANUFACTURED IN ACCORDANCE WITH AS 2423 "COATED STEEL WIRE FENCING PRODUCTS".
6. ERECTION SHALL BE IN ACCORDANCE WITH AS 1725 "CHAIN-LINK FABRIC SECURITY FENCES AND GATES", UNLESS NOTED OTHERWISE.
7. FENCING WIRE SHALL BE CONTINUOUS FROM GATE POST TO GATE POST AND BE CONSTRUCTED WITH 1800 mm HIGH CHAIN-LINK FABRIC. CHAIN-LINK FABRIC SHALL BE "HEAVY DUTY", MANUFACTURED FROM 3.15 mm DIA. GALV. CORE WIRE, WITH UNIFORM 50mm DIAMOND MESH. THE TOP SELVEDGE SHALL BE BARBED AND THE BOTTOM SELVEDGE SHALL BE KNUCKLED.
8. SUPPORT CABLES SHALL CONSIST OF 2 x 3.15mm DIA. GALV. CABLE WIRE, TWISTED TOGETHER BETWEEN POSTS, OR 1 x 4mm DIA. GALV. HELICOIL CABLE WIRE HELIX SPIRALLED. SUPPORT CABLES SHALL BE INSTALLED IN ACCORDANCE WITH AS 1725.
9. LACING WIRE SHALL BE 2mm DIA. GALV. WIRE INSTALLED IN ACCORDANCE WITH AS 1725.
10. TIE WIRE TO SECURE CHAIN-LINK FABRIC TO POSTS, AND SECURE SUPPORT CABLES TO INTERMEDIATE POSTS, SHALL BE 2 x 1.57mm DIA. GALV. WIRES, OR 1 x 2mm DIA. GALV. WIRE. TIE WIRE TO SECURE CHAIN-LINK FABRIC TO CABLES SHALL BE 1 x 1.57mm DIA. GALV. WIRE TWISTED TWICE AND NEATLY CUT OFF, OR 2mm DIA. GALV. WIRE NETTING CLIPS. TIE WIRES SHALL BE AND INSTALLED IN ACCORDANCE WITH AS 1725. (SEE ALSO TIE-OFF DETAIL)
11. BRACING CABLES (WITH TURNBUCKLE) SHALL CONSIST OF 2 x 3.15mm DIA. GALV. CORE WIRES TWISTED TOGETHER AND TENSIONED IN CONJUNCTION WITH A GALVANISED 12mm TURNBUCKLE. BRACING CABLES SHALL BE GALVANISED AND INSTALLED IN ACCORDANCE WITH AS 1725.
12. STRAINER ASSEMBLIES SHALL BE INSTALLED AT 150m MAXIMUM CENTRES ON STRAIGHT LENGTHS AND AT SIGNIFICANT CHANGES IN DIRECTION. ALL CORNER AND STRAINER PANELS SHALL HAVE BRACING INSTALLED IN ACCORDANCE WITH AS 1725.
13. BOLLARDS SHALL BE INSTALLED AT GATES TO SECURE OPEN GATE PANELS ONLY WHERE DIRECTED BY QUEENSLAND RAIL INFRASTRUCTURE OWNER. SEE DETAILS THIS DRAWING.
14. IN CORRDSIVE ENVIRONMENTS EXTRA GALVANISING SHALL BE PROVIDED FOR POSTS AND/OR PLASTIC COATED MESH (WHERE ORDERED).

THE PURPOSE OF THIS DRAWING IS TO PROVIDE TYPICAL STANDARD DETAILS. THE FITNESS FOR PURPOSE OF THIS DRAWING FOR A SPECIFIC PROJECT SHALL BE DETERMINED AND CERTIFIED BY A RPEQ ENGINEER.

1:10 | 0 200 400mm | 1:25 | 0 500 1000mm

FILE No	ALTERATIONS				
13/26948	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

WIND LOADS

AS/NZS 1170.2 2011
REGION C
WIND SPEED : V100 = 56 m/s
TERRAIN CATEGORY 1

DESIGNED	BASED ON STD DGN No. 2544		APPROVED _D. GIBB_ DESIGN ENGINEER _27/08/15_ DATE; RPEQ No. 13065
DES CHK			
DRAWN	A. POWER	20.08.15	ISSUE AUTHORISED
DRG CHK	D. GIBB	25.08.15	_G. SMITH_ DISCIPLINE HEAD TRACK & STRUCTURES _26/08/15_ DATE

QueenslandRail
ACN 132 181 090

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Network - Civil Engineering

STANDARD - FENCING

1.8m HIGH CHAIN LINK SECURITY FENCE

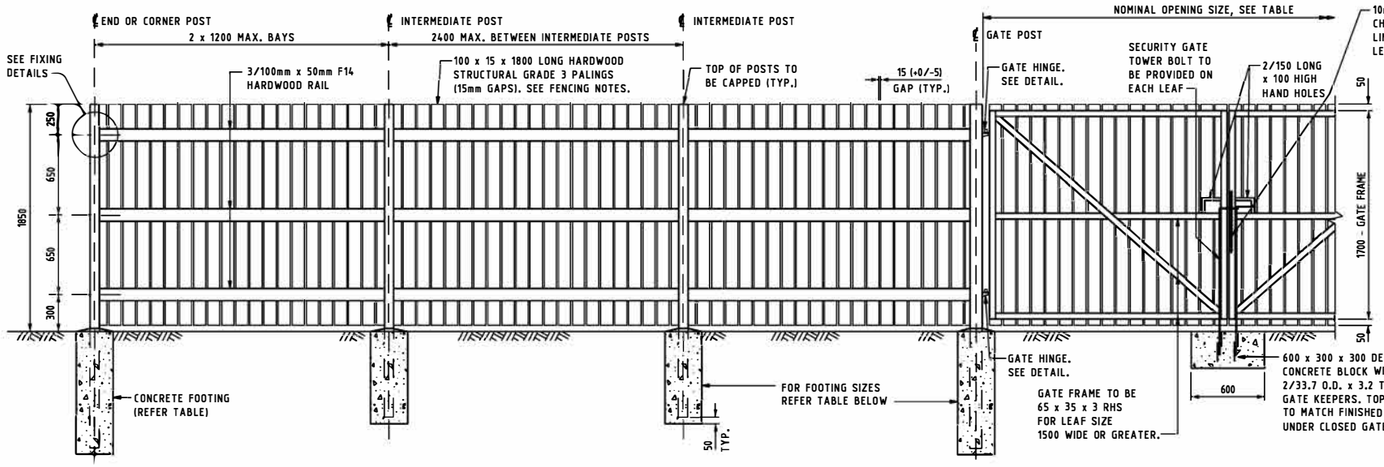
WITHOUT RAILS USING 50mm DIAMOND MESH

GENERAL ARRANGEMENT

DRAWING NUMBER: QR-C-S3230

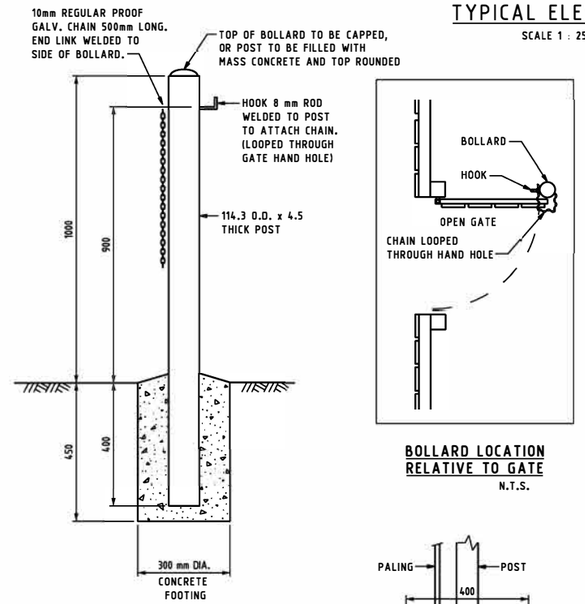
ISSUE:

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



TYPICAL ELEVATION

SCALE 1 : 25



BOLLARD DETAIL

SCALE 1 : 10

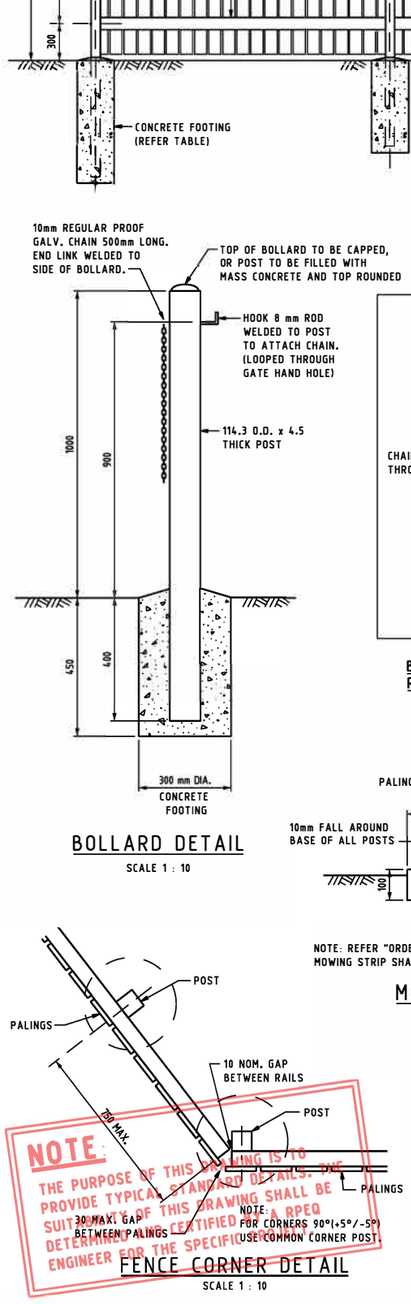
BOLLARD LOCATION RELATIVE TO GATE

N.T.S.

NOTE: REFER "ORDERING CONSIDERATIONS". MOWING STRIP SHALL NOT BE INSTALLED UNDER GATES.

MOWING STRIP

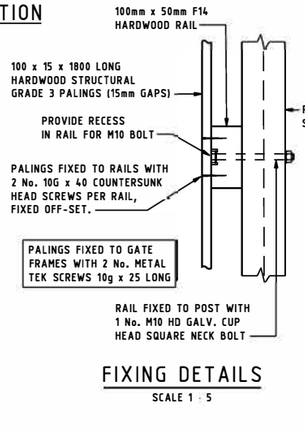
SCALE 1 : 10



NOTE: THE PURPOSE OF THIS DRAWING IS TO PROVIDE TYPICAL STANDARD DETAILS. THE FITNESS OF THIS DRAWING SHALL BE DETERMINED AND CERTIFIED BY A RPEQ ENGINEER FOR THE SPECIFIC PROJECT.

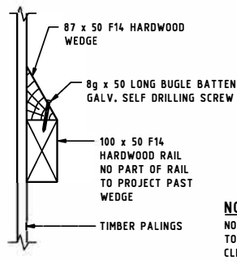
FENCE CORNER DETAIL

SCALE 1 : 10



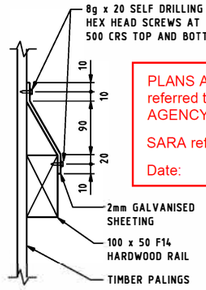
FIXING DETAILS

SCALE 1 : 5



HARDWOOD TIMBER

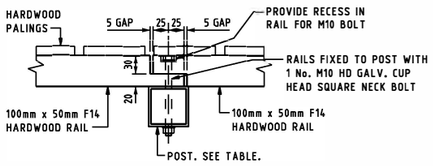
NOTE: NO PART OF RAIL IS TO ACT AS A CLIMBING HOLD REFER AS 1926.1 FIG 2.6



GALVANISED SHEETING

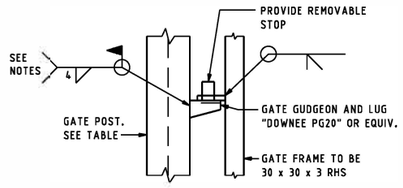
FENCE RAIL DETAIL AT SECURITY LOCATION e.g. ADJACENT TO POOL

SCALE 1:5



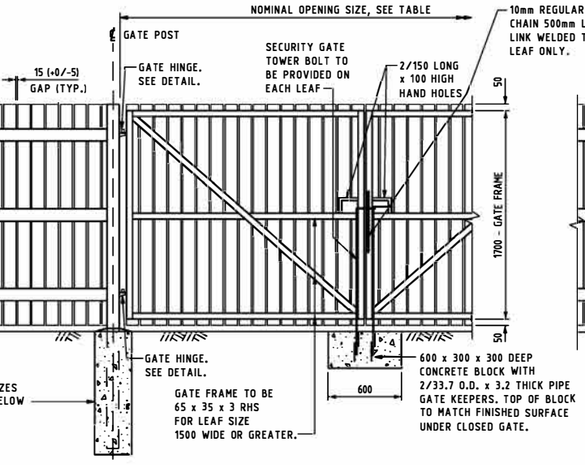
HARDWOOD RAIL JOINT DETAIL

SCALE 1 : 5



GATE HINGE DETAIL

SCALE 1 : 5



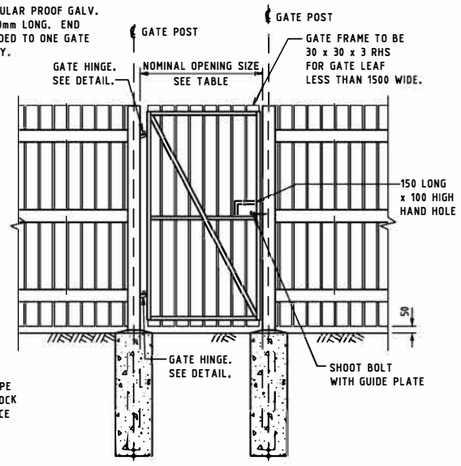
DOUBLE LEAF GATE

SCALE 1 : 25

ORDERING CONSIDERATIONS:	
MOWING STRIP	ONLY INSTALLED WHERE SPECIFIED BY QUEENSLAND RAIL. COST SHARING OPTIONS MAY BE NEGOTIATED WHERE ADJOINING OWNERS MAKE SPECIFIC REQUEST FOR INSTALLATION OF MOWING STRIP.
BARBED WIRE SECURITY	ONLY INSTALLED WHERE SPECIFIED BY QUEENSLAND RAIL. COST SHARING OPTIONS MAY BE NEGOTIATED WHERE ADJOINING OWNERS MAKE SPECIFIC REQUEST FOR INSTALLATION OF BARBED WIRE.
LAPPED FENCE PALINGS	ONLY INSTALLED WHERE SPECIFIED BY QUEENSLAND RAIL. COST SHARING OPTIONS MAY BE NEGOTIATED WHERE ADJOINING OWNERS MAKE SPECIFIC REQUEST FOR INSTALLATION OF LAPPED FENCE PALINGS.

THE PURPOSE OF THIS DRAWING IS TO PROVIDE TYPICAL STANDARD DETAILS. THE FITNESS FOR PURPOSE OF THIS DRAWING FOR A SPECIFIC PROJECT SHALL BE DETERMINED AND CERTIFIED BY A RPEQ ENGINEER.

PLANS AND DOCUMENTS referred to in the REFERRAL AGENCY RESPONSE
SARA ref: 2207-30073 SRA
Date: 24 February 2022



SINGLE LEAF GATE

SCALE 1 : 25

GENERAL NOTES:

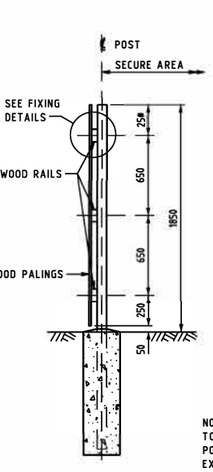
1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL STEEL PLATES SHALL BE GRADE 250 MIN. IN ACCORDANCE WITH AS/NZS 3678.
3. ALL WELDS SHALL BE 5mm CONTINUOUS FILLET WELDS UNLESS NOTED.
4. ALL WELDS SHALL BE IN ACCORDANCE WITH AS 1554.1 WITH ELECTRODES GRADE EXX48 TO AS 1553 UNLESS NOTED OTHERWISE.
5. ALL BOLTS, NUTS SHALL BE HOT DIP GALVANISED IN ACCORDANCE WITH AS/NZS 1214 AND WASHERS TO AS 4680
6. AREAS WHERE GALVANISING HAS BEEN REMOVED BY WELDING OR ABRASIONS SHALL BE CLEANED OF FOREIGN MATTER INCLUDING WELDING SLAG AND PAINTED WITH TWO COATS OF AN APPROVED ORGANIC ZINC-RICH PAINT TO PROVIDE A MIN. DRY FILM THICKNESS OF 0.10mm.
7. CONCRETE SHALL BE GRADE N25 (MIN.).
8. COST SHARING OPTIONS MAY BE NEGOTIATED WITH ADJOINING OWNERS IN THESE CIRCUMSTANCES.

GATE NOTES:

1. SINGLE GATES SHALL BE FITTED WITH SHOOT BOLT, DOUBLE GATES SHALL BE FITTED WITH FLAG PIN DROP BOLT AS SHOWN ON THE DRAWING.
2. ALL GATE FRAMES SHALL BE WELDED. FRAMES SHALL BE HOT DIP GALVANISED AFTER FABRICATION IN ACCORDANCE WITH AS 4680.
3. GATES SHALL BE INSTALLED FOR QUEENSLAND RAIL PURPOSES ONLY. GATES SHALL NOT BE INSTALLED FOR DOMESTIC USE.

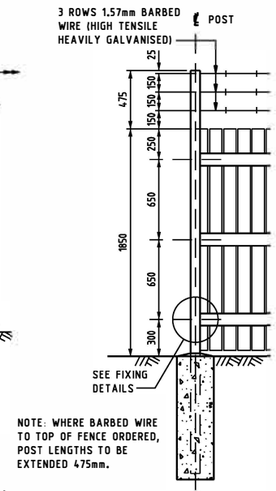
GATE TABLE		
LOCATION	NOMINAL OPENING SIZE	LEAF TYPE (NOMINAL SIZE)
PEDESTRIAN - PUBLIC ACCESS	1800	SINGLE 1800 OR DOUBLE 900
PEDESTRIAN - QR STAFF ONLY	1200	SINGLE 1200
VEHICULAR	3600	DOUBLE 1800

FENCE MEMBERS AND FOOTINGS SIZES			
TYPE OF MEMBER	TUBE SIZE	CONCRETE FOOTING NON-COHESIVE AND COHESIVE SOILS Cu < 20kPa (SEE NOTES)	CONCRETE FOOTING COHESIVE SOILS Cu > 200kPa (SEE NOTES)
INTERMEDIATE POSTS	75 x 75 x 4 RHS	Φ300 x 1500 DEEP	Φ300 x 800 DEEP
END/CORNER POSTS	75 x 75 x 4 RHS	Φ300 x 1500 DEEP	Φ300 x 1000 DEEP
GATE POSTS	100 x 100 x 4 RHS	Φ300 x 1500 DEEP	Φ300 x 1000 DEEP



TYPICAL SECTION

SCALE 1 : 25



NOTE: WHERE BARBED WIRE TO TOP OF FENCE ORDERED, POST LENGTHS TO BE EXTENDED 475mm.

ELEVATION SHOWING EXTENDED POST FOR BARBED WIRE FIXING (WHERE ORDERED)

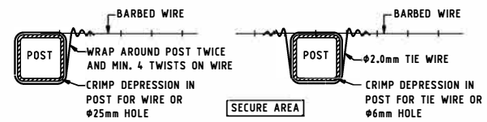
SCALE 1 : 25

FENCING NOTES:

1. ALL POSTS AND GATE FRAMES SHALL BE STEEL RECTANGULAR HOLLOW SECTION (RHS) GRADE C350. "RHS" SHALL BE IN ACCORDANCE WITH AS 1163 - 1991 "STRUCTURAL STEEL HOLLOW SECTIONS".
2. ALL TUBES, FITTINGS AND FASTENERS SHALL BE HOT DIP GALVANISED AFTER FABRICATION IN ACCORDANCE WITH AS 4680.
3. EACH RAIL BETWEEN POSTS SHALL BE A CONTINUOUS LENGTH.
4. BOLLARDS SHALL BE INSTALLED AT GATES TO SECURE OPEN GATE PANELS ONLY WHERE DIRECTED BY QUEENSLAND RAIL. SEE DETAILS THIS DRAWING.
5. SOILS ARE COHESIVE IF THE PARTICLES ADHERE AFTER WETTING AND SUBSEQUENT DRYING AND IF SIGNIFICANT FORCE IS REQUIRED TO CRUMBLE THE SOIL (FOR EXAMPLE CLAY). ALL OTHER SOILS ARE NON-COHESIVE (FOR EXAMPLE SAND). IN COHESIVE SOILS WHERE THE Cu OF THE SOIL IS BETWEEN 20 kPa AND 200 kPa THE FOOTING DEPTH MAY BE LINEARLY INTERPOLATED FROM THE TABLE. IN NON-COHESIVE SOIL, FOOTING DEPTH CANNOT BE REDUCED.
6. ALL TIMBER COMPONENTS SHALL BE OF AN APPROVED SPECIES AS LISTED IN THE QUEENSLAND RAIL SPECIFICATION AND ALL DIMENSIONS CLEAR OF SAPWOOD.
7. TIMBER PALINGS SHALL BE PLACED WITH 15mm (+0/-5) GAPS.

FENCING IN ELECTRIFIED AREAS

1. IN GENERAL THESE FENCES ARE SELF EARTHING. HOWEVER, IN SPECIAL CIRCUMSTANCES, USUALLY DUE TO PROXIMITY TO ELECTRIFICATION WIRING OR WIRING EQUIPMENT SUPPORTS OR SUBSTATIONS, EARTHING OR INSULATED SECTIONS MAY BE REQUIRED IN ACCORDANCE WITH QR MANAGER ELECTRICAL ENGINEERING REQUIREMENTS.
2. GATES AND BOLLARDS SHALL BE PDSITIONED TO PREVENT AN OPEN GATE FROM COMING WITHIN 2.0m OF ELECTRIFICATION WIRING EQUIPMENT SUPPORTS OR ANY METALWORK CONNECTED TO THEM.



BARBED WIRE TIE-OFF DETAILS (WHERE ORDERED)

N.T.S.

THIS FENCE IS SUITABLE FOR USE IN AREAS WHERE SECURITY FENCING REQUIRES AN ENHANCED PRIVACY OR AESTHETIC COMPONENT SUCH AS: CAR PARKS, STATION SURROUNDS, HIGH PUBLIC TRAFFIC AREAS ADJOINING SENSITIVE RAILWAY INFRASTRUCTURE OR RAILWAY CORRIDOR. MAY ALSO BE USED WHERE ADJOINING OWNER REQUESTS ENHANCED PRIVACY FROM RAILWAY INFRASTRUCTURE OR RAILWAY CORRIDOR, OR OTHER SPECIAL CIRCUMSTANCES.

1:5 (0, 100, 200mm)
1:10 (0, 200, 400mm)
1:25 (0, 500, 1000mm)

FILE No	ALTERATIONS			
13/26948	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

WIND LOADS
AS 1170.2 : 2002
REGION C
WIND SPEED : V100 = 56 m/s
TERRAIN CATEGORY 1

DESIGNED	BASED ON STO DGN No. 2545		APPROVED D. GIBB 25/08/15 DESIGN ENGINEER DATE RPEQ No. 13065
DES CHK			
DRAWN	A. POWER	20.08.15	ISSUE AUTHORISED
DRG CHK	D. GIBB	25.08.15	G. SMITH 26/08/15 DISCIPLINE HEAD TRACK & STRUCTURES DATE

QueenslandRail
ACN 132 181 090

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Network - Civil Engineering

STANDARD
TIMBER FENCE
1800mm HIGH TIMBER PALING FENCE

DRAWING NUMBER: QR-C-S3231
ISSUE:

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

ATTACHMENT 3

AMENDED PLANS OF DEVELOPMENT

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

DRAWING LIST - CONCEPT		
A	0.00	COVER SHEET
A	0.10	SITE CONTEXT PLAN
A	1.01A	SITE PLAN
A	1.02A	DEVELOPMENT PLAN
A	2.01	GROUND FLOOR PLAN - SUPERMARKET
A	2.02	ROOF PLAN - SUPERMARKET
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EXISTING VIEW FROM CORNER OF BYRNES & RANKIN STREET

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

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COVER SHEET

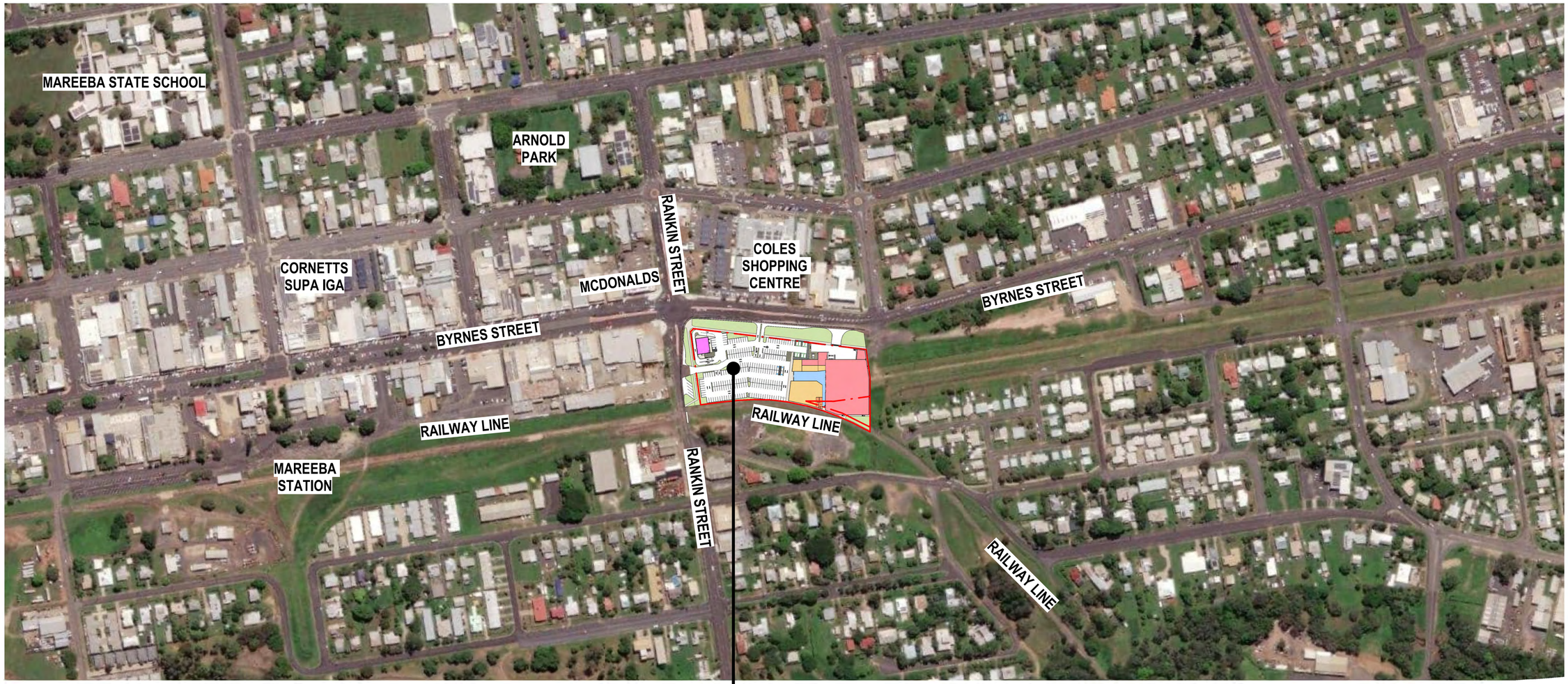
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2025-06-24

A0.00

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1 SITE CONTEXT PLAN
1 : 2500

DEVELOPMENT APPLICATION

0 25 50 75 125 250 m

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SITE CONTEXT PLAN

1 : 2500 @ A1 2025-06-24

A0.10 **rev. 10**

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DEVELOPMENT SCHEDULE

PROPOSED USES	GFA	GLAR
SUPERMARKET	3655m^2	3603m^2
SHOPS	1290m^2	1260m^2
FAST FOOD	270m^2	270m^2
AMENITIES	90m^2	
TOTAL CENTRE	**5305m^2**	**5133m^2**

CAR PARKING SCHEDULE

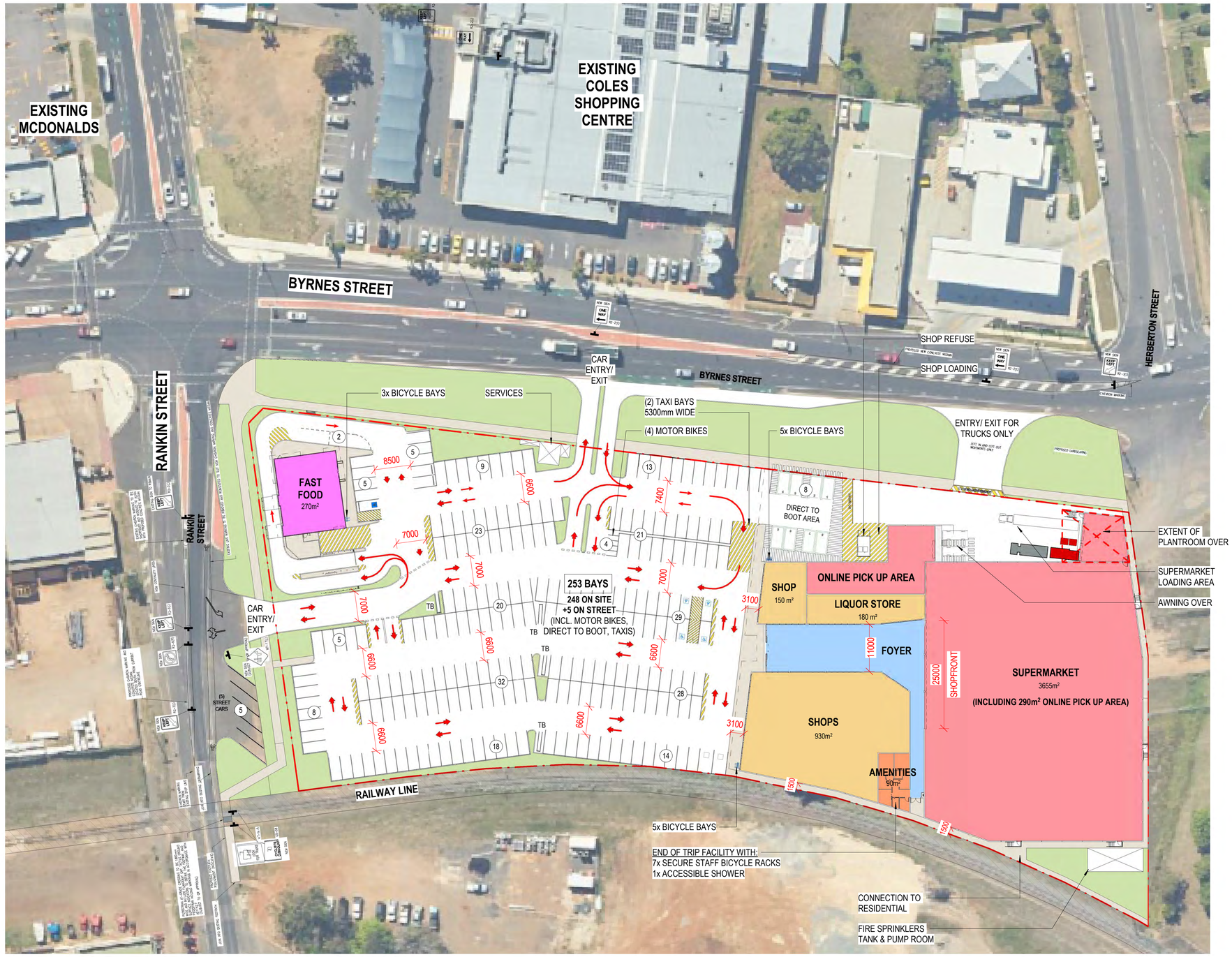
CARS CENTRE (ON SITE) (INCL. MOTOR BIKES, DIRECT TO BOOT + TAXIS)	248
STREET CARS	5
TOTAL CARS PROVIDED	**253** (4.93/100m^2 GLAR)
TOTAL CARS REQUIRED	205

NOTE:
CARS REQUIRED IS BASED ON:
1/50 UP TO 400m^2 GFA
1/25 ABOVE 400m^2 GFA

NOTE: SUPERMARKET GLAR EXCLUDES EXTERNAL WALLS AND LOADING DOCK

COVERED CARPARKS

AREA OF FOYER / PASSAGE - 522m^2



1 SITE PLAN - OPTION 6
1 : 500

DEVELOPMENT APPLICATION

0 5 10 15 25 50 m

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SITE PLAN

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3x BICYCLE BAYS
ELECTRIC PAD MOUNT TRANSFORMER
FIRE METER + BOOSTERS
5x BICYCLE BAYS
SCREENED SHOP REFUSE
SHOP LOADING
HOME DELIVERY LOADING AREA
WAITING BAYS
ELECTRICAL SERVICES (MSB/COMMS)
CAR ENTRY/ EXIT
BYRNES STREET
ENTRY/ EXIT FOR TRUCKS ONLY
RANKIN STREET
SUPERMARKET LOADING AREA
REFUSE BINS
EXTENT OF PLANTROOM OVER
COMPACTOR
ESCAPE STAIR
FAST FOOD 270m²
LOADING
DIRECT TO BOOT AREA
TAXI BAYS
(4) MOTOR BIKES
253 BAYS
248 ON SITE
+5 ON STREET
(INCL. MOTOR BIKES, DIRECT TO BOOT, TAXIS)
TB
CAR ENTRY/ EXIT
(5) STREET CARS
ONLINE PICK UP AREA
SHOP 150 m²
LIQUOR STORE 180 m²
FOYER
SUPERMARKET 3655m²
(INCLUDING 290m² ONLINE PICK UP AREA)
RL 409.20
SHOPS 930m²
AMENITIES 91 m²
RL 408.50
ESCAPE STAIR
5x BICYCLE BAYS
END OF TRIP FACILITY WITH:
7x SECURE STAFF BICYCLE RACKS
1x ACCESSIBLE SHOWER
ESCAPE STAIR
FIRE SPRINKLERS TANK & PUMP ROOM
CONNECTION TO RESIDENTIAL
RAILWAY LINE
EXISTING BUILDING

1 DEVELOPMENT PLAN - OPTION 6
1 : 300

DEVELOPMENT APPLICATION

0 3 6 9 15 30 m

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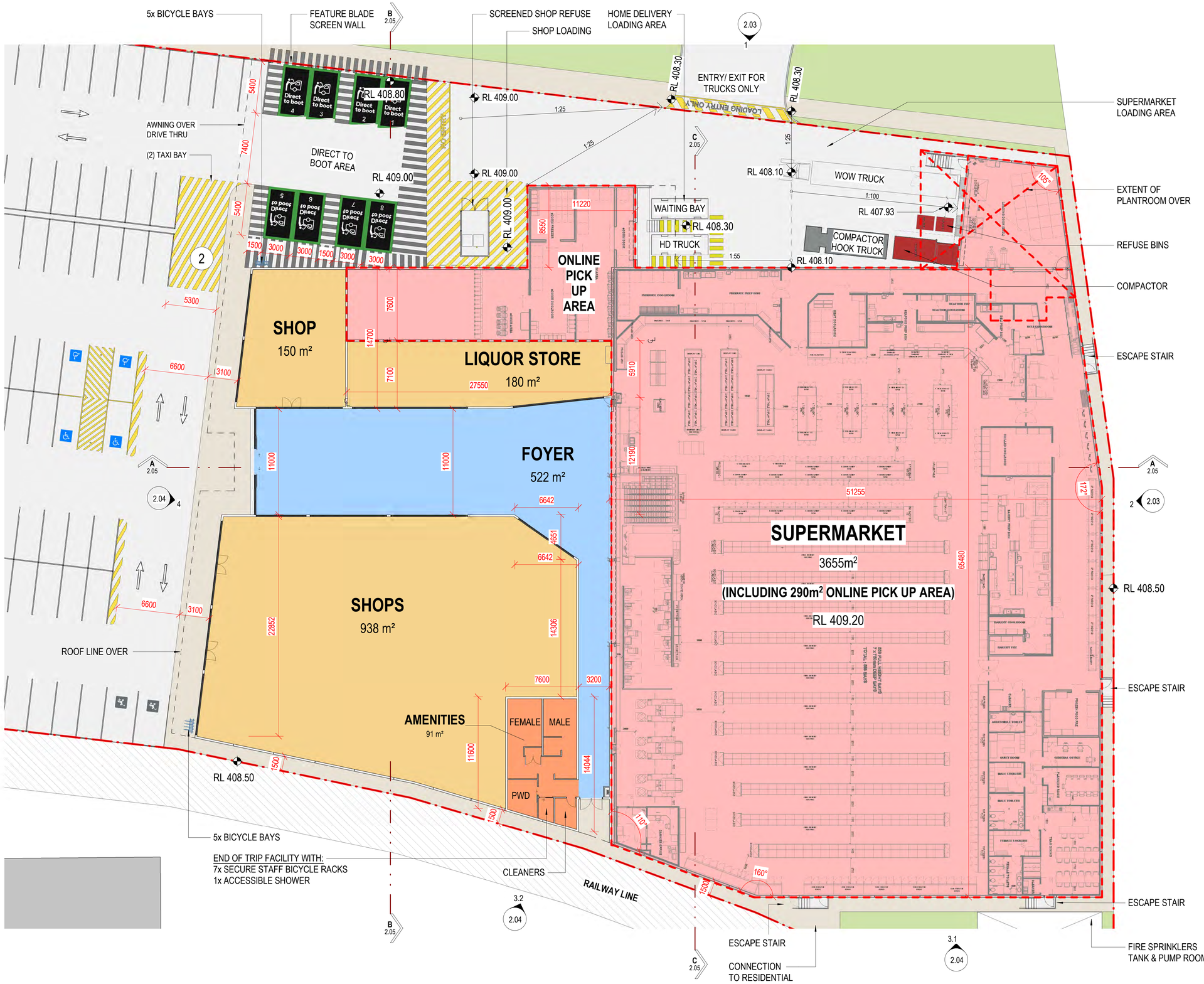
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DEVELOPMENT PLAN

1 : 300 @ A1 | 2025-06-24

A1.02A | **rev. 21**

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1 FLOOR PLAN - SUPERMARKET
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

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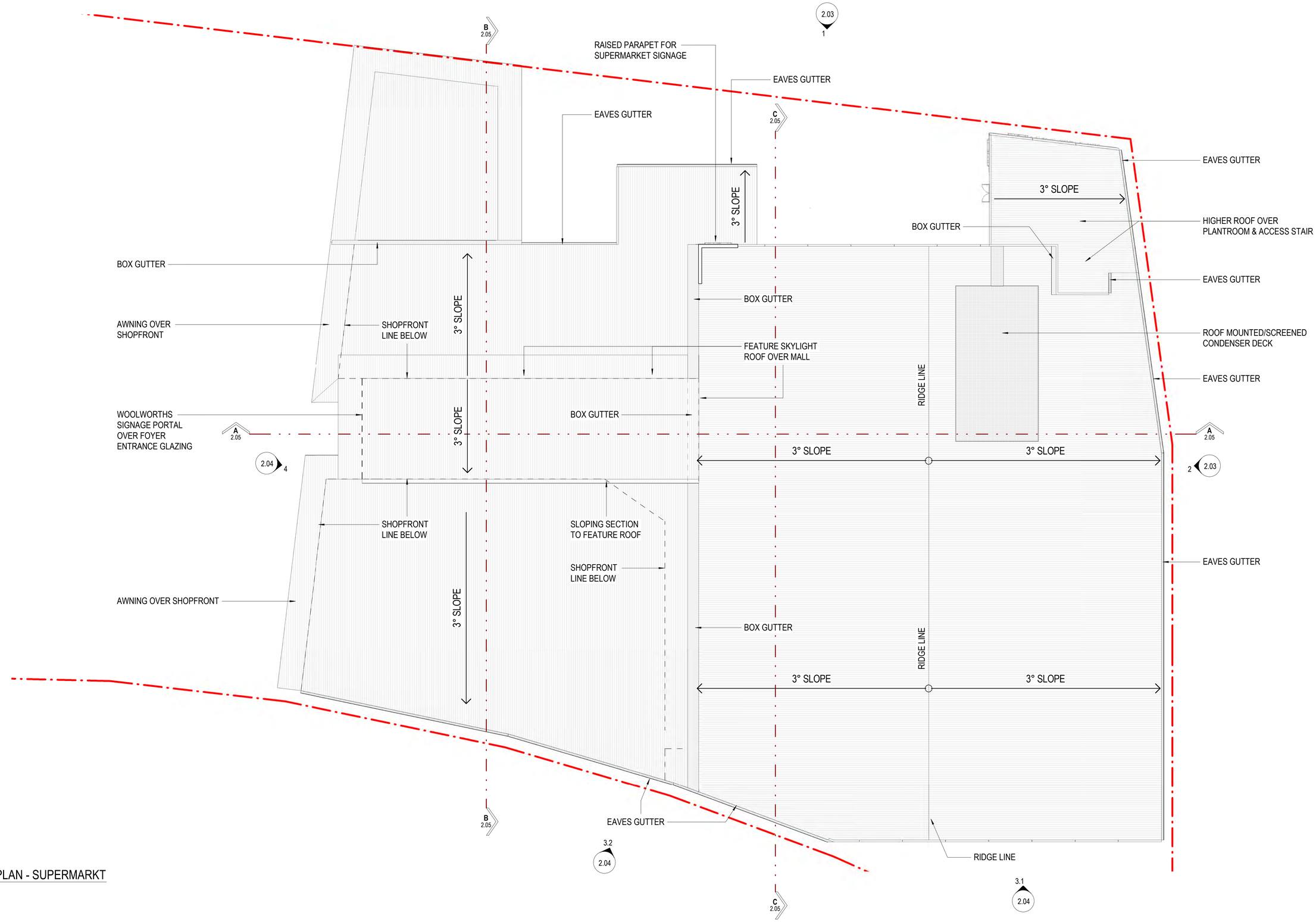
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GROUND FLOOR PLAN - SUPERMARKET

1 : 200 @ A1 | 2025-06-24

A2.01 | rev. 15

Document Set ID: 4528952
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1 ROOF PLAN - SUPERMARKT
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

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ROOF PLAN - SUPERMARKET

1 : 200 @ A1 | 2025-06-24

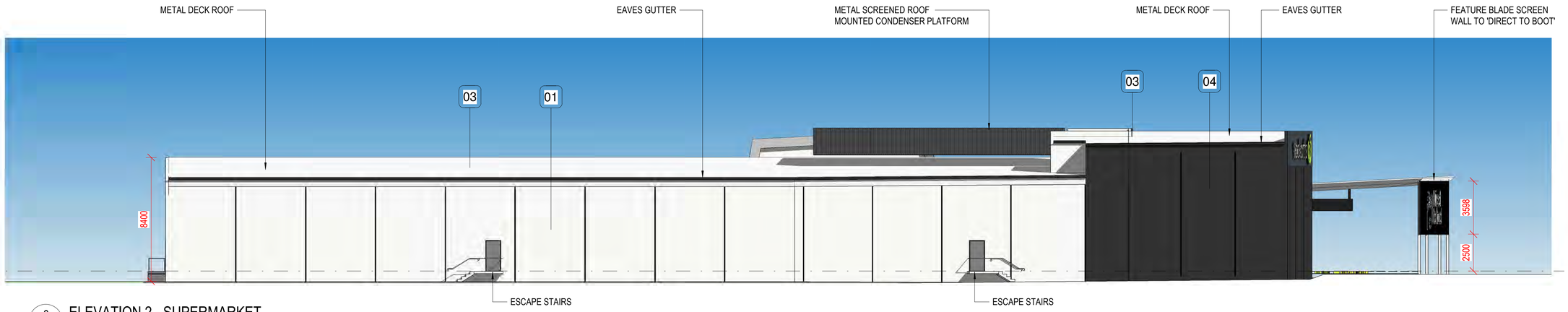
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1 / 2.01 ELEVATION 1 - SUPERMARKET

1 : 150



2 / 2.01 ELEVATION 2 - SUPERMARKET

1 : 150

1	PRECAST CONCRETE PANEL PAINTED DULUX 'VIVID WHITE'	3	LONGLINE METAL SHEETING DULUX 'MONUMENT'	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX 'MONUMENT'
2	FC CLADDING PAINTED DULUX 'VIVID WHITE'	4	PRECAST CONCRETE PANEL PAINTED DULUX 'MONUMENT'	6	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER. PAINTED DULUX 'MONUMENT'

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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ELEVATIONS - SUPERMARKET

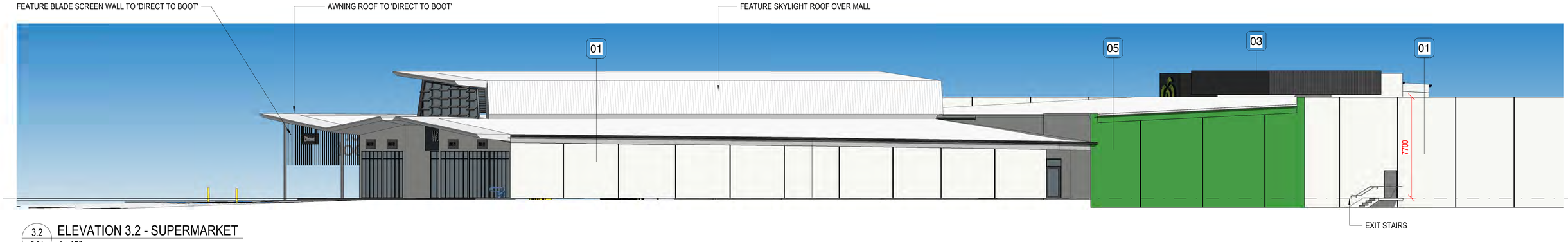
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3.1 / 2.01 ELEVATION 3.1 - SUPERMARKET
1 : 150



3.2 / 2.01 ELEVATION 3.2 - SUPERMARKET
1 : 150



4 / 2.01 ELEVATION 4 - SUPERMARKET
1 : 150

1	PRECAST CONCRETE PANEL PAINTED DULUX 'VIVID WHITE'	3	LONGLINE METAL SHEETING DULUX 'MONUMENT'	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX 'MONUMENT'
2	FC CLADDING PAINTED DULUX 'VIVID WHITE'	4	PRECAST CONCRETE PANEL PAINTED DULUX 'MONUMENT'	6	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER. PAINTED DULUX 'MONUMENT'

NOTE:
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DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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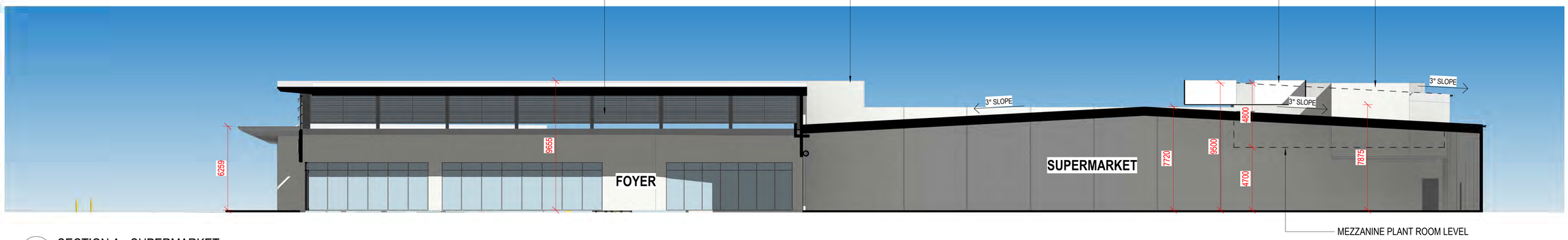
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ELEVATIONS - SUPERMARKET

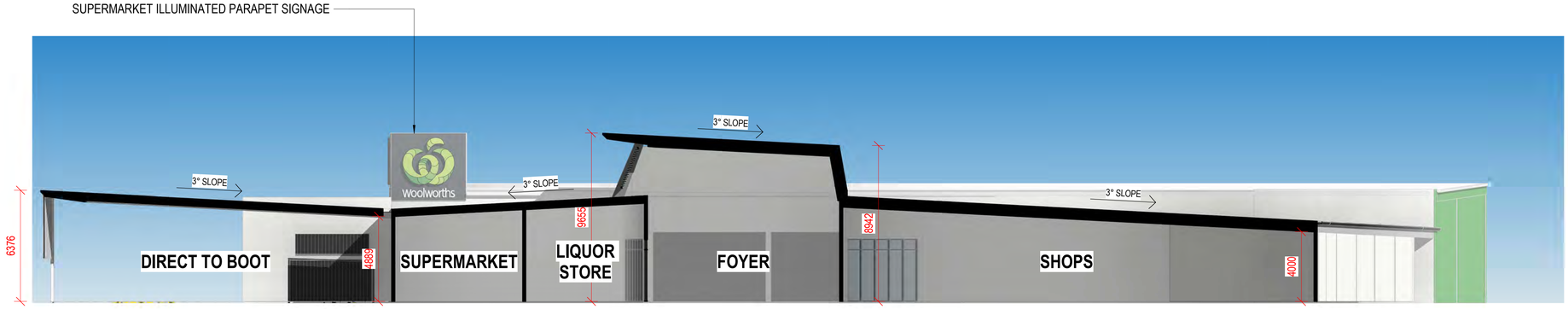
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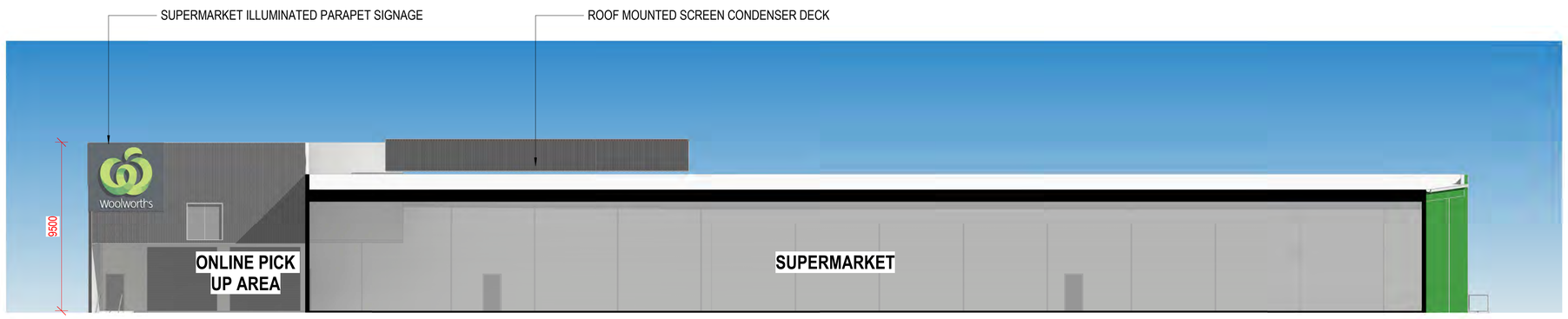
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A 2.01 SECTION A - SUPERMARKET
1 : 150



B 2.01 SECTION B - SUPERMARKET
1 : 150



C 2.01 SECTION C - SUPERMARKET
1 : 150

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DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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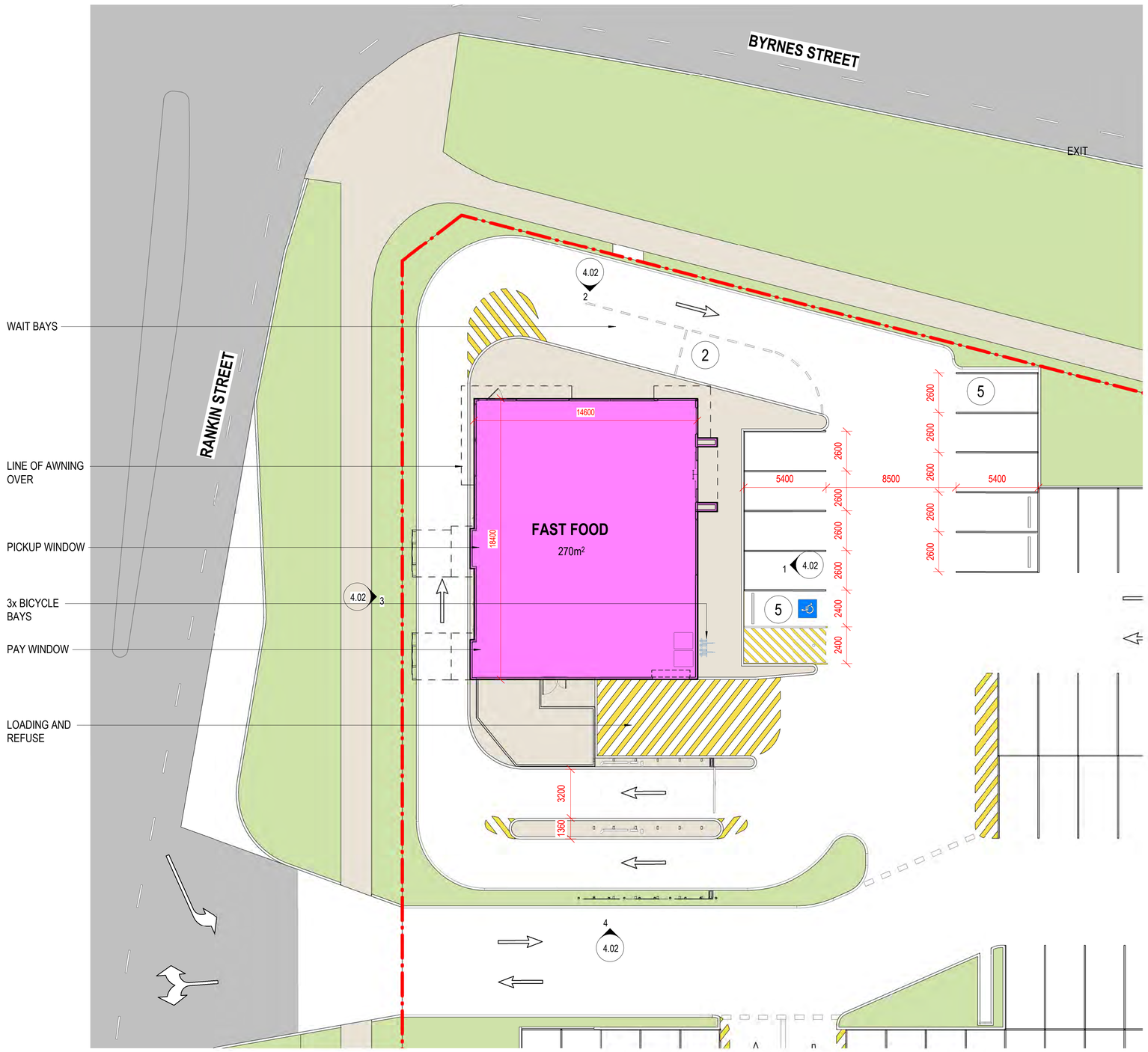
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SECTIONS - SUPERMARKET

1 : 150 @ A1 2025-06-24

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1 FLOOR PLAN - FAST FOOD
1 : 150

DEVELOPMENT APPLICATION

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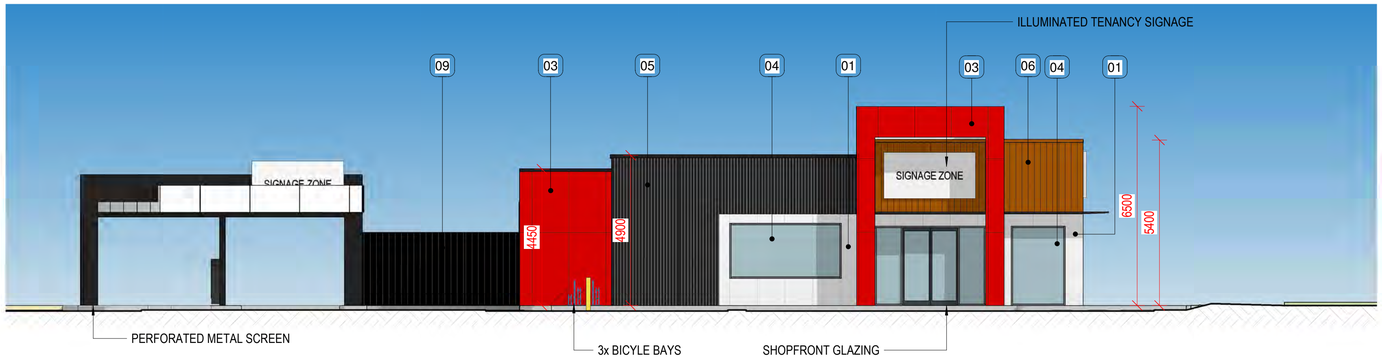
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GROUND FLOOR PLAN - FAST FOOD

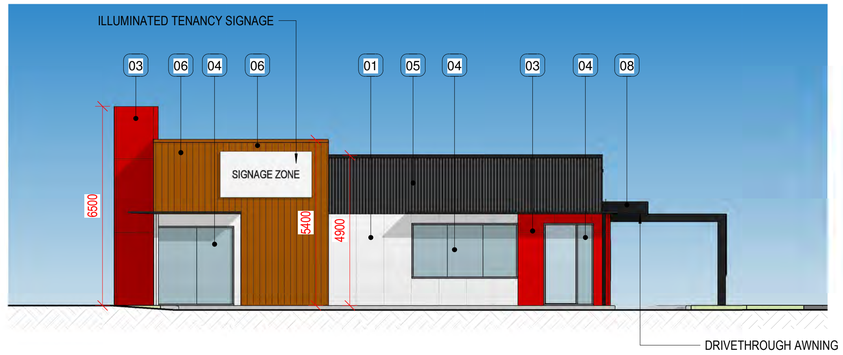
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A4.01 | **rev. 7**

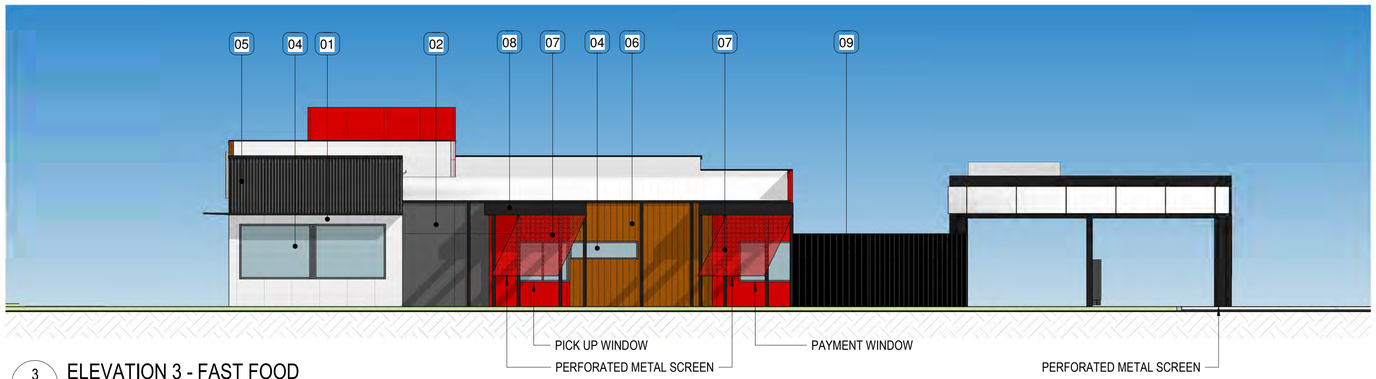
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1 / 3.01 ELEVATION 1 - FAST FOOD
1 : 100



2 / 4.01 ELEVATION 2 - FAST FOOD
1 : 100



3 / 4.01 ELEVATION 3 - FAST FOOD
1 : 100



4 / 3.01 ELEVATION 4 - FAST FOOD
1 : 100

01	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED WHITE	03	CFC SHEETING WITH EXPRESSED JOINTS TENANT CORPORATE COLOUR RED	05	LONGLINE 305 METAL WALL SHEETING COLORBOND 'MONUMENT' (MID GREY)	07	PERFERATED MESH SCREEN LOCKERGROUP POWDERCOAT "RED" R03341
09	COLORBOND CORRUGATED METAL WALL SHEETING BLACK	02	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED DULUX 'DARK GREY'	04	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	06	TIMBER-LOOK ALUMINIUM CLADDING - KNOTWOOD DRIFTWOOD
08	POWDERCOATED METAL CAPPINGS, GUTTERS & DOWNPIPES. PAINTED DULUX 'MONUMENT'						

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1 2 3 5 10m

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ELEVATIONS - FAST FOOD

1 : 100 @ A1 2025-06-24

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ARIAL VIEW



SUPERMARKET VIEW FROM CARPARK

DEVELOPMENT APPLICATION

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3D VIEWS

@ A1

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BYRNES STREET - SITE EXIT



BYRNES STREET - TRUCK & LOADING ENTRANCE

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

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3D VIEWS

@ A1

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ATTACHMENT 4

TRAFFIC IMPACT ASSESSMENT & SDAP ASSESSMENT

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Traffic Impact Assessment

Proposed Shopping Centre 232 Byrnes Street, Mareeba

Girgenti Group

231 Byrnes Street,
Mareeba QLD 4880

Prepared by:

SLR Consulting Australia Pty Ltd

SLR Project No.: 620.041936.00001

27 June 2025

Revision: 0.2

Making Sustainability Happen

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
0.1	12 July 2022	Samuel Joseph/Taylor Beauchamp	Kris Stone	Kris Stone
0.2	27 June 2025	Alex Moxon	Raymond Logan	Raymond Logan

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Girgenti Group (the Client). 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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SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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1.0 Introduction

1.1 Context

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Girgenti Group to prepare a Traffic Impact Assessment (TIA) for the proposed mixed-use development located at 232 Byrnes Street, Mareeba. Plans for the development, as prepared by Thomson Adsett, are included in **Appendix A**.

1.2 Planning Application

This Development Application (DA) seeks approval for a proposed mixed-use development comprising a shopping centre (including a Woolworths supermarket) and food & drink outlet on the existing Lot 78 on SP298287.

1.3 Assessment Scope

This TIA report assesses the consistency of the development with Council and State planning, and the impacts of the proposed development on the surrounding transport networks. The TIA identifies the transport infrastructure required to support the development, and provides an assessment of the traffic and transport aspects of the development against the requirements of the following relevant authorities:

- Mareeba Shire Council (MSC or Council).
- The Department of Transport and Main Roads (TMR).

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2.0 Existing Conditions

2.1 Subject Site

The subject site is located at 232 Byrnes Street, Mareeba, formally described as Lot 78 on SP152626. The site is situated within the Centre Zone of the Mareeba Shire Council Planning Scheme 2016.

The site is bound by Byrnes Street to the north, Rankin Street to the east, General Residential (Next Generation Neighbourhood) detached dwellings to the south, and a rail corridor to the west. The site is shown in the context of the broader area in **Figure 1** and within the local area in **Figure 2**.

Figure 1 Site Location: Regional Context



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Figure 2 Site Location: Local Context



2.2 Existing Site Use and Access Arrangements

This site is currently vacant, cleared land. Vehicular access to the site is via a driveway crossover to Rankin Street.

