8.2.5. Viewpoint 5

Table 25: Likely visual impact of the Project on Viewpoint 5

Viewpoint 5: Southerly view from Fig Tree Toad – existing view (≈ 150° HFoV)	
Visual Baseline Assessment	
 **Existing view from Viewpoint 5: Southerly view from Fig Tree Toad** – existing view (≈ 150° HFoV) Refer to **Figure 17** in **Appendix 2** for appropriate scaled image and wider panoramic view.	
Location and description	• GPS Location: 24°4'0.126" S 150°48'20.676" E • Elevation: 93.0 m • Southerly view from Fig Tree Road, providing moderately distant, partially filtered views toward the Project Area. • Nearest proposed Project infrastructure within the Project Area is approximately 2.3 km south of this viewpoint. • Represents typical views experienced by nearby isolated rural residents, rural workers and travellers along Fig Tree Road. • The view represents a strong rural character consistent with in *LCT C: Lowland Rural Plains,* largely comprised of grazing land associated with agricultural land uses, with views toward *LCT E: Major Watercourses (*Calliope River) and distant views toward *LCT A: Forested Mountains and Ranges* which includes the Calliope Range. • Existing infrastructure evident within this view includes the 275 kV Calvale to Wurdong OHTL, which is partially screened by vegetation, as well as a met mast tower located on the Calliope Range.
Key visual sensitivities	• Key visual receptors include: ○ travellers on Fig Tree Road who may experience moderately distant, partially screened views toward the Project ○ a small number of isolated rural residents who may experience similar views from their properties ○ a small number of rural workers who are considered to have a passing interest in their surroundings. • This viewpoint includes filtered yet distant views toward the Calliope Ranges, which are recognised as elevated and vegetated landscapes of district and regional significance scenic value (7.5-10) as defined in GRCPS *Scenic Amenity Overlay Code.* • This viewpoint also provides views to landscape elements and characteristics identified by the GRCPS and BSPS including: ○ bushland and waterways ○ rural landscape character. • While the Calliope Range is acknowledged as having scenic values within the GRCPS, only a small number of travellers on Fig Tree Road, isolated rural residential receptors and rural workers may experience this view.
Visual sensitivity	• ***Low***

Viewpoint 5: Southerly view from Fig Tree Toad – existing view (≈ 150° HFoV)	
Visual Evaluation	
Magnitude of Change Assessment	• The nearest Project infrastructure is located approximately 2.3 km south of this viewpoint and therefore views from this location are considered to be moderately distant. it is anticipated that the infrastructure will be partially screened by existing vegetation from this location. • A visualisation for this viewpoint was not prepared due to both the distance and low number of receptors who may access this view. • The Project is anticipated to result in a barely perceptible change due to the following factors: ○ moderately distant views toward the Project that may be filtered by existing vegetation from this section of Fig Tree Road ○ any visible parts of the Project are likely to blend into the background against the Calliope Range located within the distant view. • Whilst considering the proximity of isolated rural residential receptors to the Project Area, part of the Project infrastructure may be partially visible from permanent dwellings with potential screening by existing vegetation. • While the Project will add new large-scale electricity transmission infrastructure to the landscape, the Project is not unusual within the broader landscape as existing OHTL infrastructure is already visible within the view, and any views may be filtered and somewhat blend into the background Calliope Range.
Magnitude of change	• ***Negligible.***
Significance of impact	• ***Minor to Negligible*** *and* ***Not Significant.***

8.2.6. Viewpoint 6

Table 26: Likely visual impact of the Project on Viewpoint 6

Viewpoint 4: Southwesterly view from Duck Holes Road – existing view (≈ 170° HFoV and ≈ 85° HFoV)	
Visual Baseline Assessment	
 **Existing view from Viewpoint 4: Southwesterly view from Duck Holes Road – existing view (≈ 170° HFoV and ≈ 85° HFoV)** Refer to **Figure 18** in **Appendix 2** for appropriate scaled image and wider panoramic view.	
Location and description	• GPS Location: 24°2’34.53” S 150°46’14.04” E • Elevation: 122.0 m • Southeasterly view from elevated section of Fig Tree Road, providing distant, elevated and open views toward the Project Area. • Nearest proposed infrastructure within the Project Area is the switchyard approximately 5.4 km south-east of this viewpoint. • Represents typical views experienced by nearby isolated rural residents, rural workers and travellers along Fig Tree Road.

