URBIS

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Urbis Ltd
ABN 50 105 256 228

5 April 2024

Burdekin Shire Council
145 Young Street
AYR QLD
PO Box 974

Dear Sir / Madam,

DEVELOPMENT APPLICATION FOR A DEVELOPMENT PERMIT FOR A MATERIAL CHANGE OF USE FOR RENEWABLE ENERGY FACILITY (SOLAR FARM) AND SUBSTATION IN THREE STAGES

In accordance with Section 50 of the *Planning Act 2016* and on behalf of *Cambridge JMD Australia* (the 'Applicant'), please find attached a properly made development application for a Development Permit for a Material Change of Use for a Renewable Energy Facility (Solar Farm) and Substation in three stages. The land subject to this development application is located at 829 and 834 Keith Venables Road and 667 Black Road, Upper Haughton, formally described as Lot 6 on SP302825, Lot 1 on SP302825, and part of Lot 2 on SP302825.

We have enclosed the following information in support of the application:

- DA Form 1; and
- Town Planning Assessment Report including the following appendices:
- **Appendix A** – Property Searches;
- **Appendix B** – Land Owner's Consent;
- **Appendix C** – Proposed Development Plans;
- **Appendix D** – SPP Checklist;
- **Appendix E** – SDAP Checklist;
- **Appendix F** – Assessment Benchmark Code Assessment;
- **Appendix G** – Traffic Assessment Report, prepared by *Urbis*;
- **Appendix H** – Bushfire Hazard Assessment and Mitigation Plan, prepared by *Rob Friend and Associates Pty Ltd*;
- **Appendix I** – Noise Assessment Report, prepared by *WSP*;

- **Appendix J** – Social and Economic Impact Assessment Report, prepared by *Urbis*;
- **Appendix K** – Ecological and Environmental Approvals Report, prepared by *28South*;
- **Appendix L** – Flood Study Assessment and Mapping, prepared by WMS;
- **Appendix M** – Relevant Purpose Determination;
- **Appendix N** – Community Engagement Outcomes Report, prepared by *Urbis*;
- **Appendix O** – Wetland Amendment Request, prepared by *28South*; and
- **Appendix P** – Viewshed Analysis, prepared by *Urbis*.

An Impact Assessable Material Change of Use for Renewable Energy Facility (Solar Farm) and Substation incurs a base fee of $10,500 for up to 100ha of total activity. A fee of $40 per ha then applies for activities over 100ha. These fees are based on advice received from Council via email on 24 November 2023. Based on Council's fee estimate and a total activity area of 1,128.8 ha, the assessment fee is estimated to be **$51,652.00**, which will be paid following receipt of a fee quote.

Should you require any further information to commence your assessment, please do not hesitate to contact the undersigned or Faith Duffy on (07) 3007 3800.

Yours sincerely,

Sophie Lam
Associate Director
+61 7 3007 3857
slam@urbis.com.au

URBIS

CAMBRIDGE SOLAR FARM

TOWN PLANNING REPORT

PREPARED FOR

CAMBRIDGE JMD AUSTRALIA

APRIL 2024

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	Jon Mills
Associate Director	Sophie Lam
Consultant	Faith Duffy
Consultant	Joel Boudin
Project Code	P0044793
Report Number	V2

Urbis acknowledges the important contribution that Aboriginal and Torres Strait Islander people make in creating a strong and vibrant Australian society.

We acknowledge, in each of our offices, the Traditional Owners on whose land we stand.

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PICTURES

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EXECUTIVE SUMMARY

PROJECT OVERVIEW

Key Information	Proposed Detail
Address of Site	• 329 and 834 Keith Venables Road, Upper Haughton QLD 4809 • 667 Black Road, Upper Haughton QLD 4809
Real Property Description	• Lot 6 on SP302825 • Lot 1 on SP302825 • Part of Lot 2 on SP302825
Total Site Area	1,566.50ha
Local Government	Burdekin Shire Council
Planning Scheme	*Burdekin Shire Council Planning Scheme 2022*
Zone	Rural Zone
Purpose	Development Permit for Material Change of Use for Renewable Energy Facility (Solar Farm) and Substations in three stages
General Description of Proposal	Development of a Solar Farm and associated Substations, in three stages
Land Owner	*David Richard Vivian Cox*

ASPECT OF DEVELOPMENT

Type of Development	Material Change of Use
Type of Approval	Development Permit
Category of Development	Assessable Development
Category of Assessment	Impact Assessment

APPLICANT DETAILS

Applicant	Urbis Contact Details	Urbis Reference Number
Cambridge JMD Australia	C/- Urbis Ltd Level 32, 300 George Street, Brisbane City, QLD 4000 Sophie Lam | Faith Duffy Ph: (07) 3007 3800	P0044793

Applicant	Urbis Contact Details	Urbis Reference Number
	Email: slam@urbis.com.au | fduffy@urbis.com.au	

1. INTRODUCTION

Urbis Ltd, has prepared this development application on behalf of *Cambridge JMD Australia* ('the Applicant'). This application is for a Development Permit for Material Change of Use for Renewable Energy Facility (Solar Farm) and Substation in three stages.

The land subject to this development application is located at 829 and 834 Keith Venables Road and 667 Black Road, Upper Haughton, formally described as Lot 6 on SP302825, Lot 1 on SP302825, and part of Lot 2 on SP302825 (referred to as 'the site' hereon in).

This report addresses the merits of the development with regard to the assessment benchmarks under the *Burdekin Shire Planning Scheme 2022* ('the Planning Scheme') and relevant sections of the *Planning Act 2016* ('the Act').

This report is accompanied by and should be read in conjunction with the following drawings and technical reports:

- **Appendix A** – Property Searches;
- **Appendix B** – Land Owner's Consent;
- **Appendix C** – Proposed Development Plans;
- **Appendix D** – SPP Checklist;
- **Appendix E** – SDAP Checklist;
- **Appendix F** – Assessment Benchmark Code Assessment;
- **Appendix G** – Traffic Assessment Report, prepared by *Urbis*;
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- **Appendix O** – Wetland Amendment Request, prepared by *28South*; and
- **Appendix P** – Viewshed Analysis, prepared by *Urbis*.

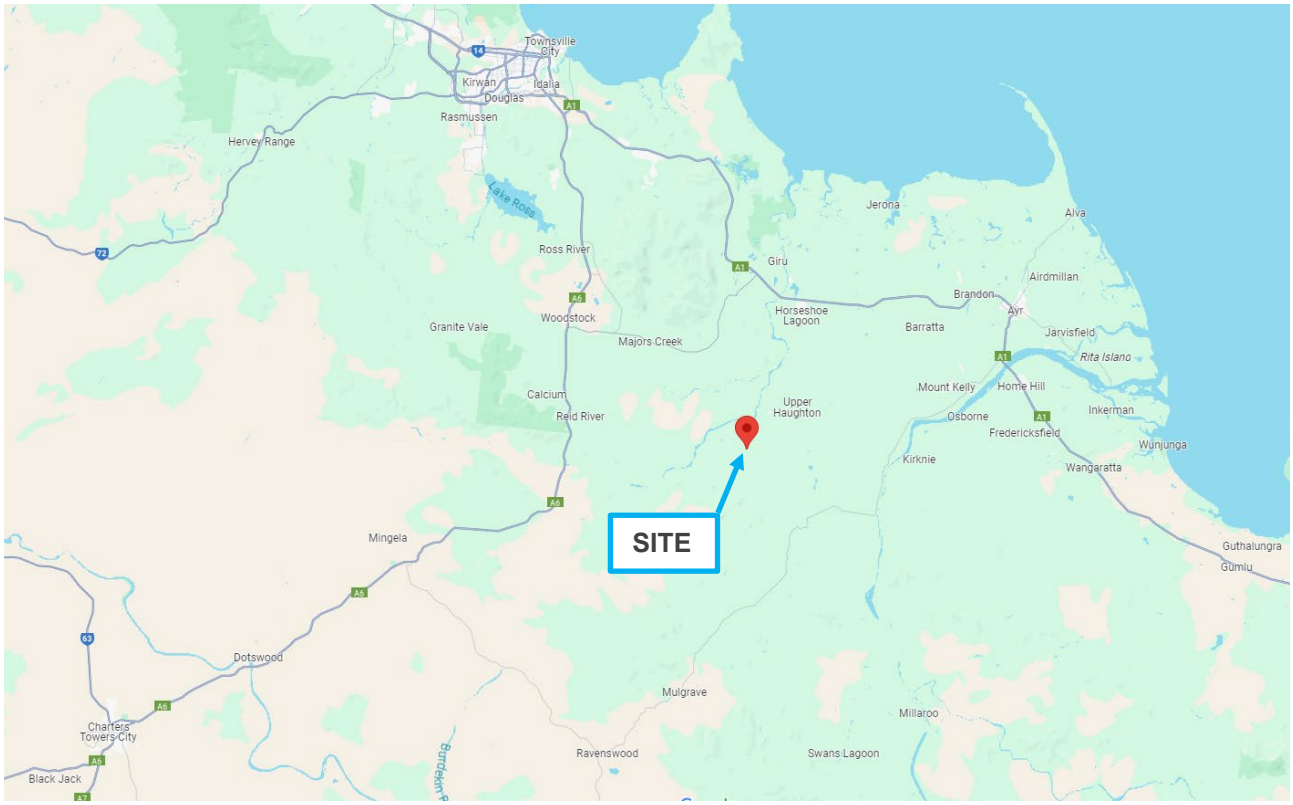
The assessment of this application is to be undertaken in accordance with Section 45(5) of the Planning Act and Sections 30 and 31 of the *Planning Regulation 2017.* This report provides the applicant's assessment against these provisions and concludes that the development is appropriate generally consistent with State legislative framework, the existing Local Planning Scheme controls and complies with the overall intent of the Rural Zone. Council's approval of the application is therefore sought, subject to reasonable and relevant conditions.

2. SITE AND SURROUNDS

2.1. SITE LOCATION

The site is located approximately 57km south-east of Townsville and is situated along the Haughton River. The site is located at 829 and 834 Keith Venables Road and 667 Black Road, Upper Haughton. The site is shown in **Figure 1** below.

Figure 1 – Site Location



Source: Google Maps

2.2. SITE CHARACTERISTICS

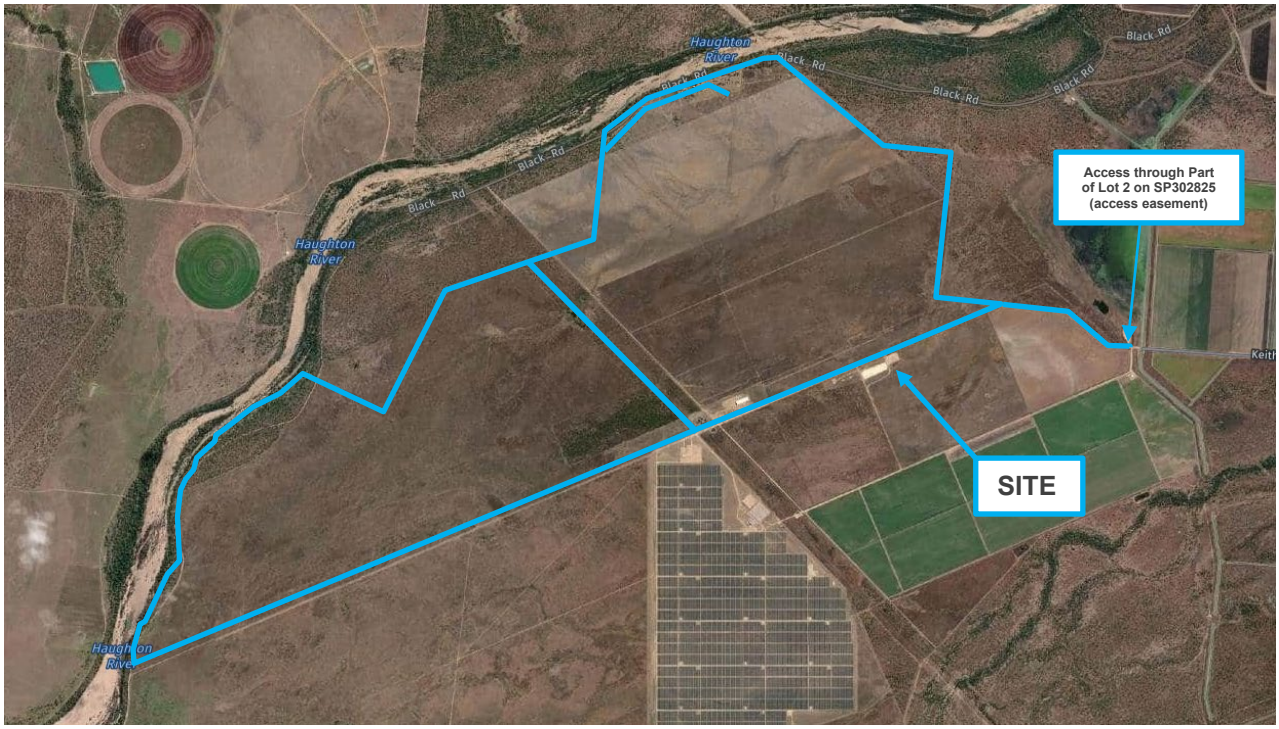
The site comprises of three (3) allotments, which have a total area of 1,566.5ha. A summary of the allotments is included in **Table 1** below.

The site is currently unutilised and vacant, with surrounding land utilised for agricultural purposes. An aerial of the site is included in **Figure 2** below.

Table 1 – Application Allotments

Address	Real Property Description	Area
829 and 834 Keith Venables Road, Upper Haughton	Lot 6 on SP302825 Part of Lot 2 on SP302825	764.4ha
667 Black Road, Upper Haughton	Lot 1 on SP302825	802.1ha
TOTAL		1,566.5ha

Figure 2 – Aerial Map



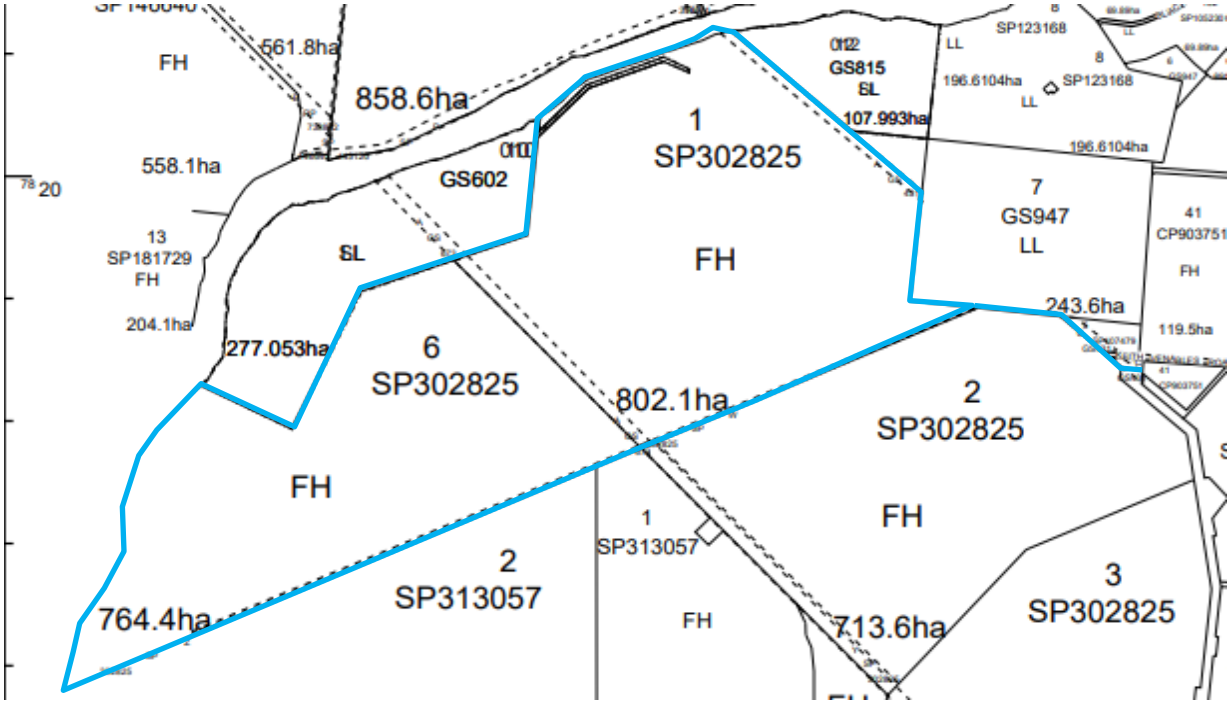
Source: NearMap

2.3. LAND OWNERSHIP

The site is comprised of three allotments, each owned by *David Richard Vivian Cox*. All allotments are held in Freehold tenure. Refer to **Appendix A** for Property Searches and **Appendix B** for Owner's Consent.

The site and cadastre are shown **Figure 3** below.

Figure 3 – Cadastral Map



Source: Smart Maps

2.4. EASEMENTS AND ENCUMBRANCES

The site is affected by a number of easements. **Table 2** summarises the easements which apply to the site.

Table 2 – Easement and Encumbrances Summary

Easement Number	Type	Land To
602801226	Burdening	The Northern Electric Authority of Queensland over Easement A on GS683
601427252	Burdening	Queensland Electricity Commission over Easement A on CP GS672
715023884	Burdening	Ergon Energy Corporation Limited over Easement B on SP256358
718741216	Burdening	Lot 1 on SP302825 and Lots 3-7 on SP302825 over Easement X on SP302825
	Benefiting	Easement X on SP302825
718741227	Burdening	Lot 3 on SP302825 over Easement Y on SP302825
718741237	Burdening	Lots 5 and 7 on SP302825 over Easement T on SP302825
718741245	Benefiting	Easement W on SP302825
	Burdening	Lots 2 - 7 on SP302825 over easement W on SP302825
602801225	Burdening	The Northern Electricity Transmission Corporation Limited over Easement A on GS431
602801227	Burdening (resumption easement)	Townsville—Thuringowa Water Supply Board over Easement G on GS1039
7188741229	Burdening	Lots 4 and 5 on SP302825 over Easement Z on SP302825
718741232	Burdening	Lots 4-5 on SP302825 and Lot 7 on SP302825 over Easement S on SP302825

Easements 718741245 and 718741229 are located over the existing internal access roads. As discussed in **Section 4.7**, the proposal seeks to retain these access roads to provide access to the solar farm from Keith Venables Road.

Specifically, access to Lots 1 and 6 from Keith Venables Road is facilitated over an existing access easement and internal road that runs across Lot 2 on SP302825, connecting Keith Venables Road to the boundary of Lot 1 (Easement 718741216). Access across Lot 1, over the Powerlink easement and across Lot 2 is similarly facilitated through existing internal roads and access easements.

Easements 601427252 and 602801226 contain the Powerlink infrastructure. While the proposal seeks to gain access across these easements along the internal road network, as the network is covered by the abovementioned access easements, the proposal remains aligned with the terms of the easement. Refer to **Appendix A** for further information.

It is noted that the proposal wholly aligns with the terms of these electricity easements, as well as the access easements which do not restrict the nature of access within the easements. It also noted that part of Lot 2 has been included in this application to facilitate access.

There is one additional encumbrance over the site, as described below:

- 711488436 – Vegetation Management Notice under *Vegetation Management Act 1999*

This encumbrance locked in the Category X regulation vegetation overlay over the site. However, as the development does not require referral to the State, no further action is required. Refer to **Section 6** of this report for further details.

2.5. SURROUNDING LAND USES

The site is situated along Haughton River and is located adjacent to both the Townsville City Council and Charters Towers Regional Council local government boundaries. It is noted however that all land the subject of this application is located wholly within the Burdekin Shire Council local government area. The area surrounding the site is characterised by rural zoning with surrounding areas predominantly including large, forested, and agricultural areas, including the nearby Mount Elliot.

Nearby uses include the following:

- **North** – Immediately north of the site is the Haughton River, which traverses east-west along the northern boundary of the site and connects to the Coral Sea to the east. Further north is Mount Elliot.
- **East** – Immediately east of the site is Black Road, which provides access to north-eastern areas of the site. Further east of the site is Barratta River and beyond is the Burdekin River.
- **South** – Immediately south of the site adjoining the southern boundary of Lot 6 on SP302825 is the existing Haughton Solar Farm, which includes a substation on site.
- **West** – Immediately west of the site is Haughton River which connects with Reid River. Further west is Foots Hill Station camping grounds, beyond is Flinders Highway which connects Townsville and Charters Towers City.

2.6. ENVIRONMENTAL VALUES

Due to its rural location and scale, a number of environmental values have been identified across the site. Parts of the site are mapped as containing local, State or national environmental features, including wildlife habitat and regulated vegetation. Parts of the site are also mapped as being bushfire and flood prone.

Relevant State and Local overlays are discussed in subsequent sections of this report (refer to **Sections 6** and **7**) as well as within the Opportunities and Constraints analysis (refer to **Section 4.2**).

2.7. TOPOGRAPHY

The topography of the site is predominantly flat, with only a slight decline from west to east, from 40 metres to 30 metres AHD.

2.8. CONTAMINATED LAND

Property searches indicate the site is not included on the Environmental Management Register (EMR) or the Contaminated Land Register (CLR).

2.9. DEVELOPMENT APPROVALS

From a review of Council's publicly information, there are no existing development approvals over the site. Similarly, there are no current development applications relevant to the site.

3. PRELODGEMENT DISCUSSIONS

3.1. COUNCIL PRELODGEMENTS

Prior to the lodgement of this Development Application, the Applicant sought prelodgement advice from Council through three (3) prelodgement meetings, held on the 24 May 2023, 27 October 2023 and 13 December 2023. The key outcomes from the prelodgement meetings are included in **Table 3** below.

Table 3 – Prelodgement Meeting Discussion Summary

Item	Response
Council suggested an Economic Needs Assessment be provided to support the Development Application, with specific analysis on the potential loss of agricultural land.	A Social Economic Impact Assessment has been prepared for the proposal which provides key analysis of the social and economic Impacts and benefits of the project to the LGA. This and is included within **Appendix J**. A summary of the key findings of the assessment is included in **Section 4.11.4** of this report.
Council noted that the site is located: – Outside of the Planning Schemes mapped Renewable Energy Investigation areas; and – Within the mapped priority agricultural area of the NQRP. Appropriate justification for both these overlays is to be included in any future development application.	**Section 6** and **7** of this report addresses the location of the site in respect to Local and State overlays and provides justification for the proposed development, particularly it's designation within mapped priority agricultural areas.
Council agreed that a Development Application supported by the following documentation would assist with their assessment: ▪ Solar farm layout plans and details of BESS; ▪ Town planning assessment; ▪ Ecology report; ▪ Acoustic impact assessment; ▪ Bushfire report; Visual impact assessment and glint and glare assessment; ▪ Social economic benefits assessment; ▪ Community engagement report; ▪ Traffic impact assessment; ▪ Civil engineering report, earthworks plans; and ▪ Site based stormwater management plan.	The Development Application is supported by all listed specialist material, with summaries of the key outcomes of these reports outlined in **Section 4.11** of this report.

Item	Response
▪ Council recommended engagement is undertaken with all relevant stakeholders. ▪ Council suggested that community contribution by CREP (monetary, sponsoring buses or events etc.) would be received well by the local community and has been undertaken by Pacific Blue and other solar farm developers.	Thorough engagement has been undertaken with all relevant stakeholders including Native Title groups and adjoining landholders. Details of the engagement activities undertaken and key items of discussion are outlined in the Community Engagement Strategy contained within **Appendix N**, with a summary included in **Section 4.11** of this report.
Council Fees: Council confirmed calculation of fees per stage was "at the Applicant's discretion". Suggested the Applicant calculates as a single fee rather than breaking down via stage. Confirmed a new Local Government Infrastructure Plan (LGIP) is currently being prepared by an external consultant, and offered to request more information from the consultant around an estimate of ICs for our DA (noting only infrastructure which would be levied is impact on roads). Council confirmed that infrastructure charges calculation would need to be based on information around likely employees/contractors, traffic numbers, type of traffic, axel loads etc in each stage/phase; whether road works and intersection upgrades are proposed as part of the project and what is the construction standard being adopted.	Noted. Information has been provided separately to Council to inform infrastructure charges calculations, which we understand will be based on any potential road impacts from construction activities.
Visual Impact Assessment: Council confirmed that the Visual Impact Assessment would be required to include montages from the nearest sensitive receiver (i.e. landholder residence) as well as the nearest sensitive receiver which is not occupied by the landowner.	A viewshed analysis and preliminary visual advice has been prepared in support of the proposal. Further detail is included in **Appendix P** and **Section 4.11** of this report. Further photo montages will be provided to Council at a later date once detailed design has progressed.

3.2. STATE PRELODGEMENTS

The Applicant received prelodgement advice from the State Assessment and Referral Agency (SARA) via meetings held on 21 June 2023 and 10 November 2023. SARA provided the following advice:

- Referral for the Wetland Protection area would be required, and referral for any clearing of vegetation may be required.
- Referral for clearing of native vegetation can be avoided where all new fences, roads, and underground services are located outside of the Category B areas and all new infrastructure (other than fences, roads, underground services) is located at least 20 metres or 1.5 times the height of the tallest adjacent tree, whichever is greater, away from the Category B areas.

- State code 9 – Great Barrier Reef wetland protection areas and State code 16 – Native vegetation clearing (where referral is relevant) may be relevant for future development over the site.
- SARA's development assessment mapping system (DAMS) shows a wetland protection area (trigger area) is mapped over Lots 6 and 1 on SP302825, and a wetland protection area (wetland) is mapped over Lot 1 on SP302825. Future development for high impact earthworks will trigger referral to SARA.
- Alternatively, if the DAMS is incorrect, a map amendment process can be undertaken to demonstrate the map does not accurately reflect existing wetlands.

The proposal responds to the advice provided by SARA and ensures all required referrals are undertaken. The Applicant notes that the process to amend the wetland mapping is being undertaken currently. Nevertheless, referral for this trigger will be undertaken for completeness, as the amendment will not be finalised prior to lodgement. Further details regarding State referrals are included in **Section 6.1** of this report.

3.3. POWERLINK DISCUSSIONS

The applicant has engaged in formal discussions and made an initial application for a grid connection to Powerlink. They have indicated that up to 400MWp could be connected to the grid via a substation connected to the 275KV powerlines that run alongside Lot 6 and 1. This application is running in parallel with the development application and would be expected to be approved in Q2 2025.

4. PROPOSAL

4.1. OVERVIEW

The proposed development comprises a 300MWac grid connected solar farm, substation and associated ancillary infrastructure (invertors, transformers and cabling) across part of Lot 6 being 390 ha (Stage 1).

Provision for a further 765MWac of behind the meter (or grid connected at a future date) of solar farm with associated ancillary infrastructure (invertors, transformers and cabling) will be developed across 937 ha being the balance of Lot 6 and Lot 1 (Stages 2 and 3).

The development application formally seeks approval for:

- Development Permit for Material Change of Use for Renewable Energy Facility (Solar Farm) and Substations in three stages.

The proposal seeks to develop the site for renewable energy technologies (solar farm) across the two lots, with substations also proposed across the site. Connection to the Powerlink electricity grid is to be made through underground and overground cables.

4.2. OPPORTUNITY AND CONSTRAINTS ANALYSIS

As part of preliminary investigations of the site, Urbis Ltd have prepared a Feasibility Report to provide an analysis of the site constraints and opportunities. The intended outcome of this report is to inform the feasible development footprint that can be achieved for a Solar Farm on the site, cognisant of site constraints including ecological and hazard mapping.

The site constraints were mapped into five levels, being:

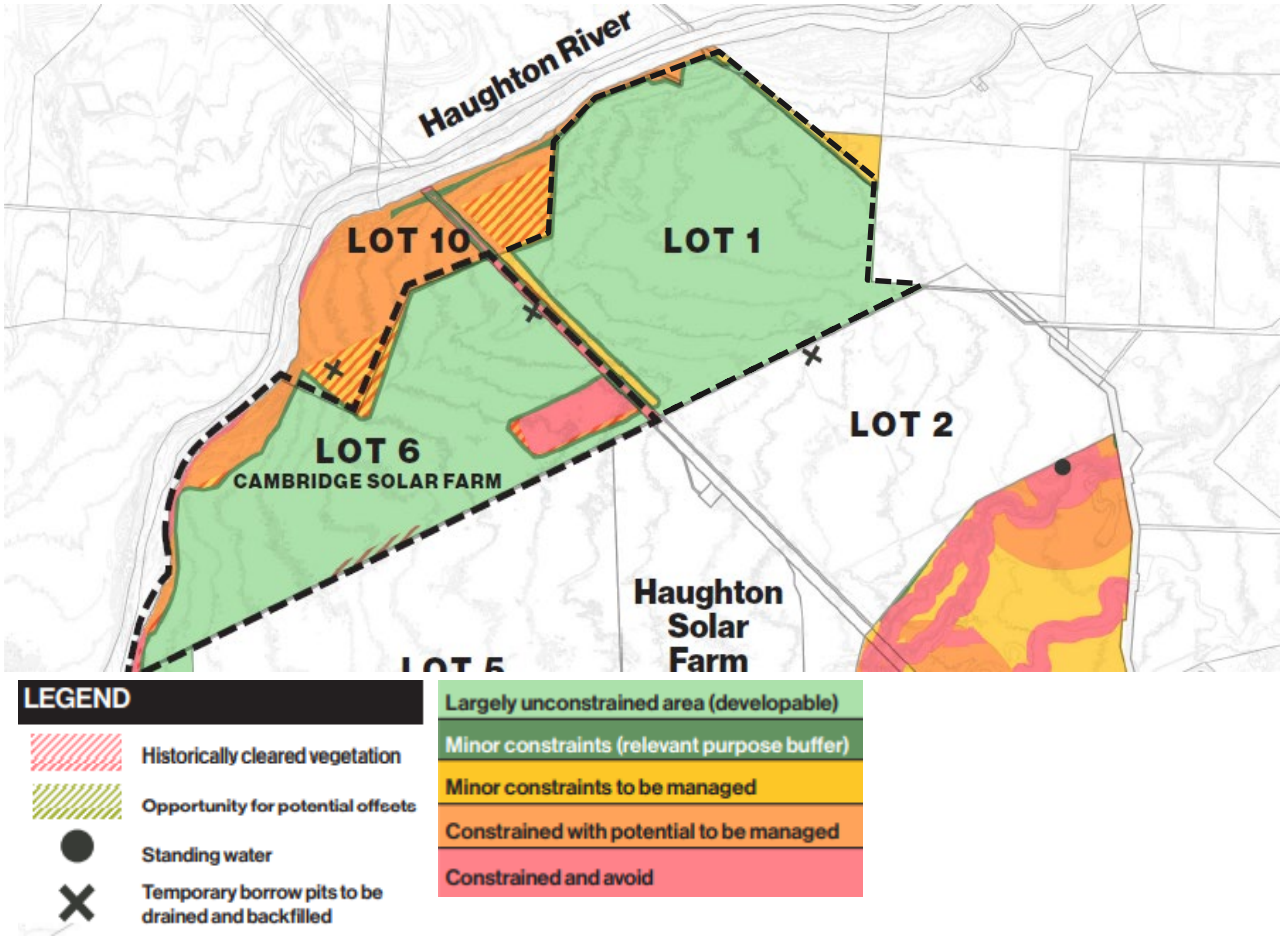
1. Largely unconstrained area;
2. Minor constraints to be managed (relevant purpose buffer);
3. Minor constraints to be managed;
4. Constrained with potential to be managed; and
5. Constrained and avoid.

This assessment informed the location and design of the solar farm development on the site. The proposal seeks to avoid areas identified as constrained, or ensure development in proximity to such areas is appropriately located and designed to minimise impact to these areas.

As shown in **Figure 4** below, the majority of the site the subject of the solar farm proposal is identified as being largely unconstrained. Lot 6 contains an isolated patch of remnant vegetation, which is also present on the western site boundary of Lot 1. Due to this, the proposed development avoids these areas, and ensures appropriate separation distances.

As a result of this analysis, it is evident that there is an opportunity to capitalise on the relatively unconstrained nature of these allotments and deliver development which is compatible with the rural nature of the site and surrounds.

Figure 4 – Constraints Risk Analysis



Source: Urbis

In addition to the opportunity and constraints assessment, the site and proposal have undergone a preliminary assessment for bushfire hazard. This assessment concluded that while there is vegetation present in some areas of the site, as well as in adjoining areas, this vegetation is relatively isolated and would not present a significant, or any, bushfire hazard to future development.

Preliminary bushfire advice has however identified that vegetation along the north-western stretch of the Haughton River presents a bushfire hazard, due to its width. Ecological advice also requires a buffer to this vegetation to ensure the proposal does not impact on ecological values or constitute a controlled action for the purpose of EPBC referral. As a result, the proposed development a 37.5m maintained asset protection zone, which will provide adequate separation for the solar infrastructure. Detailed bushfire and ecological advice has been included in the Ecological Assessment Report prepared by 28 South and Bushfire Hazard Assessment prepared by Rob Friend and Associates, included in **Appendix K** and **H** respectively.

Flood mapping and assessment has also been undertaken across the site, indicating that Lots 1 and 6 the subject of this application are not subject to flood hazard. Refer to the Flood Study Assessment and Mapping prepared by WMS in **Appendix L** for further details.

4.3. PROPOSED LAYOUT

The proposed development has been designed in accordance with the opportunities and constraints analysis undertaken over the site and outlined in **Section 4.2**. The proposed layout is reflective of this analysis and includes solar panels across the majority area of all three allotments, avoiding areas of ecological mapping.

To accommodate the proposal, the site will be cleared and levelled to accommodate land that is suitable for installation purposes, of approximately 1,128.8 ha in area. Due to the current use of the site for rural activities, the majority of the site is largely vacant rural land uses and is predominately cleared of vegetation. As per the constraints risk analysis the areas on the site that are constrained have been retained and/or buffered (with buffer areas remaining undeveloped as shown in the layout plans), the location of the solar farm on the site will not result in the loss or clearing of any vegetation. Further, it has been confirmed with

the Department of Resources that a Relevant Purpose Determination is not required to be obtained in regard to its proximity to mapped State vegetation and noting that no clearing of native vegetation is proposed. The proposal is therefore not prohibited under the Planning Regulation. Refer to **Section 4.10** and **6.1** of this report and **Appendix M** for confirmation letter provided by the Department for further information.

The proposal includes underground and overground cables connecting to inverters and into onsite substations, that will connect into the existing 275kV transmission infrastructure for Stage 1 only.

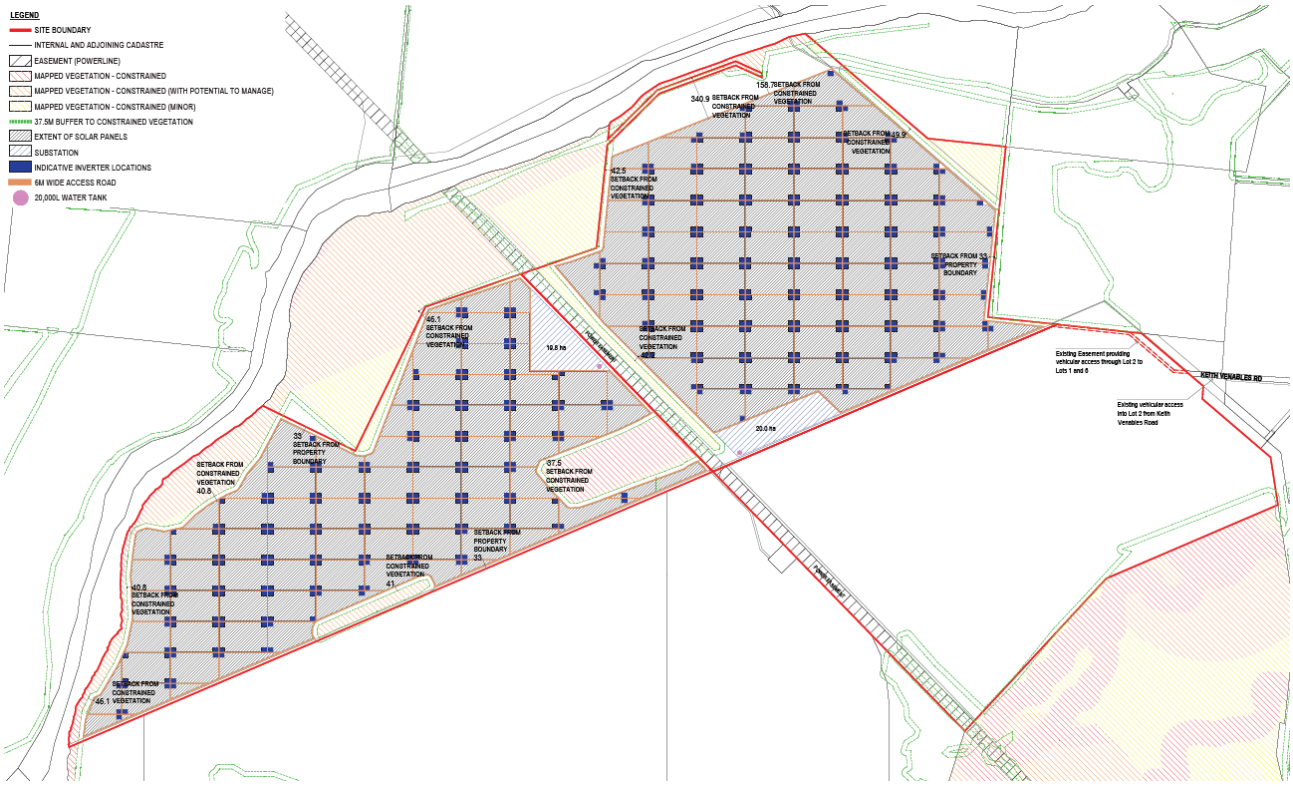
The proposed development will provide for the following areas, as summarised in **Table 4** below.

Table 4 – Proposal Area Summary

	Lot 6 (Stage 1 and 2)	**Lot 1 (Stage 3)**	**Total**
Solar panels area	522.3 ha	566.7 ha	1,089 ha
Substation area	19.8 ha	20.0 ha	39.8 ha
TOTAL AREA	542.1 ha	586.7 ha	1,128.8 ha

The indicative site layout is shown below in **Figure 5**.

Figure 5 – Proposed Site Layout



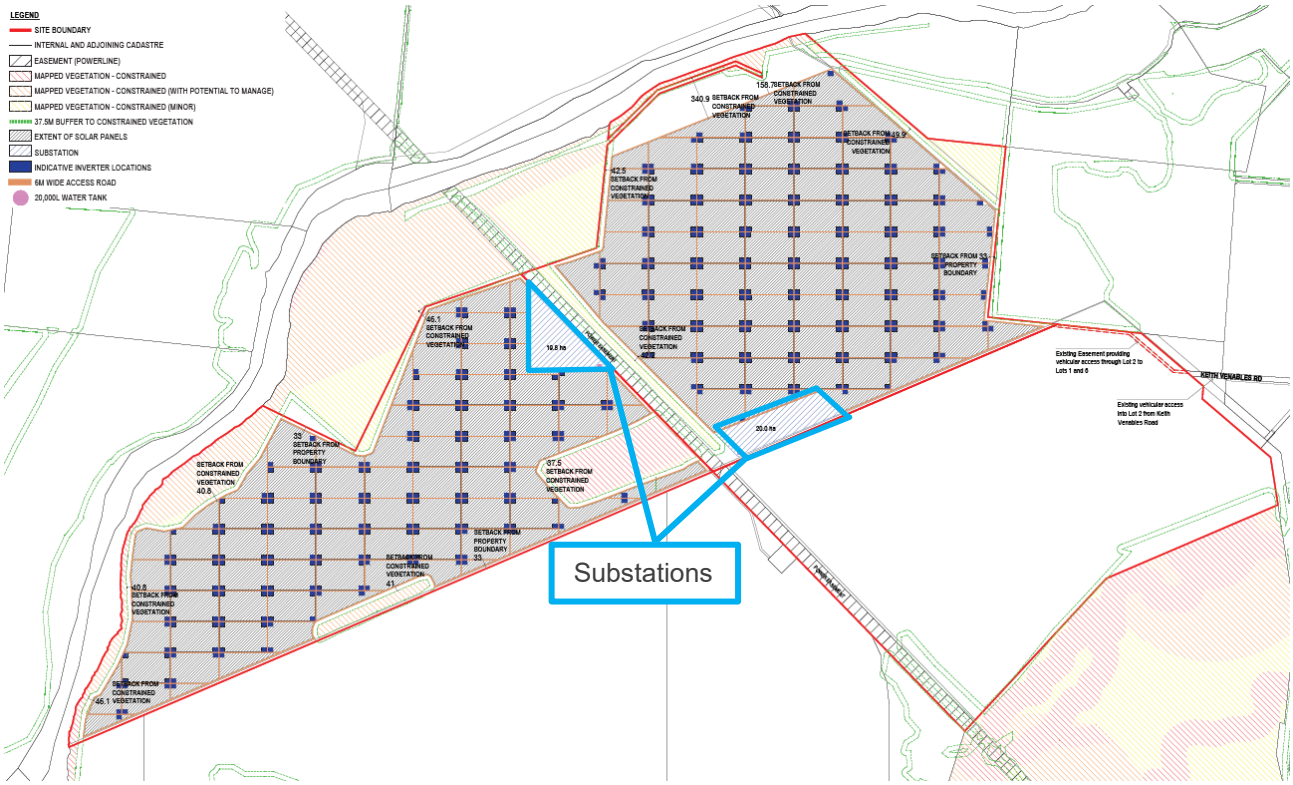
Source: Urbis

4.4. SUBSTATIONS

Each allotment includes a dedicated substation area, that is located and designed to appropriately service the proposed development. The location of these substation areas is shown in **Figure 6** below. Each substation area may accommodate up to two (2) substations, to ensure sufficient capacity to service the proposed development. An indicative design of the individual substations is illustrated in **Figure 7** below.

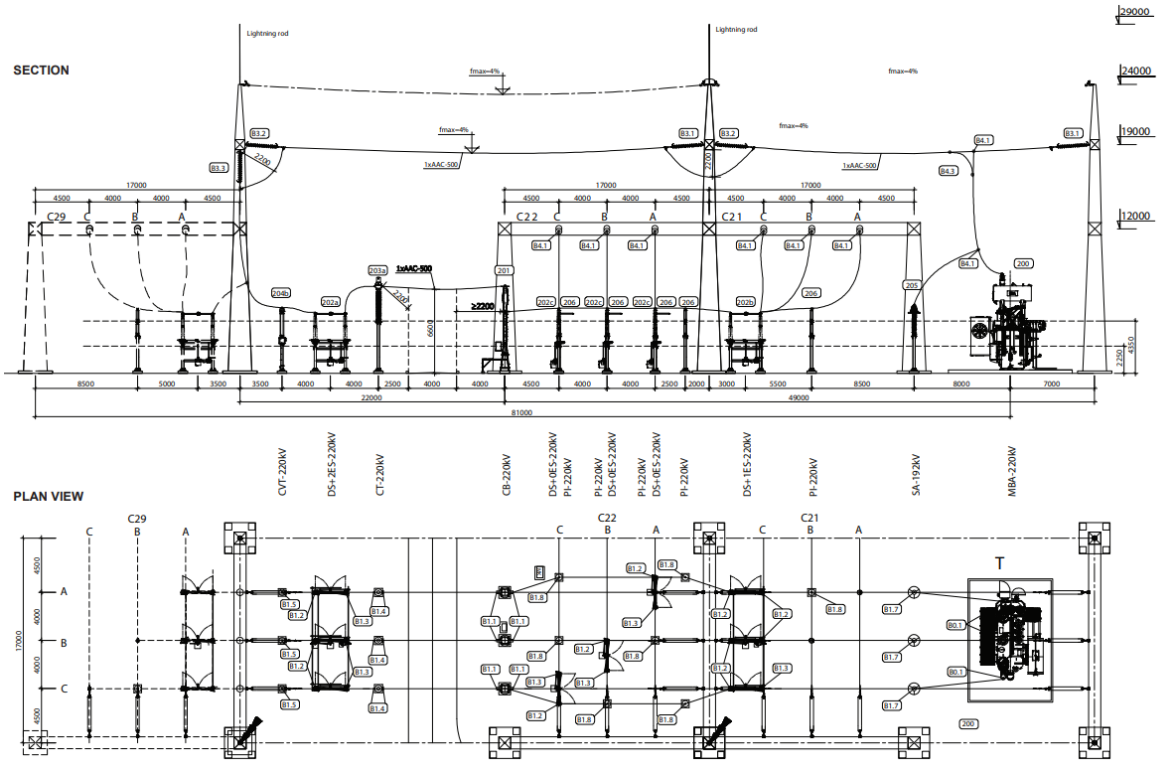
The substations will include all relevant equipment, including disconnectors, circuit breakers, transformers and surge arrests. The design of the substation will be determined during detailed design phases.

Figure 6 – Substation Locations



Source: Urbis

Figure 7 – Indicative Substation Design



Source: Urbis

4.5. CABLING AND CONNECTIONS

The proposal will include underground and overground cables connecting to inverters and into the onsite substations. These will connect into the existing 275kV transmission infrastructure for Stage 1 only (as agreed with Powerlink).

The proposed development does not include any transmission lines.

4.6. OTHER ANCILLARY BUILDINGS

The proposal will include ancillary infrastructure as outlined below. The exact location of this infrastructure is not yet known and will be determined at the detailed design phase.

Communication monitoring house

A Communications building is required to enable 24-hour remote monitoring of performance and security.

Switch Room

The switch room contains switching controls and other equipment.

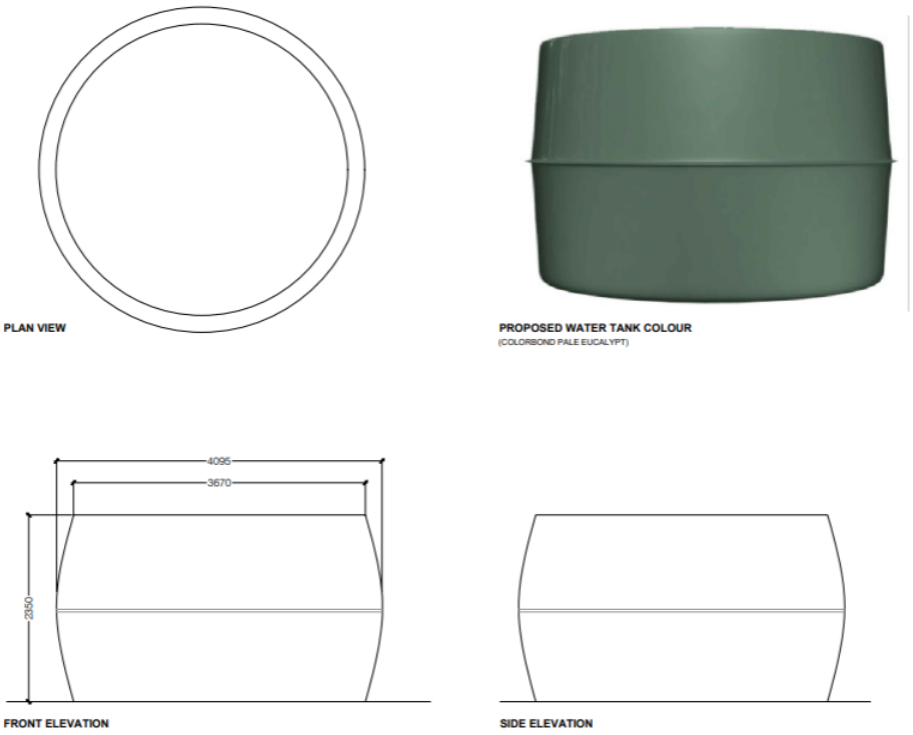
Composting toilets

A composting toilet will be provided onsite for operators and maintenance staff. The toilets are waterless, chemical free and self-composting. Toilets use a dehydration process resulting in an order free compost which is collected annually for processing off site.

Water tanks

Water tanks are proposed on site, as described above. The tanks will measure approximately 4.095m (w) x 2,35m (h). The proposed colouring is Colourbond's 'Pale Eucalypt,' as pictured below.

Figure 8 – Indicative Water Tank Design



Source: Urbis

4.7. SITE ACCESS

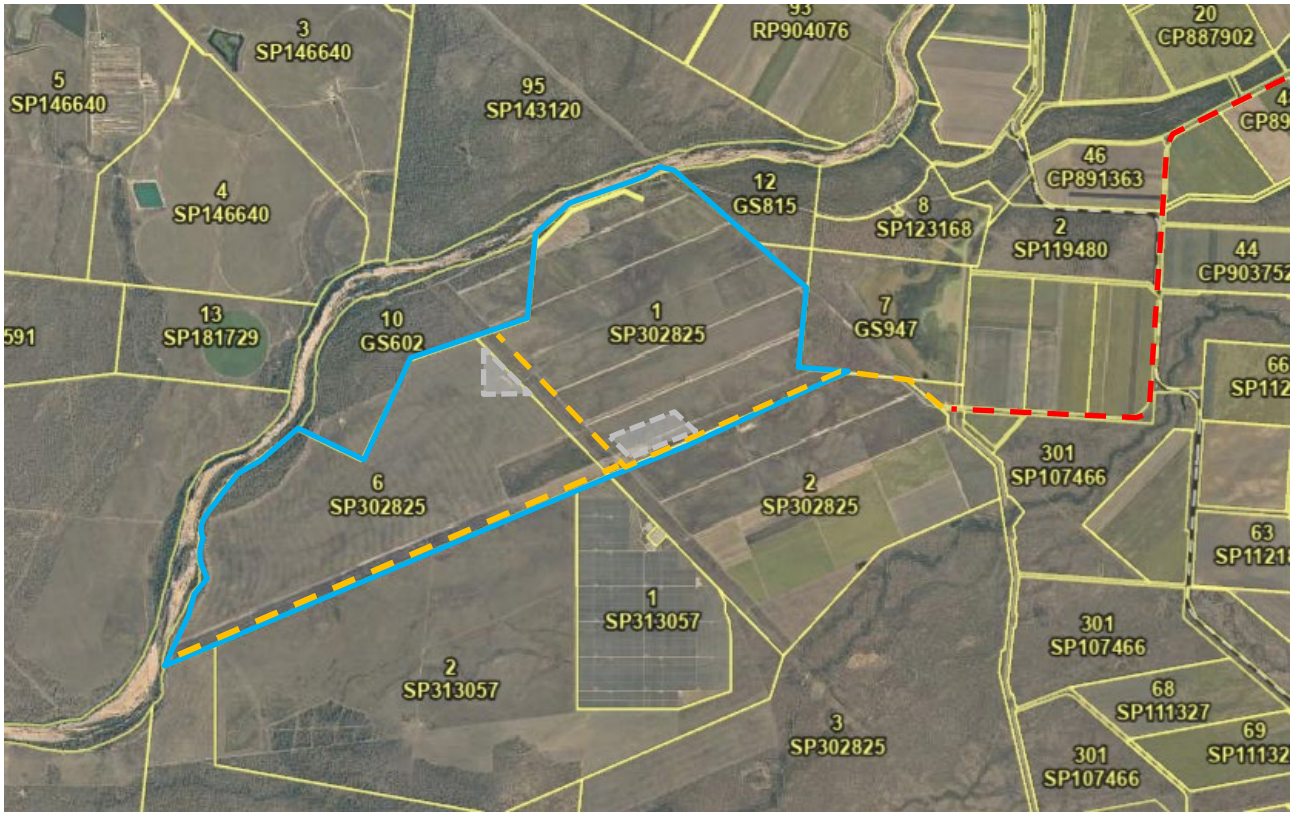
Access to the site is provided via Keith Venables Road which is located to the east of Lot 2 on SP302825. Access to Lots 1 and 6 from Keith Venables Road is facilitated over an existing access easement and internal road that runs across part of Lot 2, connecting Keith Venables Road to the boundary of Lot 1 (Easement 718741216). Access across Lot 1, over the Powerlink easement and across Lot 2 is similarly facilitated through existing internal roads and access easements.

It is noted that the proposal wholly aligns with the terms of these easements, which do not restrict the nature of access within the easements. It is noted that part of Lot 2 has been included in this application to facilitate access.

Additional internal access between proposed solar arrays and substations is facilitated via new internal roads as shown on the Proposed Development Plans included in **Appendix C**.

The proposed access arrangements are shown in **Figure 9** below.

Figure 9 – Site Access



Legend

Site access – Keith Venables Road

Internal access – unsealed roads (access easements through Lot 2 on SP302825 and Lots 1 and 6)

Proposed Substations

Source: QLD Globe

As mentioned above, the proposed development seeks to utilise existing Easement 718741216 as a service entry into the site for development. Given that this easement is located over part of Lot 2 on SP302825, the proposed development seeks to apply over part of this land.

It is noted that section 51 of the Planning Act 2016 stipulates the making of development applications in Queensland, and the required documents which it must be accompanied by. Furthermore, s51(2) determines that the application must be accompanied by the owner of the premises to the extent that:

a) The applicant is not the owner; and

b) The application is for –

i. a material change of use of premises or reconfiguring a lot; or

ii. works on premises that are below high-water mark and are outside a canal; and

c) the premises are not excluded premises.

Further, the Planning Act 2016 defines an excluded premises as –

a) generally –

i. premises that are a servient tenement for an easement, if the development is consistent with the easement terms

Given that the proposed development seeks to utilise Easement 718741216 for site access, the development is therefore consistent with the easement terms and therefore does not require owners consent from the landowner of Lot 2 on SP302825.

4.8. DEVELOPMENT STAGING

The development application is proposed to be completed in three stages, with construction anticipated from 2025 to 2031. Staging is anticipated to occur as per **Table 5** below:

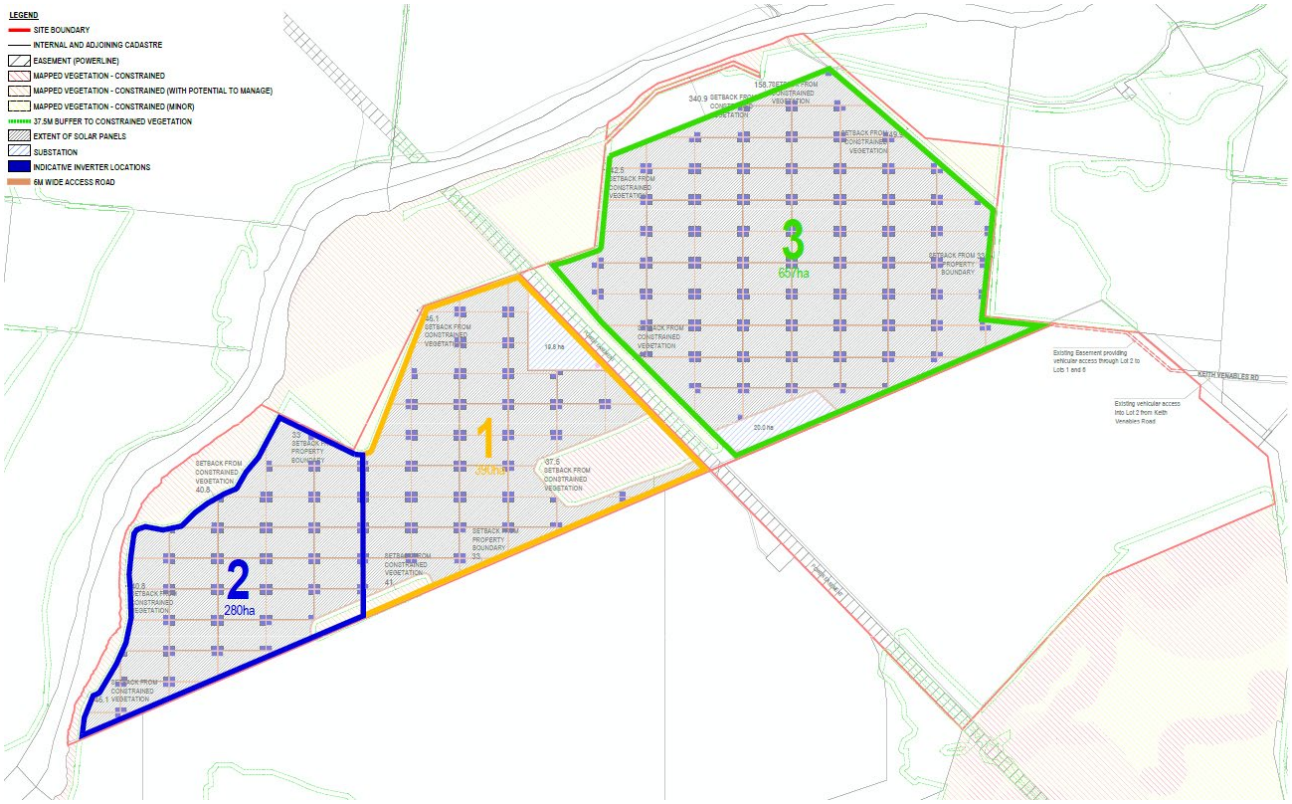
Table 5 – Construction Staging

Stage	Lot	Potential Capacity (MWp)	Potential Power (Mwac)	Estimated Construction Time (Months)
1	6 (part)	373.85	300.00	24
2	6 (part)	257.03	205.55	18
3	1	698.95	560.10	24
Total		**1,329.83**	**1,065.65**	**66**

For the purposes of infrastructure charges, charges are expected to be levied per stage as upgrades to existing road networks are likely to be progressively required before each stage of the proposed construction.

Staging has also been shown on the solar farm layout plans as shown in **Figure 10** below.

Figure 10 – Staging Plan



Source: Urbis

4.9. DECOMMISSIONING

Upon decommissioning of the Solar Farm, all structures associated with the facility will be removed and the remaining ground holes will be backfilled to restore the land to a standard appropriate for rural use. Damaged solar cells are to be recycled by resource recovery or repurposing depending on performance quality, and land will be returned to its original condition or higher. Solar farm infrastructure does not sterilise the rural amenity and use of the land, which means that rural activities can be carried out on the site after decommissioning without needing extensive site rehabilitation.

4.10. RELEVANT PURPOSE DETERMINATION

Given the site includes native vegetation (as identified by the DAMS), a request for a 'Relevant Purpose Determination' for the proposed works was lodged to the Department of Resources by 28 South Environmental Pty Ltd. This request details that Proposed Action has located all proposed 'built infrastructure' outside of mapped Regulated Vegetation, and specifically designed into the plan of development a suitable buffer of 1.5 times the height of the tallest vegetation or greater within the mapped Regulated Vegetation. Thus, the Proposed Action does not encroach upon, or result in any consequential clearing of Regulated Vegetation.

The Department of Resources has confirmed that the proposal is not considered a "Relevant Purpose" and therefore is not prohibited development under the Planning Regulation. Refer to **Section 6.1** of this report and **Appendix M** for confirmation letter provided by the Department for further information.

4.11. SPECIALIST REPORTING

As discussed with Council, the following specialist reports have been prepared in support of the Development Application:

- Traffic Assessment Report, prepared by *Urbis*;
- Bushfire Hazard Assessment and Mitigation Plan, prepared by *Rob Friend and Associates Pty Ltd*;
- Noise Assessment Report, prepared by *WSP*;

- Social and Economic Impact Assessment Report, prepared by *Urbis*;
- Ecological and Environmental Approvals Report, prepared by *28South*; and
- Heritage Impact Assessment, prepared by *Urbis*.

The Applicant notes that the following specialist reports originally explored a proposal which included development over three lots (including Lot 2 on SP302825 to the south). As a result of ongoing detailed design, this lot has been removed from the proposal and is not included in this Development Application. While the following reports provide an assessment over all three allotments, it is confirmed that no development is proposed over Lot 2. For further information on the extent of proposed works, please refer to **Sections 4.1-4.10** of this report.

4.11.1. Transport Assessment Report

Urbis Ltd has completed a traffic and transport engineering study in relation to the proposed renewable energy facility on the site for both construction and operation. The report assessed the proposed solar farm against compliance with Burdekin Shire Council Planning Scheme and the Department of Transport and Main Road's (DTMR's) Guide to Traffic Impact Assessment. The findings of the assessment are summarised below, the report in its entirety can be found in **Appendix G**.

- Heavy vehicles will utilise the Bruce Highway, Upper Haughton Road, Barratta Road and Keith Venables Road to transport material to and from the site;
- Access to the site is provided via Keith Venables Road which is located to the east of Lot 2 on SP302825. Access to Lots 1 and 6 from Keith Venables Road is facilitated over an existing access easement and internal road that runs across Lot 2, connecting Keith Venables Road to the boundary of Lot 1 (Easement 718741216). Access across Lot 1, over the Powerlink easement and across Lot 2 is similarly facilitated through existing internal roads and access easements;
- Additional internal access between proposed solar arrays and substations is facilitated via new internal roads as shown on the Proposed Development Plans included in **Appendix C**;
- Access to the solar arrays and substations for maintenance will be achieved via new internal roads;
- During peak construction and operations, the site is expected to generate a total of 126 light vehicles and 11 heavy vehicles during the AM and PM peak hours;
- Analysis of the impacted intersections demonstrated that all four studies intersections will operate well within acceptable levels;
- The net delay increase was less than DTMR's 5% threshold and as such, no mitigation techniques are required;
- Overall risk score of the state-controlled road network is not expected to change; and
- Pavement impact assessment demonstrated that during construction and the 20-year of operations assessment, the site is not anticipated to require pavement contributions.

4.11.2. Bushfire Hazard Assessment and Mitigation Plan

A Bushfire Hazard Assessment and Mitigation Plan has been prepared by Rob Friend and Associates Pty Ltd in support of this development application. This report has outlined findings from both a desktop analysis and site inspection, to inform a bushfire management plan. The findings and conclusions are outlined below.

- The principal bushfire hazard relative to the proposed renewable energy park are along the right bank and flood plain to the north of the development site.
- The area of retained vegetation within the south-eastern corner of Lot 6 is located more than 100 metres from any area of significant bushfire hazard and is therefore unlikely to become involved in a vegetation fire.
- Solar farm infrastructure is not particularly flammable, however electrical storage and transmitting infrastructure could be considered to be essential community infrastructure and as such they need to be located no closer than a distance which is no less than that which is exposed to a Radiant heat flux of 10kW/m^2.

- The SPP technical guideline requires essential community infrastructure (which are referred to in the Scheme as Critical Infrastructure) and vulnerable uses are to be located no closer than a distance which achieves a Radiant heat flux exposure of 10kW/m^2.
- The Fire Management Plan recommends firebreaks to be construction around the perimeter of the proposal, which will be supported by on site water tanks.
- Vegetation management will also occur to ensure the ecological and biodiversity values of the vegetated areas are maintained and enhanced however, unless required for that purpose, no controlled burning will be undertaken within the patch to the north of the development site.

Refer to the Bushfire Hazard Assessment and Mitigation Plan in **Appendix H** for further information.

4.11.3. Noise Assessment Report

A Noise Assessment Report has been prepared by WSP to accompany this application. This Report assesses the existing site and noise environment, which due to the rural, low-density nature of the locality, is very low. An assessment of the proposal development has been undertaken to assess potential impacts and mitigation measures required.

The findings of this concluded that impacts may occur during construction, however the extent of severity of these impacts will be reduced substantially through the adoption of management measures and through the Construction Noise Management Plan. These mitigation measures will be determined through the Construction Noise Management Plan post-approval at which point the extent of potential noise emitters will be known. No mitigation measures are required during operation of the solar farm as no exceedances of noise goals have been predicted during the operational phase.

Refer to the Noise Assessment Report in **Appendix I** for further information.

4.11.4. Social and Economic Impact Assessment

Urbis have prepared a Social and Economic Impact Assessment to accompany this development application, which is included within **Appendix J**. This report provides the following conclusions:

- Direct economic benefits during the construction and development phase of the proposed development are identified in the form of employment and value-added benefits. The total estimated capital investment value of the entire development is $2.4 billion (incl. GST).
- The direct and indirect employment benefits according to the REMPLAN analysis concluded that 400 direct jobs, and 935 indirect jobs would be created over the six year development period.
- In comparison, the direct and indirect employment benefits of the existing 300ha sugar cane farm according to the REMPLAN provided a total of 4 jobs (direct and indirect). Even when contemplating the site in its entirety for sugar cane farming uses (i.e. 1,748ha), to reflect the economic impact of the loss of agricultural land being utilised across the site, at most, estimates 16 total jobs.
- The operation of the entirety of the site (1,128.8ha) for sugar cane farming would contribute value added annual contributions to the Gross State Product (GSP) in the realm of $4.5 million per annum. Once complete, the proposed solar farm facilities will generate ongoing GSP of $26.5 million per annum.
- When removing the existing sugar cane farm on the site from Burdekin Shire's LGA, the number of sugar cane farms is only expected to decrease by 0.3%.
- Once the proposed development is complete and operational, it has the potential to deliver an extra 1,869 MWp of renewable energy to Australia.

4.11.5. Community Engagement Outcomes Report

Urbis have prepared an Engagement Outcomes Report to accompany this development application. The report was prepared in line with the Queensland Government's Solar Farm Guidelines and the International Association of Public Participation's (IAP2) Public Participation Spectrum, and is included within **Appendix N**. This report provides the following insights:

- Cambridge consulted with the neighbours directly bordering the site via series of letters, phone calls, and meetings that were held face-to-face. Eight neighbouring landowners opted in for a one-on-one briefing;

- Consultation with direct neighbours included providing them with an overview of the proposal and the ability to ask questions of the project team;
- Consultation with relevant Registered Aboriginal Parties is ongoing in accordance with preparing a Duty of Care Assessment (DoCA) in accordance with the Aboriginal Cultural Heritage Act 2003;
- Of the 10 adjoining land owners, only one neighbour noted any concerns and was in relation to increased traffic on Black Road, the nine other neighbours had no objections;
- Urbis has attempted to consult with local government councillors, a State MP, and a Federal Government MP, however, at the time of the report has received no feedback.

4.11.6. Ecological and Environmental Approvals Report

28South have prepared an Ecological and Environmental Approvals Report for the proposed development, which is included within **Appendix K**. This report provides the following conclusions:

- The site has been previously subject to significant historical disturbance in the form of clearing and operates presently as a cane farm/ rested pastural paddocks.
- The proposal is sited and designed to utilise existing cleared lands and nearby electricity infrastructure, which allows for ecological assets on site to be avoided and the existing environmental values on the site to be retained.
- Water demand will be reduced the cease of agricultural purposes on the site. Through this, fertiliser nutrient loads and excess runoff associated with this farming practice will be reduced, which indirectly contribute to the betterment of aquatic and marine environments associated with the downstream catchment.
- The proposal will result in the reestablishment of native grass species, which will promote forage supply in the form of insects and native grain.
- No clearing of native vegetation is proposed on the site, and all solar farm arrays and infrastructure avoid mapped areas of vegetation. A buffer of 37.5m has been adopted from edges of vegetation to solar arrays as required under the legislation.
- The proposal has been concurrently referred to the Commonwealth for assessment against the provisions of the EPBC Act. This assessment will run concurrently with the MCU application to BSC, with the project being referred as being 'Not a Controlled Action'. Should the project receive this determination from the DCCEEW, the footprint and works associated with the project will maintain legal surety under the EPBC Act.
- The proposal demonstrates compliance with the Environmental Area Overlay Code and higher level considerations of the Strategic Framework, as well as relevant State environmental statutory considerations.

Overall, the proposal positively contributes to a clean energy future, whilst having minimal impact on existing environmental features. The proposed development effectively avoids areas of significance to ensure compliance with relevant statutory provisions. Refer to **Appendix K** for further information.

4.11.7. Flood Study Assessment and Mapping

WMS have prepared a high-level Flood Study Assessment for the development, which is included within **Appendix L**. This report provides the follow conclusions:

- Flood modelling shows that the site is subject to mainstream flooding from Oaky Creek, and overland flow from the local catchment.
- The northern portion of the site is mostly affected by overland flow, while the south-eastern portion is affected by a combination of overland flow and outbreaks from Oaky Creek.
- The area is subject to overland flow from the local catchment; however, overland flow depths remain generally below 300mm and velocities remain below 0.5m/s.
- The northern portion of the site is traversed by an overland flow path which drains in an eastern direction towards the balancing storage and the Sunwater irrigation channel. Peak flood depths along this flow path are generally below 500mm.

4.11.8. Viewshed Analysis and Preliminary Visual Advice

Urbis have prepared a Viewshed Analysis and Preliminary Visual Advice to support the proposal. This advice concludes that:

- The likely visual catchment of site (Lots 1 & 6) based on analysis of the viewshed map and aerial photography is considered low and constrained from both the private and public domain locations.
- Visibility from, and the potential visual impact on private dwellings is likely **low** due to:
  - Vegetation immediately surrounding the dwellings;
  - Intervening vegetation within the wider landscape;
  - Distances between the dwellings and proposal site.
- Visibility from the public domain and likely visual impacts is likely **low** given:
  - The limited number of publicly accessible roads surrounding the site;
  - Intervening vegetation between roads and the site would likely block views from these locations.
- Surrounding vegetation likely creates a significant filtering and blocking effect which is further increased by the vegetation often extending over large areas of land and creating a visually dense screening effect.

Refer to **Appendix P** for further information.