2.3 Surrounding Road Network

Details of the key roads surrounding the subject site are provided in **Table 1.**

Table 1 Key Surrounding Roads

Road Name	Authority	Classification	Existing Form	Posted Speed
Byrnes Street	Department of Transport and Mains Roads (Far North District)	State Road (Rural)	Dual carriageway with single traffic lane in either direction. Typically, a rural cross-section with a mixture of cycle lanes/sealed and unsealed shoulders in both directions with parking bays on both sides of the road.	60 km/h
Herberton Street	Mareeba Shire Council	Local Road (Rural)	Single carriageway with a single traffic lane in either direction, marked. Typically, a rural cross-section with parking bays on both sides of the road.	60 km/h
Rankin Street	Mareeba Shire Council	Local Road (Rural)	Single carriageway with single traffic lane in either direction, marked. Typically, a rural cross-section with parking bays on both sides of the road.	40 km/h

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Road Name	Authority	Classification	Existing Form	Posted Speed
Frew Street	Mareeba Shire Council (or privately owned)	Local Road (Rural)	Single carriageway with single traffic lane in either direction, unmarked. Typically, a rural cross-section with unsealed shoulders in both directions.	10 km/h

Byrnes Street, Herberton St and Rankin Street are all listed as part of MSC's Transport Network within Mareeba Shire Council.

2.4 Public Transport

The subject site is located within reasonable proximity to an existing bus stop (Hail N Ride Service serving existing bus routes) located within an approximate 250m walking distance to the north-east of the subject site on Walsh Street. Details of public transport services in the vicinity of the subject site are summarised in **Table 2**.

Table 2 Existing Bus Services

Service	Route	Peak Frequency	Nearest Stop
850	Atherton, Tolga, Walkamin, Mareeba stops, Koah, Speewah, Kuranda stops, Cairns	Only comes twice a day	250 m (Walsh Street near Rankin Street)

2.5 Crash History

To highlight any existing safety deficiencies on the external road network within the vicinity of the subject site, SLR have undertaken a review of DTMR crash data for the study area. Crashes are reported for the following periods, noting that only data collected within the last five years has been analysed herein:

- Fatal crashes: January 2018 to December 2023.
- Non-fatal casualty crashes: January 2018 to December 2023.

Reflective of the above, DTMR crash data for the study area within the vicinity of the site is summarised on **Figure 3** with details and DCA codes summarised in **Table 3**.

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Figure 3 DTMR Crash Data Summary

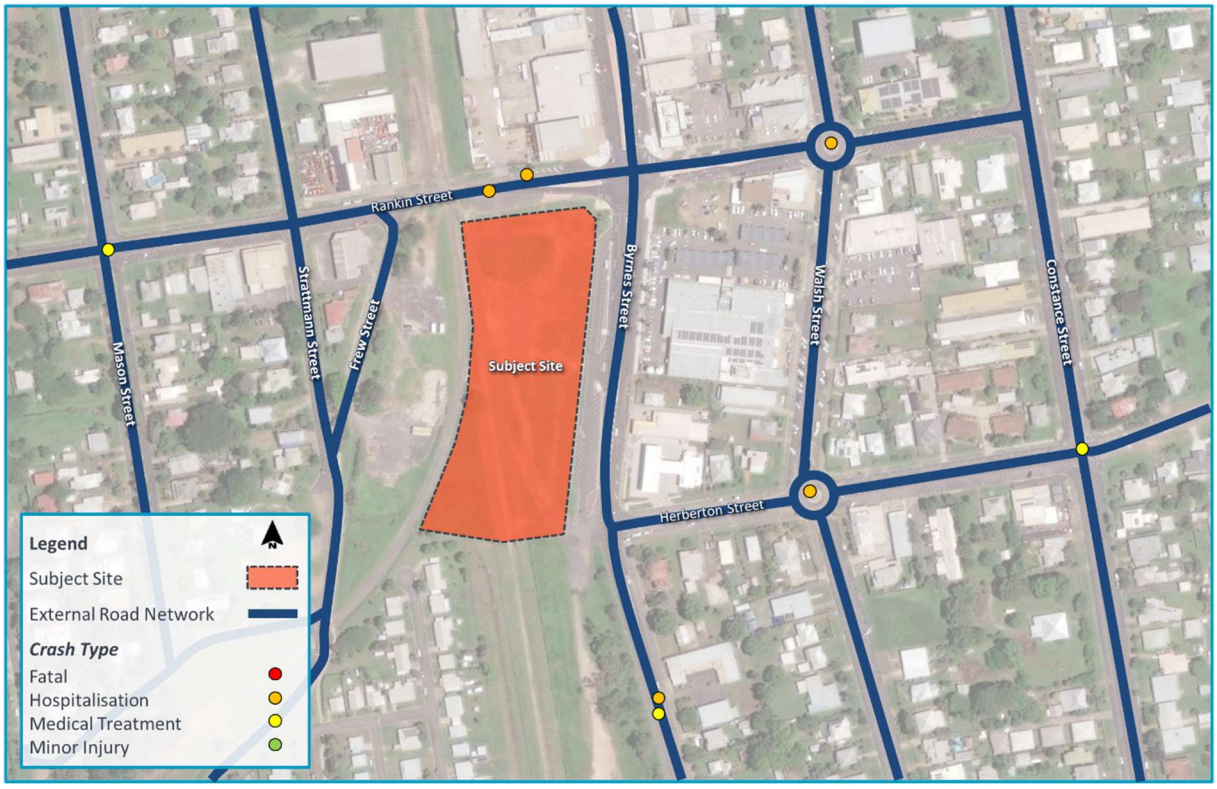


Table 3 Details of Reported Crashes (2018 – 2023) near the Proposed Development

Crash ID	Year	Severity	DCA Code	Description
107327	2019	Hospitalisation	104	Vehs Adjacent Approach: Thru-Right
129215	2019	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
205890	2022	Medical treatment	101	Vehs Adjacent Approach: Thru-Thru
24043	2021	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
244605	2022	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
246901	2018	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
24849	2018	Minor injury	101	Vehs Adjacent Approach: Thru-Thru
268078	2019	Medical treatment	202	Vehs Opposite Approach: Thru-Right
280500	2022	Medical treatment	101	Vehs Adjacent Approach: Thru-Thru
324419	2021	Hospitalisation	408	Vehs Manoeuvring: Entering From Footway
362877	2022	Hospitalisation	101	Vehs Adjacent Approach: Thru-Thru
372828	2020	Hospitalisation	408	Vehs Manoeuvring: Entering From Footway
372931	2021	Hospitalisation	303	Vehs Same Direction: Right Rear
387175	2019	Minor injury	703	Off Path-Straight: Left Off Cway Hit Object

The following can be surmised from a review of the crash data:

- There were no fatal crashes reported in the vicinity of the subject site.

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- The crashes reported in the vicinity of the site were reported as Medical Treatment or Hospitalisation.
- The reported crashes were located at intersections, with no crashes reported mid-block.

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3.0 Development Overview

3.1 Proposed Development

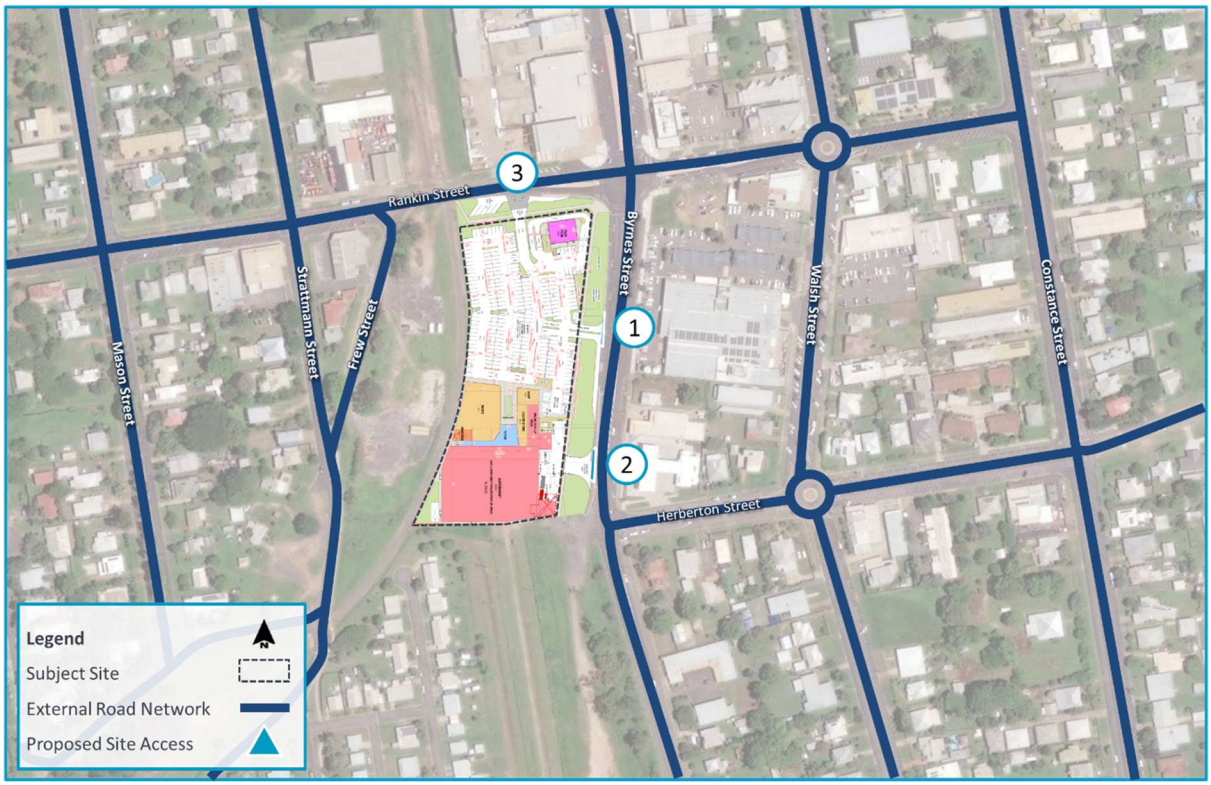
Based on the plans prepared by Thomson Adsett, which are included at **Appendix A**, it is proposed to develop the site for a proposed mixed-use development comprising a shopping centre (including a Woolworths supermarket), a food & drink outlet, and shop land uses. The land uses and associated yields proposed as part of the development are described in terms of Gross Floor Area (GFA) and Gross Leasable Floor Area (GLFA) in **Table 4**. Note that all floor areas have been extracted from the architectural plans and are current at the time of preparing this report.

Table 4 Development Summary

Tenancy	Land Use	Yield (GFA)	Yield (GLFA)
Supermarket (Woolworths)	Shopping Centre	4,945m²	4,863m²
Shops			
Fast Food	Food and Drink Outlet	270m²	270m²
Total		**5,215m²**	**5,133m²**
Car parking (including parking for persons with a disability)		*253 spaces*	

The development layout and the proposed site access locations are mapped on **Figure 4**.

Figure 4 Development Layout and Site Access



3.2 Site Access and Car Parking

The development's proposed vehicular access arrangements are summarised as follows:

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- Access 1: Byrnes Road – Passenger Vehicles Only
    - Left-in, left-out driveway designed to accommodate entry and exit for passenger vehicles.
- Access 2: Byrnes Road – Service Vehicles Only
    - Left-in, left-out driveway designed to accommodate entry and exit for service vehicles only, up to an Articulated Vehicle (**AV**).
- Access 3: Rankin Street – Passenger and Service Vehicles
    - Left-in, all movements out driveway designed to accommodate entry and exit for passenger vehicles and service vehicles up to a Heavy Rigid Vehicle (**HRV**) in size.

3.3 Servicing

The southern driveway on Byrnes Street and the Rankin Street driveway are intended to accommodate service vehicle access to and from the site, although their design varies based on the type of service vehicle access proposed at each driveway. The service vehicle driveway to Byrnes Street will facilitate service vehicles up to an AV in size for the supermarket. The access to Rankin Street will provide access for service vehicles up to a HRV servicing the fast-food tenancies. Swept path figures are included at **Appendix B**.

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4.0 Car Parking Provision

4.1 Statutory Requirements

Table 9.4.3.3B – Vehicle Parking and Service Vehicle Spare Requirements of the MSC Planning Scheme specifies the car parking rates for developments within the Centre Zone. The applicable parking rates for the proposed land uses are presented in **Table 5**.

Table 5 Schedule 7 Car Parking Rates – Centre Requirement

Land Use	Yield (GFA)	Car Parking Rate (inside the Centre Zone)	Requirement
Shopping Centre	4,945m²	One space per 50m² or part thereof of GFA up to 400m² GFA and one space per 25m² or part thereof of GFA above 400m²	190 spaces
Food and Drink Outlet	270m²	One space per 50m² or part thereof of GFA up to 400m² GFA	6 spaces
Total			**196 spaces**

Given that the development proposes to provide a total of 253 car parking spaces (a 57-space surplus), the development is considered to have met the minimum car parking requirements of MSC's Planning Scheme.

It is noted that an additional 4 motorcycle bays are also provided onsite.

4.2 PWD Car Parking Provision

The Building Code of Australia (BCA) stipulates the People with Disability (PWD) car parking requirements for a building based on the class of building. The BCA requirements for each class of building proposed as part of the development are as follows:

- Shop (Class 6) buildings require one PWD space for every 50 car parking spaces or part thereof.

The PWD car parking requirement in accordance with the BCA has therefore been calculated using a rate of one PWD space for every 50 car parking spaces or part thereof. The parking requirement of 196 spaces results in the need to provide four (4) PWD spaces.

It is proposed that four (4) PWD parking spaces will be provided in front of the shopping centre and another in front of the fast food building, resulting in a total of five (5) PWD spaces across the site. The development therefore exceeds the BCA requirement with respect to PWD car parking provision when based on the required overall car parking rate.

The locations of the PWD spaces have been designed to provide ease of access to/from the entry (doorways) of the relevant buildings.

4.3 Caravan and Recreational Vehicle Parking

It is noted that there is existing caravan and recreational vehicle (RV) parking provided in the road reserve along the sites Byrnes Street frontage. Through the development of the site, it is not feasible to retain this facility whilst also enabling access to the proposed development.

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It is understood that this issue has been discussed with Council officers who identified the desirable provision of some caravan or RV parking within the site.

Whilst the current development plans, included in **Appendix A**, do not provide caravan parking within the site, given the parking surplus currently achieved, there may be provision to modify the plans to provide some caravan or RV parking onsite should MSC require it. One caravan/RV space would likely require the consolidation of two typical passenger vehicle parking spaces.

4.4 Taxi Facilities

It is proposed that a taxi bay of sufficient size to accommodate two taxis will be provided on site. The provision of taxi facilities is provided in line with the requirement outlined in State Code 6.

The taxi bay is located close to the front entrance of the shopping centre building (i.e. supermarket and adjacent shops), with direct access to the footpath. Passengers using the taxi bay do not need to cross any vehicle circulating aisles to access the supermarket area.

The taxi bay is located reasonably close to the site exit so that taxis exiting the site from taxi bay are able to do so with minimum delays.

The design of the taxi bay enables taxis to stand parallel to the kerb, allowing taxis at the front of the bay to exit easily and for taxi behind to move forward. The design allows for taxis to move in a forward direction at all times (no reverse movements). The width of the bay enables a taxi at the rear of the bay to pass a taxi propped at the front of the bay.

4.5 Bicycle Parking

Table 9.4.3.3D – Bicycle Parking and End of Trip Facility Requirements of the MSC Planning Scheme specifies the bicycle parking rates for proposed land uses. The bicycle provision specified is presented in **Table 6**.

Table 6 Bicycle Parking Requirement

Land Use		Yield	Bicycle Parking Rate	Requirement
Shopping Centre	Employee	80 Staff	Secure bicycle storage for 8% of building staff (based on one person per 60m² GLA).	7 bicycle parking spaces
	Visitors	4,863m² GLFA	One space per 500m² GLA or part thereof for centres under 30,000m²	10 bicycle parking spaces
Food & Drink Outlet		270m² GFA	One space per 100m² GFA.	3 bicycle parking spaces

20 bicycle racks will be provided across the site. This includes the following provision:

- 7 secured bicycle parking spaces for staff.
- 13 publicly accessible spaces for the use of visitors.

This provision is in accordance with the bicycle parking requirements of MSC's Planning Scheme.

4.5.1 End of Trip Facilities

Table 9.4.3.3D – Bicycle Parking and End of Trip Facility Requirements of the MSC Planning Scheme also specifies the requirement for end of trip facilities for shopping centres,

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including the number of showers and lockers. The end of trip facility requirements of MSC is presented in **Table 7**.

Table 7 End of Trip Facility Requirements

EOT Facility	Yield	Rate	Requirement
Showers	7 bicycle parking spaces	Accessible showers at the rate of one shower per 10 bicycle spaces provided or part thereof	1 Accessible Shower
Lockers	80 Staff	20% of building staff (based on one person per 60m² GLA to cater for walkers, cyclists and other active users.	20 Lockers

It is proposed that lockers will be provided within the individual tenancies for the use of staff, with an accessible shower provided within the onsite amenities.

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5.0 Servicing Provisions

5.1 Statutory Requirements

The servicing provisions proposed as part of the development have been designed in accordance with the MSC Planning Scheme, and are summarised below in **Table 8**:

Table 8 Service Vehicle Provisions

Land Use	MSC Requirement	
Shopping Centre	One AV space per 1,000m²; and one SRV space per 500m²; or one SRV space per every 2 specialty uses, whichever the greater.	5 x AV spaces 10 x SRV spaces
Food & Drink Outlet	One HRV space.	1 x HRV Space

Given the proposed tenancy breakdown of the development, the above servicing provision for the shopping centre component is considered excessive for the expected servicing demands. Servicing for the development has been provided based on the anticipated demands for the proposed development.

It is proposed that servicing for the shopping centre will primarily occur within a central loading area located in the south-eastern corner of the site. This will be accessed via the 'service vehicle only' crossover to Byrnes Street.

Based on the size of the tenancies proposed, service for vehicles an AV in size will occur solely for the supermarket component of the shopping centre. As outlined previously, the tenant for the proposed shopping centre will be Woolworths. Woolworths have confirmed that a single AV loading bay is required to service the development, with servicing to be scheduled. This will ensure that the supermarket loading dock is capable of catering for all servicing requirements (deliveries, refuse collection etc) for the supermarket.

It is proposed that servicing will occur with vehicles up to a Small Rigid Vehicle (**SRV**) in size for the remaining retail tenancies. Within the centralised loading area, provision has been made for two SRV's to stand at one time, which is considered suitable to cater for the 'specialty' retail tenancies within the shopping centre.

The centralised loading area within the south-eastern corner will be separated from the 'Direct to Boot' circulation area using bollards and line marking. This will ensure that the primary servicing area will operate separate to the public parking area with passenger vehicles unable to enter the loading area.

For the food & drink outlet, servicing for vehicles up to a HRV has been catered for. Due to the spatial requirements of the HRV swept path, it is proposed that servicing for vehicles for HRV's will occur outside of peak operational periods to ensure they are able to manoeuvre into the loading bay.

Based on the provisions above, it is considered that the development adequately caters for the servicing requirements of each land use within the site.

Swept path assessments have been included in **Appendix B** which demonstrate how service vehicles access, circulate and manoeuvre within the development. These confirm that the swept path of each design vehicle can be adequately accommodated.

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5.2 Refuse Collection

For the supermarket tenancy within the Shopping Centre, it is proposed that refuse collection will occur at the dedicated loading dock. For the remaining retail tenancies, refuse collection will occur within the dedicated loading areas identified in the development plans.

For the food & drink outlet, refuse collection will occur in the dedicated loading area adjacent to the tenancy.

Swept path assessments have been included in **Appendix B**, which show the refuse collection manoeuvres.

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6.0 Design Considerations

6.1 Overview

A review of the proposed internal site layout was undertaken against the following relevant documents:

- Australian Standard for Parking Facilities Part 1: Off-street car parking (AS2890.1).
- Australian Standard for Parking Facilities Part 2: Off-street commercial vehicle facilities (AS2890.2).
- Australian Standards for Parking Facilities Part 6: Off-street parking for people with disabilities (AS2890.6).
- Austroads Guide to Road Design Part4A: Unsignalized and Signalised Intersections (AGRD4A).

6.2 Vehicular Access

Vehicular access to/from the development will be provided via driveway crossovers to both Rankin Street and Byrnes Street the form of the following:

- Access 1: Byrnes Steet
  - Priority controlled intersection which is restricted to a left-in, left out access.
  - The form of the intersection including the driveway design has been based on the swept path requirements of B99 passenger vehicles, taking into consideration the design requirements outlined in AS2890.1.
  - The length and taper of the auxiliary left-turn lane into the site has been designed in accordance with the *Austroads Guide to Road Design* (AGRD4A), which provides a total lane length of 50m.
- Access 2: Byrnes Steet
  - Priority controlled intersection which is restricted to left-in, left out access.
  - The form of the intersection including the driveway design has been based on the swept path requirements of an Articulated Vehicle, taking into consideration the design requirements outlined in AS2890.2.
- Access 3: Rankin Street
  - Priority controlled intersection which is restricted to a left-in, all movements out access.
  - The form of the intersection including the driveway design has been based on the swept path requirements of a HRV, taking into consideration the design requirements outlined in AS2890.2.
  - The length and taper of the auxiliary left-turn lane into the site has been designed in accordance with the Austroads Guide to Road Design (AGRD4A), which provides a total lane length of 22m.
  - The access to Rankin Street provides sufficient separation to the rail line to the west. From the access there is approx. 26m of queueing available, which is sufficient to cater for vehicles up to a b-double in size to queue clear of the

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access. As no right turn is proposed into the access, there will be no queueing from the site access back towards the rail line.

The following sections report the results of a detailed sight distance assessment and turn warrants assessment for the proposed site accesses.

6.2.1 Sight Distance Assessment

SLR has undertaken a review of the available sight distance at the proposed site accesses against the requirements described within Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD4A). **Table 9**, **Table 10** and **Table 11** summarise the inputs and results of the sight distance assessment, with **Figure 5** showing the extent of sight distance at the two Byrnes Street and Rankin Street access driveway locations, as well as viewing ranges in each direction.

It is noted that the northern approach for both the Byrnes Street accesses are not required as the development does not propose any right-out movements at these locations.

Table 9 Sight Distance Assessment Summary – Byrnes Street Site Access (Passenger Vehicles Only)

Parameter	Southern Approach	Northern Approach
Critical Requirement	Safe Intersection Sight Distance (SISD)	**N/A– No Right Turn Out**
Posted Speed	60km/hr	
Offset to Roadway	5m	
Based SISD Requirement	123m Standard	
Available Sight Distance	Over 150m	
Compliance Achieved	**Yes**	

Table 10 Sight Distance Assessment Summary – Byrnes Street Site Access (Service Vehicles Only)

Parameter	Southern Approach	Northern Approach
Critical Requirement	Safe Intersection Sight Distance (SISD)	**N/A– No Right Turn Out**
Posted Speed	60km/hr	
Offset to Roadway	5m	
Based SISD Requirement	123m Standard	
Available Sight Distance	Over 150m	
Compliance Achieved	**Yes**	

Table 11 Sight Distance Assessment Summary – Rankin Street Site Access

Parameter	Eastern Approach	Western Approach
Critical Requirement	Safe Intersection Sight Distance (SISD)	
Posted Speed	40km/hr	
Offset to Roadway	5m	
Based SISD Requirement	73m Standard	73m Standard

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Parameter	Eastern Approach	Western Approach
Available Sight Distance	Over 100m	Over 100m
Compliance Achieved	**Yes**	**Yes**

Figure 5 Site Accesses – Available Sight Distances

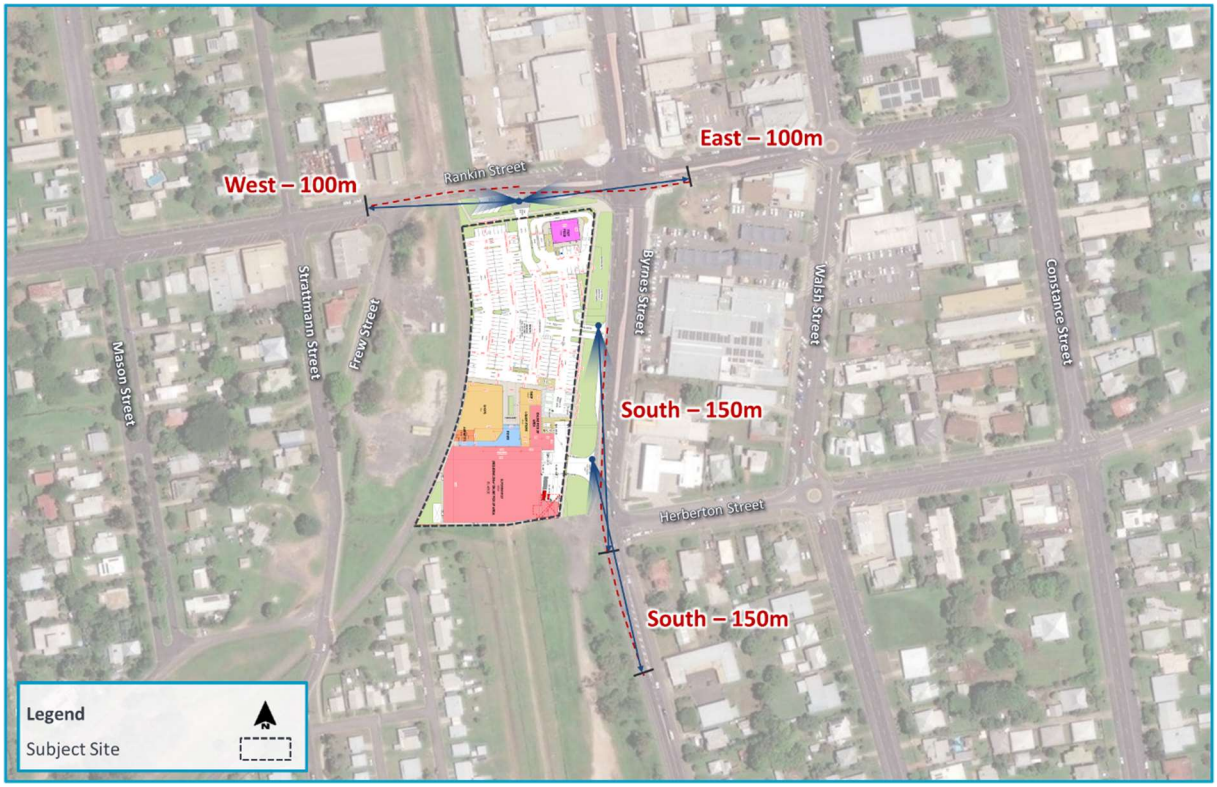


Table 9, **Table 10** and **Table 11** show that the proposed site accesses will allow for the required SISD in all directions. Therefore, the proposed locations for the driveways are deemed to be safe.

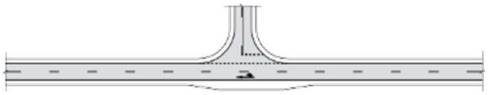
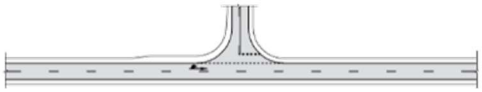
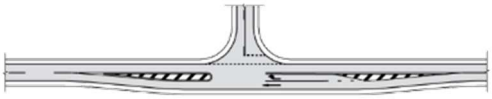
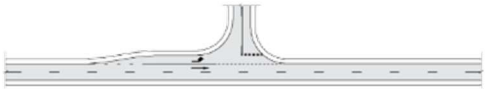
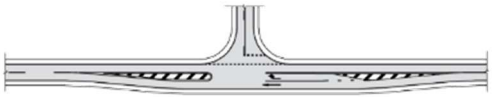
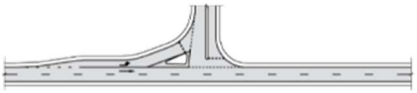
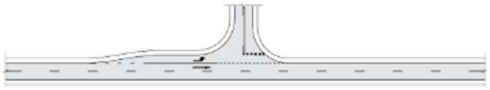
6.2.2 Turn Warrant Assessments

Turn warrant assessments have been undertaken to establish the desirable form of both the Byrnes Street and Rankin Street accesses in accordance with the industry research summarised within the *Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing Management* (AGTM66-20).

The warrants provide guidance where turning lanes should be provided based on design traffic volumes. A pictorial description of the various turn treatments considered is provided on **Figure 6** and **Figure 7** to assist with reader interpretation of this assessment.

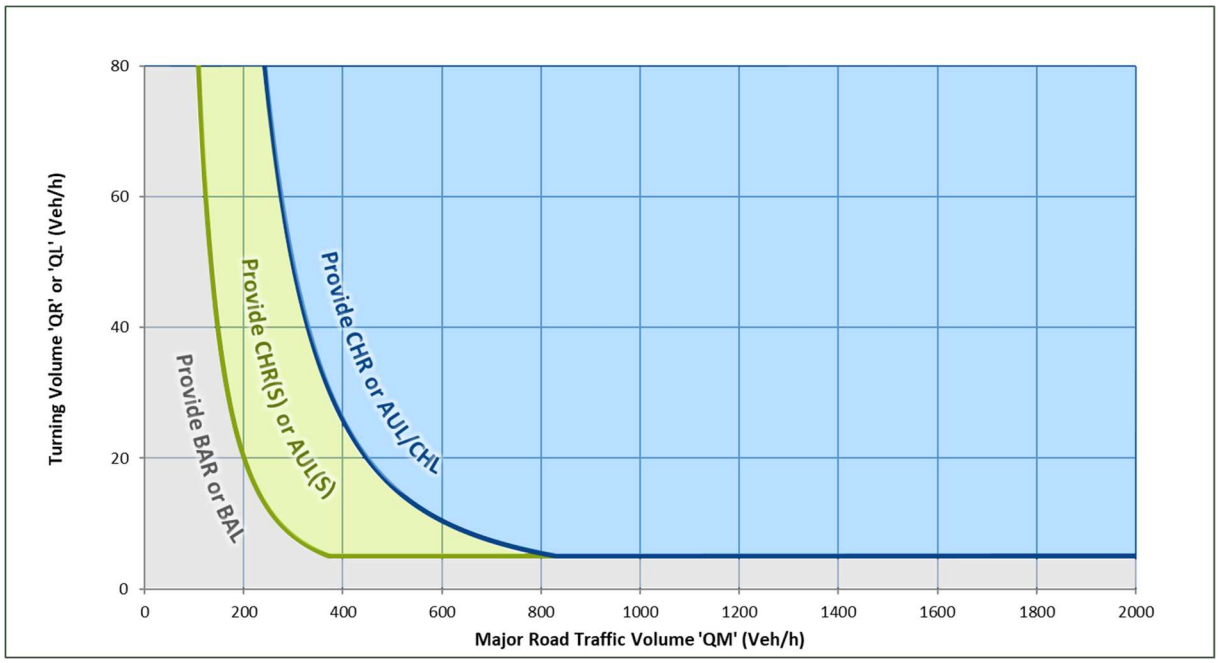
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Figure 6 Turn Treatment Types

Acronym	Right Turn Treatment	Left Turn Treatment
BAR or BAL	 BAR (Basic Right Turn)	 BAL (Basic Left Turn)
CHR(S) or AUL(S)	 CHR(S) (Channelised Right Turn [Short])	 AUL(S) (Auxiliary Left Turn [Short])
CHR or AUL/CHL	 CHR (Channelised Right Turn)	 CHL (Channelised Left Turn)
		 AUL (Auxiliary Left Turn)

*Source: AGTM6-20

Figure 7 Turn Treatment Types and Volume Criteria



6.2.2.1 Byrnes Street/Site Access

Figure 8, **Figure 9** and **Figure 10** summarise the turn warrant assessments undertaken for the proposed Byrnes Street site access intersection at the 2037 design horizon for the 'With Development' traffic scenario during the Thursday AM, Thursday PM, and Saturday peak hour periods respectively. The assessment is based on the following criteria:

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- Design Domain – Normal Design Domain.
- Design Speed – <70km/h (Posted 60km/h).
- Left Turn Splitter Island – Not Applicable.

Figure 8 Byrnes Street/Site Access Turn Warrant Assessment – 2037 AM

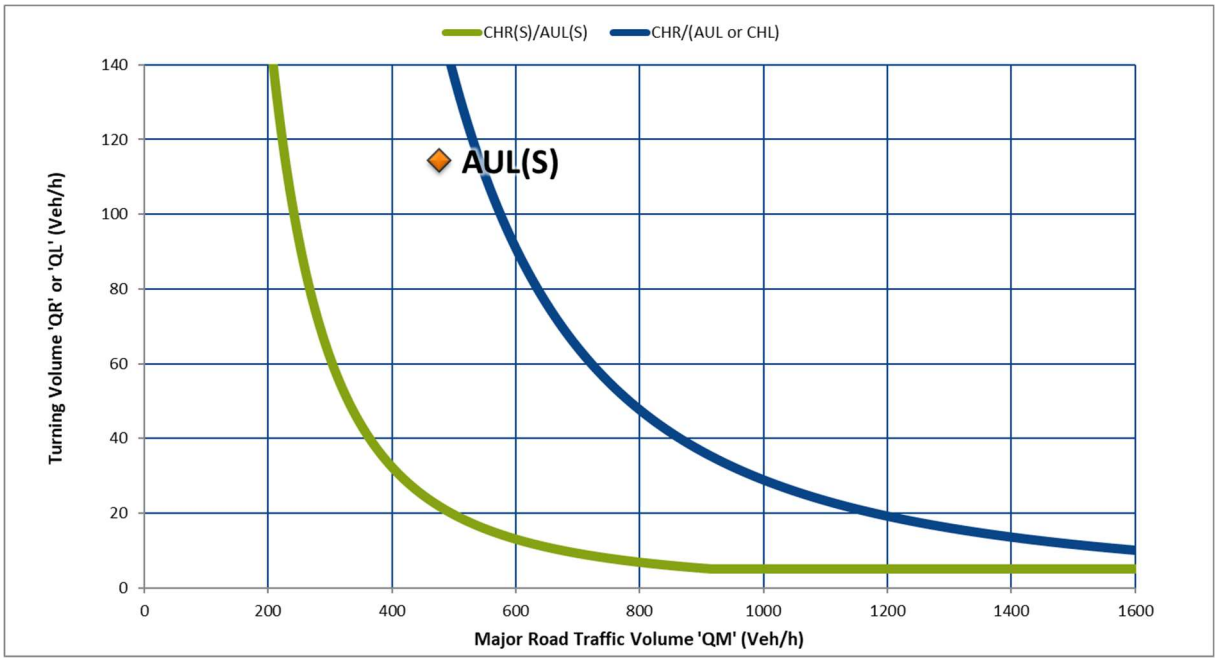
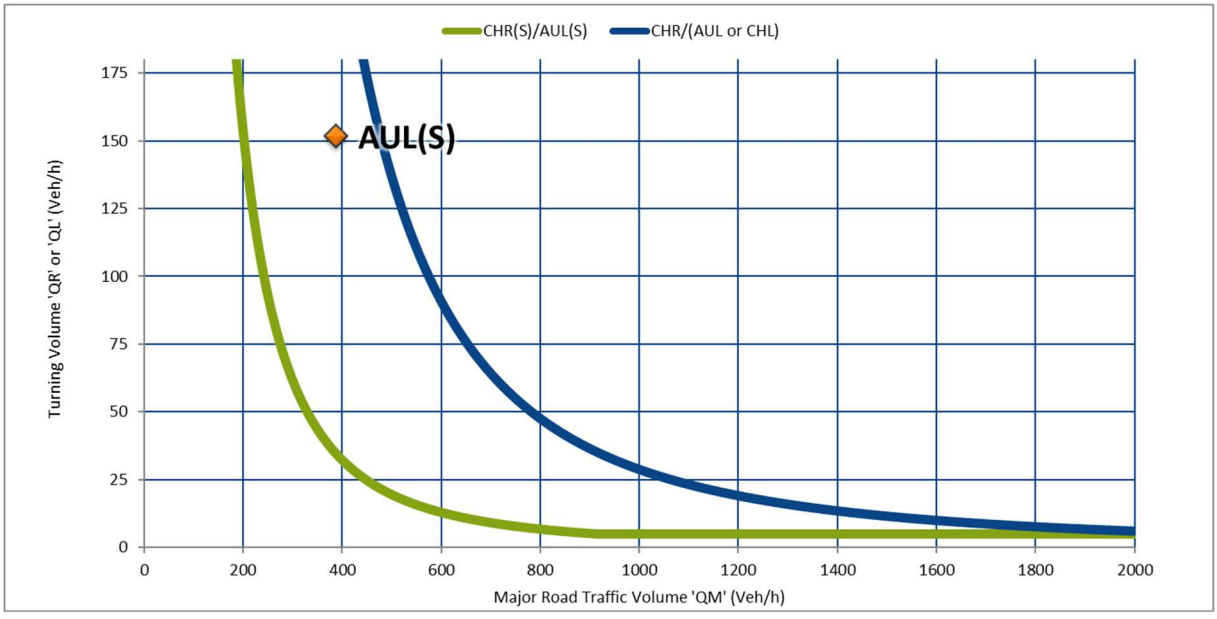


Figure 9 Byrnes Street/Site Access Turn Warrant Assessment – 2037 PM



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Figure 10 Byrnes Street/Site Access Turn Warrant Assessment – 2037 Saturday

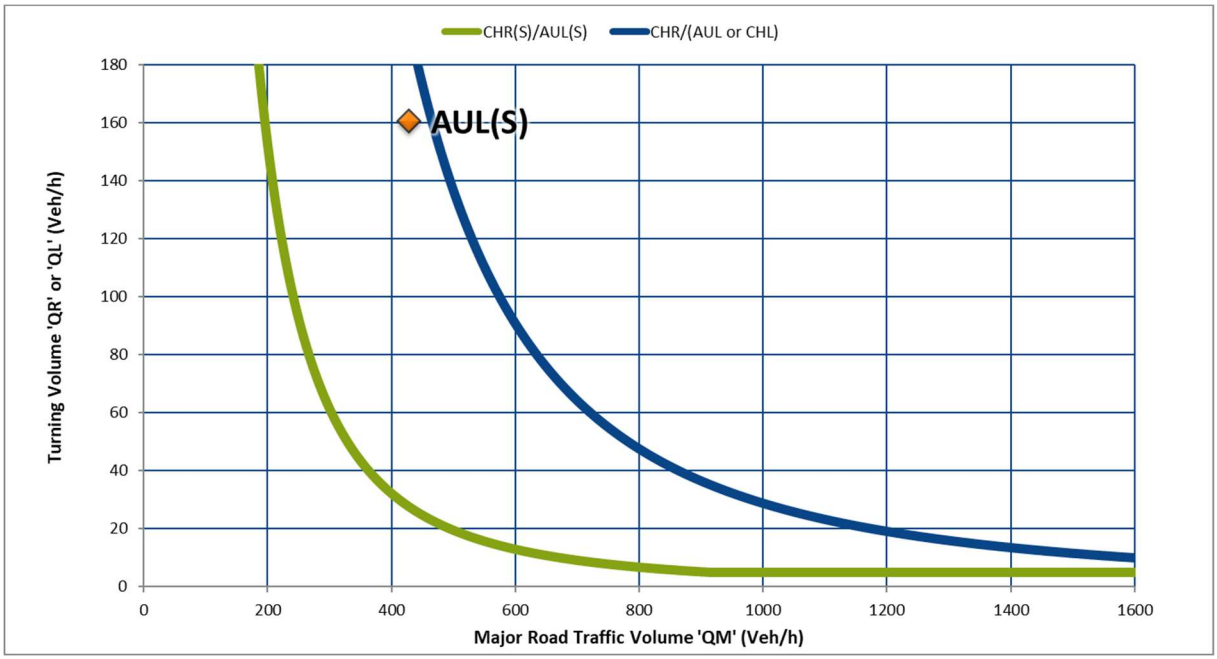


Figure 8, **Figure 9** and **Figure 10** indicate that AUL(s) treatment is required for the left turn into the site. The design of the left turn has been provided in accordance with the standards outlined in *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD044-21) for an AUL.

6.2.2.2 Rankin Street/Site Access

Figure 11, **Figure 12** and **Figure 13** summarise the turn warrant assessments undertaken for the proposed Rankin Street site access intersection at the 2037 design horizon for the 'With Development' traffic scenario during the Thursday AM, Thursday PM, and Saturday peak hour periods respectively. The assessment is based on the following criteria:

- Design Domain – Normal Design Domain
- Design Speed – <70km/h (Posted 40km/h)
- Left Turn Splitter Island – Not Applicable

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Figure 11 Rankin Street/Site Access Turn Warrant Assessment – 2037 AM

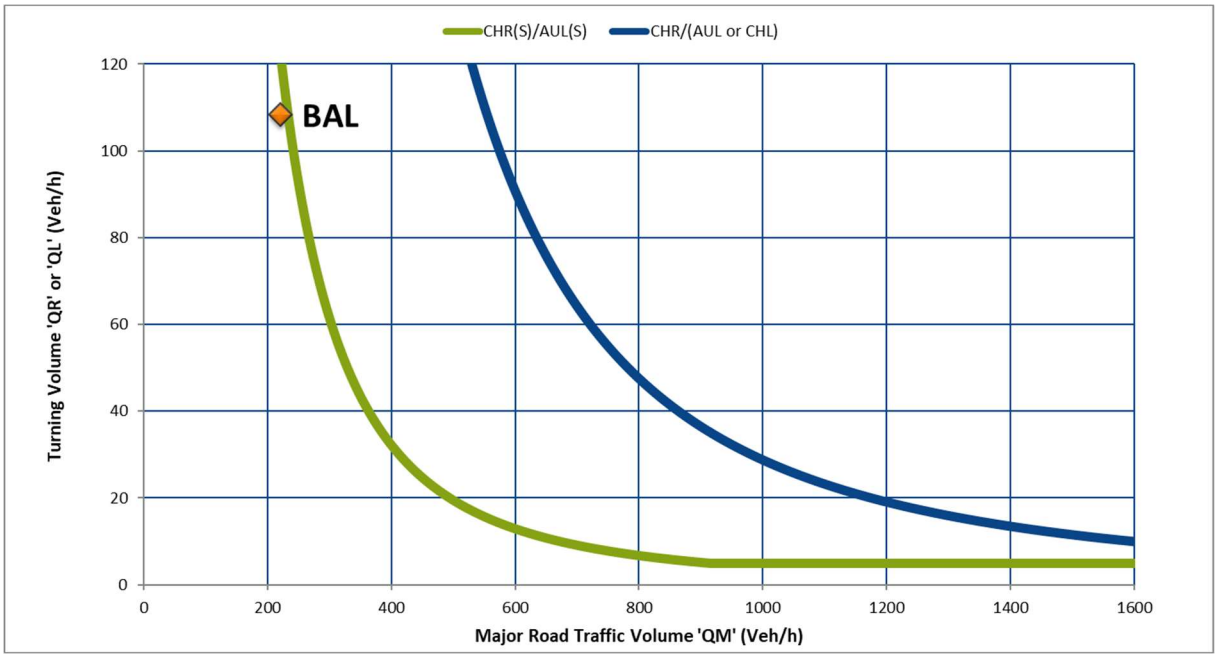
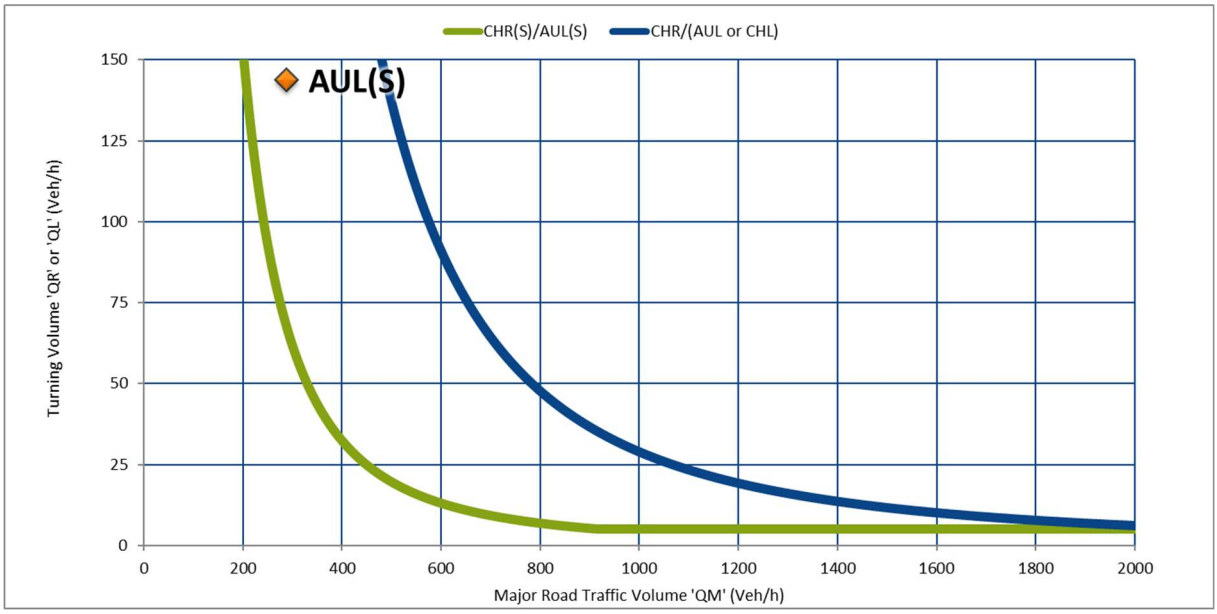


Figure 12 Rankin Street/Site Access Turn Warrant Assessment – 2037 PM



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Figure 13 Rankin Street/Site Access Turn Warrant Assessment – 2037 Saturday

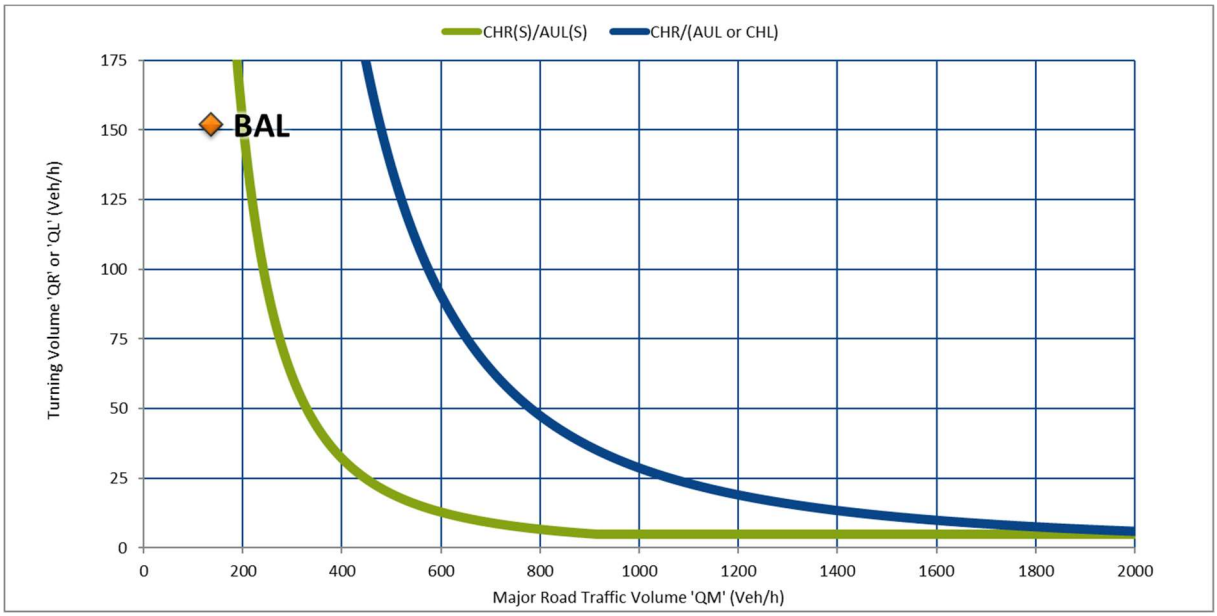


Figure 11, **Figure 12** and **Figure 13** indicate that AUL(s) treatment is required for the left turn into the site. The design of the left turn has been provided in accordance with the standards outlined in *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (AGRD044-21) for an AUL.

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6.3 Queuing Provisions

The following is noted with respect to the proposed vehicle queuing provisions across the development:

- The Australian Standard AS2890.1 specified that for a car park with capacity of more than 100 cars, that queue storage be provided that is:
  - 1st 100 cars: 3% of capacity;
  - 2nd 100 cars: 2% capacity;
  - Additional cars: 1% of capacity;
  - A minimum queueing length of 3 cars/lane.
- Based on AS2890.1, the proposed car park for the development with a capacity for 253 cars would require queue storage for six (6) cars in total divided between two driveways into the site.
- The proposed car park for the development provides queue storage for approximately four (4) car lengths from Byrnes Street plus approximately five (5) car lengths from Rankin Street. In total, over nine (9) car length of internal queueing is provided across the development, which is compliant with AS2890.1.

6.4 Car Parking and Circulation

The design of the proposed car parking and circulation arrangements have been assessed against the requirements of AS2890.1. A summary of the assessment is presented in **Table 12**.

Table 12 Car Parking Area and Circulation Compliance Review

Element	Proposed Design	AS2890.1 Compliant
90’ Car Parking Space Dimensions (User Class 3A)	2.6m x 5.4m	Yes
Parking Aisle (User Class 3A)	6.6m min	Yes
Circulating Roadway Width: One Way Two Way	 3.0m min 7.0m min	 Yes Yes
Motorcycle Parking Spaces	1.2m x 2.5m	Yes

As demonstrated within **Table 12**, the dimensions for car parking and circulation roads are compliant with AS2890.1.

6.5 Public Transport Provision

Outlined in prelodgement meetings held with TMR, it was noted that there may be a future requirement for a bus stop to be provided along the site frontage to Byrnes Street. Whilst it is not proposed that the bus stop will be provided as part of the development, the design of the accesses to Byrnes Street as taken into consideration the spatial requirements of a bus stop.

A concept drawing has been prepared showing the provision of an indented bus stop along the site frontage suitable to facilitate a 14.5m rigid bus, and is included in **Appendix F**. It is noted however that an in-line kerb bus stop would be reasonable given the very low demand and forecast dwell time.

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7.0 Assessed Traffic Demands

7.1 Existing Traffic Demands

In order to ascertain the existing traffics demands on the road network surrounding the site, SLR obtained traffic count data for the following intersections:

- Byrnes Street / Lloyd Street.
- Byrnes Street / Rankin Street.
- Byrnes Street / Herberton Street.
- Byrnes Street / Basalt Street.
- Byrnes Street / Kenneally Street / Costin Street.

Traffic count data for the above intersections was obtained by commissioning Austraffic to conduct traffic surveys for the Thursday AM (AM), Thursday PM (PM) and Saturday (SAT) peak periods. The traffic surveys, undertaken on Thursday 5 May 2022 and Saturday 7 May 2022, established the following peak hour periods (at the site frontage):

- AM Peak Hour: 8:00am-9:00am.
- PM Peak Hour: 4:30pm-5:30pm.
- SAT Peak Hour: 11:00am-12:00pm.

The traffic volumes surveyed during the network peak hour periods are included within the traffic network diagrams included in **Appendix C**, along with the assessed traffic volumes reflecting all the assumptions below.

7.2 Development Traffic Demands

Peak hour traffic demand has been forecast for the subject development based upon survey data provided in the following sources:

- *Trip Generation Surveys Small Suburban Shopping Centres Analysis Report* (Bitzios, 2018). (Bitzios)
- *Guide to Traffic Generating Developments* (RTA, 2002). (RTA GTGD).

Table 13 describes the data sources and categories used for each of the corresponding land uses within the development.

Table 13 Data Sources for Trip Generation

Land Use	Data Source	Category/Trip Generation
Shopping Centre	Bitzios	Using the average vehicle trips per 100m² GLFA rates for each of the respective peak periods. Found in Section 4.3 of the report prepared by Bitzios.
Fast Food Outlet	RTA GTGD	It is noted that there is already a McDonalds located within the vicinity of the site, and as such the application of the higher rate (representative of a McDonalds) is not necessary, with the lower generation rate applied. For the Thursday AM Peak, it has been assumed that the fast-food tenancy will generate 80% of the PM Peak demand.

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The adopted peak hour traffic generation rates for the development are presented in **Table 14**, which also outlines the reduction factors where applicable to account for any anticipated cross utilisation of trips within the site (i.e., where a customer visits more than one tenancy within the site).

Table 14 Development Trip Generation Rates

Land Use	Yield	Trip Rates			Cross Utilisation Reduction
		AM Peak	PM Peak	SAT Peak	
Supermarket	4,863m² GLFA	7.76vph/100m²	10.41vph/100m²	11.11vph/100m²	0%
Fast Food	1 site	80vph/site	100vph/site	100vph/site	15%

The resultant traffic demands based on the traffic generation rates above are outlined in **Table 15**.

Table 15 Development Trip Demand Forecast

Land Use	Trip Generation (In/Out)		
	AM Peak	PM Peak	SAT Peak
Supermarket	377vph	506vph	540vph
Fast Food	68vph	85vph	85vph
Total	**445vph**	**591vph**	**625vph**

The proportions of 'new' trips (including diverted drop-in trips from outside the local road network) and 'drop-in' trips (undiverted drop-in trips from within the local road network) for development generated traffic during the network peak hour periods have been adopted as presented in **Table 16**.

Table 16 Development Trip Demand Forecast

Land Use	New Trips (New Trips and Diverted Drop-in Trips)	Drop-In Trips (Undiverted Drop-in Trips)
Supermarket	75%	25%
Fast Food	50%	50%

7.3 Traffic Distribution

7.3.1 Directional Split

The following inbound/outbound trip directional splits have been adopted for each assessed land use:

- All uses: 50% inbound / 50% outbound.

7.3.2 External Traffic Distribution – New Trips

The distribution of new trips to the external road network has been assigned according to that presented in **Table 17**. These proportions were based on a review of the scale of catchment areas local to the development in the absence of any economic studies for the proposed development.

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Table 17 External Traffic Distribution – New Trips

Direction	Via	Proportion of New Trips
South	Byrnes Street	10%
South-East	Byrnes Street, Kenneally Road	10%
South-West	Byrnes Street, Costin Street	10%
East	Rankin Street, Herberton Street	25%
North	Byrnes Street	30%
West	Rankin Street	15%

7.3.3 External Traffic Distribution - Drop-in Trips

The distribution of drop-in trips through the development (which are a diversion of existing trips on the local road network into the development and back onto the external road network) take into consideration the major movements on the adjacent road network. They also take into consideration the restrictions regarding the allowable turns at the accesses and the ease of access for a 'drop-in' trip. This distribution, or routing of trips, is presented in **Table 18**.

Table 18 External Traffic Distribution - Drop-In Trips

Origin	Destination	Proportion of Drop-in Trips
South	East	0%
	North	30%
	West	5%
East	South	0%
	North	15%
	West	0%
North	South	30%
	East	15%
	West	5%
West^		0%

^ Due to the restriction on movements entering the development on Rankin Street (no right turns in) and the additional routing that would be required, it is assumed that vehicles travelling from the west will not access the development as a 'drop-in' trip.

7.4 Background Traffic Growth

An annual growth rate of 1.59% has been applied to background traffic movements to project future background traffic volumes. This growth rate was taken from TMR's 10-year growth rate in AADT along the site frontage.

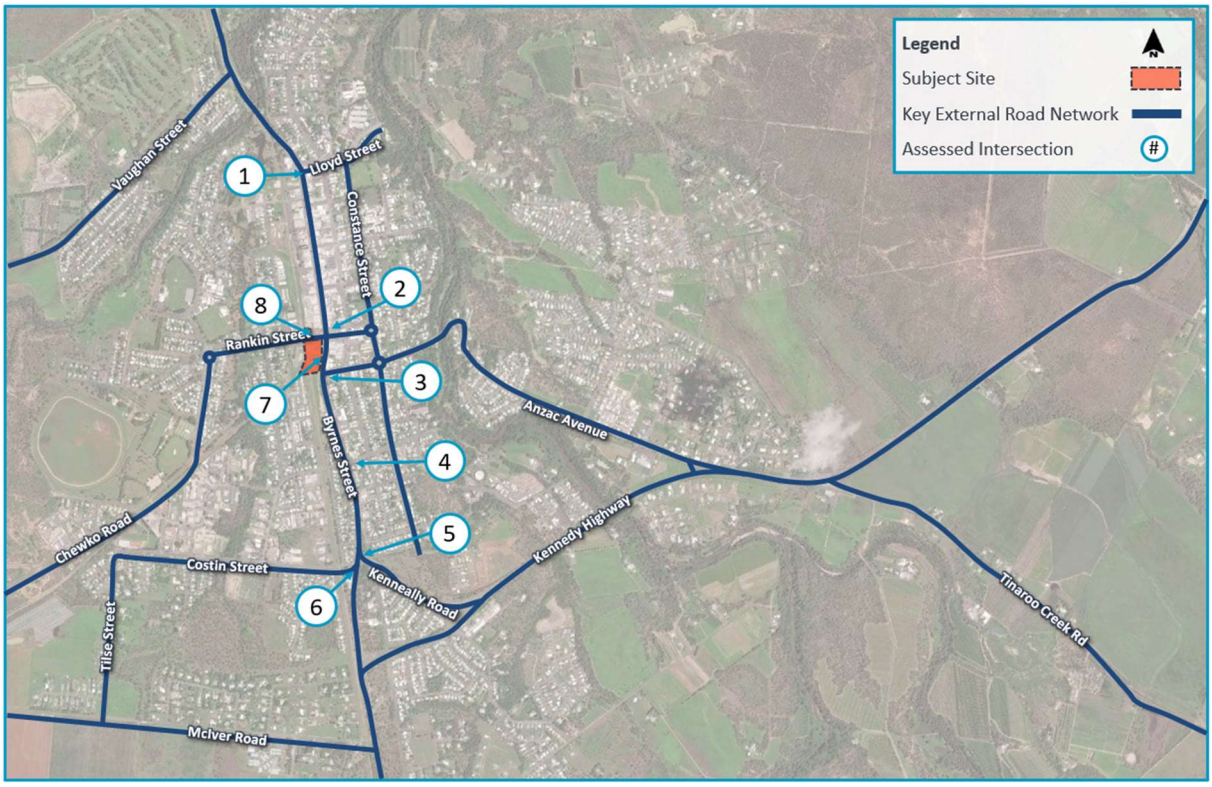
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8.0 Operational Assessment

8.1 Study Intersections

A detailed analysis of the potential traffic impacts of the proposed development on the operation of the external road network has been undertaken at the eight (8) locations identified on **Figure 14**.

Figure 14 Study Intersections



ID	Intersection	Existing Form	Future Form	Authority
1	Byrnes Street / Lloyd Street			TMR
2	Byrnes Street / Rankin Street			TMR
3	Byrnes Street / Herberton Street			TMR
4	Byrnes Street / Basalt Street			TMR
5	Byrnes Street / Keneally Road			TMR
6	Byrnes Street / Costin Street			TMR
7	Byrnes Street / Site Access	-		TMR
8	Rankin Street / Site Access	-		MSC

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8.2 Assessment Scenarios

It has been assumed that the proposed development would be completed and fully operational by 2027. Reflective of this, the following assessment scenarios have been assessed:

- State-controlled intersections:
  - **2022 'Background':** To establish existing operational conditions.
  - **2027 'Background':** To establish the year of opening baseline operating conditions in the absence of the subject development.
  - **2027 'With Development':** To identify the incremental impact of development traffic on operating conditions at the year of opening.
- Site access intersections:
  - **2027 'With Development':** To identify the incremental impact of development traffic on operating conditions at the year of opening.
  - **2037 'With Development':** To identify the incremental impact of development traffic on operating conditions at the 10-year design horizon.

The operation of the road network during the Thursday AM (AM), Thursday PM (PM) and Saturday (SAT) peak hour periods was assessed for all of the above scenarios.

8.3 Performance Criteria

8.3.1 Intersection Performance

The maximum DOS thresholds identified by AGTM12-20 for each intersection type are reproduced in **Table 19**. These parameters are considered to be relevant and appropriate for assessing the capacity and performance of an intersection, particularly for new intersections.

Table 19 Degree of Saturation Thresholds

Intersection Type	DOS Threshold
Signalised intersections	Less than or equal to 0.90
Roundabouts	Less than or equal to 0.85
Priority controlled intersections	Less than or equal to 0.80

DOS values exceeding those presented in **Table 19** indicate that an intersection is nearing is practical capacity and upgrade works may be required. Above these threshold values, users of the intersection are likely to experience increasing delays and queuing.

8.3.2 Critical Delay

The RMS (now TfNSW) Guide to Traffic Generating Developments (2002) recommends that the average delay statistic for the critical movement provides a better indication of intersection performance and safety for roundabouts and priority-controlled intersections than DOS. A summary of the delay thresholds recommended by TfNSW is provided in **Table 20**.

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Table 20 Critical Delay Thresholds

LOS	Description	Critical Delay (sec/vehicle)
A	Good operation	< 14 sec
B	Acceptable delays and spare capacity	15 – 28 sec
C	Satisfactory	29 – 42 sec
D	Near capacity	43 – 56 sec
E	At capacity, requires other control mode	57 – 70 sec

8.3.2.1 Net Worsening of Intersection Delay

The GTIA introduced a 'no net worsening' methodology for intersection delay, whereby the impact of development generated traffic requires mitigation should the increase in intersection delay under 'with-development' conditions increase by 5% or more compared with that of the 'base case' conditions. Intersection delay is calculated using the below equation at state-controlled intersections.

$$ID = \sum_{i=1}^{n} WD - \sum_{i=1}^{n} BC$$

Where: ***ID*** is the aggregate intersection-delay impact in vehicle-minutes;

WD is with-development intersection vehicle-minutes for the design peak periods. This is calculated by multiplying the with-development average delay by movement to the base case volume on each movement, thus not counting the impact as delays to development traffic, but rather only to pre-existing traffic that is affected by the additional delays;

BC is the base case intersection vehicle-minutes for the design peak periods;

n is the number of study intersections; and

i is each study intersection.

It is noted that Section 11.3.1 of the GTIA states that, where traffic generated by the subject development increases the delay to base traffic by less than 5% in aggregate, no mitigation works are required.

8.4 Intersection Assessment

For the intersection assessment undertaken with SIDRA, to capture the interactions between the intersections along the assessed corridor, the intersections were networked within SIDRA. This was considered particularly critical to capture any interaction between the signalised intersection of Byrnes Street/Rankin Street and the proposed site accesses. It also allowed for the interaction between the priority-controlled intersections of Byrnes Street/Kenneally Road, and Byrnes Street/Costin Street given there very small separation and the provision of short lanes extending between the two.

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8.4.1 Intersection 1 – Byrnes Street / Lloyd Street

The Byrnes Street / Lloyd Street intersection is currently formed as a three-legged roundabout. The existing layout and the assessed SIDRA intersection form are shown on **Figure 15**. The results of the SIDRA assessment are presented in **Table 21**. Detailed SIDRA outputs are provided at **Appendix D**.