Viewpoint 4: Southwesterly view from Duck Holes Road – existing view (≈ 170° HFoV and ≈ 85° HFoV)	
	• The view represents a strong rural character consistent with *LCT B: Undulating and Grazed Uplands.* Elevated and forested backdrop associated with the Calliope and Boyne Range within *LCT A: Forested Ranges and Mountains* are visible, along with areas of *LCT D: Forested Lowlands* and *LCT E: Major Watercourses* associated with the Calliope River. • Existing infrastructure evident within this view includes a met mast tower, 275 kV Calvale to Wurdong OHTL, and a rural residence which is partially screened by vegetation.
Key visual sensitivities	• Key visual receptors include: o travellers on Fig Tree Road who may experience distant, open and elevated views toward the Project Area o a small number of nearby isolated rural residents who have the potential to experience similar prolonged views from this area and are considered to have a high level of interest in their surroundings o a small number of rural workers who are considered to have a passing interest in their surroundings. • This view comprises a strong rural character, and there is limited evidence of existing built infrastructure outside of the met mast tower and rural residence. • This viewpoint with the inclusion of the Calliope and Boyne Ranges contains clear yet distant views to elevated and vegetated landscapes of district and regional significance scenic value (7.5-10) as defined in GRCPS *Scenic Amenity Overlay Code.* It is noted that the Calliope Range is located within the LVIA Study Area, and Boyne Range is located outside of the LVIA Study Area. • This view also contains views to landscape elements and characteristics identified by the GRCPS and BSPS including: o bushland and waterways o rural landscape character. • A small number of isolated rural residential receptors in the area may experience prolonged views toward the Project and the proximity of this viewpoint to landscapes identified to contain scenic qualities. • The Project will introduce additional OHTL infrastructure into landscape that already contains large scale infrastructural components of existing OHTLs.
Visual sensitivity	• ***Low.***
Visual Evaluation	
Magnitude of change assessment	• The nearest Project infrastructure is located approximately 5.4 km south-east of this viewpoint and therefore views from this location are considered to be distant. • A visualisation for this Viewpoint was not considered due to both the distance and low number of receptors who may access this view. • The Project is anticipated to result in a barely perceptible change due to the following factors: o distant, filtered and blended views toward the Project may be possible for a small number of isolated rural residential receptors in the vicinity of this location, particularly those with open southeasterly views toward the Project. o Project infrastructure may be partially screened by existing vegetation within the midground of this view, with visible parts of the Project Area blending into the Calliope Range located to the south of the Project.

Viewpoint 4: Southwesterly view from Duck Holes Road – existing view (≈ 170° HFoV and ≈ 85° HFoV)	
	• Whilst considering the proximity of these isolated rural residential receptors to the Project, part of the Project infrastructure may be partially visible from permanent dwellings with potential screening by existing vegetation. • While the Project will introduce additional large scale energy infrastructure into the rural landscape, any anticipated distant views to the Project may be filtered and somewhat blend into the background Calliope Range.
Magnitude of change	• ***Negligible.***
Significance of impact	• ***Minor to Negligible*** and ***Not Significant.***

8.2.7. Viewpoint 7

Table 27: Likely visual impact of the Project on Viewpoint 7

Viewpoint 7: Easterly view from Dawson Highway – existing view (≈ 150° HFoV)	
Visual Baseline Assessment	
 **Existing view from Viewpoint 7: Easterly view from Dawson Highway** – existing view (≈ 150° HFoV) *Refer to existing view (≈ 115° HFoV)* **Figure 19** in **Appendix 2** for appropriate scaled image and wider panoramic view.	
Location and description	• GPS Location: 24°8'7.974" S 150°44'8.052" E • Elevation: 402.9 m • Easterly view from the far southwestern area of the Dawson Highway within the LVIA Study Area providing elevated, somewhat open, transient and distant views toward the Project Area. • This elevated view is located on the Calliope Range. • Nearest proposed infrastructure within the Project Area is the Project's switchyard approximately 7.2 km north-east of this viewpoint. • Representative of typical views experienced by travellers along the Dawson Highway, including rural workers and residents. This view is also representative of easterly views experienced from Calliope Range State Forest. • This viewpoint is located within *LCT A: Forested Mountains and Ranges*, with generally filtered views due to forested and vegetated areas. Views from this location project across to both *LCT C: Lowland Rural Plains, LCT D: Forested Lowlands* and *LCT E: Major Watercourses* associated with the Calliope River. • There is evidence of existing infrastructure within this view, including the existing 275 kV Calvale to Wurdong OHTL and general road infrastructure associated with the Dawson Highway.
Key visual sensitivities	• Key visual receptors include:

Viewpoint 7: Easterly view from Dawson Highway – existing view (≈ 150° HFoV)	
	○ a moderate number of travellers along the Dawson Highway including rural workers, local rural residents and travellers ○ rural workers on nearby properties who are considered to have a general interest in their surroundings. • Views from this viewpoint extend out across a predominantly rural character and elevated forested areas. The inclusion of existing infrastructure reduces the sensitivity of this view, which includes the 275 kV Calvale to Wurdong OHTL and highway infrastructure. • This viewpoint with the inclusion of the Calliope and Boyne Ranges contains clear yet distant views to elevated and vegetated landscapes of district and regional significance scenic value (7.5-10) as defined in GRCPS *Scenic Amenity Overlay Code.* It is noted that the Calliope Range is located within the LVIA Study Area, and Boyne Range is located outside of the LVIA Study Area. • This view also contains views to landscape elements and characteristics described in the GRCPS and BSPS including: ○ bushland and waterways ○ rural landscape character. • This view provides transient views for a moderate number of travellers along the Dawson Highway, which is not a scenic route. Prolonged viewing opportunities for a small number of isolated rural residents and rural workers may be possible. • Furthermore, the highway infrastructure and the existing 275 kV Calvale to Wurdong OHTL present in the view reduces the sensitivity of the view. The Project will introduce additional OHTL infrastructure into landscape that already contains large scale infrastructural components of existing OHTLs.
Visual Sensitivity	• ***Medium.***
Visual Evaluation	
Magnitude of Change Assessment	• The nearest Project infrastructure is located approximately 7.2 km northeast of this viewpoint and therefore views from this location are considered to be distant. • A visualisation has not been prepared for this Viewpoint due to the distance from the Project Area from this view. • The rural character of views to part of the Calliope Range is affected by the presence of the existing 275 kV Calvale to Wurdong OHTL. • It is anticipated that infrastructure may be openly visible, partially screened by existing vegetation within the foreground and midground of this view and somewhat blend into the background with existing vegetation of the plains and uplands. • The Project is anticipated to result in a noticeable change due to the following factors: ○ distant, open, filtered, blended and transient views toward the Project Area will be possible from elevated and east facing areas within Calliope Range State Forest and along elevated sections of the Dawson Highway ○ this viewpoint location will provide potential views toward the majority of the Project due to the viewpoints elevated nature. • Whilst views from the Dawson Highway are transient and likely to be filtered due to vegetation, Project infrastructure may be perceptible within a natural and rural landscape where existing OHTL infrastructure is already visible.
Magnitude of change	• ***Negligible***

Viewpoint 7: Easterly view from Dawson Highway – existing view (≈ 150° HFoV)	
Significance of impact	• ***Minor*** and ***Not Significant.***

8.3. Summary of visual impact assessment

A summary of the baseline analysis and overall likely visual impact anticipated during the operation of the Project (as described in **Section 8.2: Viewpoint assessment**) associated with the presence of OHTL infrastructure is presented in **Table 28.**

The potential for views within 10 km of the Project Area was considered and 7 viewpoints (with select visualisations) were chosen to represent the views of identified receptors including:

- Residents living on isolated rural properties in the farmland surrounding the Project Area (including houses, homesteads and cottages) with close to distant views toward landscapes identified as containing both mapped and unmapped scenic amenity areas.
- Agricultural workers in the countryside including farmers experiencing views from within the rural landscape, parts of which are acknowledged as having mapped scenic value and containing 'unmapped scenic amenity areas'.
- Recreational users of the landscape, including those visiting the Calliope Range State Forest, of which are specifically recognised for their natural landscape values recognised in the BSPS.
- Travellers using major and minor roads within the LVIA Study Area, including motorists on local roads, who may experience views toward the Project.
- Tourists passing through the LVIA Study Area by vehicle, who may experience views toward the Project.

Several of these viewpoints, shown on **Figure 7**, represent views across landscapes identified as having unmapped scenic amenity value (as described in **Section 5: Legislative context and standards**).

Table 28: Summary of visual assessment

Viewpoint name	Anticipated approximate distance to nearest Project infrastructure	Key visual receptors	Viewpoint Sensitivity	Magnitude of change	Potential Visual Impact	Significance of impact
Viewpoint 1: Northwesterly view from Dawson Highway at intersection of Rockford Road	Approximately 1.5 km north of this viewpoint	Travellers along the Dawson Highway, nearby isolated rural residents and rural workers	Medium	Medium	Moderate	**Not Significant**
Viewpoint 2a: Easterly view from Voewood Property gate – existing view (≈ 65° HFoV)	Approximately 145 m east of this viewpoint	Travellers along the Dawson Highway, nearby isolated rural residents (noting Voewood is an involved	Medium	Medium	Moderate	**Not Significant**