5. COMMONWEALTH PLANNING FRAMEWORK

5.1. ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The proposed development over the site has been referred to the Commonwealth Government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to obtain confirmation that the development does not affect matters of national environmental significance. The EPBC Act defines nine matters of national environmental significance, which are:

- World heritage properties;
- National heritage places;
- Wetlands of international importance;
- Listed threatened species and ecological communities;
- Listed migratory species;
- Protection of the environment from nuclear actions;
- Commonwealth marine areas;
- The Great Barrier Reef Marine Park; and
- Protection of water resources from coal seam gas development and large coal mining development.

Under the EPBC Act, all actions which may have a significant impact on matters of national environmental significance (defined as 'controlled actions') must receive prior approval from the Minister for the Environment (the Minister). This approval is received through an environmental assessment process, administered by the Department of Agriculture, Water and the Environment (the department). The process is comprised of the following three stages:

1. **Referral** — the proposed development concept is referred to the Minister to determine whether the development includes controlled actions and therefore whether those actions require approval.
2. **Assessment** — the Minister determines the method of assessing the potential impacts of the controlled action, and the assessment is carried out.
3. **Approval** — the Minister decides whether to approve the action and any conditions to attach to an approval.

It is considered that certain types of flora and fauna are the only items that may require a referral. For certainty, an EPBC Referral has been prepared and lodged. This is currently under assessment.

5.2. ABORIGINAL CULTURAL HERITAGE ACT 2003

The *Aboriginal Cultural Heritage Act 2003* and *Torres Strait Islander Cultural Heritage Act 2003* (the Cultural Heritage Acts) require anyone who carries out a land-use activity to exercise a duty of care.

This 'duty of care' means land users must take all reasonable and practicable measures to ensure their activity does not harm Aboriginal or Torres Strait Islander cultural heritage. The duty of care applies to any activity where Aboriginal or Torres Strait Islander cultural heritage is located. This includes cultural heritage located on freehold land and regardless of whether or not it has been identified or recorded in a database.

Consultation with the Aboriginal or Torres Strait Islander party for an area may be necessary if there is a high risk that the activity may harm Aboriginal or Torres Strait Islander cultural heritage.

The cultural heritage duty of care can be met by acting:

- in compliance with gazetted cultural heritage duty of care guidelines;
- under an approved Cultural Heritage Management Plan (CHMP) developed under Part 7 of the Cultural Heritage Acts;

- under a native title agreement or another agreement with an Aboriginal or Torres Strait Islander party that addresses cultural heritage; and
- in compliance with native title protection conditions (for low-impact mineral exploration)—but only if the conditions address cultural heritage.

Due to the existing land uses on the site, it is unlikely that the site has any culturally significant values. However, a cultural heritage assessment is being completed separately to confirm any on site heritage values.

6. STATE AND REGIONAL PLANNING FRAMEWORK

Table 6 below provides an assessment of the State and Regional Planning Framework.

Table 6 – State and Regional Planning Framework

Instrument/Assessment Benchmark	Date of Instrument	Assessment
Planning Act 2016 (**Planning Act**)	10 June 2022	The proposed development is subject to the procedures of Impact Assessment and is to be assessed in accordance with Section 45(5) of the Planning Act.
Development Assessment Rules 2017 Version 1.3 (**DA Rules**)	11 September 2020	The Development Assessment Rules is a statutory instrument made pursuant to Section 68(1) of the Planning Act, regulating the development assessment process.
Planning Regulation 2017 (**Planning Regulation**)	25 August 2023	Schedule 8 of the Planning Regulation identifies Burdekin Shire Council as the assessment manager of the development application. In accordance with Schedule 10 of the Planning Regulation, the development application requires referral for two State matters. Refer to **Section 6.1** below for further details.
State Planning Policy **(SPP)**	3 July 2017	Under the State Planning Policy Mapping, the following state interests were triggered: ▪ Agriculture – Agricultural Land Classification – Class A and B – Important Agricultural Areas ▪ Biodiversity – MSES – Wildlife Habitat (endangered or vulnerable) – MSES – Regulated Vegetation (category R) – MSES – Regulated Vegetation (essential habitat) – MSES – Regulated Vegetation (intersecting a watercourse) – MSES – High ecological significance wetlands ▪ Natural Hazard and Risk Resilience – Flood Hazard Area – Level 1 – Queensland floodplain assessment overlay – Bushfire Prone Area • Medium Potential Bushfire Intensity • Potential Impact Buffer ▪ Energy and Water Supply

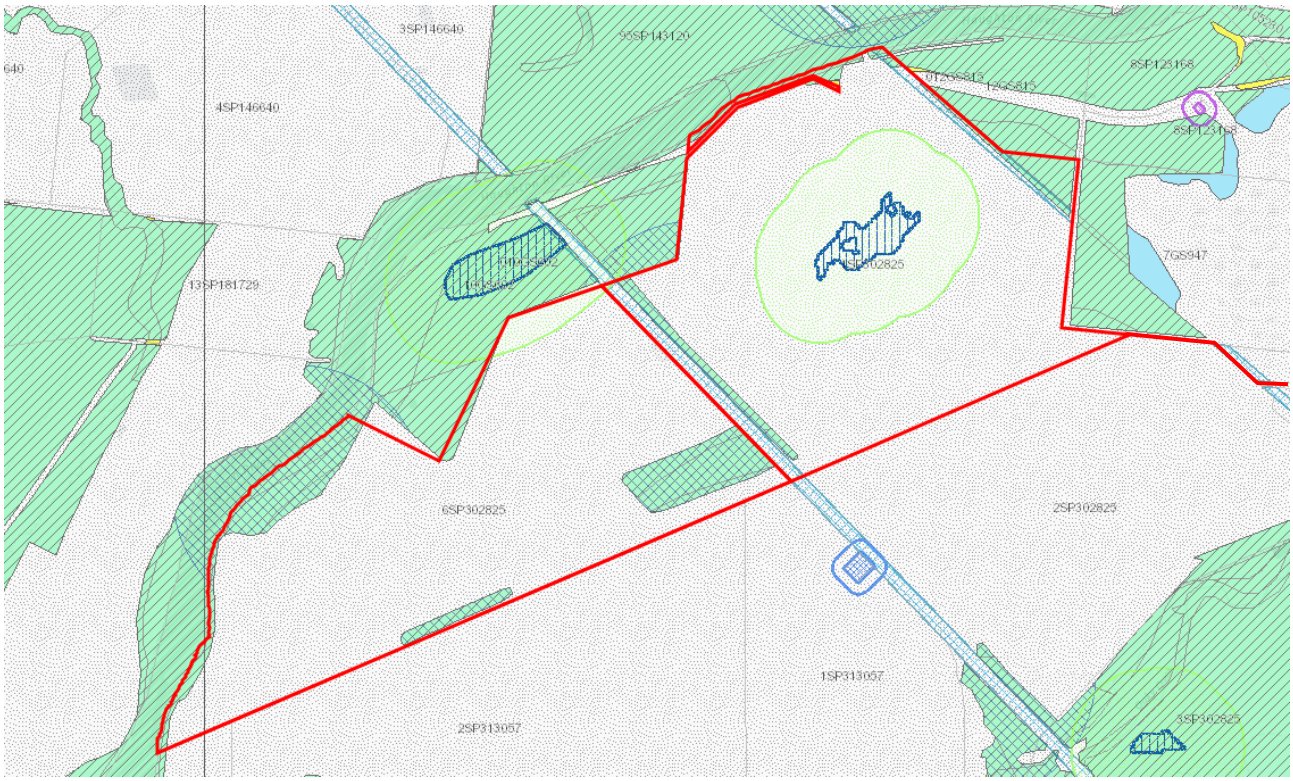
Instrument/Assessment Benchmark	Date of Instrument	Assessment
		– Major electricity infrastructure (Powerlink) – Electricity substation (Powerlink) The applicable *Burdekin Shire Planning Scheme 2022* has been prepared to integrate all State Interests. Therefore, the proposed development does not require any further assessment against SPP benchmarks. Refer to **Appendix D** for SPP checklist.
North Queensland Regional Plan 2020 (**Regional Plan**)	March 2020	The *North Queensland Regional Plan 2020* sets a framework of state interests relevant to development within the region. The regional policies provided by the Regional Plan aim to protect priority agricultural land uses, whilst supporting co-existence opportunities for the resource sector and provide certainty for future of towns. To protect agricultural land uses, the Regional Plan provides mapping which indicates Priority Agricultural Areas (PAA). As shown in **Section 6.2**, Lot 6 on SP302825 and Lot 1 on SP302825, are included in the PAA. As the proposal is for a solar farm, the development will not affect the long-term ability for the site to be used for agricultural purposes. Further justification in this regard is included in **Section 8** below. The Minister has identified that the Planning Scheme appropriately advances the *North Queensland Regional Plan 2020*, as it applies in the Planning Scheme area. Therefore, further assessment against the regional plan is not required.
State Development Assessment Provisions Version 3.0 (**SDAP**)	18 February 2022	A review of the SDAP Mapping identifies the following overlays as being applicable to the site: ▪ Water Resources – Water resource planning area boundaries ▪ Wetland Protection Area – Wetland protection area trigger area – Wetland protection area wetland ▪ Native Vegetation – Category B on the regulated vegetation management map – Category X on the regulated vegetation management map

Instrument/Assessment Benchmark	Date of Instrument	Assessment
		– Category A or B area that is a least concern regional ecosystem – Coastal bioregions and sub-regions – Essential Habitat ▪ Electricity Infrastructure – Powerlink easement – Ergon easement Assessment of the proposed development against the State Assessment criteria for the relevant referral agency role is included in **Appendix E**. This assessment indicates that the proposal requires referral to the Chief Executive Officer as well as Powerlink – refer to **Section 6.1** below for further details.

6.1. REFERAL REQUIREMENTS

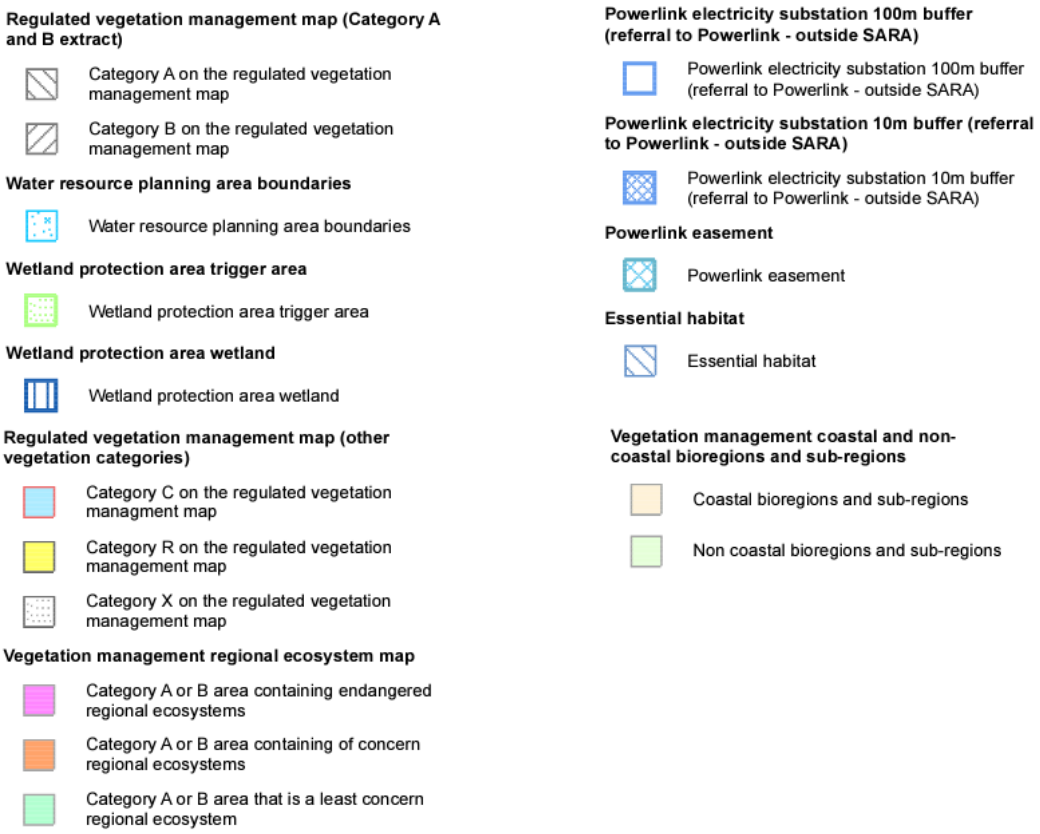
An extract of the State Development Assessment Mapping (DAMS) below shows the site in relation to the identified State interests.

Figure 11 – SDAP Mapping Extract



Source: DSDMIP

Legend



Schedule 10 of the *Planning Regulation 2017* ('the Regulation') identifies State matters which require referral of the development application to State agencies including the State Assessment and Referral Agency (SARA). The matters that are relevant to the development application are outlined in **Table 7** below.

Table 7 – Referral Triggers

Planning Regulation 2017 Reference	Trigger	Referral Agency	Relevant State Codes
Schedule 10, Part 3, Division 4, Table 3	Material change of use that is assessable development under a local categorising instrument • Clearing native vegetation	SARA	State code 16: Native vegetation clearing
Schedule 10, Part 9, Division 2, Table 2	Material change of use of premises near a substation site or subject to an easement • Major electricity infrastructure	Non-SARA Referral – Powerlink	Not Applicable

Planning Regulation 2017 Reference	Trigger	Referral Agency	Relevant State Codes
Schedule 10, Part 20, Division 4, Table 3, Item 1	Material change of use of premises in a wetland protection area	SARA	State code 9: Great Barrier Reef wetland protection areas

To address the abovementioned SARA trigger for clearing of native vegetation, a request for a 'Relevant Purpose Determination' for the proposed works was lodged to the Department of Resources by 28 South Environmental Pty Ltd. This request details that Proposed Action has located all proposed 'built infrastructure' outside of mapped Regulated Vegetation, and specifically designed into the plan of development a suitable buffer of 1.5 times the height of the tallest vegetation or greater within the mapped Regulated Vegetation. Thus, the Proposed Action does not encroach upon, or result in any consequential clearing of Regulated Vegetation.

On 1 February 2024, the Department of Resources confirmed that referral Schedule 10, Part 3, Division 4 of the Planning Regulation is not required, and invited the application for a 'Relevant Purpose Determination' to be withdrawn, on the basis that:

- No clearing that is assessable development will occur as a result of the material change of use; and
- No accepted operational work may be carried out as a result of the material change of use; and
- The development application is not for a preliminary approval that includes a variation request.

A copy of the invitation to withdraw the application for a 'Relevant Purpose Determination' and confirmation of referral requirements for this trigger, is included within **Appendix M**.

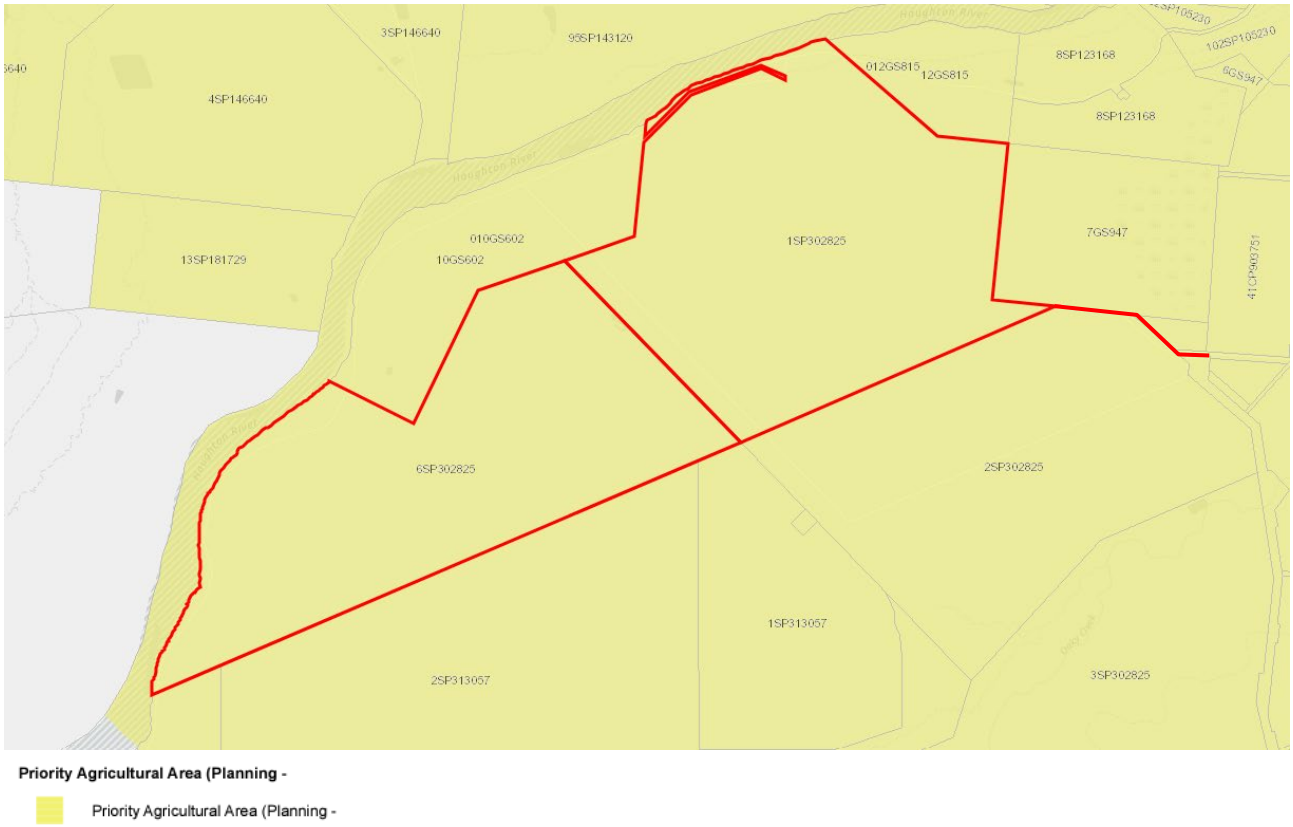
As discussed in **Section 3.2** of this report, DAMS mapping currently shows a wetland protection area (trigger area) is mapped over Lots 6 and 1 on SP302825, and a wetland protection area (wetland) is mapped over Lot 1 on SP302825. Therefore, a referral is triggered for this matter. However, the Applicant has lodged an amendment to the wetland mapping, to amend the abovementioned wetlands which are incorrectly mapped over the site. This is currently being assessed. Given this amendment is not yet final, referral for this trigger will be undertaken for completeness. The proposal will however have no impact on any existing wetlands and separate assessment is expected to be required by SARA. Refer to **Appendix O** for the map amendment request.

6.2. NORTH QUEENSLAND REGIONAL PLAN

The regional policies provided by the North Queensland Regional Plan aim to protect priority agricultural land uses, whilst supporting co-existence opportunities for the resource sector and provide certainty for future of towns. To protect agricultural land uses, the Regional Plan provides mapping which indicates Priority Agricultural Areas (PAA). As shown in **Figure 12**, Lot 6 on SP302825 and Lot 1 on SP302825 are included in the PAA.

As the proposal is for a solar farm the development will not affect the long-term ability for the site to be used for agricultural purposes. Upon decommissioning of the Solar Farm, all structures associated with the facility will be removed and the remaining ground holes will be backfilled to restore the land to a standard appropriate for rural use. Damaged solar cells are to be recycled by resource recovery or repurposing depending on performance quality, and land will be returned to its original condition or higher. Solar farm infrastructure does not sterilise the rural amenity and use of the land, which means that rural activities can be carried out on the site after decommissioning without needing extensive site rehabilitation. Further justification in this regard is included in **Section 8** below.

Figure 12 – Priority Agricultural Areas



Source: North Queensland Regional Plan

6.2.1. Renewable Energy Zones

The Queensland Government's COVID-19 Economic Recovery Plan lays the foundation for longer-term recovery. As part of the recovery plan, the Queensland Government committed to establish 3 Queensland Renewable Energy Zones (REZ) in northern, central, and southern Queensland to foster jobs and growth and help Queensland reach 50% renewables by 2030. This policy initiative is in drafting stages, with formal community consultation having occurred in 2023.

The QREZ's are areas with high quality renewable resources, that can be developed in a coordinated way. The site is located in the Northern REZ, which broadly incorporates an area from Cooktown to Mackay, and inland to Hughenden. This region has some of the strongest wind and solar resources in Australia. The site's location within the REZ highlights the suitability of the site to accommodate a renewable energy project. The proposed solar farm will effectively align with the intent of the REZ and contribute to meeting Queensland's renewable energy targets.

7. LOCAL PLANNING FRAMEWORK

7.1. BURDEKIN SHIRE PLANNING SCHEME 2020

The *Burdekin Shire Planning Scheme 2022* ('Planning Scheme') is the local planning instrument that is used to assess the proposed development. The following section of this report provides an assessment of the proposed development against the relevant provisions of the Planning Scheme.

7.2. LAND USE DEFINITIONS

The proposed development application seeks a development approval for a Material Change of Use for a Renewable Energy Facility (which includes the solar farm use) and Substations. These land uses are defined in Schedule 1 of the Planning Scheme and are outlined in **Table 8** below.

Table 8 – Defined Land Uses

Land Use	Definition
Renewable Energy Facility	a. *Premises used for the generation of electricity or energy from a renewable energy source, including for example, sources of bio-energy, geothermal energy, hydropower, ocean energy, solar energy, or wind energy; but* b. *Does not include the use of premises to generate electricity or energy that is to be used mainly on the premises.*
Substation	*Premises used –* a. *As part of a transmission grid or supply network to –* i. *Convert or transform electrical energy from one voltage to another; or* ii. *Regulate voltage in an electrical circuit; or* iii. *Control electrical circuits; or* iv. *Switch electrical current between circuits; or* b. *For a telecommunications facility for –* i. *Works as defined under the Electricity Act, section 12 (1); or* ii. *Workforce operational and safety communications*

7.3. ZONING

Under the Planning Scheme, the site is designated within the Rural Zone, as shown in **Figure 13** below.

The purpose of the Rural Zone is to:

a. *Provide for rural uses and activities; and*

b. *Provide for other uses and activities that are compatible with—*

i. *Existing and future rural uses and activities; and*

ii. *The character and environmental features of the zone; and*

c. *Maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes*

The proposed development aligns with the intent of the Rural Zone. The proposal responds to all known constraints and will not compromise the site's ability to be converted back to rural purposes. Additionally, the proposed development will not result in the fragmentation or alienation of rural land.

Figure 13 – Zoning Map Extract

Source: Burdekin Shire Planning Scheme Mapping

Legend

Rural Zone

7.4. OVERLAYS

The following overlays under the Planning Scheme have been identified as applicable to the site:

- Agricultural
  - Priority Agricultural Area
  - Agricultural Land Classification (Classes A and B)
- Bushfire Risk
  - Medium Potential Bushfire Hazard
  - Potential Impact Buffer
- Flood hazard
  - QRA Level 1 Floodplain Assessment Area
- Environmental Significance
  - Regional Biodiversity Corridor – NQ Regional Plan 2020
  - MSES – Regulated Vegetation (Essential Habitat)
  - MSES - Regulated Vegetation (High Ecological Significance Wetlands)
  - MSES - Regulated Vegetation (Category R)

- Infrastructure
  - Powerlink high voltage electricity transmission corridor

The relevant Overlays Codes are addressed in **Appendix F**.

7.5. CATEGORY OF ASSESSMENT

7.5.1. Category of development

There are three categories of development. These are accepted development, assessable development, and prohibited development.

The Planning Scheme, being the local categorising instrument for this application, confirms that the category of development for the proposed development is assessable development.

7.5.2. Category of Assessment

Under Table 3.4.9 of the Tables of Assessment for the Rural Zone Code, a material change of use for the development of a Substation is subject to Code Assessment if undertaken by a Public Sector Entity. As the Applicant is a private entity, the development is subject to Impact Assessment. Additionally, a Material Change of Use for Renewable Energy Facility is also subject to Impact Assessment.

There are no applicable overlays which increase the level of assessment for the Material Change of Use component.

Therefore, the proposed development is subject to **Impact Assessment** and therefore assessed against the entire planning scheme.

7.6. ASSESSMENT BENCHMARKS

The following Assessment Benchmarks are relevant to the proposed development. A full assessment against all relevant codes can be found in **Appendix F**.

Table 9 – Applicable Planning Scheme Codes

Primary Codes	Overlay Codes	Prescribed Secondary Codes
Rural Zone Code	Bushfire Hazard Overlay Code Flood Hazard Overlay Code Environmental Significance Overlay Code Regional Infrastructure Overlay Code	Development Works code

8. KEY PLANNING CONSIDERATIONS

The proposed development generally achieves a high level of compliance with the applicable assessment benchmarks. In the majority of circumstances, this is achieved by compliance with the prescribed Acceptable Outcomes (AO) within the applicable assessment benchmarks. In some instances, compliance with certain AO's is not achieved and the corresponding Performance Outcome (PO) have been proposed. A detailed assessment against the Assessment Benchmarks has been provided in **Appendix F**, in the following instances greater justification was needed and therefore they have been provided in the below sections.

8.1. LAND USE

No Acceptable Outcome is provided and therefore the corresponding Performance Outcome **PO31** of the Rural Zone Code is what the proposal has been assessed against. **PO31** states:

> ***PO31***
>
> *Commercial-scale solar and wind farms are located within renewable energy investigation areas. Where commercial-scale solar and wind farms cannot locate in these areas, they are within corridors close to the electricity transmission grid along with other renewable energy facilities.*

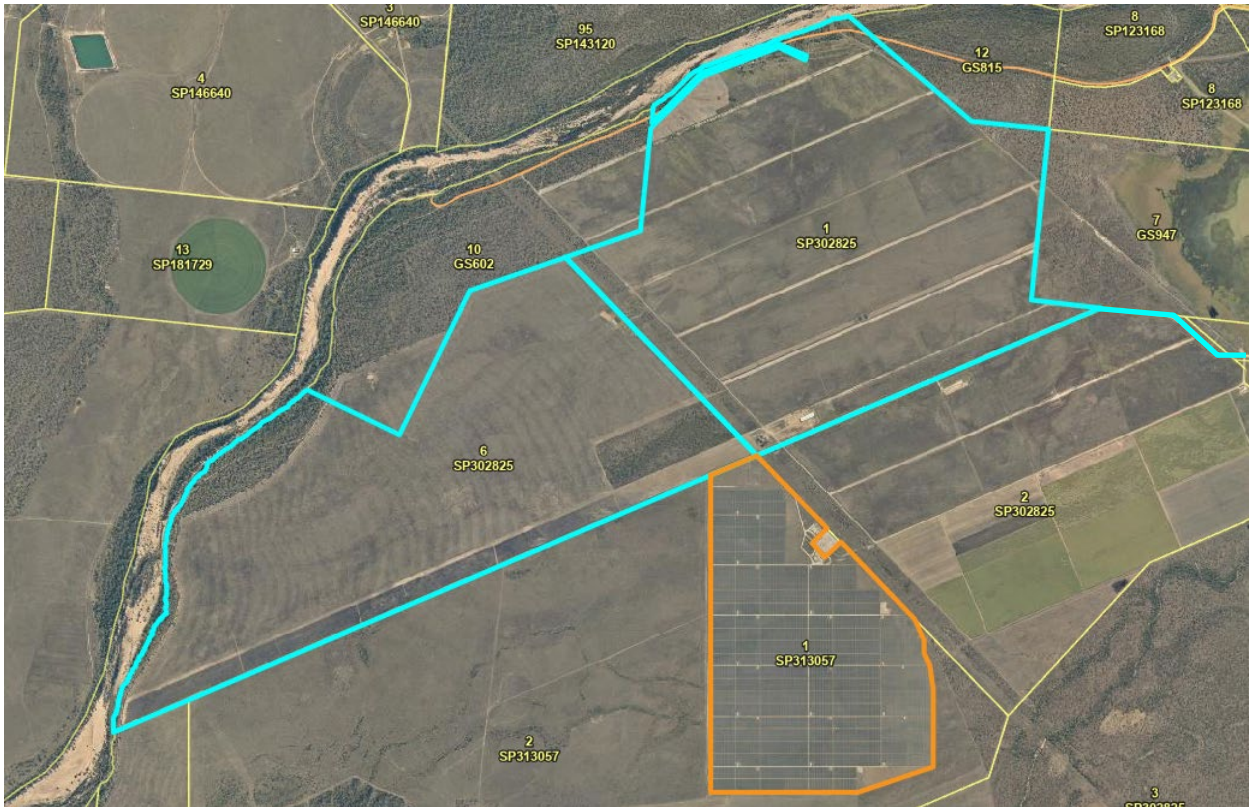
Although the location of the site for the proposed solar farm is not situated within the renewable energy investigation area, it is within very close proximity to these areas. The North Queensland Regional Plan Renewable Energy Investigation Area as illustrated in **Figure 14** below and is situated south of the site.

Figure 14 – Renewable Energy Investigation Area

Source: DAMS Mapping

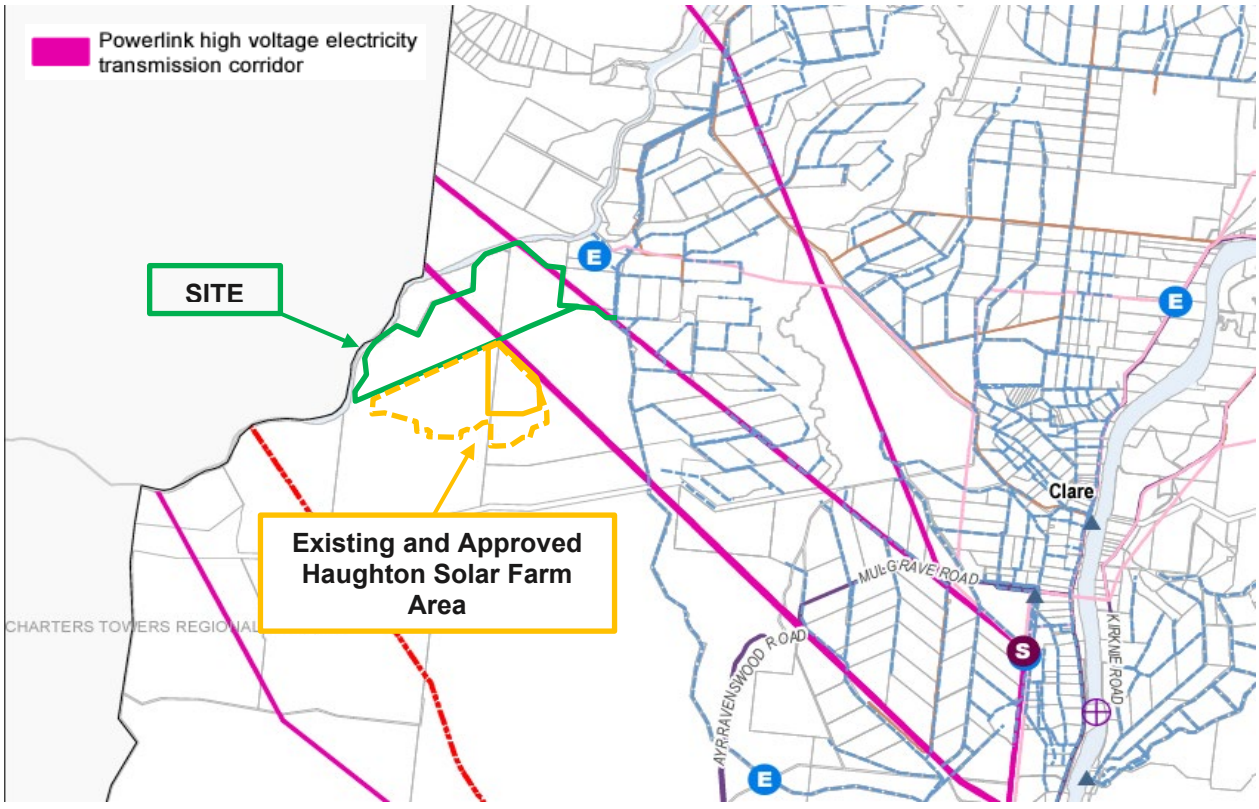
Despite this and having regard to the provisions of the Performance Outcome, the site is well located to accommodate renewable energy facilities. The site is adjacent to the existing Haughton Solar Farm and the proposal therefore benefits from co-location with existing renewable energy infrastructure to create a de-facto renewable energy precinct in itself. Importantly, the site is very well located in regard to electricity infrastructure, with a Powerlink high voltage electricity transmission corridor traversing the site into which the proposal will ultimately be connected. Refer to **Figure 15** below.

Figure 15 – Adjacent Solar Farm and Electricity Infrastructure



Picture 1 Adjacent Haughton Solar Farm (in orange)

Source: QLD Globe



Picture 2 – Powerlink electricity transmission corridor

Source: Burdekin Shire Planning Scheme

In summary, the site sits within an area that is highly accessible to the electricity transmission grid, is adjacent to an existing commercial solar farm development and in proximity to Renewable Energy Investigation Areas in accordance with Performance Outcome **PO31**.

8.2. AGRICULTURAL AND FARMING ACTIVITIES

No Acceptable Outcome is stated and therefore the corresponding Performance Outcomes **PO16** and **PO18** of the Rural Zone Code are the relevant assessment benchmarks in which the proposal is assessed against. These Performance Outcomes state:

> ***PO16***
>
> *Other than for public infrastructure, non-agricultural development within priority agricultural areas does not result in a net loss to agricultural production.*
>
> ***PO18***
>
> *Development does not prejudice the ongoing operation, intensification, or expansion of nearby farming activities.*

The part of the site the subject of this application is not currently used for agricultural purposes, with the surrounding sugar cane farming being conducted on sites which have more than sufficient area to meet these agricultural purposes. Notwithstanding this, it is acknowledged that the site is mapped as being a priority agricultural area under Regional Plan and Local mapping.

As part of the proposed development for a commercial scale solar farm on the site (with ancillary substation) a decommissioning plan has been created which, in the event of closing of the solar farm use, would remove all structures associated with the facility and backfill ground holes to restore the land to a standard appropriate for rural use.

Additionally, solar farm infrastructure does not sterilise the rural amenity of the land, and upon decommissioning would be returned to its original condition or higher. Therefore, the proposed development does not prejudice the long term ability for of the site or surrounds to be intensified for farming activities and there would be no net loss to agricultural production in the longer term.

The Social and Economic Impact Assessment prepared Urbis, includes an assessment of the existing employment benefits and value added, should the site be used for agricultural purposes (sugar cane farming). This Assessment also highlights the expected employment benefits and value added for the proposed development. If the site were to be used for agricultural purposes, at total of 24 jobs would be either directly or indirectly created. This use would also produce a value of $6.4 million per annum through doing so.

In comparison, the proposed development will create 80 direct or indirect jobs and result in an added value of $26.5 million per annum. This Assessment highlights the opportunity to capture greater economic benefits. Through redeveloping the site for renewable energy purposes, the local economy will be bolstered by improved employment opportunities and increased economic activity. For further information, refer to the Social and Economic Impact Assessment in **Appendix J**.

In summary, the proposed development will maintain the ability for the site to be utilised for agricultural purposes in the future, and will in no way limit the ongoing operation of external agricultural activities. The proposal will positively contribute to the local economy and be a direct and indirect source of employment.

9. CONCLUSION

Urbis Ltd has been commissioned by *Cambridge JMD Australia* to prepare this development application for the proposed development at 829 and 834 Keith Venables Road and 667 Black Road, Upper Haughton, formally described as Lot 6 on SP302825, Lot 1 on SP302825, and part of Lot 2 on SP302825.

This development application seeks the following development approval for a Development Permit for Material Change of Use for Renewable Energy Facility (Solar Farm) and Substation in three stages.

The following key planning matters are highlighted in support of this proposal:

- The development protects the rural integrity of surrounding properties and provides the ability for the conversion of the site back to rural purposes following the decommissioning of the land use.
- Due to the nature of the proposed development, the amenity of surrounding rural areas will be maintained. The proposal will not emit pollutants nor create significant noise or light emissions which would affect the amenity of adjoining properties.
- The proposal is designed to avoid known constraints, including flooding, bushfire, and other ecological processes where possible.
- The conversion of the site to a Renewable Energy Facility will provide a sustainable environmental outcome, providing green energy to the locality.

As demonstrated by the assessment provided in this report, the proposed development complies with the outcomes sought by the Planning Scheme and other relevant planning instruments and is therefore submitted for approval.

10. DISCLAIMER

This report is dated 10 April 2024 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Ltd **(Urbis)** opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of CAMBRIDGE JMD AUSTRALIA **(Instructing Party)** for the purpose of Development Application **(Purpose)** and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

In preparing this report, Urbis may rely on or refer to documents in a language other than English, which Urbis may arrange to be translated. Urbis is not responsible for the accuracy or completeness of such translations and disclaims any liability for any statement or opinion made in this report being inaccurate or incomplete arising from such translations.

Whilst Urbis has made all reasonable inquiries it believes necessary in preparing this report, it is not responsible for determining the completeness or accuracy of information provided to it. Urbis (including its officers and personnel) is not liable for any errors or omissions, including in information provided by the Instructing Party or another person or upon which Urbis relies, provided that such errors or omissions are not made by Urbis recklessly or in bad faith.

This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

APPENDIX A PROPERTY SEARCHES

APPENDIX B LAND OWNERS CONSENT

APPENDIX C PROPOSED PLANS

APPENDIX D SPP CHECKLIST

APPENDIX E SDAP CHECKLIST

APPENDIX F ASSESSMENT AGAINST PLANNING SCHEME

APPENDIX G TRANSPORT ASSESSMENT REPORT

APPENDIX H BUSHFIRE HAZARD ASSESSMENT AND MITIGATION PLAN

APPENDIX I NOISE ASSESSMENT REPORT

APPENDIX J SOCIAL AND ECONOMIC IMPACT ASSESSMENT

APPENDIX K ECOLOGICAL AND ENVIRONMENTAL APPROVALS

APPENDIX L FLOOD STUDY ASSESSMENT AND MAPPING

APPENDIX M RELEVANT PURPOSE DETERMINATION

APPENDIX N COMMUNITY ENGAGEMENT OUTCOMES REPORT

APPENDIX O WETLAND AMENDMENT REQUEST

URBIS

APPENDIX P VIEWSHED ANALYSIS AND PRELIMINARY VISUAL ADVICE

DA Form 1 – Development application details

Approved form (version 1.4 effective 15 December 2023) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application **involving code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) **and** parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008.* For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

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*)	Cambridge JMD Australia
Contact name *(only applicable for companies)*	C/- Urbis Ltd
Postal address *(P.O. Box or street address)*	Level 32, 300 George Street
Suburb	Brisbane City
State	QLD
Postcode	4000
Country	Australia
Contact number	07 3007 3800
Email address *(non-mandatory)*	slam@urbis.com.au | fduffy@urbis.com.au
Mobile number *(non-mandatory)*	+61 7 3007 3857 | +61 7 3007 3523
Fax number *(non-mandatory)*	
Applicant's reference number(s) *(if applicable)*	P0044793

2) Owner's consent
2.1) Is written consent of the owner required for this development application?
☒ Yes – the written consent of the owner(s) is attached to this development application ☐ No – proceed to 3)

PART 2 – LOCATION DETAILS

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

***Note**: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see DA Forms Guide: Relevant plans.*

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).*

	Unit No.	Street No.	Street Name and Type	Suburb
a)		829 834	Keith Venables Road Keith Venables Road	Upper Haughton Upper Haughton
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4809	6 2 (part of)	SP302825 SP302825	Burdekin Shire Burdekin Shire
b)	Unit No.	Street No.	Street Name and Type	Suburb
		667	Black Road	Upper Haughton
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4809	1	SP302825	Burdekin Shire

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 this development application and the details of these premises have been attached in a schedule to this development application

☒ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

☒ In or adjacent to a water body or watercourse or in or above an aquifer

Name of water body, watercourse or aquifer:	Adjacent to the Haughton River

☐ On strategic port land under the *Transport Infrastructure Act 1994*

Lot on plan description of strategic port land:	
Name of port authority for the lot:	

☐ In a tidal area

Name of local government for the tidal area *(if applicable)*:	
Name of port authority for tidal area *(if applicable)*:	

☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*	
Name of airport:	
☐ Listed on the Environmental Management Register (EMR) under the *Environmental Protection Act 1994*	
EMR site identification:	
☐ Listed on the Contaminated Land Register (CLR) under the *Environmental Protection Act 1994*	
CLR site identification:	

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see DA Forms Guide.

☒ Yes – All easement locations, types and dimensions are included in plans submitted with this development application

☐ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? *(tick only one box)*

☒ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☐ Code assessment ☒ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots)*:

Development of a Solar Farm and substations in three stages

e) Relevant plans

***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms guide: Relevant plans.*

☒ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect

a) What is the type of development? *(tick only one box)*

☐ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

☐ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☐ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots)*:

e) Relevant plans

***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.*

☐ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

☐ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application

☒ Not required

Section 2 – Further development details

7) Does the proposed development application involve any of the following?	
Material change of use	☒ Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	☐ Yes – complete division 2
Operational work	☐ Yes – complete division 3
Building work	☐ Yes – complete *DA Form 2 – Building work details*

Division 1 – Material change of use

***Note**: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.*

8.1) Describe the proposed material change of use			
Provide a general description of the proposed use	Provide the planning scheme definition *(include each definition in a new row)*	Number of dwelling units *(if applicable)*	Gross floor area (m^2) *(if applicable)*
Solar Farm	Renewable Energy Facility	N/A	N/A
Substations	Substation	N/A	N/A

8.2) Does the proposed use involve the use of existing buildings on the premises?
☐ Yes
☒ No

Division 2 – Reconfiguring a lot

***Note**: This division is only required to be completed if any part of the development application involves reconfiguring a lot.*

9.1) What is the total number of existing lots making up the premises?

9.2) What is the nature of the lot reconfiguration? *(tick all applicable boxes)*	
☐ Subdivision *(complete 10))*	☐ Dividing land into parts by agreement *(complete 11))*
☐ Boundary realignment *(complete 12))*	☐ Creating or changing an easement giving access to a lot from a constructed road *(complete 13))*

10) Subdivision				
10.1) For this development, how many lots are being created and what is the intended use of those lots:				
Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				

10.2) Will the subdivision be staged?	
☐ Yes – provide additional details below ☐ No	
How many stages will the works include?	
What stage(s) will this development application apply to?	

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?				
Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment			
12.1) What are the current and proposed areas for each lot comprising the premises?			
Current lot		Proposed lot	
Lot on plan description	Area (m^2)	Lot on plan description	Area (m^2)
12.2) What is the reason for the boundary realignment?			

13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? *(attach schedule if there are more than two easements)*				
Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? *(e.g. pedestrian access)*	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work

***Note**: This division is only required to be completed if any part of the development application involves operational work.*

14.1) What is the nature of the operational work?		
☐ Road work	☐ Stormwater	☐ Water infrastructure
☐ Drainage work	☐ Earthworks	☐ Sewage infrastructure
☐ Landscaping	☐ Signage	☐ Clearing vegetation
☐ Other – please specify:		
14.2) Is the operational work necessary to facilitate the creation of new lots? *(e.g. subdivision)*		
☐ Yes – specify number of new lots:		
☐ No		
14.3) What is the monetary value of the proposed operational work? *(include GST, materials and labour)*		
$		

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application
Burdekin Shire Council
16) Has the local government agreed to apply a superseded planning scheme for this development application?
☐ Yes – a copy of the decision notice is attached to this development application
☐ The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
☒ No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?
***Note**: A development application will require referral if prescribed by the* Planning Regulation 2017.

☐ No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6

Matters requiring referral to the **Chief Executive of the *Planning Act 2016***:

☒ Clearing native vegetation
☐ Contaminated land *(unexploded ordnance)*
☐ Environmentally relevant activities (ERA) *(only if the ERA has not been devolved to a local government)*
☐ Fisheries – aquaculture
☐ Fisheries – declared fish habitat area
☐ Fisheries – marine plants
☐ Fisheries – waterway barrier works
☐ Hazardous chemical facilities
☐ Heritage places – Queensland heritage place *(on or near a Queensland heritage place)*
☐ Infrastructure-related referrals – designated premises
☐ Infrastructure-related referrals – state transport infrastructure
☐ Infrastructure-related referrals – State transport corridor and future State transport corridor
☐ Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels
☐ Infrastructure-related referrals – near a state-controlled road intersection
☐ Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas
☐ Koala habitat in SEQ region – key resource areas
☐ Ports – Brisbane core port land – near a State transport corridor or future State transport corridor
☐ Ports – Brisbane core port land – environmentally relevant activity (ERA)
☐ Ports – Brisbane core port land – tidal works or work in a coastal management district
☐ Ports – Brisbane core port land – hazardous chemical facility
☐ Ports – Brisbane core port land – taking or interfering with water
☐ Ports – Brisbane core port land – referable dams
☐ Ports – Brisbane core port land – fisheries
☐ Ports – Land within Port of Brisbane's port limits *(below high-water mark)*
☐ SEQ development area
☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
☐ SEQ northern inter-urban break – tourist activity or sport and recreation activity
☐ SEQ northern inter-urban break – community activity
☐ SEQ northern inter-urban break – indoor recreation
☐ SEQ northern inter-urban break – urban activity
☐ SEQ northern inter-urban break – combined use
☐ Tidal works or works in a coastal management district
☐ Reconfiguring a lot in a coastal management district or for a canal
☐ Erosion prone area in a coastal management district
☐ Urban design
☐ Water-related development – taking or interfering with water
☐ Water-related development – removing quarry material *(from a watercourse or lake)*
☐ Water-related development – referable dams
☐ Water-related development –levees *(category 3 levees only)*
☒ Wetland protection area

Matters requiring referral to the **local government:**

☐ Airport land

☐ Environmentally relevant activities (ERA) (*only if the ERA has been devolved to local government)*

☐ Heritage places – Local heritage places

Matters requiring referral to the **Chief Executive of the distribution entity or transmission entity:**

☒ Infrastructure-related referrals – Electricity infrastructure

Matters requiring referral to:

- The **Chief Executive of the holder of the licence**, if not an individual
- The **holder of the licence**, if the holder of the licence is an individual

☐ Infrastructure-related referrals – Oil and gas infrastructure

Matters requiring referral to the **Brisbane City Council:**

☐ Ports – Brisbane core port land

Matters requiring referral to the **Minister responsible for administering the *Transport Infrastructure Act 1994*:**

☐ Ports – Brisbane core port land *(where inconsistent with the Brisbane port LUP for transport reasons)*

☐ Ports – Strategic port land

Matters requiring referral to the **relevant port operator**, if applicant is not port operator**:**

☐ Ports – Land within Port of Brisbane's port limits *(below high-water mark)*

Matters requiring referral to the **Chief Executive of the relevant port authority:**

☐ Ports – Land within limits of another port *(below high-water mark)*

Matters requiring referral to the **Gold Coast Waterways Authority:**

☐ Tidal works or work in a coastal management district *(in Gold Coast waters)*

Matters requiring referral to the **Queensland Fire and Emergency Service:**

☐ Tidal works or work in a coastal management district *(involving a marina (more than six vessel berths))*

18) Has any referral agency provided a referral response for this development application?

☐ Yes – referral response(s) received and listed below are attached to this development application

☒ No

Referral requirement	Referral agency	Date of referral response

Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application *(if applicable).*

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules

☒ I agree to receive an information request if determined necessary for this development application

☐ I do not agree to accept an information request for this development application

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

- *that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development 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.

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? *(e.g. a preliminary approval)*

☐ Yes – provide details below or include details in a schedule to this development application
☒ No

List of approval/development application references	Reference number	Date	Assessment manager
☐ Approval ☐ Development application			
☐ Approval ☐ Development application			

21) Has the portable long service leave levy been paid? *(only applicable to development applications involving building work or operational work)*

☐ Yes – a copy of the receipted QLeave form is attached to this development application
☐ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid
☒ Not applicable *(e.g. building and construction work is less than $150,000 excluding GST)*

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

☐ Yes – show cause or enforcement notice is attached
☒ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an **Environmentally Relevant Activity (ERA)** under section 115 of the *Environmental Protection Act 1994*?

☐ Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below
☒ No

***Note**: Application for an environmental authority can be found by searching "ESR/2015/1791" as a search term at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.*

Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			

☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a **hazardous chemical facility**?

☐ Yes – *Form 69: Notification of a facility exceeding 10% of schedule 15 threshold* is attached to this development application
☒ No

***Note**: See www.business.qld.gov.au for further information about hazardous chemical notifications.*

Clearing native vegetation

23.3) Does this development application involve **clearing native vegetation** that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)

☒ No

***Note**: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.*

2. See https://www.qld.gov.au/environment/land/vegetation/applying for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a **prescribed environmental matter** under the *Environmental Offsets Act 2014*?

☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter

☒ No

***Note**: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.*

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

☐ Yes – the development application involves premises in the koala habitat area in the koala priority area

☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area

☒ No

***Note**: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.des.qld.gov.au for further information.*

Water resources

23.6) Does this development application involve **taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the *Water Act 2000***?

☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development

☒ No

***Note**: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au for further information.*

DA templates are available from https://planning.dsdmip.qld.gov.au/. If the development application involves:

- *Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1*
- *Taking or interfering with water in a watercourse, lake or spring: complete DA Form1 Template 2*
- *Taking overland flow water: complete DA Form 1 Template 3.*

Waterway barrier works

23.7) Does this application involve **waterway barrier works?**

☐ Yes – the relevant template is completed and attached to this development application

☒ No

DA templates are available from https://planning.dsdmip.qld.gov.au/. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve **aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants?**

☐ Yes – an associated *resource* allocation authority is attached to this development application, if required under the *Fisheries Act 1994*

☒ No

***Note**: See guidance materials at www.daf.qld.gov.au for further information.*

Quarry materials from a watercourse or lake

23.9) Does this development application involve the **removal of quarry materials from a watercourse or lake** under the *Water Act 2000?*

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

***Note**: Contact the Department of Natural Resources, Mines and Energy at www.dnrme.qld.gov.au and www.business.qld.gov.au for further information.*

Quarry materials from land under tidal waters

23.10) Does this development application involve the **removal of quarry materials from land under tidal water** under the *Coastal Protection and Management Act 1995?*

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
☒ No

***Note**: Contact the Department of Environment and Science at www.des.qld.gov.au for further information.*

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the Water Supply Act)?

☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the Water Supply Act is attached to this development application
☒ No

***Note**: See guidance materials at www.dnrme.qld.gov.au for further information.*

Tidal work or development within a coastal management district

23.12) Does this development application involve **tidal work or development in a coastal management district**?

☐ Yes – the following is included with this development application:
- ☐ Evidence the proposal meets the code for assessable development that is prescribed tidal work *(only required if application involves prescribed tidal work)*
- ☐ A certificate of title

☒ No

***Note**: See guidance materials at www.des.qld.gov.au for further information.*

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

☐ Yes – details of the heritage place are provided in the table below
☒ No

***Note**: See guidance materials at www.des.qld.gov.au for information requirements regarding development of Queensland heritage places.*

Name of the heritage place:		Place ID:	

Brothels

23.14) Does this development application involve a **material change of use for a brothel**?

☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*
☒ No

Decision under section 62 of the *Transport Infrastructure Act 1994*

23.15) Does this development application involve new or changed access to a state-controlled road?

☐ Yes – this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
☒ No

Walkable neighbourhoods assessment benchmarks under Schedule 12A of the Planning Regulation
23.16) Does this development application involve reconfiguring a lot into 2 or more lots in certain residential zones (except rural residential zones), where at least one road is created or extended?
☐ Yes – Schedule 12A is applicable to the development application and the assessment benchmarks contained in schedule 12A have been considered ☒ No ***Note**: See guidance materials at www.planning.dsdmip.qld.gov.au for further information.*

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist	
I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17 ***Note**: See the Planning Regulation 2017 for referral requirements*	☒ Yes
If building work is associated with the proposed development, Parts 4 to 6 of *DA Form 2 – Building work details* have been completed and attached to this development application	☐ Yes ☒ Not applicable
Supporting information addressing any applicable assessment benchmarks is with the development application ***Note**: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, 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 aspects of this development application. For further information, see DA Forms Guide: Relevant plans.*	☒ Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (*see 21*)	☐ Yes ☒ Not applicable

25) Applicant declaration
☒ By making this development application, I declare that all information in this development 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 assessment manager and any referral agency for the development 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 assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development 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 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received: | Reference number(s):

Notification of engagement of alternative assessment manager	
Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

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			

Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Dye Durham
Suite 1, Level 3
550 Bourke Street
MELBOURNE VIC 3001

Transaction ID: 50862634 EMR Site Id: 01 June 2023
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 1 Plan: SP302825
667 BLACK RD
UPPER HAUGHTON

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please email emr.clr.registry@des.qld.gov.au

Administering Authority

Department of Environment and Science (DES)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454, Brisbane QLD 4001, AUSTRALIA
www.des.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Dye Durham
Suite 1, Level 3
550 Bourke Street
MELBOURNE VIC 3001

Transaction ID: 50862632 EMR Site Id: 01 June 2023
Cheque Number:
Client Reference:

This response relates to a search request received for the site:
Lot: 6 Plan: SP302825
834 KEITH VENABLES RD
UPPER HAUGHTON

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if DES has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if DES has not been notified

If you have any queries in relation to this search please email emr.clr.registry@des.qld.gov.au

Administering Authority

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 44603132
Search Date: 01/06/2023 09:31 Title Reference: 51144185
Date Created: 17/05/2018

Previous Title: 21398053
50255509

REGISTERED OWNER

Dealing No: 718741200 11/05/2018

DAVID RICHARD VIVIAN COX

ESTATE AND LAND

Estate in Fee Simple

LOT 1 SURVEY PLAN 302825
Local Government: BURDEKIN

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 21398053 (Lot 4 on CP GS602)
(Lot 11 on CP GS602)
Deed of Grant No. 40017878 (Lot 30 on SP 100843)

2. EASEMENT No 602801225 (A478) 30/09/1970
burdening the land to
THE NORTHERN ELECTRIC AUTHORITY OF QUEENSLAND
OVER EASEMENT A ON GS431

3. TRANSFER No 716066594 10/10/2014 at 09:52
EASEMENT: 602801225 (A478)
QUEENSLAND ELECTRICITY TRANSMISSION CORPORATION LIMITED
A.C.N. 078 849 233

4. EASEMENT No 602801226 (A796) 26/03/1974
burdening the land to
THE NORTHERN ELECTRIC AUTHORITY OF QUEENSLAND
OVER EASEMENT A ON CP GS683

5. TRANSFER No 716066556 10/10/2014 at 09:50
EASEMENT: 602801226 (A796)
QUEENSLAND ELECTRICITY TRANSMISSION CORPORATION LIMITED
A.C.N. 078 849 233

6. RESUMPTION EASEMENT No 602801227 (R1360) 28/07/1988
Burdening the land
TOWNSVILLE-THURINGOWA WATER SUPPLY BOARD
OVER EASEMENT G ON GS1039

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 44603132
Search Date: 01/06/2023 09:31 Title Reference: 51144185
Date Created: 17/05/2018

EASEMENTS, ENCUMBRANCES AND INTERESTS

7. EASEMENT IN GROSS No 601427252 (T421893K) 02/06/1989
   Burdening
   THE LAND
   TO QUEENSLAND ELECTRICITY COMMISSION
   OVER EASEMENT A ON CP GS672
   UNDER SECTION 285 OF THE LAND ACT

8. TRANSFER No 703675385 05/11/1999 at 08:59
   EASEMENT IN GROSS: 601427252 (T421893K)
   QUEENSLAND ELECTRICITY TRANSMISSION CORPORATION LIMITED
   A.C.N. 078 849 233

9. MORTGAGE No 706426785 11/03/2003 at 13:27
   NATIONAL AUSTRALIA BANK LIMITED A.B.N. 12 004 044 937

10. EASEMENT No 718741216 11/05/2018 at 12:50
    benefiting the land over
    EASEMENT X ON SP302825

11. EASEMENT No 718741245 11/05/2018 at 12:58
    burdening the land to
    LOTS 2 - 7 ON SP302825 OVER
    EASEMENT W ON SP302825

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
711488436	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	10/03/2008 10:19	CURRENT

UNREGISTERED DEALINGS - NIL

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ DYE & DURHAM

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 44603184
Search Date: 01/06/2023 09:34 Title Reference: 51144190
Date Created: 17/05/2018

Previous Title: 21398053

REGISTERED OWNER

Dealing No: 718741200 11/05/2018

DAVID RICHARD VIVIAN COX

ESTATE AND LAND

Estate in Fee Simple

LOT 6 SURVEY PLAN 302825
Local Government: BURDEKIN

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 21398053 (Lot 4 on CP GS602)

2. MORTGAGE No 706426785 11/03/2003 at 13:27
NATIONAL AUSTRALIA BANK LIMITED A.B.N. 12 004 044 937

3. EASEMENT No 718741216 11/05/2018 at 12:50
benefiting the land over
EASEMENT X ON SP302825

4. EASEMENT No 718741229 11/05/2018 at 12:54
burdening the land to
LOTS 4 AND 5 ON SP302825 OVER
EASEMENT Z ON SP302825

5. EASEMENT No 718741232 11/05/2018 at 12:55
burdening the land to
LOTS 4-5 ON SP302825 AND LOT 7 ON SP302825 OVER
EASEMENT S ON SP302825

6. EASEMENT No 718741245 11/05/2018 at 12:58
benefiting the land over
EASEMENT W ON SP302825

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
711488436	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	10/03/2008 10:19	CURRENT

UNREGISTERED DEALINGS - NIL

CURRENT TITLE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 44603184
Search Date: 01/06/2023 09:34 Title Reference: 51144190
Date Created: 17/05/2018

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ DYE & DURHAM

IRS

COPY

13 FEB,
~~31 January~~ 2024

The Assessment Manager
Burdekin Shire Council
145 Young St
Ayr QLD 4807

Dear Sir / Madam,

RE: OWNER'S CONSENT TO THE MAKING OF A DEVELOPMENT APPLICATION UNDER THE PLANNING ACT 2016

David Richard Vivian Cox is the registered owner of the site located at 829 and 834 Keith Venables Road and 667 Black Road, Upper Haughton, formally described as Lots 1, 2 and 6 on SP302825.

David Richard Vivian Cox hereby consents to the making of a Development Application at the above-mentioned property by Urbis Pty Ltd on behalf of *Cambridge JMD Australia* (the Applicant) under the *Planning Act 2016*.

Yours sincerely,

.....David R. Cox.....
Signature

.....DAVID RICHARD VIVIAN COX.....
Name

13 / 2 / 2024

LEGEND

- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- 37.5M BUFFER TO CONSTRAINED VEGETATION
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD
- 20,000L WATER TANK

158.7 SETBACK FROM CONSTRAINED VEGETATION

340.9 SETBACK FROM CONSTRAINED VEGETATION

SETBACK FROM 49.9 CONSTRAINED VEGETATION

42.5 SETBACK FROM CONSTRAINED VEGETATION

SETBACK FROM 33 PROPERTY BOUNDARY

46.1 SETBACK FROM CONSTRAINED VEGETATION

19.8 ha

Power Easement

SETBACK FROM CONSTRAINED VEGETATION 42.2

20.0 ha

Existing Easement providing vehicular access through Lot 2 to Lots 1 and 6

KEITH VENABLES RD

Existing vehicular access into Lot 2 from Keith Venables Road

33 SETBACK FROM PROPERTY BOUNDARY

SETBACK FROM CONSTRAINED VEGETATION 40.8

37.5 SETBACK FROM CONSTRAINED VEGETATION

SETBACK FROM PROPERTY BOUNDARY 33

SETBACK FROM CONSTRAINED VEGETATION 41

40.8 SETBACK FROM CONSTRAINED VEGETATION

SETBACK FROM CONSTRAINED 46.1 VEGETATION

Powerline Easement

CAMBRIDGE SOLAR FARM

PLAN OF DEVELOPMENT - OVERALL

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

Cambridge JMD Australia

1:12,500 @ A1
1:25,000 @ A3

0 100 250 500m

PROJECT NO. P0044793

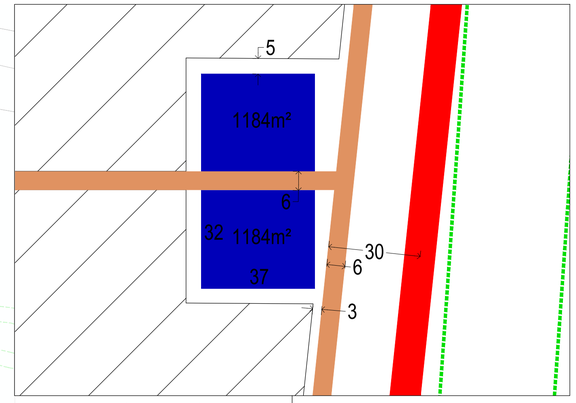
DATE 10.04.2024

DRAWING NO. MP-01

REVISION 6

LEGEND

- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- 37.5M BUFFER TO CONSTRAINED VEGETATION
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD
- 20,000L WATER TANK



KEY PLAN - BOUNDARY & INVERTER

1:1000 @ A1

158.7
340.9
49.9
42.5
33
46.1
19.8 ha
POWER EASEMENT
42.2
20.0 ha
37.5

URBIS

CAMBRIDGE SOLAR FARM

PLAN OF DEVELOPMENT - LOT 1

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

Cambridge JMD Australia

1:7,500 @ A1
1:15,000 @ A3

0 50 100 200 300m

PROJECT NO. P0044793

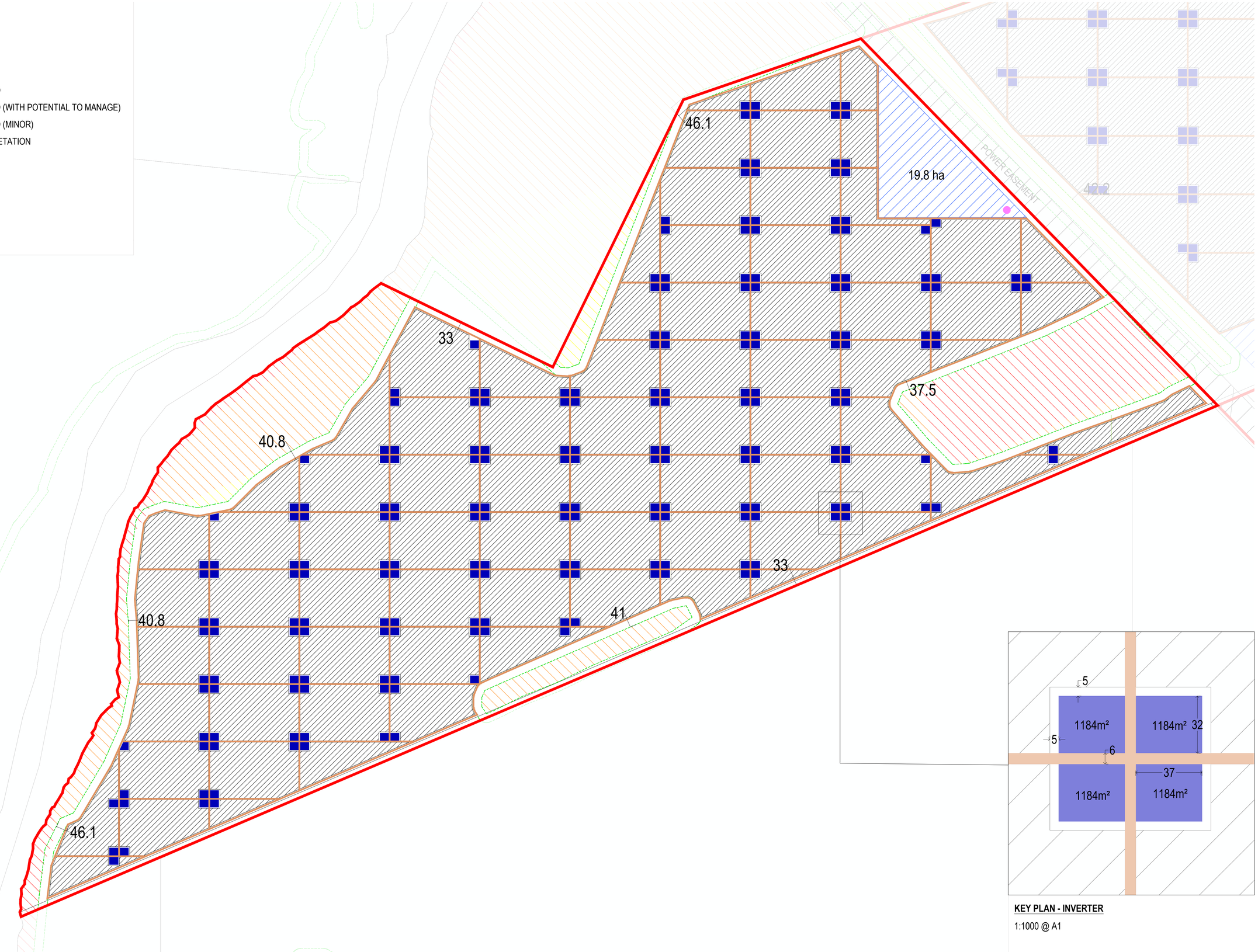
DATE 10.04.2024

DRAWING NO. MP-02

REVISION 6

LEGEND

- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- 37.5M BUFFER TO CONSTRAINED VEGETATION
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD
- 20,000L WATER TANK



KEY PLAN - INVERTER

1:1000 @ A1

URBIS

CAMBRIDGE SOLAR FARM

PLAN OF DEVELOPMENT - LOT 6

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

Cambridge JMD Australia

1:7,500 @ A1
1:15,000 @ A3

0 50 100 200 300m

PROJECT NO. P0044793

DATE 10.04.2024

DRAWING NO. MP-03

REVISION 6

LEGEND

- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- 37.5M BUFFER TO CONSTRAINED VEGETATION
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD

1
390ha

2
280ha

3
657ha

19.8 ha

20.0 ha

46.1 SETBACK FROM CONSTRAINED VEGETATION

42.5 SETBACK FROM CONSTRAINED VEGETATION

158.7 SETBACK FROM CONSTRAINED VEGETATION

340.9 SETBACK FROM CONSTRAINED VEGETATION

SETBACK FROM CONSTRAINED VEGETATION 49.2

SETBACK FROM 33 PROPERTY BOUNDARY

SETBACK FROM CONSTRAINED VEGETATION 49.2

37.5 SETBACK FROM CONSTRAINED VEGETATION

SETBACK FROM CONSTRAINED VEGETATION 40.8

33 SETBACK FROM PROPERTY BOUNDARY

SETBACK FROM PROPERTY BOUNDARY 33

SETBACK FROM CONSTRAINED VEGETATION 41

40.8 SETBACK FROM CONSTRAINED VEGETATION

SETBACK FROM CONSTRAINED VEGETATION 46.1

Powerline easement

Existing Easement providing vehicular access through Lot 2 to Lots 1 and 6

Existing vehicular access into Lot 2 from Keith Venables Road

KEITH VENABLES RD

CAMBRIDGE SOLAR FARM

INDICATIVE STAGING PLAN

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

Cambridge JMD Australia

1:12,500 @ A1
1:25,000 @ A3

0 100 250 500m

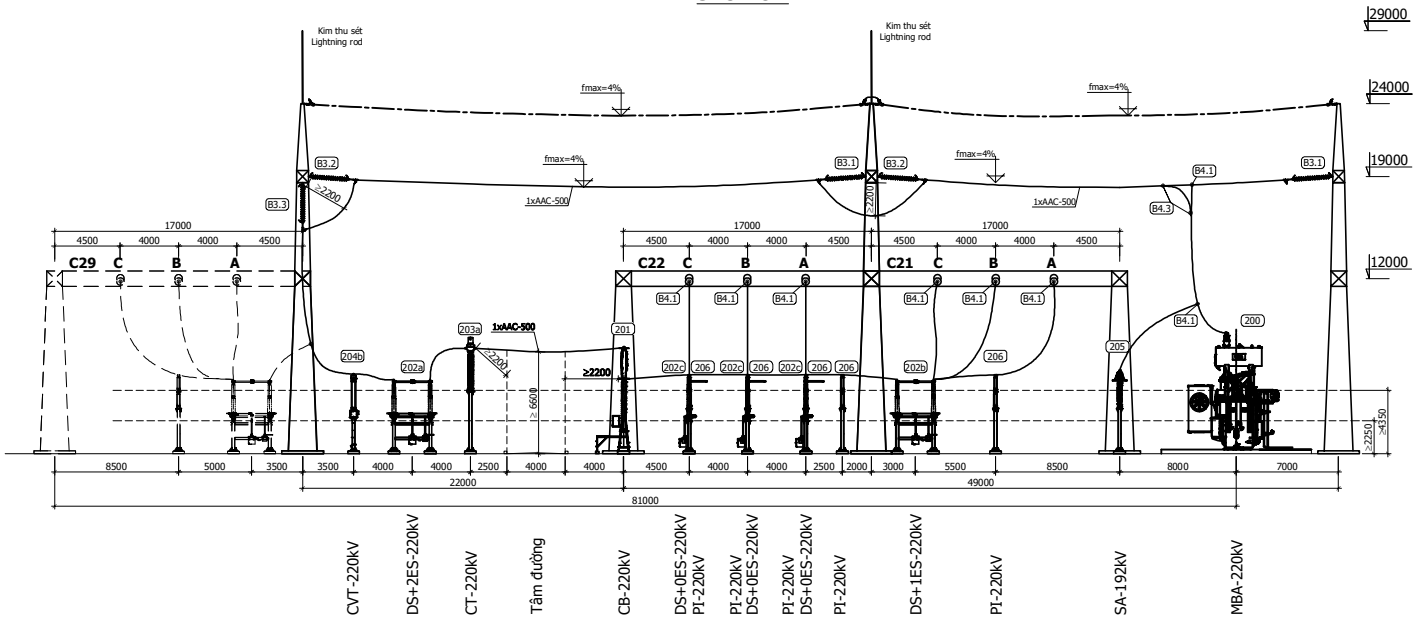
PROJECT NO. P0044793

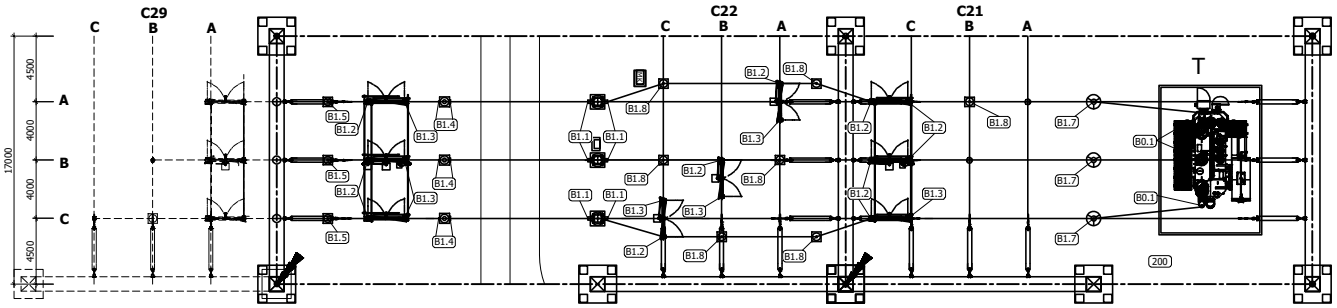
DATE 10.04.2024

DRAWING NO. MP-04

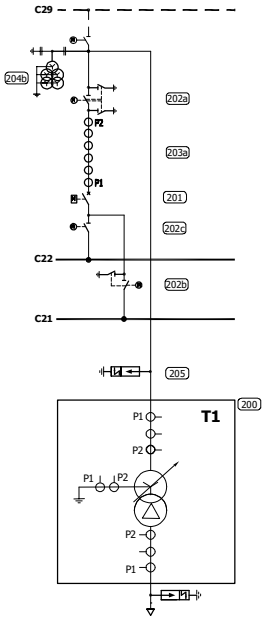
REVISION 6

MẶT CẮT
SECTION





MẶT BẰNG
LAYOUT



SƠ ĐỒ NỐI ĐIỆN
SINGLE LINE DIAGRAM

GHI CHÚ/NOTE:

——— : Thể hiện phần lắp đặt và xây dựng trong dự án này.
Equipment will be installed in this project

– – – – – – – – – – : Thể hiện phần lắp đặt và xây dựng trong tương lai.
Equipment will be installed in the future

SUNSEAP Group of Companies SUNSEAP LINKS PTE. LTD			NHÀ MÁY ĐIỆN MẶT TRỜI SUNSEAP VIỆT NAM SUNSEAP VIET NAM SOLAR POWER PLANT	
POWER ENGINEERING CONSULTING JOINT STOCK COMPANY 5 ISO 9001:2015			HẠNG MỤC: TRẠM BIẾN ÁP 220kV PART: 220kV SUBSTATION	
PHÓ TGĐ	ĐỒNG TRINH HOÀNG		MẶT BẰNG - MẶT CẮT NGĂN D01, D05 SETION - LAYOUT OF D01,D05	
TP.THIẾT KẾ	HỒ LINH VŨ			
CNLDA	HỒ LINH VŨ			
KIỂM TRA	NGUYỄN VĂN TỚI		TKCS / T10/2019	19182.HK1.E1.03
THIẾT KẾ	PHAN VĂN NAM		TL:1/# / TỜ: 1/1	

A3 FRAME

URBIS

SPP CHECKLIST

Matters of State Interest	Planning Scheme Reflects State Interest*	Type	Relevant to Development / Trigger	Assessment Required
Housing Supply and Diversity	Yes	No Assessment Benchmarks		
Liveable Communities	Yes	MCU	A development application in an urban area involving premises that is, or will be, accessed by common private title, for: Application involving buildings – either attached or detached – that are not covered by other legislation or planning provisions mandating fire hydrants.	No
		ROL		No
Agriculture	Yes	No Assessment Benchmarks		
Development and Construction	Yes	No Assessment Benchmarks		
Mining and Extractive Resources	Yes	ROL	Within a Key Resource Area (KRA)	No
		MCU	Within the resource/ processing area of a KRA or the separation area for the resource/processing area of a KRA, unless for: (a) dwelling house on an existing lot, or (b) home-based business (where not employing more than two non-resident people on a full-time equivalent basis), or (c) caretaker's accommodation (associated with an extractive industry), or (d) animal husbandry, or (e) cropping.	No
		MCU	Within the transport routes separation area of a KRA that will result in an increase in the number of people working or residing in the	No

Matters of State Interest	Planning Scheme Reflects State Interest*	Type	Relevant to Development / Trigger	Assessment Required
			transport route separation area, unless for: (a) dwelling house on an existing lot, or (b) home-based business (where not employing more than two non-resident people on a full-time equivalent basis), or (c) caretaker's accommodation (associated with an extractive industry), or (d) animal husbandry, or (e) cropping.	
Tourism	Yes	No Assessment Benchmarks		
Biodiversity	Yes	No Assessment Benchmarks		
Coastal Environment	Yes	No Assessment Benchmarks		
Cultural Heritage	Yes	No Assessment Benchmarks		
Water Quality	Yes	MCU	for an urban purpose that involves premises 2,500m² or greater and; (a) will result in 6 or more dwellings; or (b) will result in an impervious area greater than 25% of the net developable area	No
	Yes	MCU	Where located wholly outside an urban area and relating to premises that is within, or partly within, a water supply buffer area, that involves: a) intensive animal industry,	No

Matters of State Interest	Planning Scheme Reflects State Interest*	Type	Relevant to Development / Trigger	Assessment Required
			b) medium and high-impact industry, c) noxious and hazardous industry, d) extractive industry, e) utility installation that involves sewerage services, drainage or stormwater services, f) waste management facilities, or g) motor sport facility	
	Yes	ROL	For an urban purpose that involves premises 2,500m² or and will result in 6 or more lots.	No
	Yes	ROL	Where located wholly outside an urban area and relating to premises that is within, or partly within, a water supply buffer area, that involves: Creating 5 or more additional lots if any resultant lot is less than 16Ha, and any of the lots created will rely on on-site wastewater treatment.	No
	Yes	OPW	for an urban purpose that involves disturbing a land area 2,500m² or greater.	No
Emissions and Hazardous Activities	Yes	No Assessment Benchmarks		
Natural Hazards, Risk and Resilience	Yes	MCU	Where in any of the following: (1) bushfire prone areas (2) flood hazard areas (3) landslide hazard areas (4) storm tide inundation areas (5) erosion prone area Note: There are specific assessment benchmarks which apply for erosion prone	No
	Yes	ROL		No
	Yes	OPW		No

Matters of State Interest	Planning Scheme Reflects State Interest*	Type	Relevant to Development / Trigger	Assessment Required
			areas in the coastal management district, separate to other natural hazards.	
Energy and Water Supply	Yes	No Assessment Benchmarks		
Infrastructure Integration	Yes	No Assessment Benchmarks		
Transport Infrastructure	Yes	No Assessment Benchmarks		
Strategic Airports and Aviation Facilities	Yes	MCU	Where: a) A premises that will result in a building, structure or associated activity intruding into the operational airspace of a strategic airport; or b) any part of the premises is within the light restriction zone or lighting area buffer of a strategic airport; or c) any part of the premises is within a wildlife hazard buffer zone of a strategic airport; or d) any part of the premises is within a public safety area of a strategic airport; or e) any part of the premises is within the 20 ANEF contour or greater for a strategic airport; or f) A premises that will result in a building, structure or associated activity intruding into the building restricted area of an aviation facility.	No
	Yes	ROL	Where:	No

Matters of State Interest	Planning Scheme Reflects State Interest*	Type	Relevant to Development / Trigger	Assessment Required
			a) any part of the premises is within a public safety area of a strategic airport; or b) any part of the premises is within the 20 ANEF contour or greater for a strategic airport	
	Yes	BW	Where **not** associated with an MCU and: a) will result in a building, structure or associated activity intruding into the building restricted area of an aviation facility. b) any part of the premises is within the light restriction zone or lighting area buffer of a strategic airport; or c) A premises that will result in a building, structure or associated activity intruding into the building restricted area of an aviation facility.	No
	Yes	OPW	Where **not** associated with an MCU and: a) the work or associated activity will intrude into the operational airspace of a strategic airport; or b) any part of the premises is within the light restriction zone or lighting area buffer of a strategic airport; or c) the work or associated activity will intrude into the building restricted area of an aviation facility.	No
Strategic Ports	Yes	No Assessment Benchmarks		

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STATE DEVELOPMENT ASSESSMENT PROVISION CHECKLIST

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
Native vegetation clearing	Op. Works	No	Schedule 10, Part 3, Division 4, Table 1	State code 16: Native vegetation clearing	SARA Referral
	RoL	No	Schedule 10, Part 3, Division 4, Table 2		SARA Referral
	MCU	**No** Refer to **Appendix M** for further information.	Schedule 10, Part 3, Division 4, Table 3		SARA Referral
Unexploded ordnance (UXO) (Contaminated Land)	RoL	No	Schedule 10, Part 4, Division 3, Table 1	State code 13: Unexploded ordnance	SARA Referral
	MCU	No	Schedule 10, Part 4, Division 3, Table 1		SARA Referral
Environmentally relevant activities (ERA)	MCU, where involving devolved ERA	No	Schedule 10, Part 5, Division 4, Table 1	N/A	Non-SARA Referral
	MCU, where involving non-devolved ERA	No	Schedule 10, Part 5, Division 4, Table 2	State code 22: Environmentally relevant activities	SARA Referral
Aquaculture	MCU	No	Schedule 10, Part 6, Division 1, Subdivision 3, Table 1	State code 17: Aquaculture	SARA Referral
Declared Fish habitat area	Op. Works	No	Schedule 10, Part 6, Division 2, Subdivision 3, Table 1	State code 12: Development in a declared fish habitat area	SARA Referral
Marine Plants	Op. Works	No	Schedule 10, Part 6, Division 3, Subdivision 3, Table 1	State code 11: Removal, destruction or	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
	RoL involving removal, destruction or damage of marine plants	No	Schedule 10, Part 6, Division 3, Subdivision 3, Table 2	damage of marine plants	SARA Referral
	MCU involving removal, destruction or damage of marine plants	No	Schedule 10, Part 6, Division 3, Subdivision 3, Table 2		SARA Referral
Waterway barrier works	Op. Works	No	Schedule 10, Part 6, Division 4, Subdivision 3, Table 1	State code 18: Construction or raising waterway barrier works in fish habitats	SARA Referral
Hazardous Chemical Facilities	MCU	No	Schedule 10, Part 7, Division 3, Table 1	State code 21: Hazardous chemical facilities	SARA Referral
Heritage Places – Local Heritage Places	Building Work	No	Schedule 10, Part 8, Division 1, Subdivision 3, Table 1	N/A	Non-SARA Referral
Heritage Places – Queensland Heritage Place	Various aspects of Dev.	No	Schedule 10, Part 8, Division 2, Subdivision 3, Table 1 Schedule 10, Part 8, Division 2, Subdivision 3, Table 2	State code 14: Queensland heritage	SARA Referral
Infrastructure Related Referrals – Designated Premises	Various aspects of Dev.	No	Schedule 10, Part 9, Division 1, Table 1	N/A	Non-SARA Referral
Infrastructure Related Referrals - Electricity infrastructure	RoL	No	Schedule 10, Part 9, Division 2, Table 1	N/A	Non-SARA Referral
	MCU	**Yes**	Schedule 10, Part 9, Division 2, Table 2		Non-SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
	Op. Works	No	Schedule 10, Part 9, Division 2, Table 3		Non-SARA Referral
Oil and Gas Infrastructure	RoL	No	Schedule 10, Part 9, Division 3, Table 1	N/A	Non-SARA Referral
	MCU	No	Schedule 10, Part 9, Division 3, Table 2		Non-SARA Referral
	Op. Works	No	Schedule 10, Part 9, Division 3, Table 3		Non-SARA Referral
State Transport Infrastructure (thresholds)	Various aspects of Dev.	No	Schedule 10, Part 9, Division 4, Subdivision 1, Table 1	State code 6: Protection of state transport networks	SARA Referral
State Transport Corridors and Future Transport Corridors	RoL near a State transport corridor	No	Schedule 10, Part 9, Division 4, Subdivision 2, Table 1	**If near a state controlled road or future state controlled road:** State code 1: Development in a state-controlled road environment	SARA Referral
	RoL that is a future State transport corridor	No	Schedule 10, Part 9, Division 4, Subdivision 2, Table 2		SARA Referral
	RoL near a State-controlled road intersection	No	Schedule 10, Part 9, Division 4, Subdivision 2, Table 3	**If near a railway corridor or future railway corridor:** State code 2: Development in a railway environment **If near a busway corridor or future busway corridor:** State code 3: Development in a busway environment	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
				If near a light rail corridor or future light rail corridor: State code 4: Development in a light rail environment	
	MCU near a State transport corridor or that is a future State transport corridor	No	Schedule 10, Part 9, Division 4, Subdivision 2, Table 4	**If near a state controlled road or future state controlled road:** State code 1: Development in a state-controlled road environment **If near a railway corridor or future railway corridor:** State code 2: Development in a railway environment **If near a busway corridor or future busway corridor:** State code 3: Development in a busway environment **If near a light rail corridor or future light rail corridor:** State code 4: Development in a light rail environment	SARA Referral
	Op. Works	No	Schedule 10, Part 9, Division 4, Subdivision 2, Table 5 (State	**If near a state controlled road or future state controlled road:**	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
			transport corridor) Schedule 10, Part 9, Division 4, Subdivision 2, Table 6 (Future State transport corridor)	State code 1: Development in a state-controlled road environment **In near a railway corridor or future railway corridor:** State code 2: Development in a railway environment **If near a busway corridor or future busway corridor:** State code 3: Development in a busway environment **If near a light rail corridor or future light rail corridor:** State code 4: Development in a light rail environment	
State-controlled transport tunnels and future State-controlled transport tunnels	RoL on or near a State-controlled transport tunnel or future State-controlled transport tunnel	No	Schedule 10, Part 9, Division 4, Subdivision 3, Table 1	State code 5: Development in a state-controlled transport tunnel environment	SARA Referral
	MCU on or near a State-controlled transport tunnel or future State-controlled transport tunnel	No	Schedule 10, Part 9, Division 4, Subdivision 3, Table 2		SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
	Op. Works on or near a State-controlled transport tunnel or future State-controlled transport tunnel	No	Schedule 10, Part 9, Division 4, Subdivision 3, Table 3		SARA Referral
Koala habitat – Koala Habitat Areas outside of Koala Priority Areas	Various aspects of Dev.	No	Schedule 10, Part 10, Division 3, Subdivision 3, Table 1	State Code 25: Development in South East Queensland koala habitat areas	SARA Referral
Koala habitat – Extractive industries in key resource areas and in key koala habitat areas	Various aspects of Dev.	No	Schedule 10, Part 10, Division 4, Subdivision 3, Table 1	State Code 25: Development in South East Queensland koala habitat areas	SARA Referral
Brisbane core port land	MCU on Brisbane core port land	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 1	N/A	Non-SARA Referral
	Op. Works – near a state transport corridor	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 2	**If near a state controlled road or future state controlled road:** State code 1: Development in a state-controlled road environment **In near a railway corridor or future railway corridor:** State code 2: Development in a railway environment **If near a busway corridor or future busway corridor:** State code 3: Development in a	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
				busway environment **If near a light rail corridor or future light rail corridor:** State code 4: Development in a light rail environment	
	Op. Works – near a future state transport corridor	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 3	**If near a state controlled road or future state controlled road:** State code 1: Development in a state-controlled road environment **In near a railway corridor or future railway corridor:** State code 2: Development in a railway environment **If near a busway corridor or future busway corridor:** State code 3: Development in a busway environment **If near a light rail corridor or future light rail corridor:** State code 4: Development in a light rail environment	SARA Referral
	MCU – near a state transport	No	Schedule 10, Part 13, Division	**If near a state controlled road**	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
	corridor or that is a future state transport corridor		1, Subdivision 2, Table 4	**or future state controlled road:** State code 1: Development in a state-controlled road environment **In near a railway corridor or future railway corridor:** State code 2: Development in a railway environment **If near a busway corridor or future busway corridor:** State code 3: Development in a busway environment **If near a light rail corridor or future light rail corridor:** State code 4: Development in a light rail environment	
	Various aspects of Dev. - Development that is inconsistent with Brisbane port LUP for transport reasons	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 5	N/A	Non-SARA Referral
	MCU of premises for an environmentally relevant activity	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 6	State code 22: Environmentally relevant activities	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
	MCU or Op. Works – tidal works or works in a coastal management district	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 7	State code 8: Coastal development and tidal works	SARA Referral
	MCU – hazardous chemical facility	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 8	State code 21: Hazardous chemical facilities	SARA Referral
	Op. Works – taking or interfering with water	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 9	State code 10: Taking or interfering with water	SARA Referral
	Op. Works – referrable dams	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 10	State code 20: Referable dams	SARA Referral
	MCU or Op. Works – relating to fisheries	No	Schedule 10, Part 13, Division 1, Subdivision 2, Table 11	State code 12: Development in a declared fish habitat area OR State code 11: Removal, destruction or damage of marine plants OR State code 17: Aquaculture OR State code 18: Constructing or raising waterway barrier works in fish habitats	SARA Referral
Land within Port of Brisbane's port limits	Various aspects of Dev. – below the high-water mark and within	No	Schedule 10, Part 13, Division 2, Table 1	State code 7: Maritime safety	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
	port limits generally				
	Various aspects of Dev. –below the high-water mark and within port limits if applicant is not port operator	No	Schedule 10, Part 13, Division 2, Table 1	N/A	Non-SARA referral
Land within limits of another port	Various aspects of Dev.	No	Schedule 10, Part 13, Division 3, Table 1	N/A	Non-SARA referral
Strategic port land	Various aspects of Dev.	No	Schedule 10, Part 13, Division 5, Subdivision 3, Table 1	N/A	Non-SARA Referral
SEQ development area	RoL	No	Schedule 10, Part 15, Division 1, Table 1	N/A	SARA Referral
	MCU	No	Schedule 10, Part 15, Division 2, Table 2	N/A	SARA Referral
SEQ Regional Landscape and Rural Production Area and SEQ Rural Living Area – Tourist or sport and recreation activity	MCU	No	Schedule 10, Part 16, Division 2, Subdivision 3, Table 1	N/A	SARA Referral
SEQ Regional Landscape and Rural Production Area and SEQ Rural Living Area – Community activity	MCU	No	Schedule 10, Part 16, Division 3, Subdivision 4, Table 1	N/A	SARA Referral
SEQ Regional Landscape and Rural Production Area and SEQ Rural Living Area –	MCU	No	Schedule 10, Part 16, Division 4, Subdivision 3, Table 1	N/A	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
Indoor recreation					
SEQ Regional Landscape and Rural Production Area and SEQ Rural Living Area – Urban activity	MCU	No	Schedule 10, Part 16, Division 6, Subdivision 4, Table 1 (biotechnology industry) Schedule 10, Part 16, Division 6, Subdivision 4, Table 2 (service station or any other urban activity)	N/A	SARA Referral
SEQ Regional Landscape and Rural Production Area and SEQ Rural Living Area – Combined uses	MCU	No	Schedule 10, Part 16, Division 6, Subdivision 3	N/A	SARA Referral
Tidal works or development in a coastal management district	Op. Works	No	Schedule 10, Part 17, Division 3, Table 1	State code 8: Coastal development and tidal works	SARA Referral
	Op. Works (Gold Coast Waters)	No	Schedule 10, Part 17, Division 3, Table 3	N/A	Non-SARA Referral
	Op. Works (Marina)	No	Schedule 10, Part 17, Division 3, Table 4	N/A	Non-SARA Referral
	RoL	No	Schedule 10, Part 17, Division 3, Table 5	State code 8: Coastal development and tidal works	SARA Referral
	MCU	No	Schedule 10, Part 17, Division 3, Table 6	State code 8: Coastal development and tidal works	SARA Referral
Maritime safety	Op. Works	No	Schedule 10, Part 17, Division 3, Table 2	State code 7: Maritime safety	SARA Referral

Matters of State Interest	Type	Referral Required	Relevant Provisions of the Regulation	Relevant State Codes	SARA Referral or Non-SARA Referral
Urban design	MCU	No	Schedule 10, Part 18, Table 1	State code 24: Urban design	SARA Referral
Water Related Development – taking or interfering with water	Op. Works	No	Schedule 10, Part 19, Division 1, Subdivision 3, Table 1	State code 10: Taking or interfering with water	SARA Referral
Water Related Development – Removal of Quarry Material	All aspects of Dev.	No	Schedule 10, Part 19, Division 2, Subdivision 3, Table 1	State code 15: Removal of quarry material from a watercourse, lake or estuary	SARA Referral
Water Related Development – Referable dams	Op. Works	No	Schedule 10, Part 19, Division 3, Subdivision 3, Table 1	State code 20: Referable dams	SARA Referral
Category 3 levees	Op. Works	No	Schedule 10, Part 19, Division 4, Subdivision 3, Table 1	State code 19: Category 3 levees	SARA Referral
Wetland protection area	Op. Works	No	Schedule 10, Part 20, Division 4, Table 1	State code 9: Great Barrier Reef wetland protection areas	SARA Referral
	RoL	No	Schedule 10, Part 20, Division 4, Table 2		SARA Referral
	MCU	**Yes**	Schedule 10, Part 20, Division 4, Table 3		SARA Referral
Wind farms	MCU	No	Schedule 10, Part 21, Division 1, Table 1	State Code 23: Wind farm development	N/A *Note: SARA is the prescribed assessment manager*

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BUSHFIRE HAZARD OVERLAY

Specific benchmarks for assessment

Performance Outcome	Acceptable Outcome	Response
Compatible development		
PO1 Development does not increase the number of lots within the medium, high or very high potential bushfire intensity areas.	AO1 No new lots are created.	**Complies AO1** No new lots are proposed.
PO2 Development involving critical or vulnerable uses is not located on land subject to bushfire hazard, unless it involves a minor extension to or redevelopment of an existing use and does not substantially increase the number of people accommodated or requiring evacuation from the site.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve critical or vulnerable uses.
PO3 Critical uses are able to function effectively during and immediately after a bushfire hazard event.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve critical uses.
PO4 Development either: (a) does not involve the manufacture or storage of hazardous materials within a bushfire prone area; or (b) is designed to prevent the ignition of hazardous materials during a bushfire hazard event.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve hazardous materials.
Development design and separation from bushfire hazard – material change of use		

Performance Outcome	Acceptable Outcome	Response
PO5 Development is located and designed to ensure proposed buildings or building envelopes achieve the following radiant heat flux level at any point: (a) 10kW/m2 where the use involves the accommodation or congregation of vulnerable sectors of the community such as child care centres, community care centres, educational establishments, detention facilities, hospitals, rooming accommodation, retirement facilities or residential care facilities; or (b) 29kW/m2 otherwise. Editor's note—The radiant heat levels and separation distances are to be established in accordance with method 2 set out in AS3959-2018.	AO5 Buildings or building envelopes are separated from hazardous vegetation by a distance that achieves a radiant heat flux level at any point on the building or envelope respectively, of 10kW/m2 for a use mentioned in the performance outcome, or 29kW/m2 otherwise. Editor's note—Where a separation distance is proposed to be achieved by utilising existing cleared developed areas external to the site, certainty must be established (through tenure or other means) that the land will remain cleared of hazardous vegetation. Editor's note—For staged developments, temporary separation distances, perimeter roads or fire trails may be absorbed as part of subsequent stages. Editor's note—The achievement of a cleared separation distance must be achieved in a way that ensures compliance with other provisions within the planning scheme seeking protection of certain ecological, slope, visual or character features or functions.	**Complies with PO5-PO7** The proposal is supported by a Bushfire Hazard Assessment and Mitigation Plan which ensures all structures achieve sufficient buffering to ameliorate bushfire hazard. Refer to **Appendix H** for further information.
PO6 A constructed perimeter road or a formed, all weather fire trail is provided between the hazardous vegetation and the site boundary or building envelope and is readily accessible at all times for the type of fire fighting vehicles servicing the area. However, a fire trail will not be required where it would not serve a practical fire management purpose.	AO6 Development is separated from hazardous vegetation by a public road or fire trail which has: (a) a reserve or easement width of at least 20m; (b) a minimum trafficable (cleared and formed) width of 4m capable of accommodating a 15 tonne vehicle and which is at least 6m clear of vegetation; (c) no cut or fill embankments or retaining walls adjacent to the 4m wide trafficable path;	

Performance Outcome	Acceptable Outcome	Response
Editor's note—Fire trails are unlikely to be required where a development site is less than 2.5ha.	(d) a minimum of 4.8m vertical clearance; (e) turning areas for fire-fighting appliances in accordance with Qld Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots and Department of Transport and Main Roads' Road Planning and Design Manual (2nd edition); (f) a maximum gradient of 12.5%; (g) a crossfall of no greater than 10 degrees; (h) drainage and erosion control devices in accordance with the standards in Planning scheme policy – SC5.2 – Development works; (i) vehicular access at each end which is connected to the public road network at intervals of no more than 200m; (j) designated fire trail signage; (k) if used, has gates locked with a system authorised by Qld Fire and Emergency Services; and (l) if a fire trail, has an access easement that is granted in favour of council and Qld Fire and Emergency Services. Editor's note—Refer to exemptions for clearing vegetation to establish or maintain a necessary firebreak or fire management line under the Planning Regulation 2017.	
PO7 Effective safety and evacuation procedures and measures are established and maintained.	No acceptable outcome is nominated. Editor's note—A bushfire management plan prepared by a suitably qualified	

Performance Outcome	Acceptable Outcome	Response
	professional may be required to demonstrate compliance with the performance outcome.	
Development design and separation from bushfire hazard – reconfiguration of lots		
PO8 Where reconfiguration creates lots of 2,000m2 or less, a separation distance from hazardous vegetation is provided to achieve a radiant heat flux level of 29kW/m2 at the edge of the proposed lot(s). Editor's note—The radiant heat levels and separation distances are to be established in accordance with method 2 set out in AS3959-2018.	AO8.1 No new lots are created within the bushfire prone area. OR AO8.2 Lots are separated from hazardous vegetation by a distance that achieves radiant heat flux level of 29kW/m2 at all boundaries. Editor's note—Where a separation distance is proposed to be achieved by utilising existing cleared developed areas external to the site, certainty must be established (through tenure or other means) that the land will remain cleared of hazardous vegetation. Editor's note—For staged developments, temporary separation distances, perimeter roads or fire trails may be absorbed as part of subsequent stages. Editor's note—The achievement of a cleared separation distance may not be achievable where other provisions within the planning scheme seek the protection of certain ecological, slope, visual or character features or functions.	**Not Applicable** The proposed development does not involve Reconfiguration of Lots.
PO9 Where reconfiguration creates lots of more than 2,000m2, a building envelope of reasonable dimensions is provided on each lot which is separated from hazardous vegetation such that it achieves radiant heat flux level of 29kW/m2 at any point.	No acceptable outcome is nominated.	

Performance Outcome	Acceptable Outcome	Response
PO10 Where reconfiguration is undertaken in an urban zone, a constructed perimeter road with reticulated water supply is established between the lots and the hazardous vegetation and is readily accessible at all times for urban fire fighting vehicles. The access is available for both firefighting and maintenance/defensive works. Editor's note—Applicants should also have regard to the relevant standards set out in the reconfiguring a lot and development works codes in this planning scheme.	AO10.1 Lot boundaries are separated from hazardous vegetation by a public road which: (a) has a two lane sealed carriageway; (b) contains a reticulated water supply; (c) is connected to other public roads at both ends and at intervals of no more than 500m; (d) accommodates geometry and turning radii in accordance with Qld Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots and Department of Transport and Main Roads' Road Planning and Design Manual (2nd edition); (e) has a minimum of 4.8m vertical clearance above the road; (f) is designed to ensure hydrants and water access points are not located within parking bay allocations; and (g) incorporates roll-over kerbing.	
	AO10.2 Fire hydrants are designed and installed in accordance with AS2419.1 2005.	
PO11 Outside an urban zone, either a constructed perimeter road or a formed, all weather fire trail is established between the lots or building envelopes and the hazardous vegetation and is	AO11 Lot boundaries are separated from hazardous vegetation by a public road or fire trail which has: (a) a reserve or easement width of at least 20m;	

Performance Outcome	Acceptable Outcome	Response
readily accessible at all times for the type of fire fighting vehicles servicing the area. The access is available for both firefighting and maintenance/hazard reduction works.	(b) a minimum trafficable (cleared and formed) width of 4m capable of accommodating a 15 tonne vehicle and which is at least 6m clear of vegetation; (c) no cut or fill embankments or retaining walls adjacent to the 4m wide trafficable path; (d) a minimum of 4.8m vertical clearance; (e) turning areas for fire-fighting appliances in accordance with Qld Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; (f) a maximum gradient of 12.5%; (g) a crossfall of no greater than 10 degrees; (h) drainage and erosion control devices in accordance with the standards in Planning scheme policy – SC5.2 – Development works; (i) vehicular access at each end which is connected to the public road network at intervals of no more than 500m; (j) designated fire trail signage; (k) if used, has gates locked with a system authorised by Qld Fire and Emergency Services; and (l) if a fire trail, has an access easement that is granted in favour of council and Qld Fire and Emergency Services. Editor's note—Refer to exemptions for clearing vegetation to establish or maintain a necessary firebreak or fire management line under the Planning Regulation 2017.	

Performance Outcome	Acceptable Outcome	Response
PO12 The lot layout: (a) minimises the length of the development perimeter exposed to, or adjoining hazardous vegetation; (b) avoids the creation of potential bottleneck points in the movement network; (c) establishes direct access to a safe assembly /evacuation area in the event of an approaching bushfire; and (d) ensures roads likely to be used in the event of a fire are designed to minimise traffic congestion. Editor's note—For example, developments should avoid finger-like or hour-glass subdivision patterns or substantive vegetated corridors between lots.	No acceptable outcome is nominated. Editor's note—In order to demonstrate compliance with the performance outcome, a bushfire management plan prepared by a suitably qualified person may be required. Advice from the Queensland Fire and Emergency Services (QFES) should be sought as appropriate.	
PO13 Critical or potentially hazardous infrastructure is sited, designed and managed to reduce risk of its ignition.	AO13 Critical or potentially hazardous infrastructure such as water supply, electricity, gas and telecommunications are located underground.	
All Development		
PO14 All premises are provided with vehicular access the enables safe evacuation for occupants and easy access by firefighting appliances.	AO14 Private driveways: (a) do not exceed a length of 60m from the street to the building; (b) do not exceed a gradient of 12.5%; (c) have a minimum width of 3.5m;	**Not Applicable** The proposed development does not involve a private driveway.

Performance Outcome	Acceptable Outcome	Response
	(d) have a minimum of 4.8m vertical clearance; (e) accommodate turning areas for firefighting appliances in accordance with Qld Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines for residential, commercial and industrial lots and Department of Transport and Main Roads' Road Planning and Design Manual (2nd edition); and (f) serve no more than 3 dwellings or buildings.	
PO15 Development outside reticulated water supply areas, includes a dedicated static supply available solely for firefighting purposes and can be accessed by firefighting appliances.	AO15 A water tank is provided within 10m of each building (other than a class 10 building) which: (a) is either below ground level or is constructed or screened by non-combustible materials; Editor's note—Non-combustible is defined in AS3959:2018 and means: "not deemed combustible as determined by AS 1530.1 or not deemed combustible in accordance with the BCA." (b) has a take-off connection at a level that allows the following dedicated, static water supply to be left available for access by fire fighters: (i) 10,000 litres for residential buildings; (ii) 45,000 litres for industrial buildings; and (iii) 20,000 litres for other buildings; (c) includes a hardstand area allowing medium rigid vehicle (15 tonne fire appliance) access within 6m of the tank;	**Complies with PO15** The proposal is supported by a Bushfire Hazard Assessment and Mitigation Plan. All structures achieve appropriate buffer distances to ensure no bushfire hazard or risk to the site. Refer to **Appendix H** for further information.

Performance Outcome	Acceptable Outcome	Response
	(d) is provided with fire brigade tank fittings – 50mm ball valve and male camlock coupling and, if underground, an access hole of 200mm (minimum) to accommodate suction lines; and (e) is clearly identified by directional signage provided at the street frontage.	
PO16 Landscaping uses species that are not likely to exacerbate a bushfire event and does not increase fuel loads within separation areas.	No acceptable outcome is nominated.	**Not Applicable** No landscaping is proposed.
PO17 Bushfire risk mitigation treatments do not have a significant impact on the natural environment or landscape character of the locality.	No acceptable outcome is nominated.	**Complies with PO17** No clearing is required to achieve bushfire resilience. Refer to **Appendix H** for further information.

URBIS

DEVELOPMENT WORKS CODE

Specific benchmarks for assessment

Table 6.2.1.3(a) – Benchmarks for development that is accepted subject to requirements and assessable development

Performance Outcomes	Acceptable Outcomes	Response
Earthworks		
PO1 Excavation and filling on land maintains the amenity and utility of adjoining land.	AO1 Excavation and filling is not carried out within 1.5m of any site boundary.	**Not Applicable** The proposed development does not include any significant earthworks.
PO2 The carrying out of any excavation or filling does not contaminate any land.	AO2 No contaminated material or potential acid sulfate soil is used as fill.	
Table 6.2.1.3(b) – Benchmarks for assessable development only		
Earthworks		
PO3 The carrying out of any excavation does not create any land instability or public safety risk.	AO3 Earthworks and retaining structures are carried out in accordance with: (a) Australian Standard 3798:1996-Guidelines on earthworks for commercial and residential development; and (b) Section 3 of Australian Standard 4678:2002- Earth retaining structures.	**Not Applicable** The proposed development does not include any significant earthworks.
PO4 Earthworks do not: (a) result in ponding on the site or on nearby land; (b) adversely affect the flow of water through an overland flow path; and	No acceptable outcome is nominated.	

Performance Outcomes	Acceptable Outcomes	Response
(c) result in the loss of safety to users or uses of any other land.		
PO5 Earthworks do not result in structures or changes to ground level within a pipeline easement without the consent of the pipeline licence holder. Editor's note–Refer to sections 807-808 of the Petroleum and Gas (Production and Safety) Act 2004.	No acceptable outcome is nominated.	
PO6 Earthworks maintain the visual amenity of surrounding land and do not compromise the privacy of adjoining property.	No acceptable outcome is nominated.	
PO7 The risk of erosion and sedimentation is minimised by: (a) progressive rehabilitation of disturbed areas within the site; (b) avoiding long term stockpiling of soil; (c) diverting drainage paths around disturbed areas; and (d) preventing sediments from leaving the site.	No acceptable outcome is nominated.	
Excavation and/or filling in the rural zone		
PO8 Excavation and/or filling do not: (a) result in ponding on Council controlled land, including road reserves and infrastructure; (b) impede the flow of water through an overland flow path or drainage path on Council	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not include any significant excavation and/or filling in the rural zone.

Performance Outcomes	Acceptable Outcomes	Response
controlled land, including road reserves and infrastructure; and (c) alter the location and/or flow rate of water discharge points from the premises adversely impacting on Council road and drainage infrastructure.		
PO9 Excavation and/or filling do not result in an increase to the volume or concentration of water: (a) in an overland flow path or drainage path on Council controlled land, including road reserves and infrastructure; and (b) waterways and wetlands.	No acceptable outcome is nominated.	
PO10 Excavation and/or filling do not adversely impact on waterways and wetlands.	AO10 Excavation and/or filling do not occur within 15m of the: (a) outer bank of a waterway; or (b) outer landward boundary of a wetland.	
PO11 Excavation and/or filling do not adversely impact on Council road and drainage infrastructure.	AO11 Excavation and/or filling do not: (a) occur within 15m of Council road and drainage infrastructure; and (b) alter the flow rate or velocity of water at discharge points from the premises to Council road and drainage infrastructure.	
Infrastructure		
PO12 Development in an urban zone (other than the township zone) or within the priority infrastructure area is connected to reticulated	No acceptable outcome is nominated.	**Not Applicable** The site is not located within an urban zone or a priority infrastructure area.

Performance Outcomes	Acceptable Outcomes	Response
water, sewerage, and stormwater. Note–Urban zone is defined in the Planning Regulation 2017. The priority infrastructure area is identified in the Local Government Infrastructure Plan in schedule 6.		
PO13 Development sites are provided with services in a way that is: (a) safe and efficient; (b) maintains the integrity of the external network; (c) does not impose a load on external networks that exceed their capacity; and (d) can be safely, conveniently and cost effectively maintained.	AO13 All infrastructure required to service the development is provided in accordance with Planning scheme policy – S.C5.2 – Development works.	**Complies with AO13** The proposed development will be serviced by all required infrastructure.
PO14 Where reticulated water supply is not available, development is provided with a reliable water supply that is sufficient for the demands generated on site.	No acceptable outcome is nominated.	**Complies with PO14** The proposed development will be serviced by all required infrastructure.
PO15 Where a reticulated sewerage service is not available, an on-site system of treatment and disposal is established that is sufficient for the level of waste water generated on the site.	No acceptable outcome is nominated.	**Complies with PO15** The proposed development will be serviced by all required infrastructure.
PO16 Where provided on-site, water, waste water and stormwater infrastructure are established in a way that ensures public and environmental health, safety, water quality and amenity are maintained.	AO16.1 In the rural residential zone, premises are provided with an on-site sewerage treatment and disposal system.	**Not Applicable** The site is not located within the rural residential zone.
	AO16.2	**Complies with AO16.2**

Performance Outcomes	Acceptable Outcomes	Response
	Elsewhere, no acceptable outcome is nominated	The proposed development will be serviced by all required infrastructure.
PO17 Premises are connected to an electricity supply approved by the relevant authority.	AO17 The development is connected to electricity infrastructure in accordance with the standards of the relevant regulatory authority.	**Complies AO17** The proposed development will be serviced by all required infrastructure, including electricity infrastructure.
Water management Editor's note–A property management plan or environmental management plan, illustrating how environmental impacts will be minimised, may be required to support the proposed development.		
PO18 Development is located, designed, constructed and operated to avoid adverse impacts on environmental values and water quality of groundwater, waterways and surface water storages arising from: (a) altered stormwater quality and hydrology; (b) waste water; (c) the creation or expansion of non-tidal artificial waterways; or (d) the release and mobilisation of nutrients and sediments.	No acceptable outcome is nominated.	**Complies with PO18** An Ecological and Environmental Approvals Report has been prepared in support of the proposal. Refer to **Appendix K** for further information.
PO19 Development achieves the stormwater management design objectives outlined in tables 6.2.1.3(c) and 6.2.1.3(d). Editor's note–Urban purpose is defined in the Planning Regulation 2017.	No acceptable outcome is nominated.	**Will Comply PO19** The proposed development will comply with the standards as stated in PO19.
PO20 Wherever practical, development:	No acceptable outcome is nominated.	**Complies with PO20** The proposal has been designed to mitigate potential impacts on natural landforms. No significant earthworks or vegetation clearing

Performance Outcomes	Acceptable Outcomes	Response
(a) minimises clearing and earthworks; (b) utilises natural flow paths; and (c) minimises impervious surfaces and maximises opportunities for infiltration, capture and reuse.		are proposed by the development. Due to the nature of the proposal, very limited impervious areas will be created. Therefore, stormwater management is not required.
PO21 Stormwater drainage is provided that has sufficient capacity to safely remove stormwater run-off, in a way that: (a) minimises risk to public safety and property; (b) provides a lawful point of discharge from each lot; (c) minimises ponding; (d) allows for risk associated with potential failures within the system; and (e) allows for practical access for maintenance.	No acceptable outcome is nominated.	**Complies with PO21** Due to the nature of the proposal, very limited impervious areas will be created. Therefore, stormwater drainage and management is not required.
Acid sulfate soils		
PO22 Within the areas identified as potential acid sulfate soils on overlay map OM1, the generation or release of acid and metal contaminants into the environment from acid sulfate soils is avoided by: (a) not disturbing acid sulfate soils when excavating or otherwise removing soil or sediment, draining or extracting groundwater, excluding tidal water or filling land; or	AO22.1 Development does not: (a) involve excavating or removing 100m3 or more of soil and sediment at or below 5m AHD; or (b) permanently or temporarily drain or extract groundwater or exclude tidal water resulting in the aeration of previously saturated acid sulfate soils; or	**Not Applicable** The site is not identified as being impacted by acid sulfate soils.

Performance Outcomes	Acceptable Outcomes	Response
(b) where disturbance of acid sulfate soils cannot be avoided, development: (i) neutralises existing acidity and prevents the generation of acid and metal contaminants; and (ii) prevents the release of surface or groundwater flows containing acid and metal contaminants into the environment. Editor's note—Where works are proposed within the areas identified as potential acid sulfate soils on overlay map OM1 - Acid sulfate soils, the applicant is required to undertake an on-site acid sulfate investigation. The reason for undertaking an acid sulfate soils investigation is to determine the presence of acid sulfate soil in order to avoid disturbance. Where acid sulfate soils cannot reasonably be avoided, investigation results assist in the planning of treatment and remedial activities and must be undertaken in accordance with the Queensland Acid Sulfate Soil Technical Manual and relevant State Planning Policy. Applicants should also refer to the Guidelines for Sampling Analysis of Lowland Acid Sulfate Soils in Queensland, Acid Sulfate Soils Laboratory Methods Guidelines or Australian Standard 4969. It is highly recommended that the applicant develop a practical Acid Sulfate Soil Management Plan for use in monitoring and treating acid sulfate soils.	(c) involve filling with 500m3 or more with an average depth of 0.5m or greater that results in: (i) actual acid sulfate soils being moved below the water table; or (ii) previously saturated acid sulfate soils being aerated. OR AO22.2 Development manages waters so that: (a) all disturbed acid sulfate soils are adequately treated and/or managed so that they can no longer release acid or heavy metals; (b) the pH of all sites, and any water including discharges and seepage to groundwater, is maintained between 6.5 and 8.5 (or an agreed pH in line with natural background); (c) waters on the site, including discharges and seepage to groundwater, do not contain elevated levels of soluble metals; (d) there are no visible iron stains, flocs or sums in discharge water; (e) all reasonable preparations and actions are undertaken to ensure that aquatic health is safeguarded; and (f) infrastructure such as buried services, pipes, culverts and bridges are protected from acid attack.	
Traffic and access		

Performance Outcomes	Acceptable Outcomes	Response
PO23 The development is located on roads appropriate for the nature of traffic generated, having regard to the safety and efficiency of the transport network, and the functions and characteristics of the road hierarchy. Note–The road hierarchy is illustrated in Figure 6.2.1.3 of the Development works code.	No acceptable outcome is nominated.	**Complies PO23** The proposed development has appropriate existing road connections (to Keith Venables Road) and internal access roads to safely traverse the site and is appropriate for the operation of the site as a solar farm. A Traffic Assessment Report is included in **Appendix G**.
PO24 Development maintains a safe environment for pedestrians, cyclists and vehicles on the site and external to the site.	No acceptable outcome is nominated.	**Complies PO24** The proposed development will maintain existing internal access roads and connection to Keith Venables Road and will remain a safe environment for vehicles. The nature and location of the development means cyclists and pedestrians are unlikely to access the site. A Traffic Assessment Report is included in **Appendix H**.
PO25 Development has vehicle access and manoeuvring sufficient to accommodate the anticipated traffic demand and servicing requirements safely and efficiently.	AO25 Circulation areas, turning areas and driveways comply with Australian Standards AS2890.1 and AS2890.2, as amended from time to time.	**Will Comply with AO25** The proposed development utilises existing roads and new internal roads which will comply with the relevant requirements. Refer to the Traffic Assessment Report in **Appendix H** for further information.
PO26 Development (other than dwelling houses and dual occupancies) are designed to enable vehicles to enter and leave the site in a forward direction.	AO26 Circulation areas, turning areas and driveways comply with Australian Standards AS2890.1 and AS2890.2, as amended from time to time.	**Not Applicable** The proposed development utilises existing roads only. Refer to the Traffic Assessment Report in **Appendix H** for further information.
PO27	AO27	**Not Applicable**

Performance Outcomes	Acceptable Outcomes	Response
Development provides sufficient parking onsite to accommodate the anticipated demand safely and efficiently.	Vehicle parking is provided in accordance with table 6.2.1.3(e)–Vehicle parking rates and standards. Where the use is not nominated in table 6.2.1.3(e), no acceptable outcome is nominated.	No formalised parking is required on site as there will be no maintenance sheds or ancillary buildings proposed.
PO28 On-site parking is clearly defined, safe and easily accessible.	AO28 Parking areas comply with Australian Standards AS2890.1 and AS2890.2, as amended from time to time.	**Not Applicable** No formalised parking is required on site as there will be no maintenance sheds or ancillary buildings proposed.
PO29 Open parking spaces are designed and constructed to facilitate stormwater infiltration on-site.	No acceptable outcome is nominated.	**Not Applicable** No formalised parking is required on site as there will be no maintenance sheds or ancillary buildings proposed.
PO30 Transport noise impacts are managed by the siting and design of development so that the need for acoustic screening is minimised.	No acceptable outcome is nominated.	**Not Applicable** The nature and location of the proposed use will not result in transport noise impacts. Refer to the Noise Assessment Report in **Appendix I** for further information.
PO31 Where they are used, acoustic walls are designed to mitigate visual impacts.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not include acoustic walls.
PO32 Lighting is provided to ensure pedestrian and vehicle safety.	No acceptable outcome is nominated.	**Will Comply** Lighting will be provided where required for functional and operational purposes.
Landscaping		
PO33	No acceptable outcome is nominated.	**Not Applicable**

Performance Outcomes	Acceptable Outcomes	Response
Landscaping is designed, established and maintained to: (a) incorporate existing vegetation, where appropriate; (b) reinforce existing streetscape character; (c) provide effective shade and screening; (d) be sustainable without undue reliance on irrigation; (e) be suitable to the tropical climate. Editor's note–A landscaping plan may be required which should incorporate: • a fully dimensioned site plan describing the existing landscape including the landscape and environmental significance of remnant vegetation; • the location and depth of all existing services; • natural drainage lines; • existing levels and finished levels; • a full schedule of plantings and materials including growing characteristics, quantities of each plant and other materials; and • a drainage and irrigation plan.		The proposal does not include landscaping treatments, given the nature of the proposal. The development will however maintain areas of significant vegetation on the peripheries of the site.
PO34 Landscaping: (a) is established using semi-advanced plants in conjunction with shrubs and ground covers; (b) uses native and endemic species where possible; and (c) does not utilise species which are noxious or poisonous or have drop limbs.	No acceptable outcome is nominated.	**Not Applicable** The proposal does not include landscaping treatments, given the nature of the proposal. The development will however maintain areas of significant vegetation on the peripheries of the site.

Performance Outcomes	Acceptable Outcomes	Response
Waste and pollutant management		
PO35 Development provides on-site facilities for the storage and collection of solid wastes that are secure and avoid potential for nuisance.	No acceptable outcome is nominated.	**Not Applicable** The proposal does not include waste facilitates, given the nature of the proposal. Any waste produced on site will be appropriately disposed of.
PO36 Liquid wastes produced by development are managed and disposed of so no risk of nuisance or environmental harm is created.	No acceptable outcome is nominated.	**Not Applicable** The proposal will not produce liquid wastes.
PO37 Development involving the handling of potential pollutants is designed and operated to ensure spills and on-site surface water are captured and treated prior to release to the environment.	No acceptable outcome is nominated.	**Not Applicable** The proposal does not involve the handling of potential pollutants.
Fire hydrants in urban areas for buildings accessed by common private title Editor's note–This section will not apply where other legislation applies which mandates requirements for fire hydrants.		
PO38 Development ensures fire hydrants are installed and located to enable fire services to access water safely, effectively and efficiently.	No acceptable outcome is nominated.	**Not Applicable** The proposed development is not located in an urban area and is not for building infrastructure.
PO39 Road widths and construction within the development are adequate for fire emergency vehicles to gain access to a safe working area close to buildings and near water supplies whether or not on-street parking spaces are occupied.	No acceptable outcome is nominated.	

Performance Outcomes	Acceptable Outcomes	Response
PO40 Fire hydrants are suitably identified so fire services can locate them at all hours.	No acceptable outcome is nominated.	

URBIS

ENVIRONMENTAL SIGNIFICANCE OVERLAY CODE

Specific benchmarks for assessment

Performance Outcome	Acceptable Outcome	Response
PO1 Development: (a) avoids impacts to areas of environmental significance; or (b) where impacts cannot be avoided, they are minimised and mitigated through appropriate location, siting and design; or (c) where impacts cannot be avoided or minimised and mitigated, an environmental offset is provided for any significant residual impact. Editor's note–Significant residual impacts on matters of state environmental significance are offset in accordance with the Environmental Offsets Act 2014.	AO1 Development is: (a) not located within an area supporting matters of state environmental significance; or Editor's note–Matters of state environmental significance are shown on OM5. (b) located wholly within an area that has a valid development approval for native vegetation clearing. Editor's note–A development approval has been given under schedule 10, part 3 of the Planning Regulation 2017.	**Complies with AO1** The proposal ensures appropriate buffering to native vegetation to maintain ecological processes. No clearing is proposed. The proposal is supported by an Ecological and Environmental Approvals Report in **Appendix K** and submits the invitation to withdraw the Relevant Purpose Determination in **Appendix M**.
PO2 Development protects and complements the ecological function and integrity of the strategic environmental area (designated precinct). Editor's note–Certain land uses are unacceptable uses within the designated precinct of the strategic environmental area under the Regional Planning Interests Regulation 2014 (schedule 2).	AO2 Development is: (a) not located within a strategic environmental area (designated precinct); or Editor's note–The strategic environmental area (designated precinct) is shown on OM5. (b) located wholly within an area that has a valid development approval for native vegetation clearing. Editor's note–A development approval has been given under schedule 10, part 3 of the Planning Regulation 2017.	**Complies with AO2** The proposal ensures appropriate buffering to native vegetation to maintain ecological processes. No clearing is proposed. The proposal is supported by an Ecological and Environmental Approvals Report in **Appendix K** and submits the invitation to withdraw the Relevant Purpose Determination in **Appendix M**.
Table 5.2.3.3(b) – Benchmarks for assessable development		

Performance Outcome	Acceptable Outcome	Response
PO3 Development is located, designed and operated to: (a) retain and protect significant values; and (b) maintain the underlying ecological functions and biophysical processes. Editor's note–Values of significance may include, but are not limited to, areas of habitat that support a critical life cycle stage such as feeding, breeding or roosting or an ecological function for threatened species, ecological communities or migratory species.	No acceptable outcome is nominated.	**Complies with PO3** The proposal ensures appropriate buffering to native vegetation to maintain ecological processes. No clearing is proposed. The proposal is supported by an Ecological and Environmental Approvals Report in **Appendix K**.
PO4 Ecological corridors are retained to maintain ecological processes and functions and ensure viable connectivity between habitat areas for terrestrial and aquatic wildlife movement between habitat areas.	No acceptable outcome is nominated.	**Complies with PO4** The proposal ensures appropriate buffering to native vegetation to maintain ecological processes. The proposal is supported by an Ecological and Environmental Approvals Report in **Appendix K**.
PO5 Development maintains a buffer to wetlands and waterways, in order to: (a) protect or enhance ecological processes and values; (b) protect water quality and aquatic conditions; (c) provide unimpeded movement of fauna within and along waterways or wetlands; and (d) improve bank stability and prevent soil erosion.	AO5.1 Other than for linear infrastructure, riparian vegetation is retained and/or rehabilitated along each side of a waterway, within at least 50m of the defining banks of all waterways. Note–The defining bank can either be the bank or terrace that confines the water before the point of flooding or where there is no bank, the seasonal high water line which represents the point of flooding.	**Complies with AO5.1** The proposal does not result in any clearing of vegetation.
	AO5.2 Development provides the following buffers:	**Complies with Performance Outcome**

Performance Outcome	Acceptable Outcome	Response
	(a) 100m from the maximum water level of freshwater wetlands; and (b) 100m from the Highest Astronomical Tide (HAT) line of a tidal wetland.	The proposal is not located adjacent to waterways. Wetland amendment mapping has been submitted to the State to clarify that mapped wetlands on the map do not have any ecological value. The proposal is supported by an Ecological and Environmental Approvals Report in **Appendix K**.
PO6 Development maintains natural surface water and groundwater hydraulic regimes of wetlands and waterways.	No acceptable outcome is nominated.	**Complies with PO6** The proposal is not located adjacent to waterways. Wetland amendment mapping has been submitted to the State to clarify that mapped wetlands on the map do not have any ecological value. The proposal is supported by an Ecological and Environmental Approvals Report in **Appendix K**.
PO7 The ongoing protection of those parts of a development site supporting significant ecological features or processes that are to be retained is secured.	AO7 Those parts of the site to be protected are secured using one or more of the following mechanisms: (a) transferring into public ownership; (b) setting aside for open space and conservation purposes within a group title arrangement; (c) restricted building envelopes; or (d) protection under a conservation covenant.	**Not Applicable** No parts of the site are required to adopt any ongoing covenants.
PO8 Development does not result in the introduction of pest species	No acceptable outcome is nominated.	**Complies with PO8** The proposal will not introduce any new pest species.

Performance Outcome	Acceptable Outcome	Response
(plant or animal), that pose a risk to ecological integrity or disturbance to native flora and fauna		
PO9 Development minimises potential for disturbance of wildlife as a result of noise, light, vibration or other sources.	No acceptable outcome is nominated.	**Complies with PO9** The proposed development will emit limited noise, light or vibration impacts. The proposal is supported by an Ecological and Environmental Approvals Report in **Appendix K**.
PO10 Where development occurs within habitat areas (to the extent provided for by the other performance outcomes in this code): (a) fauna is safely relocated to suitable alternative locations; and (b) the sequence of habitat disturbance ensures that fauna is not isolated from adjoining areas of habitat.	No acceptable outcome is nominated.	**Not Applicable** The proposal does not involve any clearing and is located with appropriate buffers away from native vegetation areas.

URBIS

FLOOD OVERLAY CODE

Specific benchmarks for assessment

Performance Outcomes	Acceptable Outcomes	Response
PO1 Where land is included in an urban or rural residential zone, development does not increase the number of lots within the high or extreme flood hazard area.	AO1 No new lots are created.	**Complies with AO1** The proposal does not create new lots.
PO2 Development involving critical or vulnerable uses is not located within any flood hazard area, unless it involves a minor extension to, or redevelopment of, an existing use.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve critical or vulnerable uses.
PO3 Dual occupancies and more intensive residential uses do not establish in the rural, low density residential, township or emerging community zones where they fall within the extreme, high or medium hazard areas, unless it involves a minor extension to, or redevelopment of, an existing use.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve residential uses.
PO4 Development involving worker or tourist accommodation uses do not establish in the rural, low density residential, township or emerging community zones where they fall within the extreme, high or medium hazard areas, unless it involves a minor extension to, or redevelopment of, an existing use.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve worker or tourist accommodation.

Performance Outcomes	Acceptable Outcomes	Response
PO5 Development involving an existing use mentioned in PO2, PO3 or PO4 does not substantially increase the number of people accommodated or requiring evacuation from the site.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve an existing use.
PO6 Critical uses are able to function effectively during and immediately after a flood hazard event.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve critical uses.
PO7 Where components of commercial or industrial uses are located below the level of the defined flood event, stock or facilities: (a) are relocatable or readily replaced; (b) are not vital to the safe operation of the use during or after a flood event; and (c) are located or designed to avoid causing a risk to public safety in the event of a flood or impede the flow of flood water. Note–To demonstrate compliance with this performance outcome, applicants should prepare a flood response plan.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve commercial or industrial uses.
PO8 Development either: (a) does not involve the manufacture or storage of hazardous materials within a flood hazard area; or	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve hazardous materials.

Performance Outcomes	Acceptable Outcomes	Response
(b) is designed to prevent the release of hazardous materials during a flood event.		
PO9 Premises used for extractive industry, aquaculture, animal keeping or intensive animal husbandry are at low risk of inundation.	AO9 Development occurs on land which is above the defined flood event.	**Not Applicable** The proposal is for renewable energy facilities.
Mitigation of flood hazard		
PO10 Development which occurs in areas subject to a flood hazard ensures new buildings or extensions are designed to remain structurally sound during the defined flood event.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not include new buildings or extensions.
PO11 Infrastructure likely to become a public asset is designed to withstand hydrodynamic forces of the defined flood event.	No acceptable outcome is nominated.	**Not Applicable** The proposed development is not likely to become a public asset.
PO12 Development involving the expansion or redevelopment of critical or vulnerable uses ensures new buildings or extensions are provided with a high level of flood immunity.	AO12 Floor levels are established at the level of the 0.5% AEP plus a freeboard of 500mm.	**Not Applicable** The proposed development does not include new buildings or extensions.
PO13 Development involving the expansion or redevelopment of critical or vulnerable uses ensures effective provision is made for evacuating residents and users, or shelter in place in the event available response times prevent evacuation.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve critical or vulnerable uses.

Performance Outcomes	Acceptable Outcomes	Response
PO14 Any new lots created provide for a building envelope to accommodate a dwelling house with floor levels above the defined flood level.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not introduce any new lots
PO15 Any new lots created provide for vehicular access between a building envelope and a public road free of high or extreme hazard.	No acceptable outcome is nominated.	
PO16 Development does not change inundation characteristics outside the subject site in ways that would: (a) result in loss of flood storage or loss of, or changes to, flow paths; (b) adversely change the depth or behaviour of the hazard; or (c) reduce warning times; or (d) increase the duration of the hazard.	No acceptable outcome is nominated.	**Complies PO16** The proposed development will not characteristically change inundation paths or flows due to the minimal built form on the ground level and ability for water to move through the development.
PO17 Any structures or works intended to mitigate the risk or impacts of inundation on a development site are located wholly on private land.	No acceptable outcome is nominated.	**Complies with PO17** The proposed development will be located wholly on private land.
PO18 Adequate provision is made for safe evacuation, response, and recovery during a flood event.	No acceptable outcome is nominated.	**Will Comply PO18** The development maintains existing access to Keith Venables Road which can be utilised for any evacuation requirements.

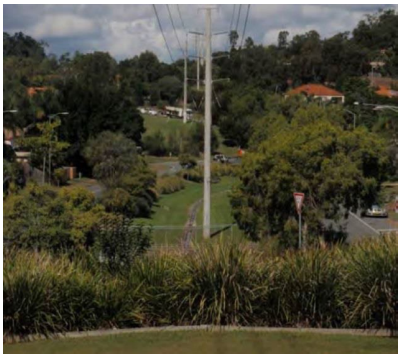
URBIS

REGIONAL INFRASTRUCTURE OVERLAY CODE

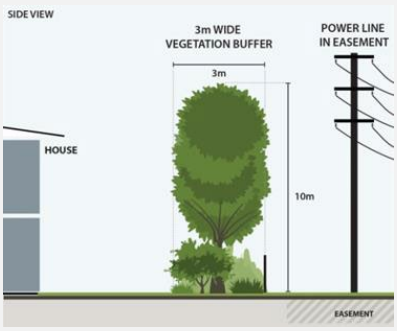
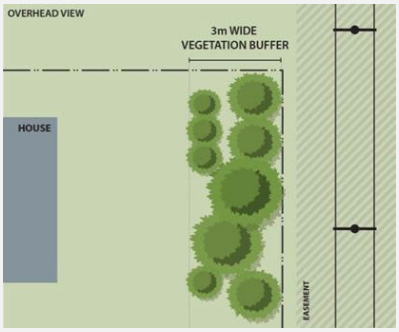
Specific benchmarks for assessment

Table 5.2.7.3 – Benchmarks for Assessable Development

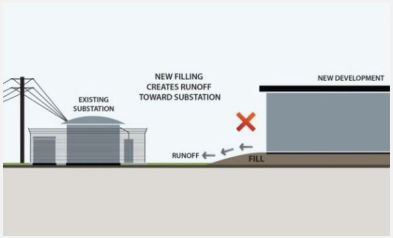
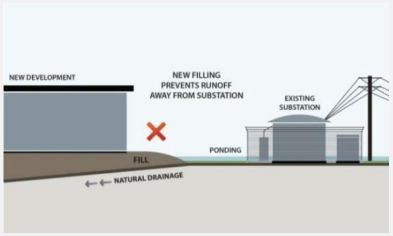
Performance Outcomes	Acceptable Outcomes	Response
PO1 Development does not increase risk to community health or safety, or the operation and reliability of regional infrastructure, including high pressure gas pipelines.	No acceptable outcome is nominated.	**Complies with PO1** The proposal does not increase risk to health or safety of the community.
PO2 Development involving a sensitive land use is sufficiently separated from regional infrastructure to: (a) avoid safety risks to people and property; (b) minimise nuisance from noise, visual impact or another source; (c) protect the physical integrity and operation of regional infrastructure; and (d) maintain adequate access for any required maintenance or upgrading of the regional infrastructure.	AO2 Sensitive land uses maintain a setback of at least: (a) 50m from an electricity transmission (Powerlink operated) substation; (b) 20m from any other substation; (c) 40m from a Powerlink high voltage electricity transmission corridor; (d) 20m from bulk water storage infrastructure.	**Not Applicable** The proposed development does not involve a sensitive land use.
PO3 Other than where they are separated from the infrastructure by a road, buildings are oriented to avoid direct overlooking of regional infrastructure.	No acceptable outcome is nominated. Editor's note–The figure below provides an illustration of buildings oriented away from infrastructure.	**Not Applicable** The proposed development does not involve the construction of new buildings.

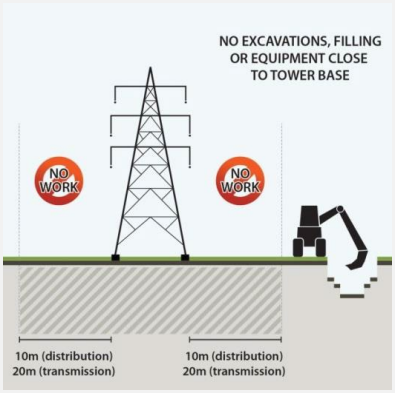
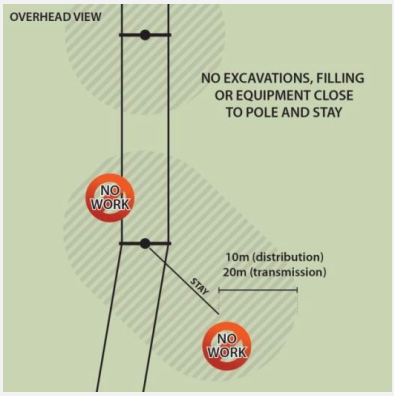
Performance Outcomes	Acceptable Outcomes	Response
		
PO4 Regional infrastructure within private land is protected by easements in favour of the service provider.	AO4 Existing easements are maintained and where none currently exist, new easements are created which are sufficient for the service provider's requirements.	**Complies AO4** The proposed development maintains existing easements and is located entirely outside these easements.
Major electricity infrastructure (including substations)		
PO5 Where major electricity infrastructure is located within public open space, the dimensions and characteristics of the open space area are sufficient to accommodate the electricity easement, in combination with compatible recreational facilities and landscaping, so that: (a) it has an open and expansive character, with landscape design that helps break up the linear and vertical dominance of the infrastructure; (b) landscaping is located outside the easement area and screens and softens the appearance of poles, towers or other structures; and (c) recreational facilities and landscaping are compatible with major electricity infrastructure, having regard to safety, height, the conductivity of materials and access to major electricity	No acceptable outcome is nominated. Editor's note–The figures below provide an example of a well-integrated transmission corridor.  	**Not Applicable** The proposed development does not include major electricity infrastructure.

Performance Outcomes	Acceptable Outcomes	Response
infrastructure by the electricity provider; and (d) the function of the open space is maintained.		
PO6 Where major electricity infrastructure is located in a road: (a) an attractive, functional and safe streetscape is achieved; (b) street furniture, planting and lighting are compatible with major electricity infrastructure, having regard to safety, height and the conductivity of materials; (c) the reserve has sufficient width to accommodate significant landscaping which assists in screening and softening poles, towers or other structures and equipment from nearby sensitive land uses; and (d) convenient access to the infrastructure by the electricity provider is maintained.	AO6 Development maintains the clearances required under schedules 4 and 5 of the Electrical Safety Regulations 2013.	**Not Applicable** The proposed development does not include major electricity infrastructure.
PO7 Development avoids potential noise nuisance from electricity substations.	AO7 Noise emissions do not exceed 5db(A) above background noise level at the facia of a building measured in accordance with AS 1055.	**Complies with AO7** A Noise Impact Assessment has been prepared to address the potential noise impacts. Refer to **Appendix I** for further information.
PO8 There is sufficient space within the site to establish landscaping which minimises the visual impacts of major electricity infrastructure and substations.	AO8 A minimum 3m wide densely planted landscaped buffer is provided along the boundary adjoining the major electricity infrastructure, including provision for advanced trees and shrubs that will grow to a minimum height of 10m.	**Not Applicable** The proposed development does not include major electricity infrastructure.

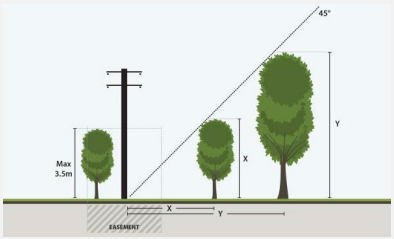
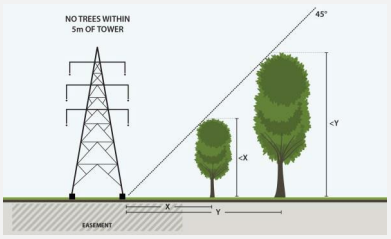
Performance Outcomes	Acceptable Outcomes	Response
	Editor's note–The figures below provide an example but are not drawn to scale. Applicants may find guidance in Powerlink's Screening your home from powerlines: A guide for planting trees and shrubs outside of easements to screen powerlines. Applicants should also note that vegetation will need to maintain statutory clearances (refer to Ergon's Standard for Vegetation Management and Standard for Vegetation Clearance Profile).   	
Reconfiguring a Lot		
PO9 Reconfiguring lots does not compromise or adversely impact upon the efficiency, functionality and integrity of regional infrastructure networks.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve the Reconfiguration of a Lot.
PO10 Lot reconfiguring integrates regional infrastructure sites and corridors within the overall layout. Layout and design:	No acceptable outcome is nominated.	

Performance Outcomes	Acceptable Outcomes	Response
(a) ensures land of sufficient size and suitability is allocated to accommodate the existing and future regional infrastructure networks; (b) minimises the visual impact of regional infrastructure; (c) maintains access to the infrastructure by the infrastructure provider via existing or new easements; and (d) provides for an interface to surrounding land uses that minimises the potential for nuisance (including noise and odour), health and safety concerns. Editor's note–Applicants should consult with infrastructure providers early in the planning process to determine relevant infrastructure requirements.		
PO11 Where reconfiguring involves a major electricity infrastructure corridor, the corridor is incorporated within a useable public open space network wherever possible.	No acceptable outcome is nominated.	
Operational works		
PO12 Development within a bulk water storage infrastructure corridor is located, designed and constructed to: (a) protect the integrity of the water supply infrastructure; and (b) maintain adequate access for any required maintenance or upgrading work to the water supply infrastructure.	AO12 Development does not involve works within a bulk water storage infrastructure corridor.	**Not Applicable** The proposed development does not involve operational works.

Performance Outcomes	Acceptable Outcomes	Response
PO13 Earthworks do not restrict access to major electricity infrastructure by the electricity providers, using their normal vehicles and equipment.	No acceptable outcome is nominated.	
PO14 Development does not increase flooding, drainage or erosion conditions that would impact on the regional infrastructure.	No acceptable outcome is nominated. Editor's note–The figures below illustrate the concept.   	**Not Applicable** The proposed development does not involve operational works.
PO15 Development maintains the clearances required under schedules 4 and 5 of the Electrical Safety Regulations 2002.	No acceptable outcome is nominated.	**Not Applicable** The proposed development does not involve operational works.
PO16 Earthworks are undertaken in a way that: (a) ensures stability of the land on or adjoining major electricity infrastructure; (b) does not otherwise impact on the safety and reliability of major electricity infrastructure; and	AO16.1 No earthworks are undertaken: (a) for overhead transmission infrastructure, within 20m of a transmission tower, pole or stay; or (b) for overhead distribution infrastructure, within 10m of a tower, pole or stay; or (c) for transmission substations, within 50m of a property	**Not Applicable** The proposed development does not involve operational works.