Figure 15 Byrnes Street / Lloyd Street – Intersection Form

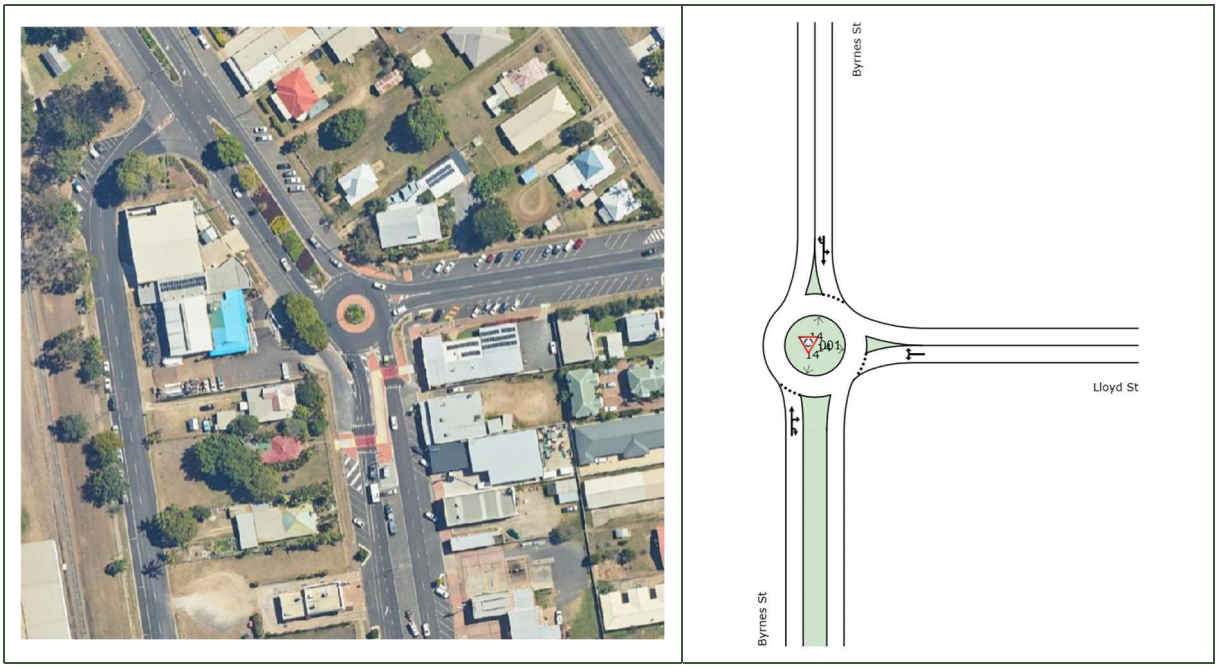


Table 21 SIDRA Outputs: Byrnes Street / Lloyd Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.43	12s	24m	0.34	12s	18m	0.31	11s	16m
2027 Background	0.47	12s	28m	0.38	12s	21m	0.2	12s	18m
With Development									
2027 With Development	0.51	12s	32m	0.43	12s	25m	0.39	12s	22m

The SIDRA analysis summarised in **Table 21** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.2 Intersection 2 – Byrnes Street / Rankin Street Intersection

The Byrnes Street / Rankin Street intersection is currently a traffic signal controlled four-way intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 16**.

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The cycle time for the three assessment periods was derived from the existing operations as observed in the Austraffic survey footage. To undertake the net delay assessment as required, to accurately compare the two scenarios (without and with development traffic) in 2027, phase times are required to be set.

Due to existing limitations within SIDRA, to run set phase times, the minimum pedestrian crossing time had to be taken into consideration. A phase time lower than the minimum pedestrian crossing time could not be applied in the timing data. This results in some ‘minor’ phases running with higher average times than what was observed.

Given the continual growth of traffic through the intersection, it is also anticipated that the phase times currently experienced will adjust over time, irrespective of the proposed development. With the signalised intersection running in isolation (no coordination along the corridor), when the demand on an approach increases, so will the respective phase times. The incremental development traffic demand on some intersection movements, i.e. right turn from north-to-west will naturally ‘call’ more green time compared to the existing Background situation.

To provide consistent phase times between the 2027 ‘Background’ and ‘With Development’, phase times that did not prejudice either scenario were utilised to provide a comparative assessment. This in turn allows for the minimum pedestrian crossing phase times to be input and run in SIDRA.

The results of the SIDRA assessment are presented in **Table 22**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 16 Byrnes Street / Rankin Street – Intersection Form

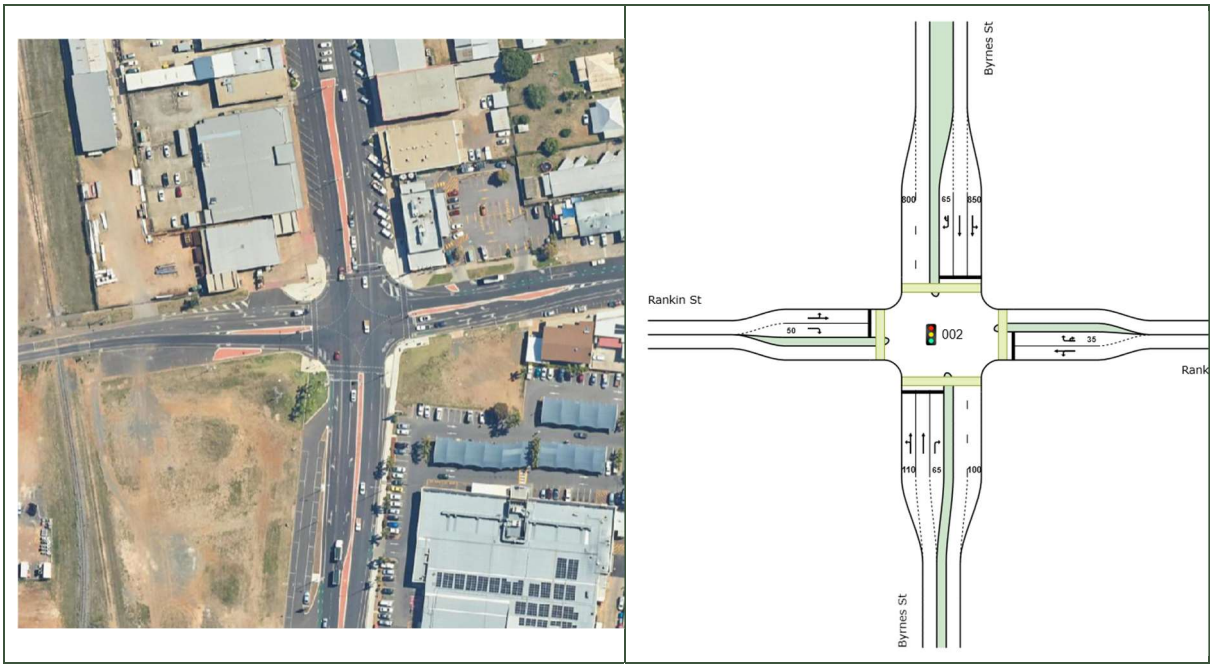


Table 22 SIDRA Outputs: Byrnes Street / Rankin Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Average Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.47	43s	116m	0.53	45s	129m	0.55	40s	130m
2027 Background	0.58	48s	137m	0.75	54s	164m	0.79	48s	170m
With Development									
2027 With Development	0.86	43s	94m	0.81	55s	109m	0.67	46s	110m

The SIDRA analysis summarised in **Table 22** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

The reduction in the 95%tile queue experienced at the intersection is attributed to the existing traffic passing the site that will become ‘drop-in’ trips to the centre. This reallocation of existing traffic will result in a redistribution on the existing network and the reduction of the critical queue lengths.

8.4.3 Intersection 3 – Byrnes Street / Herberton Street Intersection

The Byrnes Street / Herberton Street intersection is currently a priority-controlled intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 17**. The results of the SIDRA assessment are presented in **Table 23**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 17 Byrnes Street / Herberton Street – Intersection Form

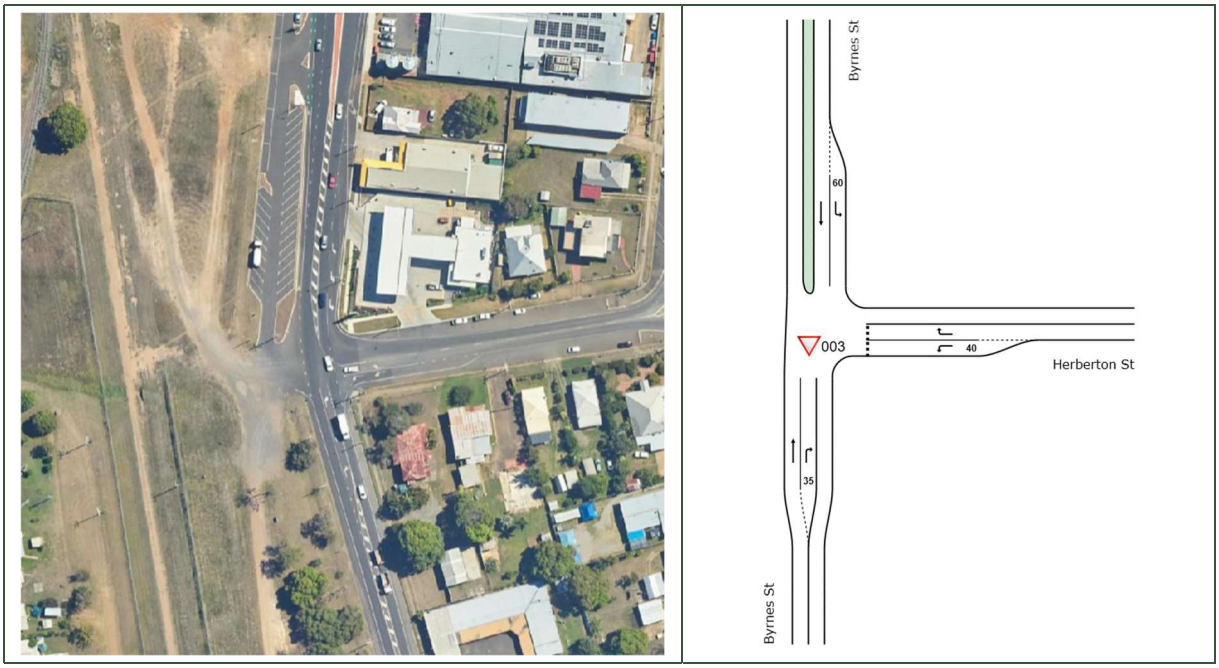


Table 23 SIDRA Outputs: Byrnes Street / Herberton Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.31	21s	12m	0.26	19s	9m	0.22	18s	7m
2027 Background	0.35	24s	15m	0.29	21s	11m	0.24	20s	8m
With Development									
2027 With Development	0.42	43s	18m	0.61	49s	15m	0.60	43s	16m

The SIDRA analysis summarised in **Table 23** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.4 Intersection 4 – Byrnes Street / Basalt Street Intersection

The Byrnes Street / Basalt Street intersection is currently a priority-controlled four-way intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 18**. The results of the SIDRA assessment are presented in **Table 24**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 18 Byrnes Street / Basalt Street – Intersection Form

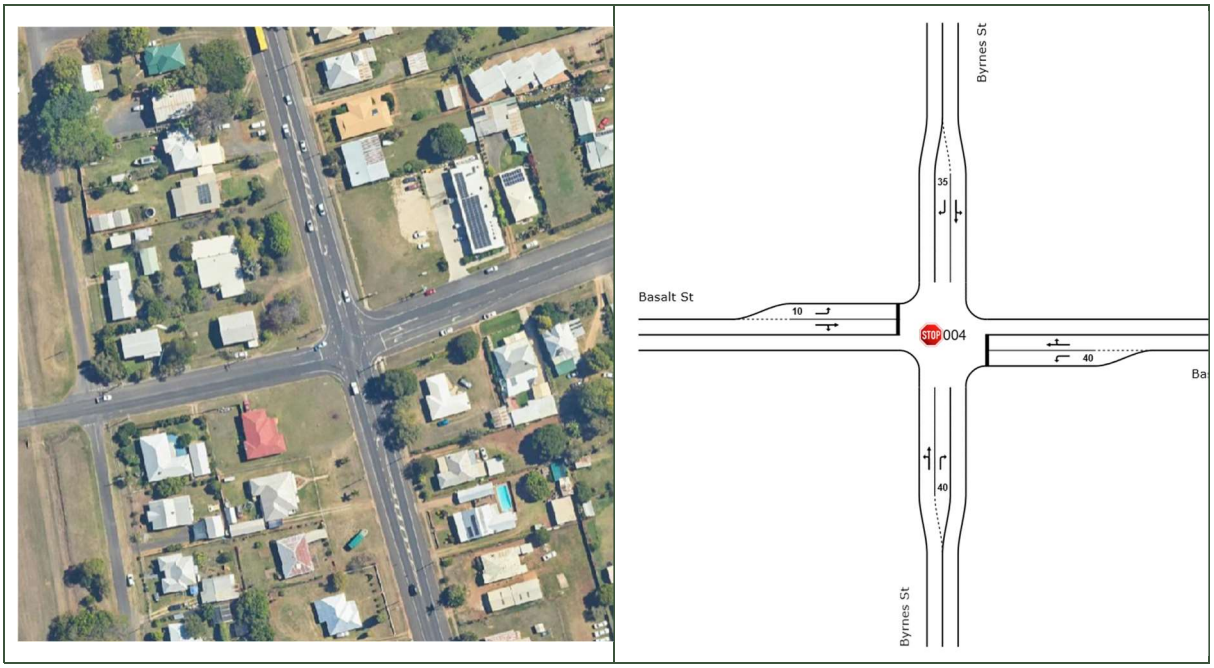


Table 24 SIDRA Outputs: Byrnes Street / Basalt Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.22	16s	3m	0.31	20s	4m	0.24	17s	4m
2027 Background	0.24	17s	3m	0.34	23s	4m	0.26	19s	4m
With Development									
2027 With Development	0.27	19s	3m	0.37	28s	5m	0.30	22s	5m

The SIDRA analysis summarised in **Table 24** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.5 Intersection 5 – Byrnes Street / Kenneally Road Intersection

The Byrnes Street / Kenneally Road intersection is currently a priority-controlled T-intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 19**. As outlined above, the intersections were networked for the assessment. The provision of 'full lanes' in the SIDRA layout represent the portion of the short turn lanes attributed to the Byrnes Street/Kenneally Road intersection, with the remainder of the short turn lane provided within the Byrnes Street/Costin Street SIDRA layout.

The results of the SIDRA assessment are presented in **Table 25**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 19 Byrnes Street / Kenneally Road – Intersection Form

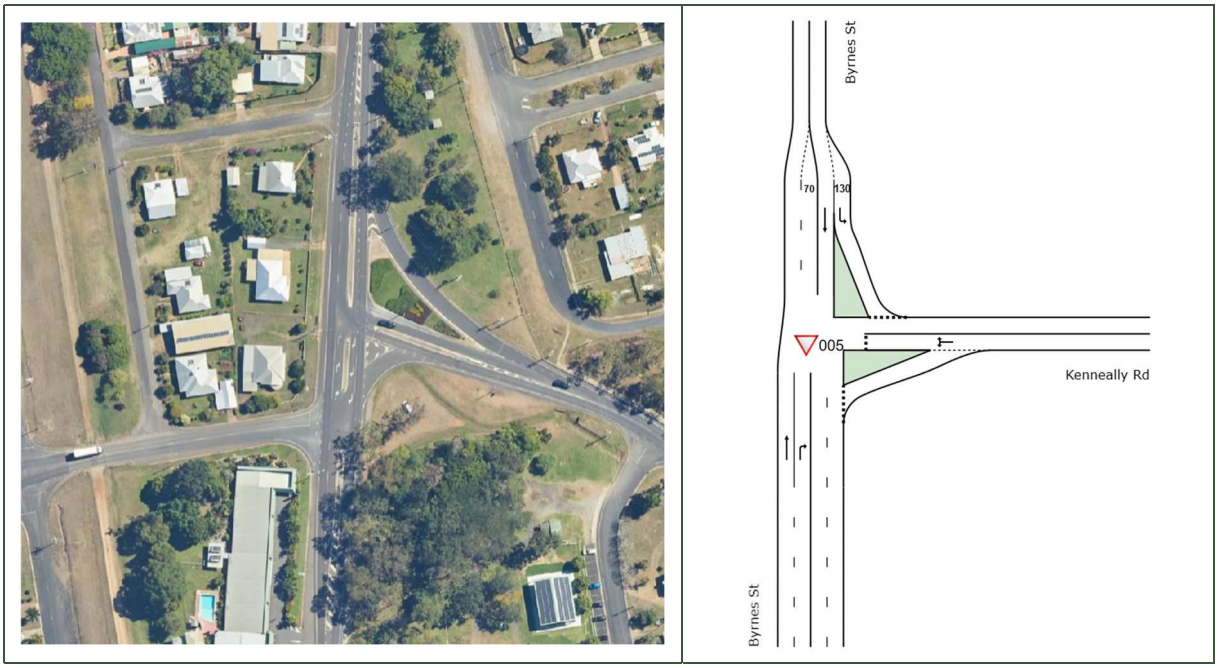


Table 25 SIDRA Outputs: Byrnes Street / Kenneally Road Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.50	50s	17m	0.29	23s	8m	0.30	16s	9m
2027 Background	0.65	65s	24m	0.36	28s	10m	0.36	19s	12m
With Development									
2027 With Development	0.88	88s	46m	0.57	37s	18m	0.51	24s	18m

The SIDRA analysis summarised in **Table 25** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.6 Intersection 6 – Byrnes Street / Costin Street Intersection

The Byrnes Street / Costin Street intersection is currently a priority-controlled T-intersection. The existing layout and the assessed SIDRA intersection form are shown on **Figure 20**. The results of the SIDRA assessment are presented in **Table 26**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 20 Byrnes Street / Costin Street – Intersection Form

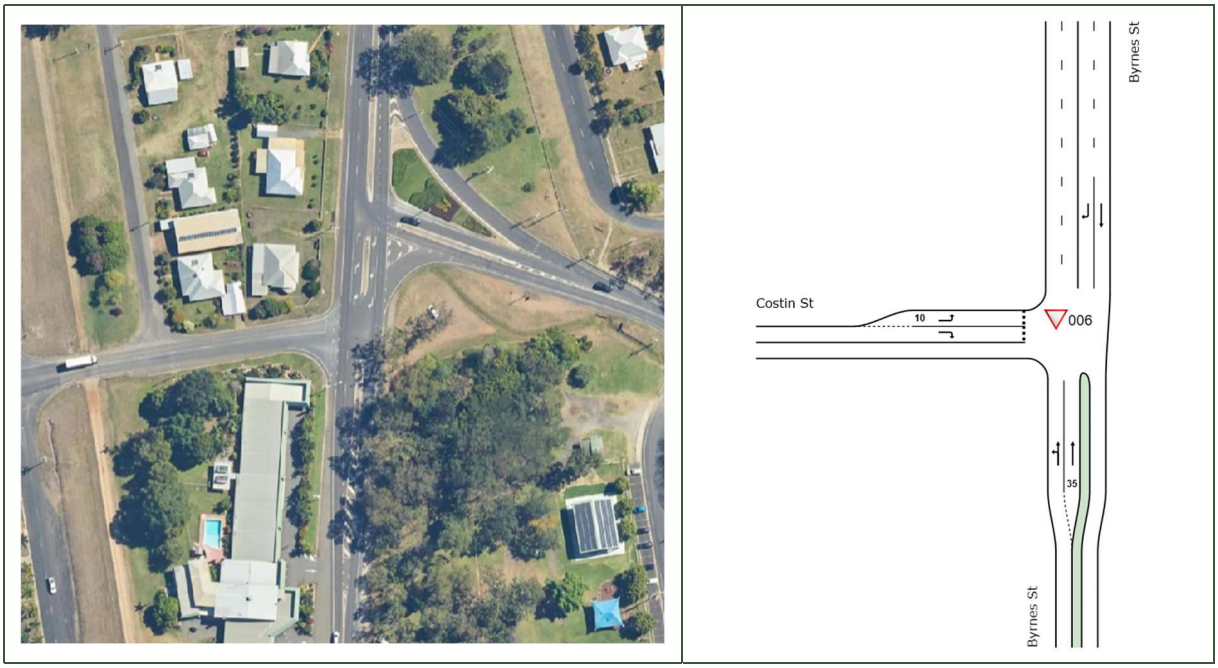


Table 26 SIDRA Outputs: Byrnes Street / Costin Street Intersection

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
Without Development									
2022 Background	0.33	25s	6m	0.24	16s	4m	0.18	12s	3m
2027 Background	0.36	30s	7m	0.26	18s	5m	0.19	13s	3m
With Development									
2027 With Development	0.36	34s	8m	0.27	21s	6m	0.20	14s	4m

The SIDRA analysis summarised in **Table 26** identifies that the intersection will operate at an acceptable performance level, with spare capacity, through to and beyond 2027.

8.4.7 Intersection 7 – Byrnes Street / Site Access

The Byrnes Street / Site Access intersection is proposed as a priority-controlled t-intersection restricted to left-in, left-out movements. The SIDRA layout of the proposed intersection form is shown on **Figure 21**. The results of the SIDRA assessment are presented in **Table 27**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 21 Byrnes Street / Site Access – Intersection Form

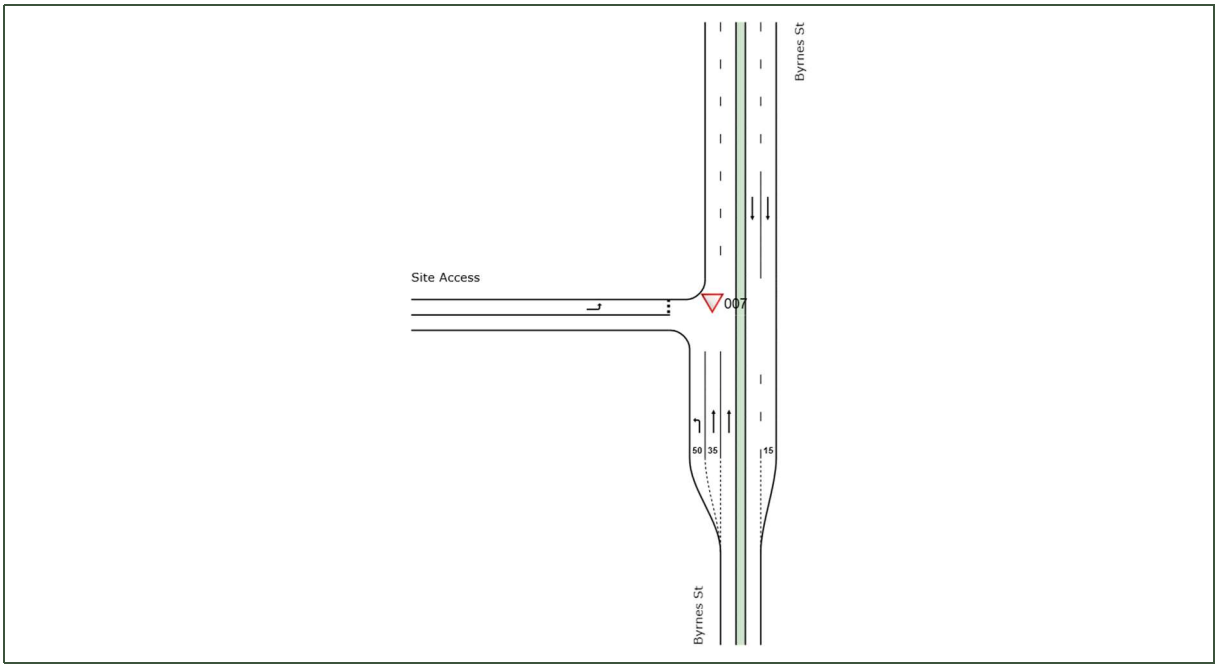


Table 27 SIDRA Outputs: Byrnes Street / Site Access

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
With Development									
2027 With Development	0.27	6s	2m	0.34	6s	2m	0.31	6s	3m
2037 With Development	0.31	6s	2m	0.38	6s	3m	0.35	6s	3m

The SIDRA analysis summarised in **Table 27** identifies that the proposed site access will operate at an acceptable performance level, with spare capacity, through to and beyond 2037. Given the provision of the access as left-in, left-out, no queueing external to the site will occur due to the operation of the site access. The queueing that occurs internal to the development will not extend into the car park circulation area and will not impact internal circulation.

8.4.8 Intersection 8 – Rankin Street / Site Access

The Rankin Street / Site Access intersection is proposed as a priority-controlled t-intersection restricted to left-in, all movements out. The SIDRA layout of the proposed intersection form is shown on **Figure 22**. The results of the SIDRA assessment are presented in **Table 28**. Detailed SIDRA outputs are provided at **Appendix D**.

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Figure 22 Rankin Street / Site Access – Intersection Form

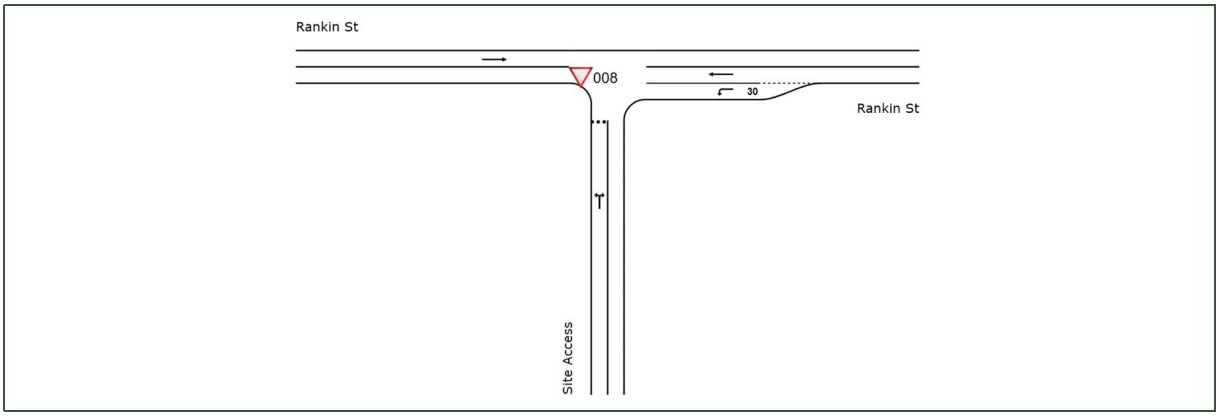


Table 28 SIDRA Outputs: Rankin Street / Site Access

Scenario	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue	DOS	Critical Delay	95%ile Queue
With Development									
2027 With Development	0.47	9s	17m	0.69	13s	24m	0.56	9s	21m
2037 With Development	0.50	10s	41m	0.75	15s	27m	0.61	10s	23m

The SIDRA analysis summarised in **Table 28** identifies that the proposed site access will operate at an acceptable performance level, with spare capacity, through to and beyond 2037. As the site access does not allow for a right turn into the site, no additional queueing along Rankin Street will occur beyond that capture in the Byrnes Street/Rankin Street results. The queueing that occurs internal to the development will not extend into the car park circulation area and will not impact internal circulation.

8.5 Net Worsening Assessment

The results of the net worsening assessment are summarised within **Table 29**, with the detailed net worsening assessment spreadsheet provided in **Appendix E**.

Table 29 Net Worsening Assessment Outputs

Peak Period	ΣBC (Total Base Case Delays)	ΣWD (Total With-Development Delays)	ID = ΣWD - ΣBC	
			Δ	%
AM	1,693min	1,832min	139min	+8.2%
PM	1,756min	1,776min	19min	+1.1%
SAT	1,511min	1,443min	67min	-4.5%
Total	**4,960min**	**5,051min**	**91min**	**+1.8%**

The results presented in **Table 29** indicates that an increase in the net delay metric of less than 5% is reported to occur during the Thursday AM, Thursday PM peak and Saturday midday peak periods. As such, no mitigation works are warranted in accordance with the

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GTIA which identified 5% as a threshold defining a significant impact that should be mitigated.

Accordingly, no capacity upgrades beyond those proposed at the site access locations have been assessed or are proposed at this time.

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9.0 Safety Assessment

9.1 Overview

Section 6 of the GTIA requires an assessment of the impacts of a proposed development on the safety of the state-controlled road network.

The following activities were undertaken as part of the road safety assessment:

- Review of existing crash data, aerial imagery and a site inspection to identify any existing safety deficiencies along either of the study corridors within the vicinity of the subject site; and
- A risk assessment to establish a risk scope for any existing safety risks, the level of impact of the subject development on these existing safety risks, as well as any additional risks introduced by the proposal.

9.2 Risk Assessment

A risk assessment was undertaken to evaluate the severity of any safety risks introduced or exacerbated by the proposed development of the subject site. This has been conducted using the safety risk score matrix detailed within Figure 9.3.2(a) of the GTIA, which has been reproduced in **Figure 23** for reference.

Figure 23 GTIA Safety Risk Score Matrix

		Potential Consequence				
		1. Property damage	2. Minor injury	3. Medical treatment	4. Hospitalisation	5. Fatality
Potential	5. Almost certain	M	M	H	H	H
	4. Likely	M	M	M	H	H
	3. Moderate	L	M	M	M	H
	2. Unlikely	L	L	M	M	M
	1. Rare	L	L	L	M	M

L = low risk, M = medium risk, H = high risk

The purpose of the road safety risk assessment as defined within the GTIA is to ensure that the subject development does not 'significantly' worsen road safety and/or mitigate any existing safety hazards. In this case a 'significant' worsening is defined as a change in the safety risk rating (for example from 'low' to 'medium'), with the following criteria provided for the mitigation of safety risks:

- The aim of the assessment is to return the 'with development' risk score to the 'without development' score and below the 'high' category in all scenarios with mitigation measures in place; and
- Any risk item classified as 'high' risk required mitigation regardless of whether this risk is pre-existing or introduced by the development.

Given the above considerations, a summary of the safety risk assessment for the subject development provided in **Table 30**.

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Table 30 Safety Risk Assessment

Potential Risk	Without Development			With Development			Mitigation Measures	With Development & Mitigation		
	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score		Likelihood	Consequence	Risk Score
Increased demand for turning movements at the surrounding intersections which may result in increased rear-end and angle crashes	2	4	**M**	3	4	**M**	As documented in the operation assessment, the intersections within the study area will continue to operate at an acceptable level with the addition of the development traffic. The operation of the intersections with the addition of the development traffic is unlikely to promote an increase in risky driver behaviour, and therefore an increased likelihood of accidents. No mitigation required.			
Queues extending back into intersections – risk of vehicles stopping in vulnerable locations (such as the middle of intersections) and obstructing vehicle movements.	2	3	**M**	2	3	**M**	No mitigation required.			
The queue along the Rankin Street frontage will queue beyond the rail line crossing increasing the chance a car will queue on the crossing.	1	5	**M**	2	5	**M**	Documented in the SIDRA results, queues along the Rankin Street frontage of the site will be contained within the available approach distance from the rail line crossing. The addition of the development traffic will not cause the queue length to extend beyond the rail crossing. No mitigation required.			
Increase in pedestrian demand travelling along the site frontage.	1	4	**M**	3	4	**M**	A footpath in the verges would reduce the likelihood of crashes resulting from pedestrians not having any dedicated facility.	1	4	**M**

The risk assessment summarised above suggests that the subject development is unlikely to have a material impact on road safety with the study area and therefore no mitigation treatments are justified.

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10.0 Code Assessment

The traffic and transport aspects of the proposed development have been assessed against the relevant requirements of the following state codes:

- State code 1: Development in a state-controlled road environment; and
- State code 6: Protection of state transport networks.

Responses to these codes regarding the traffic and transport aspects have been prepared by SLR and are included within the planning reporting prepared by Urban Sync.

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11.0 Summary and Conclusions

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Girgenti Group to prepare a Traffic Impact Assessment (TIA) for the proposed mixed-use development located at 232 Byrnes Street, Mareeba. Plans for the development, as prepared by Thomson Adsett, are included in **Appendix A**.

Based on the analysis and discussion documented herein, the following is concluded:

- The proposed development seeks to develop the existing site to include a shopping centre (including a Woolworths supermarket), a food & drink outlet and shop land uses.
- It is proposed that access to the site be via three new driveways, which are:
  - A left-in, left-out driveway on Byrnes Street for passenger vehicle only.
  - A left-in, left-out driveway on Byrnes Street for service vehicles only, facilitating vehicles up to the size of an Articulated Vehicle.
  - A left-in, all movements out driveway to Rankin Street, facilitating access for passenger vehicles and service vehicles up to the size of a Heavy Rigid Vehicle.
- The proposed car park with a capacity of 253 parking spaces (including 3 PWD spaces) exceeds the requirements of the MSC Planning Scheme.
- The proposed bicycle parking and end of trip facilities will be provided in accordance with the requirements outlined in the MSC Planning Scheme.
- All servicing is proposed to occur within the site within dedicated service areas/loading bays. Waste collection is to occur via the same service areas/loading bays as for deliveries. Swept path assessments of these facilities have confirmed that the design vehicles can be accommodated.
- All elements of the car park, circulation roadways and driveways are compliant with Australian Standards.
- The intersection assessments have identified the following:
  - The state-controlled intersections assessed will operate acceptably with the inclusion of the development at the opening year of 2027.
  - The site access intersections will operate acceptably up to and beyond the 2037 design horizon.
- The net delay assessment found that an increase in the net delay metric of less than 5% occurs across the three assessed peak periods.

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12.0 RPEQ Certification

This assessment and report have been prepared under the direction of a Registered Professional Engineer of Queensland (RPEQ) who is experienced in traffic engineering and transport planning. They are endorsed by that RPEQ accordingly.

Regards,

SLR Consulting Australia



Raymond Logan, RPEQ No. 27227
Principal – Transport Advisory

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Appendix A Development Plan

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MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

DRAWING LIST - CONCEPT		
A	0.00	COVER SHEET
A	0.10	SITE CONTEXT PLAN
A	1.01A	SITE PLAN
A	1.02A	DEVELOPMENT PLAN
A	2.01	GROUND FLOOR PLAN - SUPERMARKET
A	2.02	ROOF PLAN - SUPERMARKET
A	2.03	ELEVATIONS - SUPERMARKET
A	2.04	ELEVATIONS - SUPERMARKET
A	2.05	SECTIONS - SUPERMARKET
A	4.01	GROUND FLOOR PLAN - FAST FOOD
A	4.02	ELEVATIONS - FAST FOOD
A	5.01	3D VIEWS
A	5.02	3D VIEWS





EXISTING VIEW FROM CORNER OF BYRNES & RANKIN STREET

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

REEDLODGE PTY LTD.

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TA # 19.0298.17

COVER SHEET

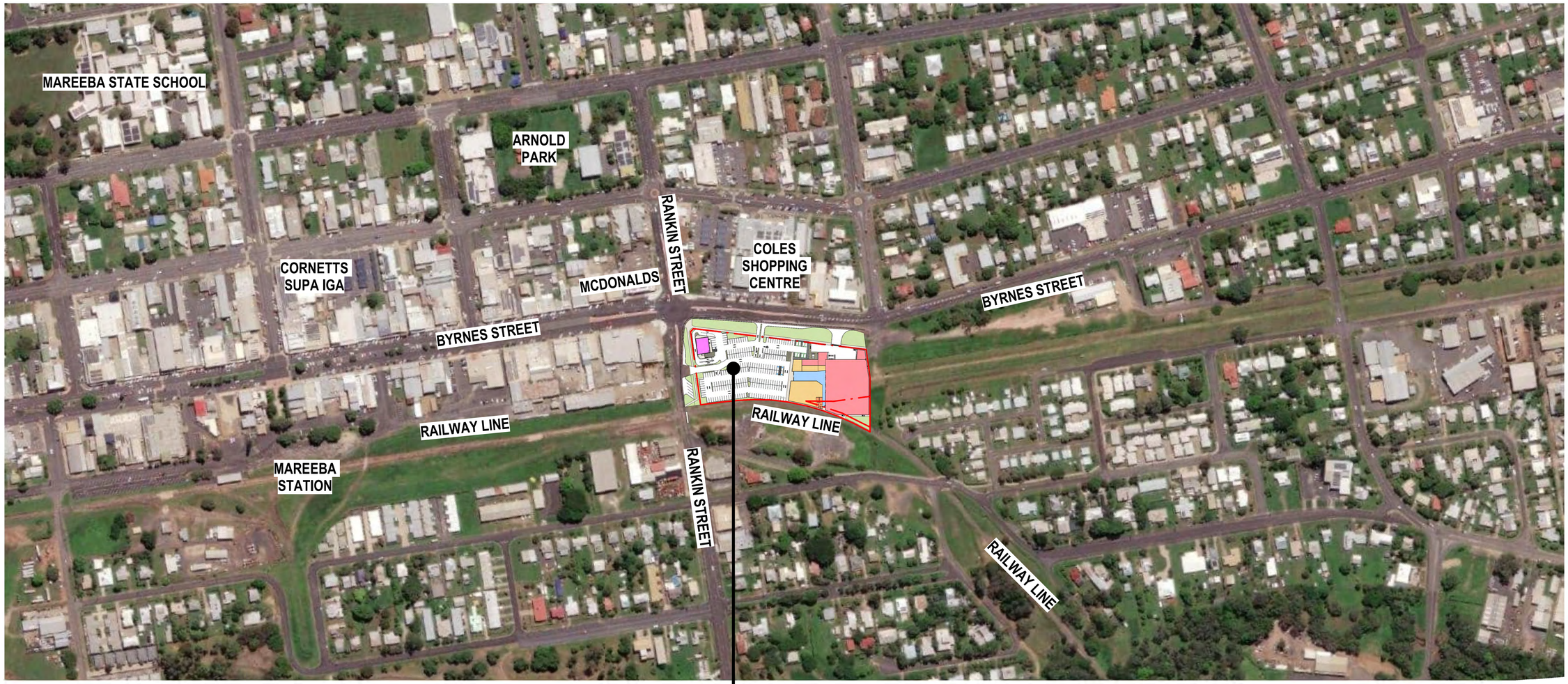
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1 SITE CONTEXT PLAN
1 : 2500

DEVELOPMENT APPLICATION

0 25 50 75 125 250 m

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SITE CONTEXT PLAN

1 : 2500 @ A1 2025-06-24

A0.10 **rev. 10**

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DEVELOPMENT SCHEDULE

PROPOSED USES	GFA	GLAR
SUPERMARKET	3655m^2	3603m^2
SHOPS	1290m^2	1260m^2
FAST FOOD	270m^2	270m^2
AMENITIES	90m^2	
TOTAL CENTRE	**5305m^2**	**5133m^2**

CAR PARKING SCHEDULE

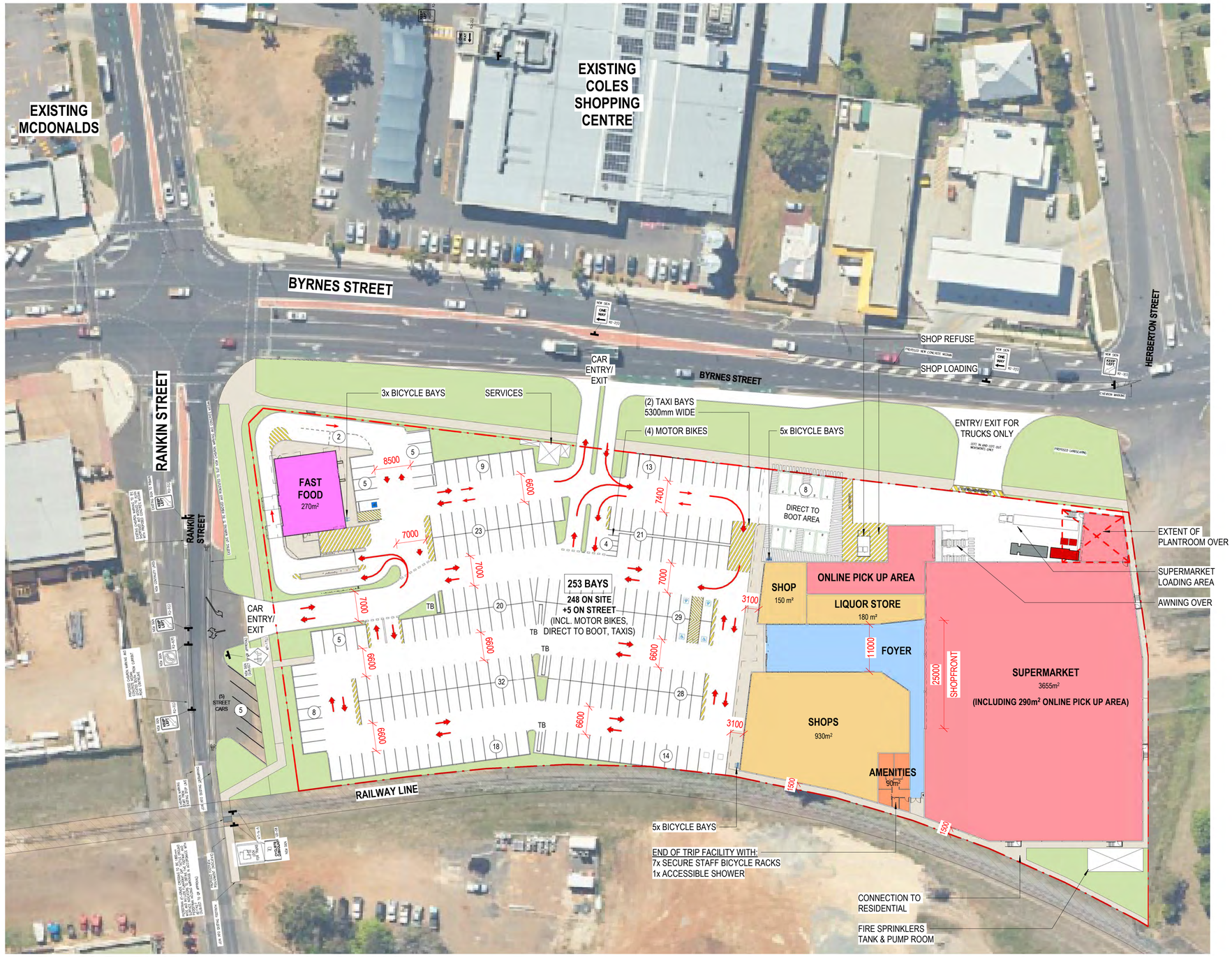
CARS CENTRE (ON SITE) (INCL. MOTOR BIKES, DIRECT TO BOOT + TAXIS)	248
STREET CARS	5
TOTAL CARS PROVIDED	**253** (4.93/100m^2 GLAR)
TOTAL CARS REQUIRED	205

NOTE:
CARS REQUIRED IS BASED ON:
1/50 UP TO 400m^2 GFA
1/25 ABOVE 400m^2 GFA

NOTE: SUPERMARKET GLAR EXCLUDES EXTERNAL WALLS AND LOADING DOCK

COVERED CARPARKS

AREA OF FOYER / PASSAGE - 522m^2



1 SITE PLAN - OPTION 6
1 : 500

DEVELOPMENT APPLICATION

0 5 10 15 25 50 m

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SITE PLAN

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A1.01A | **rev. 27**

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3x BICYCLE BAYS
ELECTRIC PAD MOUNT TRANSFORMER
FIRE METER + BOOSTERS
5x BICYCLE BAYS
SCREENED SHOP REFUSE
SHOP LOADING
HOME DELIVERY LOADING AREA
WAITING BAYS
ELECTRICAL SERVICES (MSB/COMMS)
CAR ENTRY/ EXIT
BYRNES STREET
ENTRY/ EXIT FOR TRUCKS ONLY
RANKIN STREET
SUPERMARKET LOADING AREA
REFUSE BINS
EXTENT OF PLANTROOM OVER
COMPACTOR
ESCAPE STAIR
FAST FOOD 270m²
LOADING
DIRECT TO BOOT AREA
TAXI BAYS
(4) MOTOR BIKES
253 BAYS
248 ON SITE
+5 ON STREET
(INCL. MOTOR BIKES, DIRECT TO BOOT, TAXIS)
TB
CAR ENTRY/ EXIT
(5) STREET CARS
ONLINE PICK UP AREA
SHOP 150 m²
LIQUOR STORE 180 m²
FOYER
SUPERMARKET 3655m²
(INCLUDING 290m² ONLINE PICK UP AREA)
RL 409.20
SHOPS 930m²
AMENITIES 91 m²
RL 408.50
ESCAPE STAIR
5x BICYCLE BAYS
END OF TRIP FACILITY WITH:
7x SECURE STAFF BICYCLE RACKS
1x ACCESSIBLE SHOWER
ESCAPE STAIR
FIRE SPRINKLERS TANK & PUMP ROOM
CONNECTION TO RESIDENTIAL
RAILWAY LINE
EXISTING BUILDING

1 DEVELOPMENT PLAN - OPTION 6
1 : 300

DEVELOPMENT APPLICATION

0 3 6 9 15 30 m

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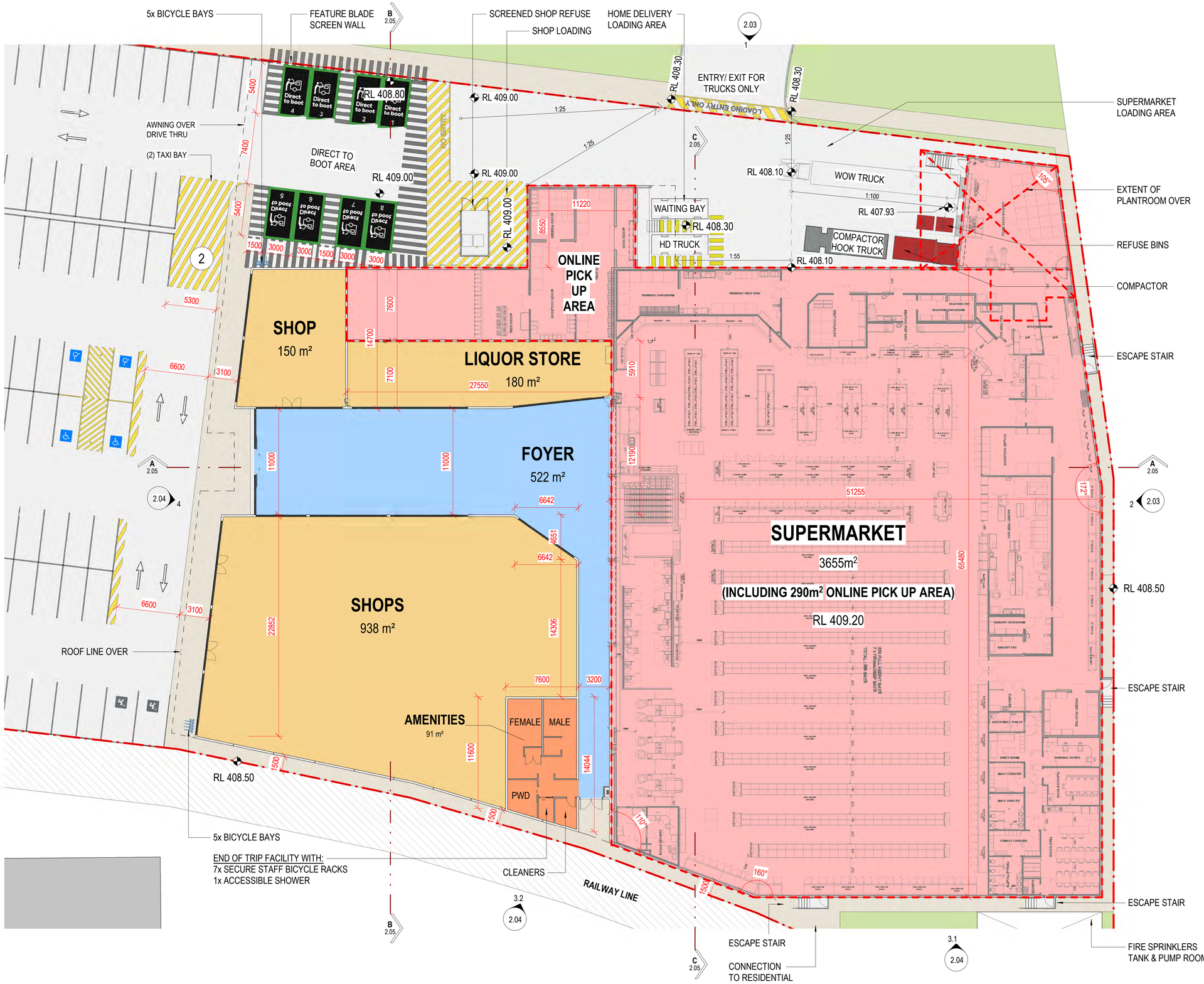
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DEVELOPMENT PLAN

1 : 300 @ A1 | 2025-06-24

A1.02A | **rev. 21**

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1 FLOOR PLAN - SUPERMARKET
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

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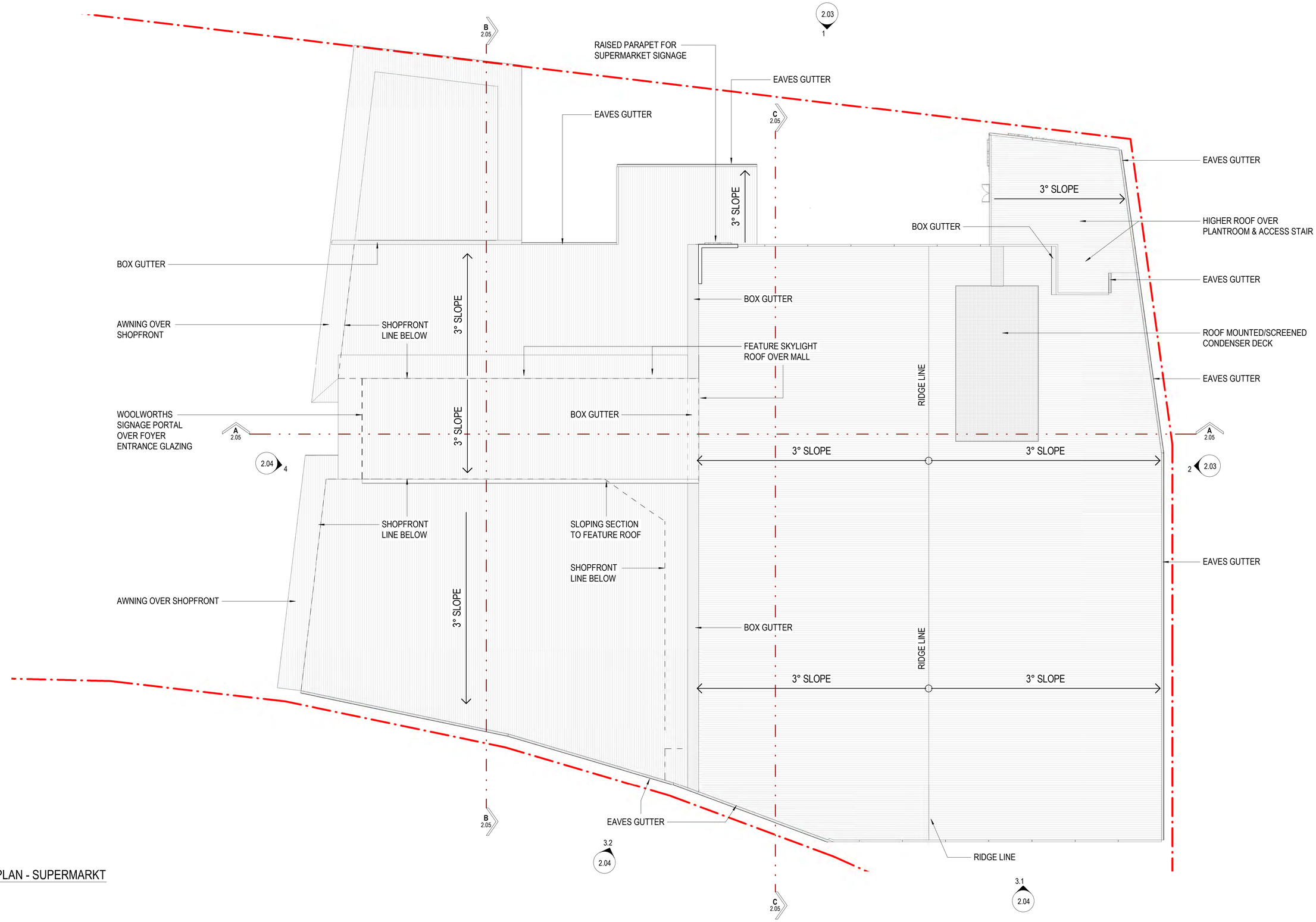
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GROUND FLOOR PLAN - SUPERMARKET

1 : 200 @ A1 | 2025-06-24

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Document Set ID: 4528952
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1 ROOF PLAN - SUPERMARKT
1 : 200

DEVELOPMENT APPLICATION

0 2 4 6 10 20 m

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ROOF PLAN - SUPERMARKET

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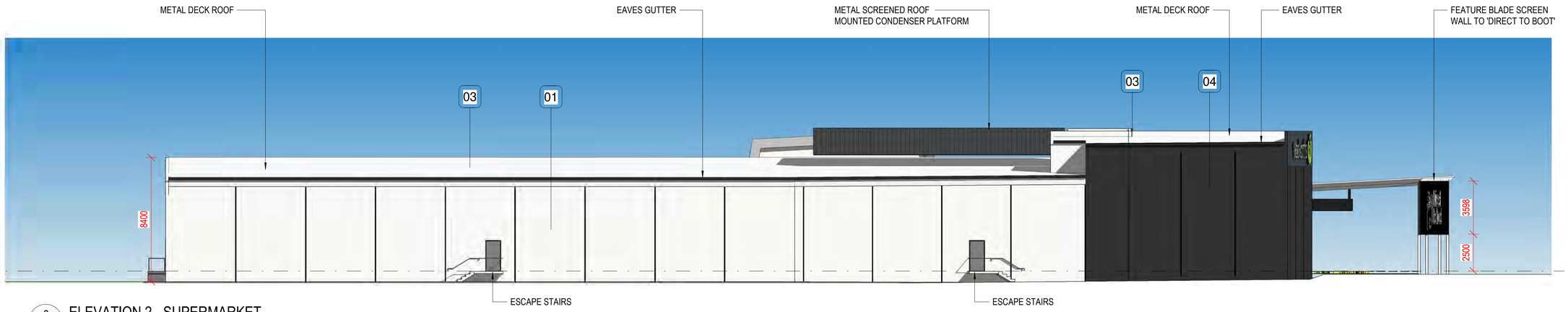
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Version: 1, Version Date: 25/07/2025



1 / 2.01 ELEVATION 1 - SUPERMARKET

1 : 150



2 / 2.01 ELEVATION 2 - SUPERMARKET

1 : 150

1	PRECAST CONCRETE PANEL PAINTED DULUX 'VIVID WHITE'	3	LONGLINE METAL SHEETING DULUX 'MONUMENT'	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX 'MONUMENT'
2	FC CLADDING PAINTED DULUX 'VIVID WHITE'	4	PRECAST CONCRETE PANEL PAINTED DULUX 'MONUMENT'	6	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	8	POWDERCOATED METAL CAPPINGS, GUTTERS, DOWNPIPES & ROLLER SHUTTER. PAINTED DULUX 'MONUMENT'

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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ELEVATIONS - SUPERMARKET

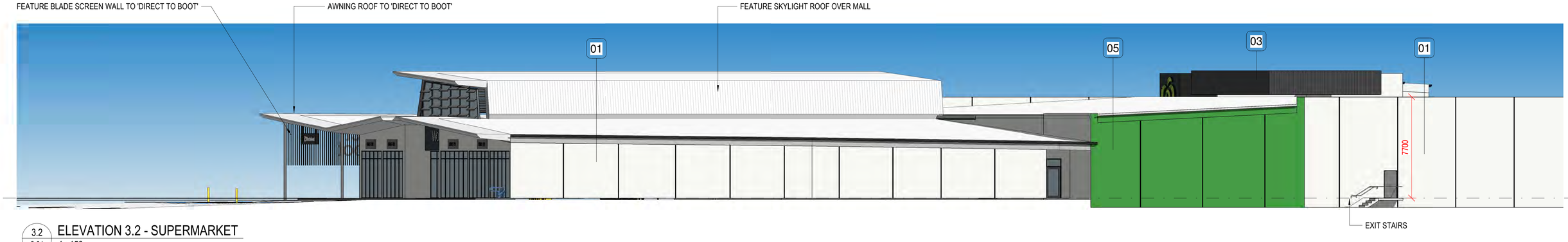
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A2.03 **rev. 9**

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3.1 / 2.01 ELEVATION 3.1 - SUPERMARKET
1 : 150



3.2 / 2.01 ELEVATION 3.2 - SUPERMARKET
1 : 150



4 / 2.01 ELEVATION 4 - SUPERMARKET
1 : 150

1	PRECAST CONCRETE PANEL PAINTED DULUX 'VIVID WHITE'	3	LONGLINE METAL SHEETING DULUX 'MONUMENT'	5	PRECAST CONCRETE PANEL PAINTED WOOLWORTHS GREEN	7	ALUCLICK FEATURE BLADES POWDERCOATED DULUX 'MONUMENT'
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NOTE:
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0 1.5 3.0 4.5 7.5 15m

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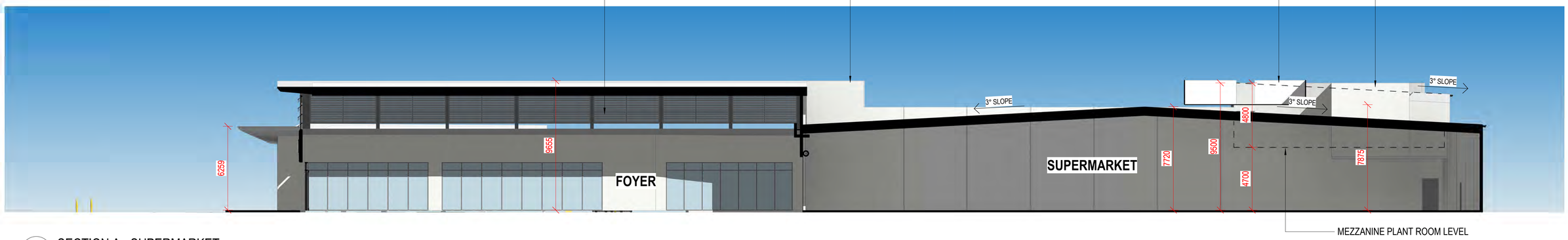
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ELEVATIONS - SUPERMARKET

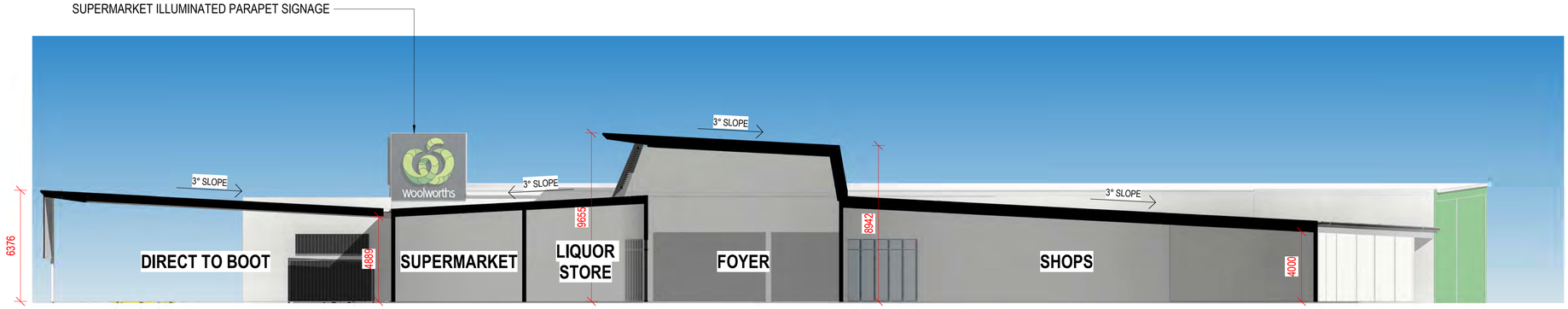
As indicated @ A1 | 2025-06-24

A2.04 | **rev. 9**

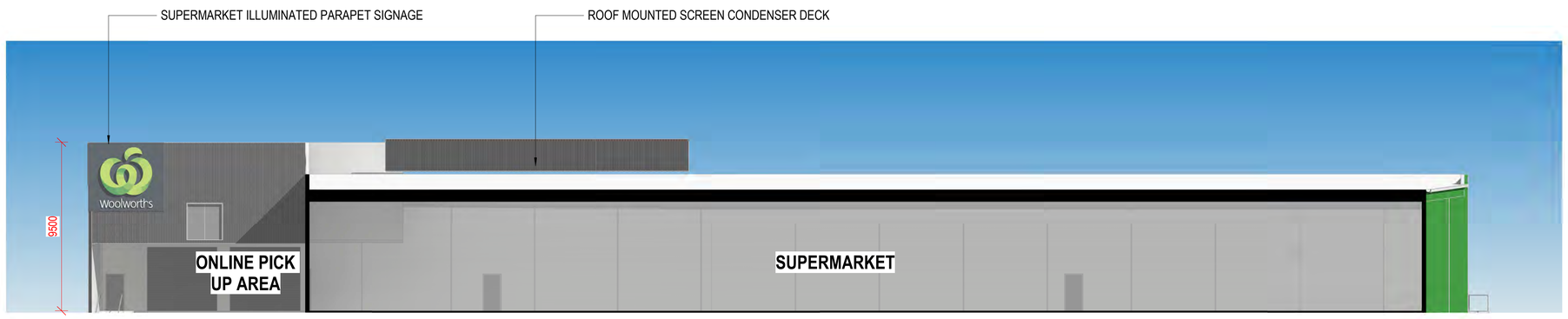
Document Set ID: 4528952
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A 2.01 SECTION A - SUPERMARKET
1 : 150



B 2.01 SECTION B - SUPERMARKET
1 : 150



C 2.01 SECTION C - SUPERMARKET
1 : 150

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE
232 BYRNES STREET, MAREEBA

REEDLODGE PTY LTD.

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Qld 4006 Australia
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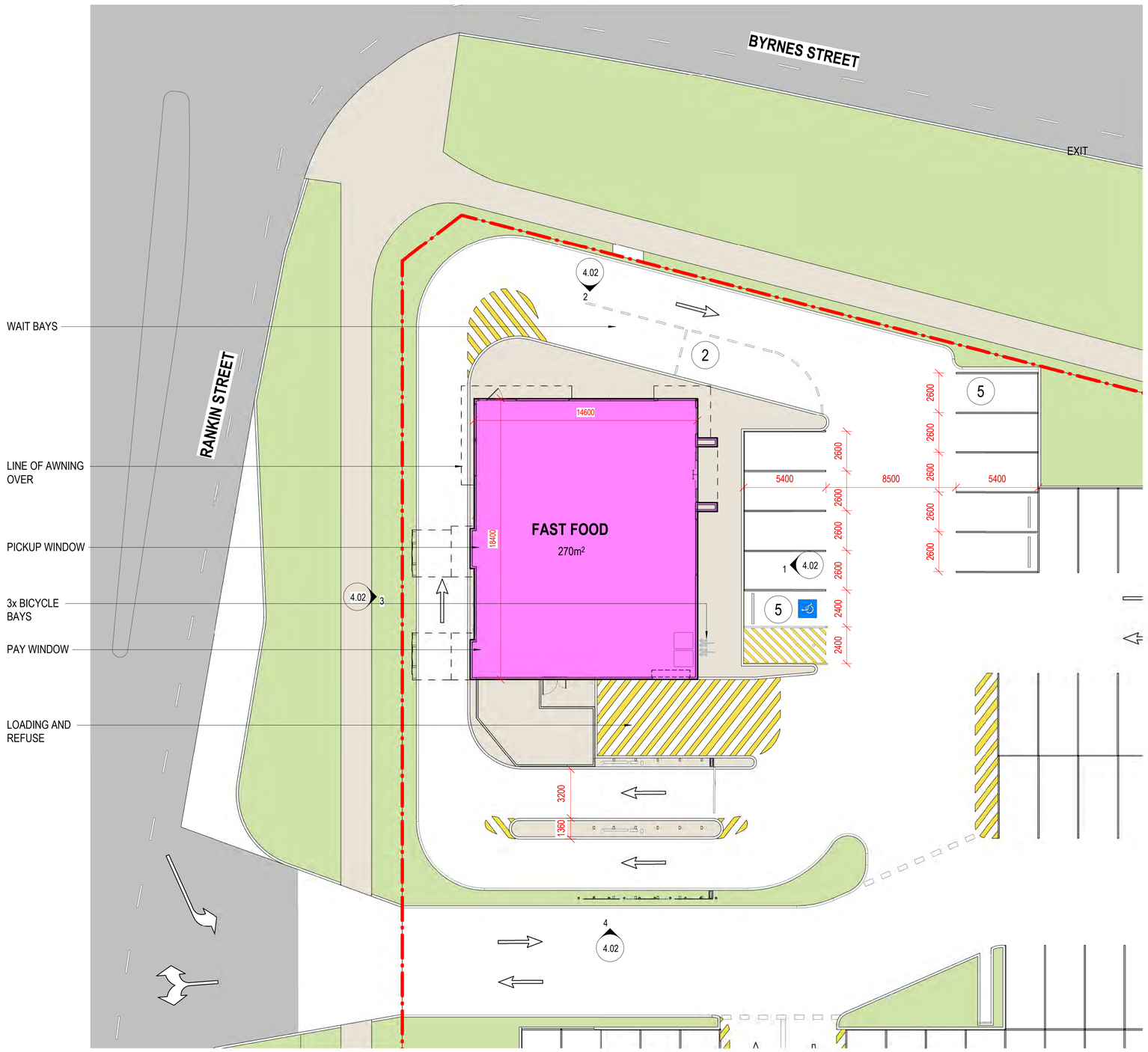
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SECTIONS - SUPERMARKET

1 : 150 @ A1 2025-06-24

TA # 19.0298.17 **A2.05** **rev. 9**

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 FLOOR PLAN - FAST FOOD
1 : 150

DEVELOPMENT APPLICATION

0 1.5 3.0 4.5 7.5 15m

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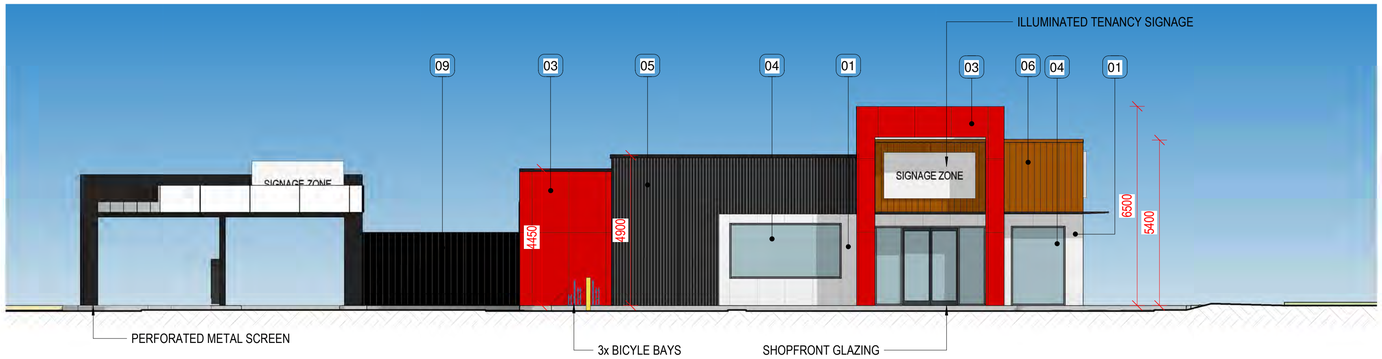
TA # 19.0298.17

GROUND FLOOR PLAN - FAST FOOD

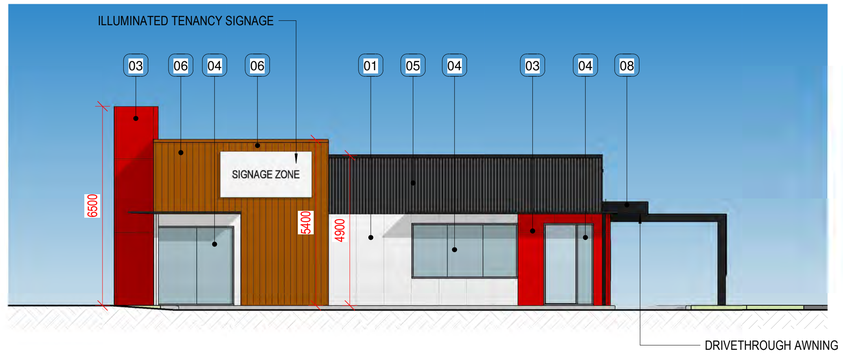
1 : 150 @ A1 | 2025-06-24

A4.01 | **rev. 7**

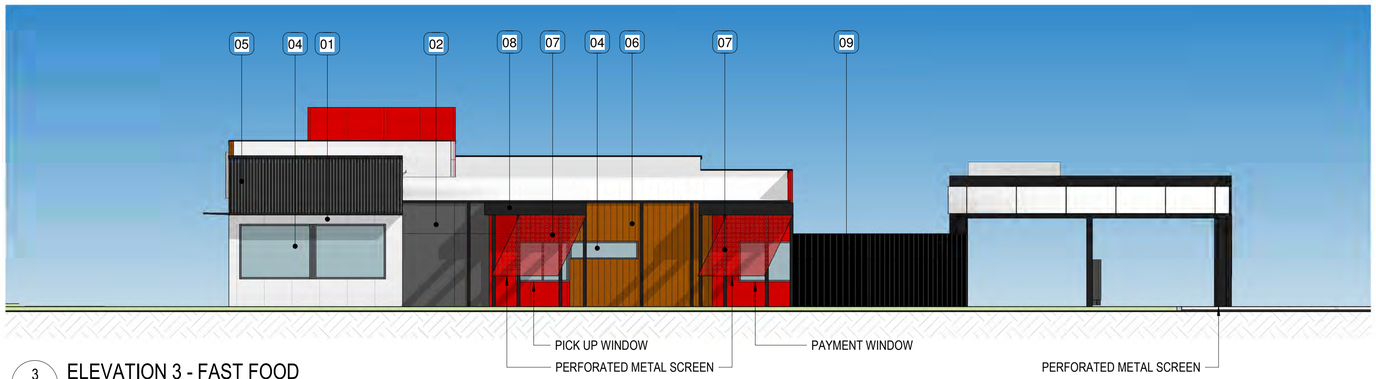
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



1 / 3.01 ELEVATION 1 - FAST FOOD
1 : 100



2 / 4.01 ELEVATION 2 - FAST FOOD
1 : 100



3 / 4.01 ELEVATION 3 - FAST FOOD
1 : 100



4 / 3.01 ELEVATION 4 - FAST FOOD
1 : 100

01	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED WHITE	03	CFC SHEETING WITH EXPRESSED JOINTS TENANT CORPORATE COLOUR RED	05	LONGLINE 305 METAL WALL SHEETING COLORBOND 'MONUMENT' (MID GREY)	07	PERFERATED MESH SCREEN LOCKERGROUP POWDERCOAT "RED" R03341
09	COLORBOND CORRUGATED METAL WALL SHEETING BLACK	02	CONCRETE PANEL / CFC SHEETING WITH EXPRESSED JOINTS PAINTED DULUX 'DARK GREY'	04	CLEAR GLAZING IN POWDERCOAT ALUMINUM FRAME DARK GREY	06	TIMBER-LOOK ALUMINIUM CLADDING - KNOTWOOD DRIFTWOOD
08	POWDERCOATED METAL CAPPINGS, GUTTERS & DOWNPIPES. PAINTED DULUX 'MONUMENT'						

NOTE:
SIGNAGE DOES NOT FORM PART OF THIS APPLICATION

DEVELOPMENT APPLICATION

0 1 2 3 5 10m

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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ELEVATIONS - FAST FOOD

1 : 100 @ A1 2025-06-24

A4.02 **rev. 6**

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Version: 1, Version Date: 25/07/2025



ARIAL VIEW



SUPERMARKET VIEW FROM CARPARK

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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TA # 19.0298.17

3D VIEWS

@ A1

2025-06-24

A5.01

rev. 9

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



BYRNES STREET - SITE EXIT



BYRNES STREET - TRUCK & LOADING ENTRANCE

DEVELOPMENT APPLICATION

MAREEBA NEIGHBOURHOOD SHOPPING CENTRE

232 BYRNES STREET, MAREEBA

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TA # 19.0298.17

3D VIEWS

@ A1

2025-06-24

A5.02

rev. 9

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Appendix B Swept Path Assessment

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

DIRECT TO BOOT AREA

TAXI BAYS

ONLINE PICK UP

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OVER

COMPACTOR

FIRE METER + BOOSTERS

SCREENED SHOP REFUSE

SHOP LOADING

HOME DELIVERY LOADING AREA

CAR ENTRY/ EXIT

13 x 2600mm PARKING SPACE

11 x 2600mm PARKING SPACE

LEVEL 16, 175 EAGLE ST
BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

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Project No:	620.041936
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Drawn by:	JH
Certified by:	-
Sheet Size:	A3
Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels

AV

meters			
Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 28.3
Tractor Track	: 2.50	Articulating Angle	: 72.0
Trailer Track	: 2.50		

SCALE 1:400

Girgenti Group

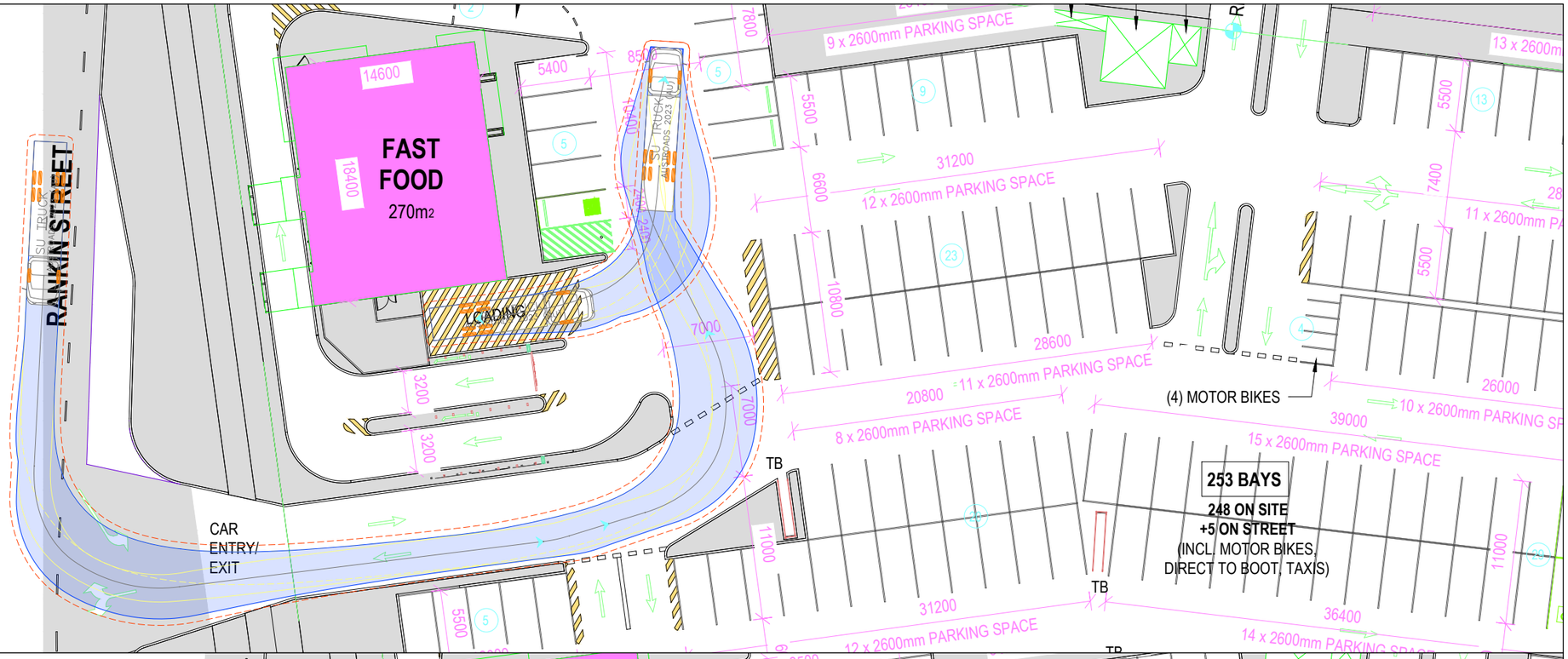
Mareeba Shopping Centre

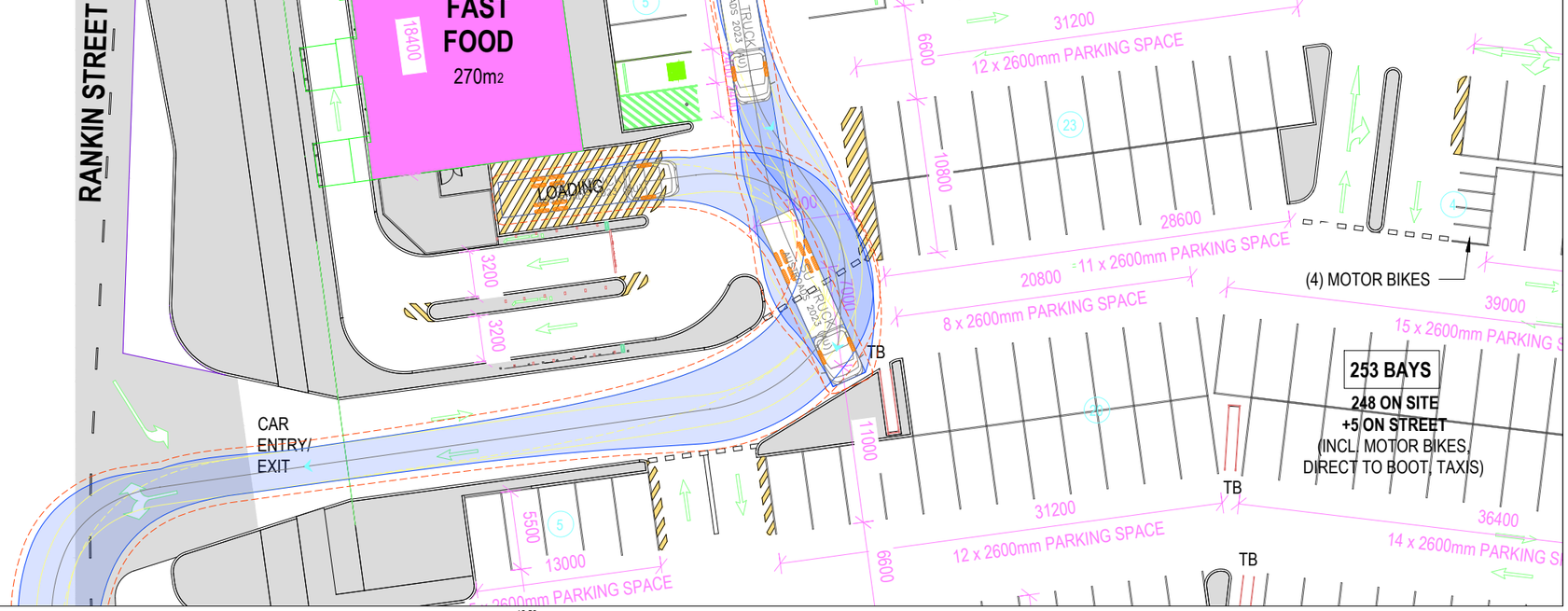
Swept Path Assessment - AV

SK01

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CONCEPT ONLY





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QUEENSLAND 4000
AUSTRALIA
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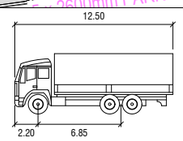
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Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



SU TRUCK

meters	
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

Swept Path Assessment - HRV

SK02

Document Set ID: 4528932
Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

33800

13 x 2600mm PARKING SPACE

1500 6000 1500 6000 1500

5500

7400

28600

11 x 2600mm PARKING SPACE

5400

1500

DIRECT TO BOOT AREA

NO ENTRY

RL 408.80

RL 409.00

RL 409.00

RL 409.00

RL 409.00

1:25

RL 408.30

RL 408.30

ONE WAY TRAFFIC ONLY

RORO Compactor

RL 408.10

1:100

RL 407.93

RL 408.30

RL 408.10

11220

8550

TAXI BAYS

26000

39000

10 x 2600mm PARKING SPACE

5300

10033

ONLINE PICK UP

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OVER

COMPACTOR

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

33800

13 x 2600mm PARKING SPACE

1500 6000 1500 6000 1500

5500

7400

28600

11 x 2600mm PARKING SPACE

5400

1500

DIRECT TO BOOT AREA

NO ENTRY

RL 408.80

RL 409.00

RL 409.00

RL 409.00

RL 409.00

1:25

RL 408.30

RL 408.30

ONE WAY TRAFFIC ONLY

RORO Compactor

RL 408.10

1:100

RL 407.93

RL 408.30

RL 408.10

11220

8550

TAXI BAYS

26000

39000

10 x 2600mm PARKING SPACE

5300

10033

ONLINE PICK UP

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OVER

COMPACTOR

LEVEL 16, 175 EAGLE ST
BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

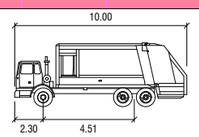
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Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



RORO Compactor

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 27.0

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

Swept Path Assessment - RORO Compactor

SK03

Document Set ID: 2529932
Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT
FOR TRUCKS
ONLY

SUPERMARKET
LOADING AREA

REFUSE BINS

EXTENT OF
PLANTROOM OV

COMPACTOR

DIRECT TO
BOOT AREA

TAXI
BAYS

ONLINE PICK UP

RL 409.00
RL 408.80
RL 408.30
RL 408.10
RL 407.93

Front Load RCV (ACCO 2350)
Custom

11220
8550
1500
6000
5400
7400
10033

LEVEL 16, 175 EAGLE ST
BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

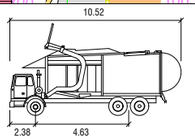
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Certified by:	-
Sheet Size:	A3
Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



Front Load RCV (ACCO 2350)

meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 28.0

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

Swept Path Assessment - Front Load RCV

SK04

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Version: 1, Version Date: 25/07/2025

CONCEPT ONLY

BYRNES STREET

ENTRY/ EXIT FOR TRUCKS ONLY

SUPERMARKET LOADING AREA

REFUSE BINS

EXTENT OF PLANTROOM OV

COMPACTOR

DIRECT TO BOOT AREA

ONLINE PICK UP

TAXI BAYS

RL 408.30
RL 409.00
RL 408.10
RL 407.93
RL 408.80
RL 409.00
RL 408.30
RL 408.10
RL 409.00
RL 409.00
RL 408.30
RL 408.10
RL 409.00
RL 409.00
RL 408.80
RL 409.00
RL 409.00
RL 408.10
RL 408.30
RL 408.10
RL 407.93

11220
8550
10033
6000
1500
5400
7400
1:25
1:100
1:35

SRV STANDARDS 2018 (AU)

SLR

LEVEL 16, 175 EAGLE ST
BRISBANE
QUEENSLAND 4000
AUSTRALIA
T: 61 7 3858 4800

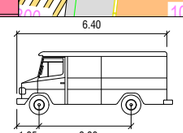
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Sheet Size:	A3
Projection:	-

SWEPT PATH LEGEND

- Vehicle Path
- Vehicle Body
- Body Clearance
- Front Wheels



SRV

	meters
Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.0
Steering Angle	: 38.1

N

0.0 4 8 12 16
METERS

SCALE 1:400

Girgenti Group

Mareeba Shopping Centre

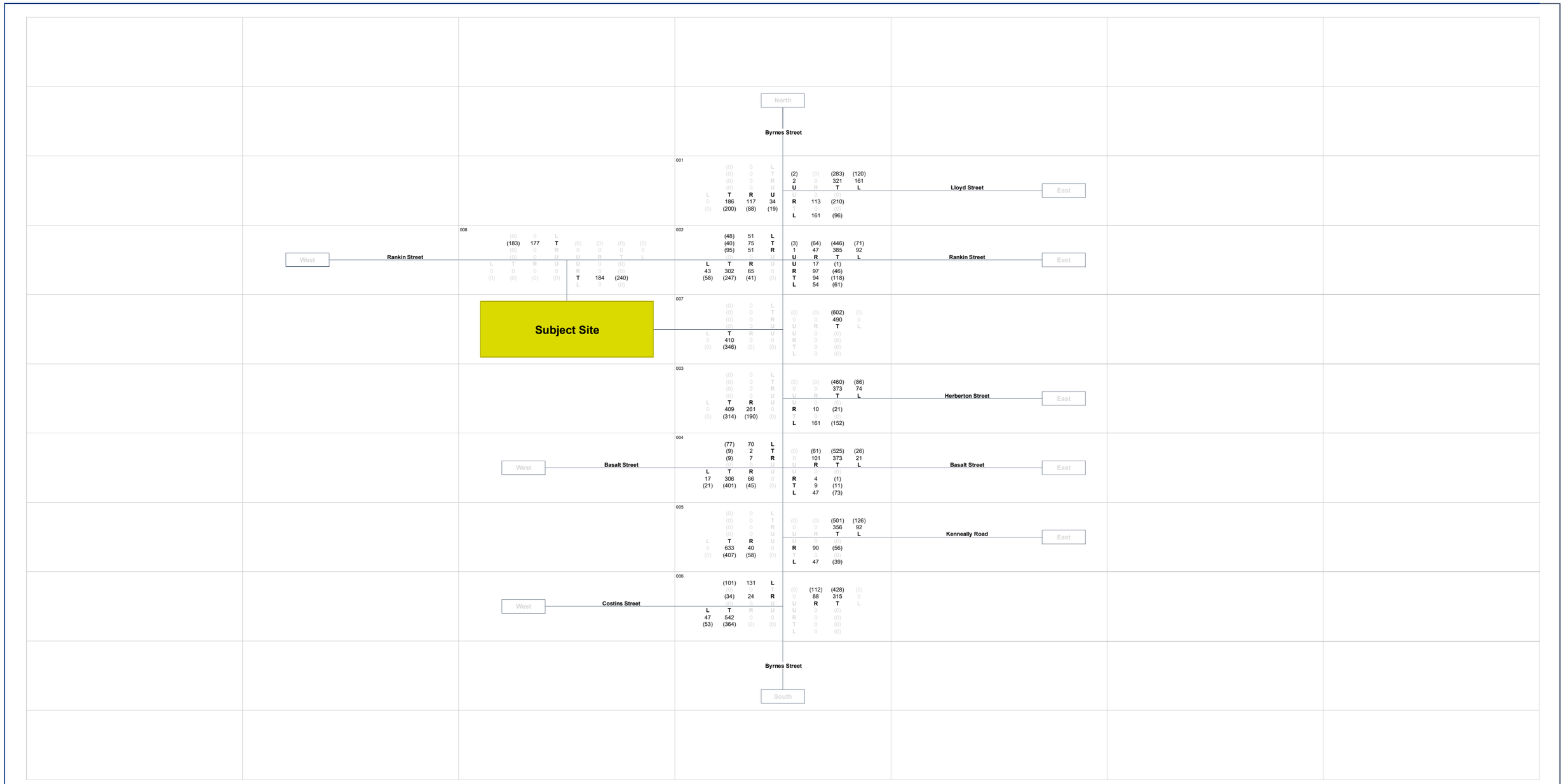
Swept Path Assessment - SRV

SK05

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Version: 1, Version Date: 25/07/2025

Appendix C Traffic Network Diagrams

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Version: 1, Version Date: 25/07/2025



SLR

C1

2022 Surveyed Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

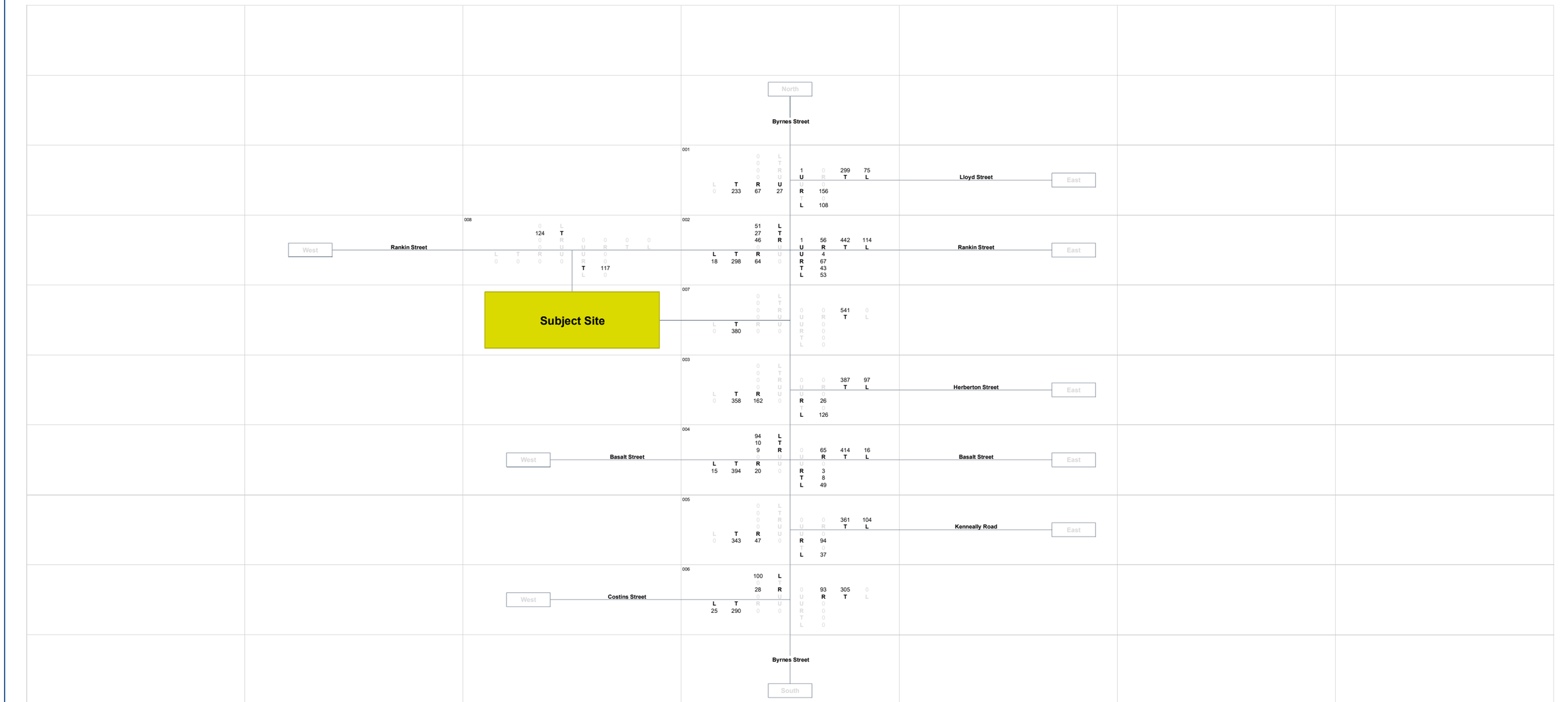
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00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

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Version: 1, Version Date: 25/07/2025



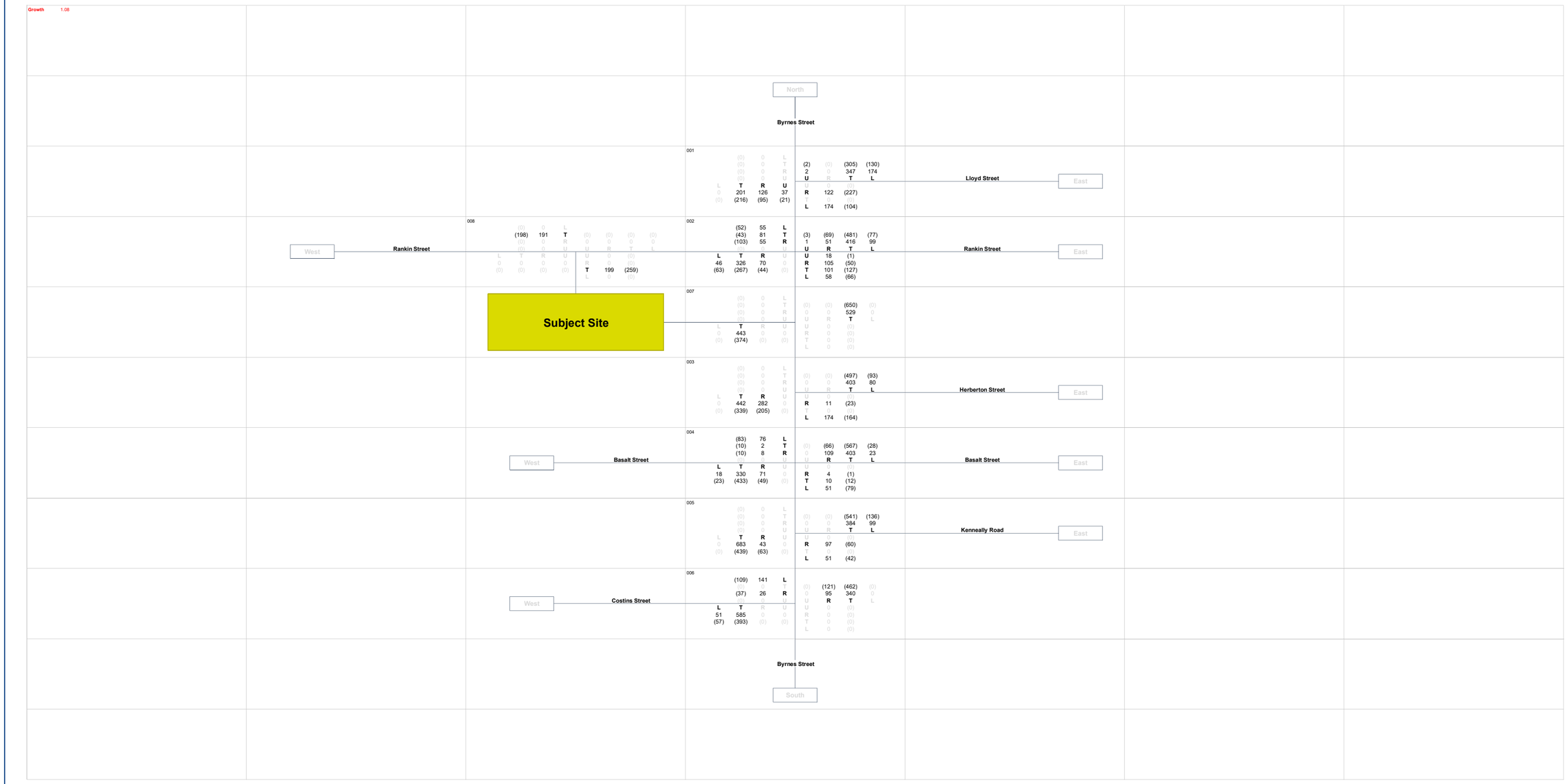
C2
2022 Surveyed Traffic Volumes (Sat Peak)
620.041936
Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend
00 Saturday Midday Peak Hour Volumes
Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Growth 1.08



C3

2027 Background Traffic Volumes (AM & PM Peaks)

620.041936

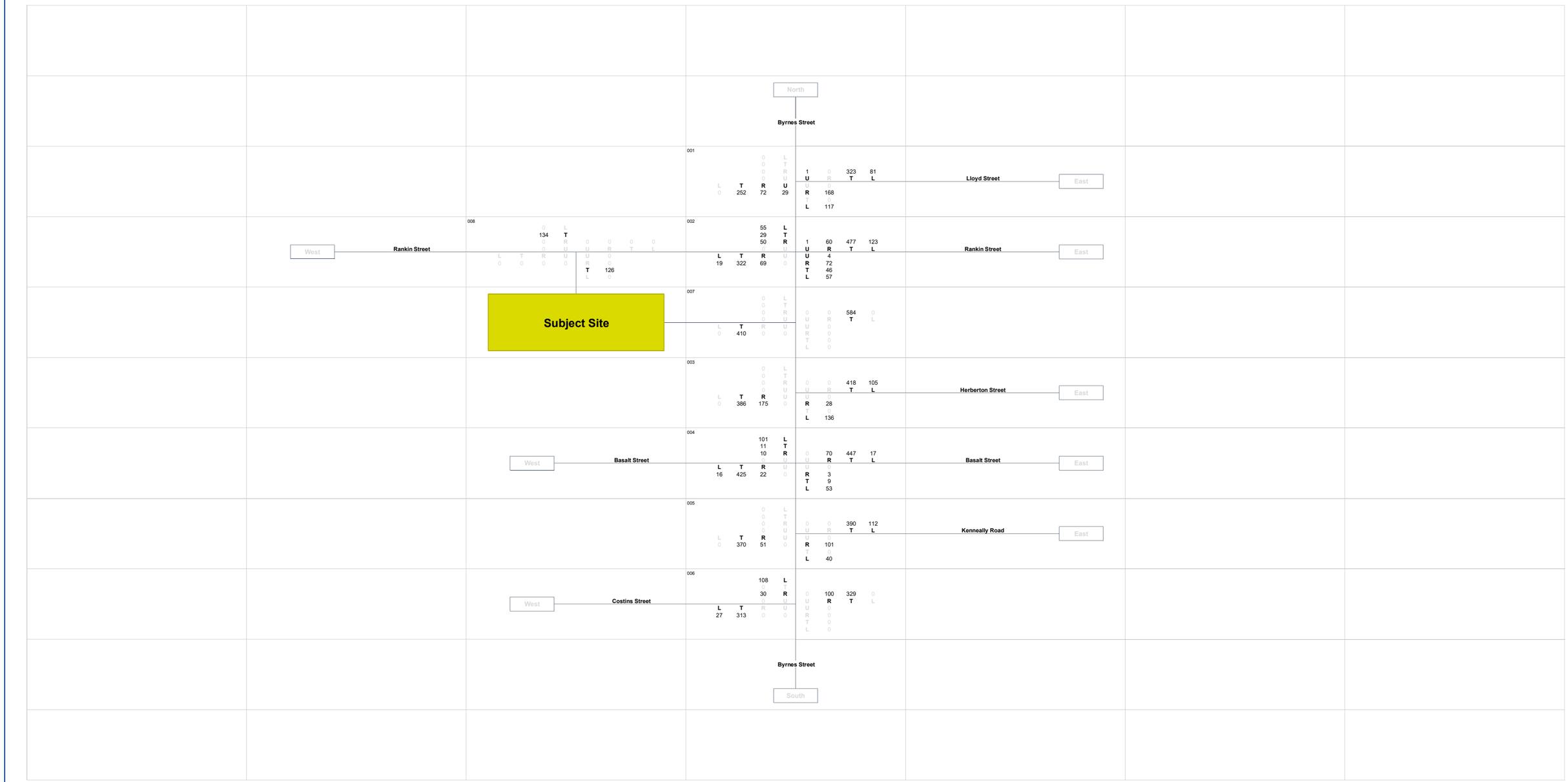
Mareeba Shopping Centre

Legend

L Left Turn
T Through
R Right Turn
U U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes
Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C4

2027 Background Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

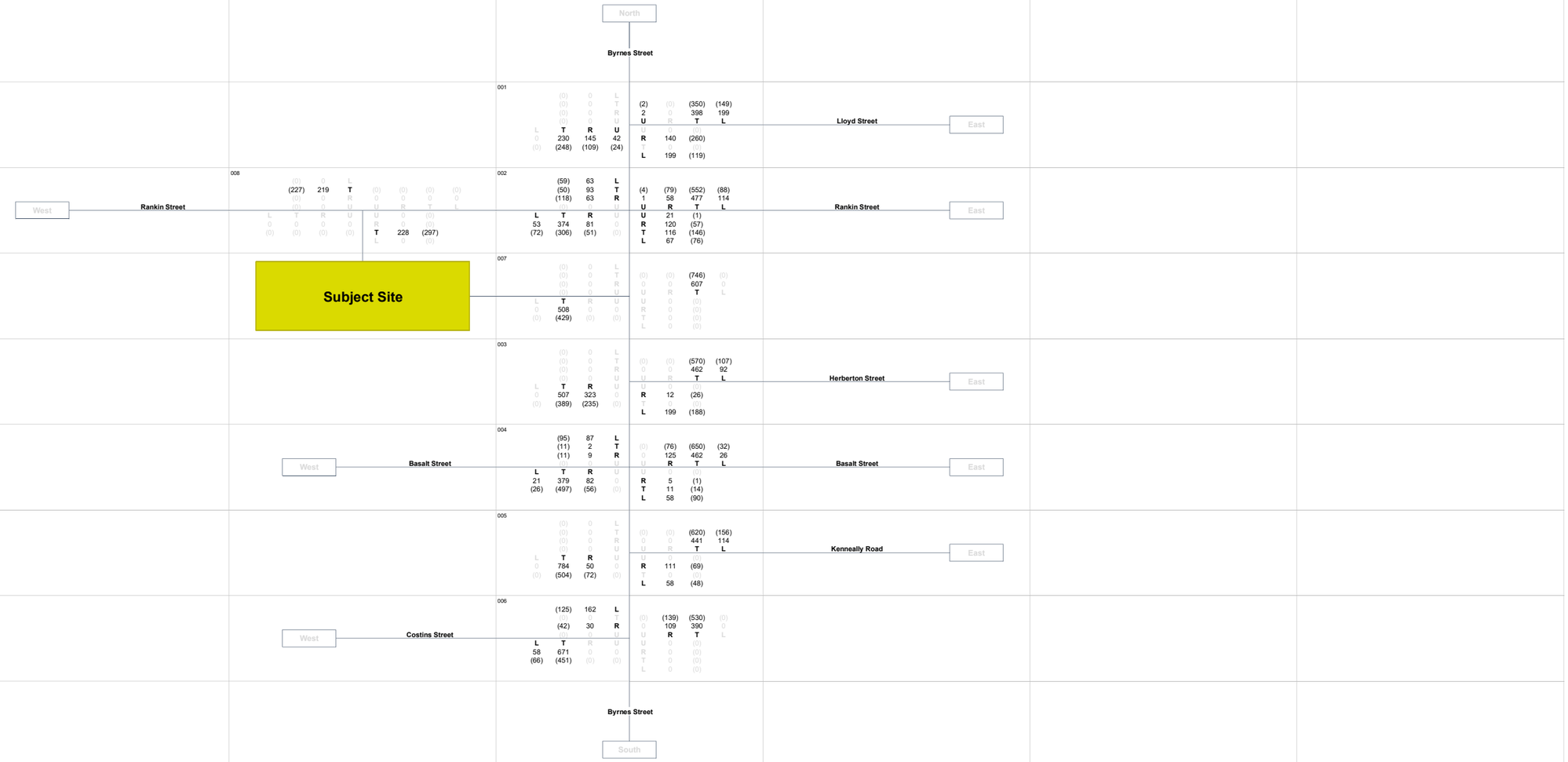
Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Growth 1.24



C5

2037 Background Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

Legend

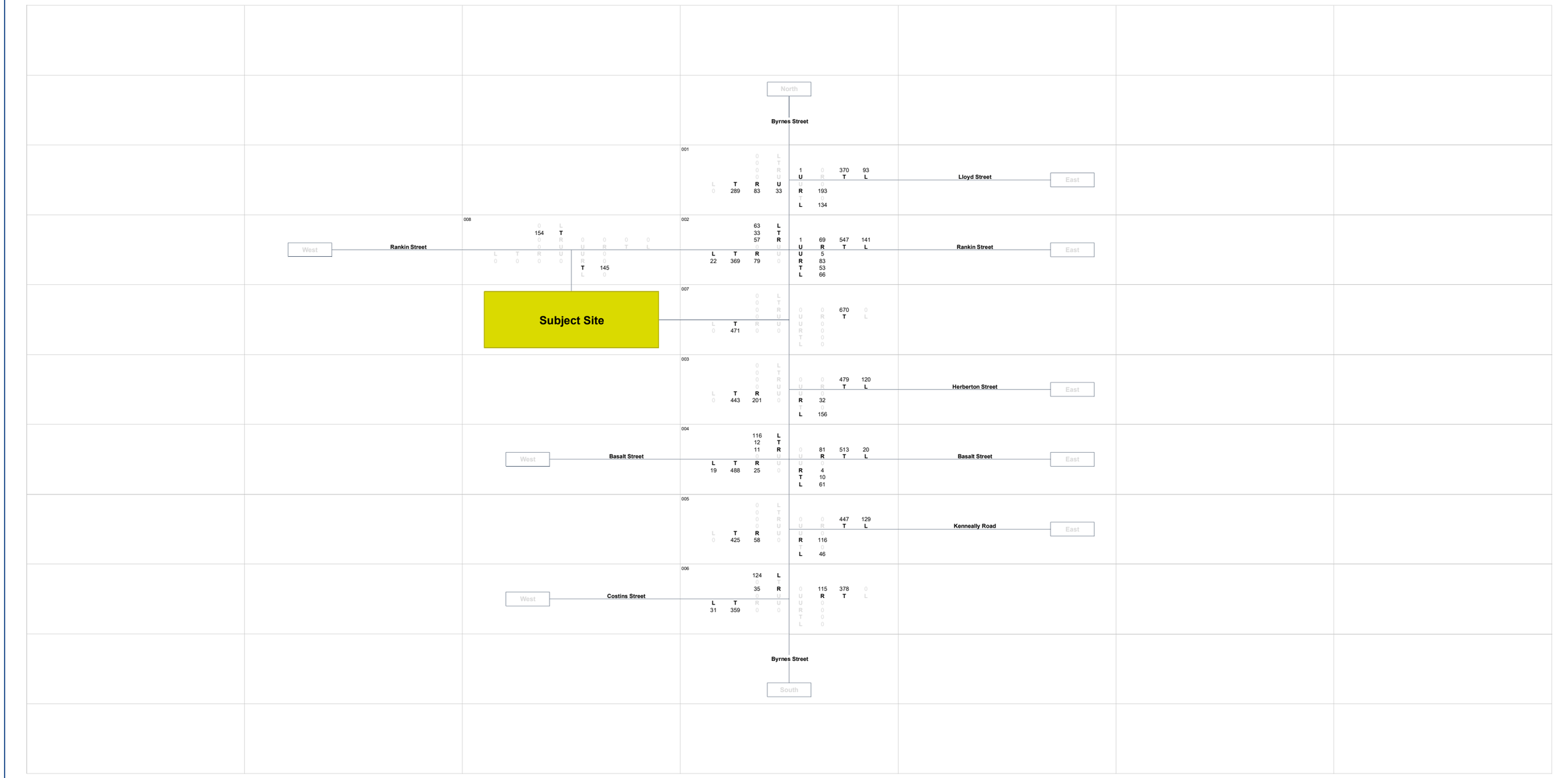
00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

L Left Turn
T Through
R Right Turn
U U-Turn

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C6

2037 Background Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

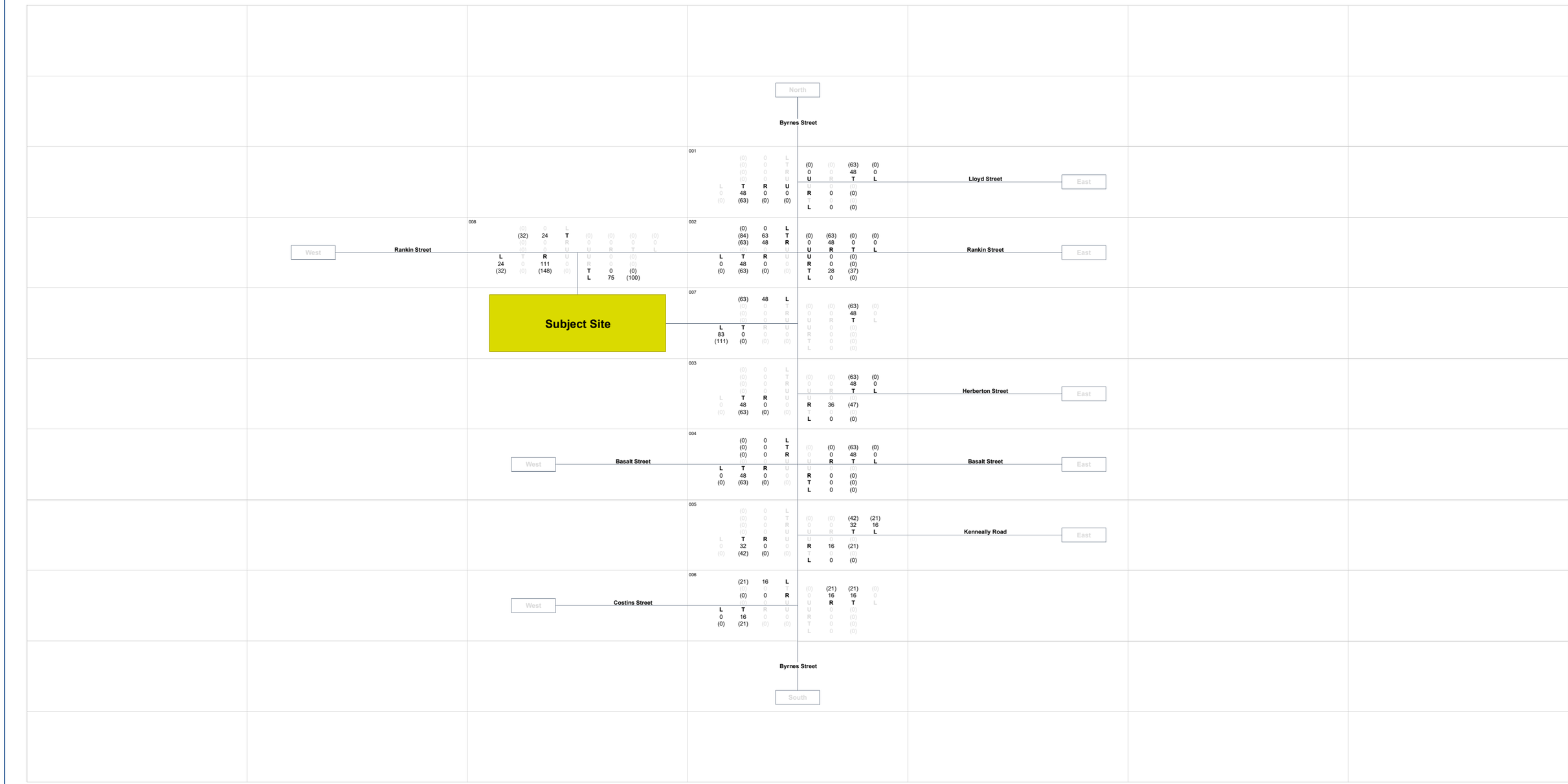
L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C7

New Development Trips (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

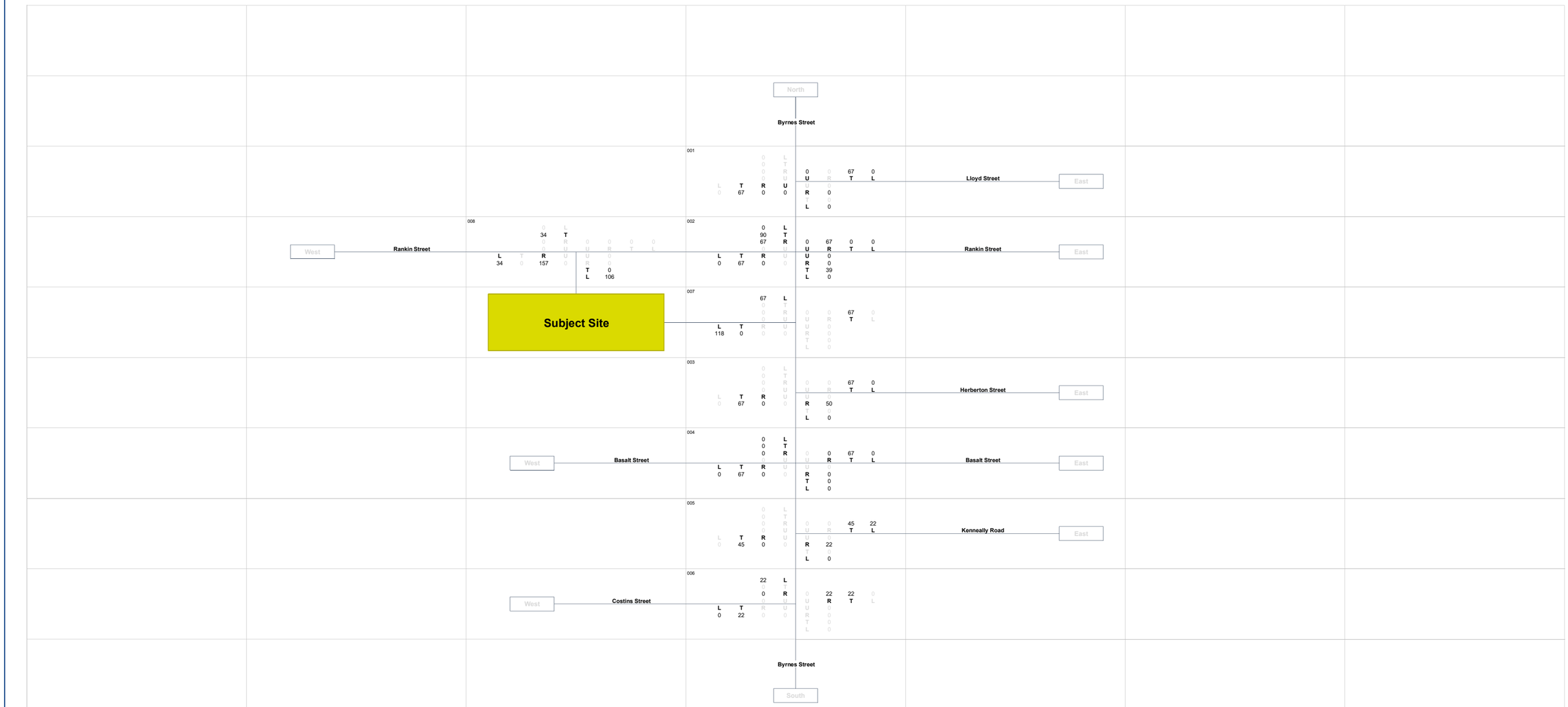
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00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C8

New Development Trips (Sat Peak)

620.041936

Mareeba Shopping Centre

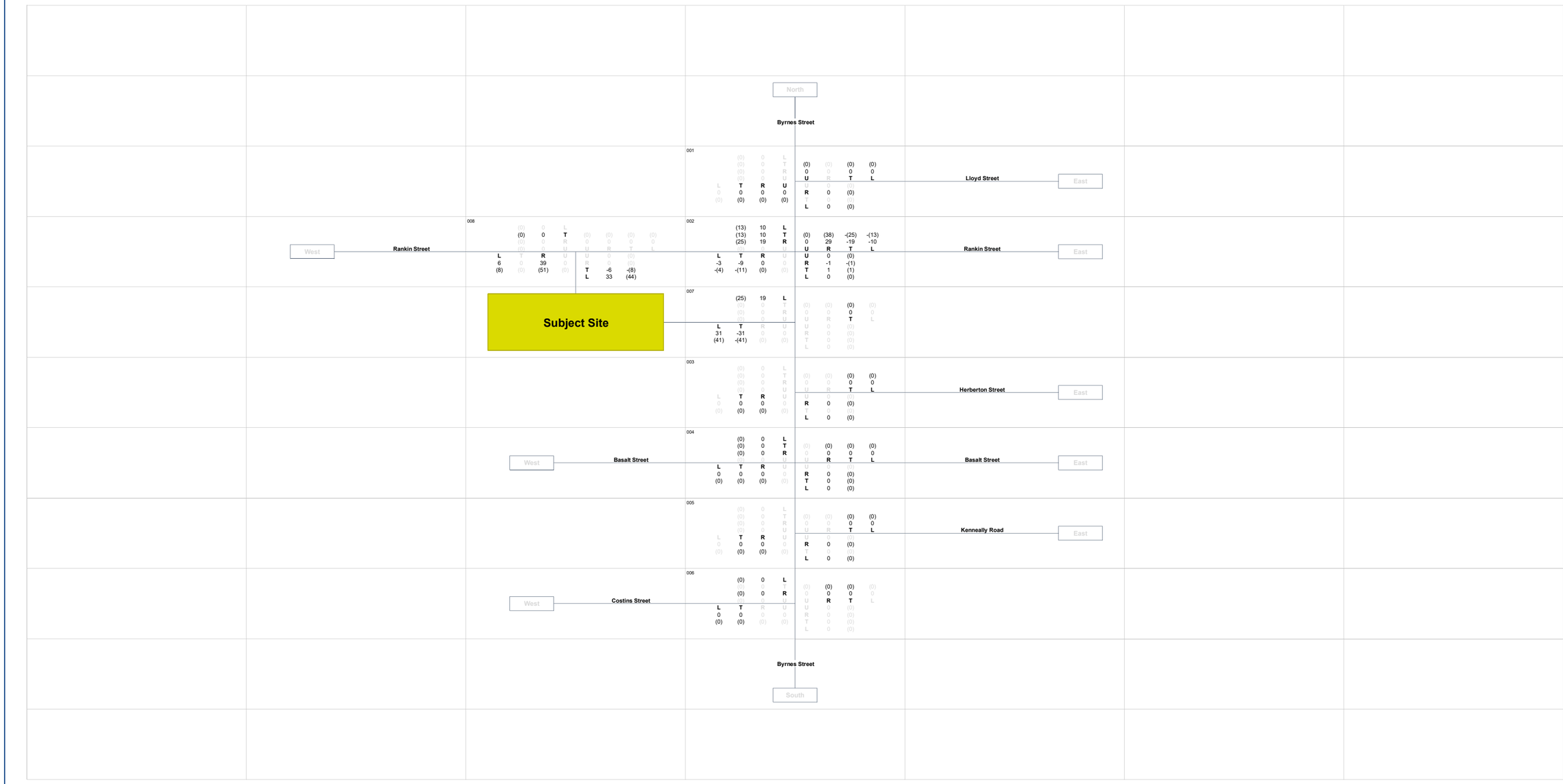
L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

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Version: 1, Version Date: 25/07/2025



C9

Drop-in Trips Total (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

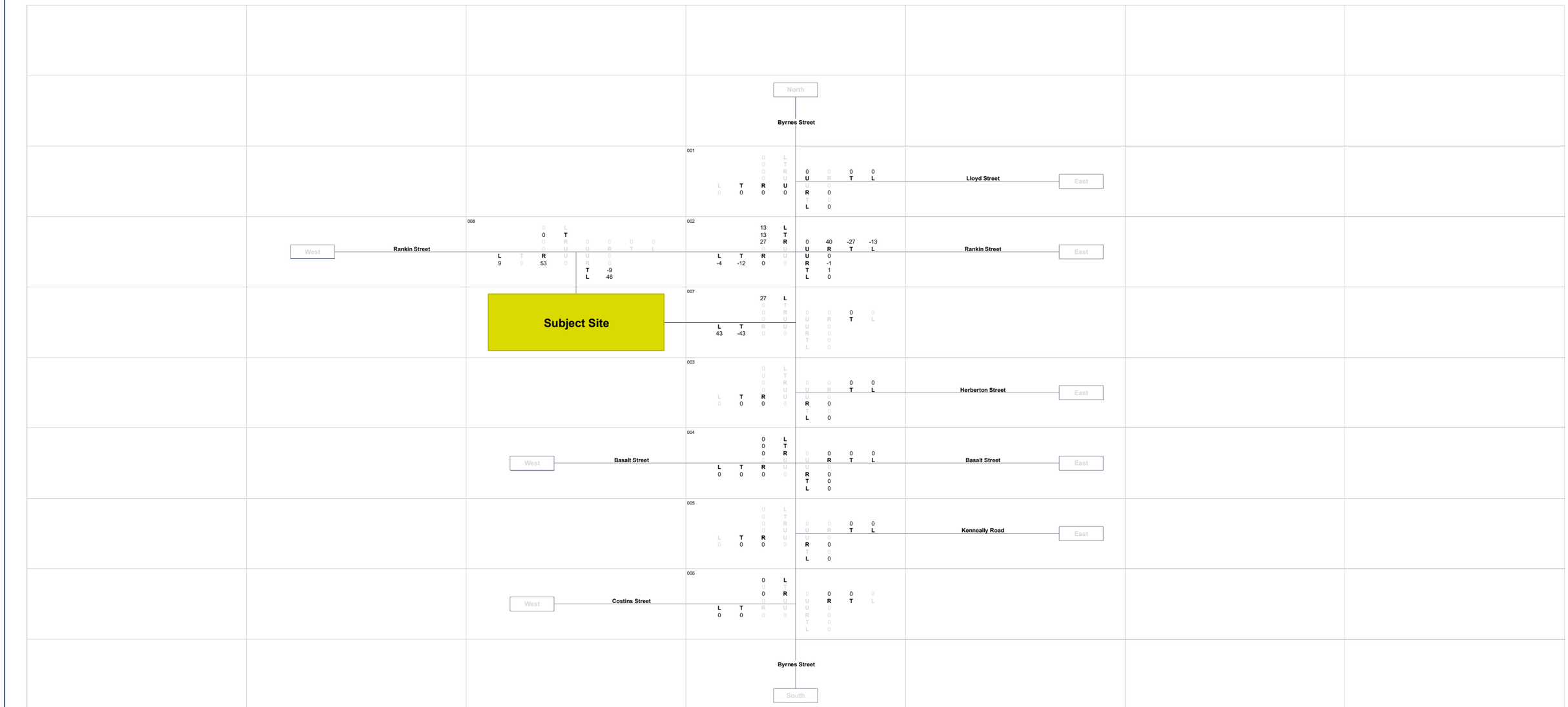
Legend

00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

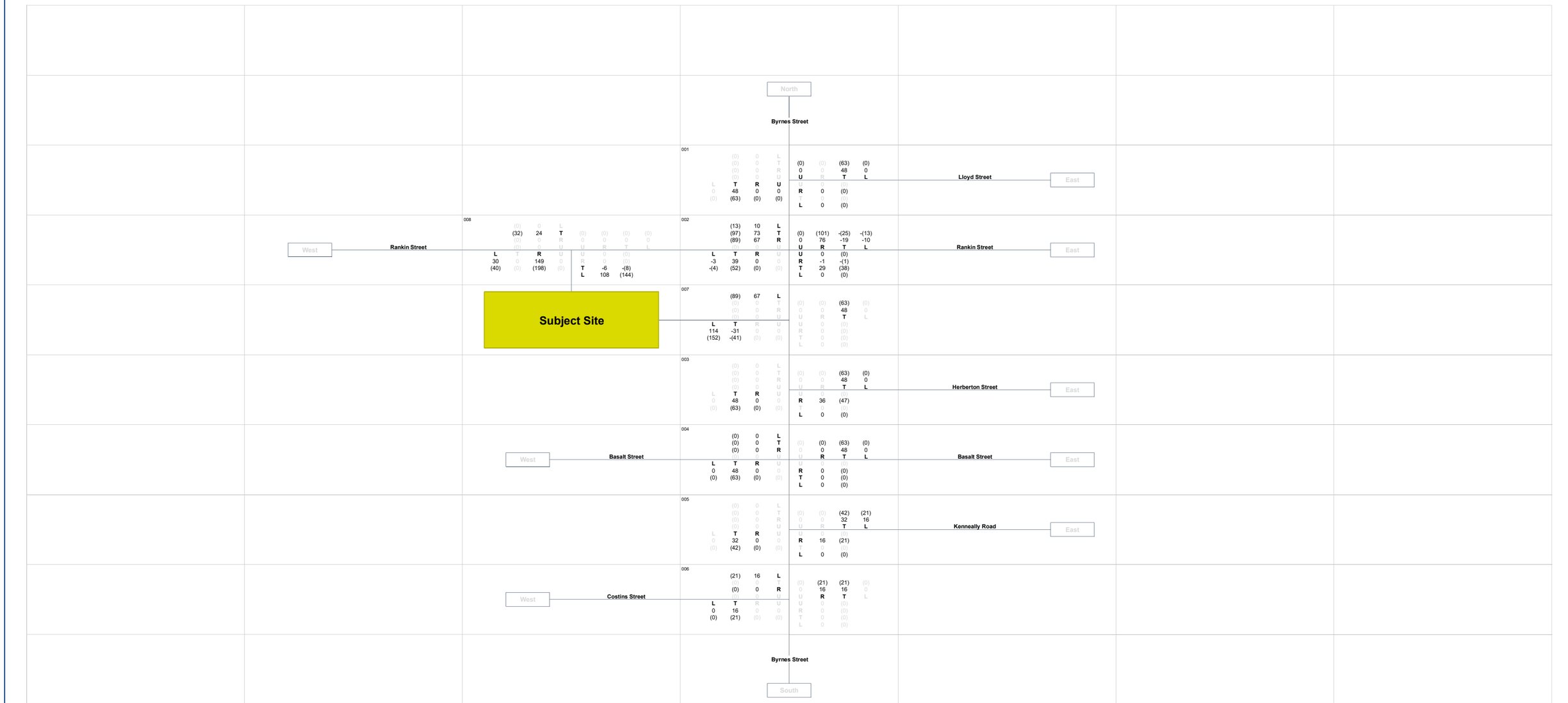


C10
Drop-in Trips Total (Sat Peak)
620.041936
Mareeba Shopping Centre

L Left Turn
T Through
R Right Turn
U U-Turn

Legend
00 Saturday Midday Peak Hour Volumes
Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C11

Development Traffic Volumes (New + Drop-in) (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

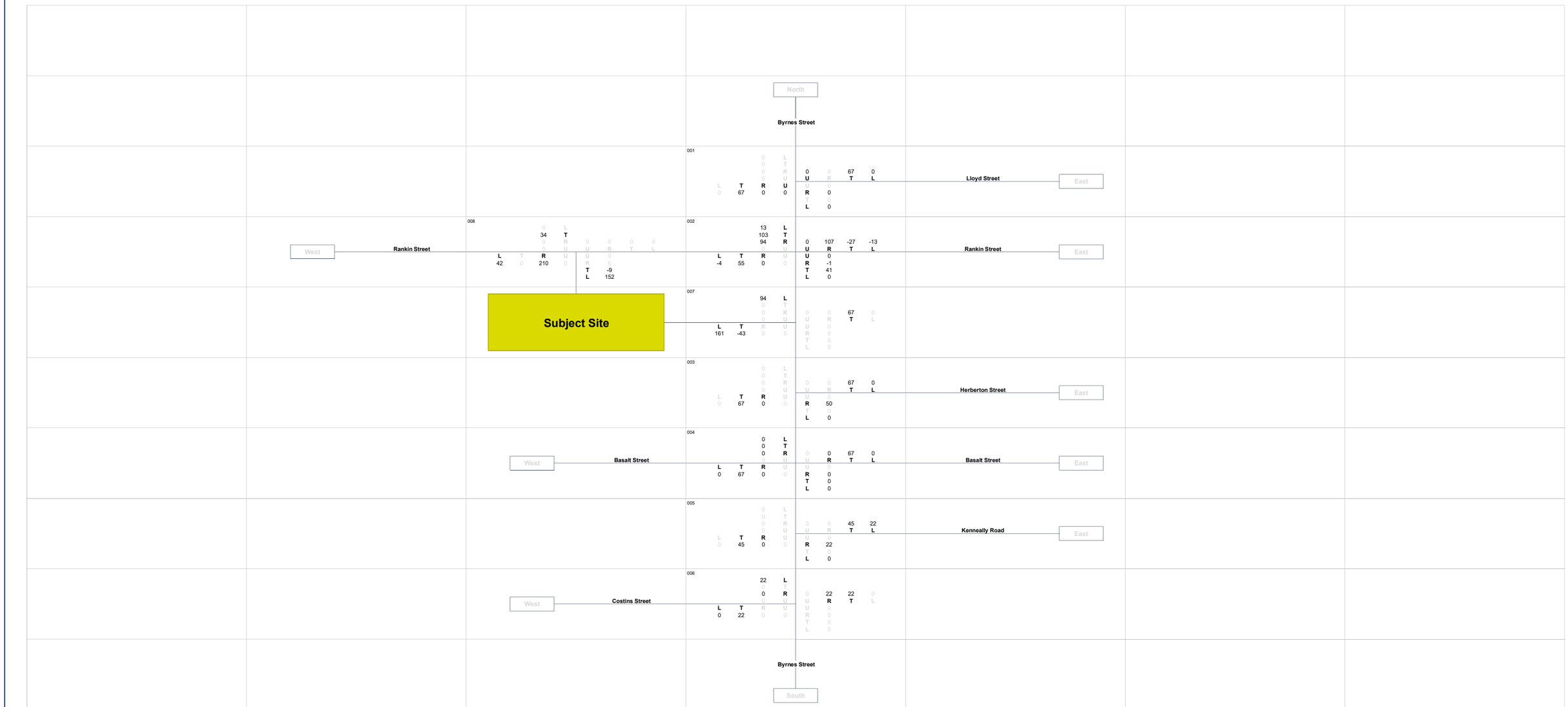
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00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C12