Performance Outcomes	Acceptable Outcomes	Response
(c) does not restrict the placement or use of the electricity provider's equipment.	boundary shared with the substation; or (d) for any other substation, within 10m of a property boundary shared with the substation. Editor's note–The figures below illustrate the concept.   	
	AO16.2 No earthworks are undertaken, or other loading or displacement of earth caused, within the easement of an underground power line.	**Not Applicable** The proposed development does not involve operational works.
PO17 Other services and infrastructure works (such as stormwater, sewerage, water and the like) do not impact on the safety and	AO17.1 Underground services are not located within 20m of a tower, pole, stay or substation boundary.	**Not Applicable** The proposed development does not involve operational works.
	AO17.2	**Not Applicable**

Performance Outcomes	Acceptable Outcomes	Response
reliability of major electricity infrastructure.	No valve pits occur within: (a) for transmission infrastructure, 60m of a tower, pole or stay; or (b) for distribution infrastructure, 20m of a tower, pole or stay.	The proposed development does not involve operational works.
	AO17.3 Pipelines with cathodic protection systems comply with part 13 of the Electrical Safety Regulation 2013.	**Not Applicable** The proposed development does not involve operational works.
	AO17.4 Underground services traversing an easement cross at right angles to the overhead or underground lines.	**Not Applicable** The proposed development does not involve operational works.
	AO17.5 Trenches for services are backfilled to be compacted in 150mm layers to at least 95% modified dry density compaction ratio.	**Not Applicable** The proposed development does not involve operational works.
	AO17.6 Trenches under construction are not left open overnight.	**Not Applicable** The proposed development does not involve operational works.
PO18 Vegetation does not pose a risk to the physical integrity, safety or reliability of or access to major electricity infrastructure.	AO18.1 Vegetation planted within an easement of an overhead powerline or the area of influence of a powerline has a mature height of no more than 3.5m.	**Not Applicable** The proposed development does not involve operational works.
	AO18.2 Vegetation planted within an underground powerline easement does not have a mature root system greater than 150mm in depth and is not	**Not Applicable** The proposed development does not involve operational works.

Performance Outcomes	Acceptable Outcomes	Response
	located directly above the powerline.	
	AO18.3 Vegetation adjoining easements complies with the clearance dimensions illustrated in the figures below.   	**Not Applicable** The proposed development does not involve operational works.
	AO18.4 Planting complies with (as relevant to the infrastructure concerned): (a) Energex's Safe Tree Guidelines; or (b) Ergon's Plant Smart brochures; or (c) Powerlink's Screening Your Home from Powerlines information. Editor's note–Further information can be found on the websites of the abovementioned infrastructure providers.	**Not Applicable** The proposed development does not involve operational works.

URBIS

RURAL ZONE CODE

Specific Benchmarks for Assessment

Table 4.2.9.3(a) - Benchmarks for development that is accepted subject to requirements and assessable development

Performance Outcomes	Acceptable Outcomes	Response
Site Layout		
PO1 Any non-residential buildings, structures and open use areas are setback from site boundaries to ensure that the amenity of adjoining land and the rural character of the locality are maintained.	AO1 Non-residential buildings, structures and open use areas are setback not less than: (a) 20m from any road frontage of the site; (b) 10m from all other site boundaries; and (c) 100m from any existing dwelling on an adjacent property.	**Complies with AO1** The solar arrays and substation infrastructure are located a minimum of 30m away from site boundaries and road frontages. No infrastructure or structures are located within 100m of surrounding dwellings.
Lighting		
PO2 Lighting does not cause undue disturbance.	AO2 The vertical illumination resulting from direct, reflected or incidental light coming from a site does not exceed 8 lux when measured at any point 1.5m outside of the boundary of the property at any level from ground level up.	**Will Comply with PO2** The development will ensure any lighting will be designed and located to minimise potential impacts.
Infrastructure		
PO3 Premises have a level of infrastructure that allows for the efficient functioning of the use while not impacting on nearby land uses or the environment.	AO3.1 Premises are connected to a reliable supply of potable water.	**Complies with PO3** The proposal gains access to all required infrastructure. Vehicle entrance to the site will be via Keith Venables Road which enters the site through the eastern boundary of Lot 2 via an access easement and is accordance with the terms of that easement.
	AO3.2 Premises are provided with an on-site sewerage treatment and disposal system.	
	PO3.3	

Performance Outcomes	Acceptable Outcomes	Response
	Premises have a legal access to a constructed road.	
Separation		
PO4 Sensitive land uses are sufficiently separated from approved or existing lawful activities likely to generate impacts to protect the safety and amenity of residents and to ensure the ongoing operation of those activities is not prejudiced.	AO4 Minimum separation distances to animal keeping (being kennels or catteries), intensive animal industries and extractive industries are in accordance with table 4.2.9.3(c).	**Not Applicable** The proposed development is not located in proximity to animal keeping, intensive animal industries or extractive industries.
Home based business – bed and breakfast		
PO5 Bed and breakfast accommodation is ancillary to the bona fide rural use of the site and rural activities in the locality are not in any way compromised by the introduction of the use.	AO5.1 The activity is undertaken on the same site as bona fide rural activities.	**Not Applicable** The proposed development is not for a home based business - bed and breakfast.
	AO5.2 Accommodation for visitors is limited to a maximum of 4 rooming units being located within 50m of the dwelling house occupied by the host family.	
	AO5.3 Cooking facilities available to the visitor are only those within and normally associated with the dwelling house of the host family.	
	AO5.4 Bedrooms for visitors are located either: (a) in the same building as the kitchen, bathing and toilet facilities provided for the visitor; or (b) in a separate building where the access between the two buildings is via a sealed pathway	

Performance Outcomes	Acceptable Outcomes	Response
	with a minimum width of 1m, provided with appropriate under-drainage and where necessary for safety, the installation of night lighting.	
	AO5.5 A maximum of 12 people (including residents) is accommodated on the site at any one time.	
Home based business – other		
PO6 Development does not detract from the effective operation of the primary use or the rural landscape character and amenity of site.	AO6 The home based business: (a) is carried out within a residential dwelling or in a separate building on the same land; (b) does not exceed 33% of the total floor area of the dwelling; (c) is carried out by a permanent resident of the dwelling; and (d) does not involve public display of goods or the hiring out of any item.	**Not Applicable** The proposed development is not for a home based business – other.
PO7 Activities conducted do not interfere with the amenity of the neighbourhood as a result of lighting, noise, radio or electrical interference, odours, vibration, emissions or waste.	AO7.1 Other than where for home based child care, hours of operation are limited to 8am to 5pm Monday to Friday and 8am to 2pm Saturday.	
	AO7.2 Background noise levels at the boundary of the site are not increased.	
PO8 Premises do not generate traffic greater than reasonably	AO8 Traffic flows in the residential street do not increase by more	

Performance Outcomes	Acceptable Outcomes	Response
expected in the surrounding residential area.	than 5 vehicular trips to and from the site per day.	
PO9 Signage on the premises is small and unobtrusive.	AO9 Only one sign is provided on the site with a maximum face area of 0.5m2 and containing only the name of the person carrying out the activity, the name of the business and the type of business.	
PO10 Premises do not impose a load on public utilities greater than would otherwise be reasonable from the same residential use of the premises.	AO10 Premises are serviced using existing infrastructure facilities including water supply, sewerage, stormwater drainage, waste collection and disposal.	
PO11 Heavy vehicle parking: (a) has a direct nexus with a home based business or rural use carried out on the site; and (b) does not adversely affect the amenity of neighbouring properties. Editor's note—A heavy vehicle is a vehicle with more than 4.5 tonnes GVM (gross vehicle mass), GCM (gross combination mass) or more than 2 tonnes ATM (aggregate trailer mass).	AO11.1 No more than two heavy vehicles are parked on the site.	
	AO11.2 While on-site, vehicles: (a) are not operated between the hours of 10pm and 6am; (b) are not left idling for more than 5 minutes at any one time; and (c) do not have a refrigeration unit running.	
Roadside Stalls		
PO12 Roadside stalls are small in scale and do not impact negatively upon the amenity, character or safety of the locality and the safety and efficiency of roads. Editor's note–A roadside stall on a state controlled road requires approval from the	AO12.1 Any structure used for the sale of goods or produce is limited to 20m2 gross floor area.	**Not Applicable** The proposed development is not for a roadside stall.
	AO12.2 Access to the structure is via the existing primary property access point.	

Performance Outcomes	Acceptable Outcomes	Response
Department of Transport and Main Roads.	AO12.3 Produce or goods sold is grown, made or produced on the land on which the roadside stall is erected.	
Stock route network		
PO13 Development does not interfere with the use of stock routes or diminish their landscape, recreational or heritage values. Editor's note–Stock routes are shown on overlay map OM2.	AO13 Development is not located within the stock route network.	**Not Applicable** The site is not located within the stock route network.
Hazardous activities		
PO14 Where development is in proximity to an abandoned mine, geotechnical investigations and adequate protections are applied. Editor's note–The location of mining claims, mineral development licences and mining leases is available online via GeoResGlobe.	AO14 Abandoned mines are avoided.	**Not Applicable** The proposed development does not involve hazardous activities.
Landslip hazard		
PO15 Development does not occur on land that is vulnerable to landslip and erosion and ensures the safety of people and property.	AO15 Where involving building work, development is not located on slopes greater than 15%.	**Not Applicable** The proposed development does not involve building work on slopes greater than 15%.
Table 4.2.9.3(b) – Benchmarks for assessable development only		
Protecting rural production		
PO16 Other than for public infrastructure, non-agricultural development within priority agricultural areas does not result	No acceptable outcome is nominated	**Complies PO16** Refer to Section 9 of the Town Planning Report.

Performance Outcomes	Acceptable Outcomes	Response
in a net loss to agricultural production. Editor's note–A net loss is one that results in widespread or irreversible impacts to existing or future agricultural activities, such as a significant reduction in the supply of raw product or altering resources necessary to maintain the function of the land.		
PO17 Development occurs on the least productive part of the site.	No acceptable outcome is nominated	**Complies PO17** Refer to Section 9 of the Town Planning Report.
PO18 Development does not prejudice the ongoing operation, intensification or expansion of nearby farming activities.	No acceptable outcome is nominated	**Complies PO18** Refer to Section 9 of the Town Planning Report.
PO19 Development is buffered so nuisance from normal farming practices such as spray drift, odour, noise and the like are avoided.	No acceptable outcome is nominated	**Complies PO19** The proposal is designed to minimise potential nuisance to surrounding farming practices. No impacts are foreseen to be created by the development.
PO20 Development does not interfere with the use of cane tram lines. Editor's note–Cane tram lines are shown on the road hierarchy map in Figure 6.2.1.3.	No acceptable outcome is nominated	**Not Applicable** The site or surrounds do not include cane tram infrastructure.
PO21 Development does not interfere with the use of stock routes or diminish their landscape, recreational or heritage values. Editor's note–Stock routes are shown on overlay map OM2.	No acceptable outcome is nominated	**Not Applicable** The site or surrounds is not included within a mapped stock route.
Reconfiguration		

Performance Outcomes	Acceptable Outcomes	Response
PO22 Reconfiguration does not result in the creation of any new lots in the Groper Creek, Jarvisfield, Jerona or Wunjunga village precincts.	No acceptable outcome is nominated	**Not Applicable** The proposed development is not for a Reconfiguration of a Lot.
PO23 Except as provided for in PO24, reconfiguration does not result in the creation of: (a) lots less than 30ha in the priority agricultural area or agricultural land classification class A and B areas shown on overlay map OM2; or (b) lots less than 100ha elsewhere. Editor's note–to remove any doubt, this performance outcome does not apply to land in a village precinct.	No acceptable outcome is nominated	
PO24 Reconfiguration creating lots less than required under PO23 occurs only where: (a) consolidating the balance of the farmed lot, which is a minimum of 30ha and the single lot created contains a dwelling house that existed at the commencement of this planning scheme; or (b) rearranging lot boundaries in a way that demonstrates a substantial improvement in the management of the land or the protection of its environmental values without increasing the number of lots. Editor's note–Applicants would need to demonstrate the nature of the improvement, such as amalgamating lots	No acceptable outcome is nominated	

Performance Outcomes	Acceptable Outcomes	Response
to create a large balance area for an environmental reserve or that is managed in accordance with an appropriate land management plan.		
Industrial activities		
PO25 Other than in the Groper Creek, Jarvisfield, Jerona or Wunjunga village precincts, industries in the rural zone include only: (a) rural industries; (b) industries processing agricultural products which require a rural location: (i) for proximity to the produce being processed; or (ii) to ensure a clean environment separate from general industrial activities; or (iii) to secure a lot size larger than lots available within the industrial zoned land; (c) industries associated with the use or processing of commodities grown in the region, such as sugar cane and grain; (d) extractive industries and other industries that require separation from urban or rural residential areas; and (e) renewable energy facilities.	No acceptable outcome is nominated	**Complies PO25** The site is not located in the stated precincts and the proposed development is for a renewable energy facility (solar farm).
Aquaculture, intensive animal industries, animal keeping and extractive industry		
PO26 Premises used for extractive industry, aquaculture, animal keeping or intensive animal husbandry are separated from existing sensitive land uses so that significant impact from noise,	No acceptable outcome is nominated Editor's note—Applicants seeking approval for intensive animal industries should refer to the 'National Guidelines for Beef Cattle Feedlots in Australia, National Beef Cattle Feedlot	**Not Applicable** The proposed development is not for aquaculture, intensive animal industries, animal keeping or extractive industries.

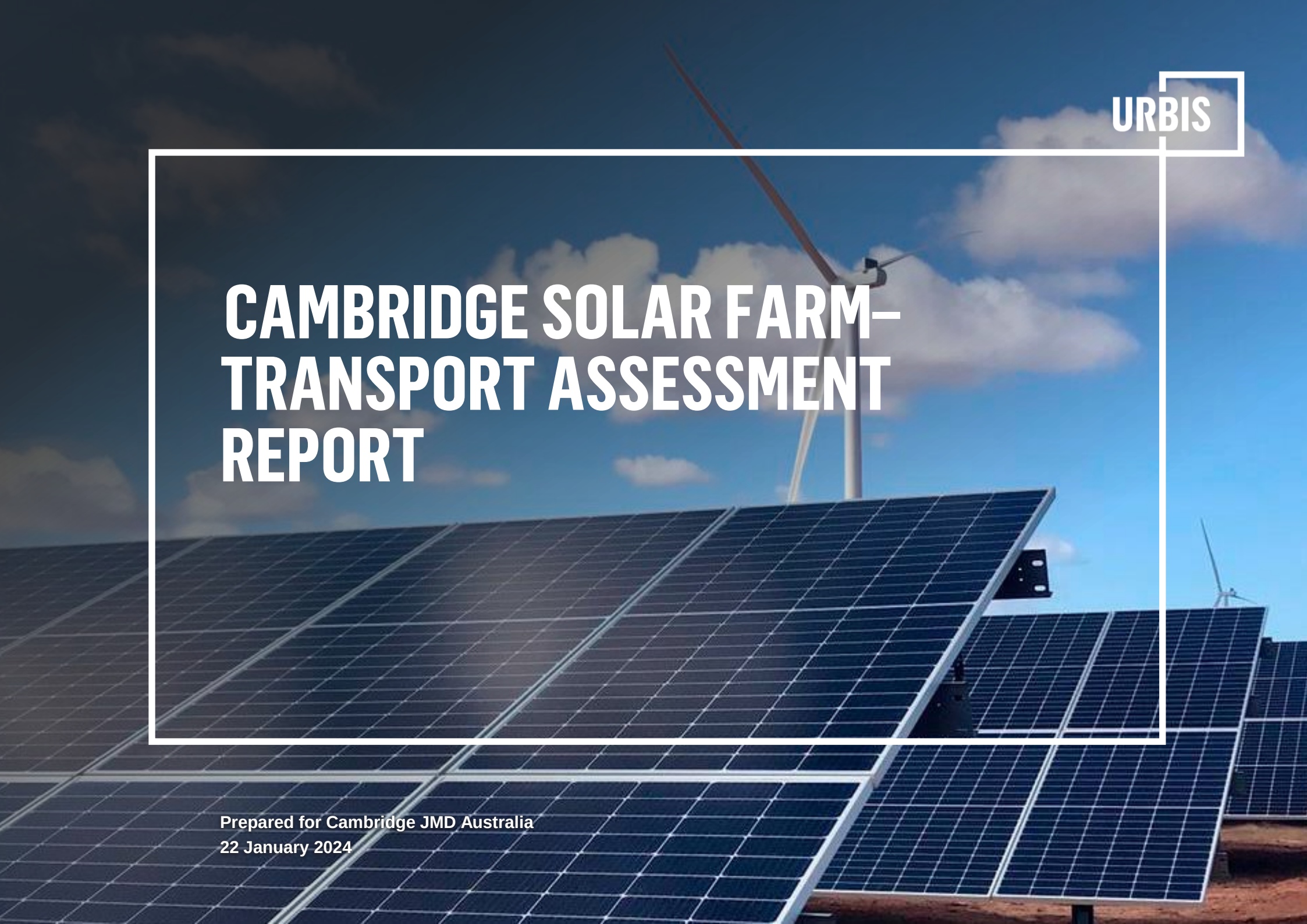
Performance Outcomes	Acceptable Outcomes	Response
odour or other emissions are unlikely to be experienced at the sensitive receptor.	Environmental Code of Practice', 'Queensland Dairy Farming Environmental Code of Practice', 'National Environmental Guidelines for Piggeries' and 'Queensland Guidelines Meat Chicken Farms and that applicants consult with the relevant State government department prior to the lodgement of a development application. For other uses council may require a study that, amongst other matters, identifies how the development meets Environmental Protection (Air) Policy 2019 or Environmental Protection (Noise) Policy 2019.	
Rural workers' accommodation, non-resident workforce accommodation, caretaker's accommodation		
PO27 Accommodation directly supports primary production on the site or in the immediate locality.	No acceptable outcome is nominated	**Not Applicable** The proposed development is not for rural workers' accommodation, non-resident workforce accommodation, or caretaker's accommodation.
PO28 Rural workers' accommodation and nonresident workforce accommodation is small scale.	AO28 The accommodation facility houses 10 workers or fewer.	
Development for tourism and recreation purposes		
PO29 Tourist accommodation is small scale and in the form of bed and breakfasts, farm stay and eco-tourism cabins and camping.	No acceptable outcome is nominated	**Not Applicable** The proposed development is not for tourism or recreation purposes.
PO30 Tourist and recreation related development has a limited footprint and involves only minor earthworks or clearing.	No acceptable outcome is nominated	
Renewable energy facilities		
PO31	No acceptable outcome is nominated	**Complies PO31**

Performance Outcomes	Acceptable Outcomes	Response
Commercial-scale solar and wind farms are located within renewable energy investigation areas. Where commercial-scale solar and wind farms cannot locate in these areas, they are within corridors close to the electricity transmission grid along with other renewable energy facilities. Editor's note–Renewable energy investigation areas are shown on overlay map OM9.		Refer to Section 9 of the Town Planning Report.
PO32 Land used for a renewable energy facility is remediated and restored to its predevelopment condition upon decommissioning.	No acceptable outcome is nominated	**Complied PO32** In the event of closing the solar farm, a decommissioning plan would remove all structures associated with the facility and backfill ground holes to restore the land to a standard appropriate for rural use. Solar farm infrastructure does not sterilise the rural amenity of the land, and upon decommissioning would be returned to its original condition or higher. Therefore, there is no net loss to agricultural production in the longer term.
Extractive industries		
PO33 The siting and extent of extractive industry operations provides for a buffer of a width that effectively screens the operation from external view and minimises the impacts of the operation on the surrounding locality.	No acceptable outcome is nominated	**Not Applicable** The proposed development is not for extractive industries.
PO34	AO34.1	

Performance Outcomes	Acceptable Outcomes	Response
Operations are undertaken over hours that minimise disturbance to the surrounding locality.	Other operations limited to within the hours of 6am to 6pm Monday to Saturday.	
	AO34.2 No operations are conducted on Sundays or public holidays.	
PO35 Unauthorised or accidental public entry does not occur.	AO35.1 People-proof fencing having a minimum height of 1.8m erected and maintained at a safe distance around excavated areas and ponded water having a depth of 1m or more.	
	AO35.2 The site has signs to warn the public of operations and safety hazards.	
PO36 On-site drainage is designed, constructed and maintained to prevent ponding in excavated areas.	No acceptable outcome is nominated.	
PO37 Haulage routes are sealed and do not traverse urban or rural residential areas other than where using state controlled roads.	No acceptable outcome is nominated.	
PO38 Disturbed areas are progressively rehabilitated to achieve a stable landform and be acceptable for future use utilising native plant species in rehabilitation. Editor's note–A bond for the performance of rehabilitation works is provided to the council, with bonded monies	No acceptable outcome is nominated.	

Performance Outcomes	Acceptable Outcomes	Response
progressively returned as staged works are completed.		
Rural amenity and character		
PO39 Development maintains the visual amenity and landscape character of the locality.	No acceptable outcome is nominated.	**Complies with PO39** The proposal maintains appropriate levels of amenity on the site and to adjoining properties.
PO40 Development minimises the loss of existing vegetation and earthworks on the site.	AO40 Development is conducted within an existing cleared area.	**Complies with AO40** The proposal is designed to avoid clearing of significant vegetation. Refer to the Ecological and Environmental Approvals Report in **Appendix K** for further information.
PO41 Development minimises impacts on the natural environment and maintains habitat areas and corridors.	No acceptable outcome is nominated.	**Complies with AO40** The proposal is designed to avoid clearing of significant vegetation and habitats. Refer to the Ecological and Environmental Approvals Report in **Appendix K** for further information.
PO42 Landscaping is provided to screen views from surrounding roads and neighbouring sites.	No acceptable outcome is nominated.	**Not Applicable** The proposal does not include landscaping treatments, but will retain the existing significant vegetation to aid in screening.
PO43 Non-residential buildings or structures are screened by a landscaped buffer when adjoining land used for rural residential or residential development.	AO43 Buildings or other structures are screened by a landscaped buffer of 5m when adjoining residential or rural residential development.	**Not Applicable** The site is not adjoined rural residential land uses.
PO44 Development does not create significant impacts as a result of	No acceptable outcome is nominated.	**Complies PO44** The proposed development will not create adverse impacts on

Performance Outcomes	Acceptable Outcomes	Response
noise, odour, dust, volume of traffic generated or other cause.		the site or to surrounding properties.
PO45 Development does not impact on public health or safety.	No acceptable outcome is nominated.	**Complies PO45** The proposed development will not impact on public health or safety and will be constructed to comply with the relevant infrastructure and safety standards.
PO46 Sensitive land uses and other forms of inappropriate development do not occur in proximity to former mining activities and related hazards (e.g. abandoned mines, tunnels and shafts), which may cause risk to people and property. Editor's note–The location of mining claims, mineral development licences and mining leases is available online via GeoResGlobe.	No acceptable outcome is nominated.	**Complies PO46** The site is not located in proximity to any former mining activities as per GeoResGlobe mapping.



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CAMBRIDGE SOLAR FARM– TRANSPORT ASSESSMENT REPORT

Prepared for Cambridge JMD Australia
22 January 2024

This report is dated 22/01/2024 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd's (Urbis) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of Cambridge JMD Australia (Instructing Party) for the purpose of a Transport Assessment and not for any other purpose or use. Urbis expressly disclaims any liability to the Instructing Party who relies or purports to rely on this report for any purpose other than the Purpose and to any party other than the Instructing Party who relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events including wars, civil unrest, economic disruption, financial market disruption, business cycles, industrial disputes, labour difficulties, political action and changes of government or law, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or made in relation to or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

Urbis has made all reasonable inquiries that it believes is necessary in preparing this report but it cannot be certain that all information material to the preparation of this report has been provided to it as there may be information that is not publicly available at the time of its inquiry.

In preparing this report, Urbis may rely on or refer to documents in a language other than English which Urbis will procure the translation of into English. Urbis is not responsible for the accuracy or completeness of such translations and to the extent that the inaccurate or incomplete translation of any document results in any statement or opinion made in this report being inaccurate or incomplete, Urbis expressly disclaims any liability for that inaccuracy or incompleteness.

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Project code	P0044793
Report number	03

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SIGNATURE:	

CONTENTS

01

INTRODUCTION

1.1 INTRODUCTION

PURPOSE

Urbis has been engaged by **Cambridge JMD Australia** to provide traffic and transport engineering advice in relation to the proposed **renewable energy park** in **Upper Haughton**, located at **approximately 58.5 km south of Townsville, QLD**.

The purpose of this report is to assess the traffic and transport components of the proposed development against the requirements of **Burdekin Shire Council Planning Scheme and TMR's Guide to Traffic Impact Assessments**.

The report addresses the following:

- External traffic impacts
- Development traffic impacts
- Pavement impacts
- Safety assessment
- Active and public transport connections

SCOPE OF WORKS

Urbis has undertaken the following tasks to complete this transport assessment report:

- Evaluation of the traffic generated by the proposed development.
- Prepared detailed assessment of the development's traffic impact on the intersections listed below:
    - Bruce Highway / Upper Haughton Road interchange;
    - Barratta Road / Keith Venables Road;
- Assessment of the range and accessibility of active and public transport connections.
- Assessment of pavement impacts for the development.
- Safety assessment for the development.

02

SITE LOCATION

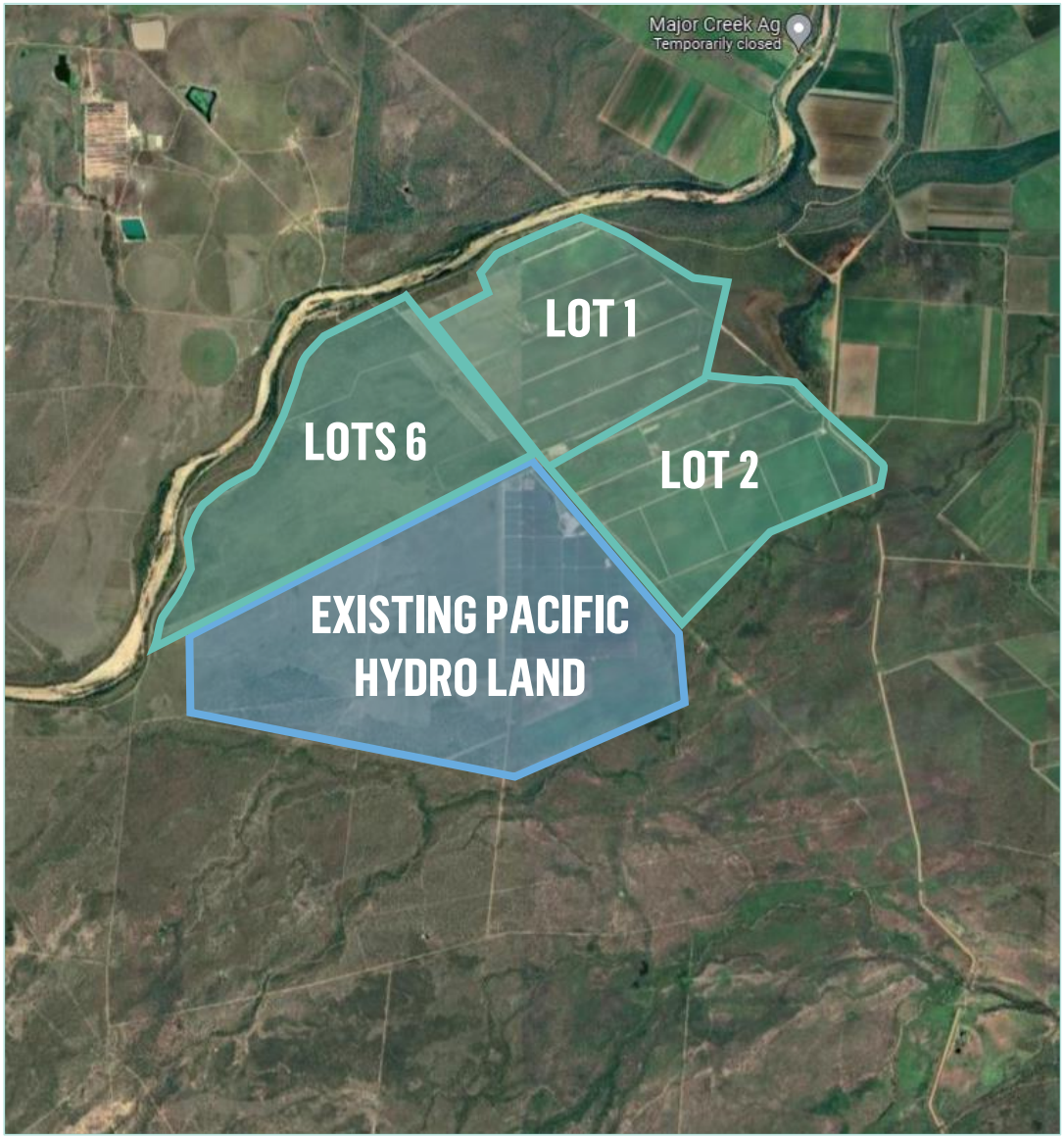
2.1 SITE LOCATION

The proposal site is located at Upper Haughton, on an irrigated sugarcane farming business located adjacent to the Burdekin River and 24 kilometres to the west of Ayr, North Queensland. The site is predominately vacant, relatively flat, and includes tracts of vegetation and other natural features such as water bodies. Access to the site is via Keith Venables Road.

The location of the site is shown in Figure 2-1, with the site proximity to the nearby major centres of Townsville and Ayr shown in Figure 2-1.1. The land adjacent to the south-east has an existing Pacific Hydro-owned solar farm (known as Haughton Solar Farm) occupying it.

Figure 2-1.1: Site Proximity to Major Centres

Figure 2-1: Site Location



03

PROPOSED DEVELOPMENT

3.1 PROPOSED DEVELOPMENT

The proposed development involves a renewable energy park consisting of up to initially 300MWac grid connected solar farm, substation and associated ancillary infrastructure (invertors, transformers and cabling) across 641ha located on Lot 6. Provision for a further 1,700MWac (approximate) of behind the meter (or grid connected at a future date) of solar, battery storage with associated ancillary infrastructure (invertors, transformers and cabling) will be developed across the 1,400ha consisting of Lots 1 and 2. The solar farm will be developed in four stages to allow for staged construction and grid connection approval.

The proposed development seeks approval for the following:

- Development Permit for Material Change of Use for Renewable Energy Facility (Solar Farm), Major Electricity Infrastructure and Substation in three stages.

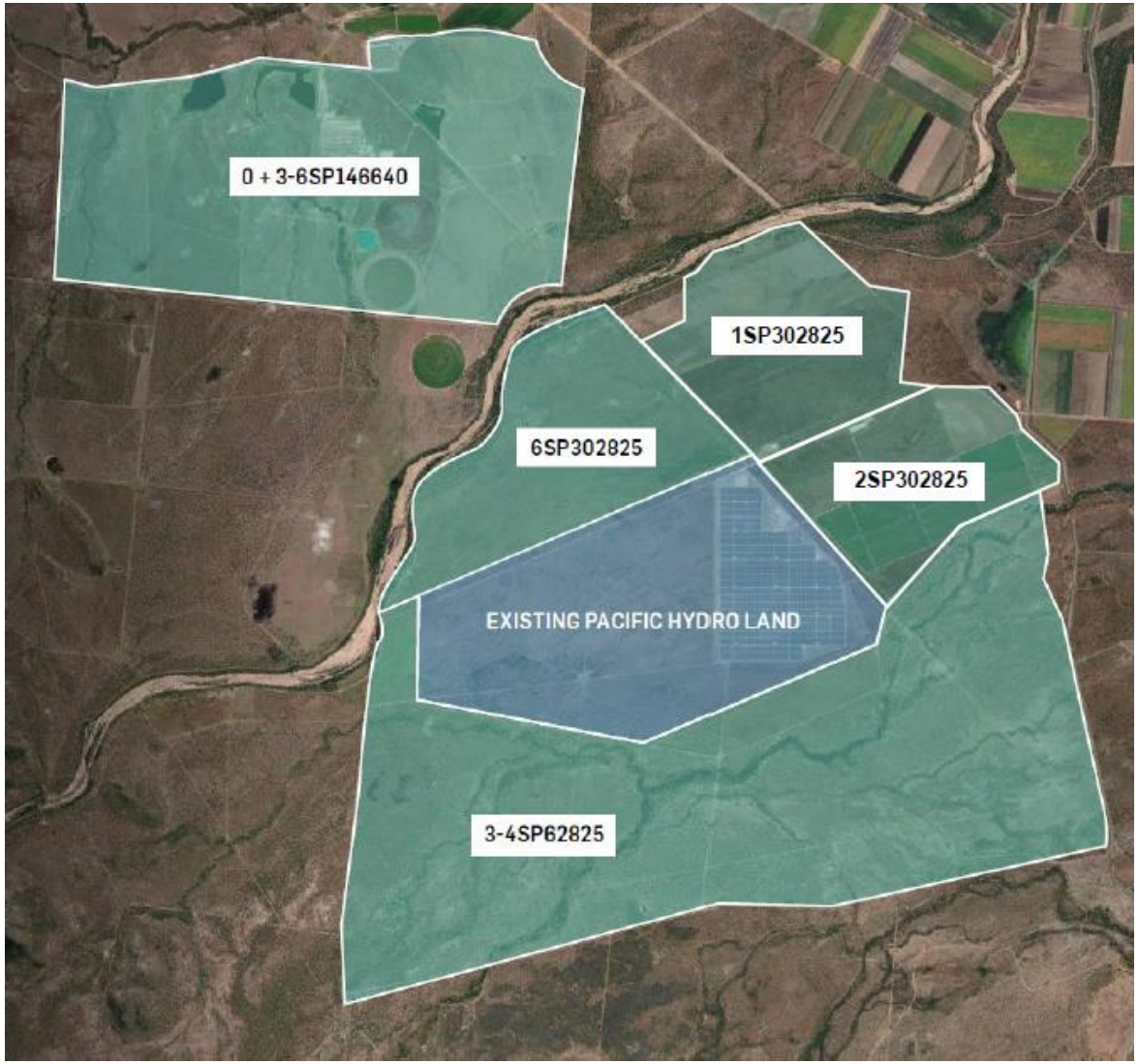
Stage 1 of the Haughton Solar Farm comprised a development application for a 300MW Solar Farm, anticipated to include the following proposed works:

- Installation of solar panels, battery storage and substation(s), and connections to existing electricity network
- Internal access roads
- Landscaping
- Ancillary site works.

Following the completion of Phase 1 of the project regarding site constraints analysis, Cambridge are looking to pursue a development application for a staged Solar Farm over **Lots 1, 2 and 6**.

Development Plans are provided in **Appendix A**.

Figure 3-1: Proposed Development



3.2 CONSTRUCTION AND OPERATIONS OVERVIEW

The staged construction of the site will involve works occurring on Lots 1, 2, 6A and 6B with varying construction periods. A summary of the stage yields and the construction periods are provided in Table 3-2.

The development site is anticipated to begin construction in 2025, with the site completely developed and operational in 2033.

As part of the construction phase, a number of different classes of heavy vehicles will access the site, including B-Doubles, Articulated Vehicles, concrete trucks, worker shuttle buses and oversized 38m long 10-axle platform trailer for substation / transformer deliveries. These deliveries are anticipated to be a rare event, with most heavy vehicles comprising B-Doubles and Articulated Vehicles.

Table 3-2: Construction and Operations Overview

Stage	Lot	Area	Potential Capacity (MWp)	Potential Power (Mwac)	Estimated Construction Time	Estimated Construction State	Estimated Construction End
1	6A	391.65 Ha	373.85	300.00	24 months	Q1 2025	Q4 2026
2	6B	268.35 Ha	257.03	205.55	18 months	Q1 2027	Q3 2028
3	1	687.77 Ha	698.95	560.10	24 months	Q3 2028	Q3 2030
4	2	400.60 Ha	539.36	433.20	24 months	Q4 2030	Q4 2032

04

EXISTING TRANSPORT NETWORKS

4.1 LOCAL ROAD NETWORK

The development site is located at Upper Haughton, approximately 58.5 kilometres south-east of Townsville and 42 kilometres to the west of Ayr, North Queensland.

The site is predominately surrounded by rural free-hold and agricultural land, with sugar cane farms and associated sugar cane rail lines located in the surrounding areas.

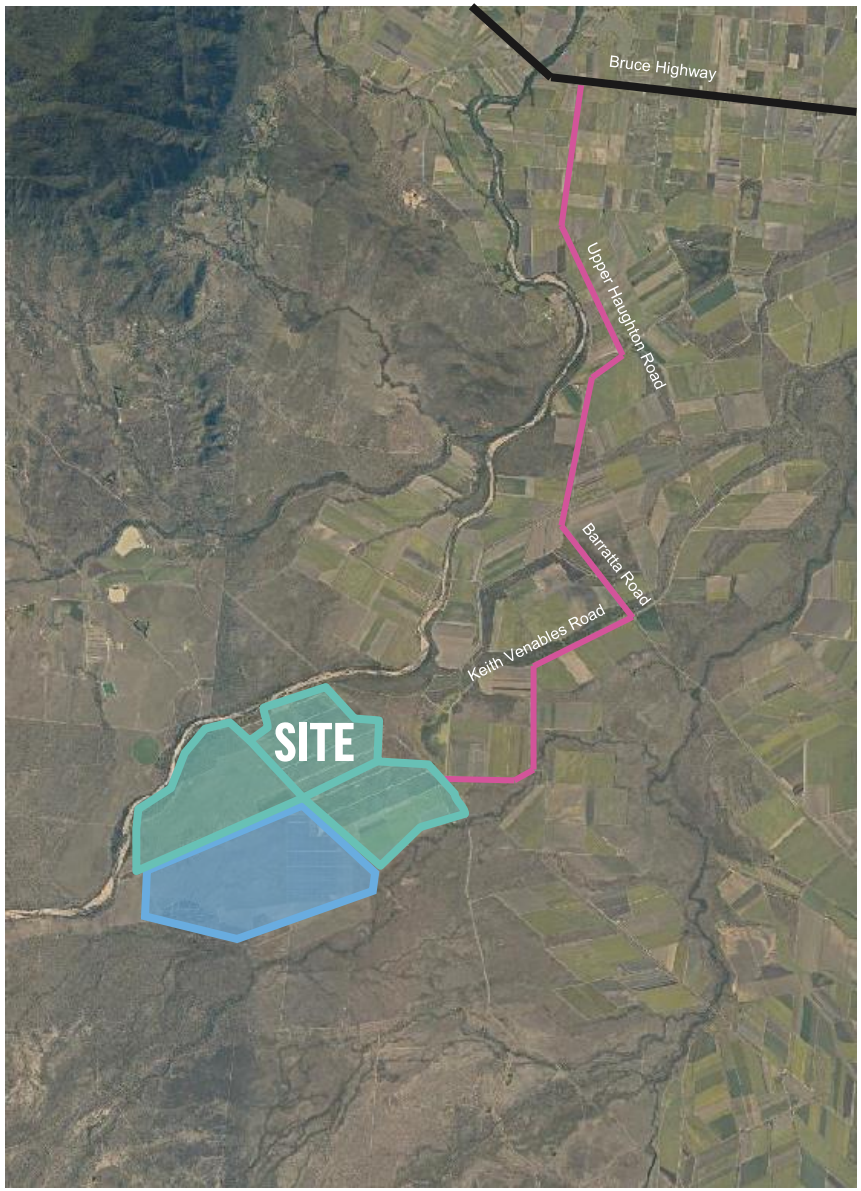
Access to the site is via Keith Venables Road, with the site located approximately 12.3km from the Barratta Road / Keith Venables Road intersection, as shown in Figure 4-1.

The key roads related to the development are illustrated on Figure 4-1 with the key characteristics of these roads as per the Burdekin Shire Planning Scheme Road Hierarchy Map are summarised in Table 4-1.

Table 4-1: Local Road Network

Road	Classification	Posted Speed Limit	Typical Form
Bruce Highway	State-controlled Highway	100km/h	Two-lane, two-way undivided, sealed 12.0m (2 x 3.5m lanes, 1.0m wide centreline, 2 x 2m sealed shoulders)
Upper Haughton Road	Local road of regional significance	100km/h	Two-lane, two-way undivided, sealed 7.0m (2 x 3.5m lanes)
Barratta Road	Local road of regional significance	100km/h	Two-lane, two-way undivided, sealed 7.0m (2 x 3.5m lanes)
Keith Venables Road	No classification	100km/h (unposted rural)	Two-lane, two-way undivided, sealed and unsealed (6.0m-7.0m width)

Figure 4-1: Existing Road Network



4.2 TRAFFIC VOLUMES

Historic traffic counts on the Bruce Highway were sourced from TMR's annual traffic census data for the state-controlled road network for the closest census location to the development site, approximately 12.3km east of the Bruce Highway / Upper Haughton Road interchange.

In 2019, the bidirectional Annual Average Daily Traffic (AADT) on the Bruce Highway was 5,481vpd, split between 2,690 vehicles travelling east towards Ayr, and 2,791 vehicles travelling west towards Townsville. Of these trips, heavy vehicles accounted for a total of 1,116 vehicles (20.36%). From the AADT Hourly Averages (provided in **Appendix B**), approximately 8.2% of vehicles travel during the peak hour (4:00PM-5:00PM), with the morning peak hour occurring from 9:00AM-10:00AM.

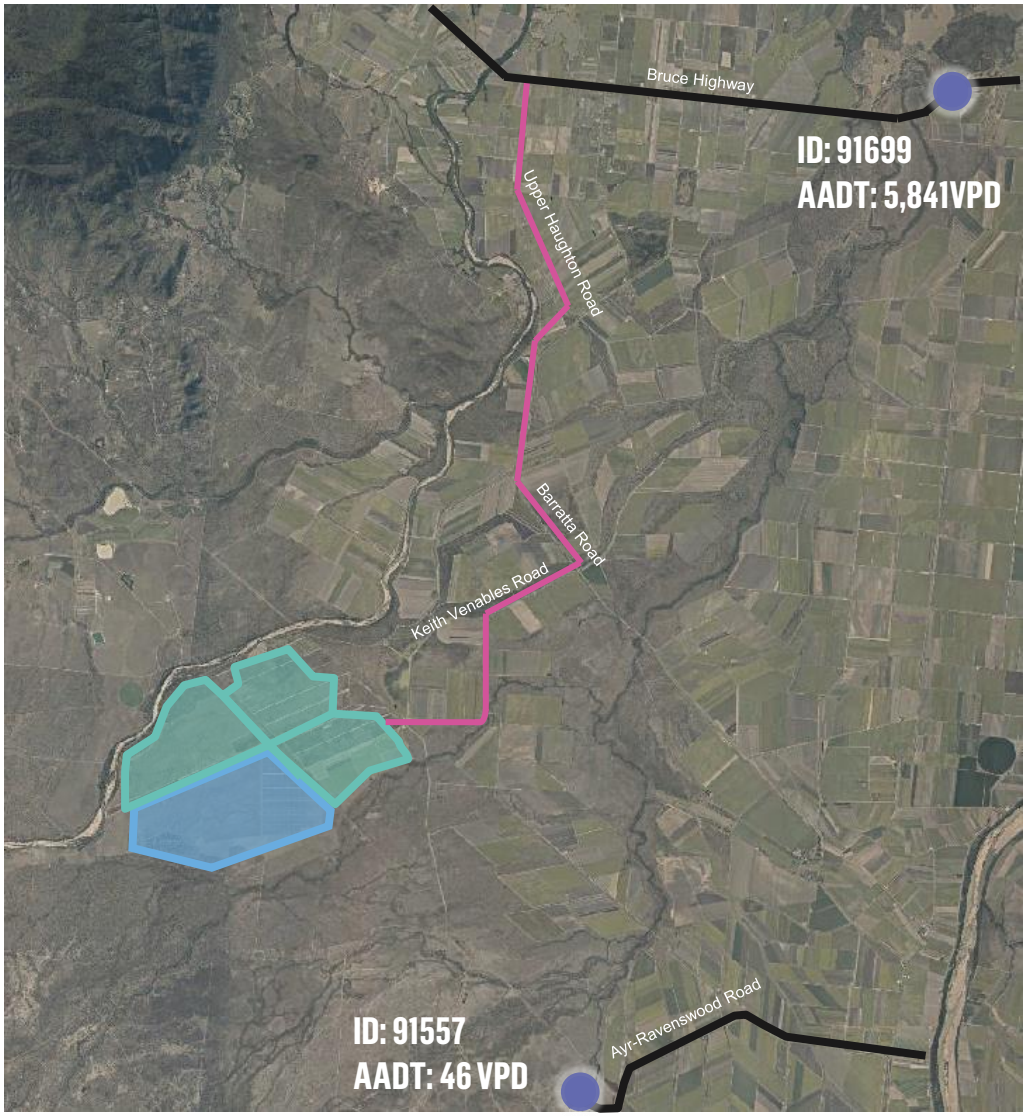
Therefore, the impacts of the development generated traffic on the road network will be assessed for these peak hours.

As no historic traffic volumes were available for the council-controlled section of the route, the TMR annual census data at the nearby Ayr-Ravenswood Road 13.5km south-west of the site was examined, given it is of a similar location and similar order road to the network. In 2019, the bidirectional AADT data of the road was 46 vehicles.

From first principles, this would approximate to a bi-directional peak hour volume of 5 vehicles. Given such low volumes, a nominal 10 light vehicles and 5 heavy vehicles was applied to each movement of the council-controlled network for the peak hours to ensure a conservative assessment. It is acknowledged that this is likely an overestimation of the traffic on the local roads (Keith Venables Road, Barratta Road) however, for the purposes of this assessment will allow for a robust assessment.

Given the nature of the development, it is anticipated that the construction volumes will exceed the operation and post construction volumes. As such, intersection analysis will be conducted using the construction traffic volumes.

Figure 4-2: TMR AADT Census Locations



4.3 – ROAD CONDITION (FROM SITE INSPECTION)

A site inspection was undertaken on 9th November 2023 to investigate the anticipated route heavy vehicles will utilise from the Port of Townsville to the site in Upper Haughton.

The majority of the route utilised the Bruce Highway between Townsville and Horseshoe Lagoon. The route then utilised the council-controlled network of Upper Haughton Road, Barratta Road and Keith Venables Road to reach the site, shown in Figure 4-3.

The site inspection noted that the majority of the route to the site was utilised by heavy vehicles in the existing situation, with the majority of Keith Venables Road and all of Upper Haughton Road and Barratta Road being approved B-Double routes as per the National Heavy Vehicle Registry (NHVR) mapping.

A total of three sugar cane level rail crossing were seen on the route, two on Upper Haughton Road and one on Keith Venables Road. The location of the sugar cane level rail crossings are shown in Figures 4-3.2 on the next page.

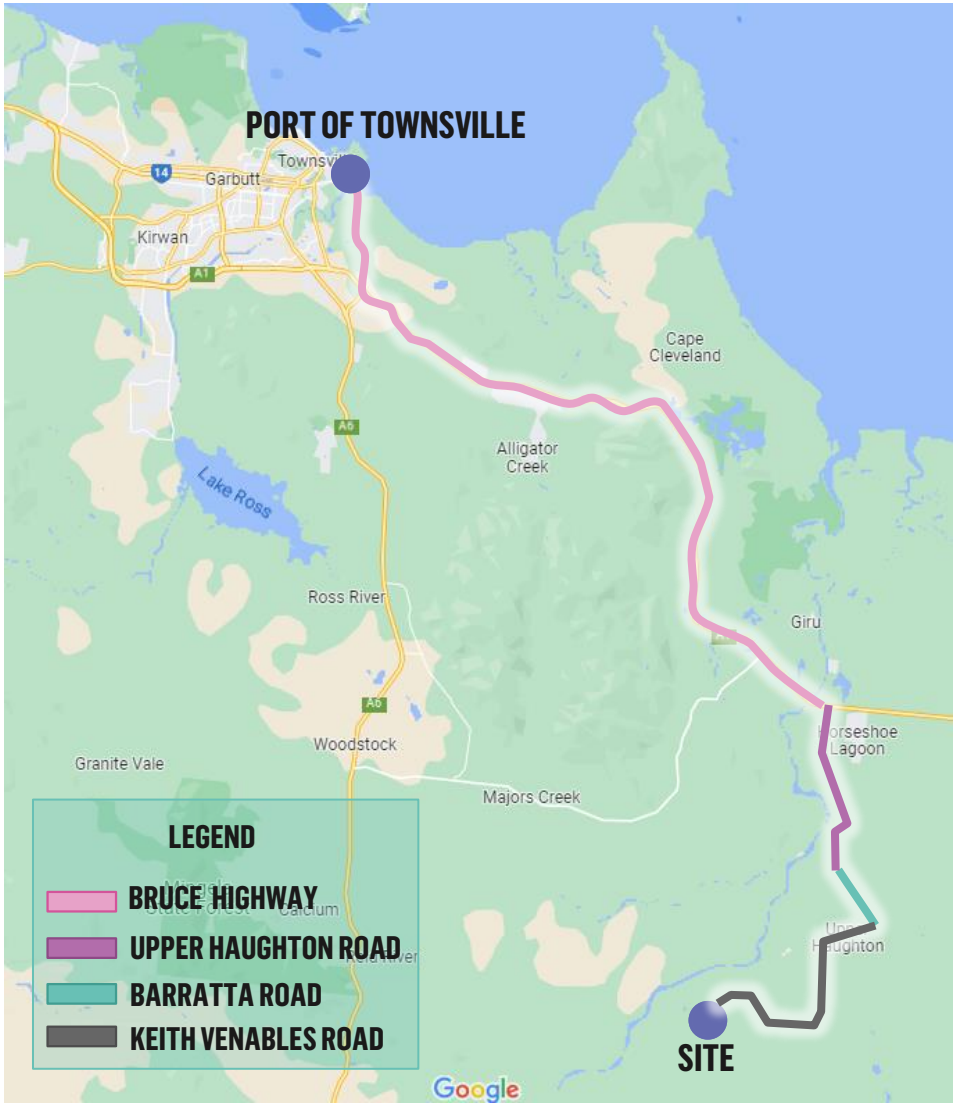
The four kilometres of Keith Venables Road closest to the site at the time of inspection was unpaved (unsealed) dirt roads. Additionally, there was a small creek with a bridge on Keith Venables Road at the start of the four-kilometre unsealed dirt road section. However, it was flat with a smooth transition between the bridge and the road surface, and is anticipated to have been utilised by heavy vehicles for the existing Pacific Hydro Land solar farm. Nevertheless, a structural assessment of the bridge should be completed prior to the commencement of construction traffic movements to site.

The route utilised the newly built Upper Haughton Road interchange with the Bruce Highway, constructed between 2019-2022. It was noted that the new interchange ramps would be spacious enough for heavy vehicles, and is an improvement to the previous four-way at-grade intersection with the Bruce Highway.

There were no significant issues identified during the site inspection regarding the use of heavy vehicles to transport materials from the port to the site.

The location of the sugar cane level rail crossings and observed overhead powerlines are shown in Figures 4.3-4 and 4.3-5, respectively on the following page. A road use management plan (RUMP) is to be developed prior to construction to ensure all light and heavy vehicle contractors are aware of the route, and the conditions and layout of the state and council-controlled network, particularly for any heavy vehicles requiring increased vertical clearance.

Figure 4-3: Site Inspection Route



4.3 – ROAD CONDITION (FROM SITE INSPECTION)

The road conditions of Upper Haughton Road, Barratta Road and Keith Venables road along the site inspection route are shown in Figure 4-3.1, Figure 4-3.2 and Figure 4-3.3, respectively.

Figure 4-3.1: Bruce Highway / Upper Haughton Road Interchange

Figure 4-3.2: Barratta Road Facing North

Figure 4-3.3: Keith Venables Road Sealed (top) and Unsealed (bottom)

4.3 ROAD CONDITION (CONT)

Figure 4-3.4: Level Crossings

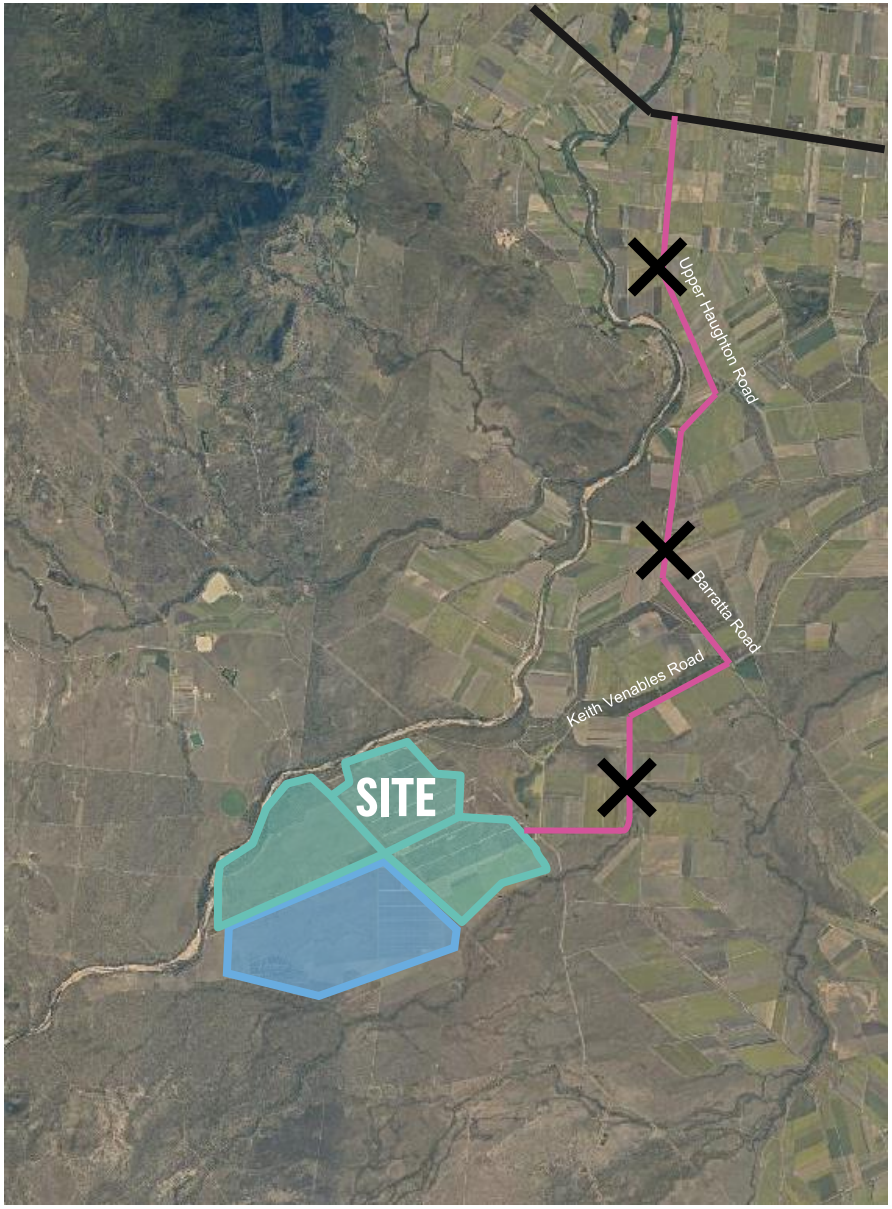
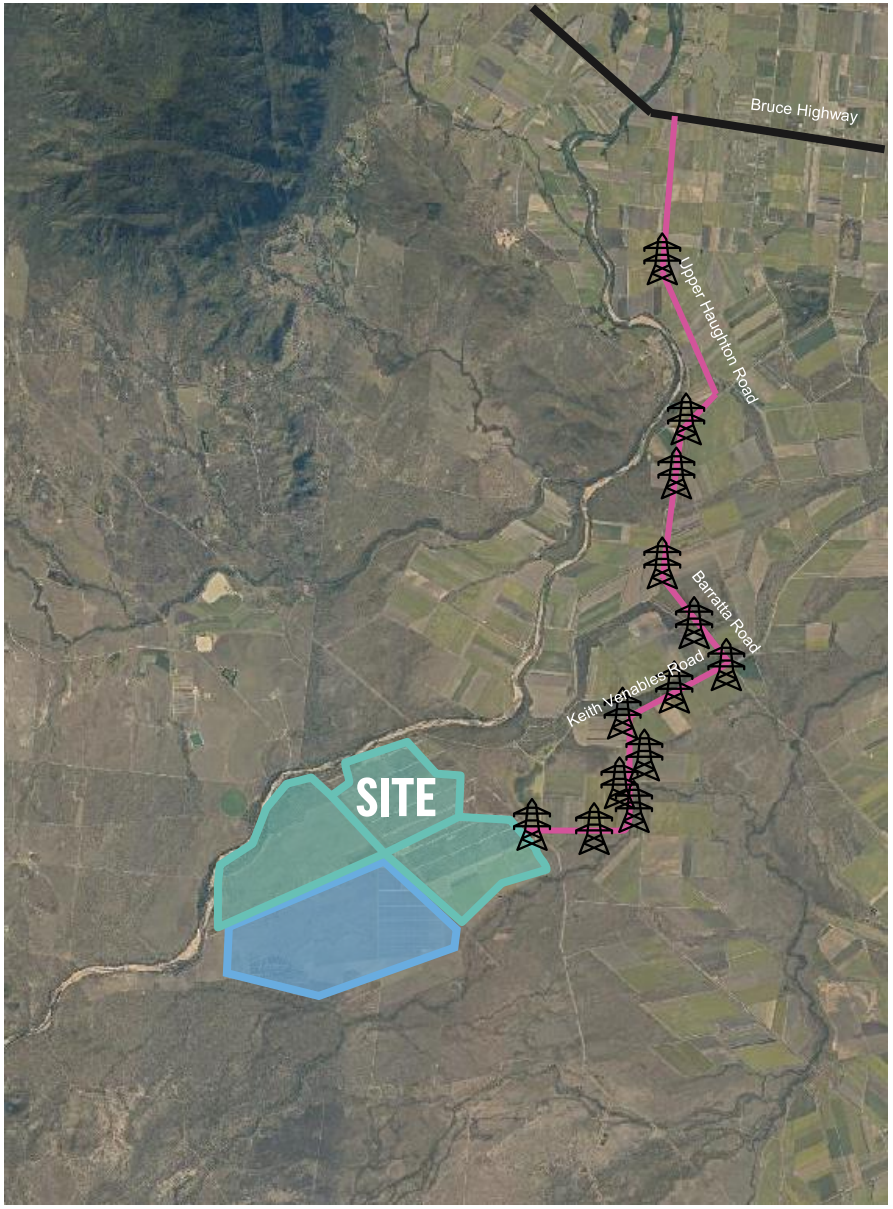


Figure 4-3.5: Powerline Crossings



4.4 – ACTIVE TRANSPORT AND PUBLIC TRANSPORT FACILITIES

Given the remote location of the development and surrounding land uses, there are no active or public transport facilities in the surrounding area. It is anticipated that all construction and post-construction traffic will occur via private car use.

05

FUTURE TRANSPORT NETWORK

5.1 – FUTURE TRANSPORT NETWORK

LOCAL NETWORK UPGRADES

As per the Burdekin Shire Council Local Government Infrastructure Plan (LGIP) Plans for Trunk Infrastructure – Transport Roads, both Upper Haughton Road and Barratta Road are listed as trunk roads, as shown in Figure 5-1.

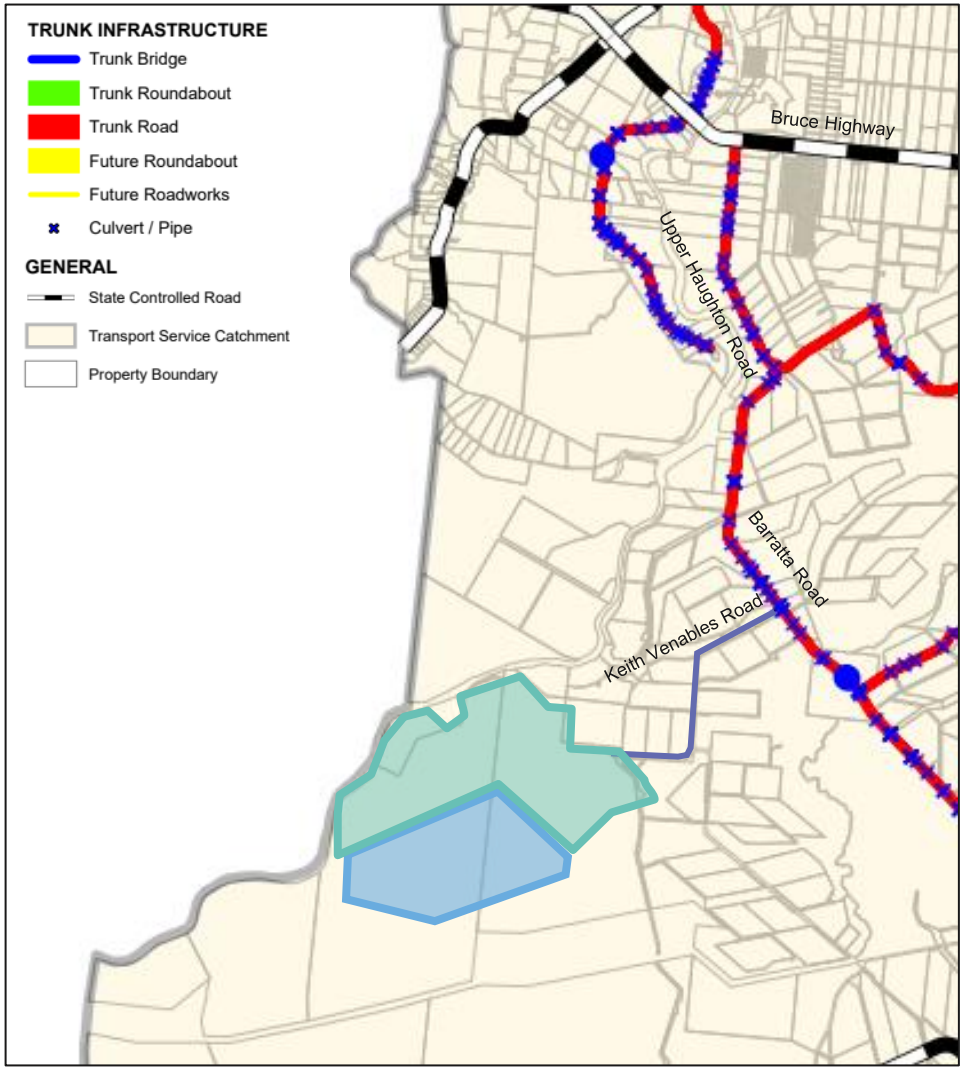
STATE NETWORK UPGRADES

TMR's Queensland Transport and Roads Investment Program 2023-2024 to 2026-2027 includes an investment for pavement rehabilitation works along Barratta Road at various locations (QTRIP ID: 1145533), estimated to occur around 2023-2024, with stage 2 (QTRIP ID: 2741382) occurring from 2024-2027. These are summarised on Table 5-1.

Table 5-1: QTRIP Investment Programs

Investment ID	Location	Indicative Budget	Estimated Timing
1145533	Barratta Road (Upper Haughton), various locations, rehabilitate pavement	$1,347,000	2023-24
2741382	Barratta Road (Upper Haughton) (Stage 2), rehabilitate pavement	$1,200,000	2026-27

Figure 5-1: BSC LGIP Trunk Roads



06

DEVELOPMENT TRAFFIC IMPACTS

6.1 – DEVELOPMENT TRAFFIC VOLUMES

6.1.1 – TRAFFIC GENERATION VOLUMES

CONSTRUCTION TRAFFIC

Traffic generated by the development has been obtained through consultation with Cambridge JMD Australia for the 300MW farm on lot 6A. The anticipated construction traffic for lots 1, 2 and 6B have been based on the Lot 6A numbers and scaled depending on anticipated construction time (increased trips for shorter construction period) and MW output (increased trips for higher MW) to determine the peak construction vehicle period and generation. Although worker shuttle buses are anticipated to be used, for a conservative assessment it has been assumed that workers will be travelling via private vehicle.

As demonstrated, the peak construction traffic is anticipated to occur during construction of Stage 3 (Lot 1 560MW component), estimated to occur from 2028 to 2030.

Expected daily traffic during construction is expected to include 295 light vehicles and 19 heavy vehicles, with the peak hour traffic generation consisting of 94 light vehicles and 6 heavy vehicles. A summary of the anticipated construction traffic is shown in Table 6-1.

OPERATIONS TRAFFIC

Once each stage has finished construction, it is anticipated that vehicles will need to access the site for day-to-day operations and maintenance. Post construction traffic generated by the development has been obtained through consultation with Cambridge JMD Australia. The total day-to-day operations and maintenance staff post construction is 75 staff for all Stages 1-4. This has been scaled for each stage based on the MW for each lot to determine operation staff and volumes. A summary of the anticipated operational traffic is shown in Table 6-2.

ASSESSED TRAFFIC VOLUMES

During construction of Phase 4, it is expected that Phase 1, 2 and 3 operational traffic will access the site. During Phase 4, it is anticipated that 75 light vehicles and 8 heavy vehicles will access the site in each peak hour for operations and maintenance.

Table 6-1: Construction Phase Traffic Generation

	Stage 1 Lot 6A	Stage 2 Lot 6B	Stage 3 Lot 1	Stage 4 Lot 2
MW	300MW	205.6MW	560.1MW	433.2MW
Construction Period	24 months	18 months	24 months	24 months
MW Scaling Factor	-	0.685	1.867	1.444
Time Scaling Factor	-	1.333	1	1
Total Scaling Factor	-	0.914	1.867	1.444
Daily Movements	167	153	312	242
Daily LV Movements	158	145	295	229
Daily HV Movements	10	10	19	15
Peak Movements	53	49	99	77
Peak LV Movements	50	46	94	73
Peak HV Movements	3	3	**6**	5

** Minor discrepancies due to rounding*

Table 6-2: Operations Phase Peak Traffic Generation

	Lot 6A	Lot 6B	Lot 1	Lot 2
MW	300MW	205.6MW	560.1MW	433.2MW
Staff trips during operation (by stage)	15	10	28	22
Staff trips during operation (cumulative)	15	25	53	75
Operational heavy vehicles (cumulative)	2	4	6	8

6.1 – DEVELOPMENT TRAFFIC VOLUMES

6.1.2 – PEAK HOUR TRAFFIC VOLUMES

The peak traffic is anticipated to occur during Phase 4, with the construction traffic of Lot 2 and the operational traffic of Lots 6A, 6B and 1 all accessing the site at the same time, as demonstrated in Table 6-3.1.

A conservative estimate of the traffic entering and exiting the site during the identified peak hours is shown in Table 6-3.2.

It is anticipated that all light vehicles will enter the development during the AM peak hour, and leave during the PM peak hour (anticipated worker movements). Additionally, it is assumed that the heavy vehicles entering the site will also leave the site during the peak hour (supply/resource deliveries)

Table 6-3.1: Combined Construction and Operations Traffic per Stage – Light Vehicles

	Stage 1 Lot 6A	Stage 2 Lot 6B	Stage 3 Lot 1	Stage 4 Lot 2	Post Construction
MW	300MW	205.6MW	560.1MW	433.2MW	-
Cumulative Operations LV Traffic	-	15	25	53	75
Construction LV Traffic	50	46	94	73	-
Combined LV traffic	**50**	**61**	**119**	**126**	**75**

Table 6-3.2: Design Development Peak Hour Traffic Generation – Stage 4 Construction + Stages 1-3 Operations

Vehicle Type	AM Peak		PM Peak		Total Peak Trips
	Vehicles Entering Development	Vehicles Exiting Development	Vehicles Entering Development	Vehicles Exiting Development	
Light Vehicles	126	0	0	126	252
Heavy Vehicles	6	6	6	6	24
TOTAL	**132**	**6**	**6**	**132**	**276**

** Minor discrepancies due to rounding*

6.2 – TRIP GENERATION FOR CONSTRUCTION AND OPERATIONS

6.2.1– TRIP DISTRIBUTION

In assigning the development generated traffic to the road network, the following assumptions were made:

- All light and heavy vehicles will access the site via Upper Haughton Road, Barratta Road, and Keith Venables Roads.
- All heavy vehicle trips will travel to / from the Port of Townsville to the development site via the Bruce Highway.
- 70% of light vehicle trips will travel to / from the site from Townsville, with 30% travelling to/from Ayr. This split is based on the advised worker accommodation locations which indicated 70% at Townsville and 30% at Ayr. These trips will split at the Bruce Highway / Upper Haughton Road interchange.
- The background traffic growth rate on the Bruce Highway of 1.37% has been applied to the council-controlled network for a conservative estimate.
- The road network peak hour periods have been determined as follows:
  - Weekday AM peak hour 9:00am – 10:00am
  - Weekday PM peak hour 4:00pm – 5:00pm.
- The peak construction and operational traffic period is estimated to occur from 2030-2032, coinciding with the construction of Lot 2 (Stage 4). It has been assumed that the operations for the previous three stages will occur simultaneously while Stage 4 construction occurs.

Figures 6-2.1 and 6-2.2 show the anticipated construction traffic distribution splits for light and heavy vehicles, respectively.

Full Traffic Flow Diagrams for the background, development and design volumes for the study intersections is provided in **Appendix C**.