Development Traffic Volumes (New + Drop-in) (Sat Peak)

620.041936

Mareeba Shopping Centre

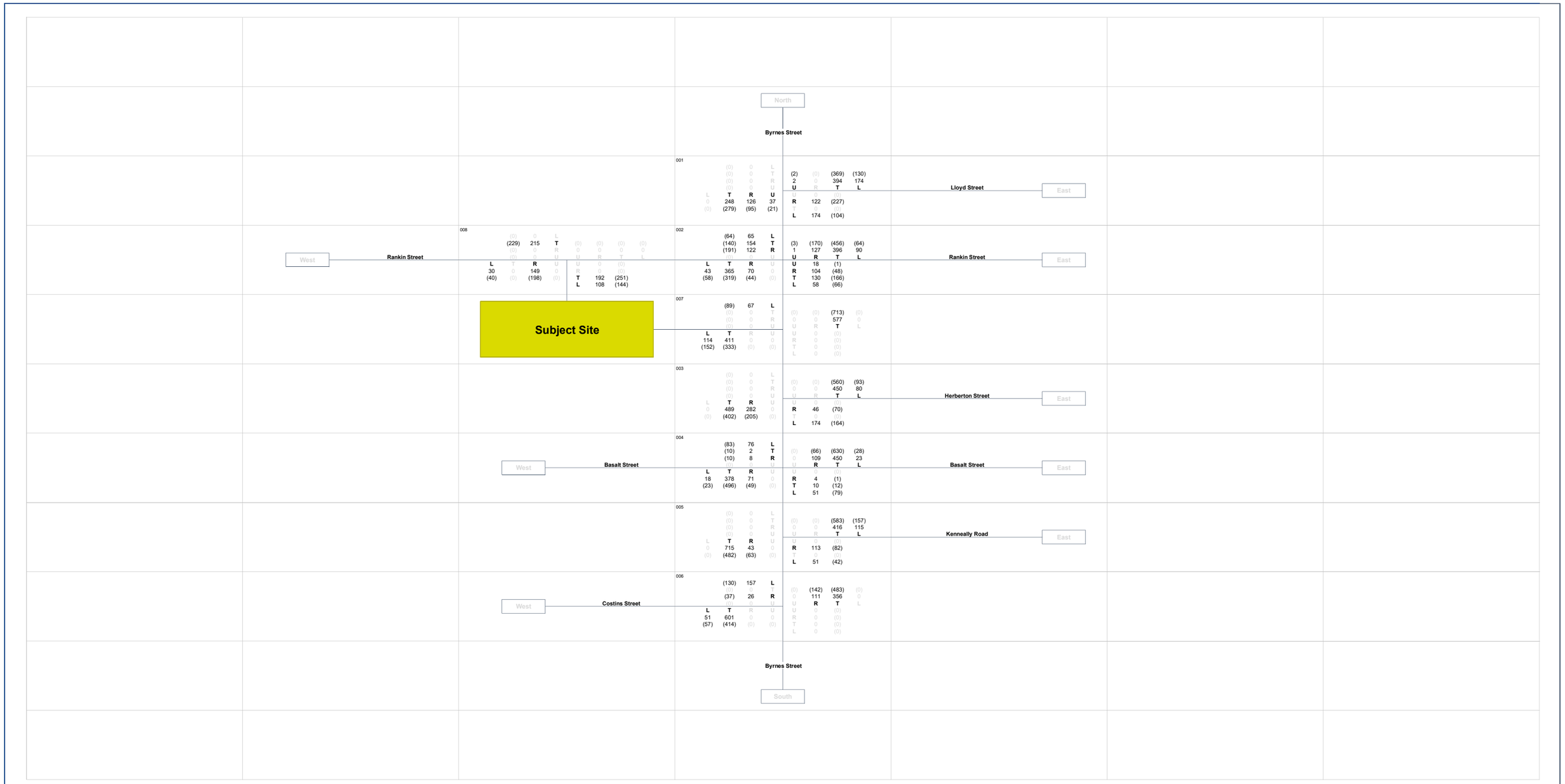
L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



SLR

C13

2027 Background + Development Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

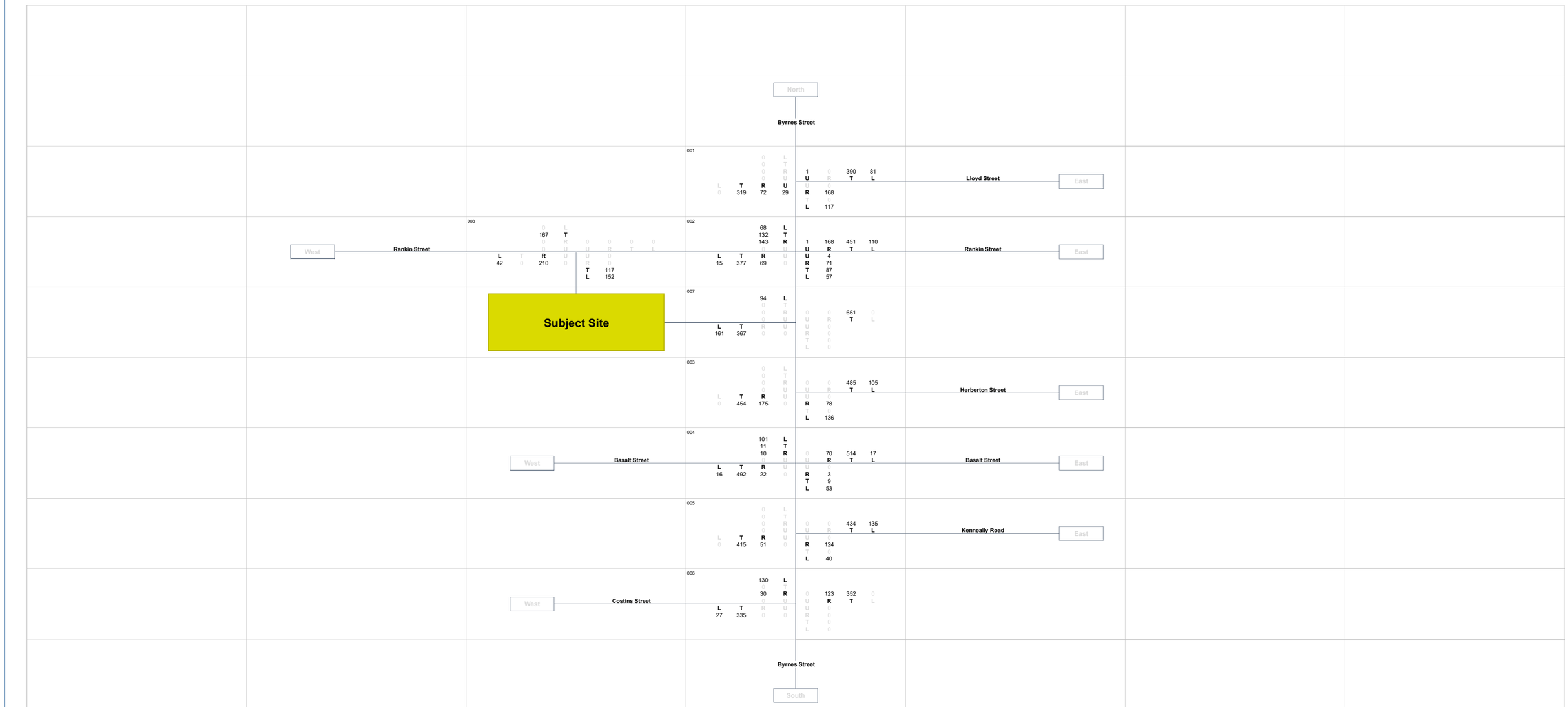
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00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C14

2027 Background + Development Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

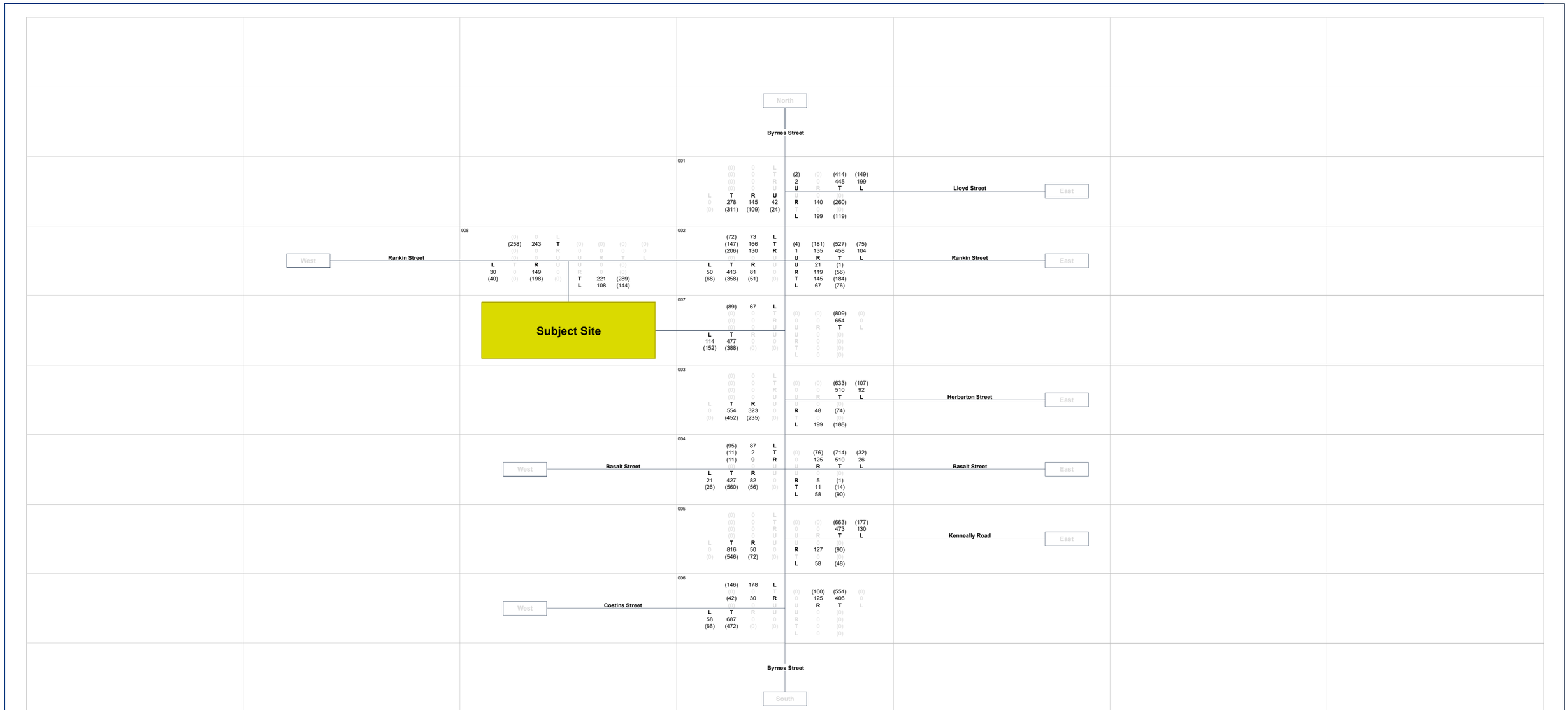
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00 Saturday Midday Peak Hour Volumes

Subject Site

L Left Turn
T Through
R Right Turn
U U-Turn

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



SLR

C15

2037 Background + Development Traffic Volumes (AM & PM Peaks)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

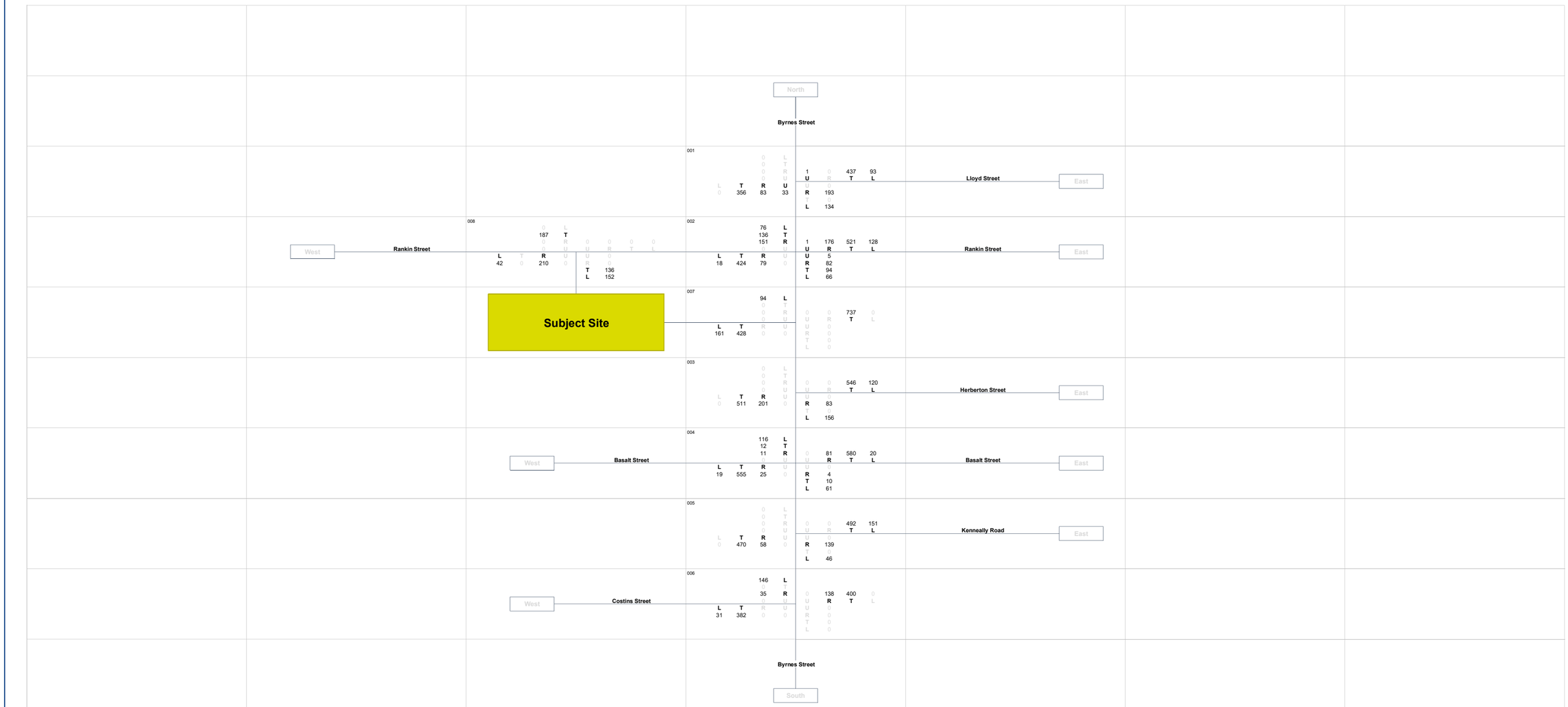
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00 Weekday AM Peak Hour Volumes

(00) Weekday PM Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025



C16

2037 Background + Development Traffic Volumes (Sat Peak)

620.041936

Mareeba Shopping Centre

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

Legend

00 Saturday Midday Peak Hour Volumes

Subject Site

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

Appendix D Detailed Sidra Outputs

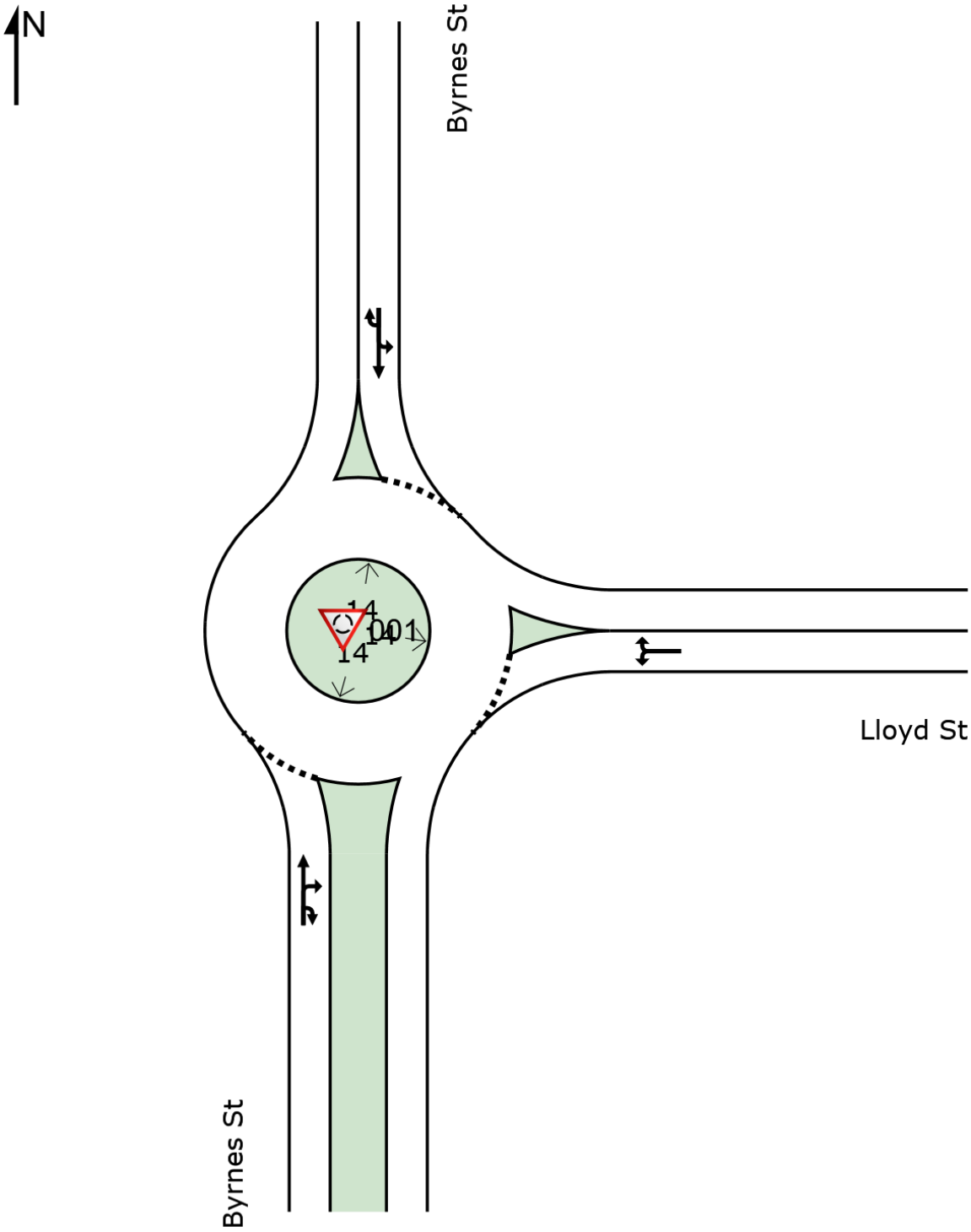
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 001 [1_2022 Survey AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 001 [1_2022 Survey AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	196	7.0	196	7.0	0.295	5.3	LOS A	2.0	14.7	0.38	0.54	0.38	53.8
3	R2	All MCs	123	7.0	123	7.0	0.295	9.2	LOS A	2.0	14.7	0.38	0.54	0.38	34.0
3u	U	All MCs	36	7.0	36	7.0	0.295	11.1	LOS B	2.0	14.7	0.38	0.54	0.38	54.5
Approach			355	7.0	355	7.0	0.295	7.2	LOS A	2.0	14.7	0.38	0.54	0.38	46.5
East: Lloyd St															
4	L2	All MCs	169	7.0	169	7.0	0.318	6.9	LOS A	2.0	14.7	0.62	0.66	0.62	51.0
6	R2	All MCs	119	7.0	119	7.0	0.318	11.0	LOS B	2.0	14.7	0.62	0.66	0.62	46.0
Approach			288	7.0	288	7.0	0.318	8.6	LOS A	2.0	14.7	0.62	0.66	0.62	49.4
North: Byrnes St															
7	L2	All MCs	169	7.0	169	7.0	0.434	5.5	LOS A	3.2	23.5	0.47	0.51	0.47	48.4
8	T1	All MCs	338	7.0	338	7.0	0.434	5.8	LOS A	3.2	23.5	0.47	0.51	0.47	54.5
9u	U	All MCs	2	7.0	2	7.0	0.434	11.5	LOS B	3.2	23.5	0.47	0.51	0.47	51.8
Approach			509	7.0	509	7.0	0.434	5.7	LOS A	3.2	23.5	0.47	0.51	0.47	53.3
All Vehicles			1153	7.0	1153	7.0	0.434	6.9	LOS A	3.2	23.5	0.48	0.56	0.48	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2022 Survey PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	211	7.0	211	7.0	0.308	6.1	LOS A	2.0	14.8	0.51	0.58	0.51	53.7
3	R2	All MCs	93	7.0	93	7.0	0.308	10.0	LOS A	2.0	14.8	0.51	0.58	0.51	33.9
3u	U	All MCs	20	7.0	20	7.0	0.308	11.8	LOS B	2.0	14.8	0.51	0.58	0.51	54.4
Approach			323	7.0	323	7.0	0.308	7.5	LOS A	2.0	14.8	0.51	0.58	0.51	47.5
East: Lloyd St															
4	L2	All MCs	101	7.0	101	7.0	0.335	6.6	LOS A	2.1	15.5	0.58	0.66	0.58	50.5
6	R2	All MCs	221	7.0	221	7.0	0.335	10.7	LOS B	2.1	15.5	0.58	0.66	0.58	45.4
Approach			322	7.0	322	7.0	0.335	9.4	LOS A	2.1	15.5	0.58	0.66	0.58	47.4
North: Byrnes St															
7	L2	All MCs	126	7.0	126	7.0	0.345	5.0	LOS A	2.4	17.8	0.38	0.47	0.38	48.8
8	T1	All MCs	298	7.0	298	7.0	0.345	5.3	LOS A	2.4	17.8	0.38	0.47	0.38	54.8
9u	U	All MCs	2	7.0	2	7.0	0.345	11.0	LOS B	2.4	17.8	0.38	0.47	0.38	52.1
Approach			426	7.0	426	7.0	0.345	5.3	LOS A	2.4	17.8	0.38	0.47	0.38	53.7
All Vehicles			1072	7.0	1072	7.0	0.345	7.2	LOS A	2.4	17.8	0.48	0.56	0.48	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2022 Survey SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	245	7.0	245	7.0	0.304	5.6	LOS A	2.0	14.8	0.44	0.54	0.44	53.9
3	R2	All MCs	71	7.0	71	7.0	0.304	9.5	LOS A	2.0	14.8	0.44	0.54	0.44	34.0
3u	U	All MCs	28	7.0	28	7.0	0.304	11.4	LOS B	2.0	14.8	0.44	0.54	0.44	54.6
Approach			344	7.0	344	7.0	0.304	6.9	LOS A	2.0	14.8	0.44	0.54	0.44	49.5
East: Lloyd St															
4	L2	All MCs	114	7.0	114	7.0	0.294	6.6	LOS A	1.8	13.1	0.57	0.66	0.57	50.7
6	R2	All MCs	164	7.0	164	7.0	0.294	10.8	LOS B	1.8	13.1	0.57	0.66	0.57	45.6
Approach			278	7.0	278	7.0	0.294	9.1	LOS A	1.8	13.1	0.57	0.66	0.57	48.2
North: Byrnes St															
7	L2	All MCs	79	7.0	79	7.0	0.313	4.9	LOS A	2.1	15.5	0.34	0.46	0.34	49.0
8	T1	All MCs	315	7.0	315	7.0	0.313	5.2	LOS A	2.1	15.5	0.34	0.46	0.34	54.9
9u	U	All MCs	1	7.0	1	7.0	0.313	10.9	LOS B	2.1	15.5	0.34	0.46	0.34	52.2
Approach			395	7.0	395	7.0	0.313	5.1	LOS A	2.1	15.5	0.34	0.46	0.34	54.2
All Vehicles			1017	7.0	1017	7.0	0.313	6.8	LOS A	2.1	15.5	0.44	0.54	0.44	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	202	7.0	202	7.0	0.306	5.4	LOS A	2.1	15.4	0.39	0.55	0.39	53.8
3	R2	All MCs	127	7.0	127	7.0	0.306	9.2	LOS A	2.1	15.4	0.39	0.55	0.39	33.9
3u	U	All MCs	37	7.0	37	7.0	0.306	11.1	LOS B	2.1	15.4	0.39	0.55	0.39	54.5
Approach			366	7.0	366	7.0	0.306	7.3	LOS A	2.1	15.4	0.39	0.55	0.39	46.5
East: Lloyd St															
4	L2	All MCs	175	7.0	175	7.0	0.332	7.0	LOS A	2.1	15.6	0.63	0.67	0.63	50.9
6	R2	All MCs	123	7.0	123	7.0	0.332	11.2	LOS B	2.1	15.6	0.63	0.67	0.63	45.8
Approach			298	7.0	298	7.0	0.332	8.7	LOS A	2.1	15.6	0.63	0.67	0.63	49.3
North: Byrnes St															
7	L2	All MCs	175	7.0	175	7.0	0.450	5.6	LOS A	3.3	24.8	0.49	0.51	0.49	48.3
8	T1	All MCs	349	7.0	349	7.0	0.450	5.8	LOS A	3.3	24.8	0.49	0.51	0.49	54.5
9u	U	All MCs	2	7.0	2	7.0	0.450	11.6	LOS B	3.3	24.8	0.49	0.51	0.49	51.7
Approach			526	7.0	526	7.0	0.450	5.8	LOS A	3.3	24.8	0.49	0.51	0.49	53.2
All Vehicles			1189	7.0	1189	7.0	0.450	7.0	LOS A	3.3	24.8	0.50	0.56	0.50	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	217	7.0	217	7.0	0.320	6.1	LOS A	2.1	15.6	0.52	0.58	0.52	53.6
3	R2	All MCs	96	7.0	96	7.0	0.320	10.0	LOS B	2.1	15.6	0.52	0.58	0.52	33.8
3u	U	All MCs	21	7.0	21	7.0	0.320	11.9	LOS B	2.1	15.6	0.52	0.58	0.52	54.4
Approach			333	7.0	333	7.0	0.320	7.6	LOS A	2.1	15.6	0.52	0.58	0.52	47.5
East: Lloyd St															
4	L2	All MCs	104	7.0	104	7.0	0.349	6.7	LOS A	2.2	16.4	0.59	0.66	0.59	50.4
6	R2	All MCs	228	7.0	228	7.0	0.349	10.8	LOS B	2.2	16.4	0.59	0.66	0.59	45.3
Approach			332	7.0	332	7.0	0.349	9.5	LOS A	2.2	16.4	0.59	0.66	0.59	47.3
North: Byrnes St															
7	L2	All MCs	130	7.0	130	7.0	0.357	5.1	LOS A	2.5	18.7	0.39	0.48	0.39	48.8
8	T1	All MCs	307	7.0	307	7.0	0.357	5.3	LOS A	2.5	18.7	0.39	0.48	0.39	54.7
9u	U	All MCs	2	7.0	2	7.0	0.357	11.1	LOS B	2.5	18.7	0.39	0.48	0.39	52.0
Approach			440	7.0	440	7.0	0.357	5.3	LOS A	2.5	18.7	0.39	0.48	0.39	53.7
All Vehicles			1106	7.0	1106	7.0	0.357	7.3	LOS A	2.5	18.7	0.49	0.56	0.49	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	253	7.0	253	7.0	0.315	5.7	LOS A	2.1	15.6	0.45	0.54	0.45	53.9
3	R2	All MCs	73	7.0	73	7.0	0.315	9.6	LOS A	2.1	15.6	0.45	0.54	0.45	34.0
3u	U	All MCs	29	7.0	29	7.0	0.315	11.4	LOS B	2.1	15.6	0.45	0.54	0.45	54.6
Approach			355	7.0	355	7.0	0.315	7.0	LOS A	2.1	15.6	0.45	0.54	0.45	49.5
East: Lloyd St															
4	L2	All MCs	117	7.0	117	7.0	0.306	6.7	LOS A	1.9	13.8	0.59	0.66	0.59	50.6
6	R2	All MCs	169	7.0	169	7.0	0.306	10.9	LOS B	1.9	13.8	0.59	0.66	0.59	45.5
Approach			287	7.0	287	7.0	0.306	9.2	LOS A	1.9	13.8	0.59	0.66	0.59	48.1
North: Byrnes St															
7	L2	All MCs	81	7.0	81	7.0	0.325	5.0	LOS A	2.2	16.2	0.35	0.46	0.35	48.9
8	T1	All MCs	325	7.0	325	7.0	0.325	5.2	LOS A	2.2	16.2	0.35	0.46	0.35	54.8
9u	U	All MCs	1	7.0	1	7.0	0.325	10.9	LOS B	2.2	16.2	0.35	0.46	0.35	52.2
Approach			407	7.0	407	7.0	0.325	5.2	LOS A	2.2	16.2	0.35	0.46	0.35	54.2
All Vehicles			1049	7.0	1049	7.0	0.325	6.9	LOS A	2.2	16.2	0.45	0.54	0.45	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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: 001 [1_2027 BG+D AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	252	7.0	252	7.0	0.346	5.4	LOS A	2.5	18.3	0.41	0.54	0.41	53.8
3	R2	All MCs	127	7.0	127	7.0	0.346	9.3	LOS A	2.5	18.3	0.41	0.54	0.41	34.0
3u	U	All MCs	37	7.0	37	7.0	0.346	11.1	LOS B	2.5	18.3	0.41	0.54	0.41	54.5
Approach			416	7.0	416	7.0	0.346	7.1	LOS A	2.5	18.3	0.41	0.54	0.41	47.4
East: Lloyd St															
4	L2	All MCs	175	7.0	175	7.0	0.348	7.4	LOS A	2.2	16.6	0.68	0.68	0.68	50.6
6	R2	All MCs	123	7.0	123	7.0	0.348	11.6	LOS B	2.2	16.6	0.68	0.68	0.68	45.5
Approach			298	7.0	298	7.0	0.348	9.2	LOS A	2.2	16.6	0.68	0.68	0.68	48.9
North: Byrnes St															
7	L2	All MCs	175	7.0	175	7.0	0.491	5.6	LOS A	3.8	28.5	0.51	0.52	0.51	48.1
8	T1	All MCs	399	7.0	399	7.0	0.491	5.9	LOS A	3.8	28.5	0.51	0.52	0.51	54.4
9u	U	All MCs	2	7.0	2	7.0	0.491	11.6	LOS B	3.8	28.5	0.51	0.52	0.51	51.6
Approach			576	7.0	576	7.0	0.491	5.8	LOS A	3.8	28.5	0.51	0.52	0.51	53.2
All Vehicles			1289	7.0	1289	7.0	0.491	7.0	LOS A	3.8	28.5	0.52	0.56	0.52	50.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG+D PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	284	7.0	284	7.0	0.383	6.2	LOS A	2.7	20.0	0.56	0.58	0.56	53.6
3	R2	All MCs	96	7.0	96	7.0	0.383	10.1	LOS B	2.7	20.0	0.56	0.58	0.56	33.8
3u	U	All MCs	21	7.0	21	7.0	0.383	12.0	LOS B	2.7	20.0	0.56	0.58	0.56	54.4
Approach			400	7.0	400	7.0	0.383	7.5	LOS A	2.7	20.0	0.56	0.58	0.56	48.5
East: Lloyd St															
4	L2	All MCs	104	7.0	104	7.0	0.372	7.2	LOS A	2.4	17.8	0.65	0.69	0.65	50.1
6	R2	All MCs	228	7.0	228	7.0	0.372	11.3	LOS B	2.4	17.8	0.65	0.69	0.65	44.8
Approach			332	7.0	332	7.0	0.372	10.0	LOS B	2.4	17.8	0.65	0.69	0.65	46.9
North: Byrnes St															
7	L2	All MCs	130	7.0	130	7.0	0.409	5.1	LOS A	3.1	22.9	0.41	0.48	0.41	48.6
8	T1	All MCs	374	7.0	374	7.0	0.409	5.4	LOS A	3.1	22.9	0.41	0.48	0.41	54.6
9u	U	All MCs	2	7.0	2	7.0	0.409	11.1	LOS B	3.1	22.9	0.41	0.48	0.41	51.9
Approach			507	7.0	507	7.0	0.409	5.3	LOS A	3.1	22.9	0.41	0.48	0.41	53.7
All Vehicles			1239	7.0	1239	7.0	0.409	7.3	LOS A	3.1	22.9	0.52	0.57	0.52	50.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2027 BG+D SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	324	7.0	324	7.0	0.376	5.8	LOS A	2.7	20.0	0.49	0.54	0.49	53.9
3	R2	All MCs	73	7.0	73	7.0	0.376	9.6	LOS A	2.7	20.0	0.49	0.54	0.49	34.0
3u	U	All MCs	29	7.0	29	7.0	0.376	11.5	LOS B	2.7	20.0	0.49	0.54	0.49	54.6
Approach			426	7.0	426	7.0	0.376	6.8	LOS A	2.7	20.0	0.49	0.54	0.49	50.2
East: Lloyd St															
4	L2	All MCs	117	7.0	117	7.0	0.328	7.3	LOS A	2.0	15.0	0.65	0.69	0.65	50.2
6	R2	All MCs	169	7.0	169	7.0	0.328	11.4	LOS B	2.0	15.0	0.65	0.69	0.65	45.0
Approach			287	7.0	287	7.0	0.328	9.8	LOS A	2.0	15.0	0.65	0.69	0.65	47.6
North: Byrnes St															
7	L2	All MCs	81	7.0	81	7.0	0.378	5.0	LOS A	2.7	20.3	0.37	0.46	0.37	48.8
8	T1	All MCs	395	7.0	395	7.0	0.378	5.3	LOS A	2.7	20.3	0.37	0.46	0.37	54.7
9u	U	All MCs	1	7.0	1	7.0	0.378	11.0	LOS B	2.7	20.3	0.37	0.46	0.37	52.0
Approach			478	7.0	478	7.0	0.378	5.2	LOS A	2.7	20.3	0.37	0.46	0.37	54.2
All Vehicles			1191	7.0	1191	7.0	0.378	6.9	LOS A	2.7	20.3	0.48	0.54	0.48	51.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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: 001 [1_2037 BG+D AM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	283	7.0	283	7.0	0.403	5.6	LOS A	3.1	22.8	0.47	0.55	0.47	53.7
3	R2	All MCs	147	7.0	147	7.0	0.403	9.5	LOS A	3.1	22.8	0.47	0.55	0.47	33.9
3u	U	All MCs	43	7.0	43	7.0	0.403	11.3	LOS B	3.1	22.8	0.47	0.55	0.47	54.4
Approach			472	7.0	472	7.0	0.403	7.3	LOS A	3.1	22.8	0.47	0.55	0.47	47.1
East: Lloyd St															
4	L2	All MCs	202	7.0	202	7.0	0.432	8.2	LOS A	3.0	22.3	0.76	0.72	0.77	50.1
6	R2	All MCs	142	7.0	142	7.0	0.432	12.4	LOS B	3.0	22.3	0.76	0.72	0.77	44.8
Approach			343	7.0	343	7.0	0.432	10.0	LOS A	3.0	22.3	0.76	0.72	0.77	48.3
North: Byrnes St															
7	L2	All MCs	202	7.0	202	7.0	0.576	6.0	LOS A	5.0	37.1	0.61	0.55	0.61	47.6
8	T1	All MCs	452	7.0	452	7.0	0.576	6.3	LOS A	5.0	37.1	0.61	0.55	0.61	54.1
9u	U	All MCs	3	7.0	3	7.0	0.576	12.0	LOS B	5.0	37.1	0.61	0.55	0.61	51.2
Approach			657	7.0	657	7.0	0.576	6.2	LOS A	5.0	37.1	0.61	0.55	0.61	52.9
All Vehicles			1473	7.0	1473	7.0	0.576	7.4	LOS A	5.0	37.1	0.60	0.59	0.60	49.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2037 BG+D PM Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	317	7.0	317	7.0	0.450	6.6	LOS A	3.4	25.0	0.63	0.61	0.63	53.4
3	R2	All MCs	110	7.0	110	7.0	0.450	10.5	LOS B	3.4	25.0	0.63	0.61	0.63	33.7
3u	U	All MCs	24	7.0	24	7.0	0.450	12.4	LOS B	3.4	25.0	0.63	0.61	0.63	54.2
Approach			451	7.0	451	7.0	0.450	7.9	LOS A	3.4	25.0	0.63	0.61	0.63	48.2
East: Lloyd St															
4	L2	All MCs	120	7.0	120	7.0	0.452	7.9	LOS A	3.2	23.5	0.73	0.72	0.74	49.6
6	R2	All MCs	263	7.0	263	7.0	0.452	12.1	LOS B	3.2	23.5	0.73	0.72	0.74	44.2
Approach			384	7.0	384	7.0	0.452	10.8	LOS B	3.2	23.5	0.73	0.72	0.74	46.3
North: Byrnes St															
7	L2	All MCs	150	7.0	150	7.0	0.474	5.3	LOS A	3.9	28.8	0.48	0.49	0.48	48.2
8	T1	All MCs	421	7.0	421	7.0	0.474	5.6	LOS A	3.9	28.8	0.48	0.49	0.48	54.4
9u	U	All MCs	3	7.0	3	7.0	0.474	11.3	LOS B	3.9	28.8	0.48	0.49	0.48	51.7
Approach			574	7.0	574	7.0	0.474	5.6	LOS A	3.9	28.8	0.48	0.49	0.48	53.5
All Vehicles			1409	7.0	1409	7.0	0.474	7.7	LOS A	3.9	28.8	0.60	0.59	0.60	50.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 001 [1_2037 BG+D SAT Peak_Byrnes St/Lloyd St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Lloyd St
Prepared: TB
Reviewed:
Site Category: NA
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	363	7.0	363	7.0	0.438	6.1	LOS A	3.3	24.8	0.55	0.56	0.55	53.7
3	R2	All MCs	84	7.0	84	7.0	0.438	9.9	LOS A	3.3	24.8	0.55	0.56	0.55	33.9
3u	U	All MCs	34	7.0	34	7.0	0.438	11.8	LOS B	3.3	24.8	0.55	0.56	0.55	54.4
Approach			481	7.0	481	7.0	0.438	7.1	LOS A	3.3	24.8	0.55	0.56	0.55	49.9
East: Lloyd St															
4	L2	All MCs	135	7.0	135	7.0	0.399	8.0	LOS A	2.6	19.5	0.72	0.71	0.72	49.8
6	R2	All MCs	196	7.0	196	7.0	0.399	12.1	LOS B	2.6	19.5	0.72	0.71	0.72	44.5
Approach			331	7.0	331	7.0	0.399	10.4	LOS B	2.6	19.5	0.72	0.71	0.72	47.1
North: Byrnes St															
7	L2	All MCs	94	7.0	94	7.0	0.436	5.2	LOS A	3.4	25.2	0.43	0.48	0.43	48.5
8	T1	All MCs	445	7.0	445	7.0	0.436	5.4	LOS A	3.4	25.2	0.43	0.48	0.43	54.6
9u	U	All MCs	1	7.0	1	7.0	0.436	11.2	LOS B	3.4	25.2	0.43	0.48	0.43	51.8
Approach			541	7.0	541	7.0	0.436	5.4	LOS A	3.4	25.2	0.43	0.48	0.43	54.0
All Vehicles			1352	7.0	1352	7.0	0.438	7.2	LOS A	3.4	25.2	0.54	0.56	0.54	51.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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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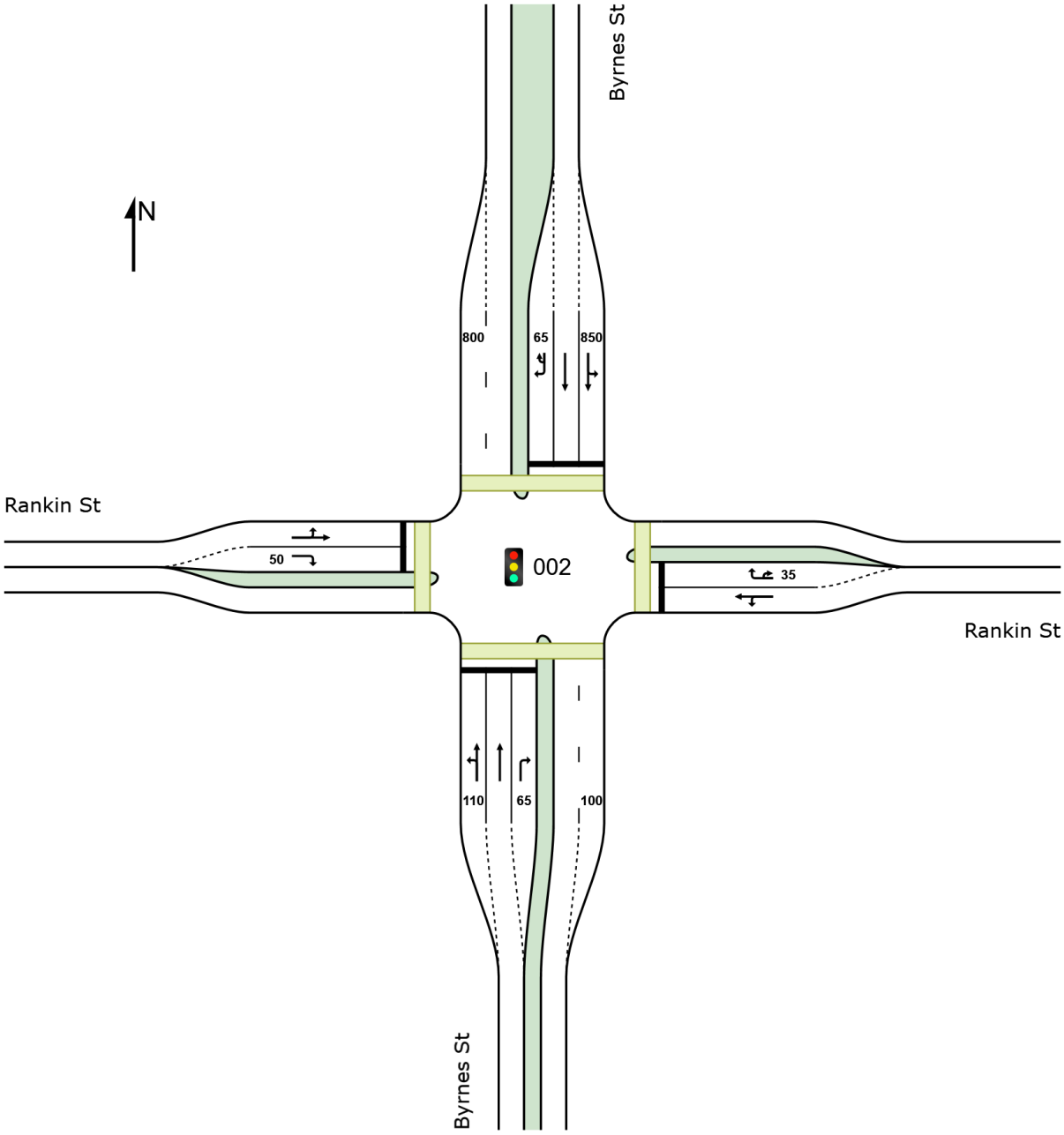
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SITE LAYOUT

Site: 002 [2_2022 Survey AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

PHASING SUMMARY

Site: 002 [2_2022 Survey AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

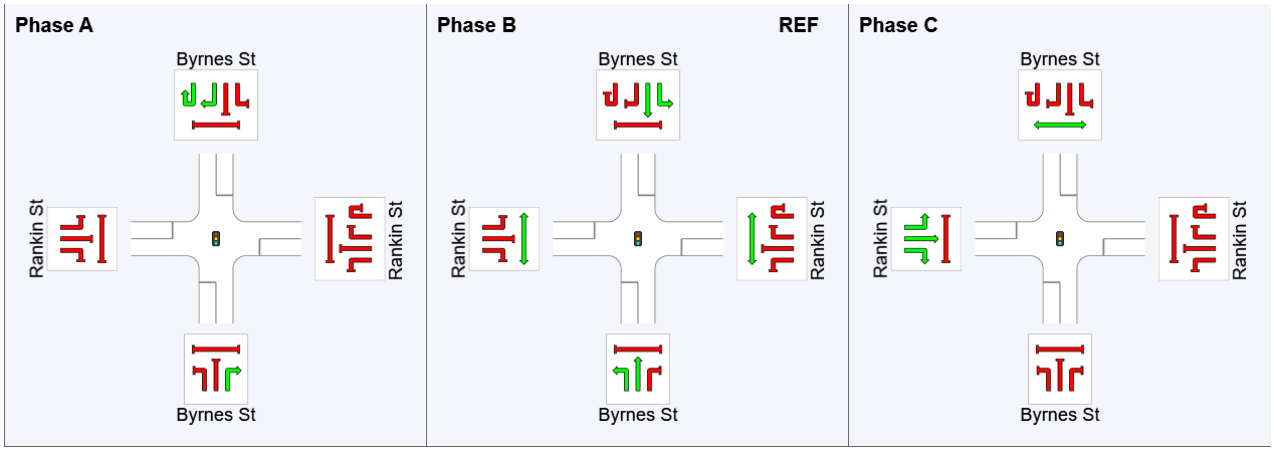
Phase Timing Summary

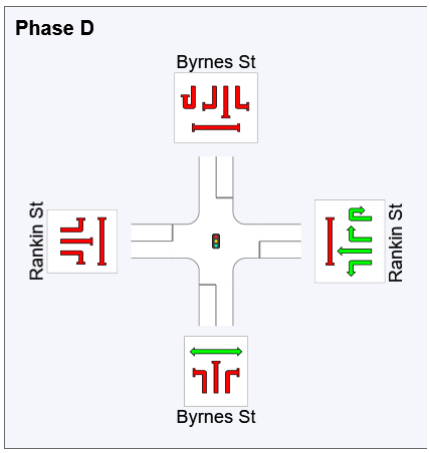
Phase	A	B	C	D
Phase Change Time (sec)	113	0	55	82
Green Time (sec)	11	49	21	25
Phase Time (sec)	17	55	27	31
Phase Split	13%	42%	21%	24%
Phase Frequency (%)	100.0[4]	100.0[4]	100.0[4]	100.0[4]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

4 Phase Frequency specified by the user (phase times not specified).

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2022 Survey AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	45	7.0	45	7.0	0.261	35.9	LOS D	7.8	57.8	0.73	0.65	0.73	10.6
2	T1	All MCs	318	7.0	318	7.0	0.261	29.9	LOS C	7.9	58.8	0.73	0.63	0.73	41.3
3	R2	All MCs	68	7.0	68	7.0	* 0.457	69.4	LOS E	4.3	32.0	0.99	0.76	0.99	12.6
Approach			432	7.0	432	7.0	0.457	36.8	LOS D	7.9	58.8	0.77	0.65	0.77	33.5
East: Rankin St															
4	L2	All MCs	57	7.0	57	7.0	* 0.469	60.1	LOS E	8.9	65.8	0.94	0.78	0.94	15.3
5	T1	All MCs	99	7.0	99	7.0	0.469	52.8	LOS D	8.9	65.8	0.94	0.78	0.94	12.0
6	R2	All MCs	102	7.0	102	7.0	0.370	57.7	LOS E	6.7	49.7	0.92	0.79	0.92	30.7
6u	U	All MCs	18	7.0	18	7.0	0.370	58.9	LOS E	6.7	49.7	0.92	0.79	0.92	10.9
Approach			276	7.0	276	7.0	0.469	56.5	LOS E	8.9	65.8	0.93	0.78	0.93	21.3
North: Byrnes St															
7	L2	All MCs	97	7.0	97	7.0	0.257	35.7	LOS D	7.5	55.8	0.73	0.70	0.73	33.7
8	T1	All MCs	405	7.0	405	7.0	* 0.468	32.8	LOS C	15.6	115.8	0.79	0.70	0.79	40.3
9	R2	All MCs	49	7.0	49	7.0	0.340	69.2	LOS E	3.1	23.3	0.98	0.75	0.98	21.7
9u	U	All MCs	1	7.0	1	7.0	0.340	70.6	LOS E	3.1	23.3	0.98	0.75	0.98	36.2
Approach			553	7.0	553	7.0	0.468	36.6	LOS D	15.6	115.8	0.80	0.70	0.80	36.3
West: Rankin St															
10	L2	All MCs	54	7.0	54	7.0	0.457	60.8	LOS E	7.7	57.5	0.95	0.78	0.95	30.5
11	T1	All MCs	79	7.0	79	7.0	* 0.457	53.6	LOS D	7.7	57.5	0.95	0.78	0.95	11.4
12	R2	All MCs	54	7.0	54	7.0	0.188	56.9	LOS E	3.0	22.1	0.90	0.74	0.90	14.5
Approach			186	7.0	186	7.0	0.457	56.6	LOS E	7.7	57.5	0.94	0.77	0.94	19.8
All Vehicles			1446	7.0	1446	7.0	0.469	43.1	LOS D	15.6	115.8	0.83	0.71	0.83	31.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Organisation: SLR CONSULTING AUSTRALIA | Licence: NETWORK / 1PC | Processed: Wednesday, 21 May 2025 12:01:13 PM
Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2022 Survey PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

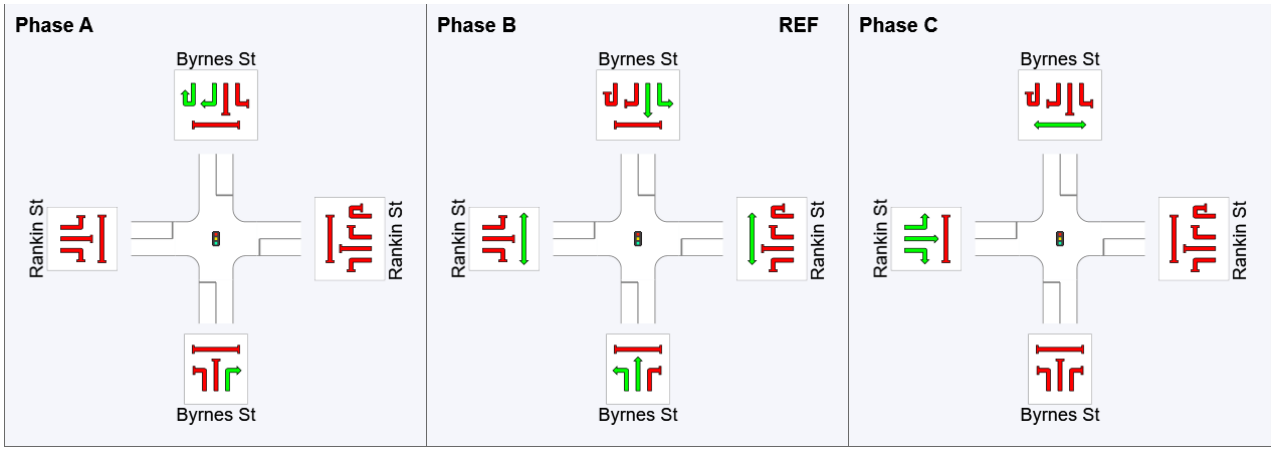
Phase Timing Summary

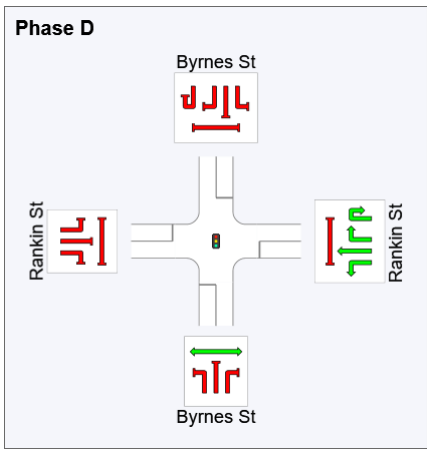
Phase	A	B	C	D
Phase Change Time (sec)	113	0	57	78
Green Time (sec)	11	51	15	29
Phase Time (sec)	17	57	21	35
Phase Split	13%	44%	16%	27%
Phase Frequency (%)	100.0[4]	100.0[4]	100.0[4]	100.0[4]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

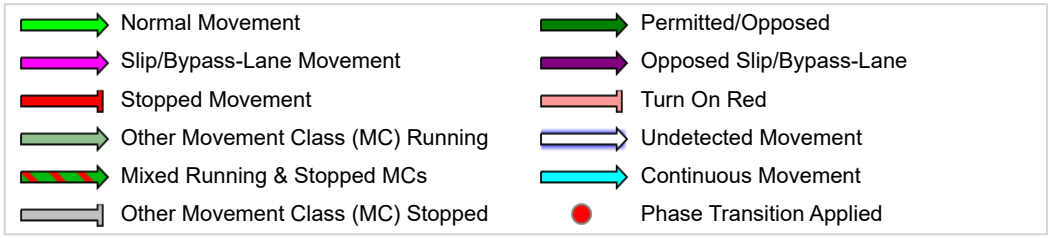
4 Phase Frequency specified by the user (phase times not specified).