Figure 6-2.1: Trip Distributions of Total AM and PM Light Vehicle trip volumes

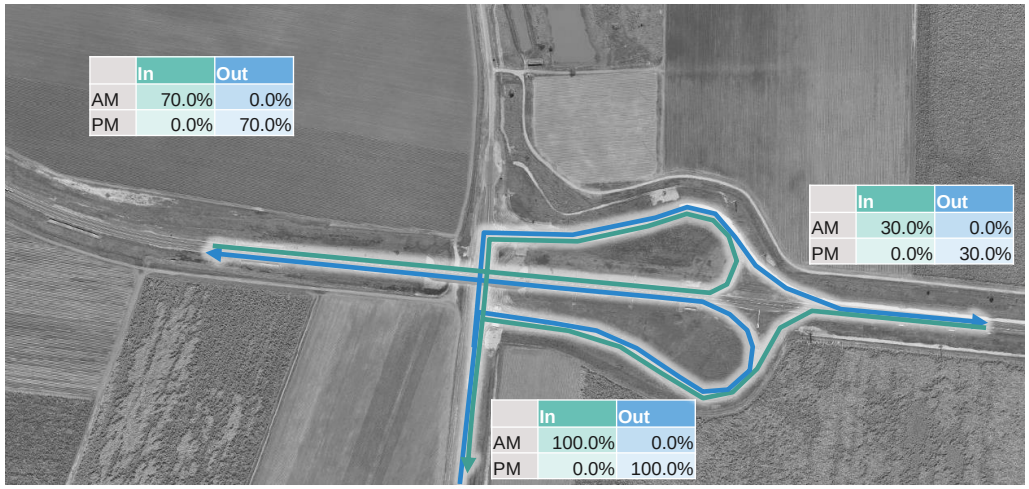
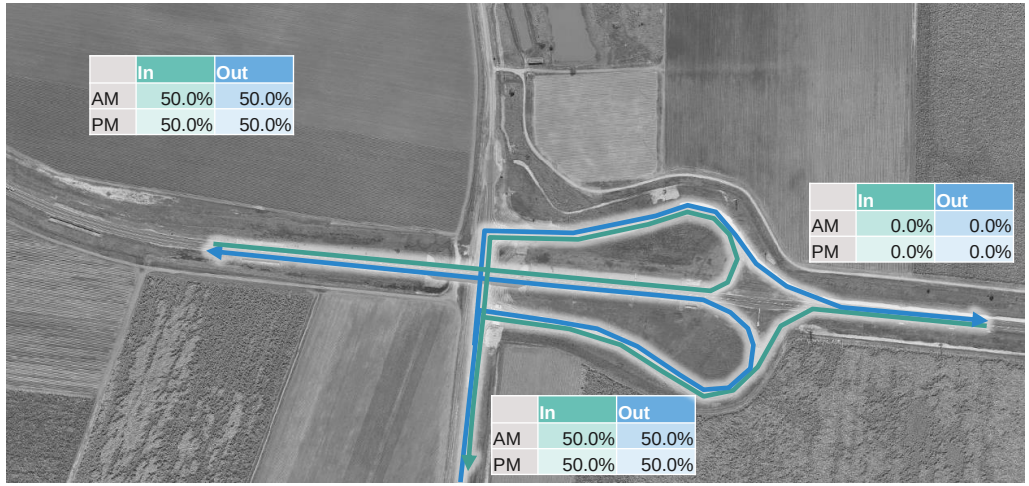


Figure 6-2.2: Trip Distributions of Total AM and PM Heavy Vehicle trip volumes



6.3 – ASSESSMENT INTERSECTIONS AND BACKGROUND TRAFFIC VOLUMES

A total of four intersections surrounding the site have been assessed to determine the proposed development traffic impacts. The Bruce Highway interchange at Upper Haughton Road has been split into three intersections for the purposes of this analysis, indicated in blue on Figure 4-1. The assessed intersections are:

- 101 – Barratta Road / Keith Venables Road
- 102 – Bruce Highway / Upper Haughton Road Interchange North Intersection
- 103 - Bruce Highway / Upper Haughton Road Interchange South Intersection
- 104 – Bruce Highway / Interchange

The TMR AADT Census data indicated that following road peak times of the Bruce Highway:

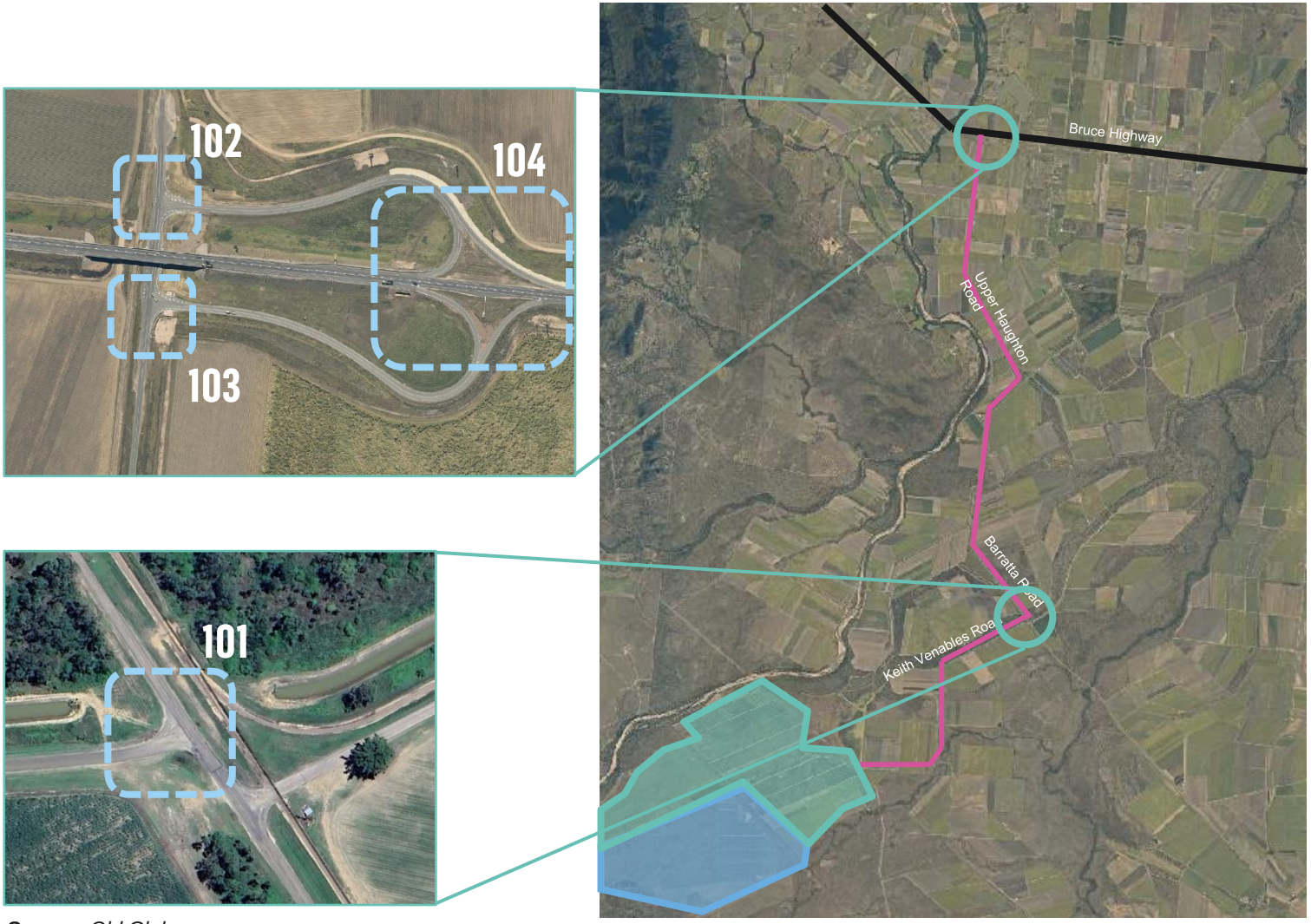
- AM peak period between 8:00am – 9:00am
- PM peak period between 4:00pm – 5:00pm

This census data of the Bruce Highway informed the future assessment of the background traffic.

As outlined in Section 4.2, the local road network volumes have been conservatively estimated as 10 vph per movement for light vehicles and 5 vph per movement for heavy vehicles. This is likely an overestimation of the traffic on the local roads (Keith Venables Road, Barratta Road) however, for the purposes of this assessment will allow for a robust assessment.

The TMR census data is included in **Appendix B.**

Figure 4-1: Study Intersections Surrounding the Site



Source: *Qld Globe*

6.4 – ASSESSMENT PARAMETERS

6.4.3 – ASSESSMENT CRITERIA

The performance of the study intersections have been analysed using SIDRA Intersection 9.1 (SIDRA). SIDRA is an industry recognised analysis tool that estimates the capacity and performance of intersections based on input parameters, including geometry and traffic volumes, and provides estimates of an intersection's Degree of Saturation (DOS), queues and delays.

6.4.3 (I) – INTERSECTION DELAY

The TMR Guide to Traffic Impact Assessments (GTIA) recognises the intersection delay as a greater indicator of intersection performance in comparison to the previous TMR Guidelines for Assessment of Road Impacts of Development (GARID) significance on the degree of saturation (DOS). The TMR GTIA appreciates that in urban networks, the DOS of an intersection may not be the most accurate representation of the intersection's operation as it is expected that existing intersections are approaching capacity with the growth of our cities.

The desired outcome outlined by the GTIA is to ensure that the sum of all intersection delays on the base traffic within the study area does not significantly worsen (i.e., does not increase average delays by more than 5% in aggregate) as a result of the development. The TMR GTIA outlines that the proposed development should seek to achieve no net worsening to efficiency across the impact assessment area. While Council intersections should be included in the impact assessment area, the no net worsening calculations should only apply to intersections with at least one state-controlled road approach, unless otherwise stated by Council.

Intersection mitigation measures (avoid, manage or mitigate) must be considered where the sum of all intersection delays on the base traffic is greater than 5% in aggregate. Furthermore, for priority-controlled intersections, where the average peak hour delays for any movement exceeds 42 seconds, as outlined in the GTIA, the intersection should be upgraded for safety reasons. At an individual intersection-level, where this threshold has been exceeded, Urbis has made further comments. For signalised intersections, given the delay is dependent on the cycle length and phasing arrangement, the DOS is still considered.

6.4.3 (II) – INTERSECTION DEGREE OF SATURATION

While the movement delay is considered to provide a better indication of intersection performance and safety for priority-controlled intersections and roundabouts, the DOS should still be considered when assessing the performance of the intersection.

Table 6-4 provides the DOS thresholds adopted for the assessment. The results of the detailed intersection analysis are discussed in Section 6.

Table 6-4: Adopted Intersection Performance Threshold – Degree of Saturation

Intersection Treatment	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

***Source**: TMR Guidelines for Assessment of Road Impacts Development*

6.5 –ASSESSMENT PARAMETERS

6.5.1 – ASSESSMENT SCENARIOS

In accordance with the **TMR *Guide to Traffic Impact Assessment*** **(2017**), the impact assessment year has been categorised based on the impact type. For the purpose of this assessment, the impact on the site access / frontage, and intersection delay are applicable.

As the peak combined construction and operations volumes are estimated to occur from 2030 – 2032, the analysis will use 2032 as the assessment year for a conservative analysis.

The 10-year design horizon analysis utilises the total operational traffic for the site.

Table 6-5 summarises the impact assessment scenarios for the study intersections.

Full SIDRA intersection summaries are provided in **Appendix D**.

Table 6-5: Traffic Impact Assessment Scenarios

Impact Assessment Scenario	Study Intersections
2019 BG (TMR Census Year)	All intersections
2032 BG (year of peak construction volumes)	All intersections
2032 BG + Dev (year of peak construction volumes)	All intersections
2042 BG (10-year horizon operational volumes)	All intersections
2042 BG + Dev (10-year horizon operational volumes)	All intersections

BG = background traffic, Dev = development traffic

6.5.2 – MODELLING PARAMETERS

A summary of the SIDRA Modelling parameters adopted for this assessment are summarised below:

- The assumed cycle lengths and phasing for the signalised intersections are informed from recent surveys and are presented in the following site summaries.
- Signalised intersections with pedestrian crossings have been modelled to apply a delayed start for opposed left turn movements running in the same phase.
- Peak Flow Factor – **0.95 (30min/60min)**
- Basic Saturation Flow – **1,950tcu/hr.**
- The heavy vehicle proportions for each movement are consistent with the survey data.
- A linear traffic growth of **1.37% per annum** (p.a.) has been adopted for the assessment and applied to the background traffic volumes through all intersections based on existing vehicle growth trends on the Bruce Highway as per the TMR AADT census.
- This growth rate is considered to be a reasonable estimate for the surrounding external road network.

6.6 – SIDRA RESULTS

INTERSECTION 1 – BARRATTA ROAD – KEITH VENABLES ROAD

Discussion

The operation of the priority-controlled T-intersection is within acceptable ranges.

For the 2032 construction volumes design traffic scenarios, the intersection operates with a maximum degree of saturation of 0.14, average intersection delays of 8.4 seconds, and a queue length of 4.4m, less than 1 vehicle length.

As such, the construction volumes for the development are not likely to have a significant impact to the safety or operation of the intersection.

For the 2042 design horizon, when the site will be on operational activities, the intersection operates under better conditions with a maximum degree of saturation of 0.10, average intersection delays of 8.0 seconds and queues length of 3.3m.

Therefore, the impact of operational traffic will not have a significant impact to the safety or operation of the intersection.

Figure 6-6.1. SIDRA Intersection Layout

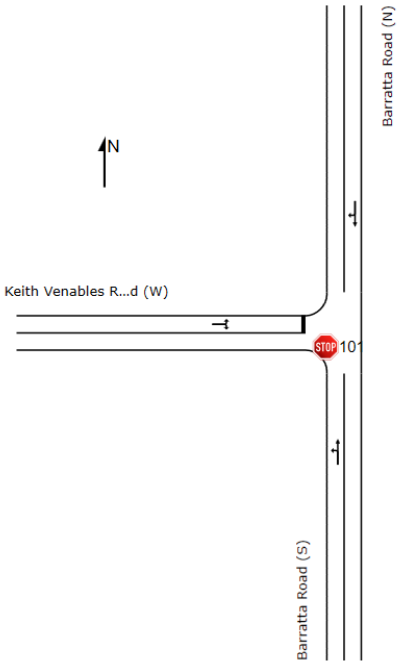


Table 6-6.1. SIDRA Intersection Results

SCENARIO *DoS - Degree of Saturation (%)* *Delay of Critical Approach Movement (s)* *95th Percentile Queue Length (m)* *Critical Movement of Approach*	NORTHERN APPROACH				SOUTHERN APPROACH				WESTERN APPROACH				TOTAL INT			
	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement
AM 2019 BG	0.02	8.6	0.7	N-R	0.02	8.7	0	S-L	0.03	11.5	1	W-L	0.03	6.6	1	W-L
AM 2032 BG	0.03	8.6	0.9	N-R	0.02	8.7	0	S-L	0.04	11.5	1.2	W-L	0.04	6.7	1.2	W-L
AM 2032 BG + Dev	0.11	7.8	3.9	N-R	0.02	8.7	0	S-L	0.05	12.3	1.6	W-L	0.11	7.4	3.9	W-L
AM 2042 BG	0.03	8.7	1	N-L	0.03	8.7	0	S-L	0.04	11.6	1.3	W-L	0.04	6.7	1.3	W-L
AM 2042 BG + Dev	0.08	7.9	2.9	N-R	0.03	8.7	0	S-L	0.05	12.2	1.6	W-L	0.08	7.3	2.9	W-L
PM 2019 BG	0.02	8.6	0.7	N-R	0.02	8.7	0	S-L	0.03	11.5	1	W-L	0.03	6.6	1	W-L
PM 2032 BG	0.03	8.6	0.9	N-R	0.02	8.7	0	S-L	0.04	11.5	1.2	W-L	0.04	6.7	1.2	W-L
PM 2032 BG + Dev	0.03	9	1.2	N-R	0.02	8.7	0	S-L	0.14	11.2	4.4	W-R	0.14	8.4	4.4	W-R
PM 2042 BG	0.03	8.7	1	N-L	0.03	8.7	0	S-L	0.04	11.6	1.3	W-L	0.04	6.7	1.3	W-L
PM 2042 BG + Dev	0.03	9	1.3	N-R	0.03	8.7	0	S-L	0.10	11.4	3.3	W-R	0.10	8	3.3	W-R

6.6 – SIDRA RESULTS

INTERSECTION 2 – UPPER HAUGHTON ROAD / BRUCE HIGHWAY (NORTH INTERSECTION)

Discussion

The operation of the priority-controlled T-intersection is within acceptable ranges.

For the 2032 construction volumes design traffic scenarios, the intersection operates with a maximum degree of saturation of 0.10, average intersection delays of 4.3 seconds, and a queue length of 1.2m, less than 1 vehicle length.

As such, the construction volumes for the development are not likely to have a significant impact to the safety or operation of the intersection.

For the 2042 design horizon, when the site will be on operational activities, the intersection operates under better conditions with a maximum degree of saturation of 0.08, average intersection delays of 4.1 seconds and queues length of 1.0m.

Therefore, the impact of operational traffic will not have a significant impact to the safety or operation of the intersection.

Figure 6-6.2. SIDRA Intersection Layout

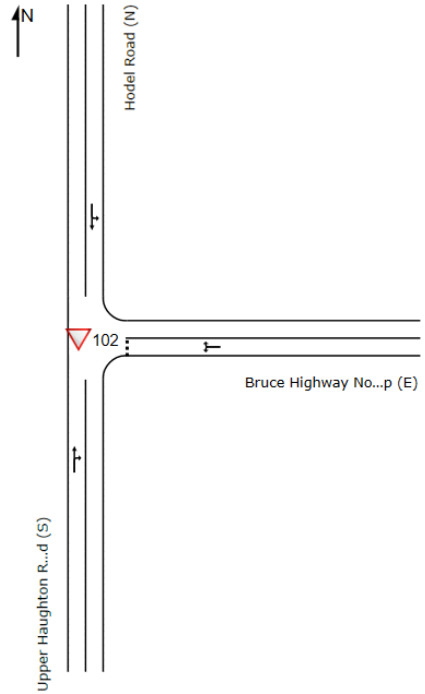


Table 6-6.2. SIDRA Intersection Results

SCENARIO *DoS - Degree of Saturation (%)* *Delay of Critical Approach Movement (s)* *95th Percentile Queue Length (m)* *Critical Movement of Approach*	NORTHERN APPROACH				SOUTHERN APPROACH				EASTERN APPROACH				TOTAL INT			
	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement
AM 2019 BG	0.02	7.6	0	N-L	0.02	5.3	0.3	S-R	0.03	5.2	0.3	E-R	0.03	3.8	0.3	N-L
AM 2032 BG	0.02	7.6	0	N-L	0.03	5.4	0.4	S-R	0.03	5.2	0.4	E-R	0.03	3.8	0.4	N-L
AM 2032 BG + Dev	0.02	7.6	0	N-L	0.03	5.4	0.4	S-R	0.10	5.3	1.2	E-R	0.10	4.2	1.2	N-L
AM 2042 BG	0.03	7.6	0	N-L	0.03	5.4	0.4	S-R	0.04	5.3	0.5	E-R	0.04	3.9	0.5	N-L
AM 2042 BG + Dev	0.03	7.6	0	N-L	0.03	5.4	0.4	S-R	0.08	5.3	1.0	E-R	0.08	4.1	1.0	N-L
PM 2019 BG	0.02	7.6	0	N-L	0.02	5.3	0.3	S-R	0.03	5.2	0.3	E-R	0.03	3.8	0.3	N-L
PM 2032 BG	0.02	7.6	0	N-L	0.03	5.4	0.4	S-R	0.03	5.2	0.4	E-R	0.03	3.8	0.4	N-L
PM 2032 BG + Dev	0.02	7.6	0	N-L	0.05	5.2	0.7	S-R	0.04	5.4	0.5	E-R	0.05	4.3	0.7	N-L
PM 2042 BG	0.03	7.6	0	N-L	0.03	5.4	0.4	S-R	0.04	5.3	0.5	E-R	0.04	3.9	0.5	N-L
PM 2042 BG + Dev	0.03	7.6	0	N-L	0.04	5.3	0.6	S-R	0.04	5.4	0.6	E-R	0.04	4.1	0.6	N-L

6.6 – SIDRA RESULTS

INTERSECTION 3 – UPPER HAUGHTON ROAD / BRUCE HIGHWAY (SOUTH INTERSECTION)

Discussion

The operation of the priority-controlled T-intersection is within acceptable ranges.

For the 2032 construction volumes design traffic scenarios, the intersection operates with a maximum degree of saturation of 0.11, average intersection delays of 4.4 seconds, and a queue length of 1.5m, less than 1 vehicle length.

As such, the construction volumes for the development are not likely to have a significant impact to the safety or operation of the intersection.

For the 2042 design horizon, when the site will be on operational activities, the intersection operates under better conditions with a maximum degree of saturation of 0.08, average intersection delays of 4.3 seconds and queues length of 1.1m.

Therefore, the impact of operational traffic will not have a significant impact to the safety or operation of the intersection.

Figure 6-6.3. SIDRA Intersection Layout

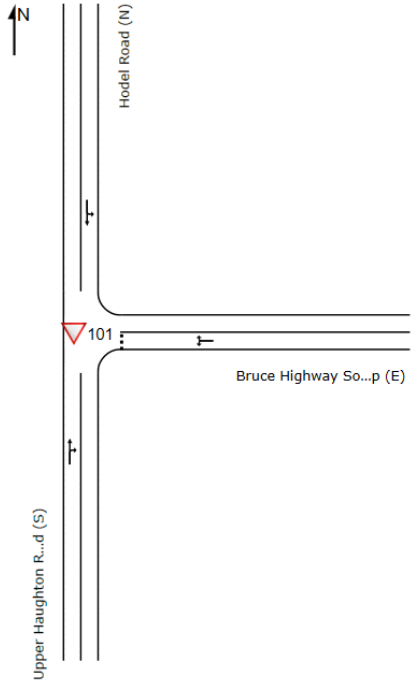


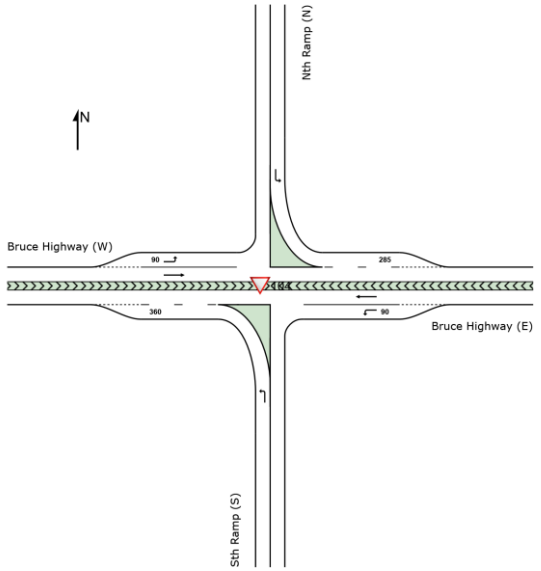
Table 6-6.3. SIDRA Intersection Results

SCENARIO *DoS - Degree of Saturation (%)* *Delay of Critical Approach Movement (s)* *95th Percentile Queue Length (m)* *Critical Movement of Approach*	NORTHERN APPROACH				SOUTHERN APPROACH				EASTERN APPROACH				TOTAL INT			
	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement
AM 2019 BG	0.02	5.3	0	N-L	0.02	7.5	0.3	S-R	0.03	5.2	0.3	E-R	0.03	3.8	0.3	S-R
AM 2032 BG	0.02	5.3	0	N-L	0.03	7.6	0.4	S-R	0.03	5.2	0.4	E-R	0.03	3.9	0.4	S-R
AM 2032 BG + Dev	0.08	5.3	0	N-	0.03	8.7	0.5	S-R	0.06	5.8	0.8	E-R	0.08	2.8	0.8	S-R
AM 2042 BG	0.03	7.6	0	N-L	0.03	5.4	0.4	S-R	0.04	5.3	0.5	E-R	0.04	3.9	0.5	N-L
AM 2042 BG + Dev	0.06	5.3	0	N-L	0.03	8.4	0.6	S-R	0.06	5.7	0.7	E-R	0.06	3.1	0.7	S-R
PM 2019 BG	0.02	5.3	0	N-L	0.02	7.5	0.3	S-R	0.03	5.2	0.3	E-R	0.03	3.8	0.3	S-R
PM 2032 BG	0.02	5.3	0	N-L	0.03	7.6	0.4	S-R	0.03	5.2	0.4	E-R	0.03	3.9	0.4	S-R
PM 2032 BG + Dev	0.03	5.3	0	N-L	0.11	7.1	1.5	S-R	0.04	6	0.5	E-R	0.11	4.4	1.5	S-R
PM 2042 BG	0.03	5.3	0	N-R	0.03	7.7	0.4	S-R	0.04	5.3	0.5	E-R	0.04	3.9	0.5	S-R
PM 2042 BG + Dev	0.03	5.3	0	N-L	0.08	7.2	1.1	S-R	0.04	5.8	0.5	E-R	0.08	4.3	1.1	S-R

6.6 – SIDRA RESULTS

INTERSECTION 4 –BRUCE HIGHWAY INTERCHANGE

Figure 6-6.4. SIDRA Intersection Layout



Discussion

The operation of the on and off ramps with the Bruce Highway is within acceptable ranges.

For the 2032 construction volumes design traffic scenarios, the intersection operates with a maximum degree of saturation of 0.16, average intersection delays of 2.6 seconds, and no queues due to the continuous flow conditions.

As such, the construction volumes for the development are not likely to have a significant impact to the safety or operation of the intersection.

For the 2042 design horizon, when the site will be on operational activities, the intersection operates under better conditions with a maximum degree of saturation of 0.18, average intersection delays of 2.2 seconds and no queues.

Therefore, the impact of operational traffic will not have a significant impact to the safety or operation of the intersection.

Table 6-6.4. SIDRA Intersection Results

SCENARIO *DoS - Degree of Saturation (%)* *Delay of Critical Approach Movement (s)* *95th Percentile Queue Length (m)* *Critical Movement of Approach*	NORTHERN APPROACH				SOUTHERN APPROACH				EASTERN APPROACH				WESTERN APPROACH				TOTAL INT			
	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement	DoS	Delay (s)	95th Queue (m)	Crit Movement
AM 2019 BG	0.02	5.2	0	N-L	0.02	5.2	0	S-L	0.13	8.7	0	E-L	0.13	8.7	0	W-L	0.13	1.5	0	E-L
AM 2032 BG	0.03	5.3	0	N-L	0.03	5.3	0	S-L	0.16	8.7	0	E-L	0.15	8.7	0	W-L	0.16	1.6	0	E-L
AM 2032 BG + Dev	0.03	5.3	0	N-L	0.03	5.5	0	S-L	0.16	8.3	0	E-L	0.15	8.2	0	W-L	0.16	2.6	0	E-L
AM 2042 BG	0.03	5.4	0	N-L	0.03	5.5	0	S-L	0.17	8.7	0	E-L	0.17	8.7	0	W-L	0.17	1.5	0	E-L
AM 2042 BG + Dev	0.03	5.4	0	N-L	0.03	5.6	0	S-L	0.17	8.4	0	E-L	0.17	8.3	0	W-L	0.17	2.2	0	E-L
PM 2019 BG	0.02	5.2	0	N-L	0.02	5.2	0	S-L	0.14	8.7	0	E-L	0.14	8.7	0	W-L	0.14	1.5	0	E-L
PM 2032 BG	0.03	5.4	0	N-L	0.03	5.4	0	S-L	0.16	8.7	0	E-L	0.16	8.7	0	W-L	0.16	1.5	0	E-L
PM 2032 BG + Dev	0.05	5.2	0	N-L	0.08	5.2	0	S-L	0.16	8.7	0	E-L	0.16	8.9	0	W-L	0.16	2.1	0	W-L
PM 2042 BG	0.03	5.5	0	N-L	0.03	5.5	0	S-L	0.18	8.7	0	E-L	0.18	8.7	0	W-L	0.18	1.5	0	E-L
PM 2042 BG + Dev	0.04	5.3	0	N-L	0.06	5.3	0	S-L	0.18	8.7	0	E-L	0.18	8.9	0	W-L	0.18	1.9	0	W-L

6.7 – DELAY IMPACTS

As outlined in the Department of Transport and Main Roads (TMR) Guide to Traffic Impact Assessments (GTIA), the delay impact on the state controlled road network will need to be assessed to understand the impact of the development generated traffic on the state controlled roads. The calculation of this net delay is outlined in the below extract from the GTIA Section 11.3.1.

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

where:

ID	is aggregate intersection-delay impact vehicle-minutes.
WD	is 'with development' intersection vehicle-minutes for 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, only to pre-existing traffic that is affected by these additional delays.
BC	is base case intersection vehicle-minutes for design peak periods
n	is the number of intersections in the impact assessment area
i	is each intersection within the impact assessment area.

The net delay assessment for the Bruce Highway interchange including the Upper Haughton Road / Hodel Road (north and south) intersections, is outlined in Table 6-7.

As demonstrated, the net delay increase of 3.23% during the peak construction period is less than the TMR 5% threshold and as such, no mitigation strategies are necessary due to the development construction volumes. Furthermore, the peak construction activities will only occur for a temporary period with operations traffic, being lower than construction traffic, occurring beyond 2032. Therefore, the ongoing impact of the development will have an even lower delay impact to the road network.

Table 6-7. Interchange Delay Assessment

Scenario	Net Delay (veh-mins)	Net Delay Increase (veh-mins)
AM 2032 BG	1,804	**BG Total Delays = 3,616**
PM 2032 BG	1,811	
AM 2032 Design	1,917	**Design Total Delays = 3,732**
PM 2032 Design	1,815	
Network Impact		**+117 veh-mins** **3.23%**

** Minor discrepancies due to rounding*

6.8 – LINK ASSESSMENT

The GTIA Table 6.4 identifies that a link capacity assessment is triggered for:

All road links where the development traffic exceeds 5% of the base traffic in either direction on the link's annual average daily traffic (AADT) in the year of opening of each stage.

Table 6-8 outlines the link capacity assessment on the state controlled roads, identifying the proportionate impact of the project traffic for each stage on the link's daily traffic.

As shown, the link assessment identifies that the maximum link impact from the project traffic is 3.9% on the Townsville Port Road.

For the local road network, the GTIA assessment criteria is not applicable. Instead, a capacity based link assessment has been adopted whereby the total project traffic at each stage has been assessed in comparison to the daily traffic thresholds for single carriageway rural roads, as outlined in Table 4.5 of Austroads Guide to Road Design Part 3: Geometric Design. The daily design traffic for each of the local roads is based on the existing formation of the roads, and outlined as follows:

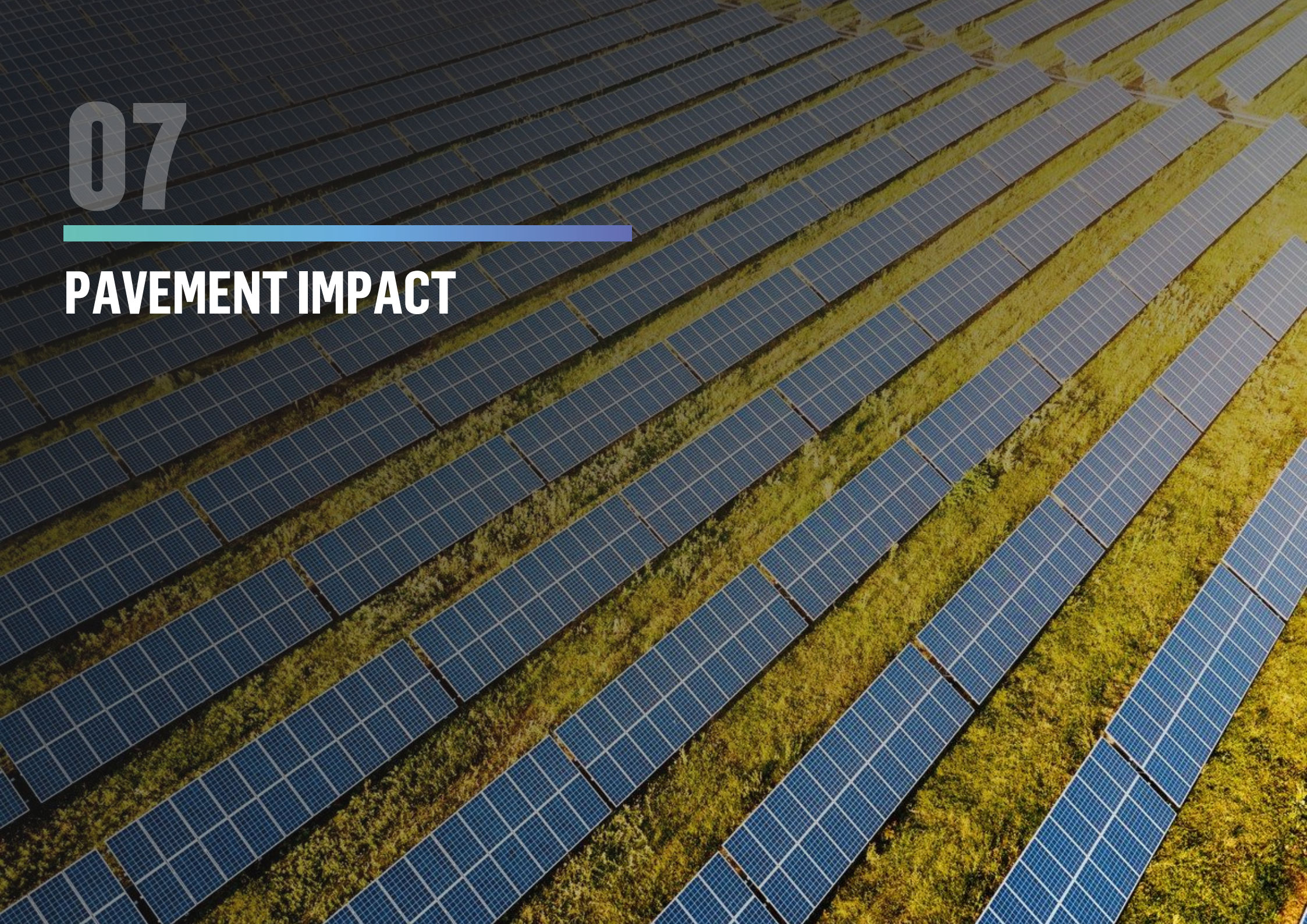
- Upper Haughton Road, Barratta Road (7.0m sealed, 0.75m-1.5m unsealed shoulders, 8.5m-10.0m carriageway): daily capacity up to 500 vpd
- Keith Venables Road (sealed) (6.0m-7.0m sealed, 0.5m-1.5m shoulders, 9.0m-10.0m carriageway): daily capacity up to 500 vpd
- Keith Venables Road (unsealed) (7.0m unsealed): daily capacity above 150 vpd but less than 500 vpd

Table 6-8 indicates the daily traffic volumes expected for the local roads at each stage year of opening. Upper Haughton Road, Barratta Road and the sealed section of Keith Venables Road remain within the 500 vpd threshold and therefore, the existing form is considered to remain suitable. However, the unsealed section of Keith Venables Road will greatly exceed the 150 vpd threshold during the Stage 3 and 4 construction. With this in mind, it is recommended that the road segment is sealed with a width of 7.2m (6.2m travel lanes plus 0.5m sealed shoulders) during the construction period for Stages 3 and 4. Post construction traffic will be suitable for the existing road formation of all assessed roads.

Table 6-8: Link Assessment (daily traffic volumes)

ID	Road Name	Stage 1 Lot 6A	Stage 2 Lot 6B	Stage 3 Lot 1	Stage 4 Lot 2	Post Construction
Baseline Traffic		**2026**	**2028**	**2030**	**2032**	**2032**
10L	Bruce Highway (Ayr – Townsville)	6,007	6,157	6,307	6,457	6.457
841	Townsville Port Road	2,904	3,183	3,262	3,342	3,421
With Project Traffic		**2026**	**2028**	**2030**	**2032**	**2032**
10L	Bruce Highway (Ayr – Townsville)	+121 (2.0%)	+124 (2.0%)	+247 (3.9%)	+218 (3.4%)	+61 (0.9%)
841	Townsville Port Road	+21 (0.7%)	+23 (0.7%)	+45 (1.4%)	+41 (1.2%)	+13 (0.4%)
Local Roads ***(not subject to 5% impact assessment)***		**2026**	**2028**	**2030**	**2032**	**2032**
Local roads	Upper Haughton Road, Barratta Road (7.0m sealed)	218	224	396	357	137
Local roads	Keith Venables Road (6.0m-7.0m sealed, 7.0m unsealed)	218	224	396^	357^	137

^ Daily traffic volumes significantly beyond the link capacity for the unsealed section of Keith Venables Road. Temporary pavement seal during these stages of construction recommended.



07

PAVEMENT IMPACT

7.1 – HEAVY VEHICLE VOLUMES

CONSTRUCTION TRAFFIC

As outlined in Section 3.2, the development site is anticipated to begin construction in 2025, with the site completely developed and operational in 2033. The development traffic volumes assessed determined that the peak construction traffic is anticipated to occur during construction of the Lot 2 433MW component (Stage 4), estimated to occur from 2030 to 2032. For a conservative assessment, these peak heavy vehicle volumes have been applied to the entire 7.5 year construction period.

OPERATIONS TRAFFIC

Following construction, operational traffic is estimated to include 75 light vehicle trips per peak, eight heavy vehicle trips per peak, assumed to be a Small Rigid Vehicle (SRV).

Heavy Vehicle construction volume splits have been determined based on a similar solar farm previously assessed by Urbis. The breakdown of vehicle splits and anticipated total trips for the construction traffic is shown in Table 7-1.

Table 7-1.1: Construction Heavy Vehicle Type Splits

Vehicle Type	% split of total HV traffic	Daily Trips
Medium Rigid Vehicle	15%	3.45
Heavy Rigid Vehicle	15%	3.45
Articulated Vehicle	40%	9.2
B-Double	15%	6.9
Oversize Vehicle	15%	-
Total	**100%**	**23**

Table 7-1.2: Operations Heavy Vehicle Type Splits

Vehicle Type	% split of total HV traffic	Daily Trips
Small Rigid Vehicle	100%	16.0
Total	**100%**	**16.0**

7.2 – PAVEMENT IMPACTS

Pavement impacts of the TMR roads have been assessed according to GTIA Practice Notes: Pavement Impact Assessment, published in December 2018. Road pavement data was provided by TMR's Road Asset Division on 30 January 2023, including the most recent Annual Average Daily Traffic (AADT), Existing SAR4, and Marginal Cost information for the Bruce Highway, and the Townsville Port Road in 100m segments.

The impact assessment area analysed is listed in Table 7-2.1.

The pavement types listed in the road asset data for the assessed network is outlined in Table 7-2.2, with the Design Vehicle Standard Axle Repetitions (SARs) shown in Table 7-2.3.

The total SARs have been identified for each 100m segment based on the costing pavement type provided by TMR in both the gazettal and anti-gazettal directions. The detailed calculations are provided in **Appendix E**.

Table 7-2.2: Pavement Type Descriptions

TMR Pavement Types	FAMLIT Pavement Type	Load Damage Exponent
Sprayed seal over flexible pavement, including cement modified and lime stabilised layer types C4 and C5	GN	4
Sprayed seal or Asphalt over flexible pavement with bitumen stabilised pavement.	AC	5
Asphalt over flexible pavement, including cement modified and lime stabilised layer types C4 and C5	AC	5
Sprays seal over semi rigid / semi rigid composite pavement	CS	12
Asphalt over semi rigid / semi rigid composite pavement	CS	12

Table 7-2.1: State-controlled Roads Assessed

Road ID	Road Name	Start Chainage	End Chainage
10L	Bruce Highway (Ayr – Townsville)	33.983	77.929
841	Townsville Port Road	0.00	7.811

Table 7-2.3: Design Vehicle SARs

Vehicle Type	Vehicle Class	SAR4		SAR5		SAR12	
		Loaded SAR	Unloaded SAR	Loaded SAR	Unloaded SAR	Loaded SAR	Unloaded SAR
SRV	Class 3	2.98	0.54	3.29	0.43	6.6	0.11
MRV	Class 3	2.98	0.54	3.29	0.43	6.6	0.11
HRV	Class 4	3.57	0.5	4.14	0.41	12.08	0.11
AV	Class 9	4.93	0.51	5.61	0.41	14.63	0.11
B-Double	Class 10	6.3	0.53	7.09	0.42	17.17	0.11
Oversize Vehicle	Class 12	11.75	0.58	13.45	0.44	36.79	0.11

7.3 – CONTRIBUTIONS

Pavement impacts and the resulting contributions have been assessed in accordance with TMR's GTIA. The GTIA calculation for the cost contributions is reproduced in Figure 7-3.

As the site reaches full operations in 2032, the pavement impacts have been assessed to 2052 to adhere with the GTIA's 20 years of operation requirement. Full detailed calculations for the Development SARs and the marginal cost per SAR per km for each 100m segment of road are included in **Appendix E**.

Development contributions for each state-controlled road from the construction and operations traffic is shown in Table 7-3.

As shown, the development will not trigger any significant pavement impacts on the state controlled road network, resulting in $0 contribution calculated.

This is due to the low heavy vehicles anticipated to be required for the site, in relation to the baseline heavy vehicles on the major freight routes that are the Bruce Highway and Townsville Port Road. Additionally, the temporary nature of the construction activities means the peak traffic will only occur for two years at most.

Figure 7-3: Pavement Contribution Calculation

$$\text{Pavement contribution} = \sum_{i=1}^{n} [(C + O)_i \times MC_i \times L_i]$$

where:

I	is each road segment triggered
C	is construction period SARs
O	is operational period SARS for the impact mitigation period
MC	is the relevant marginal cost (per SAR-km) prescribed in the department's database for each road segment
L	is the length of road section in km
N	is the number of road segments triggered in the impact assessment area.

Table 7-3: Assessed Pavement Contributions

ID	Road Name	Cost
Construction Traffic (2025 – 2032)		
10L	Bruce Highway (Ayr – Townsville)	$0
841	Townsville Port Road	$0
Operations Traffic (2032 – 2052)		
10L	Bruce Highway (Ayr – Townsville)	$0
841	Townsville Port Road	$0

7.4 – LOCAL ROAD IMPACTS

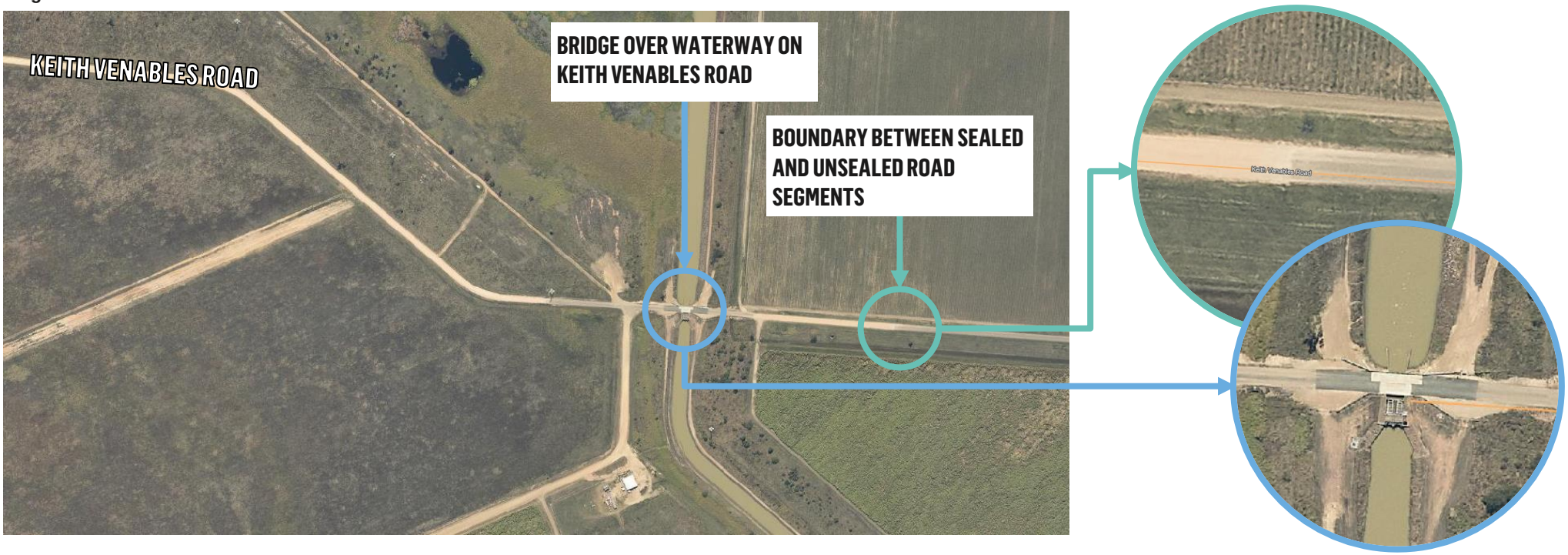
The TMR Guide to Pavement Impact Assessments only focuses on state-controlled roads that may be impacted, not any council-controlled roads that the route utilises. For any increase in heavy vehicles along the council-controlled section of the route, it is acknowledged that some pavement degradation is likely to occur, particularly on unsealed sections of road such as the western portion of Keith Venables Road. The transition between sealed and unsealed sections is shown on Figure 7-4.

Additionally, the existing bridge on Ketih Venables Road (indicated on Figure 7-4) appears to be suitable for heavy vehicle movements with a deck carriageway width of 8.0m. However, to ensure that the bridge is structurally sound to accommodate truck movements, a structural assessment should be completed prior to the commencement of construction traffic movements to site.

It is recommended that a road use management plan be prepared for the council-controlled roads as part of the pre-construction stage. Potential recommendations could include:

- Pre- and post-construction dilapidation assessments occur at every stage to assess the road condition.
- Dust suppression measures, particularly on the gravel portions of the route although this may only be required if neighbouring properties are affected.
- Potentially sealing the gravel sections of Keith Venables Road for the duration of construction activities, particularly during Stages 3 and 4.
- Wet weather management particularly where roads are at risk of being washed out.

Figure 7-4: Unsealed Route Section



08

SAFETY ASSESSMENT

6.1 – CRASH HISTORY

Crash data has been sourced from the QLD Department of Transport and Main Roads for the construction vehicle route for the most recent 5-year period (2018-2022) of available crash data. Crash data has been analysed for locations along the route where turning movements are required (i.e. intersections, interchanges). A summary of the crash data is provided in Table 8-1 and Table 8-2, indicating a reduction in crashes over the years.

Figure 8-1 shows the locations of the crashes. It is noted there were no fatal crashes recorded at these critical route locations.

The supplied data indicates that a total of two crashes were recorded at the Bruce Highway / Townsville Port Road intersection, no crashes were recorded at the Upper Haughton Road interchange (as it had opened in 2022), and only one crash was recorded on the council-controlled section of the route.

STATE ROADS

The data indicated that both crashes recorded at the Bruce Highway / Townsville Port Road intersection were rear-end crashes at the signalised intersection, with each occurring on a different intersection approach (West and East). One crash was recorded on a clear day, while the other one occurred during rainy weather. With two crashes in the past five years, a trend is not indicated.

LOCAL ROADS

One crash was recorded on Upper Haughton Road, listed as an out-of-control vehicle travelling south over the posted speed limit. As there is only one recorded crash on the council-controlled section of the route, there are no discernible trends present.

Table 8-2: Crashes categorised by severity

Crash Severity	
Minor Injury	0
Medical Treatment	2
Hospitalisation	1
Total	**3**

Table 8-1: Analysed crashes by year

Year	Crash Count
2018	2
2019	0
2020	0
2021	1
2022	0
Total	**3**

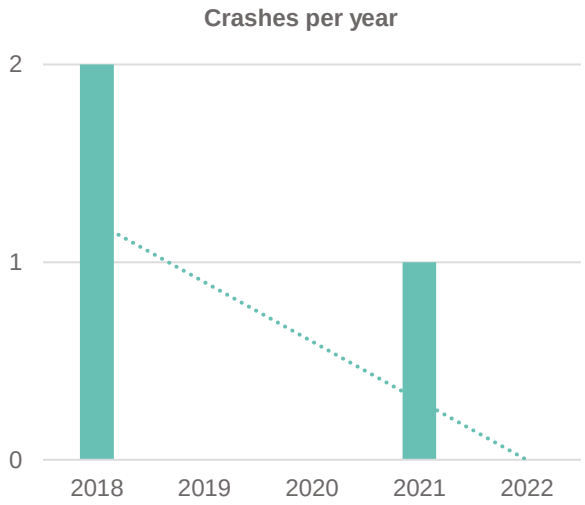
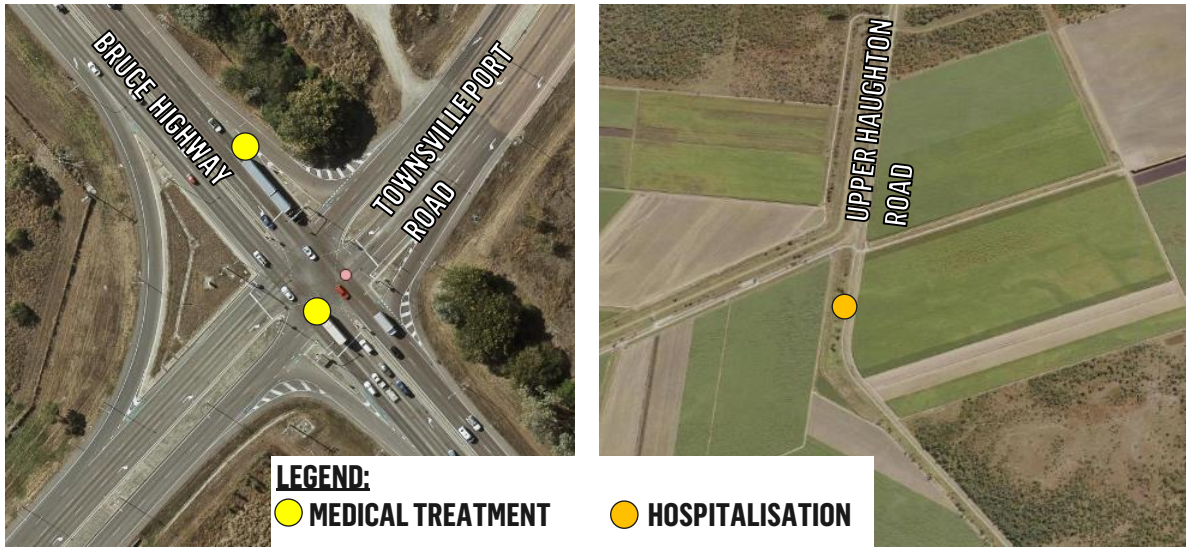


Figure 8-1: Bruce Highway / Townsville Port (Left), Upper Haughton Road (right) Crash Locations



6.2 – SAFETY RISK ASSESSMENT MATRIX

A road safety impact assessment has been undertaken for the **Bruce Highway / Upper Haughton Road interchange** in accordance with Section 9 of the GTIA. Risks have been identified with *Figure 9.3.2(a) – Safety risk score matrix* which has been reproduced in this report as Figure 6-2.

As demonstrated by the safety assessment, there will be a slight increase in the likelihood of a collision occurring due to the increase in vehicle movements, however the overall risk score is not expected to change as both the with and without development scenarios have an overall risk score of medium.

In order to mitigate the increase in risk for construction drivers and staff, it is recommended that a road use management plan (RUMP) is to be developed prior to construction to ensure all light and heavy vehicle contractors are aware of the route, and the conditions and layout of the state and council-controlled network.

Figure 6-2: Safety Risk Score Matrix
Source: *TMR*

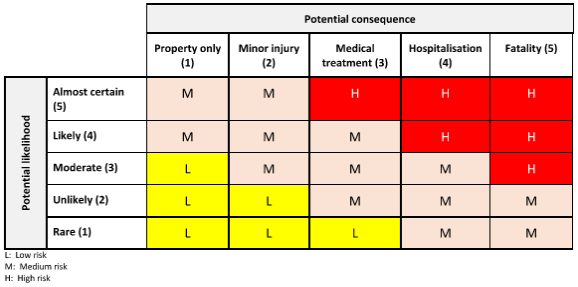


Table 6-2: Risk Assessment – Bruce Highway / Upper Haughton Road Interchange

Risk Item	Without Development			With Development		
	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score
Risk of rear-end collision between vehicles travelling eastbound on Bruce Highway and vehicles turning left onto the Upper Haughton Road off-ramp (travelling to site)	2	4	M	3	4	M
Risk of rear end collision between vehicles travelling westbound on Bruce Highway and vehicles turning left onto the Upper Haughton Road off-ramp (travelling to site)	2	4	M	3	4	M
Risk of vehicles from adjacent approach through-left collision between vehicles travelling eastbound on the Bruce Highway and vehicles entering from the Upper Haughton Road on-ramp (travelling from site)	2	4	M	3	4	M
Risk of vehicles from adjacent approach through-left collision between vehicles travelling westbound on the Bruce Highway and vehicles entering from the Upper Haughton Road on-ramp (travelling from site)	2	4	M	3	4	M
Risk of rear-end collision between vehicles travelling northbound on Bruce Highway and vehicles turning right onto the Upper Haughton Road on-ramp (travelling from site northern intersection)	2	4	M	3	4	M
Risk of vehicles from adjacent approach through-left collision between vehicles travelling southbound on the Bruce Highway and vehicles entering from the Upper Haughton Road off-ramp (travelling from site northern intersection)	2	4	M	3	4	M
Risk of rear-end collision between vehicles travelling northbound on Bruce Highway and vehicles turning right onto the Upper Haughton Road on-ramp (travelling from site southern intersection)	2	4	M	3	4	M
Risk of vehicles from adjacent approach through-left collision between vehicles travelling southbound on the Bruce Highway and vehicles entering from the Upper Haughton Road off-ramp (travelling from site southern intersection)	2	4	M	3	4	M

09

CONCLUSIONS

7.1 – SUMMARY

FINDINGS

- The development proposes a 1,700MW renewable energy park in Upper Haughton, approximately 70km south-east of Townsville. The development is proposed to be split into four stages, with construction from 2025 to 2032.
- Heavy Vehicles will utilise the Townsville Port Road, Bruce Highway, Upper Haughton Road, Barratta Road and Keith Venables Road to transport material between the site and the Port of Townsville.
- During peak construction and operations, the site is expected to generate a total of 126 light vehicles and 11 heavy vehicles during the AM and PM peak hours. This relates to construction of Stage 4 with operations of the previous stages ongoing.
- SIDRA intersection analysis of the impacted intersections demonstrated that all four study intersections operate well within acceptable levels.
- A delay impact assessment on the state controlled road network demonstrated that the net delay increase was less than TMR's 5% threshold and as such, no mitigation techniques are required. The delay assessment covered the peak construction period where the highest number of trips would be generated. This scenario will only occur for a temporary period with operations traffic, being lower than construction traffic, occurring beyond the year of opening (2032). Therefore, the ongoing impact of the development will have an even lower delay impact to the road network.
- A safety assessment found that the overall risk score of the state-controlled network is not expected to change with the proposed development activities. The crash analysis found no crash trend at the key intersections.
- The Pavement Impact Assessment demonstrated that during construction and the 20-year of operations assessment, the site is not anticipated to require any pavement contributions. This is attributed to the temporary construction period and the relatively high number of heavy vehicles occurring on the road network in the baseline.
- A link assessment of the study road network has identified that the development will not have a significant (>5%) impact on the state controlled road network. Furthermore, for the local roads, the existing form of Upper Haughton Road, Barratta Road and the sealed section of Keith Venables Road will remain suitable for the expected traffic volumes. The unsealed section of Keith Venables Road will greatly exceed the threshold during the Stage 3 and 4 construction. It is recommended that the road segment is sealed with a width of 7.2m (6.2m travel lanes plus 0.5m sealed shoulders) during the construction period for Stages 3 and 4.
- Post construction traffic will be suitable for the existing road formation of all assessed roads.
- A road use management plan is recommended to be developed and implemented for construction and operations activities, prior to construction commencing. This should include management of the local road network.
- The existing bridge on Keith Venables Road should be reviewed structurally prior to the commencement of construction traffic movements to site.

RECOMMENDATIONS	TIMING
A road use management plan (RUMP) is to be developed prior to construction to ensure all light and heavy vehicle contractors are aware of the route, and the conditions and layout of the state and council-controlled network.	Prior to construction
Temporary sealing of the unsealed section of Keith Venables Road with a width of 7.2m (6.2m travel lanes plus 0.5m sealed shoulders) during the construction period for Stages 3 and 4.	Prior to commencement of Stage 3 construction until the end of Stage 4 construction
Confirm structural suitability of the Keith Venables Road bridge to accommodate heavy vehicle movements.	Prior to construction

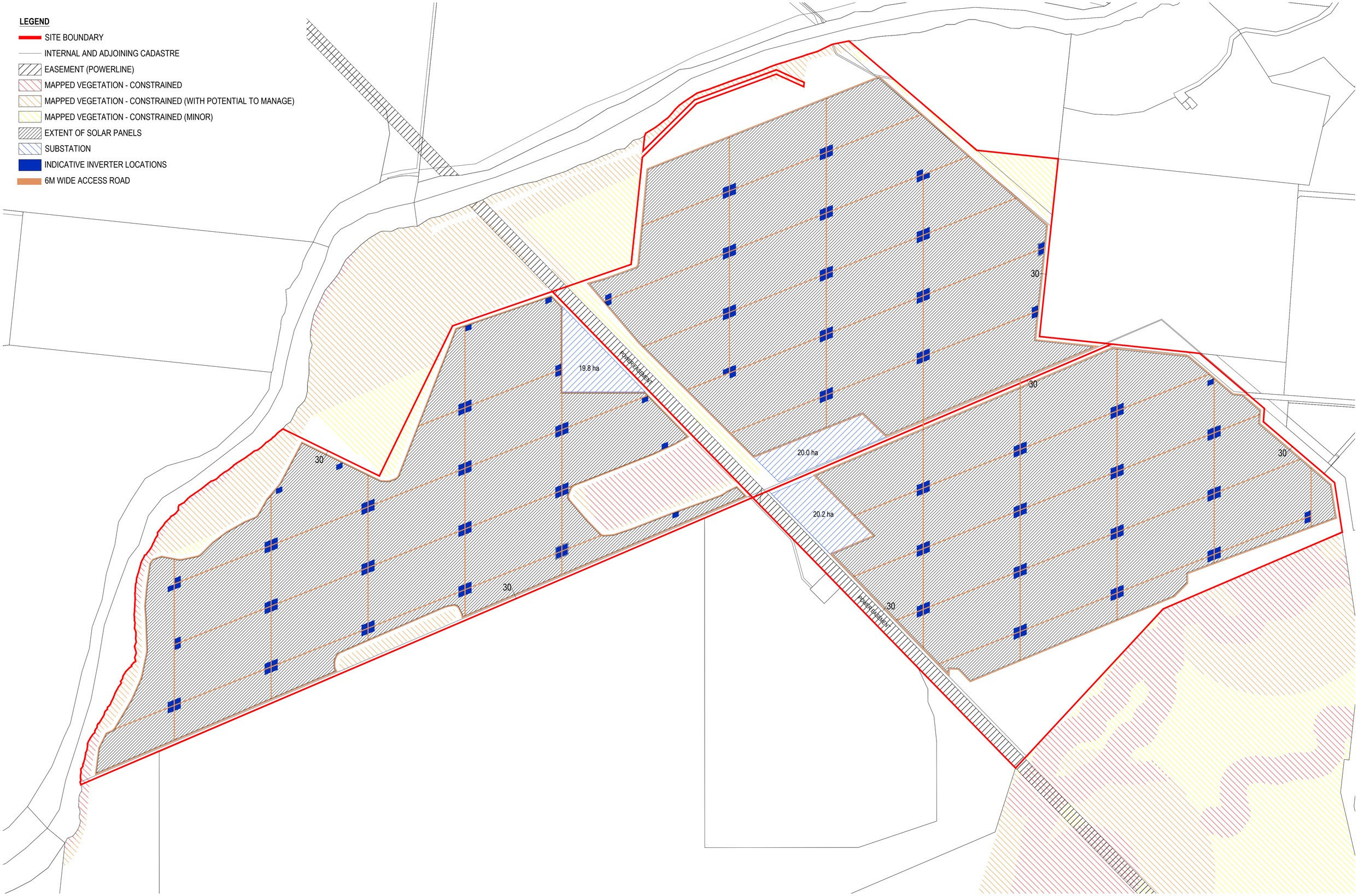
10

APPENDICES

APPENDIX A – DEVELOPMENT PLANS

LEGEND

- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD



CAMBRIDGE SOLAR FARM

PLAN OF DEVELOPMENT - OVERALL

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

DAVCO

1:12,500 @ A1
1:25,000 @ A3

0 100 250 500m

PROJECT NO.	DATE
P0044793	08.12.2023
DRAWING NO.	REVISION
MP-01	1

LEGEND

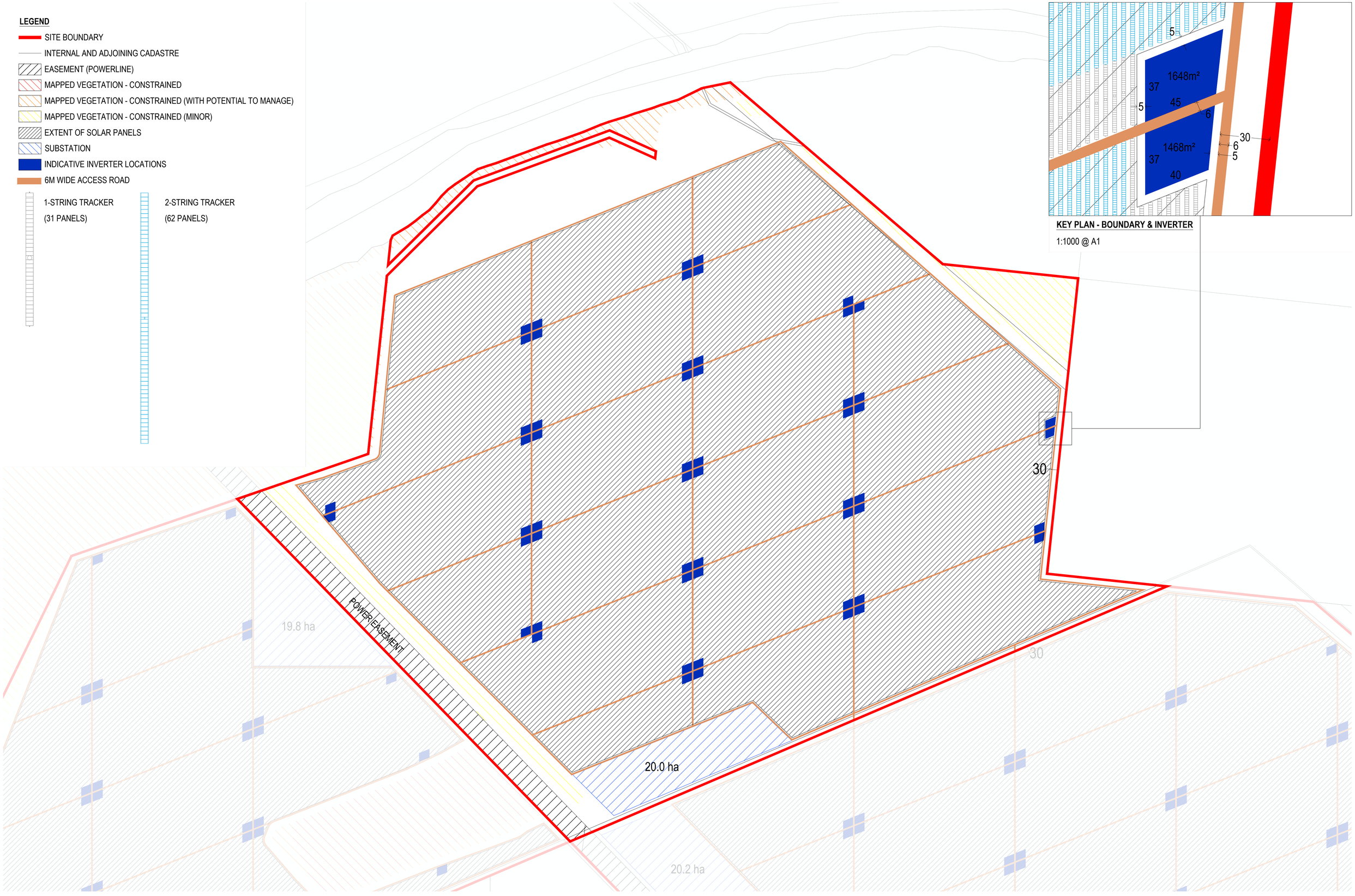
- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD

1-STRING TRACKER
(31 PANELS)

2-STRING TRACKER
(62 PANELS)

KEY PLAN - BOUNDARY & INVERTER

1:1000 @ A1



CAMBRIDGE SOLAR FARM

PLAN OF DEVELOPMENT - LOT 1

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

DAVCO

1:7,500 @ A1
1:15,000 @ A3

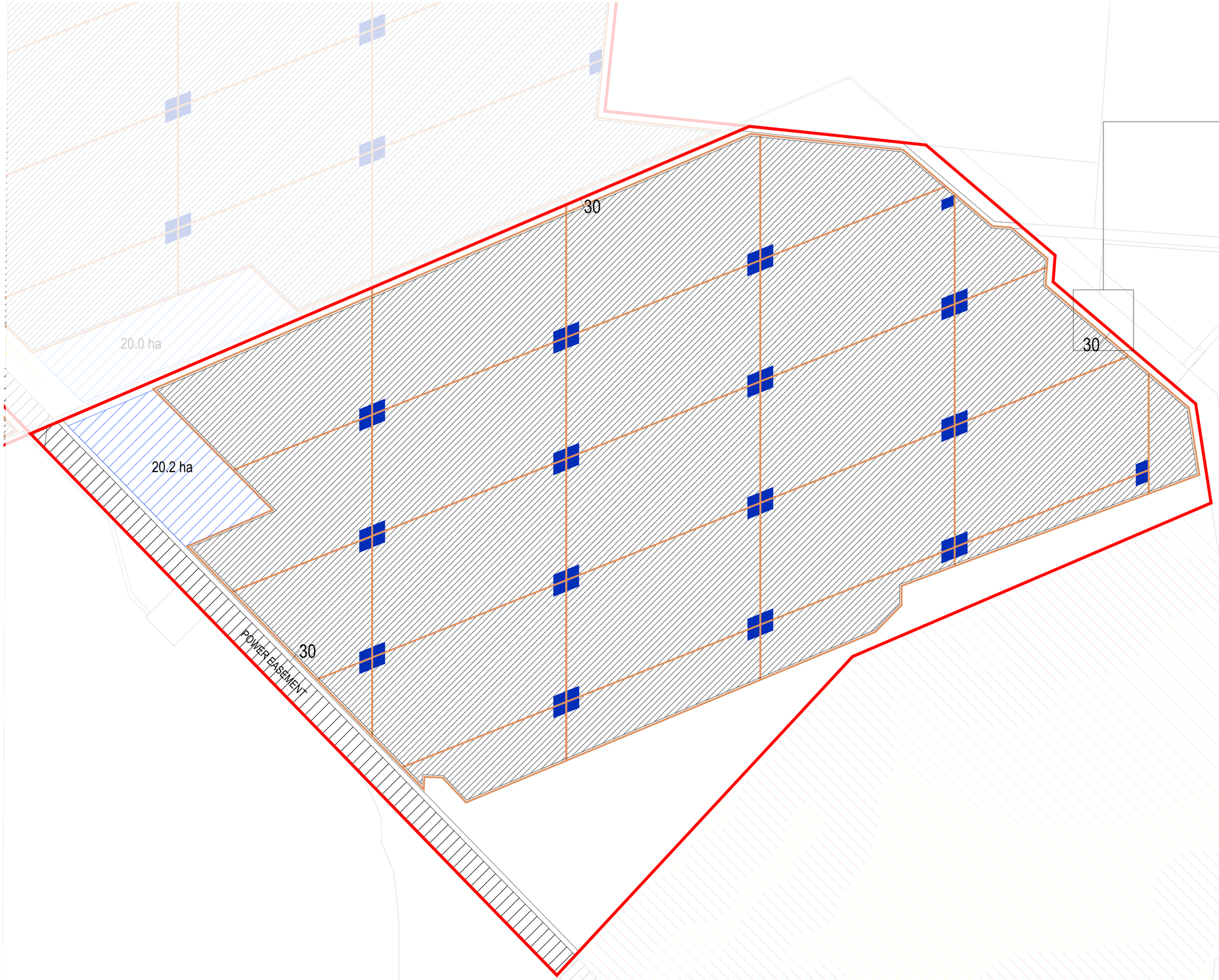
0 50 100 200 300m

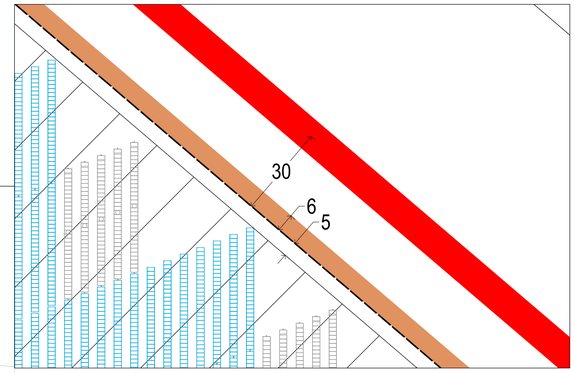
PROJECT NO. P0044793

DATE 08.12.2023

DRAWING NO. MP-02

REVISION 1





KEY PLAN - BOUNDARY

1:1000 @ A1

LEGEND

- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD

1-STRING TRACKER (31 PANELS)