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2022 Survey PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	61	7.0	61	7.0	0.222	34.0	LOS C	6.6	49.0	0.71	0.65	0.71	10.7
2	T1	All MCs	260	7.0	260	7.0	0.222	28.0	LOS C	6.8	50.2	0.71	0.61	0.71	42.0
3	R2	All MCs	43	7.0	43	7.0	0.288	68.1	LOS E	2.7	19.8	0.98	0.74	0.98	12.8
Approach			364	7.0	364	7.0	0.288	33.7	LOS C	6.8	50.2	0.74	0.63	0.74	33.0
East: Rankin St															
4	L2	All MCs	64	7.0	64	7.0	* 0.491	63.9	LOS E	10.5	77.9	0.92	0.78	0.92	15.9
5	T1	All MCs	124	7.0	124	7.0	0.491	56.2	LOS E	10.5	77.9	0.92	0.78	0.92	12.6
6	R2	All MCs	48	7.0	48	7.0	0.126	57.8	LOS E	2.5	18.6	0.84	0.73	0.84	32.5
6u	U	All MCs	1	7.0	1	7.0	0.126	58.9	LOS E	2.5	18.6	0.84	0.73	0.84	12.0
Approach			238	7.0	238	7.0	0.491	58.6	LOS E	10.5	77.9	0.91	0.77	0.91	17.5
North: Byrnes St															
7	L2	All MCs	75	7.0	75	7.0	0.269	34.6	LOS C	8.1	60.5	0.72	0.67	0.72	34.3
8	T1	All MCs	469	7.0	469	7.0	* 0.490	32.9	LOS C	16.7	123.6	0.78	0.69	0.78	40.8
9	R2	All MCs	67	7.0	67	7.0	* 0.478	72.0	LOS E	4.5	33.1	1.00	0.77	1.00	21.5
9u	U	All MCs	3	7.0	3	7.0	0.478	73.3	LOS E	4.5	33.1	1.00	0.77	1.00	35.9
Approach			615	7.0	615	7.0	0.490	37.6	LOS D	16.7	123.6	0.80	0.70	0.80	36.1
West: Rankin St															
10	L2	All MCs	51	7.0	51	7.0	0.457	66.1	LOS E	5.7	42.0	0.98	0.77	0.98	28.9
11	T1	All MCs	42	7.0	42	7.0	0.457	59.0	LOS E	5.7	42.0	0.98	0.77	0.98	10.4
12	R2	All MCs	100	7.0	100	7.0	* 0.490	65.5	LOS E	6.1	45.5	0.98	0.78	0.98	13.1
Approach			193	7.0	193	7.0	0.490	64.2	LOS E	6.1	45.5	0.98	0.78	0.98	18.1
All Vehicles			1409	7.0	1409	7.0	0.491	43.8	LOS D	16.7	123.6	0.83	0.70	0.83	30.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2022 Survey SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

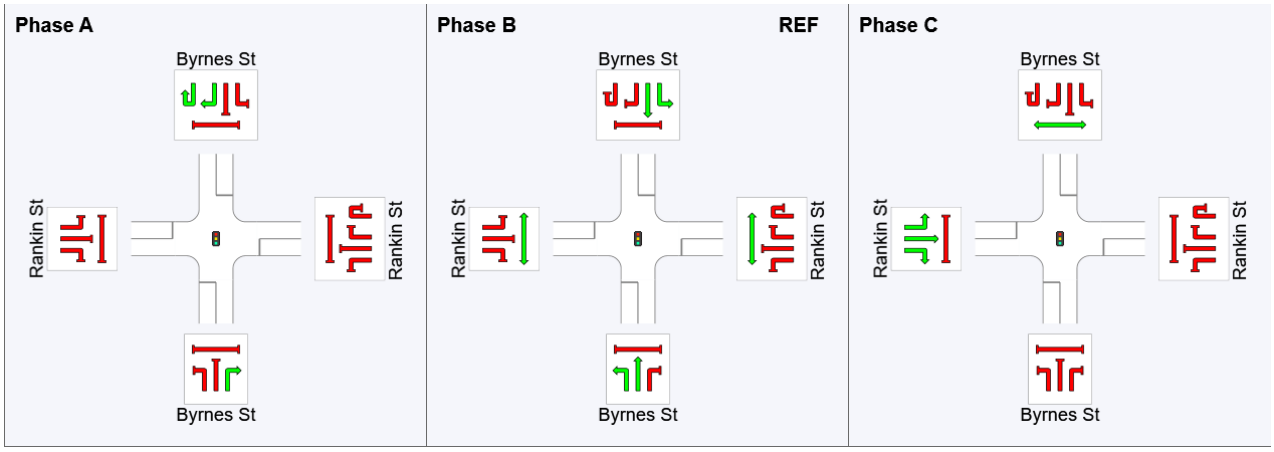
Phase Timing Summary

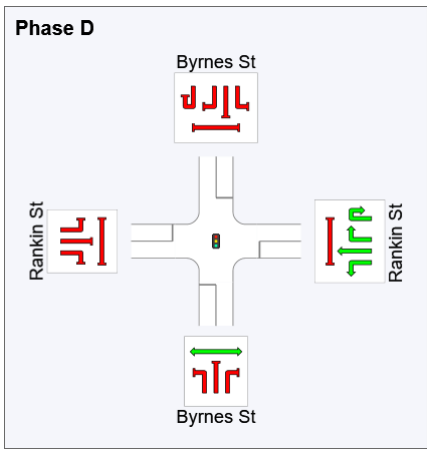
Phase	A	B	C	D
Phase Change Time (sec)	103	0	62	81
Green Time (sec)	11	56	13	16
Phase Time (sec)	17	62	19	22
Phase Split	14%	52%	16%	18%
Phase Frequency (%)	100.0[4]	100.0[4]	100.0[4]	100.0[4]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

4 Phase Frequency specified by the user (phase times not specified).

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2022 Survey SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	19	7.0	19	7.0	0.192	26.0	LOS C	5.6	41.5	0.62	0.54	0.62	11.8
2	T1	All MCs	314	7.0	314	7.0	0.192	20.0	LOS C	5.6	41.8	0.62	0.53	0.62	46.1
3	R2	All MCs	67	7.0	67	7.0	* 0.415	63.5	LOS E	3.9	28.9	0.99	0.76	0.99	13.5
Approach			400	7.0	400	7.0	0.415	27.6	LOS C	5.6	41.8	0.68	0.57	0.68	38.9
East: Rankin St															
4	L2	All MCs	56	7.0	56	7.0	0.431	60.0	LOS E	5.6	41.5	0.96	0.77	0.96	14.6
5	T1	All MCs	45	7.0	45	7.0	* 0.431	52.4	LOS D	5.6	41.5	0.96	0.77	0.96	11.4
6	R2	All MCs	71	7.0	71	7.0	0.323	57.6	LOS E	4.1	30.2	0.95	0.77	0.95	30.2
6u	U	All MCs	4	7.0	4	7.0	0.323	58.8	LOS E	4.1	30.2	0.95	0.77	0.95	10.6
Approach			176	7.0	176	7.0	0.431	57.1	LOS E	5.6	41.5	0.96	0.77	0.96	22.0
North: Byrnes St															
7	L2	All MCs	120	7.0	120	7.0	0.242	26.3	LOS C	7.0	52.0	0.64	0.67	0.64	36.7
8	T1	All MCs	465	7.0	465	7.0	* 0.440	22.5	LOS C	14.9	110.4	0.71	0.64	0.71	44.7
9	R2	All MCs	59	7.0	59	7.0	0.372	63.2	LOS E	3.4	25.6	0.98	0.76	0.98	22.4
9u	U	All MCs	1	7.0	1	7.0	0.372	64.6	LOS E	3.4	25.6	0.98	0.76	0.98	37.2
Approach			645	7.0	645	7.0	0.440	27.0	LOS C	14.9	110.4	0.72	0.65	0.72	39.8
West: Rankin St															
10	L2	All MCs	54	7.0	54	7.0	0.439	62.4	LOS E	4.7	34.7	0.98	0.77	0.98	29.6
11	T1	All MCs	28	7.0	28	7.0	* 0.439	55.3	LOS E	4.7	34.7	0.98	0.77	0.98	10.8
12	R2	All MCs	48	7.0	48	7.0	0.253	60.1	LOS E	2.7	19.9	0.95	0.74	0.95	13.9
Approach			131	7.0	131	7.0	0.439	60.0	LOS E	4.7	34.7	0.97	0.76	0.97	21.6
All Vehicles			1352	7.0	1352	7.0	0.440	34.3	LOS C	14.9	110.4	0.76	0.65	0.76	35.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

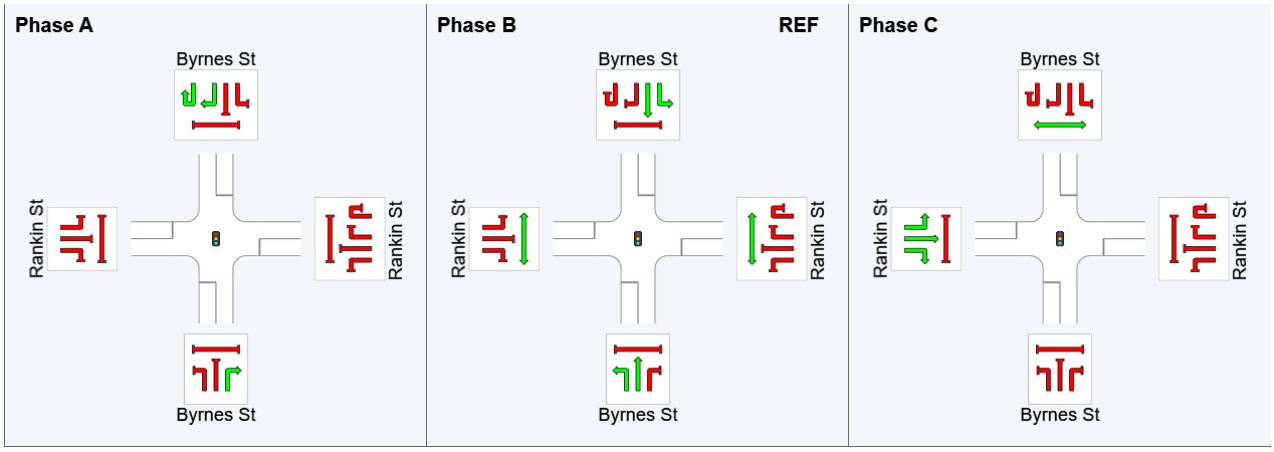
Phase Timing Summary

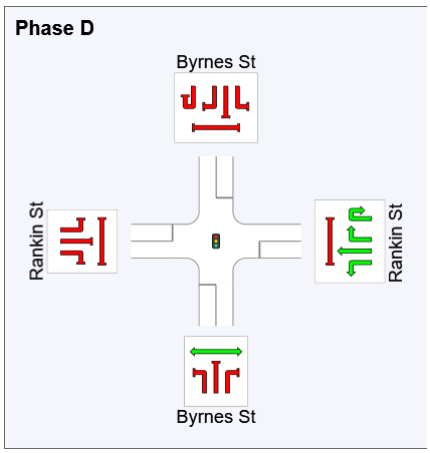
Phase	A	B	C	D
Phase Change Time (sec)	107	0	49	76
Green Time (sec)	17	43	21	25
Phase Time (sec)	23	49	27	31
Phase Split	18%	38%	21%	24%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

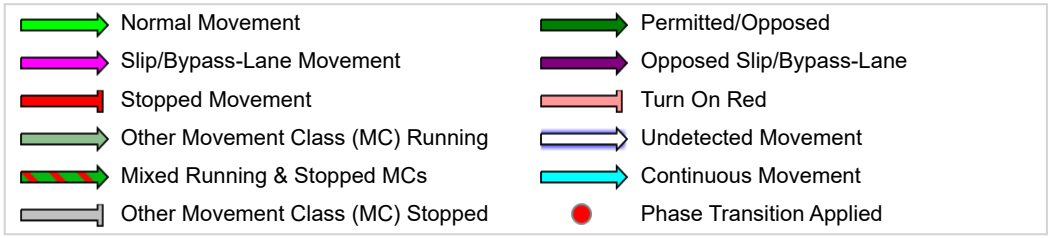
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	49	7.0	49	7.0	0.321	41.0	LOS D	9.2	67.9	0.79	0.70	0.79	10.1
2	T1	All MCs	343	7.0	343	7.0	0.321	35.0	LOS C	9.3	69.1	0.79	0.68	0.79	39.3
3	R2	All MCs	74	7.0	74	7.0	* 0.319	62.1	LOS E	4.3	32.2	0.95	0.77	0.95	13.7
Approach			466	7.0	466	7.0	0.321	39.9	LOS D	9.3	69.1	0.82	0.69	0.82	32.5
East: Rankin St															
4	L2	All MCs	61	7.0	61	7.0	0.539	64.7	LOS E	9.7	72.2	0.95	0.79	0.95	15.1
5	T1	All MCs	107	7.0	107	7.0	* 0.539	57.2	LOS E	9.7	72.2	0.95	0.79	0.95	11.9
6	R2	All MCs	110	7.0	110	7.0	0.399	61.7	LOS E	7.3	54.0	0.92	0.79	0.92	30.6
6u	U	All MCs	19	7.0	19	7.0	0.399	62.9	LOS E	7.3	54.0	0.92	0.79	0.92	10.9
Approach			298	7.0	298	7.0	0.539	60.8	LOS E	9.7	72.2	0.94	0.79	0.94	21.8
North: Byrnes St															
7	L2	All MCs	105	7.0	105	7.0	0.321	40.8	LOS D	9.0	66.6	0.79	0.73	0.79	32.2
8	T1	All MCs	437	7.0	437	7.0	* 0.585	42.8	LOS D	18.4	136.7	0.87	0.76	0.87	38.1
9	R2	All MCs	53	7.0	53	7.0	0.237	67.2	LOS E	3.2	23.5	0.94	0.75	0.94	22.6
9u	U	All MCs	1	7.0	1	7.0	0.237	68.6	LOS E	3.2	23.5	0.94	0.75	0.94	37.7
Approach			597	7.0	597	7.0	0.585	44.7	LOS D	18.4	136.7	0.86	0.75	0.86	35.0
West: Rankin St															
10	L2	All MCs	58	7.0	58	7.0	0.493	61.3	LOS E	8.4	62.5	0.96	0.79	0.96	30.4
11	T1	All MCs	85	7.0	85	7.0	* 0.493	54.0	LOS D	8.4	62.5	0.96	0.79	0.96	11.3
12	R2	All MCs	58	7.0	58	7.0	0.203	57.0	LOS E	3.2	23.9	0.91	0.75	0.91	14.5
Approach			201	7.0	201	7.0	0.493	57.0	LOS E	8.4	62.5	0.94	0.78	0.94	19.7
All Vehicles			1561	7.0	1561	7.0	0.585	47.9	LOS D	18.4	136.7	0.87	0.75	0.87	30.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

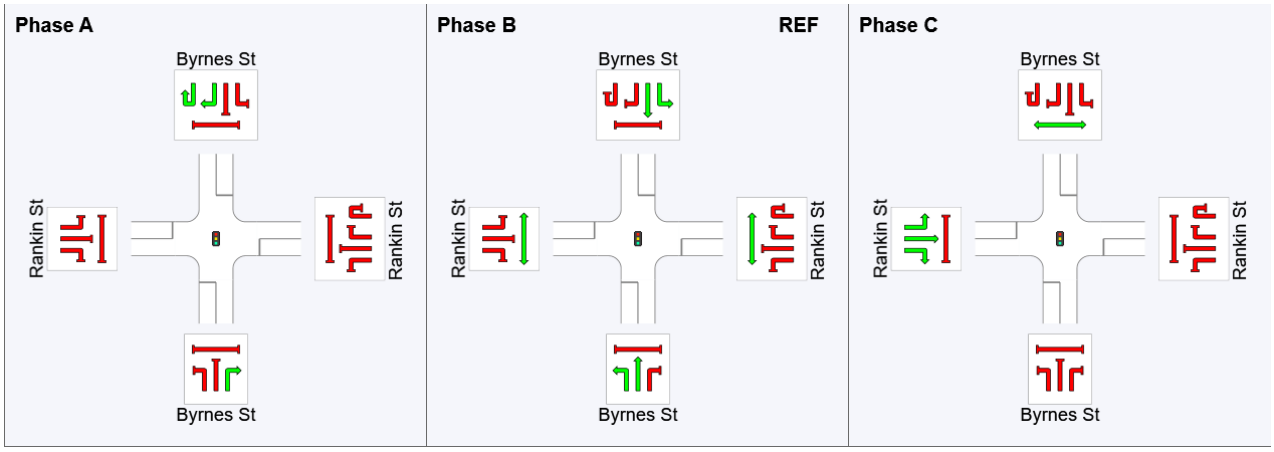
Phase Timing Summary

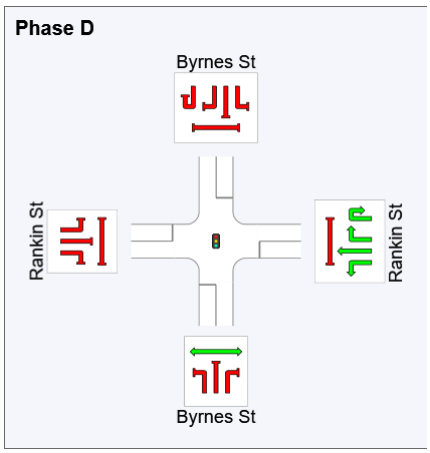
Phase	A	B	C	D
Phase Change Time (sec)	104	0	43	70
Green Time (sec)	20	37	21	28
Phase Time (sec)	26	43	27	34
Phase Split	20%	33%	21%	26%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	66	7.0	66	7.0	0.331	45.6	LOS D	8.5	63.3	0.84	0.73	0.84	9.7
2	T1	All MCs	281	7.0	281	7.0	0.331	39.4	LOS D	8.8	65.1	0.84	0.71	0.84	37.5
3	R2	All MCs	47	7.0	47	7.0	0.171	57.7	LOS E	2.6	19.3	0.91	0.74	0.91	14.5
Approach			393	7.0	393	7.0	0.331	42.6	LOS D	8.8	65.1	0.84	0.71	0.84	30.2
East: Rankin St															
4	L2	All MCs	69	7.0	69	7.0	0.560	69.3	LOS E	11.6	86.1	0.94	0.80	0.94	15.6
5	T1	All MCs	134	7.0	134	7.0	* 0.560	61.5	LOS E	11.6	86.1	0.94	0.80	0.94	12.3
6	R2	All MCs	52	7.0	52	7.0	0.141	62.5	LOS E	2.7	20.3	0.85	0.74	0.85	32.2
6u	U	All MCs	1	7.0	1	7.0	0.141	63.6	LOS E	2.7	20.3	0.85	0.74	0.85	11.8
Approach			257	7.0	257	7.0	0.560	63.8	LOS E	11.6	86.1	0.92	0.78	0.92	19.1
North: Byrnes St															
7	L2	All MCs	81	7.0	81	7.0	0.411	46.7	LOS D	10.9	80.8	0.86	0.75	0.86	30.9
8	T1	All MCs	507	7.0	507	7.0	* 0.749	53.9	LOS D	22.0	163.4	0.94	0.83	0.96	35.7
9	R2	All MCs	73	7.0	73	7.0	* 0.284	70.6	LOS E	4.3	32.2	0.93	0.76	0.93	23.0
9u	U	All MCs	3	7.0	3	7.0	0.284	72.0	LOS E	4.3	32.2	0.93	0.76	0.93	38.2
Approach			664	7.0	664	7.0	0.749	55.0	LOS D	22.0	163.4	0.93	0.82	0.94	33.3
West: Rankin St															
10	L2	All MCs	55	7.0	55	7.0	0.349	59.4	LOS E	5.7	42.5	0.93	0.76	0.93	30.5
11	T1	All MCs	45	7.0	45	7.0	0.349	52.4	LOS D	5.7	42.5	0.93	0.76	0.93	11.4
12	R2	All MCs	108	7.0	108	7.0	* 0.378	58.8	LOS E	6.2	46.1	0.94	0.78	0.94	14.2
Approach			208	7.0	208	7.0	0.378	57.6	LOS E	6.2	46.1	0.94	0.77	0.94	19.5
All Vehicles			1522	7.0	1522	7.0	0.749	53.6	LOS D	22.0	163.4	0.91	0.78	0.91	29.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

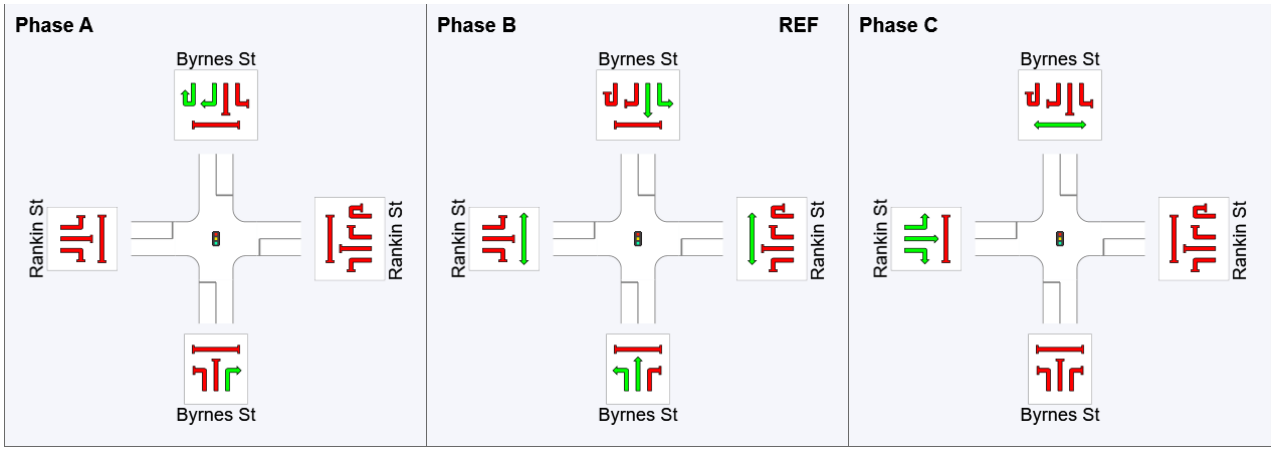
Phase Timing Summary

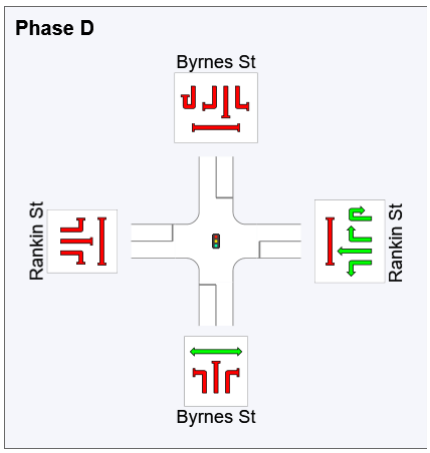
Phase	A	B	C	D
Phase Change Time (sec)	95	0	41	68
Green Time (sec)	19	35	21	21
Phase Time (sec)	25	41	27	27
Phase Split	21%	34%	23%	23%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

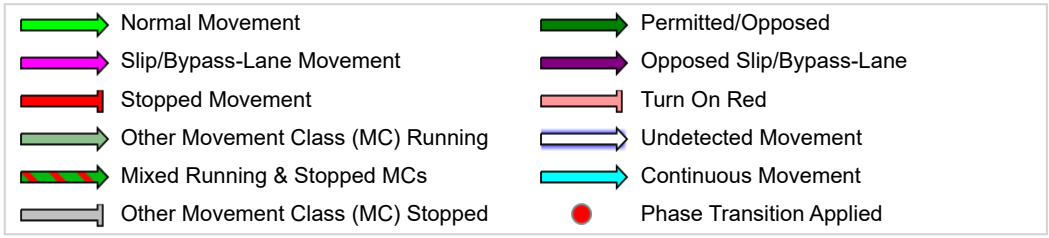
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	20	7.0	20	7.0	0.331	42.2	LOS D	8.2	60.8	0.83	0.70	0.83	10.1
2	T1	All MCs	339	7.0	339	7.0	0.331	36.0	LOS D	8.3	61.3	0.83	0.69	0.83	39.0
3	R2	All MCs	73	7.0	73	7.0	* 0.260	54.2	LOS D	3.8	28.2	0.92	0.76	0.92	15.1
Approach			432	7.0	432	7.0	0.331	39.4	LOS D	8.3	61.3	0.84	0.70	0.84	34.3
East: Rankin St															
4	L2	All MCs	60	7.0	60	7.0	0.352	54.7	LOS D	5.7	42.4	0.92	0.76	0.92	15.7
5	T1	All MCs	49	7.0	49	7.0	* 0.352	47.1	LOS D	5.7	42.4	0.92	0.76	0.92	12.3
6	R2	All MCs	76	7.0	76	7.0	0.265	52.4	LOS D	4.1	30.8	0.91	0.76	0.91	31.5
6u	U	All MCs	5	7.0	5	7.0	0.265	53.5	LOS D	4.1	30.8	0.91	0.76	0.91	11.4
Approach			190	7.0	190	7.0	0.352	51.8	LOS D	5.7	42.4	0.92	0.76	0.92	23.4
North: Byrnes St															
7	L2	All MCs	130	7.0	130	7.0	0.431	43.1	LOS D	10.7	79.1	0.86	0.77	0.86	31.5
8	T1	All MCs	502	7.0	502	7.0	* 0.785	52.6	LOS D	22.9	169.9	0.96	0.88	1.01	36.2
9	R2	All MCs	64	7.0	64	7.0	0.233	65.2	LOS E	3.4	25.0	0.91	0.75	0.91	23.7
9u	U	All MCs	1	7.0	1	7.0	0.233	66.5	LOS E	3.4	25.0	0.91	0.75	0.91	39.3
Approach			697	7.0	697	7.0	0.785	52.0	LOS D	22.9	169.9	0.94	0.85	0.97	33.8
West: Rankin St															
10	L2	All MCs	58	7.0	58	7.0	0.289	53.5	LOS D	4.6	34.0	0.91	0.75	0.91	31.9
11	T1	All MCs	31	7.0	31	7.0	* 0.289	46.4	LOS D	4.6	34.0	0.91	0.75	0.91	12.3
12	R2	All MCs	52	7.0	52	7.0	0.169	51.4	LOS D	2.6	19.5	0.89	0.74	0.89	15.6
Approach			141	7.0	141	7.0	0.289	51.1	LOS D	4.6	34.0	0.90	0.75	0.90	23.8
All Vehicles			1459	7.0	1459	7.0	0.785	48.1	LOS D	22.9	169.9	0.90	0.78	0.92	32.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

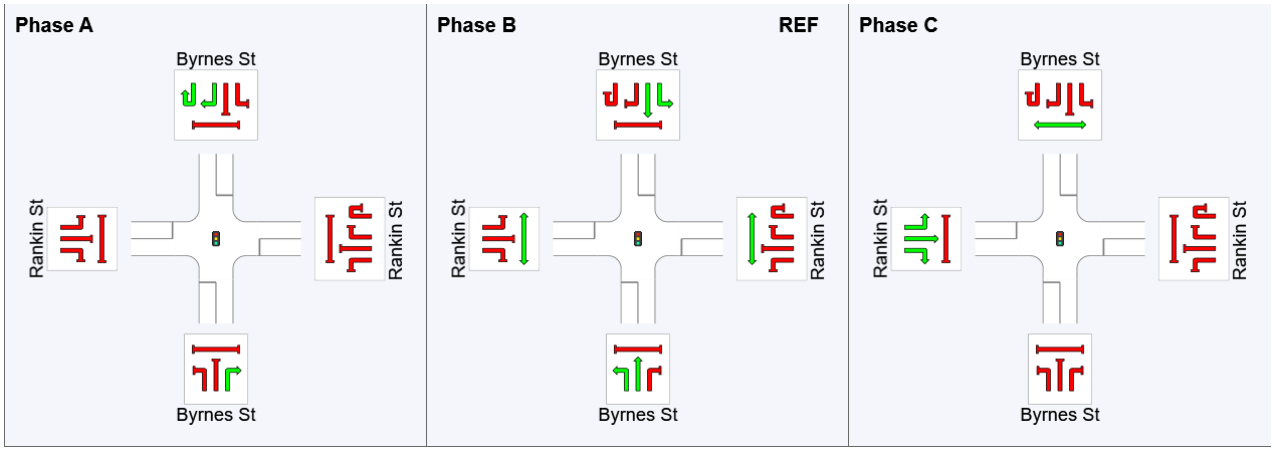
Phase Timing Summary

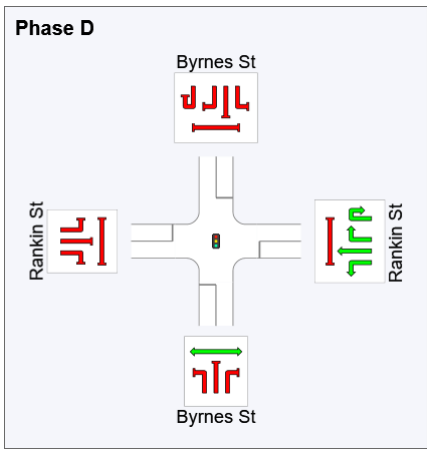
Phase	A	B	C	D
Phase Change Time (sec)	107	0	49	76
Green Time (sec)	17	43	21	25
Phase Time (sec)	23	49	27	31
Phase Split	18%	38%	21%	24%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

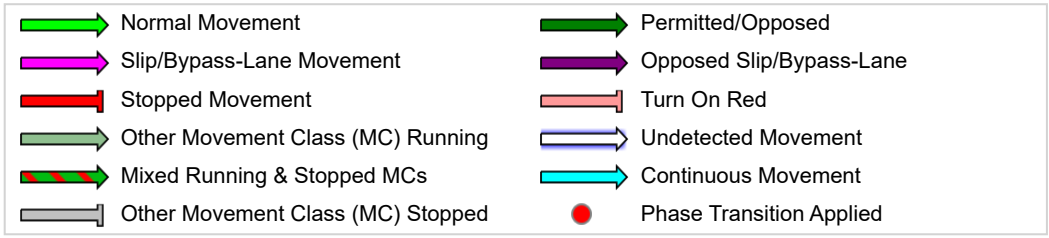
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	45	7.0	45	7.0	0.351	41.2	LOS D	10.2	75.4	0.80	0.70	0.80	5.5
2	T1	All MCs	384	7.0	384	7.0	0.351	35.5	LOS D	10.3	76.5	0.80	0.69	0.80	37.6
3	R2	All MCs	74	7.0	74	7.0	0.319	61.8	LOS E	4.3	32.2	0.95	0.76	0.95	9.6
Approach			503	7.0	503	7.0	0.351	39.8	LOS D	10.3	76.5	0.83	0.70	0.83	31.1
East: Rankin St															
4	L2	All MCs	61	7.0	61	7.0	0.684	73.6	LOS E	12.0	88.9	0.98	0.84	1.01	10.4
5	T1	All MCs	137	7.0	137	7.0	* 0.684	67.0	LOS E	12.0	88.9	0.98	0.84	1.01	9.5
6	R2	All MCs	109	7.0	109	7.0	0.396	69.0	LOS E	7.2	53.6	0.92	0.79	0.92	30.6
6u	U	All MCs	19	7.0	19	7.0	0.396	70.1	LOS E	7.2	53.6	0.92	0.79	0.92	10.9
Approach			327	7.0	327	7.0	0.684	69.1	LOS E	12.0	88.9	0.96	0.82	0.98	19.6
North: Byrnes St															
7	L2	All MCs	94	7.0	94	7.0	* 0.420	42.3	LOS D	12.4	91.8	0.83	0.74	0.83	34.1
8	T1	All MCs	417	7.0	417	7.0	0.420	36.1	LOS D	12.7	94.2	0.83	0.72	0.83	37.1
9	R2	All MCs	134	7.0	134	7.0	* 0.585	64.5	LOS E	8.3	61.5	0.99	0.80	0.99	21.6
9u	U	All MCs	1	7.0	1	7.0	0.585	65.9	LOS E	8.3	61.5	0.99	0.80	0.99	37.0
Approach			647	7.0	647	7.0	0.585	42.9	LOS D	12.7	94.2	0.86	0.74	0.86	32.1
West: Rankin St															
10	L2	All MCs	68	7.0	68	7.0	0.860	80.6	LOS F	15.9	118.0	1.00	1.00	1.23	27.1
11	T1	All MCs	162	7.0	162	7.0	* 0.860	74.6	LOS E	15.9	118.0	1.00	1.00	1.23	8.0
12	R2	All MCs	128	7.0	128	7.0	0.449	66.4	LOS E	7.5	55.6	0.95	0.79	0.95	8.2
Approach			358	7.0	358	7.0	0.860	72.8	LOS E	15.9	118.0	0.98	0.93	1.13	13.6
All Vehicles			1835	7.0	1835	7.0	0.860	52.6	LOS D	15.9	118.0	0.89	0.78	0.92	26.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

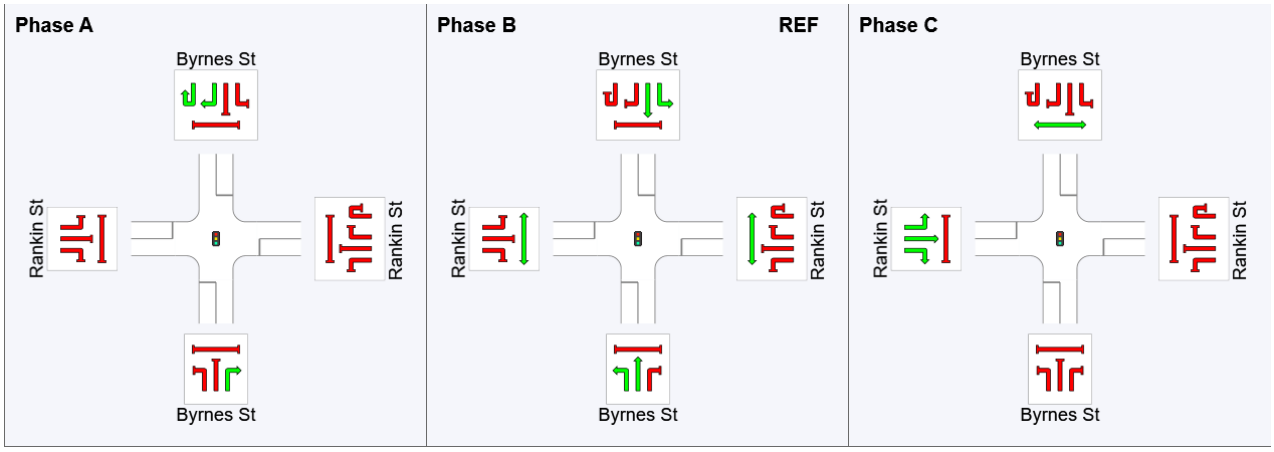
Phase Timing Summary

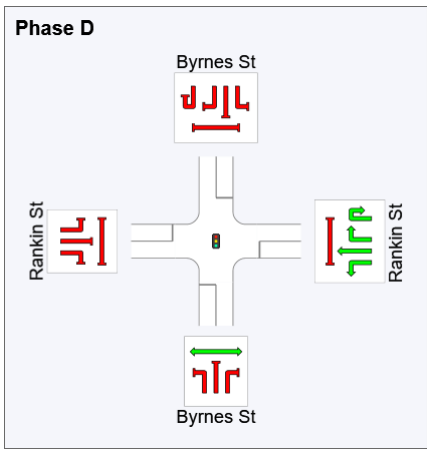
Phase	A	B	C	D
Phase Change Time (sec)	104	0	43	70
Green Time (sec)	20	37	21	28
Phase Time (sec)	26	43	27	34
Phase Split	20%	33%	21%	26%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

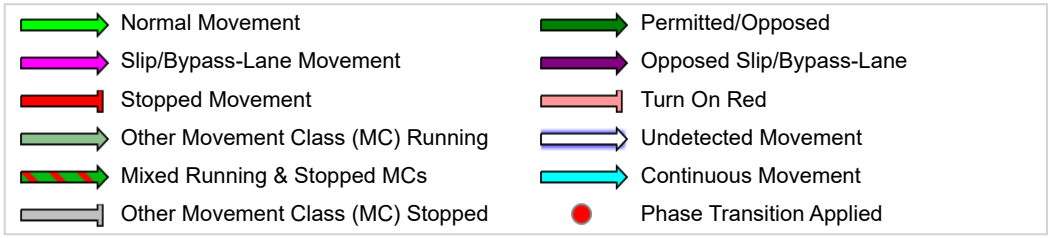
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	61	7.0	61	7.0	0.378	46.0	LOS D	9.9	73.8	0.85	0.74	0.85	5.2
2	T1	All MCs	335	7.0	335	7.0	0.378	40.1	LOS D	10.2	75.5	0.85	0.72	0.85	35.8
3	R2	All MCs	47	7.0	47	7.0	0.171	57.4	LOS E	2.6	19.3	0.91	0.74	0.91	10.1
Approach			443	7.0	443	7.0	0.378	42.8	LOS D	10.2	75.5	0.86	0.72	0.86	29.2
East: Rankin St															
4	L2	All MCs	69	7.0	69	7.0	* 0.678	76.5	LOS E	14.4	106.7	0.97	0.83	0.98	10.9
5	T1	All MCs	174	7.0	174	7.0	0.678	69.9	LOS E	14.4	106.7	0.97	0.83	0.98	10.0
6	R2	All MCs	51	7.0	51	7.0	0.138	69.1	LOS E	2.7	19.8	0.84	0.74	0.84	32.2
6u	U	All MCs	1	7.0	1	7.0	0.138	70.2	LOS E	2.7	19.8	0.84	0.74	0.84	11.9
Approach			296	7.0	296	7.0	0.678	71.3	LOS E	14.4	106.7	0.95	0.81	0.96	16.2
North: Byrnes St															
7	L2	All MCs	67	7.0	67	7.0	* 0.520	48.3	LOS D	14.4	107.2	0.89	0.78	0.89	32.6
8	T1	All MCs	480	7.0	480	7.0	0.520	41.9	LOS D	14.7	109.1	0.89	0.77	0.89	35.1
9	R2	All MCs	179	7.0	179	7.0	* 0.676	63.5	LOS E	11.3	83.9	1.00	0.83	1.03	21.8
9u	U	All MCs	3	7.0	3	7.0	0.676	64.8	LOS E	11.3	83.9	1.00	0.83	1.03	37.2
Approach			730	7.0	730	7.0	0.676	47.9	LOS D	14.7	109.1	0.92	0.78	0.93	30.4
West: Rankin St															
10	L2	All MCs	68	7.0	68	7.0	0.808	72.6	LOS E	14.2	105.7	1.00	0.94	1.15	28.0
11	T1	All MCs	148	7.0	148	7.0	* 0.808	66.9	LOS E	14.2	105.7	1.00	0.94	1.15	8.5
12	R2	All MCs	201	7.0	201	7.0	0.722	67.3	LOS E	12.6	93.8	1.00	0.86	1.06	7.7
Approach			417	7.0	417	7.0	0.808	68.0	LOS E	14.2	105.7	1.00	0.90	1.11	13.0
All Vehicles			1886	7.0	1886	7.0	0.808	54.8	LOS D	14.7	109.1	0.93	0.80	0.96	25.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2027 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

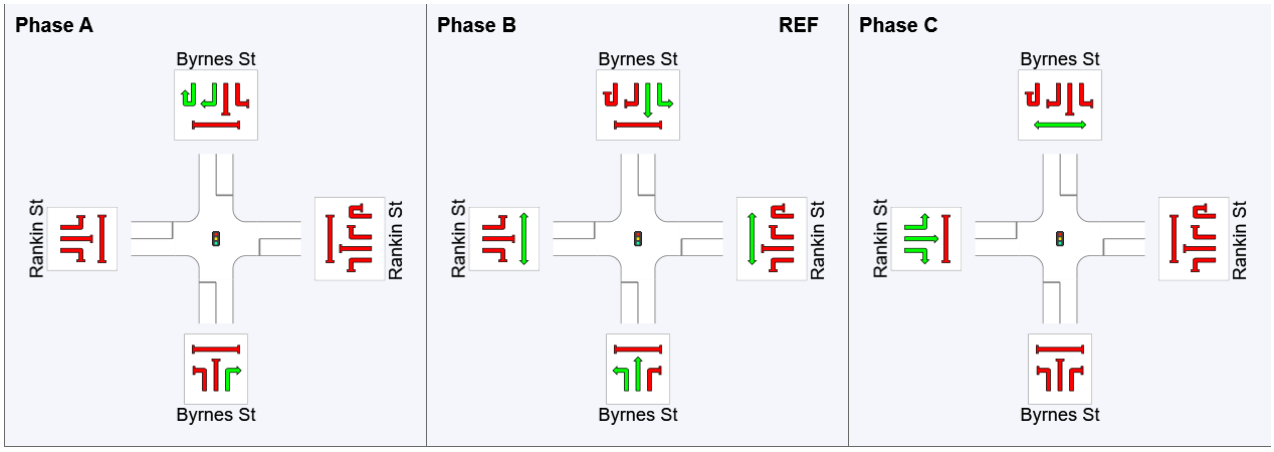
Phase Timing Summary

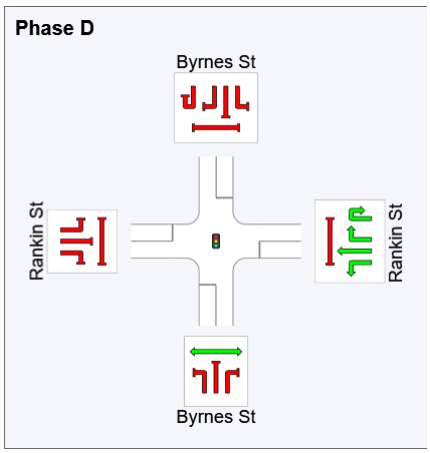
Phase	A	B	C	D
Phase Change Time (sec)	95	0	41	68
Green Time (sec)	19	35	21	21
Phase Time (sec)	25	41	27	27
Phase Split	21%	34%	23%	23%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

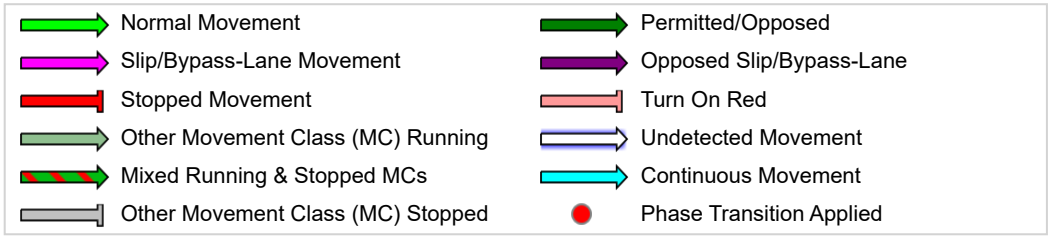
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2027 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.380	42.6	LOS D	9.6	71.1	0.84	0.71	0.84	5.4
2	T1	All MCs	397	7.0	397	7.0	0.380	36.7	LOS D	9.6	71.5	0.84	0.71	0.84	37.3
3	R2	All MCs	73	7.0	73	7.0	0.260	53.9	LOS D	3.8	28.2	0.92	0.76	0.92	10.7
Approach			485	7.0	485	7.0	0.380	39.5	LOS D	9.6	71.5	0.86	0.72	0.86	33.2
East: Rankin St															
4	L2	All MCs	60	7.0	60	7.0	0.482	55.1	LOS E	8.2	60.5	0.95	0.78	0.95	11.1
5	T1	All MCs	91	7.0	91	7.0	* 0.482	48.5	LOS D	8.2	60.5	0.95	0.78	0.95	10.2
6	R2	All MCs	75	7.0	75	7.0	0.261	52.3	LOS D	4.1	30.2	0.91	0.76	0.91	31.5
6u	U	All MCs	5	7.0	5	7.0	0.261	53.5	LOS D	4.1	30.2	0.91	0.76	0.91	11.4
Approach			231	7.0	231	7.0	0.482	51.6	LOS D	8.2	60.5	0.93	0.78	0.93	20.4
North: Byrnes St															
7	L2	All MCs	116	7.0	116	7.0	* 0.550	44.9	LOS D	14.4	106.8	0.90	0.79	0.90	33.3
8	T1	All MCs	474	7.0	474	7.0	0.550	38.5	LOS D	14.8	109.9	0.90	0.78	0.90	36.2
9	R2	All MCs	176	7.0	176	7.0	* 0.635	57.9	LOS E	10.0	74.2	0.99	0.82	0.99	22.5
9u	U	All MCs	1	7.0	1	7.0	0.635	59.3	LOS E	10.0	74.2	0.99	0.82	0.99	38.4
Approach			767	7.0	767	7.0	0.635	44.0	LOS D	14.8	109.9	0.92	0.79	0.92	31.5
West: Rankin St															
10	L2	All MCs	72	7.0	72	7.0	0.667	56.6	LOS E	11.8	87.9	0.99	0.83	1.00	30.8
11	T1	All MCs	139	7.0	139	7.0	* 0.667	50.8	LOS D	11.8	87.9	0.99	0.83	1.00	10.0
12	R2	All MCs	151	7.0	151	7.0	0.488	53.2	LOS D	8.1	60.3	0.95	0.80	0.95	8.8
Approach			362	7.0	362	7.0	0.667	52.9	LOS D	11.8	87.9	0.97	0.82	0.98	15.9
All Vehicles			1845	7.0	1845	7.0	0.667	45.5	LOS D	14.8	109.9	0.91	0.77	0.92	28.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2037 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

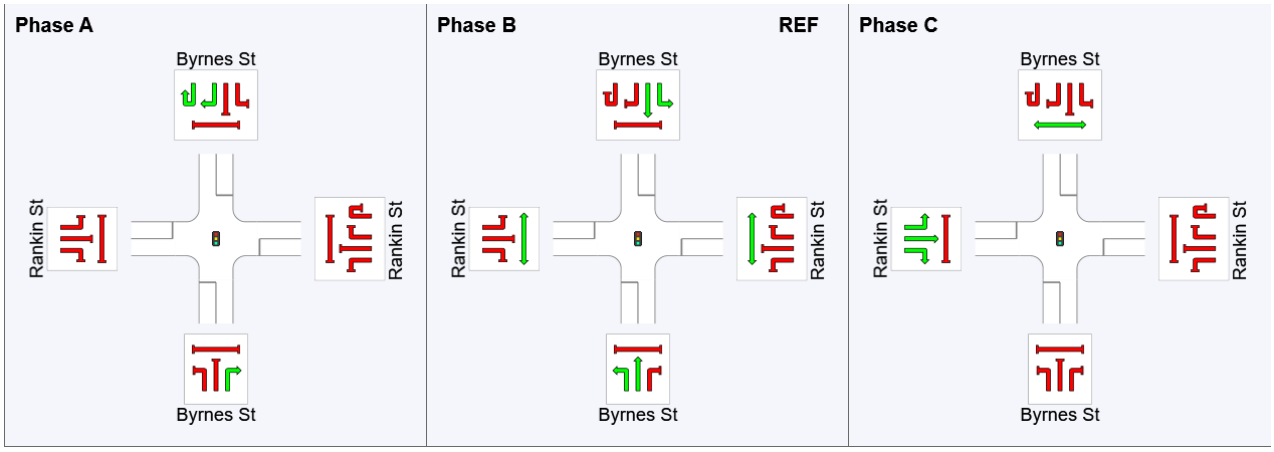
Phase Timing Summary

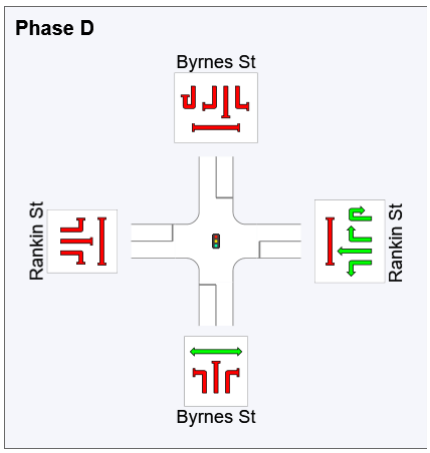
Phase	A	B	C	D
Phase Change Time (sec)	107	0	49	76
Green Time (sec)	17	43	21	25
Phase Time (sec)	23	49	27	31
Phase Split	18%	38%	21%	24%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

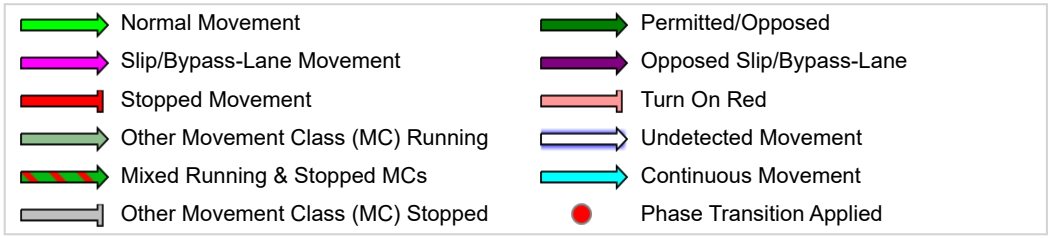
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2037 BG+D AM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	53	7.0	53	7.0	0.398	41.9	LOS D	11.7	87.2	0.82	0.72	0.82	5.4
2	T1	All MCs	435	7.0	435	7.0	0.398	36.2	LOS D	11.9	88.5	0.82	0.71	0.82	37.4
3	R2	All MCs	85	7.0	85	7.0	0.366	62.2	LOS E	5.0	37.3	0.96	0.77	0.96	9.5
Approach			572	7.0	572	7.0	0.398	40.6	LOS D	11.9	88.5	0.84	0.72	0.84	30.8
East: Rankin St															
4	L2	All MCs	70	7.0	70	7.0	* 0.816	85.4	LOS F	14.8	109.5	1.00	0.95	1.16	9.5
5	T1	All MCs	153	7.0	153	7.0	0.816	78.8	LOS E	14.8	109.5	1.00	0.95	1.16	8.6
6	R2	All MCs	125	7.0	125	7.0	0.455	74.7	LOS E	8.4	62.4	0.93	0.80	0.93	30.5
6u	U	All MCs	22	7.0	22	7.0	0.455	75.8	LOS E	8.4	62.4	0.93	0.80	0.93	10.8
Approach			371	7.0	371	7.0	0.816	78.5	LOS E	14.8	109.5	0.97	0.89	1.07	18.8
North: Byrnes St															
7	L2	All MCs	110	7.0	110	7.0	* 0.486	43.3	LOS D	14.7	109.0	0.85	0.76	0.85	33.8
8	T1	All MCs	482	7.0	482	7.0	0.486	37.0	LOS D	15.1	111.9	0.85	0.74	0.85	36.8
9	R2	All MCs	142	7.0	142	7.0	* 0.620	64.9	LOS E	8.8	65.6	1.00	0.81	1.00	21.6
9u	U	All MCs	1	7.0	1	7.0	0.620	66.3	LOS E	8.8	65.6	1.00	0.81	1.00	36.9
Approach			734	7.0	734	7.0	0.620	43.4	LOS D	15.1	111.9	0.88	0.76	0.88	32.1
West: Rankin St															
10	L2	All MCs	77	7.0	77	7.0	0.979	113.0	LOS F	21.1	156.4	1.00	1.20	1.52	22.3
11	T1	All MCs	175	7.0	175	7.0	* 0.979	106.8	LOS F	21.1	156.4	1.00	1.20	1.52	5.9
12	R2	All MCs	137	7.0	137	7.0	0.479	71.3	LOS E	8.0	59.6	0.96	0.80	0.96	8.1
Approach			388	7.0	388	7.0	0.979	95.5	LOS F	21.1	156.4	0.98	1.06	1.32	11.4
All Vehicles			2065	7.0	2065	7.0	0.979	58.7	LOS E	21.1	156.4	0.90	0.83	0.99	25.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	20	21	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		50	53	59.2	LOS E	0.1	0.1	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2037 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

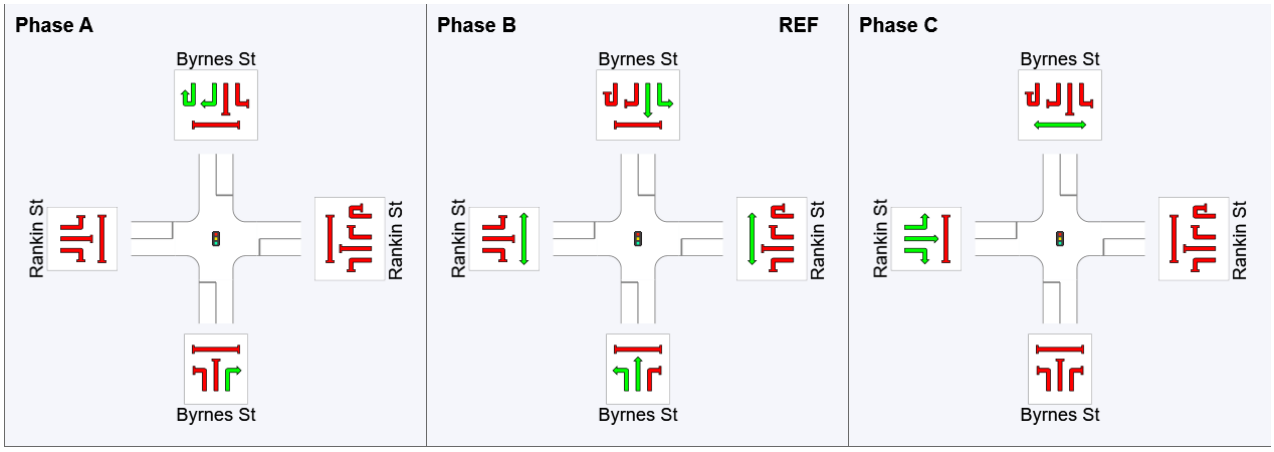
Phase Timing Summary

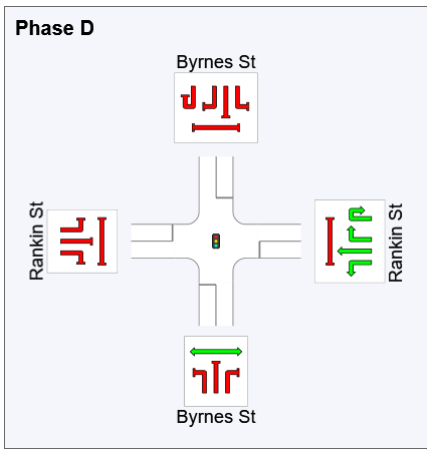
Phase	A	B	C	D
Phase Change Time (sec)	104	0	43	70
Green Time (sec)	20	37	21	28
Phase Time (sec)	26	43	27	34
Phase Split	20%	33%	21%	26%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

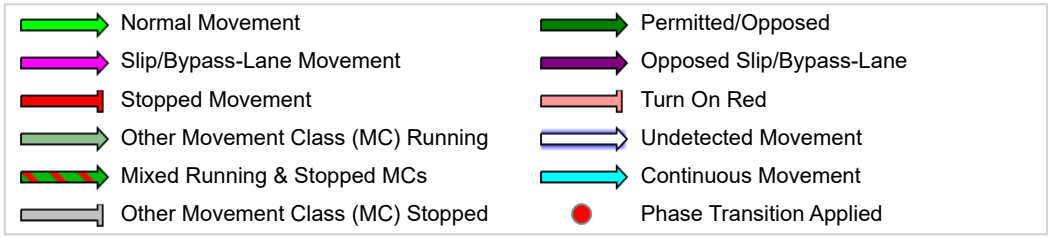
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2037 BG+D PM Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 130 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	71	7.0	71	7.0	0.427	46.6	LOS D	11.4	84.7	0.86	0.75	0.86	5.2
2	T1	All MCs	377	7.0	377	7.0	0.427	40.8	LOS D	11.7	86.7	0.86	0.74	0.86	35.5
3	R2	All MCs	53	7.0	53	7.0	0.196	57.7	LOS E	3.0	22.2	0.91	0.75	0.91	10.1
Approach			501	7.0	501	7.0	0.427	43.5	LOS D	11.7	86.7	0.87	0.74	0.87	28.8
East: Rankin St															
4	L2	All MCs	80	7.0	80	7.0	* 0.775	84.7	LOS F	17.2	127.6	1.00	0.91	1.08	10.3
5	T1	All MCs	194	7.0	194	7.0	0.775	78.1	LOS E	17.2	127.6	1.00	0.91	1.08	9.4
6	R2	All MCs	59	7.0	59	7.0	0.158	73.4	LOS E	3.1	22.9	0.85	0.74	0.85	32.1
6u	U	All MCs	1	7.0	1	7.0	0.158	74.6	LOS E	3.1	22.9	0.85	0.74	0.85	11.8
Approach			334	7.0	334	7.0	0.775	78.8	LOS E	17.2	127.6	0.97	0.88	1.04	15.5
North: Byrnes St															
7	L2	All MCs	79	7.0	79	7.0	* 0.619	49.8	LOS D	17.8	132.0	0.93	0.81	0.93	32.1
8	T1	All MCs	555	7.0	555	7.0	0.619	45.5	LOS D	17.8	132.0	0.93	0.80	0.93	34.6
9	R2	All MCs	190	7.0	190	7.0	* 0.718	68.4	LOS E	12.2	90.7	1.00	0.86	1.06	21.6
9u	U	All MCs	4	7.0	4	7.0	0.718	69.8	LOS E	12.2	90.7	1.00	0.86	1.06	36.9
Approach			828	7.0	828	7.0	0.718	51.3	LOS D	17.8	132.0	0.94	0.81	0.96	30.3
West: Rankin St															
10	L2	All MCs	76	7.0	76	7.0	0.923	90.8	LOS F	17.3	128.4	1.00	1.09	1.37	25.1
11	T1	All MCs	154	7.0	154	7.0	* 0.923	85.0	LOS F	17.3	128.4	1.00	1.09	1.37	7.1
12	R2	All MCs	217	7.0	217	7.0	0.852	78.8	LOS E	14.9	110.8	1.00	0.95	1.22	7.0
Approach			448	7.0	448	7.0	0.923	83.0	LOS F	17.3	128.4	1.00	1.02	1.30	11.6
All Vehicles			2110	7.0	2110	7.0	0.923	60.5	LOS E	17.8	132.0	0.94	0.85	1.02	24.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
East: Rankin St												
P2	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
North: Byrnes St												
P3	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
West: Rankin St												
P4	Full	10	11	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94
All Pedestrians		40	42	59.2	LOS E	0.0	0.0	0.95	0.95	213.0	200.0	0.94

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

PHASING SUMMARY

Site: 002 [2_2037 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Surveyed Phasing
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B

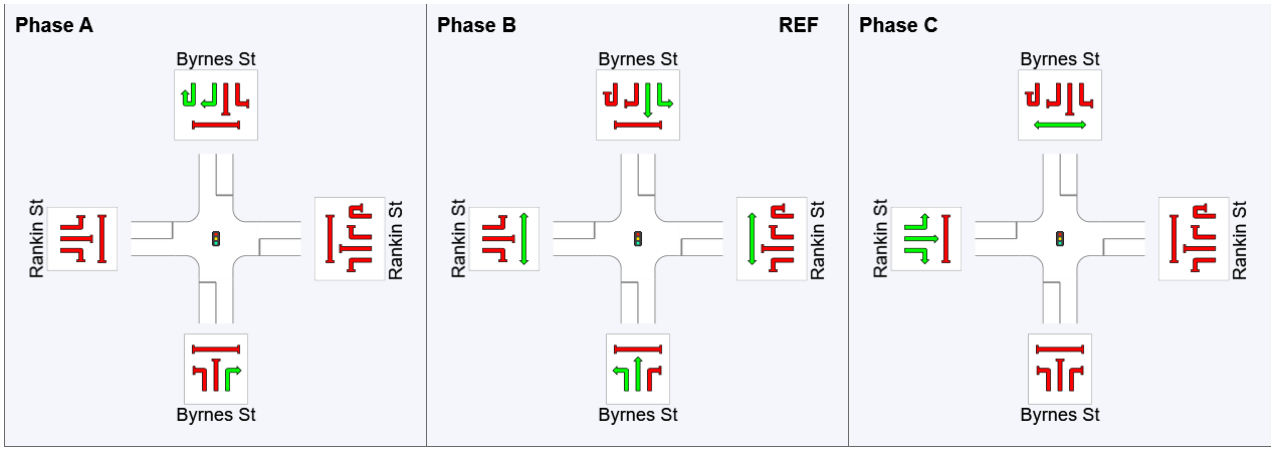
Phase Timing Summary

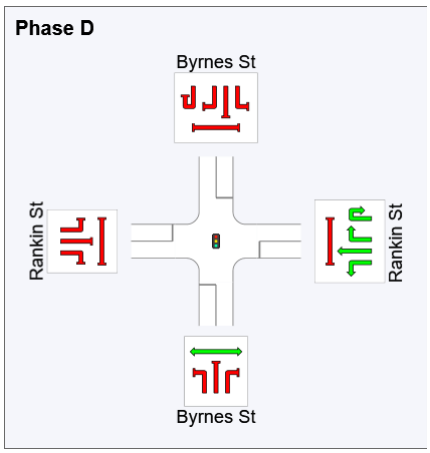
Phase	A	B	C	D
Phase Change Time (sec)	95	0	41	68
Green Time (sec)	19	35	21	21
Phase Time (sec)	25	41	27	27
Phase Split	21%	34%	23%	23%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

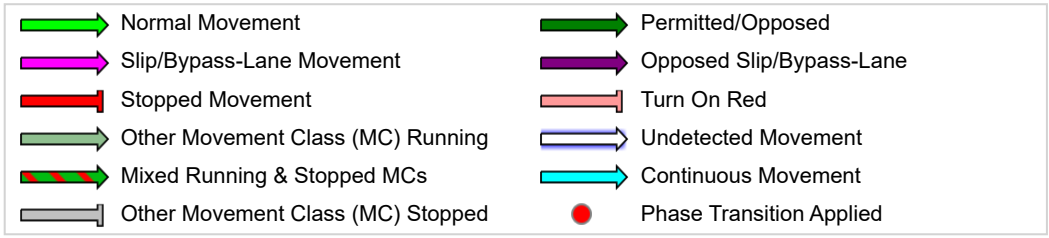
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 002 [2_2037 BG+D SAT Peak_Byrnes St/Rankin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 001 - Byrnes St / Rankin St
Prepared: TB
Reviewed:
Site Category: NA
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	19	7.0	19	7.0	0.429	43.2	LOS D	11.0	81.6	0.86	0.73	0.86	5.4
2	T1	All MCs	447	7.0	447	7.0	0.429	37.4	LOS D	11.1	82.1	0.86	0.73	0.86	37.0
3	R2	All MCs	83	7.0	83	7.0	0.298	54.3	LOS D	4.4	32.6	0.93	0.77	0.93	10.6
Approach			549	7.0	549	7.0	0.429	40.1	LOS D	11.1	82.1	0.87	0.73	0.87	32.8
East: Rankin St															
4	L2	All MCs	69	7.0	69	7.0	0.557	59.1	LOS E	9.2	67.9	0.96	0.80	0.96	11.0
5	T1	All MCs	99	7.0	99	7.0	* 0.557	52.6	LOS D	9.2	67.9	0.96	0.80	0.96	10.1
6	R2	All MCs	86	7.0	86	7.0	0.300	56.0	LOS E	4.7	35.0	0.91	0.77	0.91	31.4
6u	U	All MCs	5	7.0	5	7.0	0.300	57.2	LOS E	4.7	35.0	0.91	0.77	0.91	11.4
Approach			259	7.0	259	7.0	0.557	55.6	LOS E	9.2	67.9	0.95	0.79	0.95	20.4
North: Byrnes St															
7	L2	All MCs	135	7.0	135	7.0	* 0.654	46.4	LOS D	17.8	131.8	0.93	0.82	0.93	32.9
8	T1	All MCs	548	7.0	548	7.0	0.654	42.3	LOS D	17.8	131.8	0.93	0.81	0.93	35.6
9	R2	All MCs	186	7.0	186	7.0	* 0.669	62.4	LOS E	10.7	79.2	0.99	0.83	1.02	22.4
9u	U	All MCs	1	7.0	1	7.0	0.669	63.8	LOS E	10.7	79.2	0.99	0.83	1.02	38.2
Approach			870	7.0	870	7.0	0.669	47.3	LOS D	17.8	131.8	0.95	0.82	0.95	31.4
West: Rankin St															
10	L2	All MCs	81	7.0	81	7.0	0.733	60.7	LOS E	13.0	96.5	1.00	0.88	1.07	30.2
11	T1	All MCs	143	7.0	143	7.0	* 0.733	54.8	LOS D	13.0	96.5	1.00	0.88	1.07	9.7
12	R2	All MCs	159	7.0	159	7.0	0.513	55.4	LOS E	8.6	63.7	0.96	0.80	0.96	8.8
Approach			383	7.0	383	7.0	0.733	56.3	LOS E	13.0	96.5	0.98	0.85	1.02	15.9
All Vehicles			2060	7.0	2060	7.0	0.733	48.1	LOS D	17.8	131.8	0.93	0.80	0.94	28.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Byrnes St												
P1	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Rankin St												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Byrnes St												
P3	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
West: Rankin St												
P4	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		40	42	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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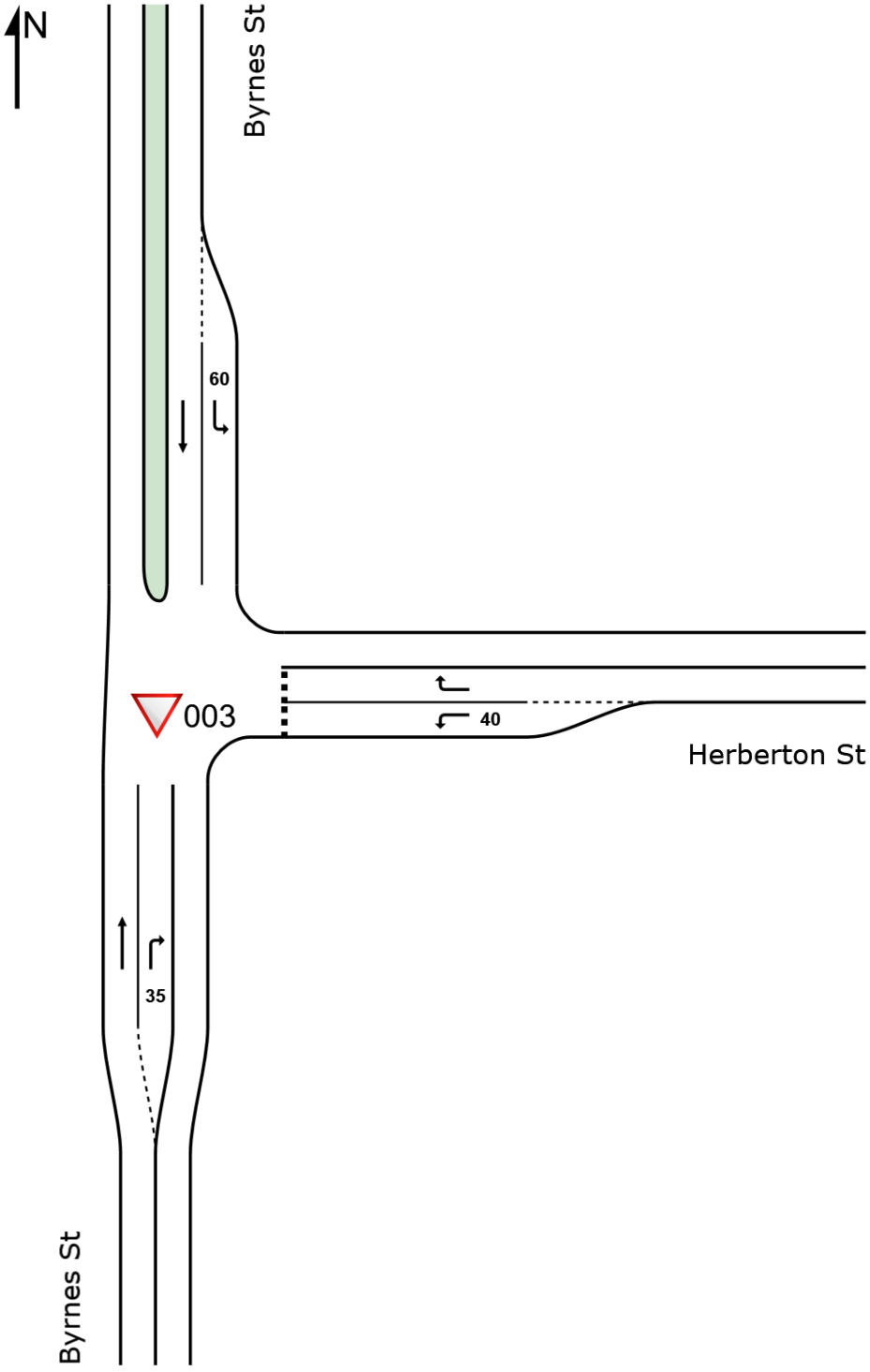
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 003 [3_2022 Survey AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 003 [3_2022 Survey AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	431	7.0	431	7.0	0.231	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	275	7.0	275	7.0	0.317	8.7	LOS A	1.6	12.2	0.56	0.74	0.60	37.5
Approach			705	7.0	705	7.0	0.317	3.4	NA	1.6	12.2	0.22	0.29	0.24	49.9
East: Herberton St															
4	L2	All MCs	169	7.0	169	7.0	0.196	7.9	LOS A	0.8	6.1	0.47	0.68	0.47	38.2
6	R2	All MCs	11	7.0	11	7.0	0.053	21.4	LOS C	0.1	1.1	0.79	0.91	0.79	26.6
Approach			180	7.0	180	7.0	0.196	8.7	LOS A	0.8	6.1	0.49	0.69	0.49	37.2
North: Byrnes St															
7	L2	All MCs	78	7.0	78	7.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	393	7.0	393	7.0	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			471	7.0	471	7.0	0.211	1.0	NA	0.0	0.0	0.00	0.10	0.00	56.6
All Vehicles			1356	7.0	1356	7.0	0.317	3.3	NA	1.6	12.2	0.18	0.27	0.19	50.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2022 Survey PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	331	7.0	331	7.0	0.177	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	200	7.0	200	7.0	0.262	9.3	LOS A	1.2	8.8	0.59	0.77	0.60	36.8
Approach			531	7.0	531	7.0	0.262	3.5	NA	1.2	8.8	0.22	0.29	0.23	49.8
East: Herberton St															
4	L2	All MCs	160	7.0	160	7.0	0.208	8.7	LOS A	0.9	6.3	0.53	0.73	0.53	37.3
6	R2	All MCs	22	7.0	22	7.0	0.096	19.5	LOS C	0.3	2.1	0.77	0.90	0.77	27.8
Approach			182	7.0	182	7.0	0.208	10.0	LOS A	0.9	6.3	0.56	0.75	0.56	35.8
North: Byrnes St															
7	L2	All MCs	91	7.0	91	7.0	0.051	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	484	7.0	484	7.0	0.260	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			575	7.0	575	7.0	0.260	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.7
All Vehicles			1287	7.0	1287	7.0	0.262	3.3	NA	1.2	8.8	0.17	0.27	0.17	50.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2022 Survey SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	377	7.0	377	7.0	0.202	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	171	7.0	171	7.0	0.205	8.5	LOS A	0.9	6.7	0.54	0.72	0.54	37.7
Approach			547	7.0	547	7.0	0.205	2.7	NA	0.9	6.7	0.17	0.23	0.17	51.8
East: Herberton St															
4	L2	All MCs	133	7.0	133	7.0	0.156	7.9	LOS A	0.6	4.7	0.47	0.68	0.47	38.2
6	R2	All MCs	27	7.0	27	7.0	0.108	18.1	LOS C	0.3	2.4	0.75	0.90	0.75	28.8
Approach			160	7.0	160	7.0	0.156	9.7	LOS A	0.6	4.7	0.52	0.72	0.52	36.1
North: Byrnes St															
7	L2	All MCs	102	7.0	102	7.0	0.058	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	407	7.0	407	7.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			509	7.0	509	7.0	0.218	1.1	NA	0.0	0.0	0.00	0.12	0.00	55.9
All Vehicles			1217	7.0	1217	7.0	0.218	3.0	NA	0.9	6.7	0.14	0.24	0.14	50.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	444	7.0	444	7.0	0.238	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	283	7.0	283	7.0	0.333	9.0	LOS A	1.8	13.3	0.58	0.76	0.64	37.2
Approach			728	7.0	728	7.0	0.333	3.5	NA	1.8	13.3	0.22	0.29	0.25	49.7
East: Herberton St															
4	L2	All MCs	175	7.0	175	7.0	0.206	8.0	LOS A	0.9	6.4	0.48	0.68	0.48	38.0
6	R2	All MCs	11	7.0	11	7.0	0.058	22.6	LOS C	0.2	1.2	0.81	0.92	0.81	25.9
Approach			186	7.0	186	7.0	0.206	8.9	LOS A	0.9	6.4	0.50	0.70	0.50	37.0
North: Byrnes St															
7	L2	All MCs	80	7.0	80	7.0	0.045	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	405	7.0	405	7.0	0.217	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			485	7.0	485	7.0	0.217	1.0	NA	0.0	0.0	0.00	0.10	0.00	56.6
All Vehicles			1399	7.0	1399	7.0	0.333	3.3	NA	1.8	13.3	0.18	0.28	0.20	49.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	341	7.0	341	7.0	0.183	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	206	7.0	206	7.0	0.277	9.6	LOS A	1.3	9.6	0.60	0.79	0.64	36.4
Approach			547	7.0	547	7.0	0.277	3.6	NA	1.3	9.6	0.23	0.30	0.24	49.6
East: Herberton St															
4	L2	All MCs	165	7.0	165	7.0	0.219	8.8	LOS A	0.9	6.7	0.54	0.73	0.54	37.1
6	R2	All MCs	23	7.0	23	7.0	0.106	20.6	LOS C	0.3	2.3	0.79	0.91	0.79	27.1
Approach			188	7.0	188	7.0	0.219	10.3	LOS B	0.9	6.7	0.57	0.76	0.57	35.5
North: Byrnes St															
7	L2	All MCs	93	7.0	93	7.0	0.053	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	500	7.0	500	7.0	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			593	7.0	593	7.0	0.268	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.7
All Vehicles			1328	7.0	1328	7.0	0.277	3.4	NA	1.3	9.6	0.17	0.27	0.18	50.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2027 BG SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	389	7.0	389	7.0	0.208	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	176	7.0	176	7.0	0.216	8.7	LOS A	1.0	7.0	0.55	0.73	0.55	37.5
Approach			565	7.0	565	7.0	0.216	2.7	NA	1.0	7.0	0.17	0.23	0.17	51.7
East: Herberton St															
4	L2	All MCs	137	7.0	137	7.0	0.164	8.0	LOS A	0.7	5.0	0.48	0.69	0.48	38.0
6	R2	All MCs	28	7.0	28	7.0	0.118	19.0	LOS C	0.4	2.6	0.77	0.90	0.77	28.2
Approach			165	7.0	165	7.0	0.164	9.9	LOS A	0.7	5.0	0.53	0.72	0.53	35.9
North: Byrnes St															
7	L2	All MCs	105	7.0	105	7.0	0.060	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	41.9
8	T1	All MCs	420	7.0	420	7.0	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			526	7.0	526	7.0	0.225	1.1	NA	0.0	0.0	0.00	0.12	0.00	55.9
All Vehicles			1256	7.0	1256	7.0	0.225	3.0	NA	1.0	7.0	0.15	0.25	0.15	50.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2027 BG+D AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	494	7.0	494	7.0	0.265	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	283	7.0	283	7.0	0.354	9.7	LOS A	2.0	14.8	0.61	0.80	0.72	36.4
Approach			778	7.0	778	7.0	0.354	3.6	NA	2.0	14.8	0.22	0.29	0.26	48.4
East: Herberton St															
4	L2	All MCs	175	7.0	175	7.0	0.219	8.5	LOS A	0.9	6.8	0.52	0.71	0.52	37.5
6	R2	All MCs	48	7.0	48	7.0	0.314	31.2	LOS D	1.0	7.2	0.88	0.99	1.03	18.0
Approach			223	7.0	223	7.0	0.314	13.4	LOS B	1.0	7.2	0.59	0.77	0.63	31.7
North: Byrnes St															
7	L2	All MCs	80	7.0	80	7.0	0.045	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	455	7.0	455	7.0	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			536	7.0	536	7.0	0.244	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.1
All Vehicles			1537	7.0	1537	7.0	0.354	4.0	NA	2.0	14.8	0.20	0.29	0.22	47.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG+D PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	408	7.0	408	7.0	0.219	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	206	7.0	206	7.0	0.304	10.6	LOS B	1.5	11.0	0.63	0.84	0.73	35.4
Approach			614	7.0	614	7.0	0.304	3.6	NA	1.5	11.0	0.21	0.28	0.24	48.6
East: Herberton St															
4	L2	All MCs	165	7.0	165	7.0	0.240	9.5	LOS A	1.0	7.2	0.57	0.77	0.58	36.3
6	R2	All MCs	73	7.0	73	7.0	0.437	32.2	LOS D	1.5	11.0	0.89	1.03	1.17	17.7
Approach			238	7.0	238	7.0	0.437	16.5	LOS C	1.5	11.0	0.67	0.85	0.76	28.8
North: Byrnes St															
7	L2	All MCs	93	7.0	93	7.0	0.053	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	566	7.0	566	7.0	0.304	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			660	7.0	660	7.0	0.304	0.8	NA	0.0	0.0	0.00	0.08	0.00	56.3
All Vehicles			1512	7.0	1512	7.0	0.437	4.4	NA	1.5	11.0	0.19	0.28	0.22	46.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2027 BG+D SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	460	7.0	460	7.0	0.246	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	176	7.0	176	7.0	0.237	9.3	LOS A	1.0	7.6	0.59	0.77	0.59	36.8
Approach			635	7.0	635	7.0	0.246	2.6	NA	1.0	7.6	0.16	0.21	0.16	51.0
East: Herberton St															
4	L2	All MCs	137	7.0	137	7.0	0.179	8.7	LOS A	0.7	5.4	0.52	0.73	0.52	37.3
6	R2	All MCs	81	7.0	81	7.0	0.442	29.8	LOS D	1.6	11.5	0.88	1.02	1.18	18.6
Approach			218	7.0	218	7.0	0.442	16.5	LOS C	1.6	11.5	0.65	0.84	0.76	28.5
North: Byrnes St															
7	L2	All MCs	105	7.0	105	7.0	0.060	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	491	7.0	491	7.0	0.263	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			596	7.0	596	7.0	0.263	1.0	NA	0.0	0.0	0.00	0.10	0.00	55.4
All Vehicles			1450	7.0	1450	7.0	0.442	4.0	NA	1.6	11.5	0.17	0.26	0.19	47.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2037 BG+D AM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	563	7.0	563	7.0	0.302	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	327	7.0	327	7.0	0.450	11.4	LOS B	2.9	21.6	0.67	0.91	0.94	34.5
Approach			890	7.0	890	7.0	0.450	4.2	NA	2.9	21.6	0.25	0.33	0.35	47.1
East: Herberton St															
4	L2	All MCs	202	7.0	202	7.0	0.274	9.3	LOS A	1.2	9.0	0.56	0.76	0.59	36.6
6	R2	All MCs	50	7.0	50	7.0	0.469	47.8	LOS E	1.4	10.5	0.93	1.04	1.21	13.5
Approach			252	7.0	252	7.0	0.469	16.9	LOS C	1.4	10.5	0.64	0.82	0.71	28.9
North: Byrnes St															
7	L2	All MCs	93	7.0	93	7.0	0.052	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	518	7.0	518	7.0	0.278	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			610	7.0	610	7.0	0.278	0.9	NA	0.0	0.0	0.00	0.09	0.00	56.0
All Vehicles			1752	7.0	1752	7.0	0.469	4.9	NA	2.9	21.6	0.22	0.32	0.28	45.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 003 [3_2037 BG+D PM Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	460	7.0	460	7.0	0.247	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	238	7.0	238	7.0	0.399	12.8	LOS B	2.2	16.1	0.69	0.95	0.93	33.2
Approach			698	7.0	698	7.0	0.399	4.4	NA	2.2	16.1	0.23	0.32	0.32	47.0
East: Herberton St															
4	L2	All MCs	191	7.0	191	7.0	0.310	11.1	LOS B	1.4	10.5	0.62	0.86	0.74	34.6
6	R2	All MCs	76	7.0	76	7.0	0.648	52.5	LOS F	2.3	16.9	0.95	1.11	1.49	12.6
Approach			267	7.0	267	7.0	0.648	23.0	LOS C	2.3	16.9	0.72	0.93	0.95	24.7
North: Byrnes St															
7	L2	All MCs	108	7.0	108	7.0	0.061	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	643	7.0	643	7.0	0.345	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			751	7.0	751	7.0	0.345	0.8	NA	0.0	0.0	0.00	0.08	0.00	56.2
All Vehicles			1716	7.0	1716	7.0	0.648	5.7	NA	2.3	16.9	0.21	0.31	0.28	44.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 003 [3_2037 BG+D SAT Peak_Byrnes St/Herberton St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 003 - Byrnes St / Herberton St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	537	7.0	537	7.0	0.288	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	211	7.0	211	7.0	0.327	11.3	LOS B	1.6	12.1	0.65	0.87	0.78	34.7
Approach			749	7.0	749	7.0	0.327	3.2	NA	1.6	12.1	0.18	0.25	0.22	49.7
East: Herberton St															
4	L2	All MCs	164	7.0	164	7.0	0.242	9.7	LOS A	1.0	7.3	0.58	0.78	0.59	36.2
6	R2	All MCs	87	7.0	87	7.0	0.715	55.8	LOS F	2.7	20.1	0.96	1.16	1.67	12.0
Approach			251	7.0	251	7.0	0.715	25.6	LOS D	2.7	20.1	0.71	0.91	0.96	23.1
North: Byrnes St															
7	L2	All MCs	126	7.0	126	7.0	0.071	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	37.9
8	T1	All MCs	575	7.0	575	7.0	0.308	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			702	7.0	702	7.0	0.308	1.0	NA	0.0	0.0	0.00	0.10	0.00	55.3
All Vehicles			1701	7.0	1701	7.0	0.715	5.6	NA	2.7	20.1	0.19	0.29	0.24	44.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

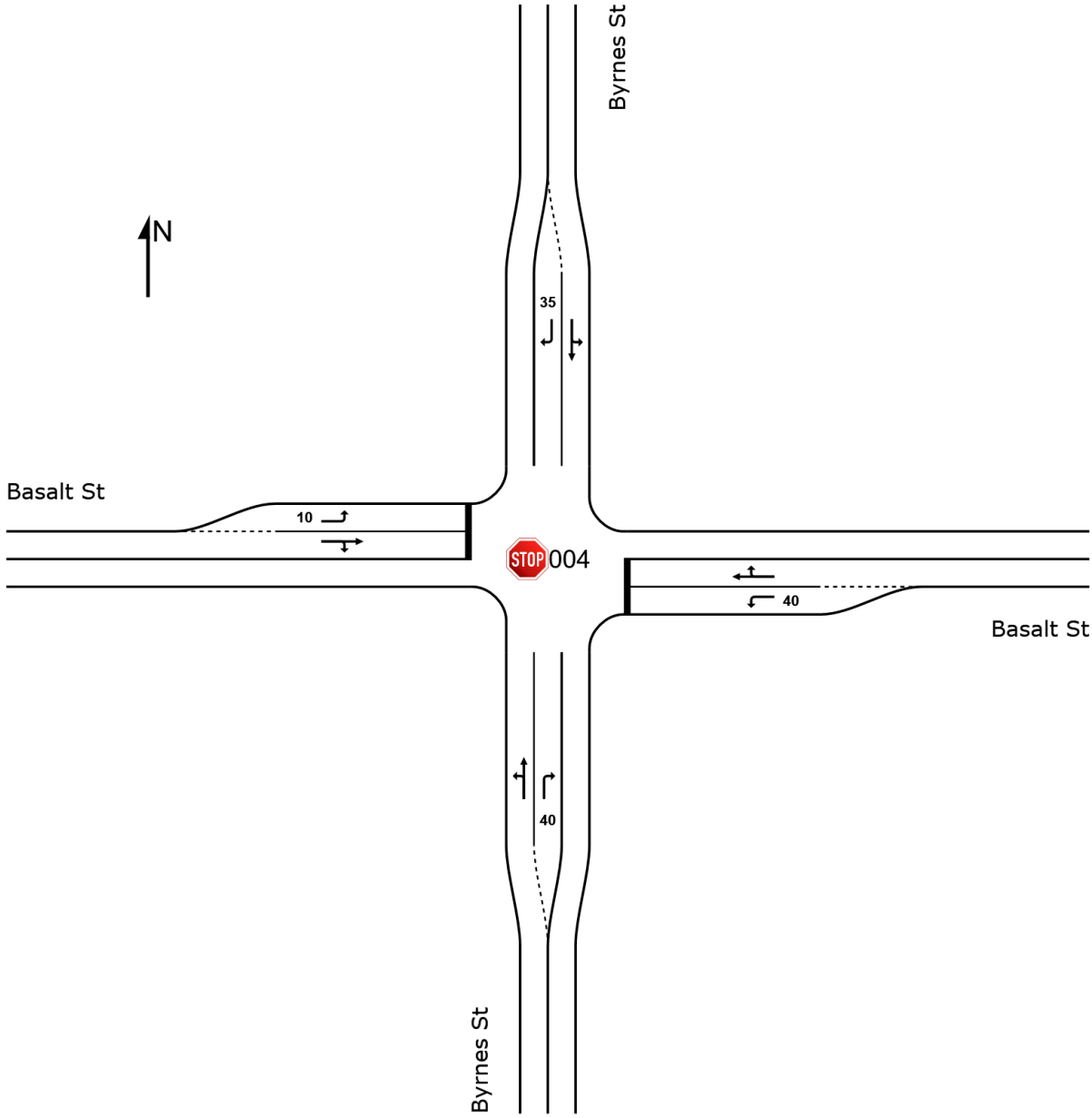
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SITE LAYOUT

Site: 004 [4_2022 Survey AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 004 [4_2022 Survey AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	18	7.0	18	7.0	0.183	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	322	7.0	322	7.0	0.183	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	69	7.0	69	7.0	0.061	7.3	LOS A	0.3	2.0	0.47	0.64	0.47	51.2
Approach			409	7.0	409	7.0	0.183	1.5	NA	0.3	2.0	0.08	0.13	0.08	57.3
East: Basalt St															
4	L2	All MCs	49	7.0	49	7.0	0.068	10.9	LOS B	0.2	1.8	0.46	0.91	0.46	49.7
5	T1	All MCs	9	7.0	9	7.0	0.030	14.3	LOS B	0.1	0.8	0.66	0.95	0.66	47.5
6	R2	All MCs	4	7.0	4	7.0	0.030	15.2	LOS C	0.1	0.8	0.66	0.95	0.66	43.2
Approach			63	7.0	63	7.0	0.068	11.7	LOS B	0.2	1.8	0.50	0.92	0.50	49.0
North: Byrnes St															
7	L2	All MCs	22	7.0	22	7.0	0.223	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	393	7.0	393	7.0	0.223	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	106	7.0	106	7.0	0.087	7.0	LOS A	0.3	2.6	0.39	0.63	0.39	48.4
Approach			521	7.0	521	7.0	0.223	1.7	NA	0.3	2.6	0.08	0.15	0.08	56.7
West: Basalt St															
10	L2	All MCs	74	7.0	74	7.0	0.095	10.4	LOS B	0.3	2.5	0.42	0.92	0.42	46.3
11	T1	All MCs	2	7.0	2	7.0	0.021	14.3	LOS B	0.1	0.5	0.67	0.93	0.67	47.4
12	R2	All MCs	7	7.0	7	7.0	0.021	14.8	LOS B	0.1	0.5	0.67	0.93	0.67	47.4
Approach			83	7.0	83	7.0	0.095	10.9	LOS B	0.3	2.5	0.45	0.92	0.45	46.4
All Vehicles			1077	7.0	1077	7.0	0.223	2.9	NA	0.3	2.6	0.13	0.25	0.13	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2022 Survey PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	22	7.0	22	7.0	0.239	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	422	7.0	422	7.0	0.239	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	47	7.0	47	7.0	0.052	8.4	LOS A	0.2	1.6	0.55	0.70	0.55	50.6
Approach			492	7.0	492	7.0	0.239	1.1	NA	0.2	1.6	0.05	0.09	0.05	58.0
East: Basalt St															
4	L2	All MCs	77	7.0	77	7.0	0.137	12.9	LOS B	0.5	3.6	0.56	0.99	0.56	48.6
5	T1	All MCs	12	7.0	12	7.0	0.038	17.8	LOS C	0.1	0.9	0.76	1.00	0.76	45.7
6	R2	All MCs	1	7.0	1	7.0	0.038	19.3	LOS C	0.1	0.9	0.76	1.00	0.76	41.1
Approach			89	7.0	89	7.0	0.137	13.6	LOS B	0.5	3.6	0.59	0.99	0.59	48.1
North: Byrnes St															
7	L2	All MCs	27	7.0	27	7.0	0.312	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	553	7.0	553	7.0	0.312	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	64	7.0	64	7.0	0.060	7.5	LOS A	0.2	1.7	0.44	0.66	0.44	48.1
Approach			644	7.0	644	7.0	0.312	1.0	NA	0.2	1.7	0.04	0.09	0.04	57.9
West: Basalt St															
10	L2	All MCs	81	7.0	81	7.0	0.121	11.5	LOS B	0.4	3.2	0.49	0.96	0.49	45.5
11	T1	All MCs	9	7.0	9	7.0	0.060	18.0	LOS C	0.2	1.4	0.77	1.00	0.77	45.2
12	R2	All MCs	9	7.0	9	7.0	0.060	19.3	LOS C	0.2	1.4	0.77	1.00	0.77	45.3
Approach			100	7.0	100	7.0	0.121	12.8	LOS B	0.4	3.2	0.55	0.97	0.55	45.5
All Vehicles			1325	7.0	1325	7.0	0.312	2.8	NA	0.5	3.6	0.12	0.22	0.12	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2022 Survey SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.231	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	415	7.0	415	7.0	0.231	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	21	7.0	21	7.0	0.019	7.4	LOS A	0.1	0.6	0.48	0.62	0.48	51.2
Approach			452	7.0	452	7.0	0.231	0.6	NA	0.1	0.6	0.02	0.05	0.02	58.8
East: Basalt St															
4	L2	All MCs	52	7.0	52	7.0	0.076	11.4	LOS B	0.3	2.0	0.49	0.93	0.49	49.5
5	T1	All MCs	8	7.0	8	7.0	0.027	14.9	LOS B	0.1	0.7	0.69	0.96	0.69	47.1
6	R2	All MCs	3	7.0	3	7.0	0.027	16.4	LOS C	0.1	0.7	0.69	0.96	0.69	42.8
Approach			63	7.0	63	7.0	0.076	12.1	LOS B	0.3	2.0	0.52	0.93	0.52	48.9
North: Byrnes St															
7	L2	All MCs	17	7.0	17	7.0	0.243	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	436	7.0	436	7.0	0.243	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
9	R2	All MCs	68	7.0	68	7.0	0.063	7.4	LOS A	0.2	1.8	0.43	0.65	0.43	48.1
Approach			521	7.0	521	7.0	0.243	1.2	NA	0.2	1.8	0.06	0.11	0.06	57.7
West: Basalt St															
10	L2	All MCs	99	7.0	99	7.0	0.146	11.5	LOS B	0.5	3.9	0.50	0.96	0.50	45.6
11	T1	All MCs	11	7.0	11	7.0	0.047	15.1	LOS C	0.2	1.2	0.69	0.99	0.69	47.0
12	R2	All MCs	9	7.0	9	7.0	0.047	15.8	LOS C	0.2	1.2	0.69	0.99	0.69	47.1
Approach			119	7.0	119	7.0	0.146	12.1	LOS B	0.5	3.9	0.53	0.96	0.53	45.9
All Vehicles			1155	7.0	1155	7.0	0.243	2.7	NA	0.5	3.9	0.12	0.22	0.12	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2027 BG AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	18	7.0	18	7.0	0.189	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	332	7.0	332	7.0	0.189	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	72	7.0	72	7.0	0.064	7.4	LOS A	0.3	2.1	0.48	0.65	0.48	51.2
Approach			422	7.0	422	7.0	0.189	1.5	NA	0.3	2.1	0.08	0.14	0.08	57.3
East: Basalt St															
4	L2	All MCs	51	7.0	51	7.0	0.072	11.0	LOS B	0.3	1.9	0.47	0.92	0.47	49.7
5	T1	All MCs	10	7.0	10	7.0	0.032	14.7	LOS B	0.1	0.8	0.68	0.96	0.68	47.3
6	R2	All MCs	4	7.0	4	7.0	0.032	15.7	LOS C	0.1	0.8	0.68	0.96	0.68	43.0
Approach			65	7.0	65	7.0	0.072	11.9	LOS B	0.3	1.9	0.51	0.93	0.51	48.9
North: Byrnes St															
7	L2	All MCs	23	7.0	23	7.0	0.230	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	405	7.0	405	7.0	0.230	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	110	7.0	110	7.0	0.091	7.0	LOS A	0.4	2.7	0.40	0.63	0.40	48.4
Approach			538	7.0	538	7.0	0.230	1.7	NA	0.4	2.7	0.08	0.15	0.08	56.7
West: Basalt St															
10	L2	All MCs	76	7.0	76	7.0	0.099	10.5	LOS B	0.4	2.6	0.43	0.92	0.43	46.2
11	T1	All MCs	2	7.0	2	7.0	0.023	14.7	LOS B	0.1	0.6	0.68	0.94	0.68	47.2
12	R2	All MCs	8	7.0	8	7.0	0.023	15.2	LOS C	0.1	0.6	0.68	0.94	0.68	47.2
Approach			86	7.0	86	7.0	0.099	11.1	LOS B	0.4	2.6	0.46	0.92	0.46	46.3
All Vehicles			1111	7.0	1111	7.0	0.230	3.0	NA	0.4	2.7	0.14	0.25	0.14	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2027 BG PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	23	7.0	23	7.0	0.246	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	436	7.0	436	7.0	0.246	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	49	7.0	49	7.0	0.055	8.5	LOS A	0.2	1.7	0.56	0.71	0.56	50.5
Approach			507	7.0	507	7.0	0.246	1.1	NA	0.2	1.7	0.05	0.10	0.05	58.0
East: Basalt St															
4	L2	All MCs	79	7.0	79	7.0	0.145	13.2	LOS B	0.5	3.8	0.57	1.00	0.57	48.4
5	T1	All MCs	12	7.0	12	7.0	0.042	18.5	LOS C	0.1	1.0	0.77	1.00	0.77	45.3
6	R2	All MCs	1	7.0	1	7.0	0.042	20.2	LOS C	0.1	1.0	0.77	1.00	0.77	40.6
Approach			92	7.0	92	7.0	0.145	14.0	LOS B	0.5	3.8	0.60	1.00	0.60	47.9
North: Byrnes St															
7	L2	All MCs	28	7.0	28	7.0	0.322	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	570	7.0	570	7.0	0.322	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
9	R2	All MCs	66	7.0	66	7.0	0.063	7.6	LOS A	0.2	1.8	0.45	0.66	0.45	48.0
Approach			665	7.0	665	7.0	0.322	1.0	NA	0.2	1.8	0.04	0.09	0.04	57.9
West: Basalt St															
10	L2	All MCs	84	7.0	84	7.0	0.128	11.6	LOS B	0.4	3.3	0.50	0.96	0.50	45.4
11	T1	All MCs	10	7.0	10	7.0	0.066	18.8	LOS C	0.2	1.6	0.79	1.00	0.79	44.8
12	R2	All MCs	10	7.0	10	7.0	0.066	20.2	LOS C	0.2	1.6	0.79	1.00	0.79	44.8
Approach			103	7.0	103	7.0	0.128	13.1	LOS B	0.4	3.3	0.56	0.97	0.56	45.3
All Vehicles			1367	7.0	1367	7.0	0.322	2.9	NA	0.5	3.8	0.12	0.22	0.12	55.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 004 [4_2027 BG SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.239	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	428	7.0	428	7.0	0.239	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	22	7.0	22	7.0	0.020	7.5	LOS A	0.1	0.6	0.49	0.62	0.49	51.1
Approach			466	7.0	466	7.0	0.239	0.6	NA	0.1	0.6	0.02	0.05	0.02	58.8
East: Basalt St															
4	L2	All MCs	53	7.0	53	7.0	0.080	11.5	LOS B	0.3	2.1	0.49	0.93	0.49	49.4
5	T1	All MCs	9	7.0	9	7.0	0.030	15.4	LOS C	0.1	0.7	0.70	0.97	0.70	46.8
6	R2	All MCs	3	7.0	3	7.0	0.030	17.0	LOS C	0.1	0.7	0.70	0.97	0.70	42.4
Approach			65	7.0	65	7.0	0.080	12.3	LOS B	0.3	2.1	0.53	0.94	0.53	48.8
North: Byrnes St															
7	L2	All MCs	17	7.0	17	7.0	0.251	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	450	7.0	450	7.0	0.251	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
9	R2	All MCs	71	7.0	71	7.0	0.066	7.5	LOS A	0.3	1.9	0.44	0.66	0.44	48.1
Approach			538	7.0	538	7.0	0.251	1.2	NA	0.3	1.9	0.06	0.11	0.06	57.7
West: Basalt St															
10	L2	All MCs	102	7.0	102	7.0	0.154	11.6	LOS B	0.6	4.1	0.51	0.96	0.51	45.4
11	T1	All MCs	11	7.0	11	7.0	0.051	15.5	LOS C	0.2	1.3	0.71	1.00	0.71	46.8
12	R2	All MCs	10	7.0	10	7.0	0.051	16.3	LOS C	0.2	1.3	0.71	1.00	0.71	46.8
Approach			123	7.0	123	7.0	0.154	12.4	LOS B	0.6	4.1	0.54	0.97	0.54	45.7
All Vehicles			1191	7.0	1191	7.0	0.251	2.7	NA	0.6	4.1	0.12	0.22	0.12	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 004 [4_2027 BG+D AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	18	7.0	18	7.0	0.215	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.9
2	T1	All MCs	382	7.0	382	7.0	0.215	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	72	7.0	72	7.0	0.068	7.7	LOS A	0.3	2.2	0.51	0.67	0.51	51.0
Approach			473	7.0	473	7.0	0.215	1.4	NA	0.3	2.2	0.08	0.12	0.08	57.5
East: Basalt St															
4	L2	All MCs	51	7.0	51	7.0	0.078	11.6	LOS B	0.3	2.1	0.50	0.93	0.50	49.4
5	T1	All MCs	10	7.0	10	7.0	0.038	16.2	LOS C	0.1	0.9	0.72	0.99	0.72	46.4
6	R2	All MCs	4	7.0	4	7.0	0.038	17.4	LOS C	0.1	0.9	0.72	0.99	0.72	41.9
Approach			65	7.0	65	7.0	0.078	12.6	LOS B	0.3	2.1	0.55	0.95	0.55	48.5
North: Byrnes St															
7	L2	All MCs	23	7.0	23	7.0	0.257	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	455	7.0	455	7.0	0.257	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	110	7.0	110	7.0	0.097	7.3	LOS A	0.4	2.8	0.43	0.66	0.43	48.2
Approach			588	7.0	588	7.0	0.257	1.6	NA	0.4	2.8	0.08	0.15	0.08	56.9
West: Basalt St															
10	L2	All MCs	76	7.0	76	7.0	0.107	11.0	LOS B	0.4	2.8	0.47	0.94	0.47	45.9
11	T1	All MCs	2	7.0	2	7.0	0.027	16.2	LOS C	0.1	0.6	0.73	0.97	0.73	46.3
12	R2	All MCs	8	7.0	8	7.0	0.027	16.9	LOS C	0.1	0.6	0.73	0.97	0.73	46.3
Approach			86	7.0	86	7.0	0.107	11.7	LOS B	0.4	2.8	0.50	0.94	0.50	45.9
All Vehicles			1211	7.0	1211	7.0	0.257	2.9	NA	0.4	2.8	0.13	0.24	0.13	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2027 BG+D PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	23	7.0	23	7.0	0.282	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	502	7.0	502	7.0	0.282	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	49	7.0	49	7.0	0.061	9.1	LOS A	0.2	1.8	0.59	0.75	0.59	50.1
Approach			574	7.0	574	7.0	0.282	1.1	NA	0.2	1.8	0.05	0.09	0.05	58.1
East: Basalt St															
4	L2	All MCs	79	7.0	79	7.0	0.164	14.3	LOS B	0.6	4.2	0.62	1.00	0.62	47.8
5	T1	All MCs	12	7.0	12	7.0	0.053	21.8	LOS C	0.2	1.2	0.82	1.00	0.82	43.5
6	R2	All MCs	1	7.0	1	7.0	0.053	24.1	LOS C	0.2	1.2	0.82	1.00	0.82	38.6
Approach			92	7.0	92	7.0	0.164	15.4	LOS C	0.6	4.2	0.64	1.00	0.64	47.1
North: Byrnes St															
7	L2	All MCs	28	7.0	28	7.0	0.357	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	637	7.0	637	7.0	0.357	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
9	R2	All MCs	66	7.0	66	7.0	0.069	8.1	LOS A	0.3	1.9	0.48	0.70	0.48	47.6
Approach			731	7.0	731	7.0	0.357	1.0	NA	0.3	1.9	0.04	0.09	0.04	58.0
West: Basalt St															
10	L2	All MCs	84	7.0	84	7.0	0.143	12.5	LOS B	0.5	3.7	0.54	0.99	0.54	44.8
11	T1	All MCs	10	7.0	10	7.0	0.084	22.2	LOS C	0.3	1.9	0.83	1.00	0.83	42.9
12	R2	All MCs	10	7.0	10	7.0	0.084	24.0	LOS C	0.3	1.9	0.83	1.00	0.83	43.0
Approach			103	7.0	103	7.0	0.143	14.5	LOS B	0.5	3.7	0.60	0.99	0.60	44.3
All Vehicles			1501	7.0	1501	7.0	0.357	2.8	NA	0.6	4.2	0.12	0.21	0.12	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2027 BG+D SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	16	7.0	16	7.0	0.277	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	499	7.0	499	7.0	0.277	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	22	7.0	22	7.0	0.022	8.0	LOS A	0.1	0.7	0.53	0.65	0.53	50.8
Approach			537	7.0	537	7.0	0.277	0.6	NA	0.1	0.7	0.02	0.04	0.02	58.9
East: Basalt St															
4	L2	All MCs	53	7.0	53	7.0	0.090	12.3	LOS B	0.3	2.3	0.53	0.96	0.53	48.9
5	T1	All MCs	9	7.0	9	7.0	0.037	17.8	LOS C	0.1	0.9	0.76	1.00	0.76	45.4
6	R2	All MCs	3	7.0	3	7.0	0.037	19.9	LOS C	0.1	0.9	0.76	1.00	0.76	40.8
Approach			65	7.0	65	7.0	0.090	13.4	LOS B	0.3	2.3	0.57	0.97	0.57	48.1
North: Byrnes St															
7	L2	All MCs	17	7.0	17	7.0	0.289	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	520	7.0	520	7.0	0.289	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
9	R2	All MCs	71	7.0	71	7.0	0.073	8.0	LOS A	0.3	2.0	0.48	0.69	0.48	47.6
Approach			608	7.0	608	7.0	0.289	1.1	NA	0.3	2.0	0.06	0.10	0.06	57.8
West: Basalt St															
10	L2	All MCs	102	7.0	102	7.0	0.174	12.6	LOS B	0.6	4.5	0.55	0.99	0.55	44.8
11	T1	All MCs	11	7.0	11	7.0	0.064	18.0	LOS C	0.2	1.5	0.77	1.00	0.77	45.3
12	R2	All MCs	10	7.0	10	7.0	0.064	19.0	LOS C	0.2	1.5	0.77	1.00	0.77	45.4
Approach			123	7.0	123	7.0	0.174	13.5	LOS B	0.6	4.5	0.59	0.99	0.59	44.9
All Vehicles			1333	7.0	1333	7.0	0.289	2.6	NA	0.6	4.5	0.12	0.20	0.12	56.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2037 BG+D AM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	21	7.0	21	7.0	0.245	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	434	7.0	434	7.0	0.245	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	83	7.0	83	7.0	0.086	8.2	LOS A	0.4	2.8	0.55	0.71	0.55	50.7
Approach			538	7.0	538	7.0	0.245	1.5	NA	0.4	2.8	0.08	0.13	0.08	57.4
East: Basalt St															
4	L2	All MCs	59	7.0	59	7.0	0.099	12.3	LOS B	0.3	2.6	0.53	0.96	0.53	48.9
5	T1	All MCs	11	7.0	11	7.0	0.055	19.0	LOS C	0.2	1.3	0.78	1.00	0.78	44.8
6	R2	All MCs	5	7.0	5	7.0	0.055	20.8	LOS C	0.2	1.3	0.78	1.00	0.78	40.1
Approach			75	7.0	75	7.0	0.099	13.9	LOS B	0.3	2.6	0.59	0.97	0.59	47.7
North: Byrnes St															
7	L2	All MCs	26	7.0	26	7.0	0.292	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	55.6
8	T1	All MCs	518	7.0	518	7.0	0.292	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
9	R2	All MCs	127	7.0	127	7.0	0.120	7.7	LOS A	0.5	3.5	0.46	0.69	0.46	47.9
Approach			671	7.0	671	7.0	0.292	1.7	NA	0.5	3.5	0.09	0.15	0.09	56.7
West: Basalt St															
10	L2	All MCs	88	7.0	88	7.0	0.134	11.6	LOS B	0.5	3.5	0.50	0.96	0.50	45.4
11	T1	All MCs	3	7.0	3	7.0	0.039	19.0	LOS C	0.1	0.9	0.79	1.00	0.79	44.6
12	R2	All MCs	9	7.0	9	7.0	0.039	20.0	LOS C	0.1	0.9	0.79	1.00	0.79	44.7
Approach			99	7.0	99	7.0	0.134	12.6	LOS B	0.5	3.5	0.54	0.97	0.54	45.3
All Vehicles			1382	7.0	1382	7.0	0.292	3.1	NA	0.5	3.5	0.15	0.25	0.15	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 004 [4_2037 BG+D PM Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	26	7.0	26	7.0	0.320	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	56.8
2	T1	All MCs	569	7.0	569	7.0	0.320	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.5
3	R2	All MCs	56	7.0	56	7.0	0.082	10.1	LOS B	0.3	2.4	0.63	0.81	0.63	49.4
Approach			652	7.0	652	7.0	0.320	1.2	NA	0.3	2.4	0.05	0.09	0.05	57.9
East: Basalt St															
4	L2	All MCs	92	7.0	92	7.0	0.226	16.5	LOS C	0.8	6.0	0.70	1.02	0.75	46.6
5	T1	All MCs	14	7.0	14	7.0	0.087	28.1	LOS D	0.2	1.8	0.87	1.00	0.87	40.4
6	R2	All MCs	1	7.0	1	7.0	0.087	32.2	LOS D	0.2	1.8	0.87	1.00	0.87	35.3
Approach			107	7.0	107	7.0	0.226	18.2	LOS C	0.8	6.0	0.72	1.02	0.76	45.6
North: Byrnes St															
7	L2	All MCs	33	7.0	33	7.0	0.407	5.7	LOS A	0.0	0.0	0.00	0.03	0.00	55.5
8	T1	All MCs	725	7.0	725	7.0	0.407	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
9	R2	All MCs	76	7.0	76	7.0	0.089	8.7	LOS A	0.3	2.4	0.52	0.74	0.52	47.1
Approach			834	7.0	834	7.0	0.407	1.1	NA	0.3	2.4	0.05	0.09	0.05	57.9
West: Basalt St															
10	L2	All MCs	97	7.0	97	7.0	0.187	13.6	LOS B	0.6	4.8	0.59	1.00	0.59	44.0
11	T1	All MCs	11	7.0	11	7.0	0.140	28.8	LOS D	0.4	2.9	0.89	1.00	0.89	39.6
12	R2	All MCs	11	7.0	11	7.0	0.140	32.1	LOS D	0.4	2.9	0.89	1.00	0.89	39.6
Approach			119	7.0	119	7.0	0.187	16.8	LOS C	0.6	4.8	0.65	1.00	0.65	42.8
All Vehicles			1711	7.0	1711	7.0	0.407	3.3	NA	0.8	6.0	0.13	0.21	0.14	55.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 004 [4_2037 BG+D SAT Peak_Byrnes St/Basalt St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 004 - Byrnes St / Basalt St
Prepared: TB
Reviewed:
Site Category: NA
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	19	7.0	19	7.0	0.313	5.7	LOS A	0.0	0.0	0.00	0.02	0.00	56.9
2	T1	All MCs	565	7.0	565	7.0	0.313	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.6
3	R2	All MCs	25	7.0	25	7.0	0.029	8.5	LOS A	0.1	0.9	0.56	0.69	0.56	50.4
Approach			608	7.0	608	7.0	0.313	0.6	NA	0.1	0.9	0.02	0.05	0.02	58.8
East: Basalt St															
4	L2	All MCs	61	7.0	61	7.0	0.117	13.4	LOS B	0.4	3.0	0.57	1.00	0.57	48.3
5	T1	All MCs	10	7.0	10	7.0	0.057	21.3	LOS C	0.2	1.3	0.82	1.00	0.82	43.4
6	R2	All MCs	4	7.0	4	7.0	0.057	24.6	LOS C	0.2	1.3	0.82	1.00	0.82	38.5
Approach			75	7.0	75	7.0	0.117	15.0	LOS B	0.4	3.0	0.62	1.00	0.62	47.2
North: Byrnes St															
7	L2	All MCs	20	7.0	20	7.0	0.327	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	All MCs	590	7.0	590	7.0	0.327	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
9	R2	All MCs	81	7.0	81	7.0	0.093	8.6	LOS A	0.3	2.5	0.51	0.74	0.51	47.1
Approach			691	7.0	691	7.0	0.327	1.2	NA	0.3	2.5	0.06	0.10	0.06	57.7
West: Basalt St															
10	L2	All MCs	118	7.0	118	7.0	0.226	13.8	LOS B	0.8	6.1	0.60	1.01	0.63	43.9
11	T1	All MCs	13	7.0	13	7.0	0.097	21.7	LOS C	0.3	2.2	0.83	1.00	0.83	43.3
12	R2	All MCs	11	7.0	11	7.0	0.097	23.1	LOS C	0.3	2.2	0.83	1.00	0.83	43.4
Approach			142	7.0	142	7.0	0.226	15.2	LOS C	0.8	6.1	0.64	1.01	0.66	43.8
All Vehicles			1516	7.0	1516	7.0	0.327	3.0	NA	0.8	6.1	0.13	0.21	0.13	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

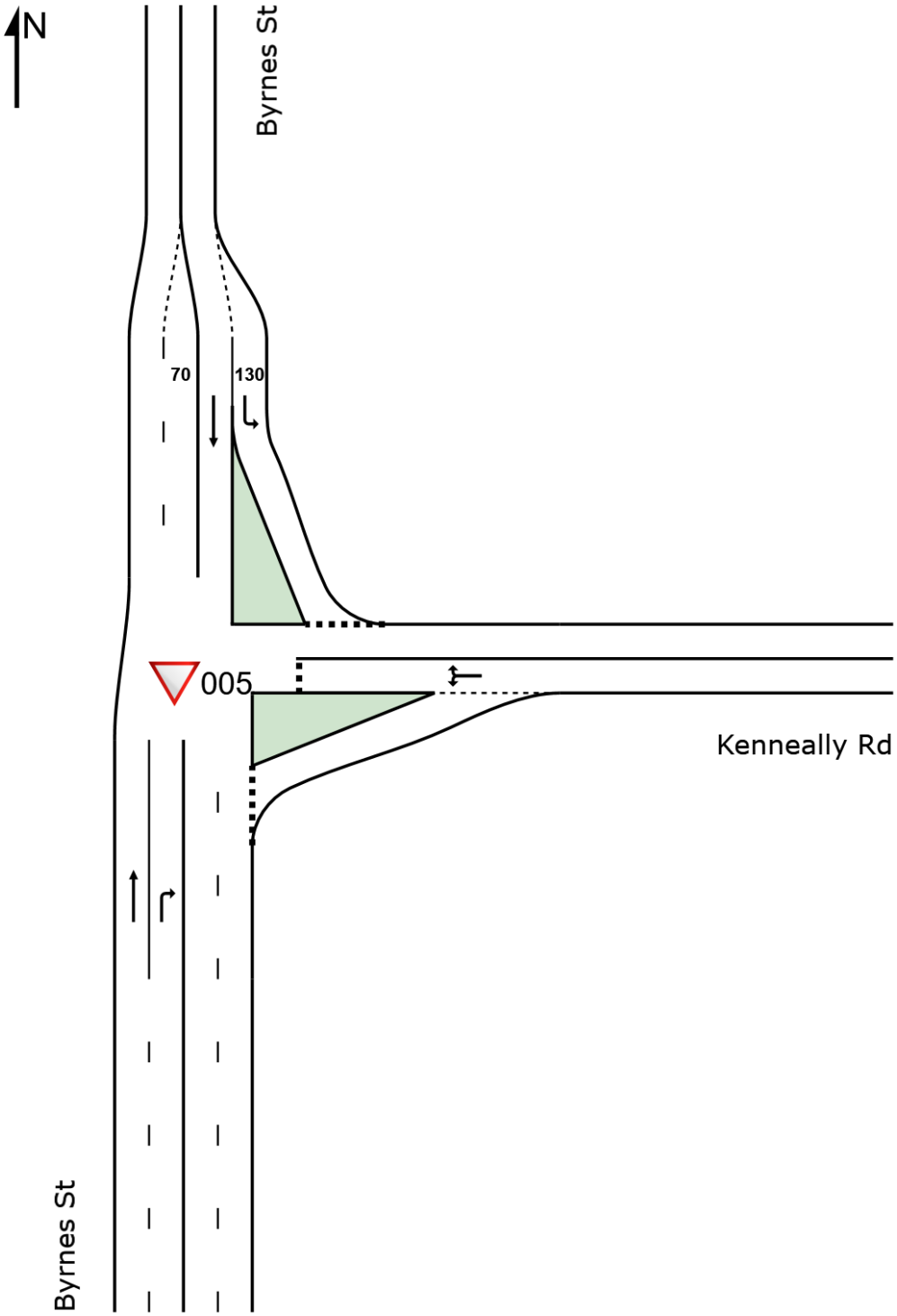
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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

SITE LAYOUT

Site: 005 [5_2022 Survey AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 005 [5_2022 Survey AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	666	7.0	666	7.0	0.357	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	42	7.0	42	7.0	0.036	4.3	LOS A	0.2	1.1	0.44	0.58	0.44	48.7
Approach			708	7.0	708	7.0	0.357	0.3	NA	0.2	1.1	0.03	0.03	0.03	59.0
East: Kenneally Rd															
4	L2	All MCs	49	7.0	49	7.0	0.502	10.7	LOS B	2.3	16.8	0.81	1.04	1.27	34.3
6	R2	All MCs	95	7.0	95	7.0	0.502	31.2	LOS D	2.3	16.8	0.81	1.04	1.27	42.1
Approach			144	7.0	144	7.0	0.502	24.2	LOS C	2.3	16.8	0.81	1.04	1.27	40.1
North: Byrnes St															
7	L2	All MCs	97	7.0	97	7.0	0.064	5.8	LOS A	0.3	1.9	0.12	0.52	0.12	52.6
8	T1	All MCs	375	7.0	375	7.0	0.201	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			472	7.0	472	7.0	0.201	1.2	LOS A	0.3	1.9	0.02	0.11	0.02	57.3
All Vehicles			1324	7.0	1324	7.0	0.502	3.2	NA	2.3	16.8	0.11	0.17	0.16	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2022 Survey PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	428	7.0	428	7.0	0.230	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	61	7.0	61	7.0	0.064	5.3	LOS A	0.3	1.9	0.53	0.68	0.53	47.5
Approach			489	7.0	489	7.0	0.230	0.7	NA	0.3	1.9	0.07	0.08	0.07	58.0
East: Kenneally Rd															
4	L2	All MCs	41	7.0	41	7.0	0.286	8.7	LOS A	1.1	7.8	0.72	0.92	0.86	38.7
6	R2	All MCs	59	7.0	59	7.0	0.286	22.8	LOS C	1.1	7.8	0.72	0.92	0.86	45.5
Approach			100	7.0	100	7.0	0.286	17.0	LOS C	1.1	7.8	0.72	0.92	0.86	43.5
North: Byrnes St															
7	L2	All MCs	133	7.0	133	7.0	0.089	5.9	LOS A	0.4	2.8	0.15	0.52	0.15	52.5
8	T1	All MCs	527	7.0	527	7.0	0.283	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			660	7.0	660	7.0	0.283	1.3	LOS A	0.4	2.8	0.03	0.10	0.03	57.2
All Vehicles			1249	7.0	1249	7.0	0.286	2.3	NA	1.1	7.8	0.10	0.16	0.11	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2022 Survey SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	361	7.0	361	7.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	49	7.0	49	7.0	0.043	4.3	LOS A	0.2	1.3	0.45	0.59	0.45	48.7
Approach			411	7.0	411	7.0	0.194	0.5	NA	0.2	1.3	0.05	0.07	0.05	58.3
East: Kenneally Rd															
4	L2	All MCs	39	7.0	39	7.0	0.297	7.7	LOS A	1.2	9.1	0.66	0.87	0.79	41.3
6	R2	All MCs	99	7.0	99	7.0	0.297	16.4	LOS C	1.2	9.1	0.66	0.87	0.79	47.3
Approach			138	7.0	138	7.0	0.297	13.9	LOS B	1.2	9.1	0.66	0.87	0.79	46.2
North: Byrnes St															
7	L2	All MCs	109	7.0	109	7.0	0.072	5.8	LOS A	0.3	2.2	0.13	0.52	0.13	52.5
8	T1	All MCs	380	7.0	380	7.0	0.204	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			489	7.0	489	7.0	0.204	1.4	LOS A	0.3	2.2	0.03	0.12	0.03	57.1
All Vehicles			1038	7.0	1038	7.0	0.297	2.7	NA	1.2	9.1	0.12	0.20	0.14	55.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2027 BG AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	688	7.0	688	7.0	0.369	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	43	7.0	43	7.0	0.038	4.3	LOS A	0.2	1.2	0.45	0.59	0.45	48.7
Approach			731	7.0	731	7.0	0.369	0.3	NA	0.2	1.2	0.03	0.04	0.03	59.0
East: Kenneally Rd															
4	L2	All MCs	51	7.0	51	7.0	0.557	12.0	LOS B	2.6	19.2	0.83	1.09	1.39	32.8
6	R2	All MCs	98	7.0	98	7.0	0.557	34.6	LOS D	2.6	19.2	0.83	1.09	1.39	40.9
Approach			149	7.0	149	7.0	0.557	26.8	LOS D	2.6	19.2	0.83	1.09	1.39	38.9
North: Byrnes St															
7	L2	All MCs	100	7.0	100	7.0	0.066	5.8	LOS A	0.3	2.0	0.12	0.52	0.12	52.6
8	T1	All MCs	387	7.0	387	7.0	0.207	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			487	7.0	487	7.0	0.207	1.2	LOS A	0.3	2.0	0.03	0.11	0.03	57.3
All Vehicles			1366	7.0	1366	7.0	0.557	3.5	NA	2.6	19.2	0.11	0.18	0.17	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2027 BG PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	442	7.0	442	7.0	0.237	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	63	7.0	63	7.0	0.068	5.4	LOS A	0.3	2.0	0.54	0.69	0.54	47.4
Approach			505	7.0	505	7.0	0.237	0.7	NA	0.3	2.0	0.07	0.09	0.07	58.0
East: Kenneally Rd															
4	L2	All MCs	42	7.0	42	7.0	0.314	9.1	LOS A	1.2	8.7	0.75	0.95	0.92	37.9
6	R2	All MCs	61	7.0	61	7.0	0.314	24.5	LOS C	1.2	8.7	0.75	0.95	0.92	44.9
Approach			103	7.0	103	7.0	0.314	18.2	LOS C	1.2	8.7	0.75	0.95	0.92	42.8
North: Byrnes St															
7	L2	All MCs	137	7.0	137	7.0	0.092	5.9	LOS A	0.4	2.9	0.16	0.52	0.16	52.4
8	T1	All MCs	544	7.0	544	7.0	0.292	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			681	7.0	681	7.0	0.292	1.3	LOS A	0.4	2.9	0.03	0.10	0.03	57.2
All Vehicles			1289	7.0	1289	7.0	0.314	2.4	NA	1.2	8.7	0.10	0.16	0.12	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2027 BG SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	373	7.0	373	7.0	0.200	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	51	7.0	51	7.0	0.045	4.4	LOS A	0.2	1.4	0.46	0.60	0.46	48.6
Approach			424	7.0	424	7.0	0.200	0.5	NA	0.2	1.4	0.05	0.07	0.05	58.3
East: Kenneally Rd															
4	L2	All MCs	40	7.0	40	7.0	0.319	7.9	LOS A	1.3	9.9	0.68	0.89	0.84	40.7
6	R2	All MCs	102	7.0	102	7.0	0.319	17.2	LOS C	1.3	9.9	0.68	0.89	0.84	46.9
Approach			142	7.0	142	7.0	0.319	14.6	LOS B	1.3	9.9	0.68	0.89	0.84	45.7
North: Byrnes St															
7	L2	All MCs	113	7.0	113	7.0	0.075	5.8	LOS A	0.3	2.3	0.14	0.52	0.14	52.5
8	T1	All MCs	392	7.0	392	7.0	0.210	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			505	7.0	505	7.0	0.210	1.4	LOS A	0.3	2.3	0.03	0.12	0.03	57.1
All Vehicles			1071	7.0	1071	7.0	0.319	2.8	NA	1.3	9.9	0.13	0.20	0.15	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 005 [5_2027 BG+D AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	721	7.0	721	7.0	0.387	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	43	7.0	43	7.0	0.039	4.5	LOS A	0.2	1.2	0.47	0.61	0.47	48.4
Approach			764	7.0	764	7.0	0.387	0.3	NA	0.2	1.2	0.03	0.03	0.03	59.0
East: Kenneally Rd															
4	L2	All MCs	51	7.0	51	7.0	0.750	19.9	LOS C	4.1	30.5	0.91	1.30	2.03	27.3
6	R2	All MCs	114	7.0	114	7.0	0.750	47.6	LOS E	4.1	30.5	0.91	1.30	2.03	36.1
Approach			165	7.0	165	7.0	0.750	39.1	LOS E	4.1	30.5	0.91	1.30	2.03	34.0
North: Byrnes St															
7	L2	All MCs	117	7.0	117	7.0	0.077	5.8	LOS A	0.3	2.4	0.12	0.52	0.12	52.6
8	T1	All MCs	420	7.0	420	7.0	0.225	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			537	7.0	537	7.0	0.225	1.3	LOS A	0.3	2.4	0.03	0.11	0.03	57.1
All Vehicles			1466	7.0	1466	7.0	0.750	5.0	NA	4.1	30.5	0.13	0.21	0.25	52.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2027 BG+D PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	486	7.0	486	7.0	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	63	7.0	63	7.0	0.073	5.8	LOS A	0.3	2.1	0.56	0.71	0.56	47.0
Approach			549	7.0	549	7.0	0.261	0.7	NA	0.3	2.1	0.06	0.08	0.06	58.0
East: Kenneally Rd															
4	L2	All MCs	42	7.0	42	7.0	0.495	12.1	LOS B	2.0	14.9	0.85	1.06	1.26	33.2
6	R2	All MCs	83	7.0	83	7.0	0.495	32.4	LOS D	2.0	14.9	0.85	1.06	1.26	41.3
Approach			125	7.0	125	7.0	0.495	25.5	LOS D	2.0	14.9	0.85	1.06	1.26	39.3
North: Byrnes St															
7	L2	All MCs	159	7.0	159	7.0	0.106	5.9	LOS A	0.5	3.4	0.16	0.52	0.16	52.4
8	T1	All MCs	589	7.0	589	7.0	0.316	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			748	7.0	748	7.0	0.316	1.3	LOS A	0.5	3.4	0.03	0.11	0.03	57.1
All Vehicles			1423	7.0	1423	7.0	0.495	3.2	NA	2.0	14.9	0.12	0.18	0.15	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2027 BG+D SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	420	7.0	420	7.0	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	51	7.0	51	7.0	0.048	4.7	LOS A	0.2	1.5	0.48	0.62	0.48	48.3
Approach			471	7.0	471	7.0	0.225	0.5	NA	0.2	1.5	0.05	0.07	0.05	58.4
East: Kenneally Rd															
4	L2	All MCs	40	7.0	40	7.0	0.456	9.7	LOS A	2.1	15.6	0.76	1.01	1.13	37.3
6	R2	All MCs	126	7.0	126	7.0	0.456	22.1	LOS C	2.1	15.6	0.76	1.01	1.13	44.5
Approach			166	7.0	166	7.0	0.456	19.1	LOS C	2.1	15.6	0.76	1.01	1.13	43.3
North: Byrnes St															
7	L2	All MCs	137	7.0	137	7.0	0.090	5.9	LOS A	0.4	2.8	0.14	0.52	0.14	52.5
8	T1	All MCs	439	7.0	439	7.0	0.235	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			576	7.0	576	7.0	0.235	1.4	LOS A	0.4	2.8	0.03	0.12	0.03	56.9
All Vehicles			1212	7.0	1212	7.0	0.456	3.5	NA	2.1	15.6	0.14	0.22	0.19	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2037 BG+D AM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	827	7.0	827	7.0	0.443	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	All MCs	50	7.0	50	7.0	0.049	4.9	LOS A	0.2	1.5	0.51	0.64	0.51	48.0
Approach			877	7.0	877	7.0	0.443	0.3	NA	0.2	1.5	0.03	0.04	0.03	58.9
East: Kenneally Rd															
4	L2	All MCs	59	7.0	59	7.0	1.301	294.8	LOS F	31.6	234.8	1.00	3.57	9.78	5.5
6	R2	All MCs	129	7.0	129	7.0	1.301	337.9	LOS F	31.6	234.8	1.00	3.57	9.78	9.5
Approach			188	7.0	188	7.0	1.301	324.4	LOS F	31.6	234.8	1.00	3.57	9.78	8.3
North: Byrnes St															
7	L2	All MCs	132	7.0	132	7.0	0.087	5.8	LOS A	0.4	2.7	0.14	0.52	0.14	52.5
8	T1	All MCs	480	7.0	480	7.0	0.257	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			612	7.0	612	7.0	0.257	1.3	LOS A	0.4	2.7	0.03	0.11	0.03	57.1
All Vehicles			1677	7.0	1677	7.0	1.301	37.1	NA	31.6	234.8	0.14	0.46	1.12	29.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2037 BG+D PM Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	555	7.0	555	7.0	0.297	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	All MCs	73	7.0	73	7.0	0.096	6.6	LOS A	0.4	2.8	0.60	0.77	0.60	46.0
Approach			627	7.0	627	7.0	0.297	0.8	NA	0.4	2.8	0.07	0.09	0.07	57.8
East: Kenneally Rd															
4	L2	All MCs	49	7.0	49	7.0	0.792	27.1	LOS D	3.9	29.0	0.95	1.31	2.13	24.1
6	R2	All MCs	92	7.0	92	7.0	0.792	58.7	LOS F	3.9	29.0	0.95	1.31	2.13	33.1
Approach			141	7.0	141	7.0	0.792	47.8	LOS E	3.9	29.0	0.95	1.31	2.13	30.6
North: Byrnes St															
7	L2	All MCs	180	7.0	180	7.0	0.122	5.9	LOS A	0.5	3.9	0.17	0.52	0.17	52.4
8	T1	All MCs	672	7.0	672	7.0	0.361	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			853	7.0	853	7.0	0.361	1.4	LOS A	0.5	3.9	0.04	0.11	0.04	57.1
All Vehicles			1621	7.0	1621	7.0	0.792	5.2	NA	3.9	29.0	0.13	0.21	0.23	51.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 005 [5_2037 BG+D SAT Peak_Byrnes St/Kenneally Rd (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 005 - Byrnes St / Kenneally Rd
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
2	T1	All MCs	477	7.0	477	7.0	0.256	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	59	7.0	59	7.0	0.060	5.1	LOS A	0.2	1.8	0.52	0.66	0.52	47.8
Approach			536	7.0	536	7.0	0.256	0.6	NA	0.2	1.8	0.06	0.07	0.06	58.3
East: Kenneally Rd															
4	L2	All MCs	46	7.0	46	7.0	0.650	14.3	LOS B	3.4	25.2	0.87	1.17	1.63	32.3
6	R2	All MCs	141	7.0	141	7.0	0.650	31.7	LOS D	3.4	25.2	0.87	1.17	1.63	40.5
Approach			188	7.0	188	7.0	0.650	27.4	LOS D	3.4	25.2	0.87	1.17	1.63	39.0
North: Byrnes St															
7	L2	All MCs	154	7.0	154	7.0	0.103	5.9	LOS A	0.4	3.2	0.15	0.52	0.15	52.5
8	T1	All MCs	500	7.0	500	7.0	0.268	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			654	7.0	654	7.0	0.268	1.4	LOS A	0.4	3.2	0.04	0.12	0.04	56.9
All Vehicles			1377	7.0	1377	7.0	0.650	4.6	NA	3.4	25.2	0.16	0.25	0.26	52.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

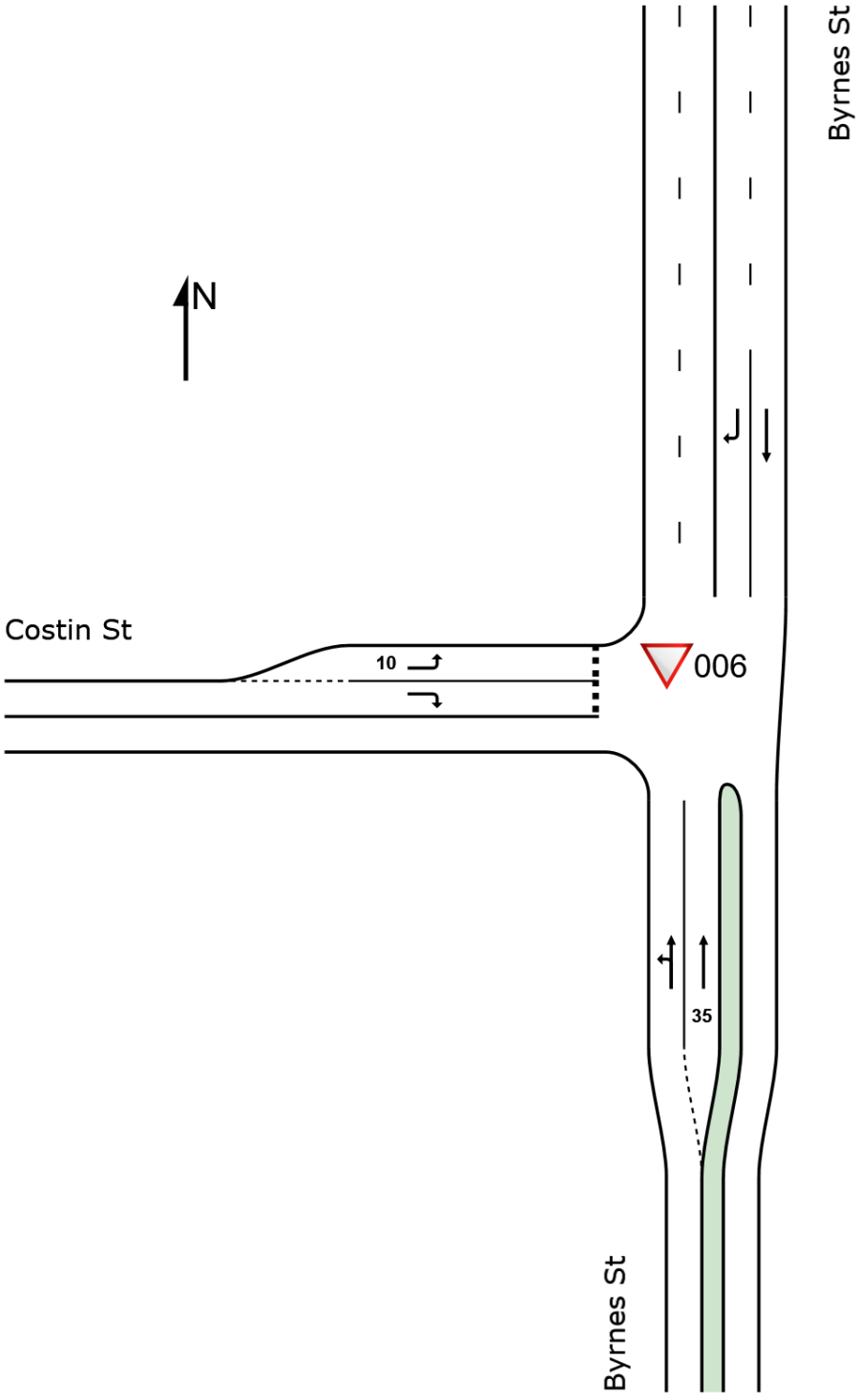
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SITE LAYOUT

Site: 006 [6_2022 Survey AM Peak_Byrnes St/Costin St (Site Folder: General)]