2-STRING TRACKER (62 PANELS)

URBIS

CAMBRIDGE SOLAR FARM

PLAN OF DEVELOPMENT - LOT 2

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

DAVCO

1:7,500 @ A1
1:15,000 @ A3

0 50 100 200 300m

PROJECT NO. P0044793

DATE 08.12.2023

DRAWING NO. MP-03

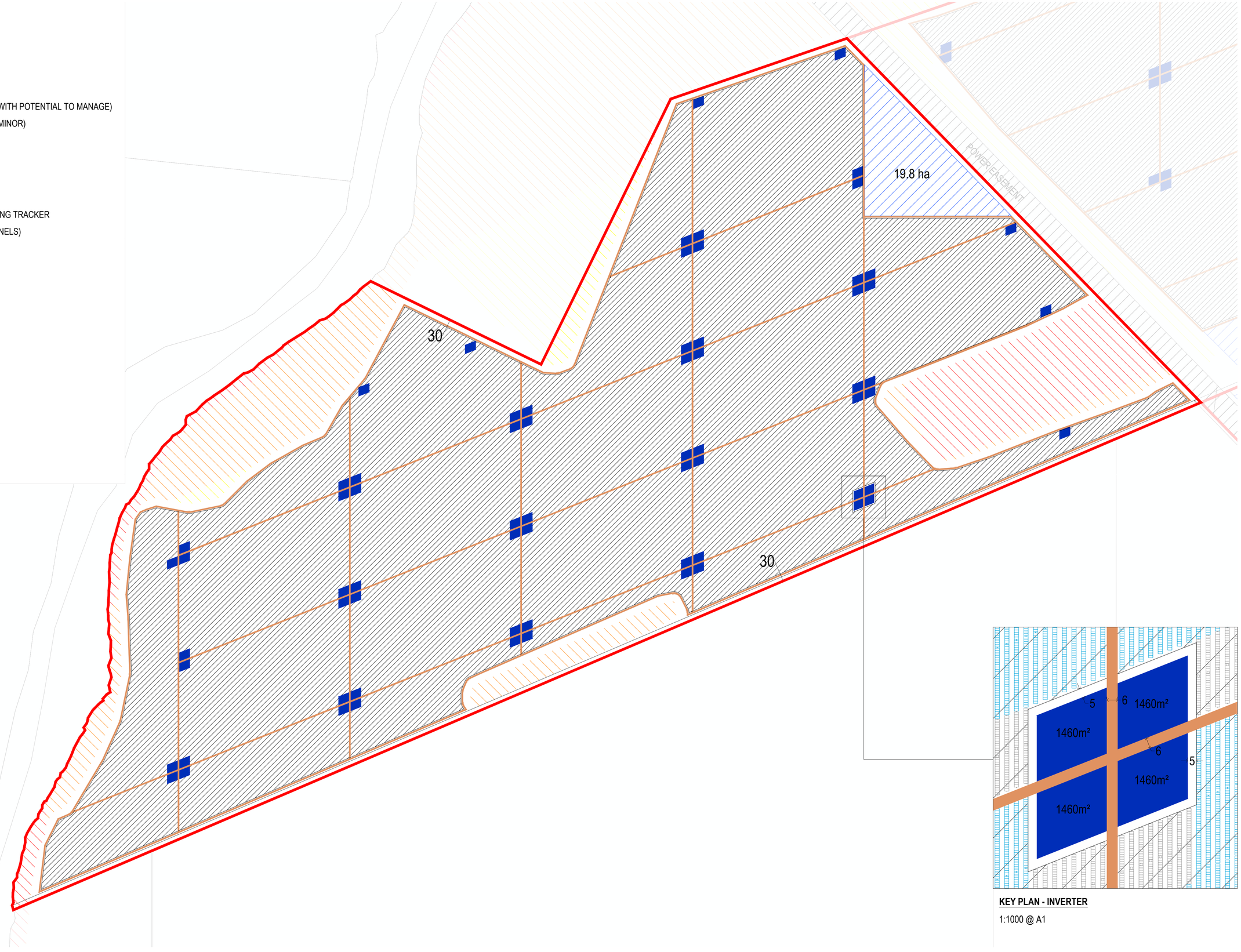
REVISION 1

LEGEND

- SITE BOUNDARY
- INTERNAL AND ADJOINING CADASTRE
- EASEMENT (POWERLINE)
- MAPPED VEGETATION - CONSTRAINED
- MAPPED VEGETATION - CONSTRAINED (WITH POTENTIAL TO MANAGE)
- MAPPED VEGETATION - CONSTRAINED (MINOR)
- EXTENT OF SOLAR PANELS
- SUBSTATION
- INDICATIVE INVERTER LOCATIONS
- 6M WIDE ACCESS ROAD

1-STRING TRACKER
(31 PANELS)

2-STRING TRACKER
(62 PANELS)



KEY PLAN - INVERTER

1:1000 @ A1

URBIS

CAMBRIDGE SOLAR FARM

PLAN OF DEVELOPMENT - LOT 6

Level 32, 300 George Street | Brisbane QLD 4000 Australia | +61 7 3007 3800 | URBIS Pty Ltd | ABN 50 105 256 228

CLIENT

DAVCO

1:7,500 @ A1
1:15,000 @ A3

0 50 100 200 300m

PROJECT NO. P0044793

DATE 08.12.2023

DRAWING NO. MP-04

REVISION 1

APPENDIX B – TRAFFIC FLOW DIAGRAMS

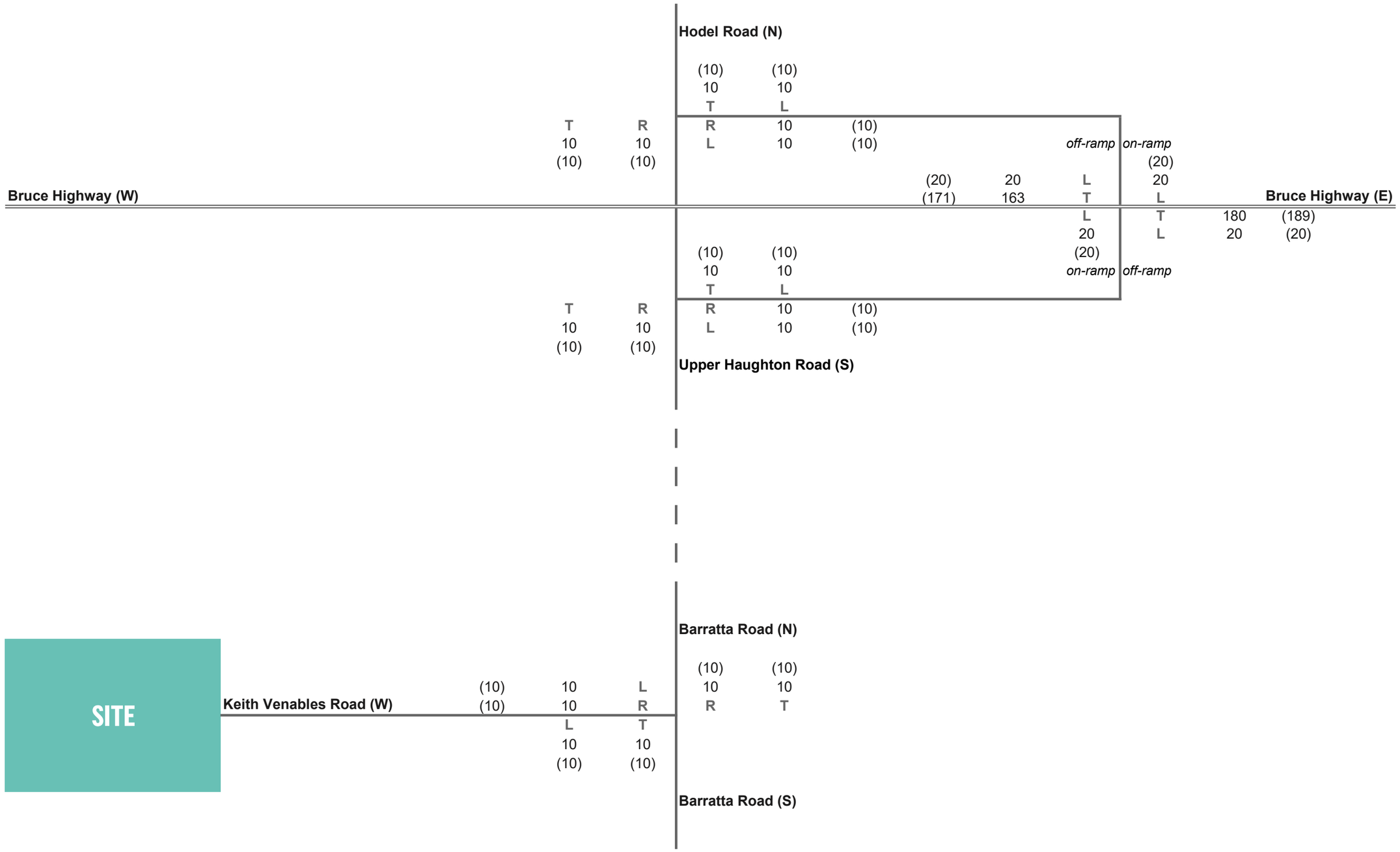


FIGURE 1

2019 BACKGROUND VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

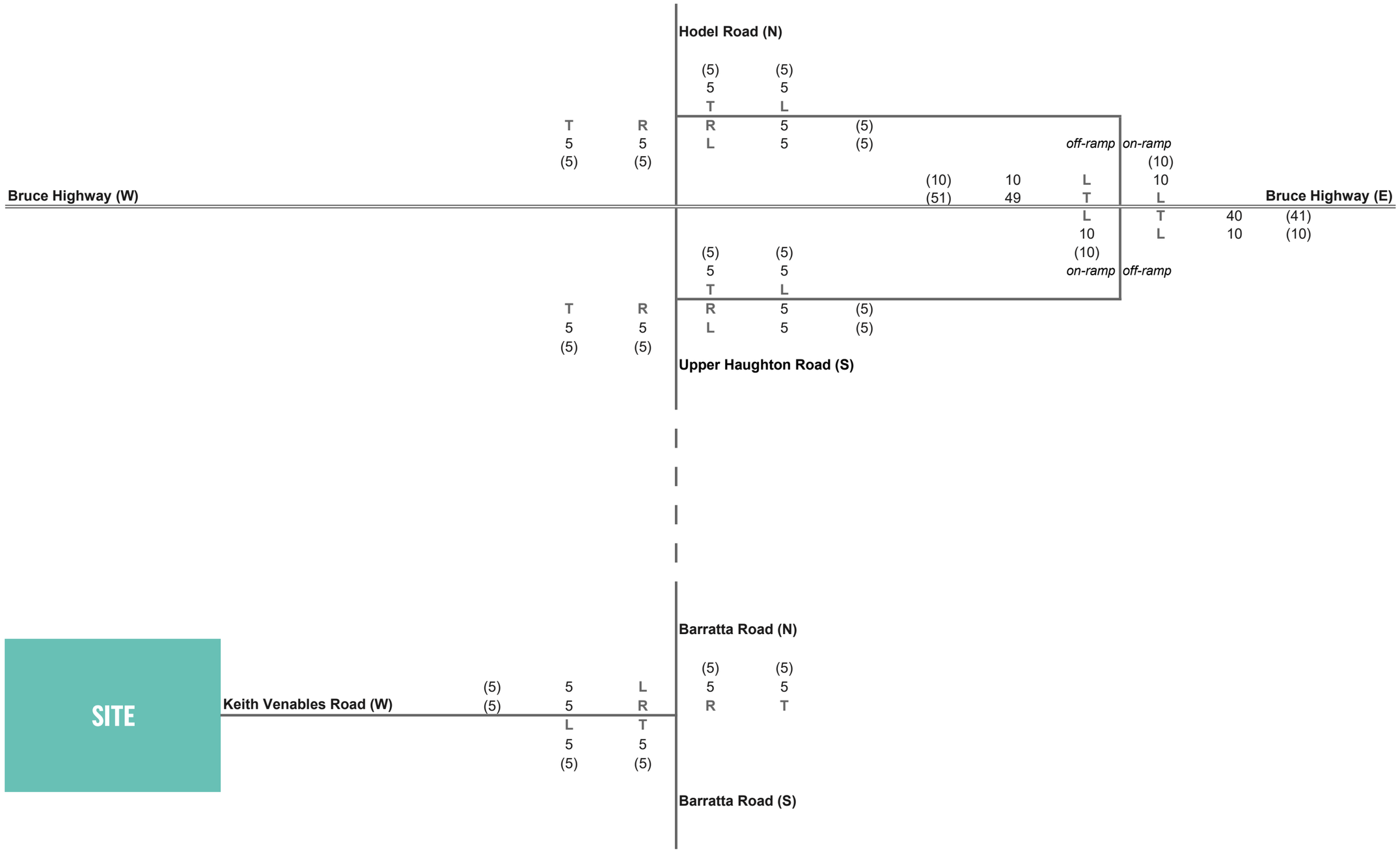


FIGURE 2

2019 HEAVY VEHICLE BACKGROUND VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	00	AM Peak Volume
T	Through	(00)	PM Peak Volume
R	Right turn		
U	U-turn		

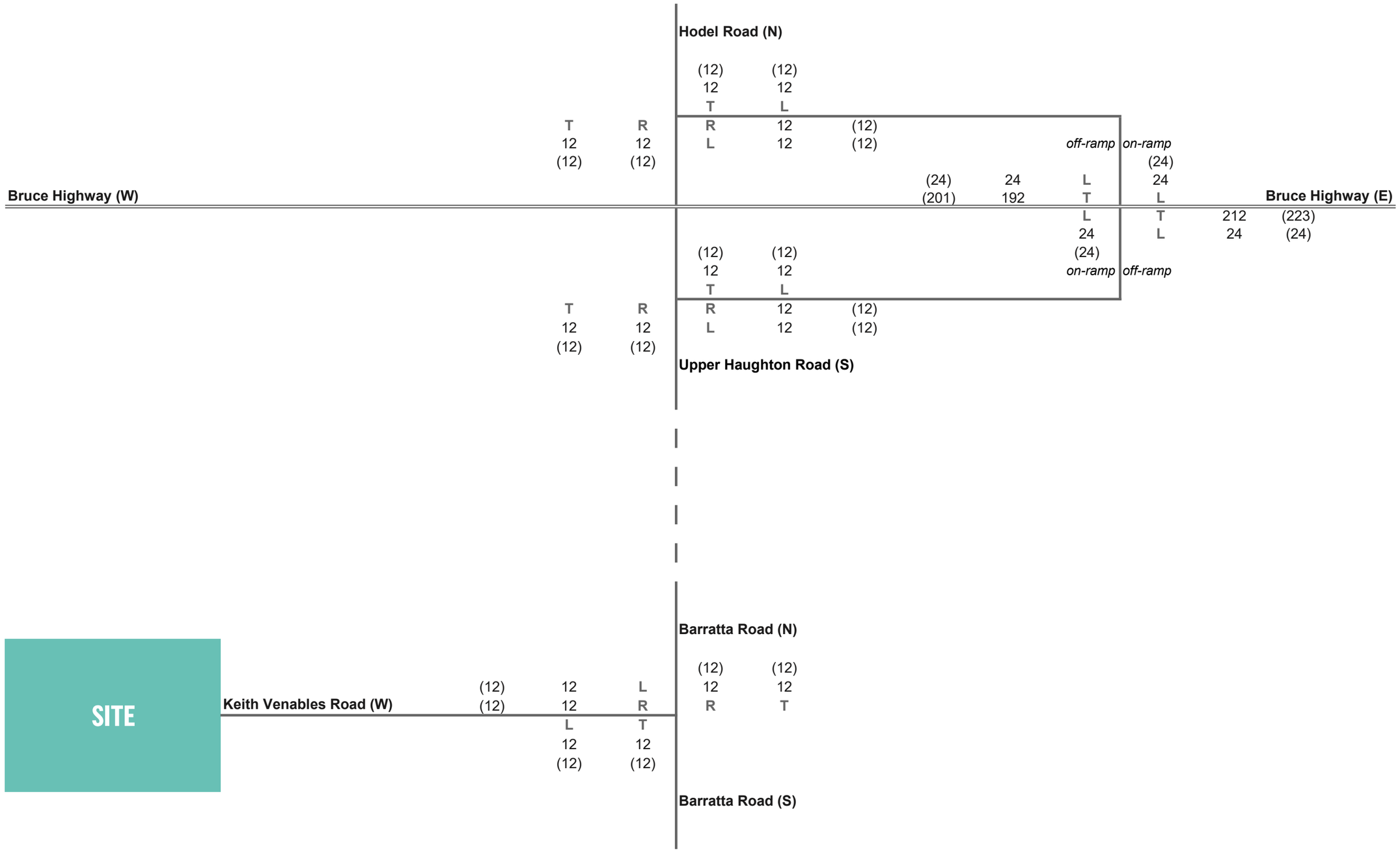


FIGURE 3

2032 LIGHT VEHICLE BACKGROUND VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

22/01/2024 https://urbisau.sharepoint.com/sites/P0044793/Shared Documents/General/02_Workspace/08 - Transport/01_Analysis/[P0044793 - Traffic Flow Diagrams__Urbis_Operations

Legend

L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

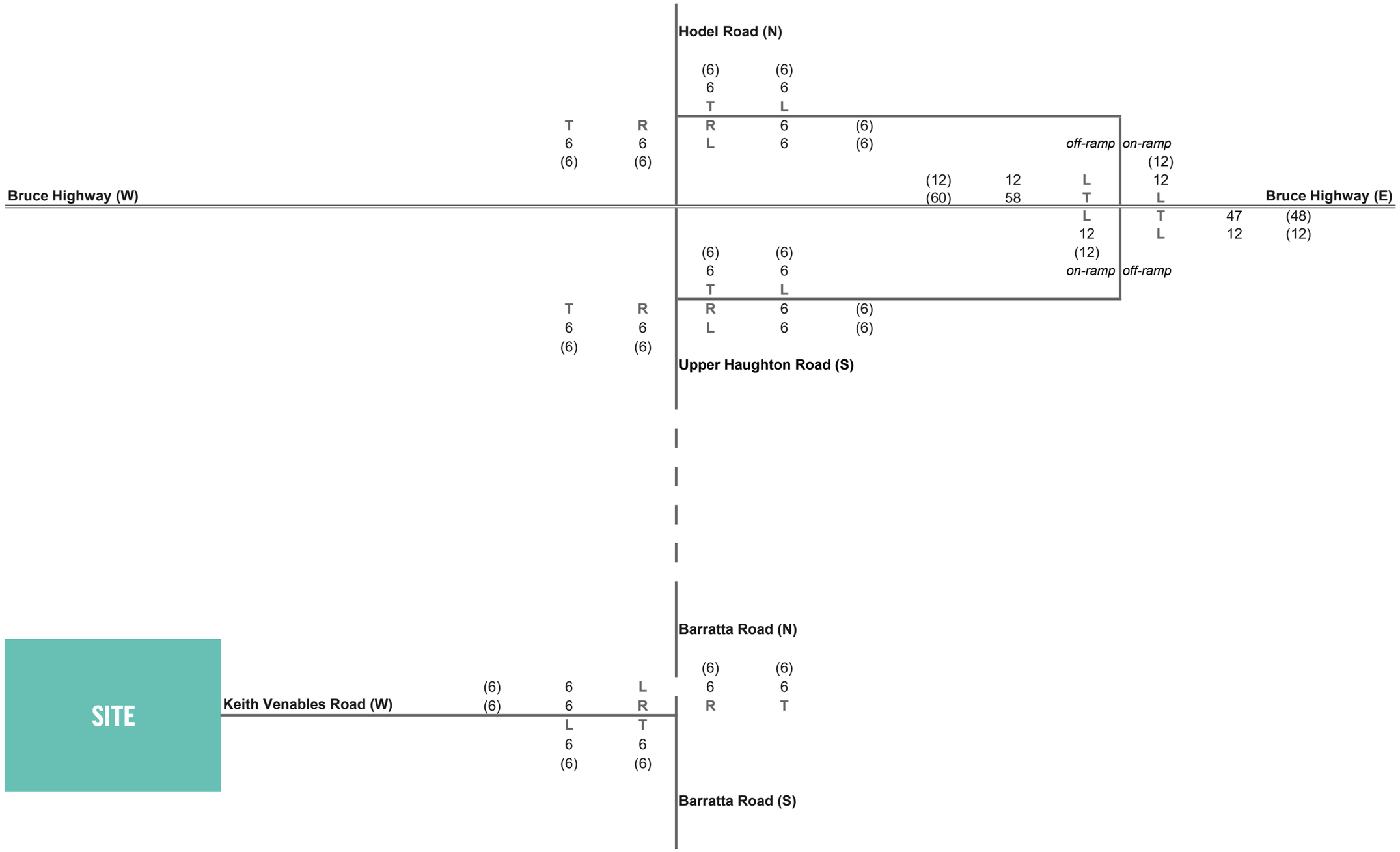


FIGURE 4

2032 HEAVY VEHICLE BACKGROUND VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

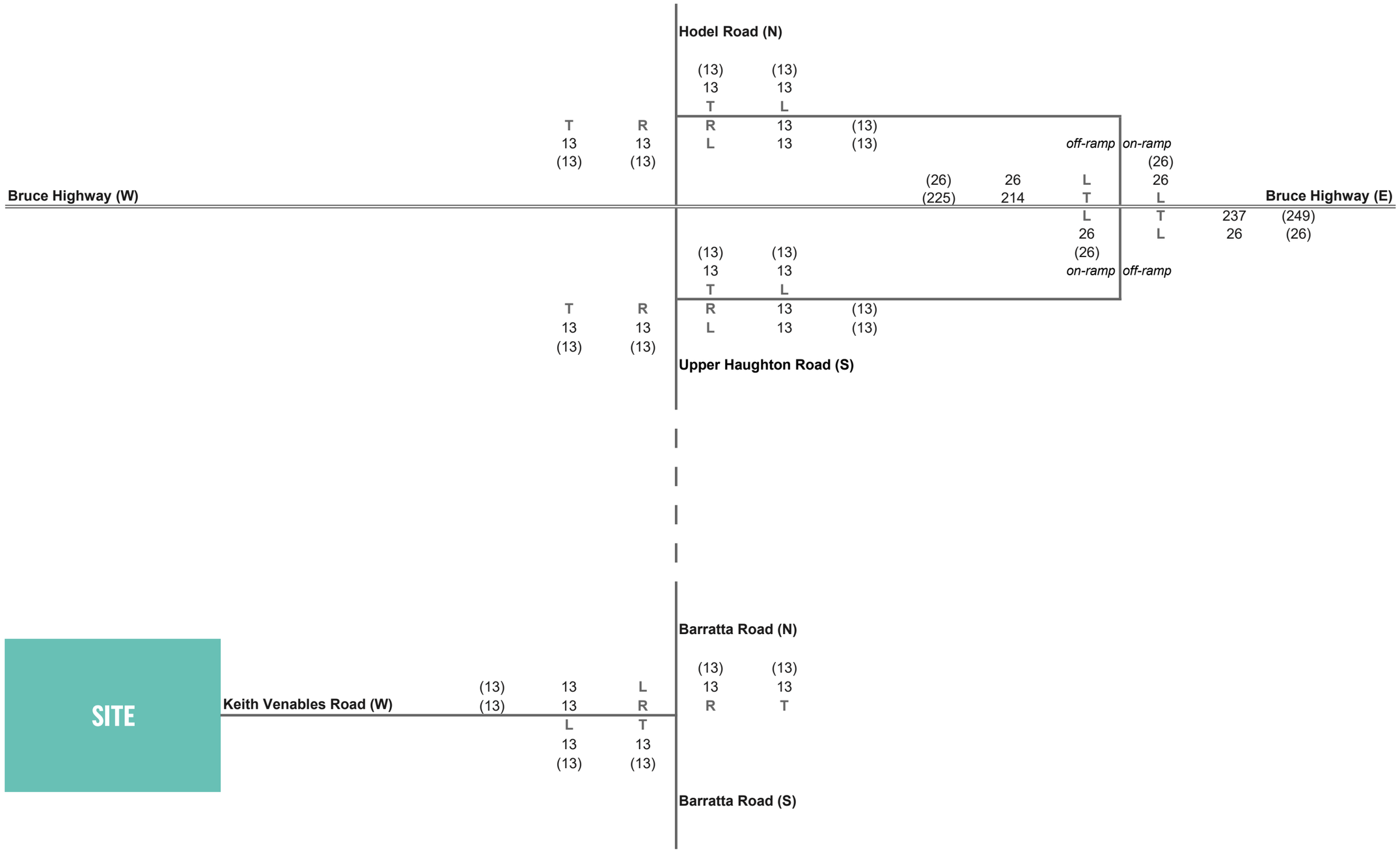


FIGURE 5

2042 LIGHT VEHICLE BACKGROUND VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

22/01/2024 https://urbisau.sharepoint.com/sites/P0044793/Shared Documents/General/02_Workspace/08 - Transport/01_Analysis/[P0044793 - Traffic Flow Diagrams__Urbis_Operations

Legend

L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

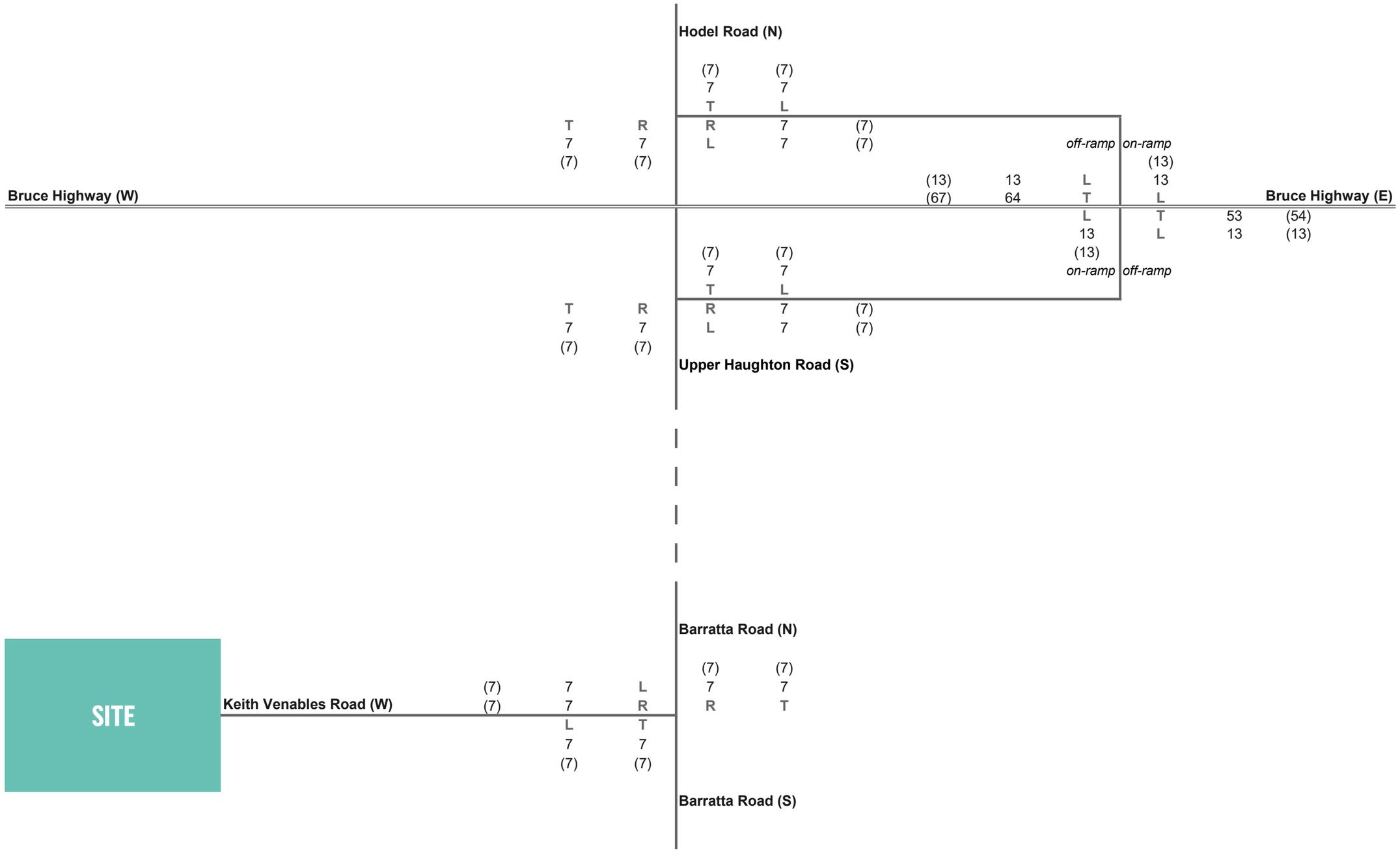


FIGURE 6

2042 HEAVY VEHICLE BACKGROUND VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

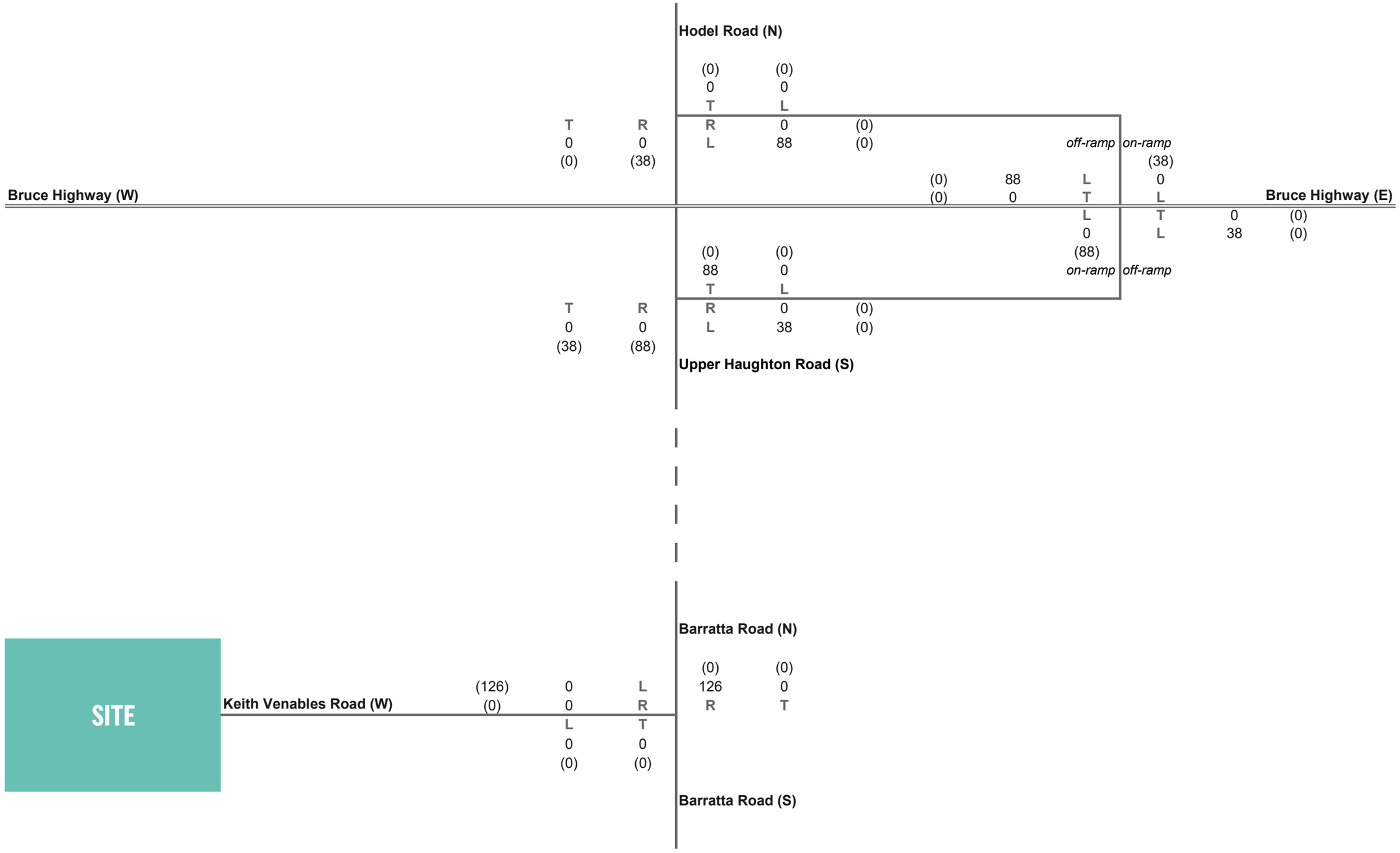


FIGURE 7

LIGHT VEHICLE PEAK CONSTRUCTION VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

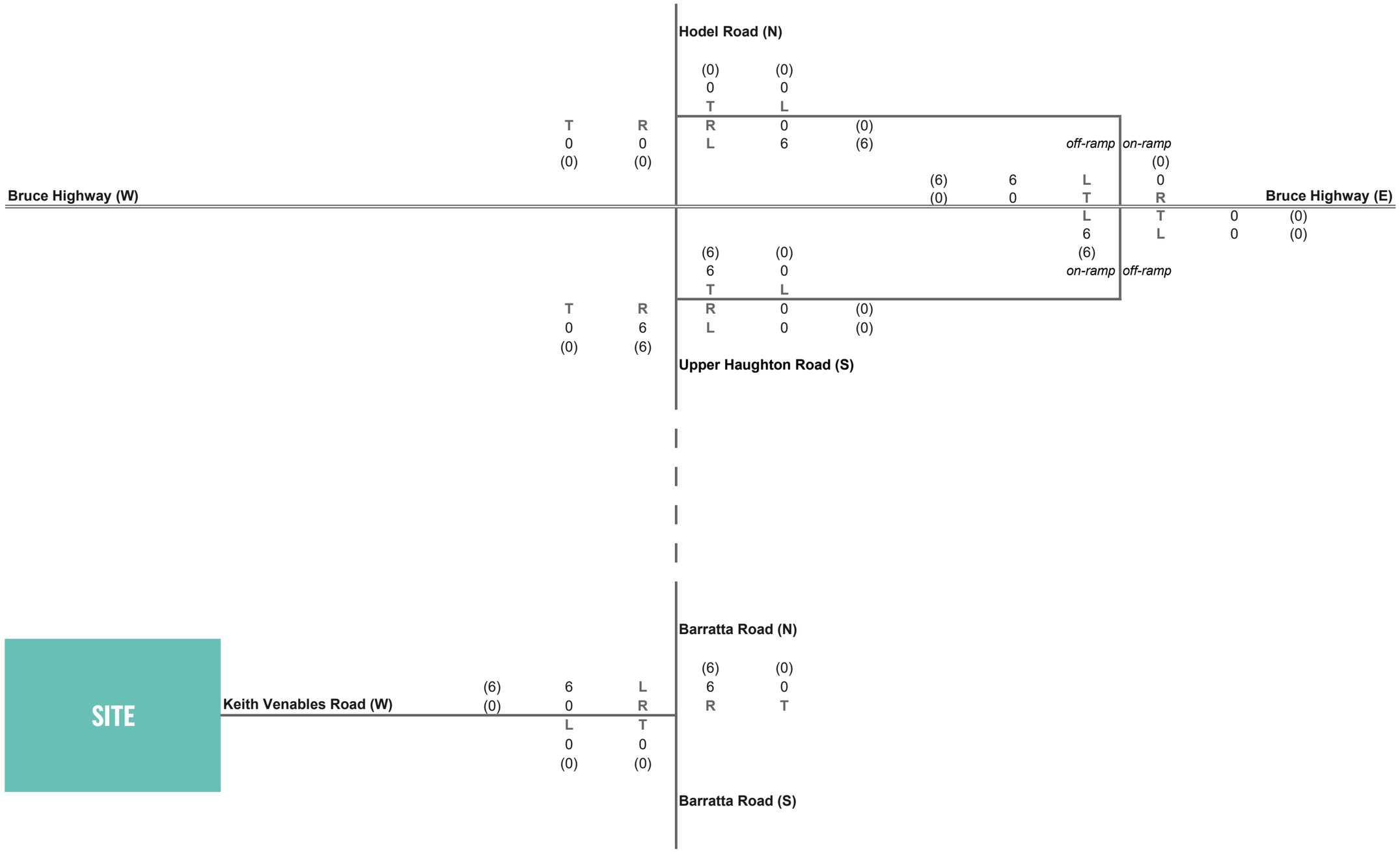


FIGURE 8

HEAVY VEHICLE PEAK CONSTRUCTION VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

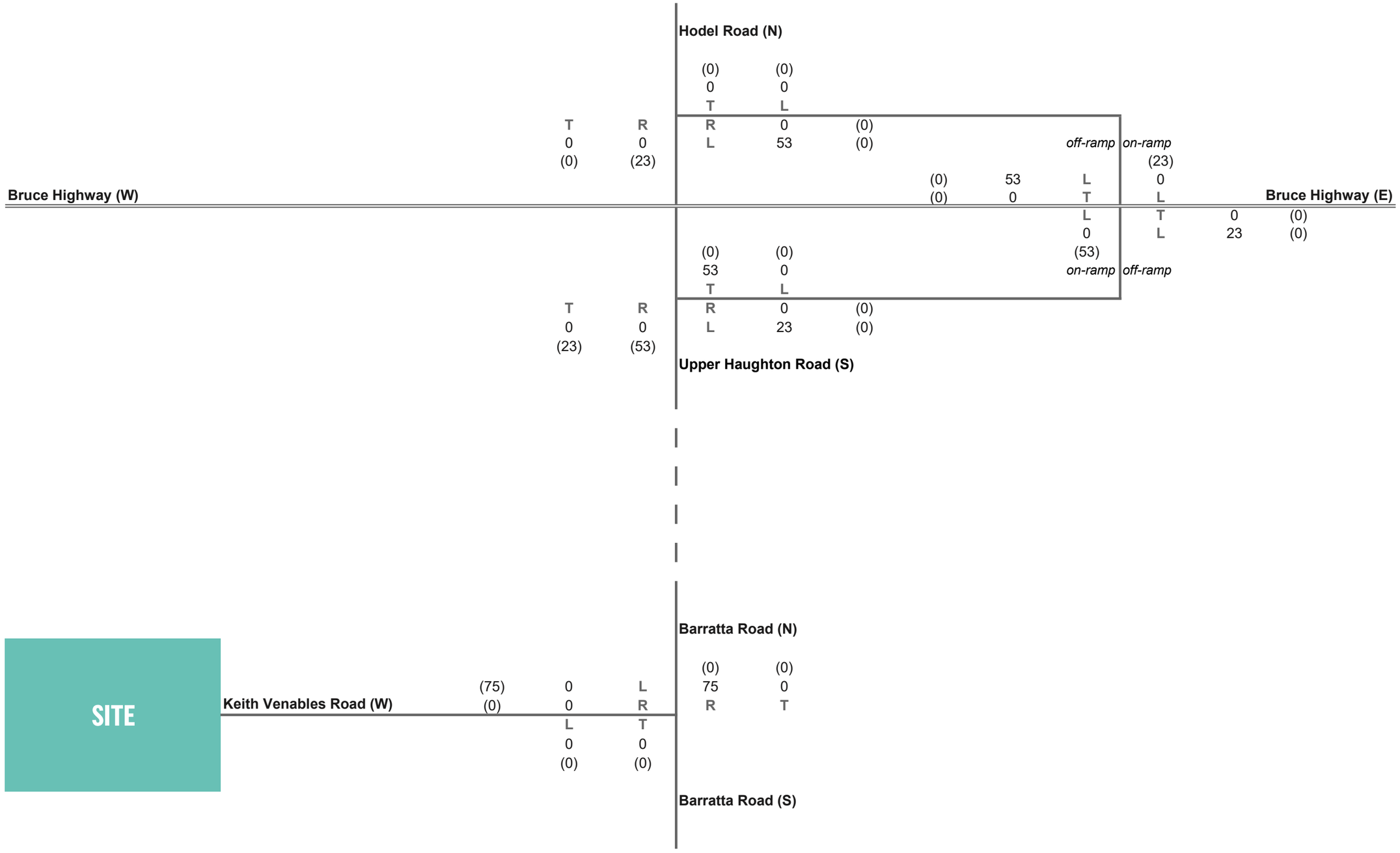


FIGURE 9

LIGHT VEHICLE PEAK OPERATION VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

22/01/2024 https://urbisau.sharepoint.com/sites/P0044793/Shared Documents/General/02_Workspace/08 - Transport/01_Analysis/[P0044793 - Traffic Flow Diagrams__Urbis_Operations

Legend

L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

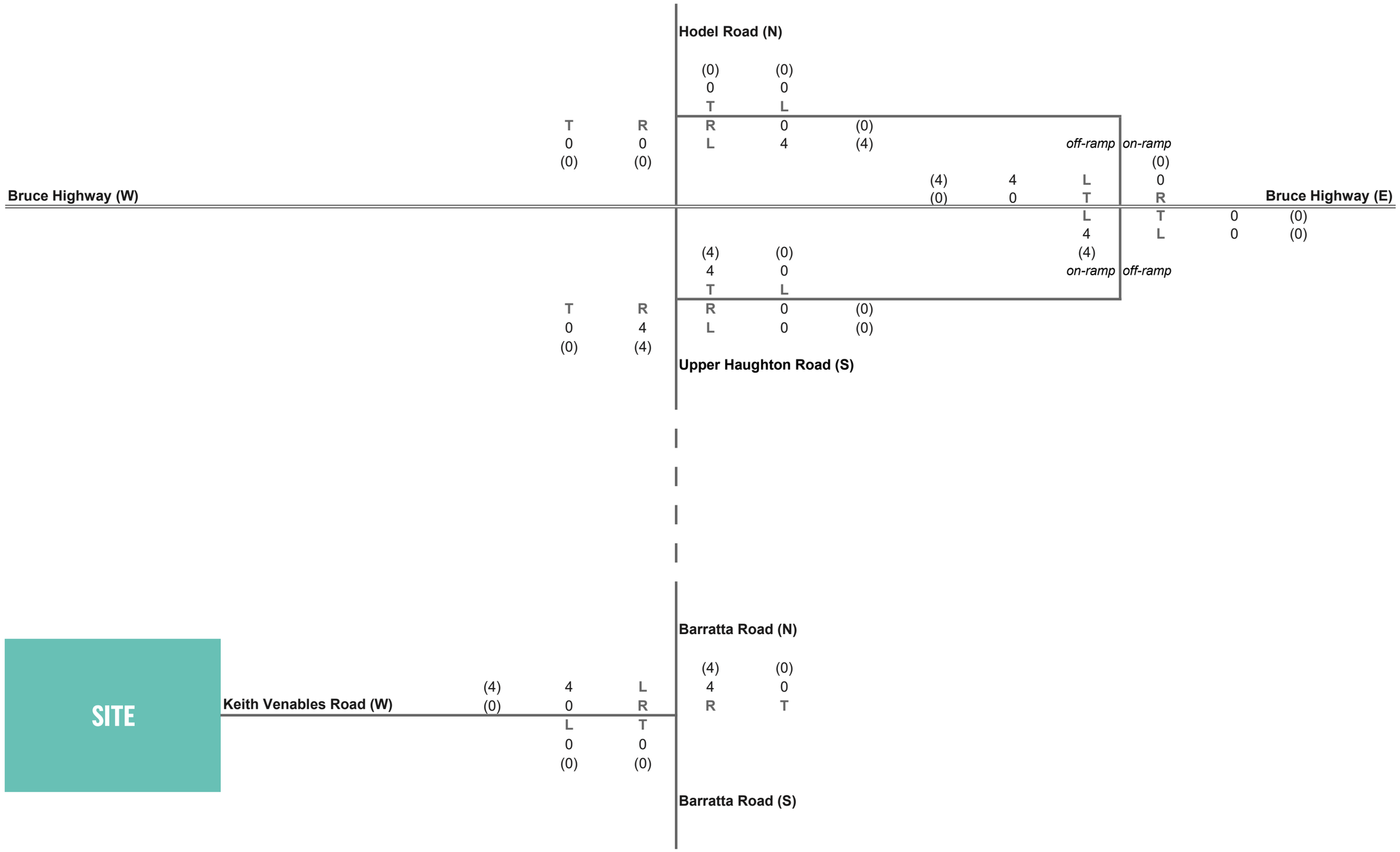


FIGURE 10

HEAVY VEHICLE PEAK OPERATION VOLUMES

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

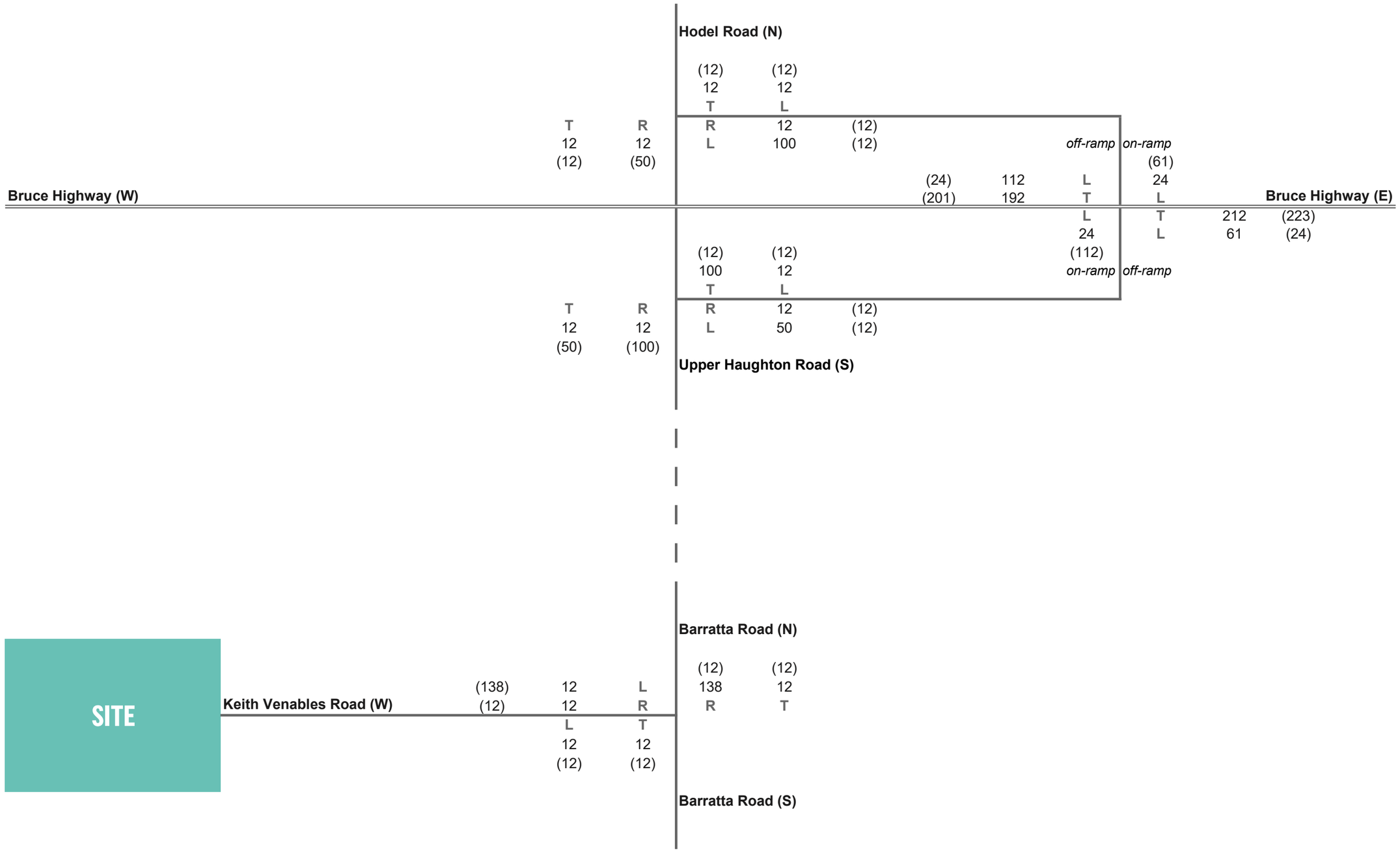


FIGURE 11

2032 LIGHT VEHICLE DESIGN VOLUMES (BACKGROUND PLUS DEVELOPMENT)

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

22/01/2024 https://urbisau.sharepoint.com/sites/P0044793/Shared Documents/General/02_Workspace/08 - Transport/01_Analysis/[P0044793 - Traffic Flow Diagrams__Urbis_Operations

Legend

L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

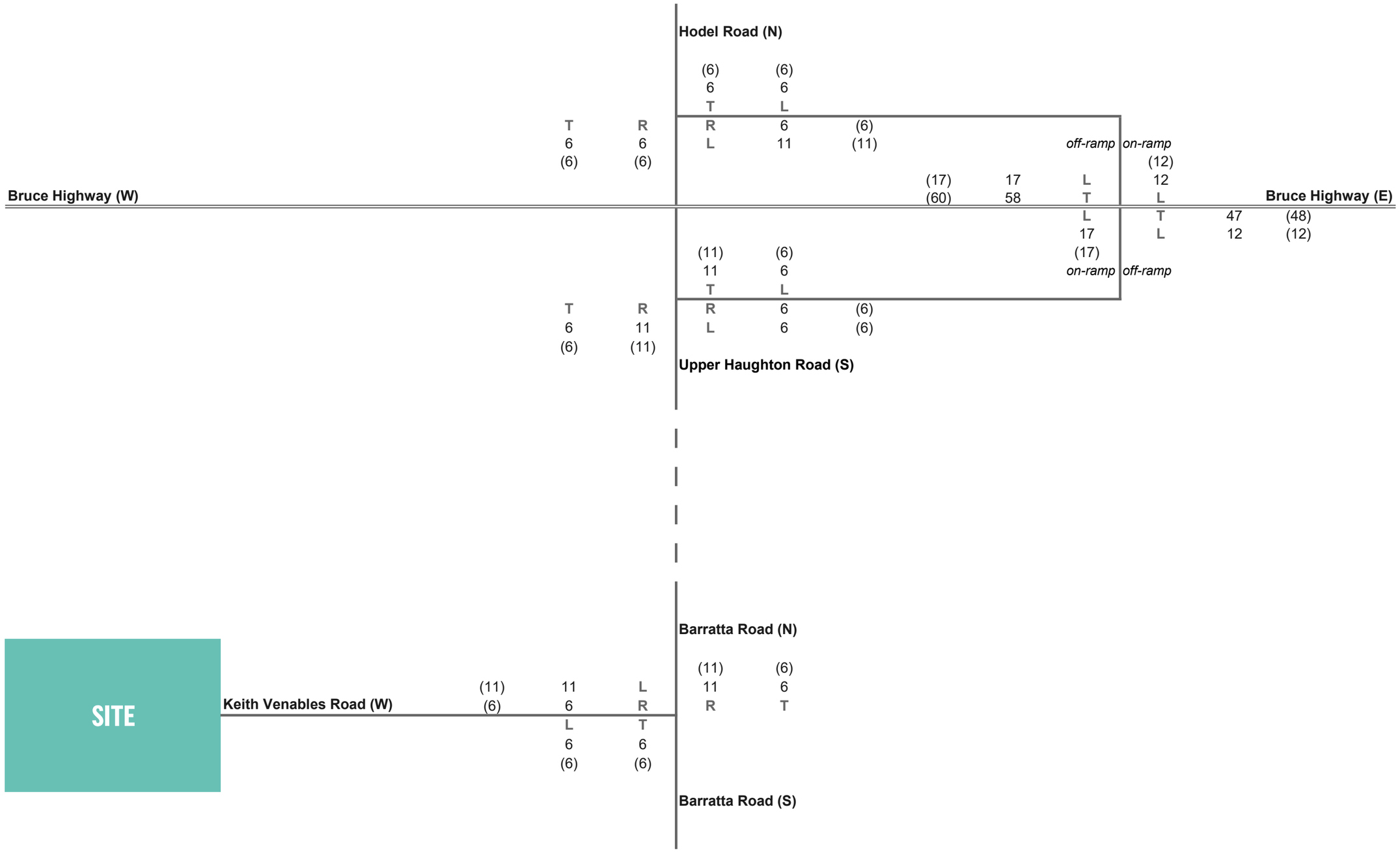


FIGURE 12

2032 HEAVY VEHICLE DESIGN VOLUMES (BACKGROUND PLUS DEVELOPMENT)

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

Legend			
L	Left turn	00	AM Peak Volume
T	Through	(00)	PM Peak Volume
R	Right turn		
U	U-turn		

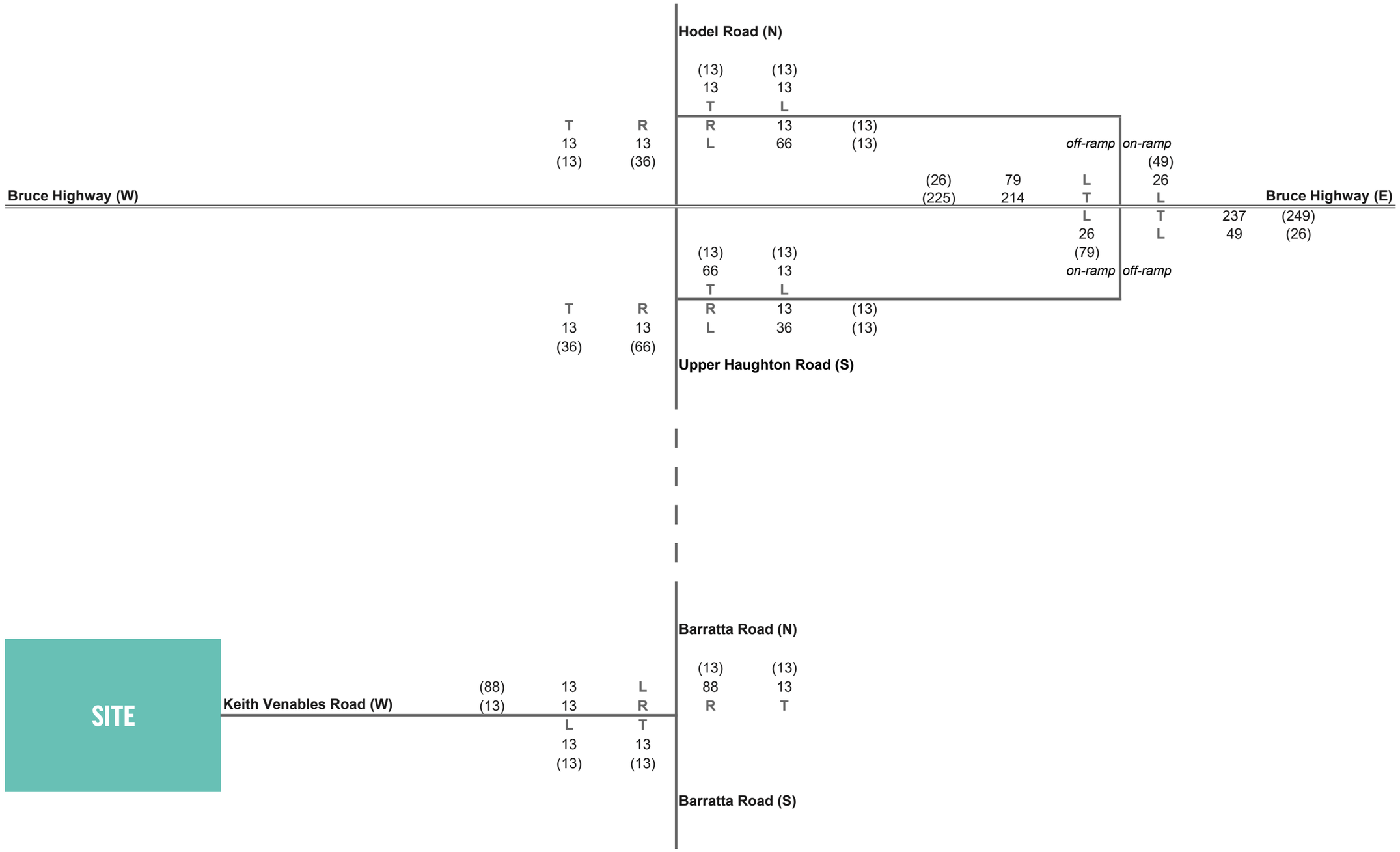


FIGURE 13

2042 LIGHT VEHICLE DESIGN VOLUMES (BACKGROUND PLUS DEVELOPMENT)

Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

22/01/2024 https://urbisau.sharepoint.com/sites/P0044793/Shared Documents/General/02_Workspace/08 - Transport/01_Analysis/[P0044793 - Traffic Flow Diagrams__Urbis_Operations

Legend

L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

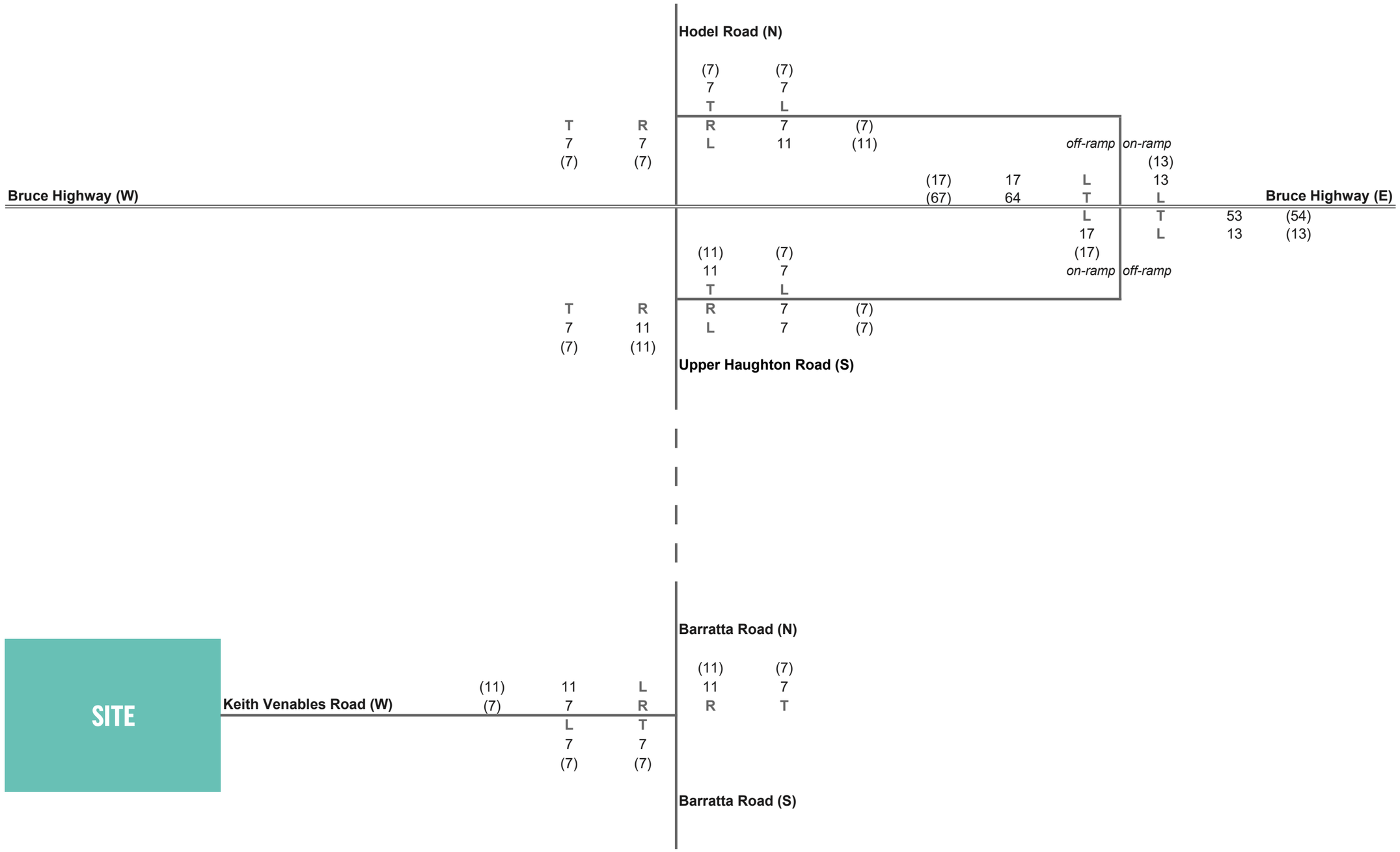


FIGURE 14

2042 HEAVY VEHICLE DESIGN VOLUMES (BACKGROUND PLUS DEVELOPMENT)

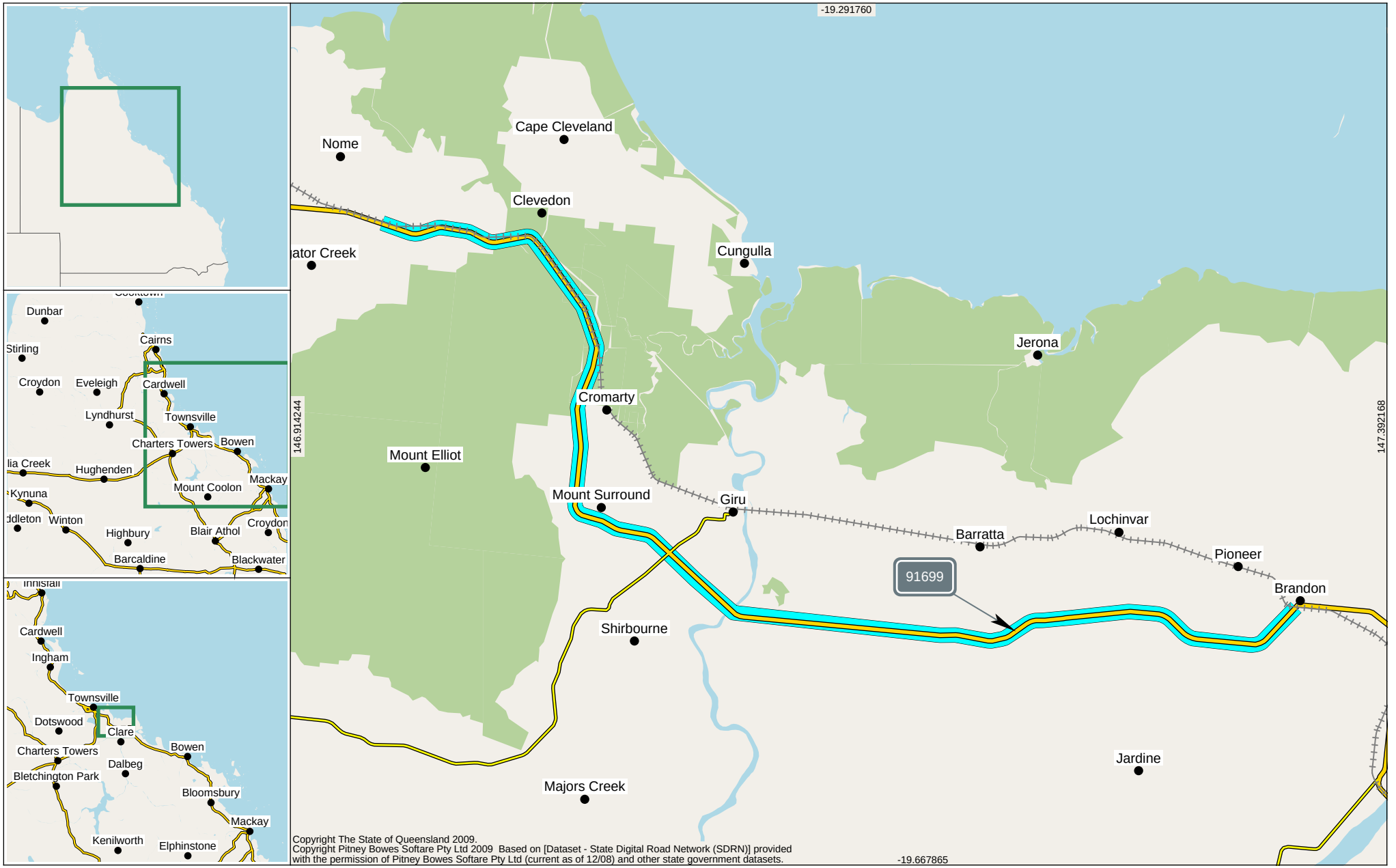
Project no. P0044793 **Project** Davco Renewable Energy Park TIA
Prepared by R.P. **Reviewed by** A.S.

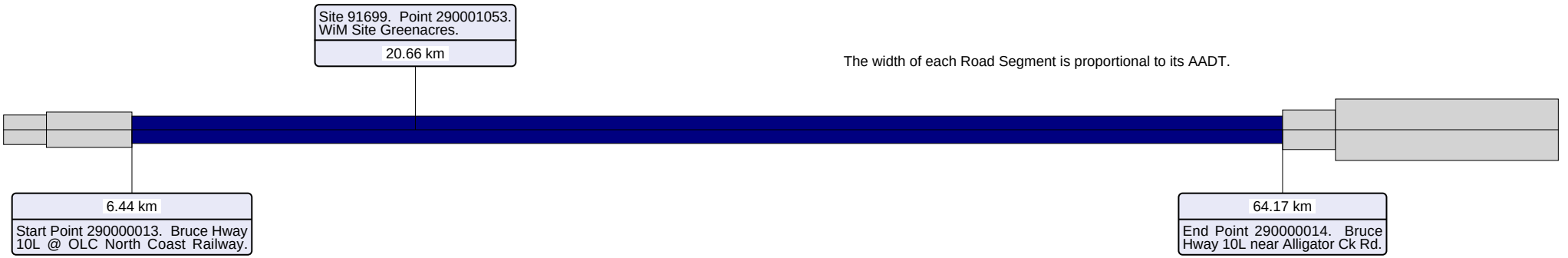
22/01/2024 https://urbisau.sharepoint.com/sites/P0044793/Shared Documents/General/02_Workspace/08 - Transport/01_Analysis/[P0044793 - Traffic Flow Diagrams__Urbis_Operations

Legend

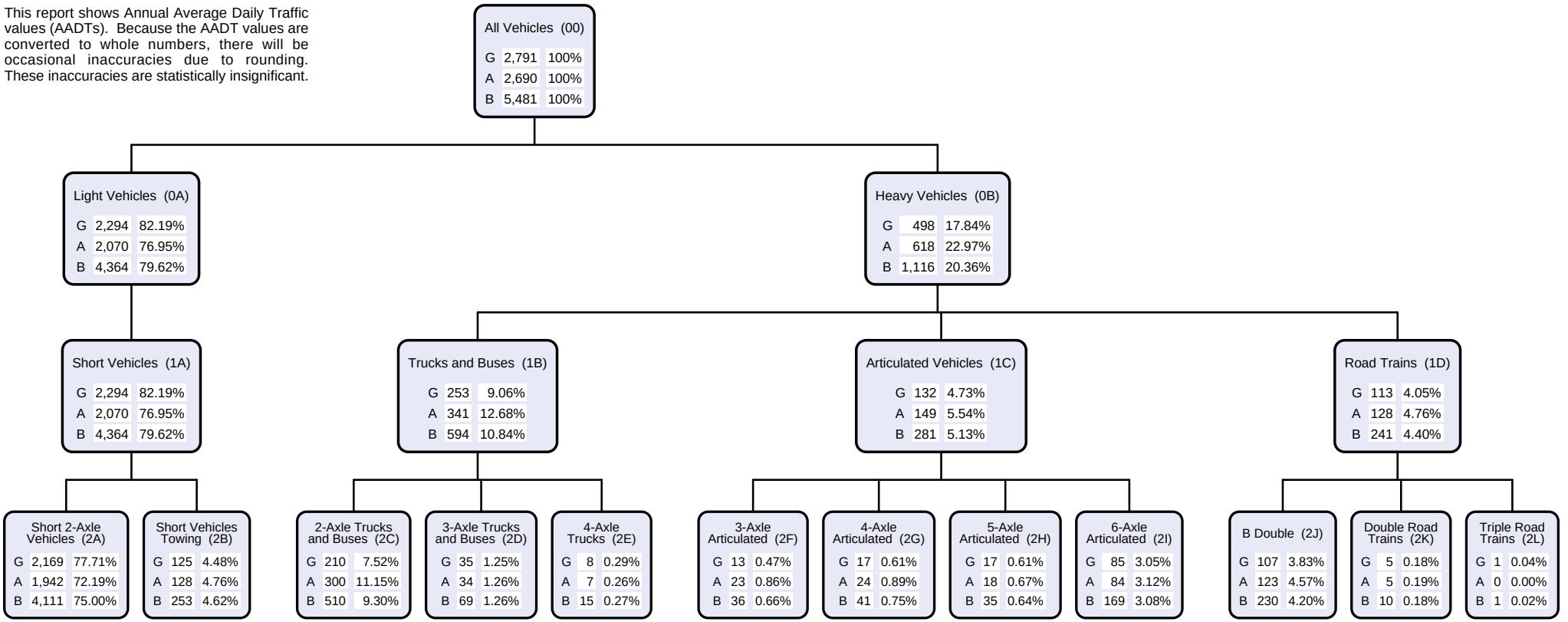
L	Left turn	**00**	AM Peak Volume
T	Through	**(00)**	PM Peak Volume
R	Right turn		
U	U-turn		

APPENDIX C – TMR CENSUS DATA





This report shows Annual Average Daily Traffic values (AADTs). Because the AADT values are converted to whole numbers, there will be occasional inaccuracies due to rounding. These inaccuracies are statistically insignificant.



AADT Segment Annual Volume Report
Provides summary data for the selected AADT Segment of a Road Section. Summary data is presented as both directional information and a combined bi-directional figure. The data is then broken down by Traffic Class, when available. The report also includes maps displaying the location of both the AADT Segment and the traffic count site.

Annual Average Daily Traffic (AADT)
Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

AADT Segments
The State declared road network is broken into Road Sections and then further broken down into AADT Segments. An AADT Segment is a sub-section of the declared road network where traffic volume is similar along the entire AADT Segment.

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Metropolitian District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

AADT Values
AADT values are displayed by direction of travel as:

- G Traffic flow in gazettal direction
- A Traffic flow against gazettal direction
- B Traffic flow in both directions

Data Collection Year
Is the most recent year that data was collected at the data collection site.

Please Note:
Due to location and/or departmental policy, some sites are not counted every year.

Gazettal Direction
Is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

Maps
Display the selected location from a range of viewing levels, the start and end position details for the AADT Segment and the location of the traffic count site.

Road Section
Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazettal Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

Segment Site
Is the unique identifier for the traffic count site representing the traffic flow within the AADT Segment.

Site
The physical location of a traffic counting device. Sites are located at a specified Through Distance along a Road Section.

Site Description
The description of the physical location of the traffic counting device.

Start and End Point
The unique identifier for the Through Distance along a Road Section.

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Traffic is categorised as per the Austroads Vehicle Classification scheme. Traffic classes are in the following hierarchical format:

Volume or All Vehicles
00 = 0A + 0B

Light Vehicles
0A = 1A
1A = 2A + 2B

Heavy Vehicles
0B = 1B + 1C + 1D
1B = 2C + 2D + 2E
1C = 2F + 2G + 2H + 2I
1D = 2J + 2K + 2L

The following classes are the categories for which data can be captured:

Volume
00 All vehicles

2-Bin
0A Light vehicles
0B Heavy vehicles

4-Bin
1A Short vehicles
1B Truck or bus
1C Articulated vehicles
1D Road train

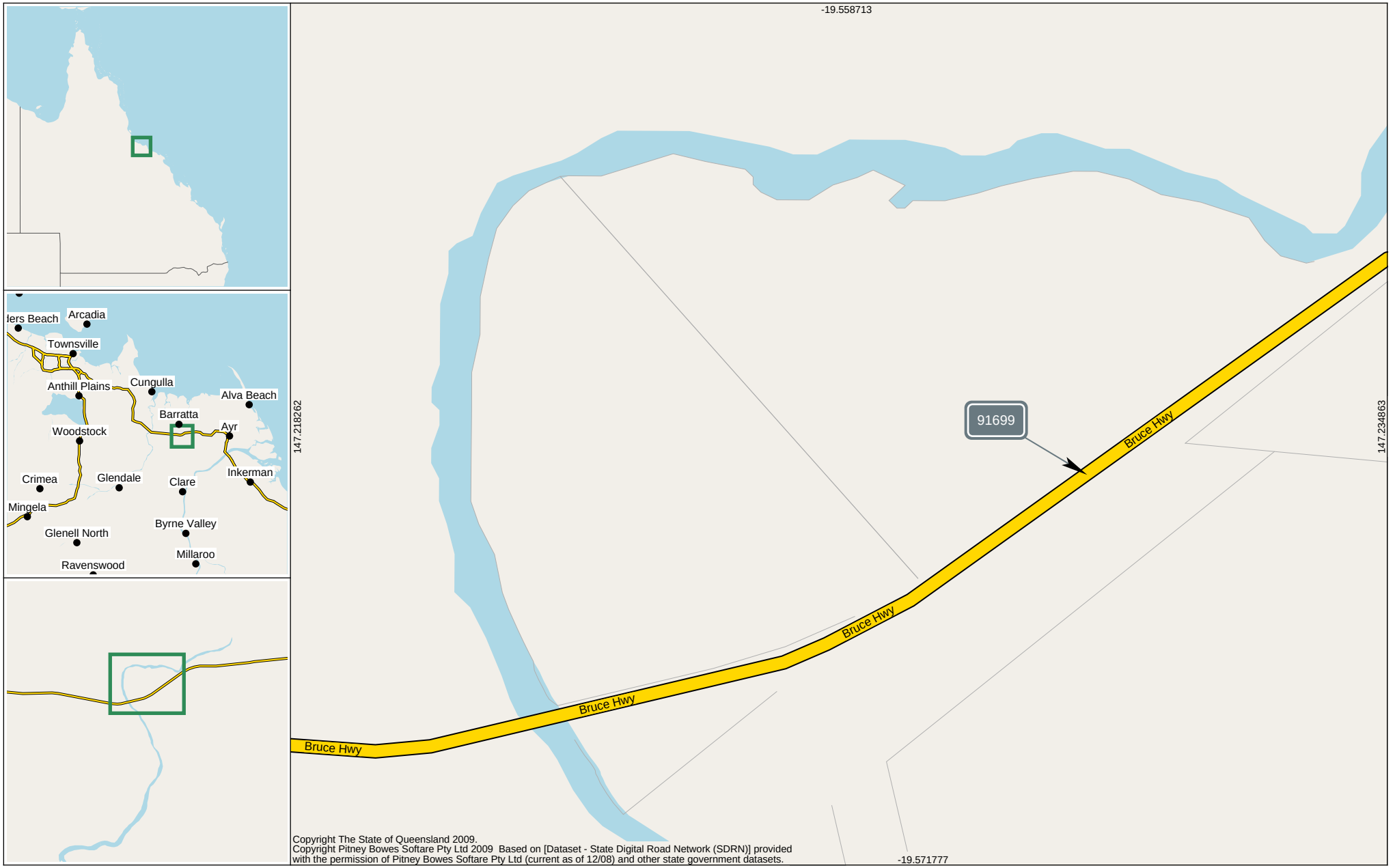
12-Bin
2A Short 2 axle vehicles
2B Short vehicles towing
2C 2 axle truck or bus
2D 3 axle truck or bus
2E 4 axle truck
2F 3 axle articulated vehicle
2G 4 axle articulated vehicle
2H 5 axle articulated vehicle
2I 6 axle articulated vehicle
2J B double
2K Double road train
2L Triple road train

Traffic Analysis and Reporting System

Annual Volume Report

Area 408 - Northern District Road Section 10L - BRUCE HIGHWAY (AYR - TOWNSVILLE)

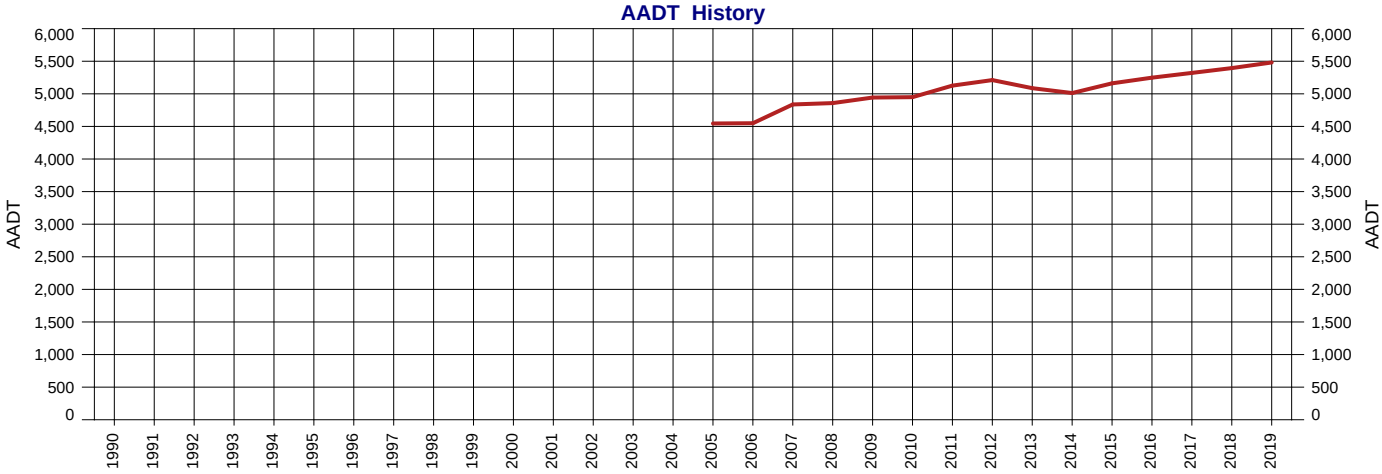
Site 91699 - 10L WiM Site Greenacres TDist 20.659km Speed Limit 100



Area	408 - Northern District
Road Section	10L - BRUCE HIGHWAY (AYR - TOWNSVILLE)
Site	91699 - 10L WiM Site Greenacres
Thru Dist	20.659
Type	P - Permanent
Stream	TB - Bi-directional traffic flow

Year	2019	Growth last Year	1.59%
AADT	5,481	Growth last 5 Yrs	1.64%
Avg Week Day	5,645	Growth last 10 Yrs	1.09%
Avg Weekend Day	4,932		

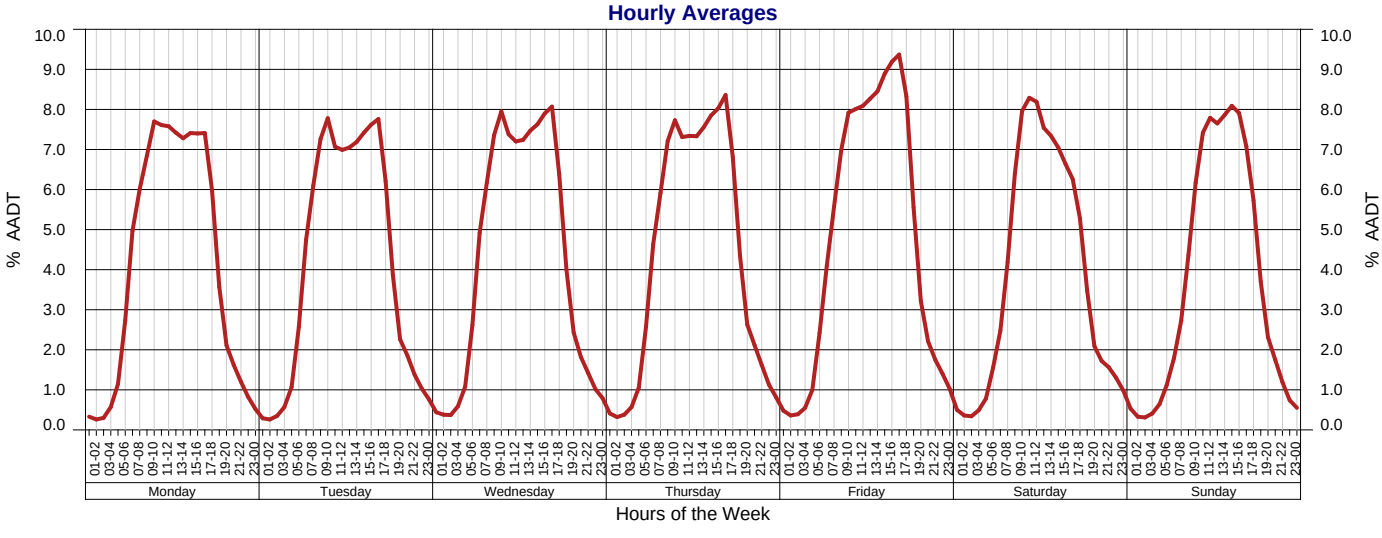
AADT History



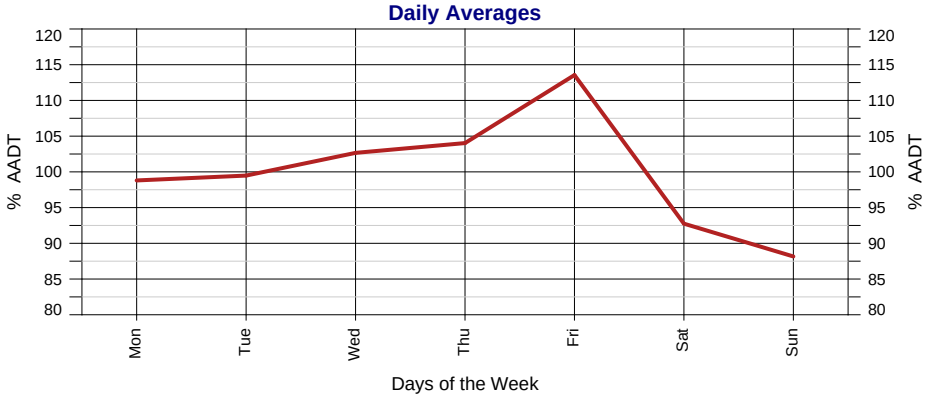
Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2019	5,481	1.59%	1.64%	1.09%
2018	5,395	1.39%	1.45%	1.01%
2017	5,321	1.39%	0.98%	0.95%
2016	5,248	1.69%	0.63%	1.02%
2015	5,161	2.97%	0.49%	1.01%
2014	5,012	-1.47%	-0.07%	
2013	5,087	-2.38%	0.71%	
2012	5,211	1.66%	1.71%	
2011	5,126	3.58%	2.02%	
2010	4,949	0.12%	1.59%	
2009	4,943	1.75%		
2008	4,858	0.43%		
2007	4,837	6.33%		
2006	4,549	0.09%		
2005	4,545			

Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2004				
2003				
2002				
2001				
2000				
1999				
1998				
1997				
1996				
1995				
1994				
1993				
1992				
1991				
1990				

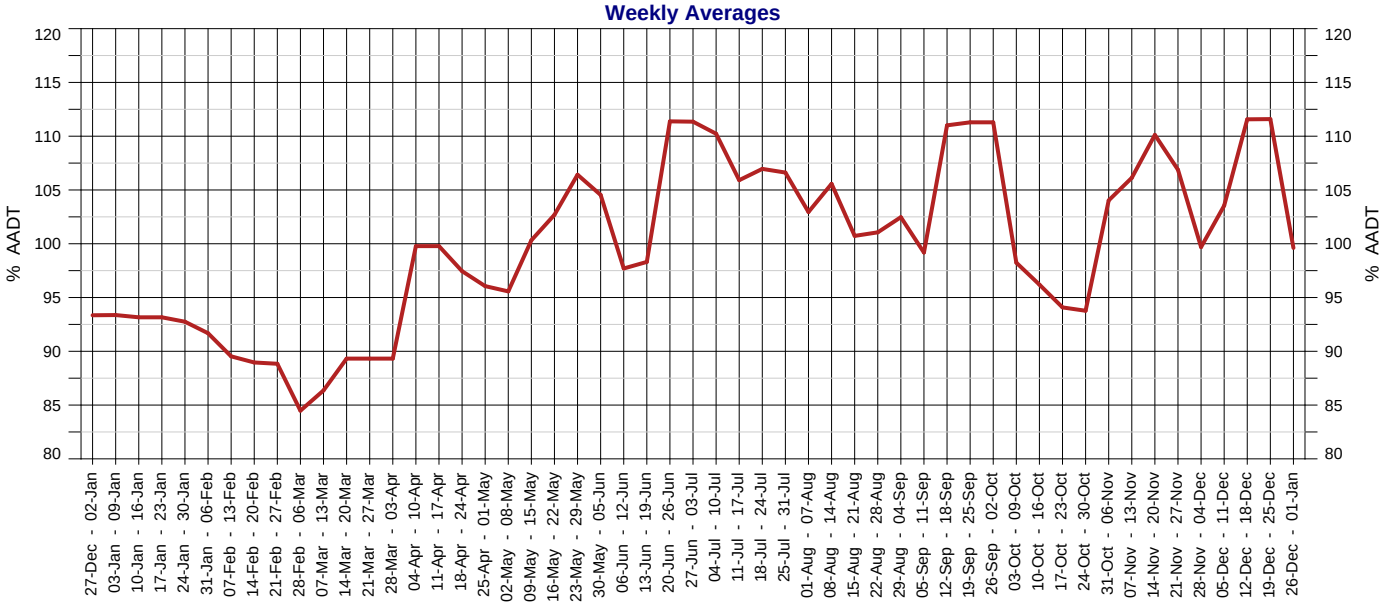
Hourly Averages



Daily Averages



Weekly Averages



2019 Calendar

January

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

September

M	T	W	T	F	S	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

October

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December

M	T	W	T	F	S	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Days on which traffic data was collected.

Annual Volume Report
Displays AADT history with hourly, daily and weekly patterns by Stream in addition to annual data for AADT figures with 1 year, 5 year and 10 year growth rates.

Annual Average Daily Traffic (AADT)
Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

AADT History
Displays the years when traffic data was collected at this count site.

Area
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South Coast District	410
South West District	411
Wide Bay/Burnett District	412

Avg Week Day
Average daily traffic volume during the week days, Monday to Friday.

Avg Weekend Day
Average daily traffic volume during the weekend, Saturday and Sunday.

Calendar
Days on which traffic data was collected are highlighted in green.

Gazettal Direction
The Gazettal Direction is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

- G Traffic flowing in Gazettal Direction
- A Traffic flowing against Gazettal Direction
- B The combined traffic flow in both Directions

Growth Percentage
Represents the increase or decrease in AADT, using a exponential fit over the previous 1, 5 or 10 year period.

Hour, Day & Week Averages
The amount of traffic on the road network will vary depending on the time of day, the day of the week and the week of the year. The ebb and flow of traffic travelling through a site over a period of time forms a pattern. The Hour, Day and Week Averages are then used in the calculation of AADT.

Road Section
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Site
The unique identifier and description of the physical location of a traffic counting device. Sites are located at a Through Distance along a Road Section.

Stream
The lane in which the traffic is travelling in. This report provides data for the combined flow of traffic in both directions.

Thru Dist or TDist
The distance from the beginning of the Road Section, in kilometres.

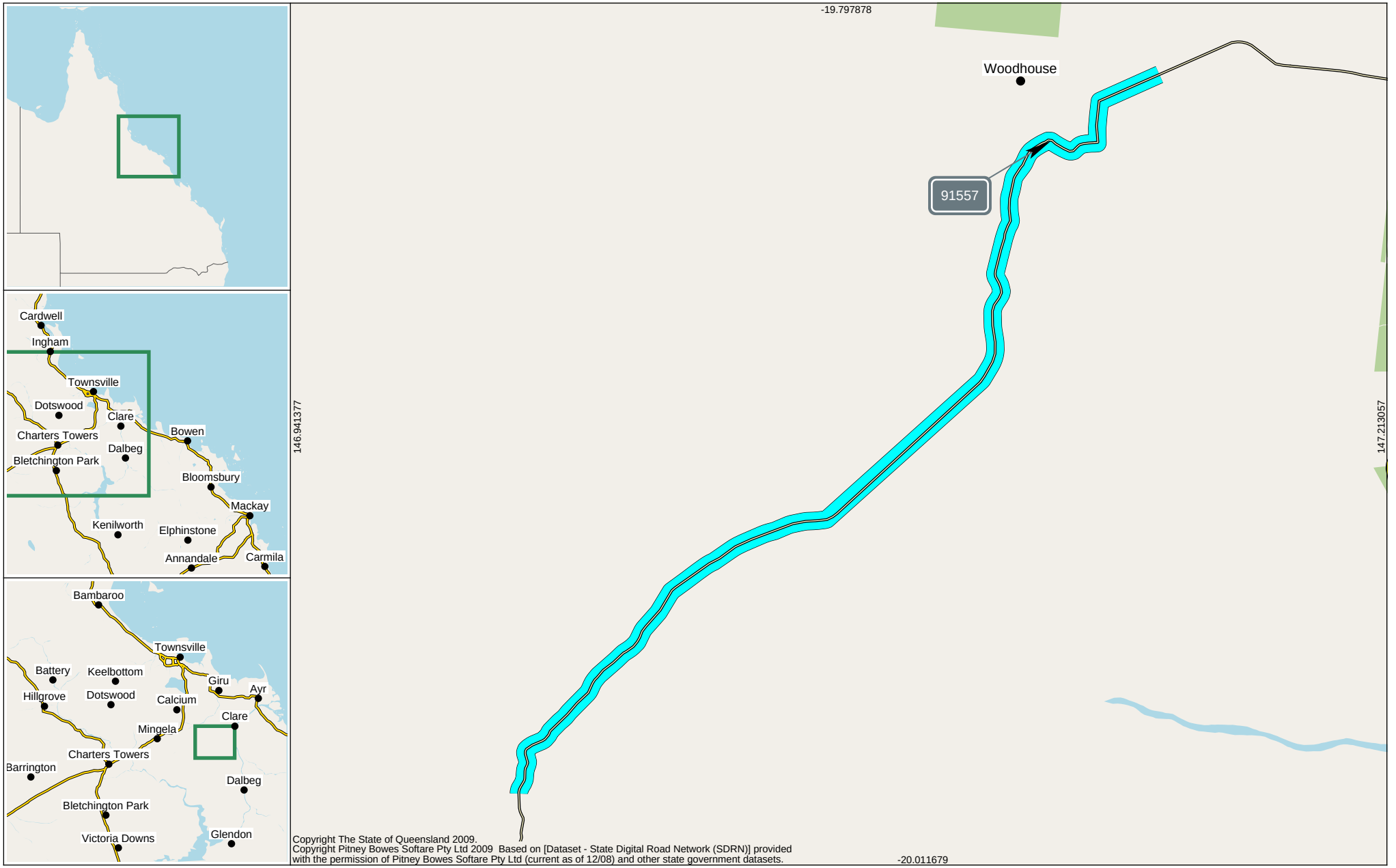
Type
There are two types of traffic counting sites, Permanent and Coverage. Permanent means the traffic counting device is in place 24/7. Coverage means the traffic counting device is in place for a specified period of time.

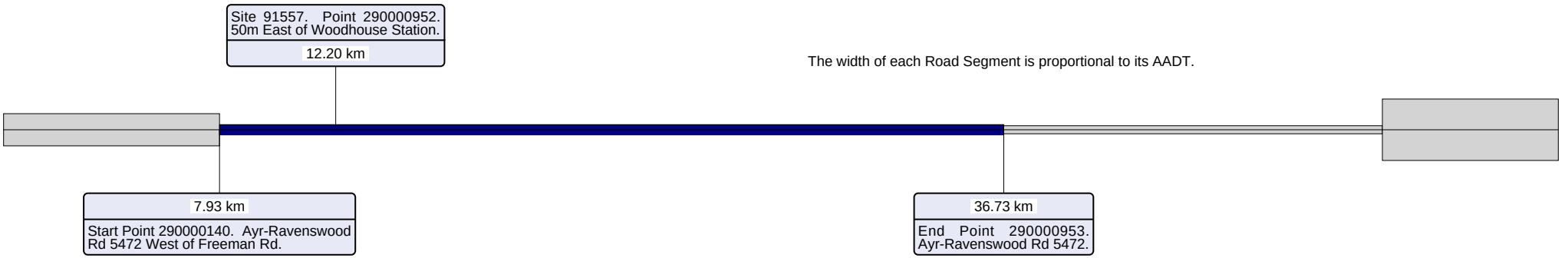
Year
Is the current year for the report. Where an AADT Year record is missing a traffic count has not been conducted, for that year.

AADT Segment Report

Area 408 - Northern District Road Section 5472 - AYR - RAVENSWOOD ROAD

Road Segment from 7.930km to 36.731km Segment Site 91557 Traffic Year 2020 Data Collection Year 2019





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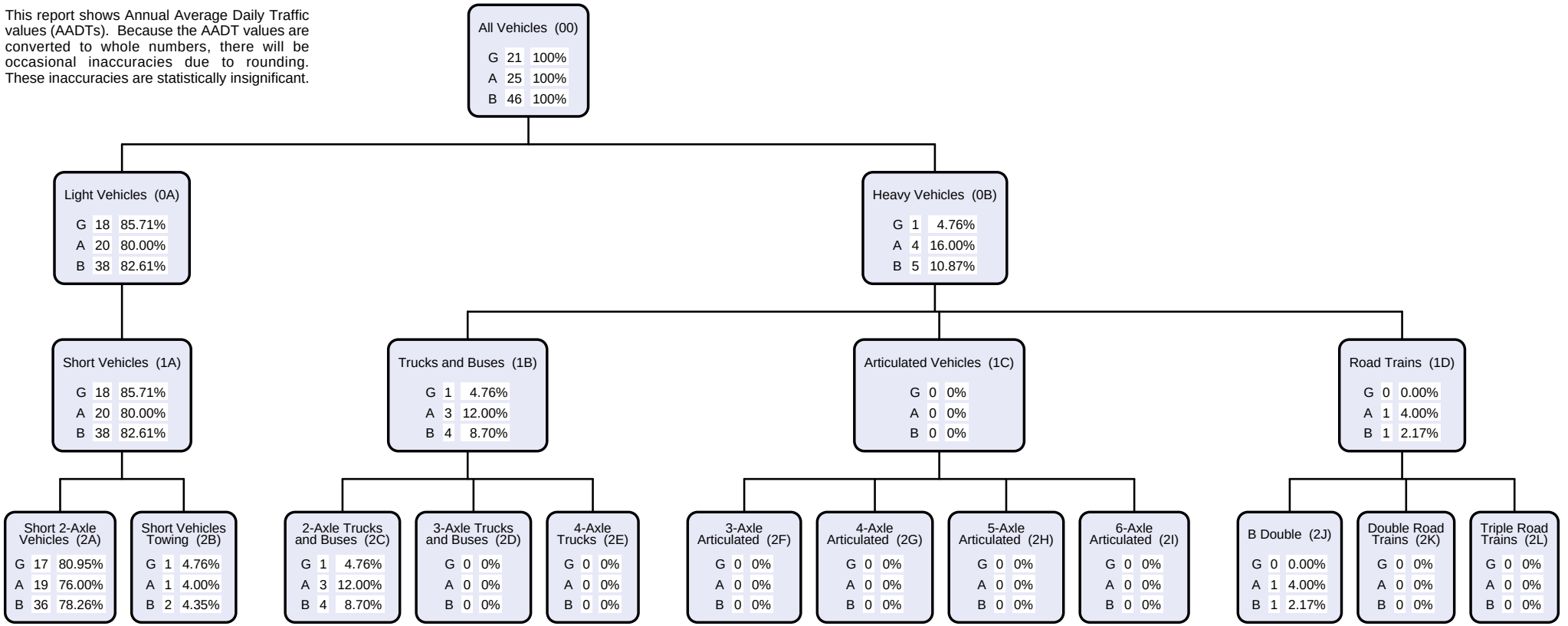

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1D = 2J + 2K + 2L

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1D Road train

12-Bin
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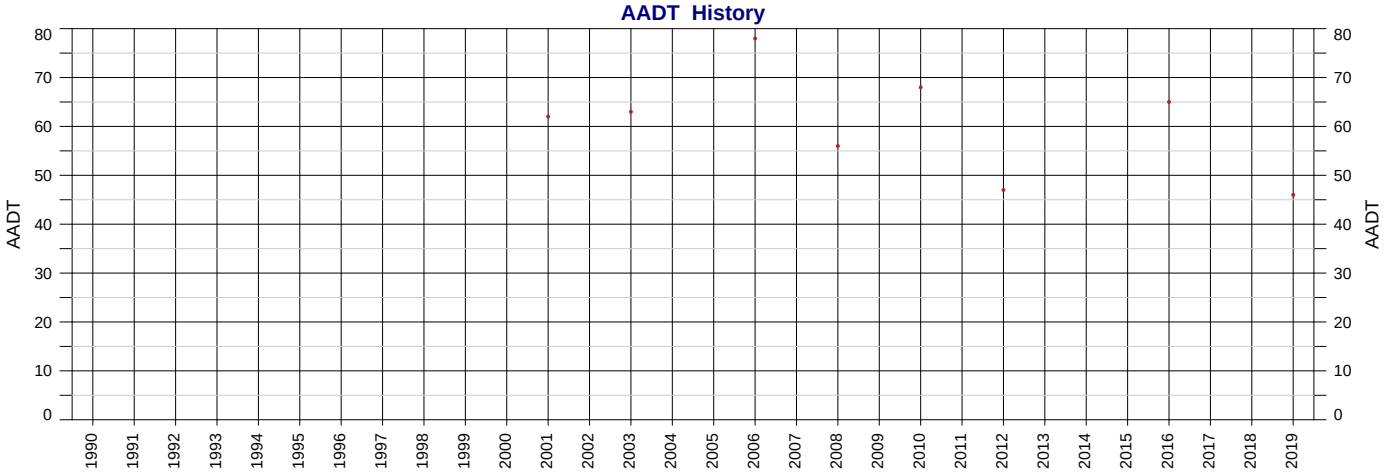
2B Short vehicles towing
2C 2 axle truck or bus
2D 3 axle truck or bus
2E 4 axle truck
2F 3 axle articulated vehicle
2G 4 axle articulated vehicle
2H 5 axle articulated vehicle
2I 6 axle articulated vehicle
2J B double
2K Double road train
2L Triple road train

Area	408 - Northern District
Road Section	5472 - AYR - RAVENSWOOD ROAD
Site	91557 - 50m East of Woodhouse Station
Thru Dist	12.198
Type	C - Coverage
Stream	TB - Bi-directional traffic flow

Year	2019	Growth last Year	
AADT	46	Growth last 5 Yrs	
Avg Week Day	52	Growth last 10 Yrs	
Avg Weekend Day	46		

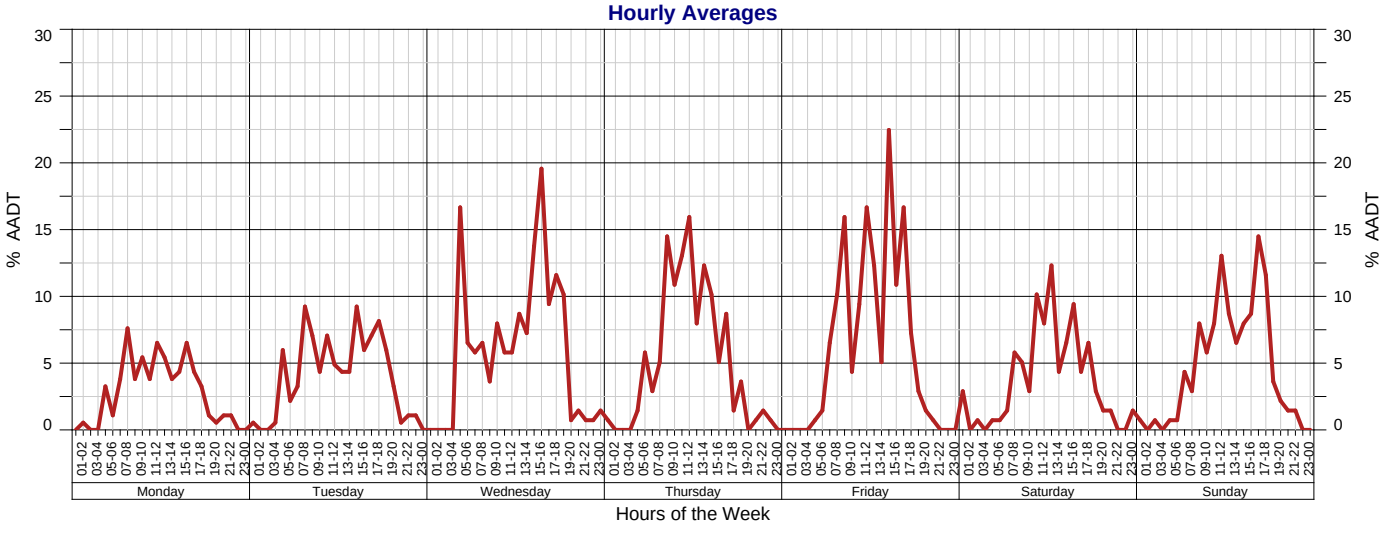
AADT History



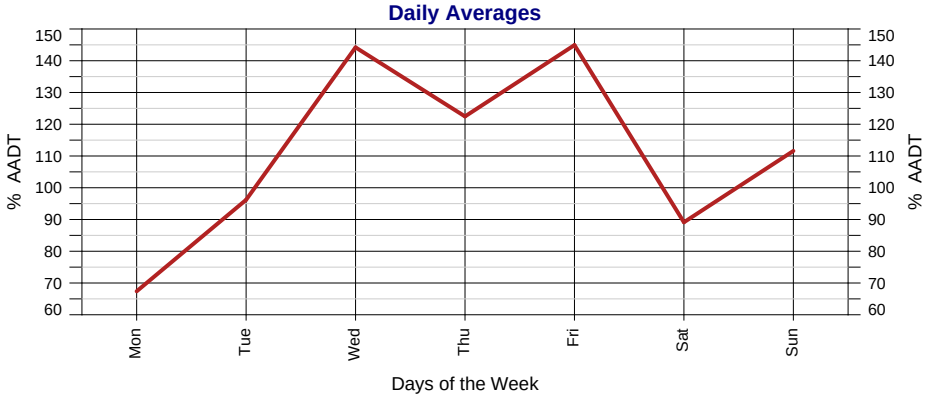
Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2019	46			
2018				
2017				
2016	65			0.18%
2015				
2014				
2013				
2012	47			
2011				
2010	68			
2009				
2008	56		-4.22%	
2007				
2006	78		5.40%	
2005				

Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2004				
2003	63			
2002				
2001	62			
2000				
1999				
1998				
1997				
1996				
1995				
1994				
1993				
1992				
1991				
1990				

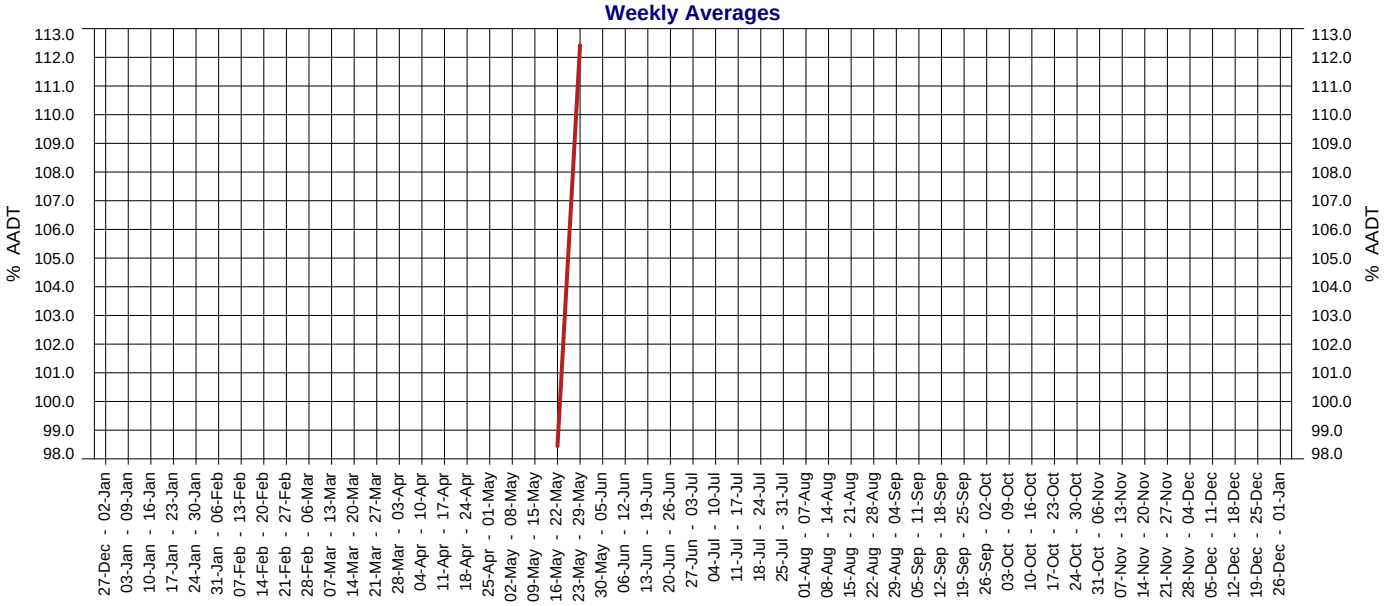
Hourly Averages



Daily Averages



Weekly Averages



2019 Calendar

January

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

September

M	T	W	T	F	S	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

October

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December

M	T	W	T	F	S	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Days on which traffic data was collected.

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Mackay/Whitsunday District	405
Metropolitian District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

Avg Week Day
Average daily traffic volume during the week days, Monday to Friday.

Avg Weekend Day
Average daily traffic volume during the weekend, Saturday and Sunday.

Calendar
Days on which traffic data was collected are highlighted in green.

Gazettal Direction
The Gazettal Direction is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

- G Traffic flowing in Gazettal Direction
- A Traffic flowing against Gazettal Direction
- B The combined traffic flow in both Directions

Growth Percentage
Represents the increase or decrease in AADT, using a exponential fit over the previous 1, 5 or 10 year period.

Hour, Day & Week Averages
The amount of traffic on the road network will vary depending on the time of day, the day of the week and the week of the year. The ebb and flow of traffic travelling through a site over a period of time forms a pattern. The Hour, Day and Week Averages are then used in the calculation of AADT.

Road Section
Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazettal Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

Site
The unique identifier and description of the physical location of a traffic counting device. Sites are located at a Through Distance along a Road Section.

Stream
The lane in which the traffic is travelling in. This report provides data for the combined flow of traffic in both directions.

Thru Dist or TDist
The distance from the beginning of the Road Section, in kilometres.

Type
There are two types of traffic counting sites, Permanent and Coverage. Permanent means the traffic counting device is in place 24/7. Coverage means the traffic counting device is in place for a specified period of time.

Year
Is the current year for the report. Where an AADT Year record is missing a traffic count has not been conducted, for that year.

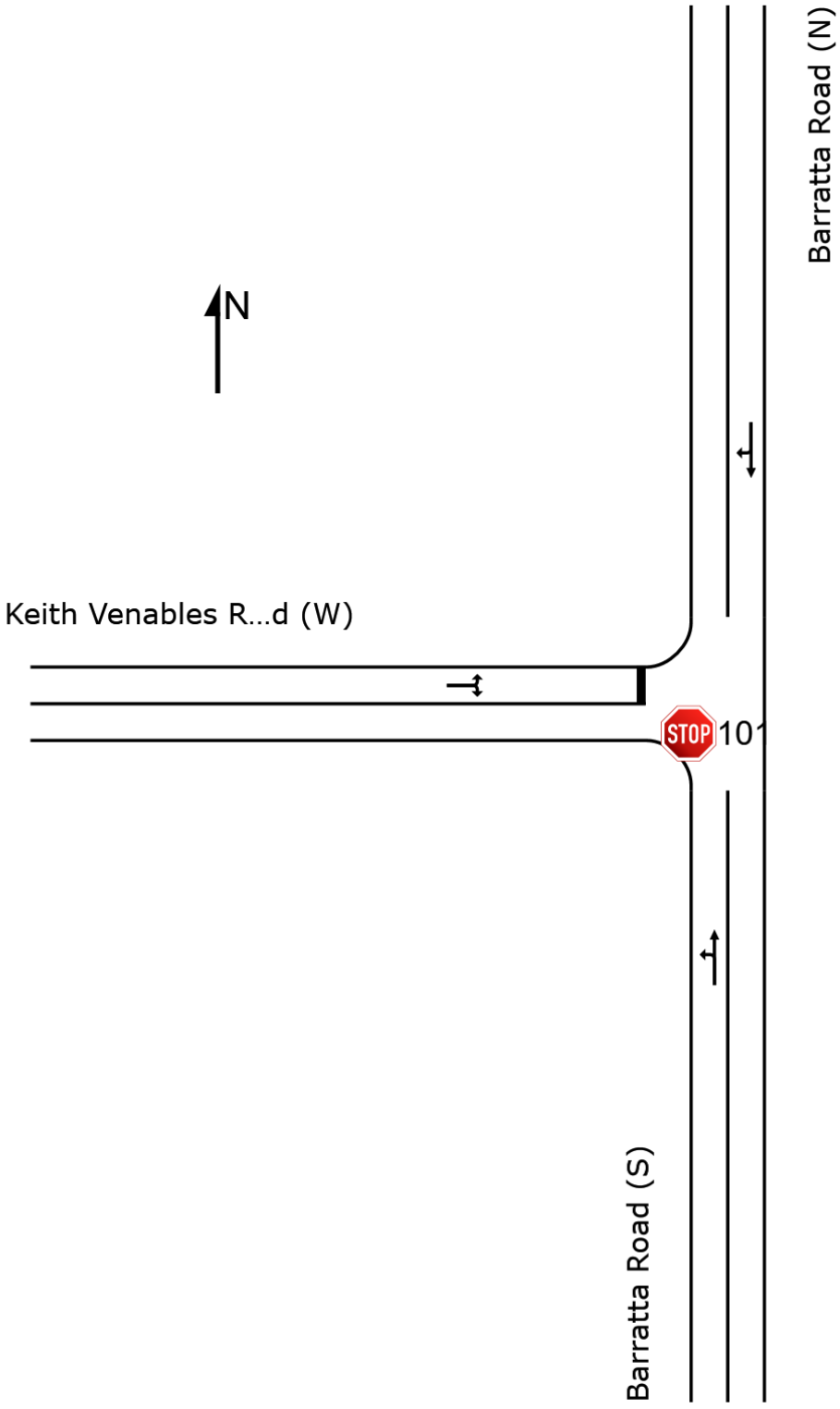
APPENDIX D – SIDRA OUTPUTS

SITE LAYOUT

Site: 101 [Barratta Road / Keith Venables Road - 2019BG AM Peak (Site Folder: Barratta Road / Keith Venables Road)]

New Site
Site Category: (None)
Stop (Two-Way)

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



MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2019BG AM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	16	33.3	16	33.3	0.020	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.6
2	T1	All MCs	16	33.3	16	33.3	0.020	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			32	33.3	32	33.3	0.020	4.4	NA	0.0	0.0	0.00	0.34	0.00	77.3
North: Barratta Road (N)															
8	T1	All MCs	16	33.3	16	33.3	0.021	0.0	LOS A	0.1	0.7	0.10	0.33	0.10	89.7
9	R2	All MCs	16	33.3	16	33.3	0.021	8.6	LOS A	0.1	0.7	0.10	0.33	0.10	66.5
Approach			32	33.3	32	33.3	0.021	4.3	NA	0.1	0.7	0.10	0.33	0.10	76.4
West: Keith Venables Road (W)															
10	L2	All MCs	16	33.3	16	33.3	0.030	11.5	LOS B	0.1	1.0	0.10	0.97	0.10	61.5
12	R2	All MCs	16	33.3	16	33.3	0.030	11.0	LOS B	0.1	1.0	0.10	0.97	0.10	61.0
Approach			32	33.3	32	33.3	0.030	11.3	LOS B	0.1	1.0	0.10	0.97	0.10	61.2
All Vehicles			95	33.3	95	33.3	0.030	6.6	NA	0.1	1.0	0.07	0.55	0.07	70.8

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2019BG PM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	16	33.3	16	33.3	0.020	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.6
2	T1	All MCs	16	33.3	16	33.3	0.020	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			32	33.3	32	33.3	0.020	4.4	NA	0.0	0.0	0.00	0.34	0.00	77.3
North: Barratta Road (N)															
8	T1	All MCs	16	33.3	16	33.3	0.021	0.0	LOS A	0.1	0.7	0.10	0.33	0.10	89.7
9	R2	All MCs	16	33.3	16	33.3	0.021	8.6	LOS A	0.1	0.7	0.10	0.33	0.10	66.5
Approach			32	33.3	32	33.3	0.021	4.3	NA	0.1	0.7	0.10	0.33	0.10	76.4
West: Keith Venables Road (W)															
10	L2	All MCs	16	33.3	16	33.3	0.030	11.5	LOS B	0.1	1.0	0.10	0.97	0.10	61.5
12	R2	All MCs	16	33.3	16	33.3	0.030	11.0	LOS B	0.1	1.0	0.10	0.97	0.10	61.0
Approach			32	33.3	32	33.3	0.030	11.3	LOS B	0.1	1.0	0.10	0.97	0.10	61.2
All Vehicles			95	33.3	95	33.3	0.030	6.6	NA	0.1	1.0	0.07	0.55	0.07	70.8

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2032BG AM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	19	33.3	19	33.3	0.024	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.6
2	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			38	33.3	38	33.3	0.024	4.4	NA	0.0	0.0	0.00	0.34	0.00	77.3
North: Barratta Road (N)															
8	T1	All MCs	19	33.3	19	33.3	0.025	0.0	LOS A	0.1	0.9	0.12	0.34	0.12	89.6
9	R2	All MCs	19	33.3	19	33.3	0.025	8.6	LOS A	0.1	0.9	0.12	0.34	0.12	66.4
Approach			38	33.3	38	33.3	0.025	4.3	NA	0.1	0.9	0.12	0.34	0.12	76.3
West: Keith Venables Road (W)															
10	L2	All MCs	19	33.3	19	33.3	0.037	11.5	LOS B	0.1	1.2	0.11	0.96	0.11	61.5
12	R2	All MCs	19	33.3	19	33.3	0.037	11.1	LOS B	0.1	1.2	0.11	0.96	0.11	60.9
Approach			38	33.3	38	33.3	0.037	11.3	LOS B	0.1	1.2	0.11	0.96	0.11	61.2
All Vehicles			114	33.3	114	33.3	0.037	6.7	NA	0.1	1.2	0.08	0.54	0.08	70.8

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2032BG PM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	19	33.3	19	33.3	0.024	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.6
2	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			38	33.3	38	33.3	0.024	4.4	NA	0.0	0.0	0.00	0.34	0.00	77.3
North: Barratta Road (N)															
8	T1	All MCs	19	33.3	19	33.3	0.025	0.0	LOS A	0.1	0.9	0.12	0.34	0.12	89.6
9	R2	All MCs	19	33.3	19	33.3	0.025	8.6	LOS A	0.1	0.9	0.12	0.34	0.12	66.4
Approach			38	33.3	38	33.3	0.025	4.3	NA	0.1	0.9	0.12	0.34	0.12	76.3
West: Keith Venables Road (W)															
10	L2	All MCs	19	33.3	19	33.3	0.037	11.5	LOS B	0.1	1.2	0.11	0.96	0.11	61.5
12	R2	All MCs	19	33.3	19	33.3	0.037	11.1	LOS B	0.1	1.2	0.11	0.96	0.11	60.9
Approach			38	33.3	38	33.3	0.037	11.3	LOS B	0.1	1.2	0.11	0.96	0.11	61.2
All Vehicles			114	33.3	114	33.3	0.037	6.7	NA	0.1	1.2	0.08	0.54	0.08	70.8

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2032D AM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	19	33.3	19	33.3	0.024	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.6
2	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			38	33.3	38	33.3	0.024	4.4	NA	0.0	0.0	0.00	0.34	0.00	77.3
North: Barratta Road (N)															
8	T1	All MCs	19	33.3	19	33.3	0.105	0.0	LOS A	0.5	3.9	0.13	0.57	0.13	83.3
9	R2	All MCs	157	7.4	157	7.4	0.105	7.8	LOS A	0.5	3.9	0.13	0.57	0.13	71.5
Approach			176	10.2	176	10.2	0.105	6.9	NA	0.5	3.9	0.13	0.57	0.13	72.6
West: Keith Venables Road (W)															
10	L2	All MCs	24	47.8	24	47.8	0.046	12.3	LOS B	0.2	1.6	0.13	0.96	0.13	57.6
12	R2	All MCs	19	33.3	19	33.3	0.046	12.1	LOS B	0.2	1.6	0.13	0.96	0.13	60.5
Approach			43	41.5	43	41.5	0.046	12.2	LOS B	0.2	1.6	0.13	0.96	0.13	58.9
All Vehicles			257	18.9	257	18.9	0.105	7.4	NA	0.5	3.9	0.11	0.60	0.11	70.4

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2032D PM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	19	33.3	19	33.3	0.024	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.6
2	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			38	33.3	38	33.3	0.024	4.4	NA	0.0	0.0	0.00	0.34	0.00	77.3
North: Barratta Road (N)															
8	T1	All MCs	19	33.3	19	33.3	0.030	0.0	LOS A	0.1	1.2	0.13	0.37	0.13	89.5
9	R2	All MCs	24	47.8	24	47.8	0.030	9.0	LOS A	0.1	1.2	0.13	0.37	0.13	62.0
Approach			43	41.5	43	41.5	0.030	5.1	NA	0.1	1.2	0.13	0.37	0.13	71.7
West: Keith Venables Road (W)															
10	L2	All MCs	157	7.4	157	7.4	0.136	10.0	LOS B	0.6	4.4	0.10	0.94	0.10	68.8
12	R2	All MCs	19	33.3	19	33.3	0.136	11.2	LOS B	0.6	4.4	0.10	0.94	0.10	60.7
Approach			176	10.2	176	10.2	0.136	10.2	LOS B	0.6	4.4	0.10	0.94	0.10	67.9
All Vehicles			257	18.9	257	18.9	0.136	8.4	NA	0.6	4.4	0.09	0.76	0.09	69.7

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2042BG AM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	21	35.0	21	35.0	0.027	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.0
2	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			42	35.0	42	35.0	0.027	4.4	NA	0.0	0.0	0.00	0.34	0.00	76.9
North: Barratta Road (N)															
8	T1	All MCs	21	35.0	21	35.0	0.028	0.0	LOS A	0.1	1.0	0.13	0.34	0.13	89.5
9	R2	All MCs	21	35.0	21	35.0	0.028	8.7	LOS A	0.1	1.0	0.13	0.34	0.13	65.9
Approach			42	35.0	42	35.0	0.028	4.3	NA	0.1	1.0	0.13	0.34	0.13	75.9
West: Keith Venables Road (W)															
10	L2	All MCs	21	35.0	21	35.0	0.041	11.6	LOS B	0.1	1.3	0.12	0.96	0.12	61.1
12	R2	All MCs	21	35.0	21	35.0	0.041	11.3	LOS B	0.1	1.3	0.12	0.96	0.12	60.5
Approach			42	35.0	42	35.0	0.041	11.4	LOS B	0.1	1.3	0.12	0.96	0.12	60.8
All Vehicles			126	35.0	126	35.0	0.041	6.7	NA	0.1	1.3	0.08	0.54	0.08	70.4

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2042BG PM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	21	35.0	21	35.0	0.027	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.0
2	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			42	35.0	42	35.0	0.027	4.4	NA	0.0	0.0	0.00	0.34	0.00	76.9
North: Barratta Road (N)															
8	T1	All MCs	21	35.0	21	35.0	0.028	0.0	LOS A	0.1	1.0	0.13	0.34	0.13	89.5
9	R2	All MCs	21	35.0	21	35.0	0.028	8.7	LOS A	0.1	1.0	0.13	0.34	0.13	65.9
Approach			42	35.0	42	35.0	0.028	4.3	NA	0.1	1.0	0.13	0.34	0.13	75.9
West: Keith Venables Road (W)															
10	L2	All MCs	21	35.0	21	35.0	0.041	11.6	LOS B	0.1	1.3	0.12	0.96	0.12	61.1
12	R2	All MCs	21	35.0	21	35.0	0.041	11.3	LOS B	0.1	1.3	0.12	0.96	0.12	60.5
Approach			42	35.0	42	35.0	0.041	11.4	LOS B	0.1	1.3	0.12	0.96	0.12	60.8
All Vehicles			126	35.0	126	35.0	0.041	6.7	NA	0.1	1.3	0.08	0.54	0.08	70.4

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2042D AM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	21	35.0	21	35.0	0.027	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.0
2	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			42	35.0	42	35.0	0.027	4.4	NA	0.0	0.0	0.00	0.34	0.00	76.9
North: Barratta Road (N)															
8	T1	All MCs	21	35.0	21	35.0	0.076	0.0	LOS A	0.4	2.9	0.14	0.53	0.14	83.9
9	R2	All MCs	104	11.1	104	11.1	0.076	7.9	LOS A	0.4	2.9	0.14	0.53	0.14	70.5
Approach			125	15.1	125	15.1	0.076	6.6	NA	0.4	2.9	0.14	0.53	0.14	72.5
West: Keith Venables Road (W)															
10	L2	All MCs	25	45.8	25	45.8	0.048	12.2	LOS B	0.2	1.6	0.14	0.96	0.14	58.2
12	R2	All MCs	21	35.0	21	35.0	0.048	11.9	LOS B	0.2	1.6	0.14	0.96	0.14	60.2
Approach			46	40.9	46	40.9	0.048	12.1	LOS B	0.2	1.6	0.14	0.96	0.14	59.1
All Vehicles			214	24.6	214	24.6	0.076	7.3	NA	0.4	2.9	0.11	0.58	0.11	69.8

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.

MOVEMENT SUMMARY

Site: 101 [Barratta Road / Keith Venables Road - 2042D PM Peak (Site Folder: Barratta Road / Keith Venables Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

New Site
Site Category: (None)
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: Barratta Road (S)															
1	L2	All MCs	21	35.0	21	35.0	0.027	8.7	LOS A	0.0	0.0	0.00	0.34	0.00	67.0
2	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.34	0.00	90.3
Approach			42	35.0	42	35.0	0.027	4.4	NA	0.0	0.0	0.00	0.34	0.00	76.9
North: Barratta Road (N)															
8	T1	All MCs	21	35.0	21	35.0	0.032	0.0	LOS A	0.1	1.3	0.14	0.37	0.14	89.4
9	R2	All MCs	25	45.8	25	45.8	0.032	9.0	LOS A	0.1	1.3	0.14	0.37	0.14	62.5
Approach			46	40.9	46	40.9	0.032	4.9	NA	0.1	1.3	0.14	0.37	0.14	72.4
West: Keith Venables Road (W)															
10	L2	All MCs	104	11.1	104	11.1	0.102	10.3	LOS B	0.4	3.3	0.10	0.94	0.10	67.7
12	R2	All MCs	21	35.0	21	35.0	0.102	11.4	LOS B	0.4	3.3	0.10	0.94	0.10	60.3
Approach			125	15.1	125	15.1	0.102	10.4	LOS B	0.4	3.3	0.10	0.94	0.10	66.3
All Vehicles			214	24.6	214	24.6	0.102	8.0	NA	0.4	3.3	0.09	0.70	0.09	69.5

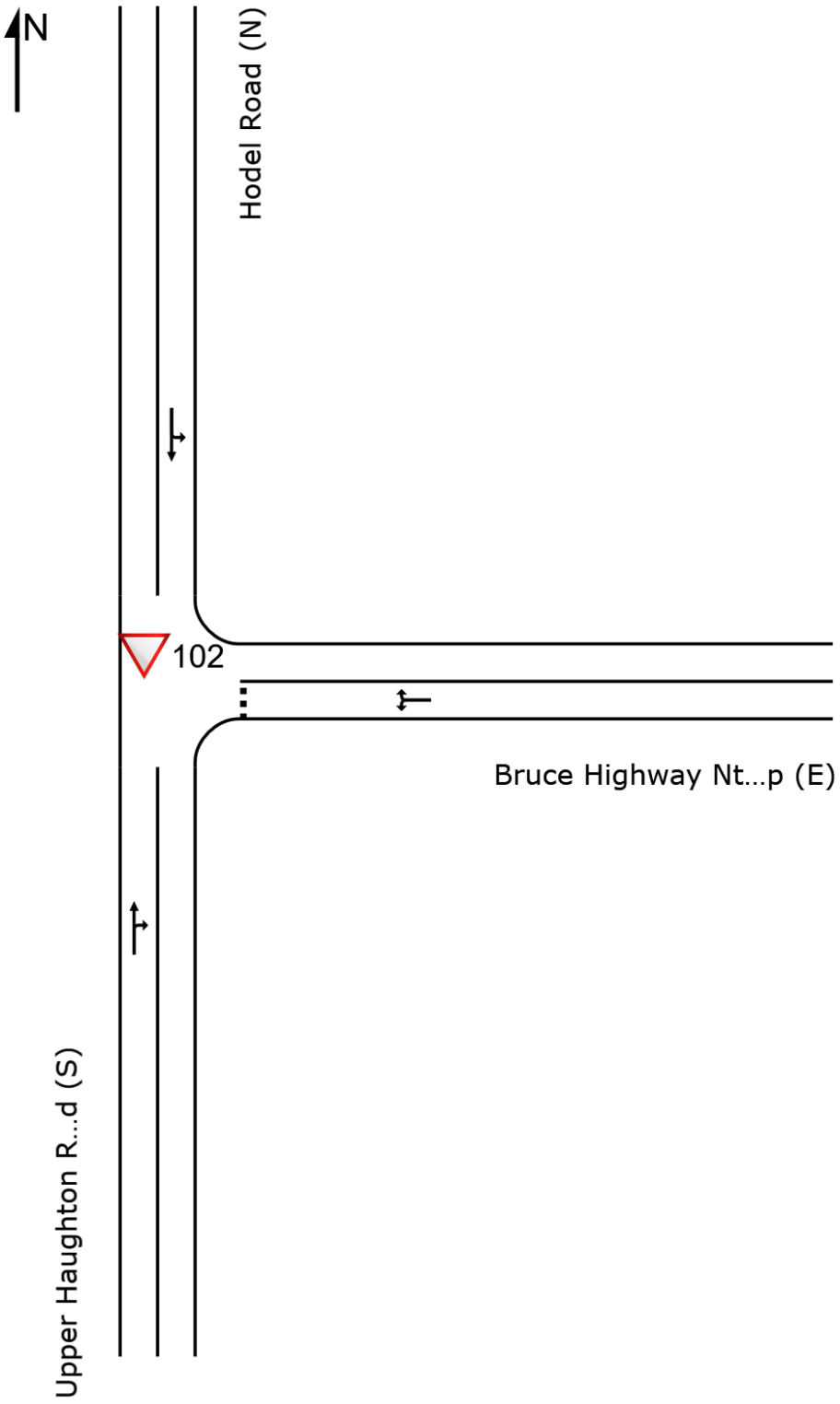
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of 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.

SITE LAYOUT

Site: 102 [Nth Intersection - 2019BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2019BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2019 BG AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	16	33.3	16	33.3	0.021	0.0	LOS A	0.0	0.3	0.10	0.31	0.10	72.5
3	R2	All MCs	16	33.3	16	33.3	0.021	5.3	LOS A	0.0	0.3	0.10	0.31	0.10	49.3
Approach			32	33.3	32	33.3	0.021	2.6	NA	0.0	0.3	0.10	0.31	0.10	58.7
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	16	33.3	16	33.3	0.027	4.9	LOS A	0.0	0.3	0.09	0.51	0.09	44.1
6	R2	All MCs	16	33.3	16	33.3	0.027	5.2	LOS A	0.0	0.3	0.09	0.51	0.09	45.1
Approach			32	33.3	32	33.3	0.027	5.0	LOS A	0.0	0.3	0.09	0.51	0.09	44.7
North: Hodel Road (N)															
7	L2	All MCs	16	33.3	16	33.3	0.020	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	58.0
8	T1	All MCs	16	33.3	16	33.3	0.020	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			32	33.3	32	33.3	0.020	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.4
All Vehicles			95	33.3	95	33.3	0.027	3.8	NA	0.0	0.3	0.07	0.38	0.07	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2019BG PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2019 BG PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	16	33.3	16	33.3	0.021	0.0	LOS A	0.0	0.3	0.10	0.31	0.10	72.5
3	R2	All MCs	16	33.3	16	33.3	0.021	5.3	LOS A	0.0	0.3	0.10	0.31	0.10	49.3
Approach			32	33.3	32	33.3	0.021	2.6	NA	0.0	0.3	0.10	0.31	0.10	58.7
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	16	33.3	16	33.3	0.027	4.9	LOS A	0.0	0.3	0.09	0.51	0.09	44.1
6	R2	All MCs	16	33.3	16	33.3	0.027	5.2	LOS A	0.0	0.3	0.09	0.51	0.09	45.1
Approach			32	33.3	32	33.3	0.027	5.0	LOS A	0.0	0.3	0.09	0.51	0.09	44.7
North: Hodel Road (N)															
7	L2	All MCs	16	33.3	16	33.3	0.020	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	58.0
8	T1	All MCs	16	33.3	16	33.3	0.020	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			32	33.3	32	33.3	0.020	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.4
All Vehicles			95	33.3	95	33.3	0.027	3.8	NA	0.0	0.3	0.07	0.38	0.07	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2032BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 BG AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	19	33.3	19	33.3	0.025	0.0	LOS A	0.0	0.4	0.12	0.31	0.12	72.4
3	R2	All MCs	19	33.3	19	33.3	0.025	5.4	LOS A	0.0	0.4	0.12	0.31	0.12	49.2
Approach			38	33.3	38	33.3	0.025	2.7	NA	0.0	0.4	0.12	0.31	0.12	58.6
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	19	33.3	19	33.3	0.032	4.9	LOS A	0.0	0.4	0.11	0.51	0.11	44.1
6	R2	All MCs	19	33.3	19	33.3	0.032	5.2	LOS A	0.0	0.4	0.11	0.51	0.11	45.0
Approach			38	33.3	38	33.3	0.032	5.1	LOS A	0.0	0.4	0.11	0.51	0.11	44.7
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.024	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	58.0
8	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			38	33.3	38	33.3	0.024	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.4
All Vehicles			114	33.3	114	33.3	0.032	3.8	NA	0.0	0.4	0.07	0.38	0.07	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2032BG PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 BG PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	19	33.3	19	33.3	0.025	0.0	LOS A	0.0	0.4	0.12	0.31	0.12	72.4
3	R2	All MCs	19	33.3	19	33.3	0.025	5.4	LOS A	0.0	0.4	0.12	0.31	0.12	49.2
Approach			38	33.3	38	33.3	0.025	2.7	NA	0.0	0.4	0.12	0.31	0.12	58.6
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	19	33.3	19	33.3	0.032	4.9	LOS A	0.0	0.4	0.11	0.51	0.11	44.1
6	R2	All MCs	19	33.3	19	33.3	0.032	5.2	LOS A	0.0	0.4	0.11	0.51	0.11	45.0
Approach			38	33.3	38	33.3	0.032	5.1	LOS A	0.0	0.4	0.11	0.51	0.11	44.7
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.024	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	58.0
8	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			38	33.3	38	33.3	0.024	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.4
All Vehicles			114	33.3	114	33.3	0.032	3.8	NA	0.0	0.4	0.07	0.38	0.07	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2032D AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 Des AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	19	33.3	19	33.3	0.025	0.0	LOS A	0.0	0.4	0.12	0.31	0.12	72.4
3	R2	All MCs	19	33.3	19	33.3	0.025	5.4	LOS A	0.0	0.4	0.12	0.31	0.12	49.2
Approach			38	33.3	38	33.3	0.025	2.7	NA	0.0	0.4	0.12	0.31	0.12	58.6
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	117	9.9	117	9.9	0.095	4.7	LOS A	0.2	1.2	0.09	0.51	0.09	44.1
6	R2	All MCs	19	33.3	19	33.3	0.095	5.3	LOS A	0.2	1.2	0.09	0.51	0.09	45.1
Approach			136	13.2	136	13.2	0.095	4.8	LOS A	0.2	1.2	0.09	0.51	0.09	44.4
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.024	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	58.0
8	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			38	33.3	38	33.3	0.024	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.4
All Vehicles			212	20.4	212	20.4	0.095	4.2	NA	0.2	1.2	0.08	0.44	0.08	49.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: URBIS | Licence: NETWORK / 1PC | Processed: Friday, 22 December 2023 11:20:21 AM
Project: C:\Users\rpeel\Urbis Pty Ltd\P0044793 Davco Renewable Energy Park - General\02_Workspace\08 - Transport\01_Analysis\P0044793 - Davco Solar Farm SIDRA_231222_Stage 4 Cumulative Traffic.sip9

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2032D PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 Des PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	19	33.3	19	33.3	0.047	0.0	LOS A	0.1	0.7	0.13	0.45	0.13	68.8
3	R2	All MCs	59	10.7	59	10.7	0.047	5.2	LOS A	0.1	0.7	0.13	0.45	0.13	55.9
Approach			78	16.2	78	16.2	0.047	4.0	NA	0.1	0.7	0.13	0.45	0.13	58.6
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	24	47.8	24	47.8	0.038	5.1	LOS A	0.1	0.5	0.11	0.51	0.11	44.0
6	R2	All MCs	19	33.3	19	33.3	0.038	5.4	LOS A	0.1	0.5	0.11	0.51	0.11	45.0
Approach			43	41.5	43	41.5	0.038	5.2	LOS A	0.1	0.5	0.11	0.51	0.11	44.6
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.024	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	58.0
8	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			38	33.3	38	33.3	0.024	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.4
All Vehicles			159	27.2	159	27.2	0.047	4.3	NA	0.1	0.7	0.09	0.44	0.09	54.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2042BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 BG AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	21	35.0	21	35.0	0.028	0.0	LOS A	0.0	0.4	0.13	0.31	0.13	72.3
3	R2	All MCs	21	35.0	21	35.0	0.028	5.4	LOS A	0.0	0.4	0.13	0.31	0.13	48.6
Approach			42	35.0	42	35.0	0.028	2.7	NA	0.0	0.4	0.13	0.31	0.13	58.2
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	21	35.0	21	35.0	0.037	5.0	LOS A	0.1	0.5	0.11	0.51	0.11	44.0
6	R2	All MCs	21	35.0	21	35.0	0.037	5.3	LOS A	0.1	0.5	0.11	0.51	0.11	45.0
Approach			42	35.0	42	35.0	0.037	5.1	LOS A	0.1	0.5	0.11	0.51	0.11	44.7
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.027	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	57.6
8	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			42	35.0	42	35.0	0.027	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.1
All Vehicles			126	35.0	126	35.0	0.037	3.9	NA	0.1	0.5	0.08	0.38	0.08	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2042BG PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 BG PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	21	35.0	21	35.0	0.028	0.0	LOS A	0.0	0.4	0.13	0.31	0.13	72.3
3	R2	All MCs	21	35.0	21	35.0	0.028	5.4	LOS A	0.0	0.4	0.13	0.31	0.13	48.6
Approach			42	35.0	42	35.0	0.028	2.7	NA	0.0	0.4	0.13	0.31	0.13	58.2
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	21	35.0	21	35.0	0.037	5.0	LOS A	0.1	0.5	0.11	0.51	0.11	44.0
6	R2	All MCs	21	35.0	21	35.0	0.037	5.3	LOS A	0.1	0.5	0.11	0.51	0.11	45.0
Approach			42	35.0	42	35.0	0.037	5.1	LOS A	0.1	0.5	0.11	0.51	0.11	44.7
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.027	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	57.6
8	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			42	35.0	42	35.0	0.027	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.1
All Vehicles			126	35.0	126	35.0	0.037	3.9	NA	0.1	0.5	0.08	0.38	0.08	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2042D AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 Des AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	21	35.0	21	35.0	0.028	0.0	LOS A	0.0	0.4	0.13	0.31	0.13	72.3
3	R2	All MCs	21	35.0	21	35.0	0.028	5.4	LOS A	0.0	0.4	0.13	0.31	0.13	48.6
Approach			42	35.0	42	35.0	0.028	2.7	NA	0.0	0.4	0.13	0.31	0.13	58.2
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	81	14.3	81	14.3	0.075	4.8	LOS A	0.1	1.0	0.10	0.51	0.10	44.1
6	R2	All MCs	21	35.0	21	35.0	0.075	5.3	LOS A	0.1	1.0	0.10	0.51	0.10	45.0
Approach			102	18.6	102	18.6	0.075	4.9	LOS A	0.1	1.0	0.10	0.51	0.10	44.4
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.027	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	57.6
8	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			42	35.0	42	35.0	0.027	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.1
All Vehicles			186	26.0	186	26.0	0.075	4.1	NA	0.1	1.0	0.08	0.42	0.08	50.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Nth Intersection - 2042D PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 Des PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	21	35.0	21	35.0	0.041	0.0	LOS A	0.1	0.6	0.14	0.41	0.14	69.6
3	R2	All MCs	45	16.3	45	16.3	0.041	5.3	LOS A	0.1	0.6	0.14	0.41	0.14	54.0
Approach			66	22.2	66	22.2	0.041	3.6	NA	0.1	0.6	0.14	0.41	0.14	58.2
East: Bruce Highway Nth Ramp (E)															
4	L2	All MCs	25	45.8	25	45.8	0.041	5.1	LOS A	0.1	0.6	0.12	0.51	0.12	44.0
6	R2	All MCs	21	35.0	21	35.0	0.041	5.4	LOS A	0.1	0.6	0.12	0.51	0.12	45.0
Approach			46	40.9	46	40.9	0.041	5.2	LOS A	0.1	0.6	0.12	0.51	0.12	44.6
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.027	7.6	LOS A	0.0	0.0	0.00	0.32	0.00	57.6
8	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	69.5
Approach			42	35.0	42	35.0	0.027	3.8	NA	0.0	0.0	0.00	0.32	0.00	61.1
All Vehicles			155	31.3	155	31.3	0.041	4.1	NA	0.1	0.6	0.09	0.42	0.09	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