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 006 [6_2022 Survey AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	49	7.0	49	7.0	0.330	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.6
2	T1	All MCs	571	7.0	571	7.0	0.330	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.0
Approach			620	7.0	620	7.0	0.330	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.6
North: Byrnes St															
8	T1	All MCs	332	7.0	332	7.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	93	7.0	93	7.0	0.149	7.4	LOS A	0.5	4.0	0.59	0.80	0.59	45.4
Approach			424	7.0	424	7.0	0.178	1.6	NA	0.5	4.0	0.13	0.17	0.13	56.0
West: Costin St															
10	L2	All MCs	138	7.0	138	7.0	0.214	9.7	LOS A	0.8	5.7	0.56	0.80	0.56	44.5
12	R2	All MCs	25	7.0	25	7.0	0.139	24.9	LOS C	0.4	3.1	0.84	0.93	0.84	41.1
Approach			163	7.0	163	7.0	0.214	12.0	LOS B	0.8	5.7	0.61	0.82	0.61	43.6
All Vehicles			1207	7.0	1207	7.0	0.330	2.5	NA	0.8	5.7	0.13	0.20	0.13	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2022 Survey PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	56	7.0	56	7.0	0.231	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	56.4
2	T1	All MCs	383	7.0	383	7.0	0.231	0.1	LOS A	0.0	0.0	0.00	0.08	0.00	58.6
Approach			439	7.0	439	7.0	0.231	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.1
North: Byrnes St															
8	T1	All MCs	451	7.0	451	7.0	0.242	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	118	7.0	118	7.0	0.142	5.5	LOS A	0.6	4.1	0.51	0.69	0.51	47.5
Approach			568	7.0	568	7.0	0.242	1.1	NA	0.6	4.1	0.10	0.14	0.10	56.8
West: Costin St															
10	L2	All MCs	106	7.0	106	7.0	0.125	7.7	LOS A	0.5	3.4	0.44	0.68	0.44	46.5
12	R2	All MCs	36	7.0	36	7.0	0.119	16.4	LOS C	0.4	2.8	0.75	0.90	0.75	45.5
Approach			142	7.0	142	7.0	0.125	9.9	LOS A	0.5	3.4	0.52	0.74	0.52	46.1
All Vehicles			1149	7.0	1149	7.0	0.242	2.1	NA	0.6	4.1	0.12	0.19	0.12	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2022 Survey SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	26	7.0	26	7.0	0.176	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.7
2	T1	All MCs	305	7.0	305	7.0	0.176	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.1
Approach			332	7.0	332	7.0	0.176	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.8
North: Byrnes St															
8	T1	All MCs	321	7.0	321	7.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	98	7.0	98	7.0	0.102	4.6	LOS A	0.4	3.0	0.43	0.62	0.43	48.5
Approach			419	7.0	419	7.0	0.172	1.1	NA	0.4	3.0	0.10	0.14	0.10	56.8
West: Costin St															
10	L2	All MCs	105	7.0	105	7.0	0.113	7.2	LOS A	0.4	3.1	0.39	0.64	0.39	47.1
12	R2	All MCs	29	7.0	29	7.0	0.065	11.7	LOS B	0.2	1.6	0.62	0.83	0.62	48.3
Approach			135	7.0	135	7.0	0.113	8.2	LOS A	0.4	3.1	0.44	0.68	0.44	47.5
All Vehicles			885	7.0	885	7.0	0.176	1.9	NA	0.4	3.1	0.11	0.19	0.11	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2027 BG AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	51	7.0	51	7.0	0.340	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.6
2	T1	All MCs	589	7.0	589	7.0	0.340	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.0
Approach			640	7.0	640	7.0	0.340	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.6
North: Byrnes St															
8	T1	All MCs	342	7.0	342	7.0	0.183	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	96	7.0	96	7.0	0.159	7.7	LOS A	0.6	4.3	0.60	0.81	0.60	45.1
Approach			438	7.0	438	7.0	0.183	1.7	NA	0.6	4.3	0.13	0.18	0.13	55.9
West: Costin St															
10	L2	All MCs	142	7.0	142	7.0	0.227	10.0	LOS A	0.8	6.2	0.58	0.82	0.59	44.1
12	R2	All MCs	26	7.0	26	7.0	0.155	26.7	LOS D	0.5	3.4	0.85	0.94	0.85	40.3
Approach			168	7.0	168	7.0	0.227	12.6	LOS B	0.8	6.2	0.62	0.84	0.63	43.1
All Vehicles			1246	7.0	1246	7.0	0.340	2.6	NA	0.8	6.2	0.13	0.20	0.13	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2027 BG PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	58	7.0	58	7.0	0.239	5.7	LOS A	0.0	0.0	0.00	0.08	0.00	56.4
2	T1	All MCs	395	7.0	395	7.0	0.239	0.1	LOS A	0.0	0.0	0.00	0.08	0.00	58.6
Approach			453	7.0	453	7.0	0.239	0.8	NA	0.0	0.0	0.00	0.08	0.00	58.1
North: Byrnes St															
8	T1	All MCs	465	7.0	465	7.0	0.249	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	122	7.0	122	7.0	0.150	5.7	LOS A	0.6	4.3	0.51	0.70	0.51	47.3
Approach			586	7.0	586	7.0	0.249	1.2	NA	0.6	4.3	0.11	0.15	0.11	56.7
West: Costin St															
10	L2	All MCs	110	7.0	110	7.0	0.131	7.8	LOS A	0.5	3.5	0.45	0.69	0.45	46.4
12	R2	All MCs	37	7.0	37	7.0	0.130	17.2	LOS C	0.4	3.0	0.77	0.90	0.77	45.1
Approach			147	7.0	147	7.0	0.131	10.2	LOS B	0.5	3.5	0.53	0.75	0.53	45.9
All Vehicles			1186	7.0	1186	7.0	0.249	2.1	NA	0.6	4.3	0.12	0.19	0.12	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 006 [6_2027 BG SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	27	7.0	27	7.0	0.181	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.7
2	T1	All MCs	315	7.0	315	7.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	59.1
Approach			342	7.0	342	7.0	0.181	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.8
North: Byrnes St															
8	T1	All MCs	331	7.0	331	7.0	0.178	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	101	7.0	101	7.0	0.107	4.7	LOS A	0.4	3.1	0.44	0.63	0.44	48.4
Approach			432	7.0	432	7.0	0.178	1.1	NA	0.4	3.1	0.10	0.15	0.10	56.8
West: Costin St															
10	L2	All MCs	109	7.0	109	7.0	0.118	7.3	LOS A	0.4	3.2	0.40	0.65	0.40	47.1
12	R2	All MCs	30	7.0	30	7.0	0.070	12.1	LOS B	0.2	1.7	0.63	0.84	0.63	48.1
Approach			139	7.0	139	7.0	0.118	8.3	LOS A	0.4	3.2	0.45	0.69	0.45	47.4
All Vehicles			913	7.0	913	7.0	0.181	2.0	NA	0.4	3.2	0.12	0.19	0.12	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 006 [6_2027 BG+D AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	51	7.0	51	7.0	0.349	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.6
2	T1	All MCs	605	7.0	605	7.0	0.349	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	59.0
Approach			656	7.0	656	7.0	0.349	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.7
North: Byrnes St															
8	T1	All MCs	359	7.0	359	7.0	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	112	7.0	112	7.0	0.193	8.0	LOS A	0.7	5.2	0.62	0.82	0.62	44.8
Approach			471	7.0	471	7.0	0.193	1.9	NA	0.7	5.2	0.15	0.20	0.15	55.4
West: Costin St															
10	L2	All MCs	159	7.0	159	7.0	0.261	10.5	LOS B	1.0	7.5	0.59	0.85	0.65	43.7
12	R2	All MCs	26	7.0	26	7.0	0.173	29.8	LOS D	0.5	3.8	0.87	0.95	0.89	39.0
Approach			185	7.0	185	7.0	0.261	13.2	LOS B	1.0	7.5	0.63	0.86	0.69	42.5
All Vehicles			1313	7.0	1313	7.0	0.349	2.8	NA	1.0	7.5	0.14	0.21	0.15	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2027 BG+D PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	58	7.0	58	7.0	0.250	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	56.4
2	T1	All MCs	418	7.0	418	7.0	0.250	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	58.7
Approach			475	7.0	475	7.0	0.250	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.2
North: Byrnes St															
8	T1	All MCs	487	7.0	487	7.0	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	144	7.0	144	7.0	0.183	5.9	LOS A	0.7	5.4	0.54	0.72	0.54	47.0
Approach			631	7.0	631	7.0	0.261	1.4	NA	0.7	5.4	0.12	0.16	0.12	56.3
West: Costin St															
10	L2	All MCs	132	7.0	132	7.0	0.163	8.1	LOS A	0.6	4.4	0.47	0.71	0.47	46.2
12	R2	All MCs	37	7.0	37	7.0	0.146	18.9	LOS C	0.4	3.3	0.80	0.91	0.80	44.1
Approach			169	7.0	169	7.0	0.163	10.4	LOS B	0.6	4.4	0.54	0.75	0.54	45.4
All Vehicles			1275	7.0	1275	7.0	0.261	2.3	NA	0.7	5.4	0.13	0.21	0.13	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 006 [6_2027 BG+D SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	27	7.0	27	7.0	0.194	5.7	LOS A	0.0	0.0	0.00	0.04	0.00	56.7
2	T1	All MCs	339	7.0	339	7.0	0.194	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.1
Approach			366	7.0	366	7.0	0.194	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.8
North: Byrnes St															
8	T1	All MCs	355	7.0	355	7.0	0.190	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	125	7.0	125	7.0	0.136	4.9	LOS A	0.5	4.0	0.46	0.65	0.46	48.2
Approach			479	7.0	479	7.0	0.190	1.3	NA	0.5	4.0	0.12	0.17	0.12	56.3
West: Costin St															
10	L2	All MCs	132	7.0	132	7.0	0.148	7.5	LOS A	0.6	4.1	0.42	0.67	0.42	46.8
12	R2	All MCs	30	7.0	30	7.0	0.078	13.2	LOS B	0.3	1.9	0.67	0.86	0.67	47.4
Approach			163	7.0	163	7.0	0.148	8.5	LOS A	0.6	4.1	0.47	0.70	0.47	47.0
All Vehicles			1008	7.0	1008	7.0	0.194	2.2	NA	0.6	4.1	0.13	0.21	0.13	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2037 BG+D AM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	59	7.0	59	7.0	0.402	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.5
2	T1	All MCs	696	7.0	696	7.0	0.402	0.1	LOS A	0.0	0.0	0.00	0.05	0.00	58.9
Approach			755	7.0	755	7.0	0.402	0.6	NA	0.0	0.0	0.00	0.05	0.00	58.6
North: Byrnes St															
8	T1	All MCs	412	7.0	412	7.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	127	7.0	127	7.0	0.263	10.2	LOS B	1.0	7.6	0.71	0.89	0.80	42.6
Approach			539	7.0	539	7.0	0.263	2.4	NA	1.0	7.6	0.17	0.21	0.19	54.6
West: Costin St															
10	L2	All MCs	181	7.0	181	7.0	0.347	12.6	LOS B	1.5	10.9	0.68	0.92	0.87	41.7
12	R2	All MCs	30	7.0	30	7.0	0.303	47.1	LOS E	0.9	6.5	0.92	1.00	1.05	32.9
Approach			211	7.0	211	7.0	0.347	17.5	LOS C	1.5	10.9	0.72	0.93	0.89	39.2
All Vehicles			1504	7.0	1504	7.0	0.402	3.6	NA	1.5	10.9	0.16	0.23	0.19	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2037 BG+D PM Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	66	7.0	66	7.0	0.287	5.7	LOS A	0.0	0.0	0.00	0.07	0.00	56.4
2	T1	All MCs	478	7.0	478	7.0	0.287	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	58.6
Approach			545	7.0	545	7.0	0.287	0.8	NA	0.0	0.0	0.00	0.07	0.00	58.1
North: Byrnes St															
8	T1	All MCs	559	7.0	559	7.0	0.300	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	163	7.0	163	7.0	0.230	6.8	LOS A	0.9	6.7	0.58	0.77	0.58	46.1
Approach			721	7.0	721	7.0	0.300	1.5	NA	0.9	6.7	0.13	0.17	0.13	56.0
West: Costin St															
10	L2	All MCs	149	7.0	149	7.0	0.199	8.7	LOS A	0.7	5.5	0.52	0.75	0.52	45.5
12	R2	All MCs	43	7.0	43	7.0	0.228	25.6	LOS D	0.7	5.1	0.86	0.96	0.94	40.8
Approach			191	7.0	191	7.0	0.228	12.4	LOS B	0.7	5.5	0.59	0.79	0.61	43.8
All Vehicles			1458	7.0	1458	7.0	0.300	2.7	NA	0.9	6.7	0.14	0.22	0.15	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 006 [6_2037 BG+D SAT Peak_Byrnes St/Costin St (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 006 - Byrnes St / Costin St
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	31	7.0	31	7.0	0.222	5.7	LOS A	0.0	0.0	0.00	0.05	0.00	56.7
2	T1	All MCs	387	7.0	387	7.0	0.222	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.1
Approach			418	7.0	418	7.0	0.222	0.5	NA	0.0	0.0	0.00	0.04	0.00	58.8
North: Byrnes St															
8	T1	All MCs	406	7.0	406	7.0	0.218	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	140	7.0	140	7.0	0.165	5.4	LOS A	0.7	4.9	0.50	0.68	0.50	47.6
Approach			546	7.0	546	7.0	0.218	1.4	NA	0.7	4.9	0.13	0.18	0.13	56.2
West: Costin St															
10	L2	All MCs	149	7.0	149	7.0	0.177	7.9	LOS A	0.7	4.9	0.46	0.70	0.46	46.4
12	R2	All MCs	35	7.0	35	7.0	0.109	15.5	LOS C	0.3	2.6	0.73	0.89	0.73	46.0
Approach			184	7.0	184	7.0	0.177	9.3	LOS A	0.7	4.9	0.51	0.73	0.51	46.3
All Vehicles			1148	7.0	1148	7.0	0.222	2.3	NA	0.7	4.9	0.14	0.22	0.14	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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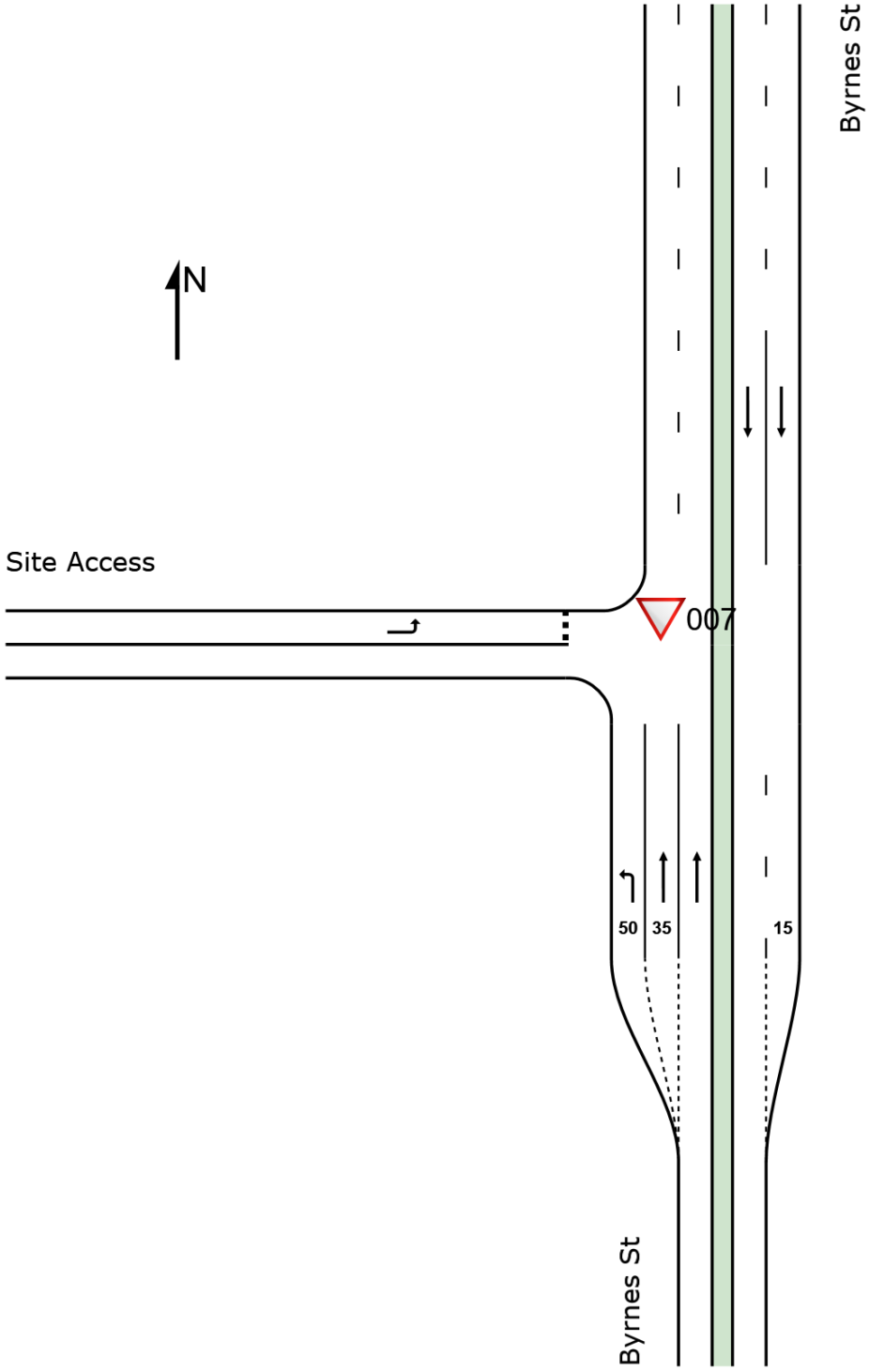
Document Set ID: 4528952
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SITE LAYOUT

Site: 007 [7_2027 BG+D AM Peak_Byrnes St/Site Access (Site Folder: General)]

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 007 [7_2027 BG+D AM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	120	7.0	120	7.0	0.068	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	413	7.0	413	7.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			533	7.0	533	7.0	0.111	1.3	NA	0.0	0.0	0.00	0.13	0.00	52.8
North: Byrnes St															
8	T1	All MCs	582	7.0	582	7.0	0.260	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			582	7.0	582	7.0	0.260	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Site Access															
10	L2	All MCs	70	7.0	70	7.0	0.068	3.6	LOS A	0.2	1.8	0.31	0.54	0.31	31.7
Approach			70	7.0	70	7.0	0.068	3.6	LOS A	0.2	1.8	0.31	0.54	0.31	31.7
All Vehicles			1185	7.0	1185	7.0	0.260	0.9	NA	0.2	1.8	0.02	0.09	0.02	54.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2027 BG+D PM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	160	7.0	160	7.0	0.090	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	333	7.0	333	7.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			492	7.0	492	7.0	0.090	1.8	NA	0.0	0.0	0.00	0.19	0.00	50.0
North: Byrnes St															
8	T1	All MCs	720	7.0	720	7.0	0.322	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			720	7.0	720	7.0	0.322	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	93	7.0	93	7.0	0.086	3.4	LOS A	0.3	2.3	0.28	0.53	0.28	32.1
Approach			93	7.0	93	7.0	0.086	3.4	LOS A	0.3	2.3	0.28	0.53	0.28	32.1
All Vehicles			1306	7.0	1306	7.0	0.322	1.1	NA	0.3	2.3	0.02	0.11	0.02	53.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2027 BG+D SAT Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	169	7.0	169	7.0	0.096	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	367	7.0	367	7.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			536	7.0	536	7.0	0.098	1.8	NA	0.0	0.0	0.00	0.18	0.00	50.2
North: Byrnes St															
8	T1	All MCs	658	7.0	658	7.0	0.294	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			658	7.0	658	7.0	0.294	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	99	7.0	99	7.0	0.093	3.5	LOS A	0.3	2.5	0.29	0.54	0.29	31.9
Approach			99	7.0	99	7.0	0.093	3.5	LOS A	0.3	2.5	0.29	0.54	0.29	31.9
All Vehicles			1293	7.0	1293	7.0	0.294	1.1	NA	0.3	2.5	0.02	0.12	0.02	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2037 BG+D AM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	120	7.0	120	7.0	0.068	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	481	7.0	481	7.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			602	7.0	602	7.0	0.129	1.1	NA	0.0	0.0	0.00	0.11	0.00	53.6
North: Byrnes St															
8	T1	All MCs	664	7.0	664	7.0	0.297	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			664	7.0	664	7.0	0.297	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	70	7.0	70	7.0	0.070	3.8	LOS A	0.3	1.9	0.34	0.56	0.34	31.2
Approach			70	7.0	70	7.0	0.070	3.8	LOS A	0.3	1.9	0.34	0.56	0.34	31.2
All Vehicles			1336	7.0	1336	7.0	0.297	0.8	NA	0.3	1.9	0.02	0.08	0.02	55.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2037 BG+D PM Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	160	7.0	160	7.0	0.090	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	391	7.0	391	7.0	0.105	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			550	7.0	550	7.0	0.105	1.6	NA	0.0	0.0	0.00	0.17	0.00	50.9
North: Byrnes St															
8	T1	All MCs	821	7.0	821	7.0	0.367	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			821	7.0	821	7.0	0.367	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	93	7.0	93	7.0	0.089	3.6	LOS A	0.3	2.4	0.30	0.54	0.30	31.7
Approach			93	7.0	93	7.0	0.089	3.6	LOS A	0.3	2.4	0.30	0.54	0.30	31.7
All Vehicles			1465	7.0	1465	7.0	0.367	1.0	NA	0.3	2.4	0.02	0.10	0.02	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 007 [7_2037 BG+D SAT Peak_Byrnes St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 007 - Byrnes St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Byrnes St															
1	L2	All MCs	169	7.0	169	7.0	0.096	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	33.7
2	T1	All MCs	431	7.0	431	7.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			600	7.0	600	7.0	0.116	1.6	NA	0.0	0.0	0.00	0.16	0.00	51.2
North: Byrnes St															
8	T1	All MCs	749	7.0	749	7.0	0.335	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach			749	7.0	749	7.0	0.335	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.8
West: Site Access															
10	L2	All MCs	99	7.0	99	7.0	0.096	3.7	LOS A	0.4	2.6	0.32	0.55	0.32	31.5
Approach			99	7.0	99	7.0	0.096	3.7	LOS A	0.4	2.6	0.32	0.55	0.32	31.5
All Vehicles			1448	7.0	1448	7.0	0.335	1.1	NA	0.4	2.6	0.02	0.10	0.02	54.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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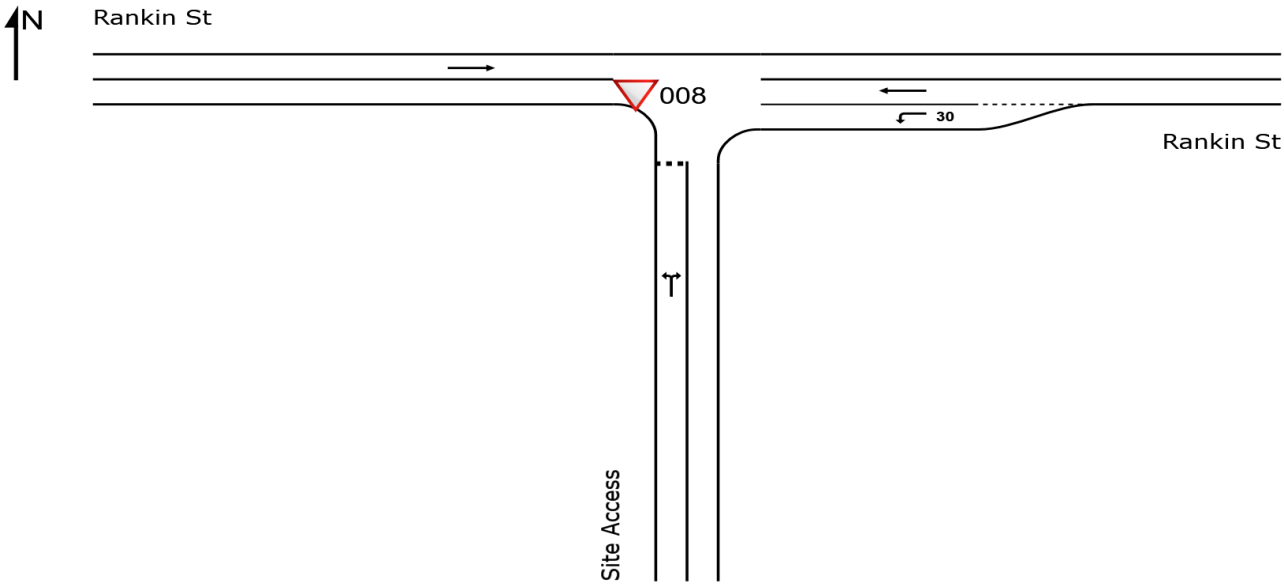
Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

SITE LAYOUT

Site: 008 [8_2027 BG+D AM Peak_Rankin St/Site Access (Site Folder: General)]

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

MOVEMENT SUMMARY

Site: 008 [8_2027 BG+D AM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	32	7.0	32	7.0	0.255	4.7	LOS A	1.1	8.4	0.52	0.67	0.52	23.5
3	R2	All MCs	157	7.0	157	7.0	0.255	7.6	LOS A	1.1	8.4	0.52	0.67	0.52	25.2
Approach			189	7.0	189	7.0	0.255	7.1	LOS A	1.1	8.4	0.52	0.67	0.52	24.9
East: Rankin St															
4	L2	All MCs	114	7.0	114	7.0	0.064	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	193	7.0	193	7.0	0.104	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			307	7.0	307	7.0	0.104	1.5	NA	0.0	0.0	0.00	0.20	0.00	43.5
West: Rankin St															
11	T1	All MCs	217	7.0	217	7.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			217	7.0	217	7.0	0.116	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			714	7.0	714	7.0	0.255	2.5	NA	1.1	8.4	0.14	0.27	0.14	38.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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.

Document Set ID: 4528952
Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 008 [8_2027 BG+D PM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	42	7.0	42	7.0	0.376	5.9	LOS A	2.2	16.0	0.62	0.79	0.76	20.7
3	R2	All MCs	209	7.0	209	7.0	0.376	9.7	LOS A	2.2	16.0	0.62	0.79	0.76	22.6
Approach			251	7.0	251	7.0	0.376	9.1	LOS A	2.2	16.0	0.62	0.79	0.76	22.3
East: Rankin St															
4	L2	All MCs	151	7.0	151	7.0	0.086	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	252	7.0	252	7.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			403	7.0	403	7.0	0.135	1.5	NA	0.0	0.0	0.00	0.21	0.00	43.4
West: Rankin St															
11	T1	All MCs	232	7.0	232	7.0	0.124	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			232	7.0	232	7.0	0.124	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			886	7.0	886	7.0	0.376	3.3	NA	2.2	16.0	0.17	0.32	0.22	35.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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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Version: 1, Version Date: 25/07/2025

MOVEMENT SUMMARY

Site: 008 [8_2027 BG+D SAT Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	45	7.0	45	7.0	0.318	4.4	LOS A	1.6	11.6	0.48	0.62	0.48	24.5
3	R2	All MCs	221	7.0	221	7.0	0.318	6.8	LOS A	1.6	11.6	0.48	0.62	0.48	26.2
Approach			266	7.0	266	7.0	0.318	6.4	LOS A	1.6	11.6	0.48	0.62	0.48	26.0
East: Rankin St															
4	L2	All MCs	160	7.0	160	7.0	0.090	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	118	7.0	118	7.0	0.063	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			278	7.0	278	7.0	0.090	2.4	NA	0.0	0.0	0.00	0.32	0.00	38.3
West: Rankin St															
11	T1	All MCs	170	7.0	170	7.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			170	7.0	170	7.0	0.091	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			714	7.0	714	7.0	0.318	3.3	NA	1.6	11.6	0.18	0.35	0.18	34.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 008 [8_2037 BG+D AM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	32	7.0	32	7.0	0.275	4.9	LOS A	1.2	9.1	0.56	0.71	0.57	22.5
3	R2	All MCs	157	7.0	157	7.0	0.275	8.3	LOS A	1.2	9.1	0.56	0.71	0.57	24.2
Approach			189	7.0	189	7.0	0.275	7.8	LOS A	1.2	9.1	0.56	0.71	0.57	24.0
East: Rankin St															
4	L2	All MCs	114	7.0	114	7.0	0.064	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	224	7.0	224	7.0	0.120	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			338	7.0	338	7.0	0.120	1.4	NA	0.0	0.0	0.00	0.19	0.00	44.5
West: Rankin St															
11	T1	All MCs	247	7.0	247	7.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			247	7.0	247	7.0	0.132	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			774	7.0	774	7.0	0.275	2.5	NA	1.2	9.1	0.14	0.25	0.14	38.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 008 [8_2037 BG+D PM Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	42	7.0	42	7.0	0.412	6.5	LOS A	2.4	18.1	0.66	0.85	0.88	19.3
3	R2	All MCs	209	7.0	209	7.0	0.412	11.2	LOS B	2.4	18.1	0.66	0.85	0.88	21.1
Approach			251	7.0	251	7.0	0.412	10.4	LOS B	2.4	18.1	0.66	0.85	0.88	20.8
East: Rankin St															
4	L2	All MCs	151	7.0	151	7.0	0.086	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	292	7.0	292	7.0	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			443	7.0	443	7.0	0.157	1.4	NA	0.0	0.0	0.00	0.19	0.00	44.4
West: Rankin St															
11	T1	All MCs	263	7.0	263	7.0	0.141	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			263	7.0	263	7.0	0.141	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles			957	7.0	957	7.0	0.412	3.4	NA	2.4	18.1	0.17	0.31	0.23	35.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: 008 [8_2037 BG+D SAT Peak_Rankin St/Site Access (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Int 008 - Rankin St / Site Access
Prepared: TB
Reviewed:
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Site Access															
1	L2	All MCs	45	7.0	45	7.0	0.333	4.6	LOS A	1.7	12.6	0.51	0.65	0.53	23.8
3	R2	All MCs	221	7.0	221	7.0	0.333	7.4	LOS A	1.7	12.6	0.51	0.65	0.53	25.5
Approach			266	7.0	266	7.0	0.333	6.9	LOS A	1.7	12.6	0.51	0.65	0.53	25.2
East: Rankin St															
4	L2	All MCs	160	7.0	160	7.0	0.090	4.1	LOS A	0.0	0.0	0.00	0.55	0.00	31.4
5	T1	All MCs	137	7.0	137	7.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			297	7.0	297	7.0	0.090	2.2	NA	0.0	0.0	0.00	0.30	0.00	39.1
West: Rankin St															
11	T1	All MCs	191	7.0	191	7.0	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			191	7.0	191	7.0	0.102	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
All Vehicles			754	7.0	754	7.0	0.333	3.3	NA	1.7	12.6	0.18	0.35	0.19	34.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041936.00001 Mareeba Byrnes St Shopping Cen\02 Analysis\03 SIDRA \620.041936-Sidra Analysis-v0.2 20250521.sip9

Appendix E Detailed Net Delay Table

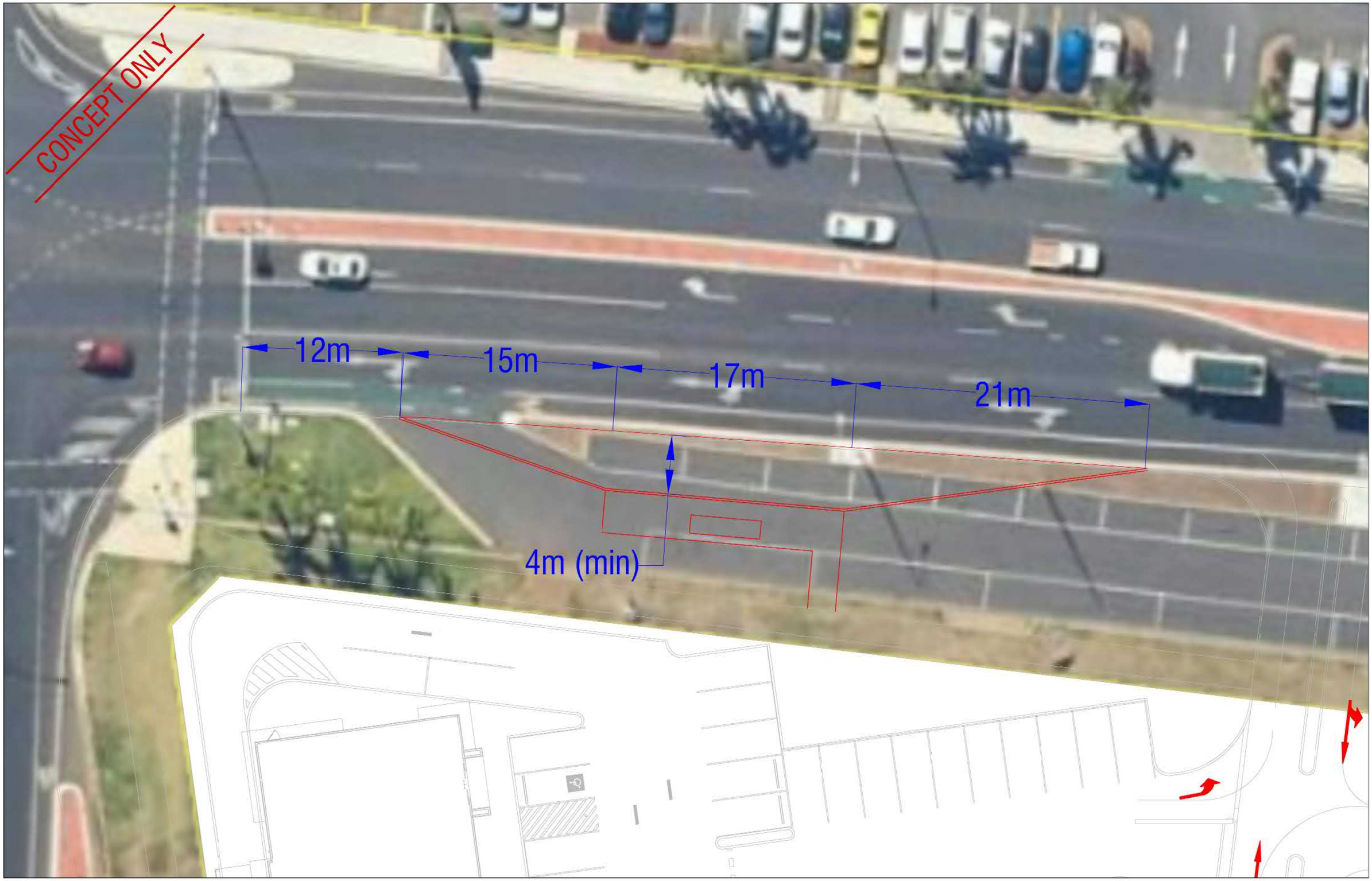
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Peak Period	Intersection	ΣBC (Total Base Case Delays)	ΣWD (Total With-Development Delays)	ID = ΣWD - ΣBC	
				Δ	%
AM Peak	1	147	150	3	2.2%
	2	1,247	1,300	53	4.2%
	3	83	98	15	17.9%
	4	59	62	3	5.2%
	5	98	159	62	63.0%
	6	60	63	4	6.3%
	Sub-Total	**1,693**	**1,832**	**139**	**8.2%**
PM Peak	1	142	146	4	3.0%
	2	1,360	1,326	-34	-2.5%
	3	79	104	25	32.1%
	4	72	79	7	10.0%
	5	58	72	14	24.4%
	6	46	48	2	5.4%
	Sub-Total	**1,756**	**1,776**	**19**	**1.1%**
SAT Peak	1	127	131	4	2.9%
	2	1,171	1,061	-109	-9.4%
	3	67	86	20	29.4%
	4	59	64	5	9.2%
	5	55	67	12	21.3%
	6	32	34	1	4.6%
	Sub-Total	**1,511**	**1,443**	**-67**	**-4.5%**
All Peaks	1	416	427	11	2.7%
	2	3,778	3,687	-90	-2.4%
	3	229	289	60	26.2%
	4	189	205	16	8.3%
	5	210	298	87	41.5%
	6	138	145	8	5.6%
	Total	**4,960**	**5,051**	**91**	**1.8%**

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Appendix F Conceptual Bus Stop Plans

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Project No:	620.30842
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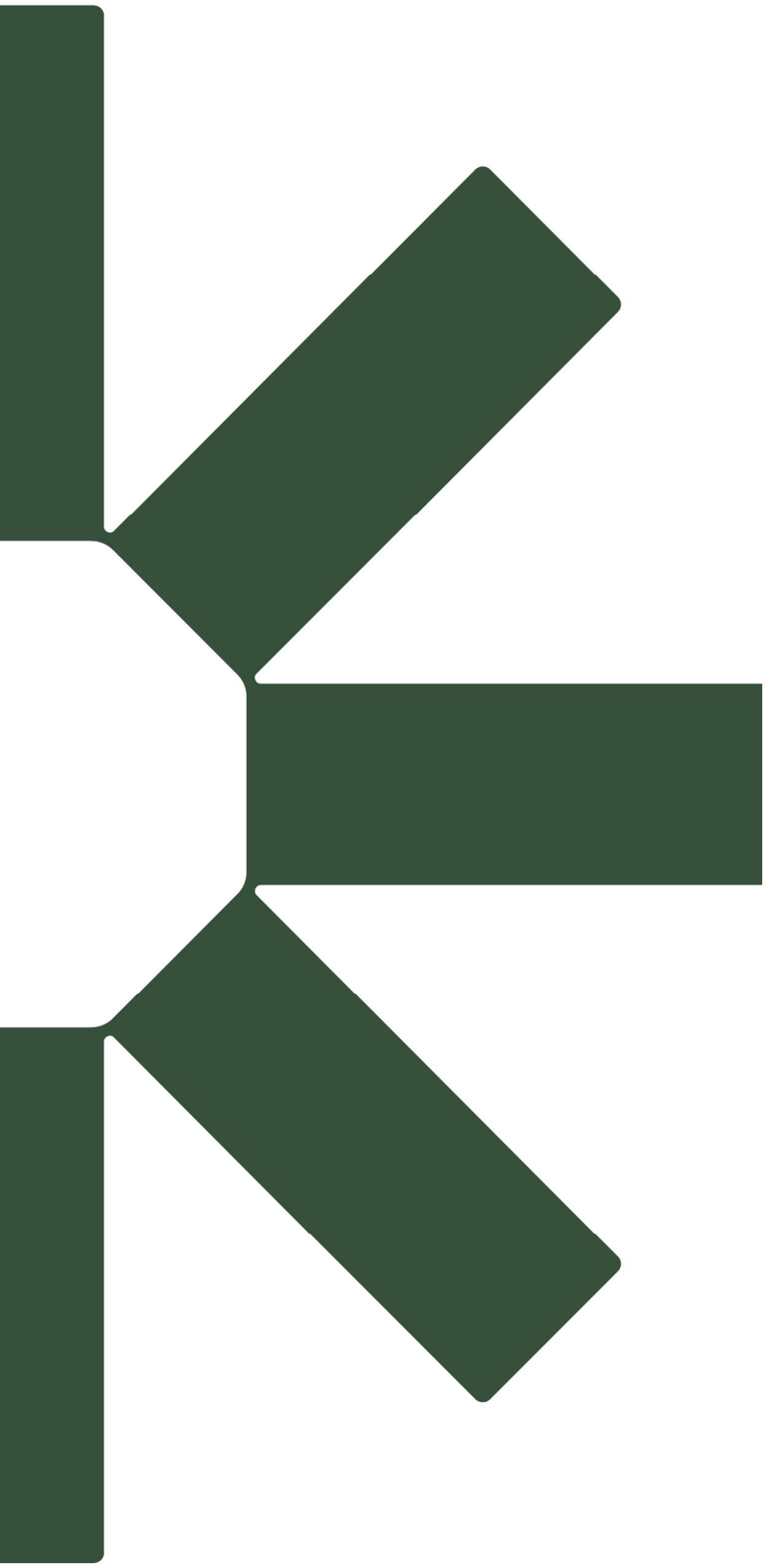
Wilcon Projects

Mareeba Byrnes St Supermarket

Concept Drawing
Indented Bus Stop

FIGURE D0207

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Making Sustainability Happen

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State code 1: Development in a state-controlled road environment

Table 1.1 Development in general

Performance outcomes	Acceptable outcomes	Response
Buildings, structures, infrastructure, services and utilities		
PO1 The location of the development does not create a safety hazard for users of the **state-controlled road.**	**AO1.1** Development is not located in a **state-controlled road**. AND **AO1.2** Development can be maintained without requiring access to a **state-controlled road**.	**Complies with AO1.1 & AO1.2** Buildings, structures, infrastructure, services and utilities are not located in, or in proximity to the road reserve of a state-controlled road and can be maintained without accessing a state-controlled road.
PO2 The design and construction of the development does not adversely impact the **structural integrity** or physical condition of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO2** The design and construction of the development will not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure.
PO3 The location of the development does not obstruct **road transport infrastructure** or adversely impact the operating performance of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO3** The location of the development does not obstruct road transport infrastructure or adversely impact the operating performance of the state-controlled road. Refer to Section 8 of the Traffic Impact Assessment prepared by SLR.
PO4 The location, placement, design and operation of advertising devices, visible from the **state-controlled road**, do not create a safety hazard for users of the **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO5 The design and construction of buildings and **structures** does not create a safety hazard by distracting users of the **state-controlled road**.	**AO5.1** Facades of buildings and **structures** fronting the **state-controlled road** are made of non-reflective materials. AND **AO5.2** Facades of buildings and **structures** do not direct or reflect point light sources into the face of oncoming traffic on the **state-controlled road**. AND **AO5.3** External lighting of buildings and **structures** is not directed into the face of oncoming traffic on the **state-controlled road**. AND **AO5.4** External lighting of buildings and **structures** does not involve flashing or laser lights.	To be addressed by other Consultants
PO6 Road, pedestrian and bikeway bridges over a **state-controlled road** are designed and constructed to prevent projectiles from being thrown onto the **state-controlled road**.	**AO6.1** Road, pedestrian and bikeway bridges over the **state-controlled road** include throw protection screens in accordance with section 4.11 of the Design Criteria for Bridges and Other Structures Manual, Department of Transport and Main Roads, 2020.	**Not Applicable**
Landscaping		
PO7 The location of landscaping does not create a safety hazard for users of the **state-controlled road**.	**AO7.1** Landscaping is not located in a **state-controlled road**. AND **AO7.2** Landscaping can be maintained without requiring access to a **state-controlled road**.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AND **AO7.3** Landscaping does not block or obscure the sight lines for vehicular access to a **state-controlled road**.	
Stormwater and overland flow		
PO8 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of the **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO9 Stormwater run-off or overland flow from the development site does not result in a material worsening of the operating performance of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO10 Stormwater run-off or overland flow from the development site does not adversely impact the **structural integrity** or physical condition of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO11 Development ensures that stormwater is lawfully discharged.	**AO11.1** Development does not create any new points of discharge to a **state-controlled road.** AND **AO11.2** Development does not concentrate flows to a **state-controlled road**. AND **AO11.3** Stormwater run-off is discharged to a **lawful point of discharge**. AND	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO11.4 Development does not worsen the condition of an existing **lawful point of discharge** to the **state-controlled road**.	
Flooding		
PO12 Development does not result in a material worsening of flooding impacts within a **state-controlled road**.	**AO12.1** For all flood events up to 1% **annual exceedance probability**, development results in negligible impacts (within +/- 10mm) to existing flood levels within a **state-controlled road**. AND **AO12.2** For all flood events up to 1% **annual exceedance probability**, development results in negligible impacts (up to a 10% increase) to existing peak velocities within a **state-controlled road**. AND **AO12.3** For all flood events up to 1% **annual exceedance probability**, development results in negligible impacts (up to a 10% increase) to existing time of submergence of a **state-controlled road**.	To be addressed by other Consultants
Drainage Infrastructure		
PO13 Drainage infrastructure does not create a safety hazard for users in the **state-controlled road**.	**AO13.1** Drainage infrastructure is wholly contained within the development site, except at the **lawful point of discharge**. AND	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO13.2 Drainage infrastructure can be maintained without requiring access to a **state-controlled road**.	
PO14 Drainage infrastructure associated with, or within, a **state-controlled road** is constructed, and designed to ensure the **structural integrity** and physical condition of existing drainage infrastructure and the surrounding drainage network.	No acceptable outcome is prescribed.	To be addressed by other Consultants

Table 1.2 Vehicular access, road layout and local roads

Performance outcomes	Acceptable outcomes	Response
Vehicular access to a state-controlled road or within 100 metres of a state-controlled road intersection		
PO15 The location, design and operation of a **new or changed access** to a **state-controlled road** does not compromise the safety of users of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO15** The location, design and operation of the new accesses to the state-controlled road do not compromise the safety of users of the state-controlled road.
PO16 The location, design and operation of a **new or changed access** does not adversely impact the **functional requirements** of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO16** The location, design and operation of the new accesses do not adversely impact the functional requirements of the state-controlled road.
PO17 The location, design and operation of a **new or changed access** is consistent with the **future intent** of the **state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO17** The location, design and operation of the new accesses are consistent with the future intent of the state-controlled road.
PO18 New or changed access is consistent with the access for the relevant **limited access road policy**: 1. **LAR 1** where direct access is prohibited; or 2. **LAR 2** where access may be permitted, subject to assessment.	No acceptable outcome is prescribed.	**Not Applicable**
PO19 New or changed access to a **local road** within 100 metres of an intersection with a **state-**	No acceptable outcome is prescribed.	**Complies with PO19** The proposed access to the development has been designed in accordance with the relevant

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Performance outcomes	Acceptable outcomes	Response
controlled road does not compromise the safety of users of the **state-controlled road**.		standards outlined in Austroads and Australian Standards. Refer to Section 6.2 of the Traffic Impact Assessment prepared by SLR.
PO20 New or changed access to a **local road** within 100 metres of an intersection with a **state-controlled road** does not adversely impact on the operating performance of the intersection.	No acceptable outcome is prescribed.	**Complies with PO20** Refer to Section 6.2 of the Traffic Impact Assessment prepared by SLR.
Public passenger transport and active transport		
PO21 Development does not compromise the safety of users of **public passenger transport infrastructure**, **public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO21** The development does not compromise the safety of users of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO22 Development maintains the ability for people to access **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO22** The development maintains the ability for people to access public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO23 Development does not adversely impact the operating performance of **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO23** The development does not adversely impact the operating performance of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO24 Development does not adversely impact the **structural integrity** or physical condition of **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO24** The development does not adversely impact the structural integrity or physical condition of public passenger transport infrastructure and active transport infrastructure.

Table 1.3 Network impacts

Performance outcomes	Acceptable outcomes	Response
PO25 Development does not compromise the safety of users of the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO25** The development does not compromise the safety of users of the state-controlled road network.

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Performance outcomes	Acceptable outcomes	Response
PO26 Development ensures **no net worsening** of the operating performance of the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO26** The development ensures no net worsening of the operating performance of the state-controlled road network. Refer to Section 8.5 of the Traffic Impact Assessment prepared by SLR.
PO27 Traffic movements are not directed onto a **state-controlled road** where they can be accommodated on the **local road** network.	No acceptable outcome is prescribed.	**Complies with PO27** Due to the nature of the development as a 'major' development, access to the state-controlled road is required. The development traffic could not be solely accommodated on the local road network.
PO28 Development involving haulage exceeding 10,000 tonnes per year does not adversely impact the pavement of a **state-controlled road**.	No acceptable outcome is prescribed.	**Not Applicable**
PO29 Development does not impede delivery of **planned upgrades** of **state-controlled roads**.	No acceptable outcome is prescribed.	**Complies with PO29** No planned upgrades of the state-controlled network are proposed within the vicinity of the site.
PO30 Development does not impede delivery of **corridor improvements** located entirely within the **state-controlled road corridor**.	No acceptable outcome is prescribed.	**Complies with PO30** No planned corridor improvements are proposed within the vicinity of the site.

Table 1.4 Filling, excavation, building foundations and retaining structures

Performance outcomes	Acceptable outcomes	Response
PO31 Development does not create a safety hazard for users of the **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO32 Development does not adversely impact the operating performance of the **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO33 Development does not undermine, damage or cause subsidence of a **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO34 Development does not cause ground water disturbance in a **state-controlled road**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO35 Excavation, boring, piling, blasting and fill compaction do not adversely impact the physical condition or **structural integrity** of a **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO36 Filling and excavation associated with the construction of **new or changed access** do not compromise the operation or capacity of existing drainage infrastructure for a **state-controlled road.**	No acceptable outcome is prescribed.	To be addressed by other Consultants

Table 1.5 Environmental emissions

Statutory note: Where a **state-controlled road** is co-located in the same transport corridor as a railway, the development should instead comply with Environmental emissions in State code 2: Development in a railway environment.

Performance outcomes	Acceptable outcomes	Response
Reconfiguring a lot		
Involving the creation of 5 or fewer new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO37 Development minimises free field noise intrusion from a **state-controlled road.**	**AO37.1** Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	OR **AO37.2** Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound. OR **AO37.3** Development provides a **solid gap-free fence** or other **solid gap-free structure** along the full extent of the boundary closest to the **state-controlled road**.	
Involving the creation of 6 or more new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO38 Reconfiguring a lot minimises free field noise intrusion from a **state-controlled road.**	**AO38.1** Development provides noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO38.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	
Material change of use (accommodation activity)		
Ground floor level requirements adjacent to a state-controlled road or type 1 multi-modal corridor		
PO39 Development minimises noise intrusion from a **state-controlled road** in **private open space**.	**AO39.1** Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.2) for **private open space** at the ground floor level; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR **AO39.2** Development achieves the maximum free field acoustic level in reference table 2 (item 2.2) for **private open space** by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO40 Development (excluding a **relevant residential building** or **relocated building)** minimises noise intrusion from a **state-controlled road** in **habitable rooms** at the facade.	**AO40.1** Development (excluding a **relevant residential building** or **relocated building**) provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum building façade acoustic level in reference table 1 (item 1.1) for **habitable rooms**; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR **AO40.2** Development (excluding a **relevant residential building** or **relocated building**) achieves the maximum building façade acoustic level in reference table 1 (item 1.1) for **habitable rooms** by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	To be addressed by other Consultants
PO41 Habitable rooms (excluding a **relevant residential building** or **relocated building**) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	To be addressed by other Consultants
Above ground floor level requirements (accommodation activity) adjacent to a state-controlled road or type 1 multi-modal corridor		

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Performance outcomes	Acceptable outcomes	Response
PO42 Balconies, podiums, and roof decks include: 1. a continuous **solid gap-free structure** or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); 2. highly acoustically absorbent material treatment for the total area of the soffit above balconies, podiums, and roof decks.	No acceptable outcome is provided.	To be addressed by other Consultants
PO43 Habitable rooms (excluding a **relevant residential building** or **relocated building**) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	To be addressed by other Consultants
Material change of use (other uses)		
Ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO44 Development: 1. provides a noise barrier or earth mound that is designed, sited and constructed: a. to achieve the maximum free field acoustic level in reference table 2 (item 2.3) for all **outdoor education areas** and **outdoor play areas**; b. in accordance with: i. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; ii. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; iii. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or	No acceptable outcome is provided.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
2. achieves the maximum free field acoustic level in reference table 2 (item 2.3) for all **outdoor education areas** and **outdoor play areas** by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.		
PO45 Development involving a **childcare centre** or **educational establishment**: 1. provides a noise barrier or earth mound that is designed, sited and constructed: 2. to achieve the maximum building facade acoustic level in reference table 1 (item 1.2); 3. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or 4. achieves the maximum building facade acoustic level in reference table 1 (item 1.2) by **alternative noise attenuation measures** where it is not practical to provide a noise barrier or earth mound.	No acceptable outcome is provided.	To be addressed by other Consultants
PO46 Development involving: 1. **indoor education areas** and **indoor play areas**; or 2. sleeping rooms in a **childcare centre**; or	No acceptable outcome is provided.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
3. **patient care areas** in a **hospital** achieves the maximum internal acoustic level in reference table 3 (items 3.2-3.4).		
Above ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO47 Development involving a **childcare centre** or **educational establishment** which have balconies, podiums or elevated **outdoor play areas** predicted to exceed the maximum free field acoustic level in reference table 2 (item 2.3) due to noise from a **state-controlled road** are provided with: 1. a continuous **solid gap-free structure** or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); 2. highly acoustically absorbent material treatment for the total area of the soffit above balconies or elevated **outdoor play areas**.	No acceptable outcome is provided.	To be addressed by other Consultants
PO48 Development including: 1. **indoor education areas** and **indoor play areas** in a **childcare centre** or **educational establishment**; or 2. sleeping rooms in a **childcare centre**; or 3. **patient care areas** in a **hospital** located above ground level, is designed and constructed to achieve the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.	To be addressed by other Consultants
Air, light and vibration		

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Performance outcomes	Acceptable outcomes	Response
PO49 Private open space, **outdoor education areas** and **outdoor play areas** are protected from air quality impacts from a **state-controlled road**.	**AO49.1** Each dwelling or unit has access to a **private open space** which is shielded from a **state-controlled road** by a building, **solid gap-free fence**, or other **solid gap-free structure**. OR **AO49.2** Each **outdoor education area** and **outdoor play area** is shielded from a **state-controlled road** by a building, **solid gap-free fence,** or other **solid gap-free structure**.	To be addressed by other Consultants
PO50 Patient care areas within **hospitals** are protected from vibration impacts from a **state-controlled road** or **type 1 multi-modal corridor**.	**AO50.1 Hospitals** are designed and constructed to ensure vibration in the patient treatment area does not exceed a vibration dose value of $0.1m/s^{1.75}$. AND **AO50.2 Hospitals** are designed and constructed to ensure vibration in the ward of a **patient care area** does not exceed a vibration dose value of $0.4m/s^{1.75}$.	To be addressed by other Consultants
PO51 Development is designed and sited to ensure light from infrastructure within, and from users of, a **state-controlled road** or **type 1 multi-modal corridor**, does not: 1. intrude into buildings during night hours (10pm to 6am); 2. create unreasonable disturbance during evening hours (6pm to 10pm).	No acceptable outcomes are prescribed.	To be addressed by other Consultants

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Table 1.6: Development in a future state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
PO52 Development does not impede delivery of a **future state-controlled road**.	**AO52.1** Development is not located in a **future state-controlled road**. OR ALL OF THE FOLLOWING APPLY: **AO52.2** Development does not involve filling and excavation of, or material changes to, a **future state-controlled road**. AND **AO52.3** The intensification of lots does not occur within a **future state-controlled road**. AND **AO52.4** Development does not result in the landlocking of parcels once a **future state-controlled road** is delivered.	**Complies with PO52 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO53 The location and design of **new or changed access** does not create a safety hazard for users of a **future state-controlled road**.	**AO53.1** Development does not include **new or changed access** to a **future state-controlled road**.	**Complies with PO53 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO54 Filling, excavation, building foundations and **retaining structures** do not undermine, damage or cause subsidence of a **future state-controlled road**.	No acceptable outcome is prescribed.	**Complies with PO54 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO55 Development does not result in a material worsening of stormwater, flooding, overland flow or drainage impacts in a **future state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO55 –** No future state-controlled roads are proposed within the vicinity of the subject site
PO56 Development ensures that stormwater is lawfully discharged.	**AO56.1** Development does not create any new points of discharge to a **future state-controlled road**.	**Complies with PO56 –** No future state-controlled roads are proposed within the vicinity of the subject site

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Performance outcomes	Acceptable outcomes	Response
	AND **AO56.2** Development does not concentrate flows to a **future state-controlled road**. AND **AO56.3** Stormwater run-off is discharged to a **lawful point of discharge**. AND **AO56.4** Development does not worsen the condition of an existing **lawful point of discharge** to the **future state-controlled road**.	

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State code 6: Protection of state transport networks

Table 6.2 Development in general

Performance outcomes	Acceptable outcomes	Response
Network impacts		
PO1 Development does not compromise the safety of users of the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO1** The development does not compromise the safety of users of the state-controlled road network.
PO2 Development does not adversely impact the structural integrity or physical condition of a **state-controlled road** or **road transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO2** The design and construction of the development will not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure.
PO3 Development ensures **no net worsening** of the operating performance the **state-controlled road** network.	No acceptable outcome is prescribed.	**Complies with PO3** The development ensures no net worsening of the operating performance of the state-controlled road network. Refer to Section 8.5 of the Traffic Impact Assessment prepared by SLR.
PO4 Traffic movements are not directed onto a **state-controlled road** where they can be accommodated on the **local road** network.	No acceptable outcome is prescribed.	**Complies with PO4** Due to the nature of the development as a 'major' development, access to the state-controlled road is required. The development traffic could not be solely accommodated on the local road network.
PO5 Development involving haulage exceeding 10,000 tonnes per year does not damage the pavement of a **state-controlled road**.	No acceptable outcome is prescribed.	**Not Applicable**
PO6 Development does not require a new **railway** level crossing.	No acceptable outcome is prescribed.	**Complies with PO6** The development does not require a new railway level crossing.
PO7 Development does not adversely impact the operating performance of an existing **railway crossing**.	No acceptable outcome is prescribed.	**Complies with PO7** The development does not adversely impact the operating performance of an existing railway crossing.
PO8 Development does not adversely impact on the safety of an existing **railway crossing**.	No acceptable outcome is prescribed.	**Complies with PO8** The development does not adversely impact on the safety of an existing railway crossing.

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Performance outcomes	Acceptable outcomes	Response
		The location of the Rankin Street access allows for suitable separation and queueing to the railway crossing.
PO9 Development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a **railway crossing**.	No acceptable outcome is prescribed.	**Complies with PO9** The development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a railway crossing.
PO10 Development does not create a safety hazard within the **railway corridor**.	No acceptable outcome is prescribed.	**Complies with PO10** The development does not create a safety hazard within the railway corridor.
PO11 Development does not adversely impact the operating performance of the **railway corridor**.	No acceptable outcome is prescribed.	**Complies with PO11** The development does not adversely impact the operating performance of the railway corridor.
PO12 Development does not interfere with or obstruct the **railway transport infrastructure** or **other rail infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO12** The development does not interfere with or obstruct the railway transport infrastructure or other rail infrastructure.
PO13 Development does not adversely impact the structural integrity or physical condition of a **railway corridor** or **rail transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO13** The development does not adversely impact the structural integrity or physical condition of a railway corridor or rail transport infrastructure.
Stormwater and overland flow		
PO14 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of a **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO15 Stormwater run-off or overland flow from the development site does not result in a material worsening of operating performance of a **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants
PO16 Stormwater run-off or overland flow from the development site does not interfere with the structural integrity or physical condition of the **state transport corridor** or **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
PO17 Development associated with a **state-controlled road** or **road transport infrastructure** ensures that stormwater is lawfully discharged.	**AO17.1** Development does not create any new points of discharge to a **state transport corridor** or **state transport infrastructure**. AND **AO17.2** Development does not concentrate flows to a **state transport corridor**. AND **AO17.3** Stormwater run-off is discharged to a **lawful point of discharge**. AND **AO17.4** Development does not worsen the condition of an existing **lawful point of discharge** to a **state transport corridor** or **state transport infrastructure**.	To be addressed by other Consultants
Flooding		
PO18 Development does not result in a material worsening of flooding impacts within a **state transport corridor** or **state transport infrastructure**	*For a **state-controlled road** or **road transport infrastructure**, all of the following apply:* **AO18.1** For all flood events up to 1% **annual exceedance probability**, development ensures there are negligible impacts (within +/- 10mm) to existing flood levels within a **state transport corridor**. AND **AO18.2** For all flood events up to 1% **annual exceedance probability**, development ensures there are negligible impacts (up to a 10% increase) to existing peak velocities within a **state transport corridor**. AND	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
	AO18.3 For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (up to a 10% increase) to existing time of submergence of a **state transport corridor**. *No acceptable outcome is prescribed for a **railway corridor** or **rail transport infrastructure**.*	
Drainage infrastructure		
PO19 Drainage infrastructure does not create a safety hazard in a **state transport corridor**.	*For a **state-controlled road** environment, both of the following apply:* **AO19.1** Drainage infrastructure associated with, or in a **state-controlled road** is wholly contained within the development site, except at the **lawful point of discharge**. AND **AO19.2** Drainage infrastructure can be maintained without requiring access to a **state transport corridor**. *For a **railway** environment both of the following apply:* **AO19.3** Drainage infrastructure associated with a **railway corridor** or **rail transport infrastructure** is wholly contained within the development site. AND **AO19.4** Drainage infrastructure can be maintained without requiring access to a **state transport corridor**.	To be addressed by other Consultants
PO20 Drainage infrastructure associated with, or in a **state-controlled road** or **road transport infrastructure** is constructed and designed to	No acceptable outcome is prescribed.	To be addressed by other Consultants

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Performance outcomes	Acceptable outcomes	Response
ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network is maintained.		
Planned upgrades		
PO21 Development does not impede delivery of **planned upgrades** of **state transport infrastructure**.	No acceptable outcome is prescribed.	To be addressed by other Consultants

Table 6.3 Public passenger transport infrastructure and active transport

Performance outcomes	Acceptable outcomes	Response
PO22 Development does not damage or interfere with **public passenger transport infrastructure**, **active transport infrastructure** or **public passenger services**.	No acceptable outcome is prescribed.	**Complies with PO22** The development does not damage or interfere with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO23 Development does not compromise the safety of **public passenger transport infrastructure**, **public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO23** The development does not compromise the safety of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO24 Development does not adversely impact the operating performance of **public passenger transport infrastructure, public passenger services** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO24** The development does not adversely impact the operating performance of public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO25 Development does not adversely impact the structural integrity or physical condition of **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO25** The development does not adversely impact the structural integrity or physical condition of public passenger transport infrastructure and active transport infrastructure.
PO26 Upgraded or new **public passenger transport infrastructure** and **active transport infrastructure** is provided to accommodate the demand for **public passenger transport** and **active transport** generated by the development.	No acceptable outcome is prescribed.	**Not Applicable** The no new public passenger transport infrastructure and active transport infrastructure are proposed as part of the development.

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Performance outcomes	Acceptable outcomes	Response
PO27 Development is designed to ensure the location of **public passenger transport infrastructure** prioritises and enables efficient **public passenger services**.	No acceptable outcome is prescribed.	**Not Applicable** The no new public passenger transport infrastructure is proposed as part of the development.
PO28 Development enables the provision or extension of **public passenger services**, **public passenger transport infrastructure** and **active transport infrastructure** to the development and avoids creating indirect or inefficient routes for **public passenger services**.	No acceptable outcome is prescribed.	**Complies with PO28** The development enables the provision or extension of public passenger services, public passenger transport infrastructure and active transport infrastructure to the development and avoids creating indirect or inefficient routes for public passenger services. As documented in the drawing provided in Appendix F of Traffic Impact Assessment prepared by SLR, the location of the proposed accesses to Byrnes Street does not impede the ability to provide a bus stop along the site frontage in the future if required.
PO29 New or modified road networks are designed to enable development to be serviced by **public passenger services**.	**AO29.1** Roads catering for buses are arterial or **sub-arterial roads**, collector or their equivalent. AND **AO29.2** Roads intended to accommodate buses are designed and constructed in accordance with: 1. Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design; Department of Transport and Main Roads; 2. Supplement to Austroads Guide to Road Design (Parts 3, 4-4C and 6), Department of Transport and Main Roads; 3. Austroads Guide to Road Design (Parts 3, 4-4C and 6); 4. Austroads Design Vehicles and Turning Path Templates; 5. Queensland Manual of Uniform Traffic Control Devices, Part 13: Local Area Traffic Management and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – Local Area Traffic Management;	**Not Applicable** No changes to the state-controlled roads are proposed as part of the development.

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Performance outcomes	Acceptable outcomes	Response
	AND **AO29.3** Traffic calming devices are not installed on roads used for buses in accordance with section 2.3.2 Bus Route Infrastructure, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO30 Development provides safe, direct and convenient access to existing and future **public passenger transport infrastructure** and **active transport infrastructure**.	No acceptable outcome is prescribed.	**Complies with PO30** The development provides safe, direct and convenient access to existing and future public passenger transport infrastructure and active transport infrastructure.
PO31 On-site vehicular circulation ensures the safety of both **public passenger transport services** and pedestrians.	No acceptable outcome is prescribed.	**Complies with PO31** The developments on-site vehicular circulation ensures the safety of both public passenger transport services and pedestrians.
PO32 Taxi facilities are provided to accommodate the demand generated by the development.	No acceptable outcome is prescribed.	**Complies with PO32** The development provides taxi facilities to accommodate the demand generated by the development.
PO33 Facilities are provided to accommodate the demand generated by the development for community transport services, courtesy transport services, and **booked hire services** other than taxis.	No acceptable outcome is prescribed.	**Complies with PO33** The development provides car parking, short-term passenger loading and taxi facilities to accommodate the demand generated by the development
PO34 Taxi facilities are located and designed to provide convenient, safe and equitable access for passengers.	**AO34.1** A **taxi facility** is provided parallel to the kerb and adjacent to the main entrance. AND **AO34.2 Taxi facilities** are designed in accordance with: 1. AS2890.5–1993 Parking facilities – on-street parking and AS1428.1–2009 Design for access and mobility – general requirements for access – new building work; 2. AS1742.11–1999 Parking controls – manual of uniform traffic control devices	**Complies with PO34** The development provides taxi facilities located parallel to the kerb and adjacent to the main entrance of the shopping centre. Taxi facilities are designed in accordance with Chapter 7 of the Public Transport Infrastructure Manual. Refer to Section 4.4 of the Traffic Impact Assessment prepared by SLR.

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Performance outcomes	Acceptable outcomes	Response
	3. AS/NZS 2890.6–2009 Parking facilities –off street parking for people with disabilities; 4. Disability standards for accessible public 5. transport 2002 made under section 31(1) of the Disability Discrimination Act 1992; 6. AS/NZS 1158.3.1 – Lighting for roads and public spaces, Part 3.1: Pedestrian area (category P) lighting – Performance and design requirements; 7. Chapter 7 Taxi Facilities, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO35 Educational establishments are designed to ensure the safe and efficient operation of **public passenger services**, pedestrian and cyclist access and **active transport infrastructure**.	**AO35.1** Educational establishments are designed in accordance with the provisions of the Planning for Safe Transport Infrastructure at Schools, Department of Transport and Main Roads, 2011.	**Not Applicable**

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ATTACHMENT 5
‘CHANGE APPROVAL’ MINOR APPLICATION ISSUED TO MAREEBA SHIRE COUNCIL

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