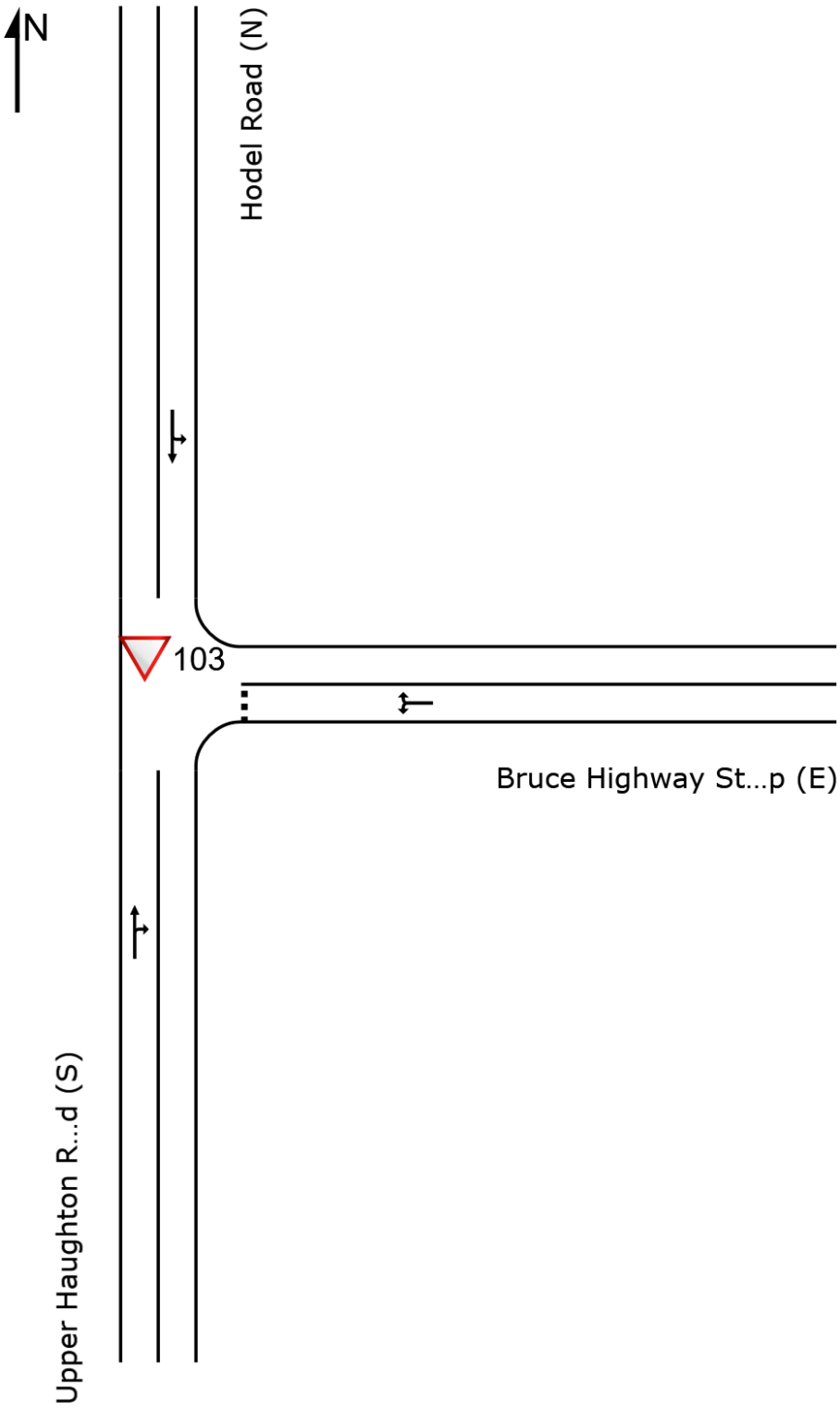
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 103 [Sth Intersection - 2019BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2019BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2019 BG AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	16	33.3	16	33.3	0.021	0.0	LOS A	0.0	0.3	0.10	0.32	0.10	68.7
3	R2	All MCs	16	33.3	16	33.3	0.021	7.5	LOS A	0.0	0.3	0.10	0.32	0.10	57.3
Approach			32	33.3	32	33.3	0.021	3.8	NA	0.0	0.3	0.10	0.32	0.10	60.7
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	16	33.3	16	33.3	0.027	4.9	LOS A	0.0	0.3	0.09	0.51	0.09	45.3
6	R2	All MCs	16	33.3	16	33.3	0.027	5.2	LOS A	0.0	0.3	0.09	0.51	0.09	44.1
Approach			32	33.3	32	33.3	0.027	5.0	LOS A	0.0	0.3	0.09	0.51	0.09	44.9
North: Hodel Road (N)															
7	L2	All MCs	16	33.3	16	33.3	0.020	5.3	LOS A	0.0	0.0	0.00	0.31	0.00	50.1
8	T1	All MCs	16	33.3	16	33.3	0.020	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	72.9
Approach			32	33.3	32	33.3	0.020	2.7	NA	0.0	0.0	0.00	0.31	0.00	59.4
All Vehicles			95	33.3	95	33.3	0.027	3.8	NA	0.0	0.3	0.07	0.38	0.07	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2019BG PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2019 BG PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	16	33.3	16	33.3	0.021	0.0	LOS A	0.0	0.3	0.10	0.32	0.10	68.7
3	R2	All MCs	16	33.3	16	33.3	0.021	7.5	LOS A	0.0	0.3	0.10	0.32	0.10	57.3
Approach			32	33.3	32	33.3	0.021	3.8	NA	0.0	0.3	0.10	0.32	0.10	60.7
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	16	33.3	16	33.3	0.027	4.9	LOS A	0.0	0.3	0.09	0.51	0.09	45.3
6	R2	All MCs	16	33.3	16	33.3	0.027	5.2	LOS A	0.0	0.3	0.09	0.51	0.09	44.1
Approach			32	33.3	32	33.3	0.027	5.0	LOS A	0.0	0.3	0.09	0.51	0.09	44.9
North: Hodel Road (N)															
7	L2	All MCs	16	33.3	16	33.3	0.020	5.3	LOS A	0.0	0.0	0.00	0.31	0.00	50.1
8	T1	All MCs	16	33.3	16	33.3	0.020	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	72.9
Approach			32	33.3	32	33.3	0.020	2.7	NA	0.0	0.0	0.00	0.31	0.00	59.4
All Vehicles			95	33.3	95	33.3	0.027	3.8	NA	0.0	0.3	0.07	0.38	0.07	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2032BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 BG AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	19	33.3	19	33.3	0.025	0.0	LOS A	0.0	0.4	0.12	0.32	0.12	68.6
3	R2	All MCs	19	33.3	19	33.3	0.025	7.6	LOS A	0.0	0.4	0.12	0.32	0.12	57.2
Approach			38	33.3	38	33.3	0.025	3.8	NA	0.0	0.4	0.12	0.32	0.12	60.6
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	19	33.3	19	33.3	0.032	4.9	LOS A	0.0	0.4	0.11	0.51	0.11	45.3
6	R2	All MCs	19	33.3	19	33.3	0.032	5.2	LOS A	0.0	0.4	0.11	0.51	0.11	44.1
Approach			38	33.3	38	33.3	0.032	5.1	LOS A	0.0	0.4	0.11	0.51	0.11	44.9
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.024	5.3	LOS A	0.0	0.0	0.00	0.31	0.00	50.1
8	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	72.9
Approach			38	33.3	38	33.3	0.024	2.7	NA	0.0	0.0	0.00	0.31	0.00	59.4
All Vehicles			114	33.3	114	33.3	0.032	3.9	NA	0.0	0.4	0.07	0.38	0.07	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2032BG PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 BG PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	19	33.3	19	33.3	0.025	0.0	LOS A	0.0	0.4	0.12	0.32	0.12	68.6
3	R2	All MCs	19	33.3	19	33.3	0.025	7.6	LOS A	0.0	0.4	0.12	0.32	0.12	57.2
Approach			38	33.3	38	33.3	0.025	3.8	NA	0.0	0.4	0.12	0.32	0.12	60.6
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	19	33.3	19	33.3	0.032	4.9	LOS A	0.0	0.4	0.11	0.51	0.11	45.3
6	R2	All MCs	19	33.3	19	33.3	0.032	5.2	LOS A	0.0	0.4	0.11	0.51	0.11	44.1
Approach			38	33.3	38	33.3	0.032	5.1	LOS A	0.0	0.4	0.11	0.51	0.11	44.9
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.024	5.3	LOS A	0.0	0.0	0.00	0.31	0.00	50.1
8	T1	All MCs	19	33.3	19	33.3	0.024	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	72.9
Approach			38	33.3	38	33.3	0.024	2.7	NA	0.0	0.0	0.00	0.31	0.00	59.4
All Vehicles			114	33.3	114	33.3	0.032	3.9	NA	0.0	0.4	0.07	0.38	0.07	53.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2032D AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 Des AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	19	33.3	19	33.3	0.032	0.0	LOS A	0.1	0.5	0.26	0.39	0.26	67.1
3	R2	All MCs	24	47.8	24	47.8	0.032	8.7	LOS A	0.1	0.5	0.26	0.39	0.26	53.0
Approach			43	41.5	43	41.5	0.032	4.9	NA	0.1	0.5	0.26	0.39	0.26	56.4
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	59	10.7	59	10.7	0.063	5.1	LOS A	0.1	0.8	0.23	0.52	0.23	45.3
6	R2	All MCs	19	33.3	19	33.3	0.063	5.8	LOS A	0.1	0.8	0.23	0.52	0.23	43.5
Approach			78	16.2	78	16.2	0.063	5.3	LOS A	0.1	0.8	0.23	0.52	0.23	45.0
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.076	5.3	LOS A	0.0	0.0	0.00	0.09	0.00	52.5
8	T1	All MCs	117	9.9	117	9.9	0.076	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	78.3
Approach			136	13.2	136	13.2	0.076	0.7	NA	0.0	0.0	0.00	0.09	0.00	73.3
All Vehicles			257	18.9	257	18.9	0.076	2.8	NA	0.1	0.8	0.12	0.27	0.12	56.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2032D PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2032 Des PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	59	10.7	59	10.7	0.105	0.0	LOS A	0.2	1.5	0.15	0.42	0.15	65.7
3	R2	All MCs	117	9.9	117	9.9	0.105	7.1	LOS A	0.2	1.5	0.15	0.42	0.15	63.1
Approach			176	10.2	176	10.2	0.105	4.7	NA	0.2	1.5	0.15	0.42	0.15	63.6
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	19	33.3	19	33.3	0.036	5.0	LOS A	0.1	0.5	0.15	0.51	0.15	45.1
6	R2	All MCs	19	33.3	19	33.3	0.036	6.0	LOS A	0.1	0.5	0.15	0.51	0.15	43.8
Approach			38	33.3	38	33.3	0.036	5.5	LOS A	0.1	0.5	0.15	0.51	0.15	44.7
North: Hodel Road (N)															
7	L2	All MCs	19	33.3	19	33.3	0.029	5.3	LOS A	0.0	0.0	0.00	0.27	0.00	50.1
8	T1	All MCs	24	47.8	24	47.8	0.029	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	72.9
Approach			43	41.5	43	41.5	0.029	2.3	NA	0.0	0.0	0.00	0.27	0.00	60.8
All Vehicles			257	18.9	257	18.9	0.105	4.4	NA	0.2	1.5	0.12	0.40	0.12	59.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2042BG AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 BG AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	21	35.0	21	35.0	0.028	0.0	LOS A	0.0	0.4	0.13	0.32	0.13	68.5
3	R2	All MCs	21	35.0	21	35.0	0.028	7.7	LOS A	0.0	0.4	0.13	0.32	0.13	56.7
Approach			42	35.0	42	35.0	0.028	3.8	NA	0.0	0.4	0.13	0.32	0.13	60.2
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	21	35.0	21	35.0	0.037	5.0	LOS A	0.1	0.5	0.11	0.51	0.11	45.2
6	R2	All MCs	21	35.0	21	35.0	0.037	5.3	LOS A	0.1	0.5	0.11	0.51	0.11	44.0
Approach			42	35.0	42	35.0	0.037	5.1	LOS A	0.1	0.5	0.11	0.51	0.11	44.8
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.027	5.3	LOS A	0.0	0.0	0.00	0.31	0.00	49.5
8	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	72.9
Approach			42	35.0	42	35.0	0.027	2.7	NA	0.0	0.0	0.00	0.31	0.00	59.0
All Vehicles			126	35.0	126	35.0	0.037	3.9	NA	0.1	0.5	0.08	0.38	0.08	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2042BG PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 BG PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	21	35.0	21	35.0	0.028	0.0	LOS A	0.0	0.4	0.13	0.32	0.13	68.5
3	R2	All MCs	21	35.0	21	35.0	0.028	7.7	LOS A	0.0	0.4	0.13	0.32	0.13	56.7
Approach			42	35.0	42	35.0	0.028	3.8	NA	0.0	0.4	0.13	0.32	0.13	60.2
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	21	35.0	21	35.0	0.037	5.0	LOS A	0.1	0.5	0.11	0.51	0.11	45.2
6	R2	All MCs	21	35.0	21	35.0	0.037	5.3	LOS A	0.1	0.5	0.11	0.51	0.11	44.0
Approach			42	35.0	42	35.0	0.037	5.1	LOS A	0.1	0.5	0.11	0.51	0.11	44.8
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.027	5.3	LOS A	0.0	0.0	0.00	0.31	0.00	49.5
8	T1	All MCs	21	35.0	21	35.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	72.9
Approach			42	35.0	42	35.0	0.027	2.7	NA	0.0	0.0	0.00	0.31	0.00	59.0
All Vehicles			126	35.0	126	35.0	0.037	3.9	NA	0.1	0.5	0.08	0.38	0.08	53.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Organisation: URBIS | Licence: NETWORK / 1PC | Processed: Friday, 22 December 2023 11:29:41 AM
Project: C:\Users\rpeel\Urbis Pty Ltd\P0044793 Davco Renewable Energy Park - General\02_Workspace\08 - Transport\01_Analysis\P0044793 - Davco Solar Farm SIDRA_231222_Stage 4 Cumulative Traffic.sip9

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2042D AM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 Des AM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	21	35.0	21	35.0	0.034	0.0	LOS A	0.1	0.6	0.22	0.37	0.22	67.5
3	R2	All MCs	25	45.8	25	45.8	0.034	8.4	LOS A	0.1	0.6	0.22	0.37	0.22	53.6
Approach			46	40.9	46	40.9	0.034	4.6	NA	0.1	0.6	0.22	0.37	0.22	57.1
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	45	16.3	45	16.3	0.055	5.0	LOS A	0.1	0.7	0.20	0.51	0.20	45.3
6	R2	All MCs	21	35.0	21	35.0	0.055	5.7	LOS A	0.1	0.7	0.20	0.51	0.20	43.7
Approach			66	22.2	66	22.2	0.055	5.2	LOS A	0.1	0.7	0.20	0.51	0.20	45.0
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.059	5.3	LOS A	0.0	0.0	0.00	0.13	0.00	51.5
8	T1	All MCs	81	14.3	81	14.3	0.059	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	77.5
Approach			102	18.6	102	18.6	0.059	1.1	NA	0.0	0.0	0.00	0.13	0.00	70.2
All Vehicles			215	24.5	215	24.5	0.059	3.1	NA	0.1	0.7	0.11	0.30	0.11	55.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 103 [Sth Intersection - 2042D PM Peak (Site Folder: Upper Haughton Road / Bruce Highway T-intersections)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Network: N101 [2042 Des PM Peak (Network Folder: Upper Haughton Road T-Intersections)]

New Site
Site Category: (None)
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	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Upper Haughton Road (S)															
2	T1	All MCs	45	16.3	45	16.3	0.077	0.0	LOS A	0.1	1.1	0.15	0.40	0.15	65.9
3	R2	All MCs	81	14.3	81	14.3	0.077	7.2	LOS A	0.1	1.1	0.15	0.40	0.15	61.8
Approach			126	15.0	126	15.0	0.077	4.6	NA	0.1	1.1	0.15	0.40	0.15	62.7
East: Bruce Highway Sth Ramp (E)															
4	L2	All MCs	21	35.0	21	35.0	0.039	5.0	LOS A	0.1	0.5	0.14	0.51	0.14	45.2
6	R2	All MCs	21	35.0	21	35.0	0.039	5.8	LOS A	0.1	0.5	0.14	0.51	0.14	43.9
Approach			42	35.0	42	35.0	0.039	5.4	LOS A	0.1	0.5	0.14	0.51	0.14	44.7
North: Hodel Road (N)															
7	L2	All MCs	21	35.0	21	35.0	0.031	5.3	LOS A	0.0	0.0	0.00	0.28	0.00	49.5
8	T1	All MCs	25	45.8	25	45.8	0.031	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	72.9
Approach			46	40.9	46	40.9	0.031	2.4	NA	0.0	0.0	0.00	0.28	0.00	60.0
All Vehicles			215	24.5	215	24.5	0.077	4.3	NA	0.1	1.1	0.12	0.40	0.12	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

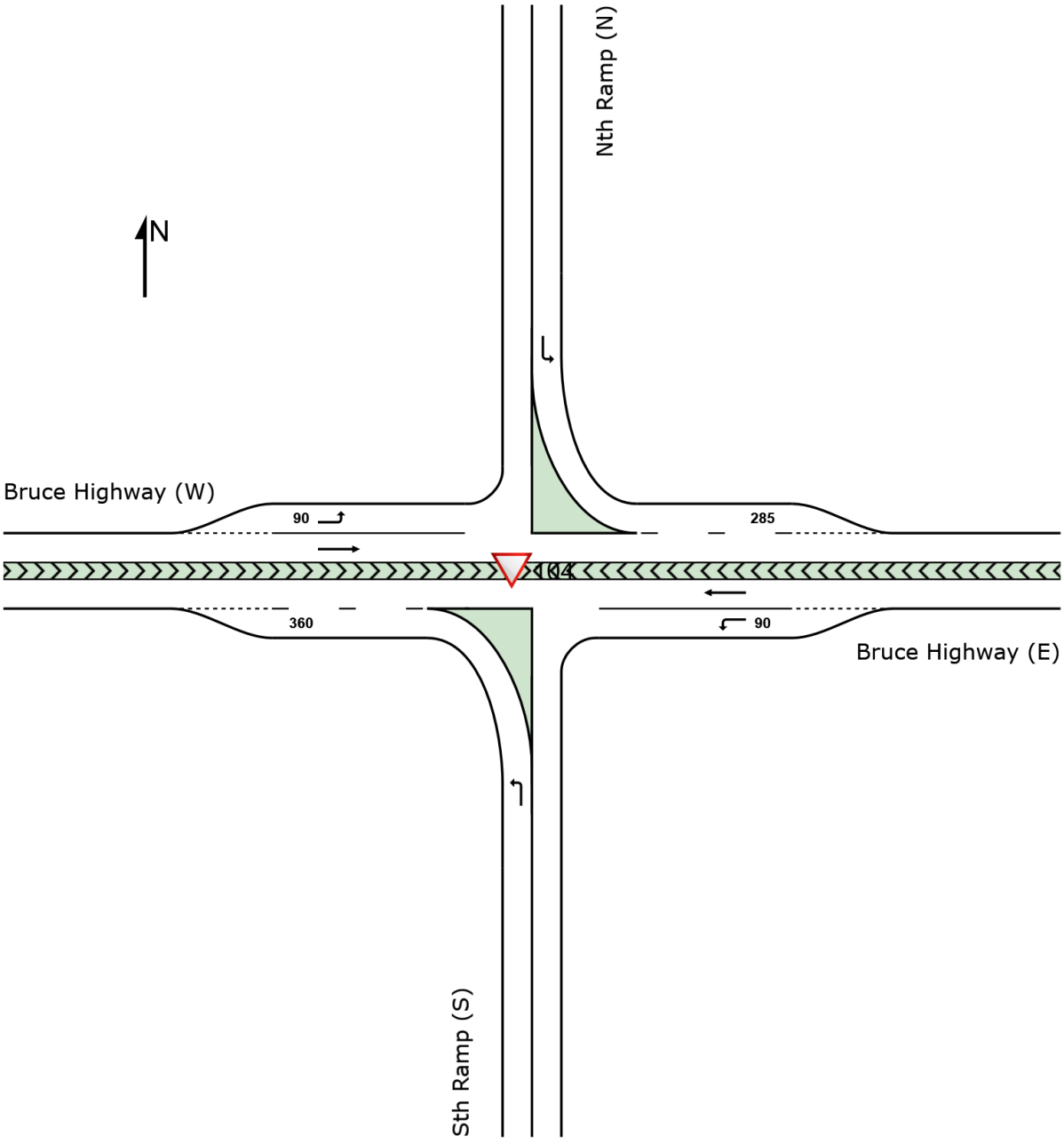
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 104 [Bruce Highway Interchange - 2019BG AM Peak (Site Folder: Bruce Highway Interchange)]

New Site
Site Category: (None)
Give-Way (Two-Way)

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



MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2019BG AM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	32	33.3	32	33.3	0.021	5.2	LOS A	0.0	0.0	0.00	0.45	0.00	46.2
Approach			32	33.3	32	33.3	0.021	5.2	NA	0.0	0.0	0.00	0.45	0.00	46.2
East: Bruce Highway (E)															
4	L2	All MCs	32	33.3	32	33.3	0.021	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	232	18.2	232	18.2	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			263	20.0	263	20.0	0.131	1.1	NA	0.0	0.0	0.00	0.08	0.00	93.4
North: Nth Ramp (N)															
7	L2	All MCs	32	33.3	32	33.3	0.021	5.2	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			32	33.3	32	33.3	0.021	5.2	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	32	33.3	32	33.3	0.021	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	62.7
11	T1	All MCs	223	23.1	223	23.1	0.130	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			255	24.4	255	24.4	0.130	1.1	NA	0.0	0.0	0.00	0.08	0.00	94.0
All Vehicles			581	23.4	581	23.4	0.131	1.5	NA	0.0	0.0	0.00	0.12	0.00	84.5

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2019BG PM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	32	33.3	32	33.3	0.021	5.3	LOS A	0.0	0.0	0.00	0.45	0.00	46.2
Approach			32	33.3	32	33.3	0.021	5.3	NA	0.0	0.0	0.00	0.45	0.00	46.2
East: Bruce Highway (E)															
4	L2	All MCs	32	33.3	32	33.3	0.021	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	242	17.8	242	17.8	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			274	19.6	274	19.6	0.137	1.0	NA	0.0	0.0	0.00	0.08	0.00	93.6
North: Nth Ramp (N)															
7	L2	All MCs	32	33.3	32	33.3	0.021	5.2	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			32	33.3	32	33.3	0.021	5.2	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	32	33.3	32	33.3	0.021	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	62.7
11	T1	All MCs	232	22.3	232	22.3	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			263	23.6	263	23.6	0.135	1.1	NA	0.0	0.0	0.00	0.08	0.00	94.2
All Vehicles			600	22.8	600	22.8	0.137	1.5	NA	0.0	0.0	0.00	0.12	0.00	85.0

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2032BG AM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	38	33.3	38	33.3	0.025	5.4	LOS A	0.0	0.0	0.00	0.45	0.00	46.2
Approach			38	33.3	38	33.3	0.025	5.4	NA	0.0	0.0	0.00	0.45	0.00	46.2
East: Bruce Highway (E)															
4	L2	All MCs	38	33.3	38	33.3	0.025	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	273	18.1	273	18.1	0.155	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			311	20.0	311	20.0	0.155	1.1	NA	0.0	0.0	0.00	0.08	0.00	93.2
North: Nth Ramp (N)															
7	L2	All MCs	38	33.3	38	33.3	0.025	5.4	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			38	33.3	38	33.3	0.025	5.4	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	38	33.3	38	33.3	0.025	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	62.7
11	T1	All MCs	263	23.2	263	23.2	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			301	24.5	301	24.5	0.154	1.1	NA	0.0	0.0	0.00	0.08	0.00	93.9
All Vehicles			687	23.4	687	23.4	0.155	1.6	NA	0.0	0.0	0.00	0.12	0.00	84.3

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2032BG PM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	38	33.3	38	33.3	0.025	5.4	LOS A	0.0	0.0	0.00	0.45	0.00	46.2
Approach			38	33.3	38	33.3	0.025	5.4	NA	0.0	0.0	0.00	0.45	0.00	46.2
East: Bruce Highway (E)															
4	L2	All MCs	38	33.3	38	33.3	0.025	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	285	17.7	285	17.7	0.161	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			323	19.5	323	19.5	0.161	1.0	NA	0.0	0.0	0.00	0.08	0.00	93.5
North: Nth Ramp (N)															
7	L2	All MCs	38	33.3	38	33.3	0.025	5.4	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			38	33.3	38	33.3	0.025	5.4	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	38	33.3	38	33.3	0.025	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	62.7
11	T1	All MCs	275	23.0	275	23.0	0.160	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			313	24.2	313	24.2	0.160	1.1	NA	0.0	0.0	0.00	0.08	0.00	94.1
All Vehicles			712	23.1	712	23.1	0.161	1.5	NA	0.0	0.0	0.00	0.12	0.00	84.8

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2032D AM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	43	41.5	43	41.5	0.030	5.5	LOS A	0.0	0.0	0.00	0.44	0.00	46.1
Approach			43	41.5	43	41.5	0.030	5.5	NA	0.0	0.0	0.00	0.44	0.00	46.1
East: Bruce Highway (E)															
4	L2	All MCs	77	16.4	77	16.4	0.046	8.3	LOS A	0.0	0.0	0.00	0.66	0.00	68.0
5	T1	All MCs	273	18.1	273	18.1	0.155	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			349	17.8	349	17.8	0.155	1.8	NA	0.0	0.0	0.00	0.15	0.00	90.5
North: Nth Ramp (N)															
7	L2	All MCs	38	33.3	38	33.3	0.025	5.4	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			38	33.3	38	33.3	0.025	5.4	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	136	13.2	136	13.2	0.079	8.2	LOS A	0.0	0.0	0.00	0.66	0.00	66.9
11	T1	All MCs	263	23.2	263	23.2	0.154	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			399	19.8	399	19.8	0.154	2.8	NA	0.0	0.0	0.00	0.22	0.00	87.0
All Vehicles			829	20.7	829	20.7	0.155	2.6	NA	0.0	0.0	0.00	0.21	0.00	81.4

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2032D PM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	136	13.2	136	13.2	0.079	5.2	LOS A	0.0	0.0	0.00	0.46	0.00	46.3
Approach			136	13.2	136	13.2	0.079	5.2	NA	0.0	0.0	0.00	0.46	0.00	46.3
East: Bruce Highway (E)															
4	L2	All MCs	38	33.3	38	33.3	0.025	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	285	17.7	285	17.7	0.161	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			323	19.5	323	19.5	0.161	1.0	NA	0.0	0.0	0.00	0.08	0.00	93.5
North: Nth Ramp (N)															
7	L2	All MCs	77	16.4	77	16.4	0.046	5.2	LOS A	0.0	0.0	0.00	0.46	0.00	45.7
Approach			77	16.4	77	16.4	0.046	5.2	NA	0.0	0.0	0.00	0.46	0.00	45.7
West: Bruce Highway (W)															
10	L2	All MCs	43	41.5	43	41.5	0.030	8.9	LOS A	0.0	0.0	0.00	0.66	0.00	61.1
11	T1	All MCs	275	23.0	275	23.0	0.160	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			318	25.5	318	25.5	0.160	1.2	NA	0.0	0.0	0.00	0.09	0.00	93.0
All Vehicles			854	20.5	854	20.5	0.161	2.1	NA	0.0	0.0	0.00	0.18	0.00	74.7

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2042BG AM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	41	33.3	41	33.3	0.027	5.5	LOS A	0.0	0.0	0.00	0.45	0.00	46.2
Approach			41	33.3	41	33.3	0.027	5.5	NA	0.0	0.0	0.00	0.45	0.00	46.2
East: Bruce Highway (E)															
4	L2	All MCs	41	33.3	41	33.3	0.027	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	305	18.3	305	18.3	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			346	20.1	346	20.1	0.173	1.0	NA	0.0	0.0	0.00	0.08	0.00	93.4
North: Nth Ramp (N)															
7	L2	All MCs	41	33.3	41	33.3	0.027	5.5	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			41	33.3	41	33.3	0.027	5.5	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	41	33.3	41	33.3	0.027	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	62.7
11	T1	All MCs	293	23.0	293	23.0	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			334	24.3	334	24.3	0.171	1.1	NA	0.0	0.0	0.00	0.08	0.00	94.0
All Vehicles			762	23.3	762	23.3	0.173	1.5	NA	0.0	0.0	0.00	0.12	0.00	84.6

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2042BG PM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	41	33.3	41	33.3	0.027	5.5	LOS A	0.0	0.0	0.00	0.45	0.00	46.2
Approach			41	33.3	41	33.3	0.027	5.5	NA	0.0	0.0	0.00	0.45	0.00	46.2
East: Bruce Highway (E)															
4	L2	All MCs	41	33.3	41	33.3	0.027	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	319	17.8	319	17.8	0.181	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			360	19.6	360	19.6	0.181	1.0	NA	0.0	0.0	0.00	0.08	0.00	93.6
North: Nth Ramp (N)															
7	L2	All MCs	41	33.3	41	33.3	0.027	5.5	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			41	33.3	41	33.3	0.027	5.5	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	41	33.3	41	33.3	0.027	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	62.7
11	T1	All MCs	307	22.9	307	22.9	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			348	24.2	348	24.2	0.179	1.0	NA	0.0	0.0	0.00	0.08	0.00	94.3
All Vehicles			791	23.0	791	23.0	0.181	1.5	NA	0.0	0.0	0.00	0.12	0.00	85.1

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2042D AM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	45	39.5	45	39.5	0.031	5.6	LOS A	0.0	0.0	0.00	0.44	0.00	46.1
Approach			45	39.5	45	39.5	0.031	5.6	NA	0.0	0.0	0.00	0.44	0.00	46.1
East: Bruce Highway (E)															
4	L2	All MCs	65	21.0	65	21.0	0.040	8.4	LOS A	0.0	0.0	0.00	0.66	0.00	66.6
5	T1	All MCs	305	18.3	305	18.3	0.173	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			371	18.8	371	18.8	0.173	1.5	NA	0.0	0.0	0.00	0.12	0.00	91.8
North: Nth Ramp (N)															
7	L2	All MCs	41	33.3	41	33.3	0.027	5.5	LOS A	0.0	0.0	0.00	0.45	0.00	45.5
Approach			41	33.3	41	33.3	0.027	5.5	NA	0.0	0.0	0.00	0.45	0.00	45.5
West: Bruce Highway (W)															
10	L2	All MCs	101	17.7	101	17.7	0.061	8.3	LOS A	0.0	0.0	0.00	0.66	0.00	65.9
11	T1	All MCs	293	23.0	293	23.0	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			394	21.7	394	21.7	0.171	2.1	NA	0.0	0.0	0.00	0.17	0.00	89.5
All Vehicles			851	21.9	851	21.9	0.173	2.2	NA	0.0	0.0	0.00	0.17	0.00	82.7

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.

MOVEMENT SUMMARY

Site: 104 [Bruce Highway Interchange - 2042D PM Peak (Site Folder: Bruce Highway Interchange)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
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: Sth Ramp (S)															
1	L2	All MCs	101	17.7	101	17.7	0.061	5.3	LOS A	0.0	0.0	0.00	0.46	0.00	46.3
Approach			101	17.7	101	17.7	0.061	5.3	NA	0.0	0.0	0.00	0.46	0.00	46.3
East: Bruce Highway (E)															
4	L2	All MCs	41	33.3	41	33.3	0.027	8.7	LOS A	0.0	0.0	0.00	0.66	0.00	63.0
5	T1	All MCs	319	17.8	319	17.8	0.181	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			360	19.6	360	19.6	0.181	1.0	NA	0.0	0.0	0.00	0.08	0.00	93.6
North: Nth Ramp (N)															
7	L2	All MCs	65	21.0	65	21.0	0.040	5.3	LOS A	0.0	0.0	0.00	0.45	0.00	45.6
Approach			65	21.0	65	21.0	0.040	5.3	NA	0.0	0.0	0.00	0.45	0.00	45.6
West: Bruce Highway (W)															
10	L2	All MCs	45	39.5	45	39.5	0.031	8.9	LOS A	0.0	0.0	0.00	0.66	0.00	61.5
11	T1	All MCs	307	22.9	307	22.9	0.179	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
Approach			353	25.1	353	25.1	0.179	1.2	NA	0.0	0.0	0.00	0.08	0.00	93.5
All Vehicles			879	21.7	879	21.7	0.181	1.9	NA	0.0	0.0	0.00	0.15	0.00	78.7

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.

APPENDIX E – PAVEMENT IMPACT ASSESSMENT CALCULATIONS

Marginal cost data for sealed segments of the selected road sections

RoadName	ROAD_SECTION_ID	SUPERSET_CWAY	CARRIAGEWAY_CODE	TDIST_START	TDIST_END	LENGTH	SEAL_FLAG	MC_COSTING_PAVEMENT_TYPE	MarginalCost	2025	2026
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.142	36.222	0.08	sealed	GN	3.12	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.222	36.322	0.1	sealed	GN	3.98	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.322	36.422	0.1	sealed	GN	4.11	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.422	36.522	0.1	sealed	GN	4.19	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.522	36.622	0.1	sealed	GN	4.23	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.622	36.722	0.1	sealed	GN	4.08	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.722	36.822	0.1	sealed	GN	3.96	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.822	36.922	0.1	sealed	GN	3.75	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	36.922	37.022	0.1	sealed	GN	3.75	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.022	37.122	0.1	sealed	GN	3.74	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.122	37.222	0.1	sealed	GN	3.74	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.222	37.322	0.1	sealed	GN	3.44	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.322	37.422	0.1	sealed	GN	2.76	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.422	37.522	0.1	sealed	GN	2.5	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.522	37.622	0.1	sealed	GN	2.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.622	37.722	0.1	sealed	AC	2.14	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.722	37.822	0.1	sealed	AC	3.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.822	37.922	0.1	sealed	AC	5.41	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	37.922	38.022	0.1	sealed	AC	5.46	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.022	38.122	0.1	sealed	AC	3.53	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.122	38.222	0.1	sealed	GN	3.79	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.222	38.322	0.1	sealed	GN	3.76	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.322	38.422	0.1	sealed	GN	3.76	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.422	38.522	0.1	sealed	GN	4.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.522	38.622	0.1	sealed	GN	4.83	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.622	38.722	0.1	sealed	GN	2.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	38.722	38.742	0.02	sealed	GN	2.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.295	43.315	0.02	sealed	AC	2.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.315	43.415	0.1	sealed	AC	3.4	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.415	43.515	0.1	sealed	AC	3.24	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.515	43.615	0.1	sealed	AC	2.83	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.615	43.715	0.1	sealed	AC	2.86	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.715	43.815	0.1	sealed	AC	3.32	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.815	43.915	0.1	sealed	AC	3.28	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	43.915	44.015	0.1	sealed	AC	2.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.015	44.115	0.1	sealed	AC	2.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.115	44.215	0.1	sealed	AC	2.59	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.215	44.315	0.1	sealed	AC	3.38	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.315	44.415	0.1	sealed	AC	2.62	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.415	44.515	0.1	sealed	AC	2.65	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.515	44.615	0.1	sealed	AC	2.82	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.615	44.715	0.1	sealed	AC	2.83	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.715	44.815	0.1	sealed	AC	2.87	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.815	44.915	0.1	sealed	AC	2.91	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	44.915	45.015	0.1	sealed	AC	2.72	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.015	45.115	0.1	sealed	AC	3.35	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.115	45.215	0.1	sealed	AC	2.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.215	45.315	0.1	sealed	AC	2.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.315	45.415	0.1	sealed	AC	2.65	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.415	45.515	0.1	sealed	AC	3.36	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.515	45.615	0.1	sealed	AC	3.37	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.615	45.715	0.1	sealed	AC	2.69	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.715	45.815	0.1	sealed	AC	2.77	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.815	45.915	0.1	sealed	AC	3.35	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	45.915	46.015	0.1	sealed	AC	3.28	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.015	46.115	0.1	sealed	AC	2.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.115	46.215	0.1	sealed	AC	3.29	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.215	46.315	0.1	sealed	AC	2.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.315	46.415	0.1	sealed	AC	2.82	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.415	46.515	0.1	sealed	AC	2.83	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.515	46.615	0.1	sealed	AC	3.4	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.615	46.715	0.1	sealed	AC	3.35	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.715	46.815	0.1	sealed	AC	2.36	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.815	46.915	0.1	sealed	AC	2.67	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	46.915	47.015	0.1	sealed	AC	3.36	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.015	47.115	0.1	sealed	AC	3.27	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.115	47.215	0.1	sealed	AC	2.82	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.215	47.315	0.1	sealed	AC	2.79	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.315	47.415	0.1	sealed	AC	2.93	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.415	47.515	0.1	sealed	AC	2.85	0	0

2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.515	47.615	0.1	sealed	AC	3.31	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.615	47.715	0.1	sealed	AC	2.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.715	47.815	0.1	sealed	AC	2.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.815	47.915	0.1	sealed	AC	2.79	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	47.915	48.015	0.1	sealed	AC	2.76	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.015	48.115	0.1	sealed	AC	3.39	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.115	48.215	0.1	sealed	AC	3.28	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.215	48.315	0.1	sealed	AC	3.28	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.315	48.415	0.1	sealed	AC	3.24	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.415	48.515	0.1	sealed	AC	2.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.515	48.615	0.1	sealed	AC	3.36	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.615	48.715	0.1	sealed	AC	2.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.715	48.815	0.1	sealed	AC	3.29	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.815	48.915	0.1	sealed	AC	2.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	48.915	49.015	0.1	sealed	AC	2.63	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.015	49.115	0.1	sealed	AC	2.63	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.115	49.215	0.1	sealed	AC	2.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.215	49.315	0.1	sealed	AC	2.58	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.315	49.415	0.1	sealed	AC	3.34	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.415	49.515	0.1	sealed	AC	2.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.515	49.615	0.1	sealed	AC	2.67	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.615	49.715	0.1	sealed	AC	3.3	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.715	49.815	0.1	sealed	AC	2.59	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.815	49.915	0.1	sealed	AC	2.62	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	49.915	50.015	0.1	sealed	AC	3.31	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.015	50.115	0.1	sealed	AC	3.4	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.115	50.215	0.1	sealed	AC	2.89	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.215	50.315	0.1	sealed	MC		0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.315	50.415	0.1	sealed	GN	2.73	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.415	50.515	0.1	sealed	GN	2.76	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.515	50.615	0.1	sealed	GN	5.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.615	50.715	0.1	sealed	GN	5.46	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.715	50.815	0.1	sealed	GN	6.24	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.815	50.915	0.1	sealed	GN	6.29	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	50.915	51.015	0.1	sealed	GN	3.13	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.015	51.115	0.1	sealed	GN	5.42	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.115	51.215	0.1	sealed	GN	3.2	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.215	51.315	0.1	sealed	GN	2.89	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.315	51.415	0.1	sealed	GN	3.19	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.415	51.515	0.1	sealed	GN	3.53	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.515	51.615	0.1	sealed	GN	3.6	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.615	51.715	0.1	sealed	GN	3.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.715	51.815	0.1	sealed	GN	3.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.815	51.915	0.1	sealed	GN	3.59	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	51.915	52.015	0.1	sealed	GN	3.62	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.015	52.115	0.1	sealed	GN	3.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.115	52.215	0.1	sealed	GN	3.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.215	52.315	0.1	sealed	GN	3.6	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.315	52.415	0.1	sealed	GN	3.67	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.415	52.515	0.1	sealed	GN	3.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.515	52.615	0.1	sealed	GN	3.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.615	52.715	0.1	sealed	GN	3.6	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.715	52.815	0.1	sealed	GN	3.8	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.815	52.915	0.1	sealed	GN	3.63	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	52.915	53.015	0.1	sealed	GN	3.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.015	53.115	0.1	sealed	GN	3.69	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.115	53.215	0.1	sealed	GN	2.73	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.215	53.315	0.1	sealed	GN	2.83	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.315	53.415	0.1	sealed	GN	2.47	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.415	53.515	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.515	53.615	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.615	53.715	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.715	53.815	0.1	sealed	GN	2.67	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.815	53.915	0.1	sealed	GN	7.83	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	53.915	54.015	0.1	sealed	GN	6.71	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.015	54.115	0.1	sealed	GN	4.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.115	54.215	0.1	sealed	GN	7.94	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.215	54.315	0.1	sealed	GN	7.54	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.315	54.415	0.1	sealed	GN	8.03	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.415	54.515	0.1	sealed	GN	9.01	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.515	54.615	0.1	sealed	GN	9.2	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.615	54.715	0.1	sealed	GN	4.42	0	0

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BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.715	54.815	0.1	sealed	GN	4.43	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.815	54.915	0.1	sealed	GN	9.19	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	54.915	55.015	0.1	sealed	GN	4.36	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.015	55.115	0.1	sealed	GN	4.28	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.115	55.215	0.1	sealed	GN	8.5	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.215	55.315	0.1	sealed	GN	4.92	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.315	55.415	0.1	sealed	GN	2.79	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.415	55.515	0.1	sealed	GN	2.55	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.515	55.615	0.1	sealed	GN	4.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.615	55.715	0.1	sealed	GN	4.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.715	55.815	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.815	55.915	0.1	sealed	GN	5.62	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	55.915	56.015	0.1	sealed	GN	5.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.015	56.115	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.115	56.215	0.1	sealed	GN	1.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.215	56.315	0.1	sealed	GN	1.99	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.315	56.415	0.1	sealed	GN	2.13	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.415	56.515	0.1	sealed	AC	2.43	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.515	56.615	0.1	sealed	AC	2.47	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.615	56.715	0.1	sealed	GN	2.04	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.715	56.815	0.1	sealed	GN	1.52	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.815	56.915	0.1	sealed	GN	1.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	56.915	57.015	0.1	sealed	GN	1.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.015	57.115	0.1	sealed	GN	1.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.115	57.215	0.1	sealed	GN	1.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.215	57.315	0.1	sealed	GN	2.55	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.315	57.415	0.1	sealed	GN	5.69	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.415	57.515	0.1	sealed	GN	3.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.515	57.615	0.1	sealed	GN	3.87	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.615	57.715	0.1	sealed	GN	5.06	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.715	57.815	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.815	57.915	0.1	sealed	GN	5.91	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	57.915	58.015	0.1	sealed	GN	5.96	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.015	58.115	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.115	58.215	0.1	sealed	GN	5.52	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.215	58.315	0.1	sealed	GN	4.03	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.315	58.415	0.1	sealed	GN	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.415	58.515	0.1	sealed	GN	4.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.515	58.615	0.1	sealed	AC	2.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.615	58.715	0.1	sealed	AC	2.59	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.715	58.815	0.1	sealed	AC	2.63	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.815	58.915	0.1	sealed	AC	2.5	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	58.915	59.015	0.1	sealed	AC	2.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.015	59.115	0.1	sealed	AC	2.67	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.115	59.215	0.1	sealed	AC	2.96	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.215	59.315	0.1	sealed	AC	2.94	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.315	59.415	0.1	sealed	AC	3.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.415	59.515	0.1	sealed	AC	3.83	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.515	59.615	0.1	sealed	AC	2.93	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.615	59.715	0.1	sealed	AC	2.73	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.715	59.815	0.1	sealed	AC	2.86	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.815	59.915	0.1	sealed	AC	2.93	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	59.915	60.015	0.1	sealed	AC	3.32	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.015	60.115	0.1	sealed	AC	3.47	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.115	60.215	0.1	sealed	GN	2.17	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.215	60.315	0.1	sealed	GN	2.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.315	60.415	0.1	sealed	GN	2.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.415	60.515	0.1	sealed	GN	2.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.515	60.615	0.1	sealed	GN	2.19	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.615	60.715	0.1	sealed	GN	2.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.715	60.815	0.1	sealed	GN	2.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.815	60.915	0.1	sealed	AC	2.09	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	60.915	61.015	0.1	sealed	AC	4.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.015	61.115	0.1	sealed	AC	4.07	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.115	61.215	0.1	sealed	AC	3.49	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.215	61.315	0.1	sealed	AC	3.39	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.315	61.415	0.1	sealed	AC	3.21	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.415	61.515	0.1	sealed	AC	3.11	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.515	61.615	0.1	sealed	AC	3.13	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.615	61.715	0.1	sealed	AC	3.02	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.715	61.815	0.1	sealed	AC	2.09	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.815	61.915	0.1	sealed	AC	2.56	0	0

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BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	61.915	62.015	0.1	sealed	AC	2.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.015	62.115	0.1	sealed	AC	1.8	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.115	62.215	0.1	sealed	AC	1.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.215	62.315	0.1	sealed	AC	1.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.315	62.415	0.1	sealed	AC	1.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.415	62.515	0.1	sealed	AC	1.72	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.515	62.615	0.1	sealed	AC	1.69	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.615	62.715	0.1	sealed	AC	1.69	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.715	62.815	0.1	sealed	AC	1.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.815	62.915	0.1	sealed	AC	2.33	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	62.915	63.015	0.1	sealed	AC	4.59	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.015	63.115	0.1	sealed	AC	3.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.115	63.215	0.1	sealed	AC	1.81	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.215	63.315	0.1	sealed	AC	1.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.315	63.415	0.1	sealed	AC	2.01	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.415	63.515	0.1	sealed	AC	2.46	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.515	63.615	0.1	sealed	AC	2.19	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.615	63.715	0.1	sealed	AC	1.82	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.715	63.815	0.1	sealed	AC	1.99	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.815	63.915	0.1	sealed	AC	2.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	63.915	64.015	0.1	sealed	AC	2.98	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.015	64.115	0.1	sealed	AC	3.99	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.115	64.215	0.1	sealed	AC	3.81	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.215	64.315	0.1	sealed	GN	3.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.315	64.415	0.1	sealed	GN	2.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.415	64.515	0.1	sealed	GN	5.44	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.515	64.615	0.1	sealed	GN	2.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.615	64.715	0.1	sealed	GN	3.18	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.715	64.815	0.1	sealed	GN	2.93	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.815	64.915	0.1	sealed	GN	5.71	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	64.915	65.015	0.1	sealed	GN	2.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.015	65.115	0.1	sealed	GN	3.25	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.115	65.215	0.1	sealed	GN	2.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.215	65.315	0.1	sealed	GN	2.88	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.315	65.415	0.1	sealed	GN	2.72	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.415	65.515	0.1	sealed	GN	2.91	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.515	65.615	0.1	sealed	GN	2.81	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.615	65.715	0.1	sealed	GN	2.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.715	65.815	0.1	sealed	GN	2.87	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.815	65.915	0.1	sealed	GN	2.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	65.915	66.015	0.1	sealed	GN	2.92	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.015	66.115	0.1	sealed	GN	2.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.115	66.215	0.1	sealed	GN	2.9	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.215	66.315	0.1	sealed	GN	2.93	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.315	66.415	0.1	sealed	GN	2.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.415	66.515	0.1	sealed	GN	3.27	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.515	66.615	0.1	sealed	AC	5.86	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.615	66.715	0.1	sealed	AC	3.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.715	66.815	0.1	sealed	AC	4.28	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.815	66.915	0.1	sealed	AC	4.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	66.915	67.015	0.1	sealed	AC	4.4	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.015	67.115	0.1	sealed	AC	3.2	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.115	67.215	0.1	sealed	AC	2.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.215	67.315	0.1	sealed	AC	2.86	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.315	67.415	0.1	sealed	AC	2.77	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.415	67.515	0.1	sealed	AC	2.86	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.515	67.615	0.1	sealed	AC	4.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.615	67.715	0.1	sealed	AC	2.71	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.715	67.815	0.1	sealed	AC	3.08	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.815	67.915	0.1	sealed	AC	3.34	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	67.915	68.015	0.1	sealed	AC	3.39	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.015	68.115	0.1	sealed	AC	3.39	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.115	68.215	0.1	sealed	AC	3.39	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.215	68.315	0.1	sealed	AC	3.39	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.315	68.415	0.1	sealed	AC	3.39	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.415	68.515	0.1	sealed	AC	5.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.515	68.615	0.1	sealed	AC	3.44	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.615	68.715	0.1	sealed	AC	3.52	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.715	68.815	0.1	sealed	AC	3.52	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.815	68.915	0.1	sealed	AC	3.52	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	68.915	69.015	0.1	sealed	AC	3.52	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.015	69.115	0.1	sealed	AC	3.52	0	0

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BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.115	69.215	0.1	sealed	AC	6.02	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.215	69.315	0.1	sealed	AC	3.27	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.315	69.415	0.1	sealed	GN	3.25	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.415	69.515	0.1	sealed	GN	5.9	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.515	69.615	0.1	sealed	GN	3.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.615	69.715	0.1	sealed	GN	7.03	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.715	69.815	0.1	sealed	GN	7.5	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.815	69.915	0.1	sealed	GN	3.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	69.915	70.015	0.1	sealed	GN	3.93	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	70.015	70.11	0.095	sealed	GN	3.92	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	70.11	70.115	0.005	sealed	GN	3.92	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	70.115	70.215	0.1	sealed	GN	3.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	70.215	70.315	0.1	sealed	GN	5.81	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	70.315	70.415	0.1	sealed	GN	3.8	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	70.415	70.515	0.1	sealed	GN	3.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	70.515	70.615	0.1	sealed	GN	3.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	70.615	70.712	0.097	sealed	GN	5.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	70.712	70.715	0.003	sealed	GN	5.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	70.715	70.815	0.1	sealed	GN	3.71	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	70.815	70.915	0.1	sealed	AC	5.26	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	70.915	71.015	0.1	sealed	AC	3.21	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.015	71.115	0.1	sealed	AC	2.97	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.115	71.215	0.1	sealed	AC	2.85	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.215	71.315	0.1	sealed	AC	2.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.315	71.415	0.1	sealed	AC	2.66	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.415	71.515	0.1	sealed	AC	2.44	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.515	71.615	0.1	sealed	AC	2.35	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.615	71.715	0.1	sealed	AC	2.42	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.715	71.815	0.1	sealed	AC	2.48	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.815	71.915	0.1	sealed	AC	3.15	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	71.915	72.015	0.1	sealed	AC	3.01	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.015	72.115	0.1	sealed	AC	2.67	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.115	72.215	0.1	sealed	AC	2.46	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.215	72.315	0.1	sealed	AC	2.44	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.315	72.415	0.1	sealed	AC	2.4	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.415	72.515	0.1	sealed	AC	2.43	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.515	72.615	0.1	sealed	AC	2.45	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.615	72.715	0.1	sealed	AC	2.4	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.715	72.815	0.1	sealed	AC	2.54	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.815	72.915	0.1	sealed	AC	2.96	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	72.915	73.015	0.1	sealed	AC	2.93	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.015	73.115	0.1	sealed	AC	3.8	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.115	73.215	0.1	sealed	AC	4.01	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.215	73.315	0.1	sealed	AC	4.02	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.315	73.415	0.1	sealed	AC	5.27	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.415	73.515	0.1	sealed	AC	3.87	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.515	73.615	0.1	sealed	AC	4.07	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.615	73.715	0.1	sealed	AC	4.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.715	73.815	0.1	sealed	AC	2.94	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.815	73.915	0.1	sealed	AC	2.97	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	73.915	74.015	0.1	sealed	AC	2.97	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.015	74.115	0.1	sealed	AC	3.01	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.115	74.215	0.1	sealed	AC	2.97	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.215	74.315	0.1	sealed	AC	2.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.315	74.415	0.1	sealed	AC	2.8	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.415	74.515	0.1	sealed	GN	3.23	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.515	74.615	0.1	sealed	AC	2.67	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.615	74.715	0.1	sealed	GN	2.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.715	74.815	0.1	sealed	GN	2.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.815	74.915	0.1	sealed	GN	2.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	74.915	75.015	0.1	sealed	AC	3.36	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	1	75.015	75.047	0.032	sealed	AC	4.92	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.047	75.115	0.068	sealed	AC	4.92	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.047	75.115	0.068	sealed	AC	4.92	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.115	75.215	0.1	sealed	AC	4.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.115	75.215	0.1	sealed	AC	4.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.215	75.315	0.1	sealed	AC	8.11	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.215	75.315	0.1	sealed	AC	8.11	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.315	75.415	0.1	sealed	GN	7.81	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.315	75.415	0.1	sealed	MC		0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.415	75.515	0.1	sealed	AC	10.51	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.415	75.515	0.1	sealed	AC	10.51	0	0

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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.515	75.615	0.1	sealed	AC	8.53	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.515	75.615	0.1	sealed	AC	8.53	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.615	75.715	0.1	sealed	GN	6.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.615	75.715	0.1	sealed	GN	6.78	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.715	75.815	0.1	sealed	GN	5.56	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.715	75.815	0.1	sealed	GN	5.56	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.815	75.915	0.1	sealed	GN	2.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.815	75.915	0.1	sealed	GN	2.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	75.915	76.015	0.1	sealed	GN	2.6	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	75.915	76.015	0.1	sealed	GN	2.6	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.015	76.115	0.1	sealed	GN	2.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.015	76.115	0.1	sealed	GN	2.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.115	76.215	0.1	sealed	GN	2.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.115	76.215	0.1	sealed	GN	2.68	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.215	76.315	0.1	sealed	GN	2.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.215	76.315	0.1	sealed	GN	2.61	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.315	76.415	0.1	sealed	GN	2.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.315	76.415	0.1	sealed	GN	2.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.415	76.515	0.1	sealed	GN	2.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.415	76.515	0.1	sealed	GN	2.7	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.515	76.615	0.1	sealed	AC	2.8	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.515	76.615	0.1	sealed	MC		0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.615	76.715	0.1	sealed	AC	3.09	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.615	76.715	0.1	sealed	AC	3.09	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.715	76.815	0.1	sealed	AC	2.96	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.715	76.815	0.1	sealed	AC	2.96	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.815	76.915	0.1	sealed	GN	3.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.815	76.915	0.1	sealed	GN	3.64	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	76.915	77.015	0.1	sealed	GN	4.97	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	76.915	77.015	0.1	sealed	GN	4.97	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.015	77.115	0.1	sealed	GN	4.27	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.015	77.115	0.1	sealed	GN	4.27	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.115	77.215	0.1	sealed	GN	4.1	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.115	77.215	0.1	sealed	GN	4.1	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.215	77.315	0.1	sealed	GN	3.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.215	77.315	0.1	sealed	GN	3.84	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.315	77.415	0.1	sealed	GN	3.16	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.315	77.415	0.1	sealed	GN	3.16	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.415	77.515	0.1	sealed	GN	4.5	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.415	77.515	0.1	sealed	GN	4.5	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.515	77.615	0.1	sealed	GN	4.15	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.515	77.615	0.1	sealed	GN	4.15	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.615	77.715	0.1	sealed	AC	3.04	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.615	77.715	0.1	sealed	AC	3.04	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.715	77.815	0.1	sealed	AC	3.04	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.715	77.815	0.1	sealed	AC	3.04	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	2	77.815	77.913	0.098	sealed	AC	3.04	0	0
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	3	3	77.815	77.913	0.098	sealed	AC	3.04	0	0
TOWNSVILLE PORT ROAD	841	1	2	0	0.1	0.1	sealed	GN	7.57	0	0
TOWNSVILLE PORT ROAD	841	3	3	0	0.1	0.1	sealed	GN	7.57	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.1	0.2	0.1	sealed	GN	5.18	0	0
TOWNSVILLE PORT ROAD	841	3	3	0.1	0.2	0.1	sealed	GN	5.18	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.2	0.3	0.1	sealed	GN	4.29	0	0
TOWNSVILLE PORT ROAD	841	3	3	0.2	0.3	0.1	sealed	GN	4.29	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.3	0.4	0.1	sealed	GN	3.22	0	0
TOWNSVILLE PORT ROAD	841	3	3	0.3	0.4	0.1	sealed	GN	3.22	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.4	0.414	0.014	sealed	GN	6.89	0	0
TOWNSVILLE PORT ROAD	841	3	3	0.4	0.427	0.027	sealed	GN	6.89	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.414	0.5	0.086	sealed	GN	6.89	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.5	0.6	0.1	sealed	GN	6.68	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.6	0.7	0.1	sealed	GN	7.04	0	0
TOWNSVILLE PORT ROAD	841	1	2	0.7	0.772	0.072	sealed	GN	6.89	0	0
TOWNSVILLE PORT ROAD	841	1	1	0.772	0.8	0.028	sealed	GN	6.89	0	0
TOWNSVILLE PORT ROAD	841	1	1	0.8	0.9	0.1	sealed	GN	6.49	0	0
TOWNSVILLE PORT ROAD	841	1	1	0.9	1	0.1	sealed	GN	6.49	0	0
TOWNSVILLE PORT ROAD	841	1	1	1	1.1	0.1	sealed	AC	5.05	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.1	1.2	0.1	sealed	AC	10.1	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.2	1.3	0.1	sealed	AC	14.46	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.3	1.4	0.1	sealed	AC	21.31	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.4	1.5	0.1	sealed	AC	18.06	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.5	1.6	0.1	sealed	AC	11.74	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.6	1.7	0.1	sealed	GN	9.27	0	0

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TOWNSVILLE PORT ROAD	841	1	1	1.7	1.8	0.1	sealed	GN	6.49	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.8	1.9	0.1	sealed	GN	6.67	0	0
TOWNSVILLE PORT ROAD	841	1	1	1.9	2	0.1	sealed	GN	6.9	0	0
TOWNSVILLE PORT ROAD	841	1	1	2	2.1	0.1	sealed	GN	7.33	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.1	2.2	0.1	sealed	GN	7.8	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.2	2.3	0.1	sealed	GN	7.7	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.3	2.4	0.1	sealed	GN	2.27	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.4	2.5	0.1	sealed	GN	6.59	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.5	2.6	0.1	sealed	GN	6.84	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.6	2.7	0.1	sealed	GN	6.84	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.7	2.8	0.1	sealed	GN	6.6	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.8	2.9	0.1	sealed	GN	6.84	0	0
TOWNSVILLE PORT ROAD	841	1	1	2.9	3	0.1	sealed	GN	6.41	0	0
TOWNSVILLE PORT ROAD	841	1	1	3	3.1	0.1	sealed	GN	7.12	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.1	3.2	0.1	sealed	AC	2.27	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.2	3.3	0.1	sealed	AC	5.11	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.3	3.4	0.1	sealed	AC	4.59	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.4	3.5	0.1	sealed	AC	4.49	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.5	3.6	0.1	sealed	GN	6.41	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.6	3.7	0.1	sealed	GN	7.12	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.7	3.8	0.1	sealed	GN	7	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.8	3.9	0.1	sealed	GN	6.87	0	0
TOWNSVILLE PORT ROAD	841	1	1	3.9	4	0.1	sealed	GN	6.6	0	0
TOWNSVILLE PORT ROAD	841	1	1	4	4.1	0.1	sealed	GN	7.94	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.1	4.2	0.1	sealed	GN	7.09	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.2	4.3	0.1	sealed	GN	7.3	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.3	4.4	0.1	sealed	GN	6.9	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.4	4.5	0.1	sealed	GN	6.37	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.5	4.6	0.1	sealed	GN	6.07	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.6	4.7	0.1	sealed	GN	6.05	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.7	4.8	0.1	sealed	GN	6.84	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.8	4.9	0.1	sealed	GN	7	0	0
TOWNSVILLE PORT ROAD	841	1	1	4.9	5	0.1	sealed	GN	6.89	0	0
TOWNSVILLE PORT ROAD	841	1	1	5	5.1	0.1	sealed	GN	6.88	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.1	5.2	0.1	sealed	GN	6.72	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.2	5.3	0.1	sealed	AC	4.46	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.3	5.4	0.1	sealed	AC	4.36	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.4	5.5	0.1	sealed	AC	4.46	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.5	5.6	0.1	sealed	GN	6.68	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.6	5.7	0.1	sealed	GN	6.69	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.7	5.8	0.1	sealed	GN	6.47	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.8	5.9	0.1	sealed	GN	7.07	0	0
TOWNSVILLE PORT ROAD	841	1	1	5.9	6	0.1	sealed	GN	6.65	0	0
TOWNSVILLE PORT ROAD	841	1	1	6	6.1	0.1	sealed	GN	7.07	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.1	6.2	0.1	sealed	GN	6.99	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.2	6.3	0.1	sealed	GN	6.99	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.3	6.4	0.1	sealed	GN	6.99	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.4	6.5	0.1	sealed	GN	6.85	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.5	6.6	0.1	sealed	GN	6.84	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.6	6.7	0.1	sealed	GN	6.4	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.7	6.8	0.1	sealed	GN	6.36	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.8	6.9	0.1	sealed	GN	6.32	0	0
TOWNSVILLE PORT ROAD	841	1	1	6.9	7	0.1	sealed	GN	6.83	0	0
TOWNSVILLE PORT ROAD	841	1	1	7	7.1	0.1	sealed	AC	2.07	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.1	7.2	0.1	sealed	AC	2.18	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.2	7.3	0.1	sealed	AC	4.94	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.3	7.4	0.1	sealed	AC	6.82	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.4	7.5	0.1	sealed	AC	5.87	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.5	7.6	0.1	sealed	AC	5.42	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.6	7.7	0.1	sealed	AC	5.58	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.7	7.8	0.1	sealed	AC	4.09	0	0
TOWNSVILLE PORT ROAD	841	1	1	7.8	7.811	0.011	sealed	AC	0.45	0	0

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SAR4

Annual Average Daily Traffic data for sealed segments of the selected road sections

Background SAR per day

RoadName	ROAD_SECTION_ID	SUPERSET_CWAY	DIRECTION	TdistStart	TdistEnd	SURFACE_TYPE_LABEL	AADT	AADT_YEAR	GROWTH_PC_5YR	AADT_NONHV	PERCENT_NONHV	AADT_HV	PERCENT_HV	ExistingSAR	2052 BG SAR4	2025	2026
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	36.142	64.166	SEALED	2781	2021	1.5	2309	83.04	472	16.96	1368.8	44401.68192	55.71175	55.71175
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	36.142	64.166	SEALED	2892	2021	1.72	2271	78.51	621	21.49	1800.9	58418.31456	5.9685	5.9685
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	64.166	66.821	SEALED	4057	2021	2.18	3160	77.88	897	22.12	2601.3	84382.00992	55.71175	55.71175
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	64.166	66.821	SEALED	4163	2021	1.99	3203	76.95	960	23.05	2784	90308.5056	5.9685	5.9685
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	66.821	70.11	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	55.71175	55.71175
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	66.821	70.11	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	5.9685	5.9685
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	70.11	70.712	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	55.71175	55.71175
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	70.11	70.712	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	5.9685	5.9685
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	70.712	75.047	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	55.71175	55.71175
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	70.712	75.047	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	5.9685	5.9685
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	75.047	77.913	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	55.71175	55.71175
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	75.047	77.913	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	5.9685	5.9685
TOWNSVILLE PORT ROAD	841	1	A	0	0.772	SEALED	1293	2021	2.89	887	68.59	406	31.41	1299.2	42143.96928	55.71175	55.71175
TOWNSVILLE PORT ROAD	841	1	G	0	0.772	SEALED	1431	2021	2.03	1003	70.06	428	29.94	1369.6	44427.63264	5.9685	5.9685
TOWNSVILLE PORT ROAD	841	1	A	0.772	7.336	SEALED	1293	2021	2.89	887	68.59	406	31.41	1299.2	42143.96928	55.71175	55.71175
TOWNSVILLE PORT ROAD	841	1	G	0.772	7.336	SEALED	1431	2021	2.03	1003	70.06	428	29.94	1369.6	44427.63264	5.9685	5.9685
TOWNSVILLE PORT ROAD	841	1	A	7.336	7.811	SEALED	2021	2021	3.3	1518	75.11	503	24.89	1609.6	52212.84864	55.71175	55.71175
TOWNSVILLE PORT ROAD	841	1	G	7.336	7.811	SEALED	1815	2021	1.73	1256	69.21	559	30.79	1788.8	58025.80992	5.9685	5.9685

2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32
55.71175	55.71175	55.71175	55.71175	55.71175	55.71175	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84	23.84
5.9685	5.9685	5.9685	5.9685	5.9685	5.9685	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32	4.32

SAR5

Annual Average Daily Traffic data for sealed segments of the selected road sections

Background SAR per day

RoadName	ROAD_SECTION_ID	SUPERSET_CWAY	DIRECTION	TdistStart	TdistEnd	SURFACE_TYPE_LABEL	AADT	AADT_YEAR	GROWTH_PC_5YR	AADT_NONHV	PERCENT_NONHV	AADT_HV	PERCENT_HV	ExistingSAR	2052 BG SAR4	2025	2026
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	36.142	64.166	SEALED	2781	2021	1.5	2309	83.04	472	16.96	1368.8	44401.68192	63.08325	63.08325
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	36.142	64.166	SEALED	2892	2021	1.72	2271	78.51	621	21.49	1800.9	58418.31456	4.784	4.784
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	64.166	66.821	SEALED	4057	2021	2.18	3160	77.88	897	22.12	2601.3	84382.00992	63.08325	63.08325
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	64.166	66.821	SEALED	4163	2021	1.99	3203	76.95	960	23.05	2784	90308.5056	4.784	4.784
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	66.821	70.11	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	63.08325	63.08325
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	66.821	70.11	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	4.784	4.784
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	70.11	70.712	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	63.08325	63.08325
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	70.11	70.712	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	4.784	4.784
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	70.712	75.047	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	63.08325	63.08325
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	70.712	75.047	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	4.784	4.784
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	75.047	77.913	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	63.08325	63.08325
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	75.047	77.913	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	4.784	4.784
TOWNSVILLE PORT ROAD	841	1	A	0	0.772	SEALED	1293	2021	2.89	887	68.59	406	31.41	1299.2	42143.96928	63.08325	63.08325
TOWNSVILLE PORT ROAD	841	1	G	0	0.772	SEALED	1431	2021	2.03	1003	70.06	428	29.94	1369.6	44427.63264	4.784	4.784
TOWNSVILLE PORT ROAD	841	1	A	0.772	7.336	SEALED	1293	2021	2.89	887	68.59	406	31.41	1299.2	42143.96928	63.08325	63.08325
TOWNSVILLE PORT ROAD	841	1	G	0.772	7.336	SEALED	1431	2021	2.03	1003	70.06	428	29.94	1369.6	44427.63264	4.784	4.784
TOWNSVILLE PORT ROAD	841	1	A	7.336	7.811	SEALED	2021	2021	3.3	1518	75.11	503	24.89	1609.6	52212.84864	63.08325	63.08325
TOWNSVILLE PORT ROAD	841	1	G	7.336	7.811	SEALED	1815	2021	1.73	1256	69.21	559	30.79	1788.8	58025.80992	4.784	4.784

2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44
63.08325	63.08325	63.08325	63.08325	63.08325	63.08325	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32	26.32
4.784	4.784	4.784	4.784	4.784	4.784	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44

SAR12

Annual Average Daily Traffic data for sealed segments of the selected road sections

Background SAR per day

RoadName	ROAD_SECTION_ID	SUPERSET_CWAY	DIRECTION	TdistStart	TdistEnd	SURFACE_TYPE_LABEL	AADT	AADT_YEAR	GROWTH_PC_5YR	AADT_NONHV	PERCENT_NONHV	AADT_HV	PERCENT_HV	ExistingSAR	2052 BG SAR4	2025	2026
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	36.142	64.166	SEALED	2781	2021	1.5	2309	83.04	472	16.96	1368.8	44401.68192	158.7575	158.7575
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	36.142	64.166	SEALED	2892	2021	1.72	2271	78.51	621	21.49	1800.9	58418.31456	1.265	1.265
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	64.166	66.821	SEALED	4057	2021	2.18	3160	77.88	897	22.12	2601.3	84382.00992	158.7575	158.7575
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	64.166	66.821	SEALED	4163	2021	1.99	3203	76.95	960	23.05	2784	90308.5056	1.265	1.265
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	66.821	70.11	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	158.7575	158.7575
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	66.821	70.11	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	1.265	1.265
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	70.11	70.712	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	158.7575	158.7575
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	70.11	70.712	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	1.265	1.265
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	70.712	75.047	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	158.7575	158.7575
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	70.712	75.047	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	1.265	1.265
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	A	75.047	77.913	SEALED	7040	2021	2.84	5985	85.02	1055	14.98	3059.5	99245.2848	158.7575	158.7575
BRUCE HIGHWAY (AYR - TOWNSVILLE)	10L	1	G	75.047	77.913	SEALED	7204	2021	3.74	6304	87.5	901	12.5	2612.9	84758.29536	1.265	1.265
TOWNSVILLE PORT ROAD	841	1	A	0	0.772	SEALED	1293	2021	2.89	887	68.59	406	31.41	1299.2	42143.96928	158.7575	158.7575
TOWNSVILLE PORT ROAD	841	1	G	0	0.772	SEALED	1431	2021	2.03	1003	70.06	428	29.94	1369.6	44427.63264	1.265	1.265
TOWNSVILLE PORT ROAD	841	1	A	0.772	7.336	SEALED	1293	2021	2.89	887	68.59	406	31.41	1299.2	42143.96928	158.7575	158.7575
TOWNSVILLE PORT ROAD	841	1	G	0.772	7.336	SEALED	1431	2021	2.03	1003	70.06	428	29.94	1369.6	44427.63264	1.265	1.265
TOWNSVILLE PORT ROAD	841	1	A	7.336	7.811	SEALED	2021	2021	3.3	1518	75.11	503	24.89	1609.6	52212.84864	158.7575	158.7575
TOWNSVILLE PORT ROAD	841	1	G	7.336	7.811	SEALED	1815	2021	1.73	1256	69.21	559	30.79	1788.8	58025.80992	1.265	1.265

2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
158.7575	158.7575	158.7575	158.7575	158.7575	158.7575	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
1.265	1.265	1.265	1.265	1.265	1.265	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88

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