Viewpoint name	Anticipated approximate distance to nearest Project infrastructure	Key visual receptors	Viewpoint Sensitivity	Magnitude of change	Potential Visual Impact	Significance of impact
		property) and rural workers				
Viewpoint 2b: Westerly view from Dawson Highway near Voewood Property – existing view (≈ 170° HFoV)	Approximately 270 m west of this viewpoint	Travellers along the Dawson Highway, nearby isolated rural residents (noting Voewood is an involved property) and rural workers	Medium	Medium	Moderate	**Not Significant**
Viewpoint 3: Westerly view from Dawson Highway – existing view and visualisation (≈ 170° HFoV)	Approximately 175 m west of this viewpoint	Travellers along the Dawson Highway and rural workers	Medium	Medium	Moderate	**Not Significant**
Viewpoint 4: Southwesterly view from Duck Holes Road – existing view (≈ 170° HFoV and ≈ 85° HFoV)	Approximately 580 m east of this viewpoint	Travellers along the Duck Holes Road and rural workers	Low	Low	Minor	**Not Significant**
Viewpoint 5: Southerly view from Fig Tree Toad – existing view (≈ 150° HFoV)	Approximately 2.3 km south of this viewpoint	Travellers along the Fig Tree Road, nearby isolated rural residents and rural workers	Low	Negligible	Minor to Negligible	**Not Significant**
Viewpoint 4: Southwesterly view from Duck Holes Road – existing view (≈ 170° HFoV and ≈ 85° HFoV)	Approximately 5.4 km south-east of this viewpoint	Travellers along the Fig Tree Road, nearby isolated rural residents and rural workers	Low	Negligible	Minor to Negligible	**Not Significant**
Viewpoint 7: Easterly view from Dawson Highway – existing view (≈ 150° HFoV)	Approximately 7.5 km north-east of this viewpoint	Travellers along the Dawson Highway and rural workers	Medium	Negligible	Minor	**Not Significant**

No nationally, regionally or locally important scenic viewpoints or lookouts are located within the LVIA Study Area.

The visual assessment has explored the impact of the Project on views and visual receptor audiences present around the Project Area. It is noted that much of the LVIA Study Area is sparsely populated, and most rural settlements are located outside the LVIA Study Area. However, a number of smaller rural communities are located within the LVIA Study Area, including Mount Alma and Dumgree. The introduction of Project OHTL monopoles and ancillary infrastructure (including switchyard, fencing, and access tracks) within the Project Area will inevitably change views experienced by a small number of people living in, working in and visiting this area and the surrounding landscape.

Non-associated rural residential receptors are present within moderate to distant proximity (5 km to 10 km) of the Project Disturbance Footprint. Whilst these rural residential receptors may individually be sensitive to potential impacts associated with the Project, due to the low number of residential receptors affected these viewpoints typically have a low to medium sensitivity rating.

Motorists along the Dawson Highway account for a much higher number of potential receptors. Whilst this particular section of the Highway is not a designated tourist route, it does provide some open views to areas identified as containing regional and district scenic value. Furthermore, it is anticipated that minor to moderate and moderate impacts, which are not significant, may be experienced on the Dawson Highway where the Project is likely to be visible in views toward the areas of mapped scenic value within the GRCPS *Planning Scheme Overlay – Scenic Amenities Map*.

Views from elevated areas with open and extensive cleared land were identified as having higher sensitivity to potential impacts associated with the Project, such as views from Fig Tree Road and the western section of the Dawson Highway located on the Calliope Range. However, due to the distance of these viewpoints from Project infrastructure, it is anticipated that the Project would be barely perceptible and, at most, noticeable from these locations.

It is noted that all viewpoints contain distant views toward elevated and vegetated landscapes of district and regional significance scenic value as defined in the GRCPS *Planning Scheme Overlay – Scenic Amenities Map*, and similarly, all views contain landscape features identified by the GRCPS and BSPS as containing unmapped scenic value found in landscape elements and characteristics.

In summary, the visual impact assessment has concluded that there would be:

- **Moderate, Not Significant** impacts on passing travellers, isolated rural residents and rural workers along the Dawson Highway (Viewpoint 1, 2a, 2b and 3) who may experience open to somewhat filtered views, and very close to moderate distant views toward the Project.
- **Minor, Not Significant** impacts on passing travellers and rural workers on Duck Holes Road (Viewpoint 4) who may experience transient very close to moderately distant open and somewhat open views toward the Project and on rural workers along the Dawson Highway (Viewpoint 7) who may experience distant, somewhat open views toward the Project.
- **Minor to Negligible, Not Significant** impacts on passing travellers, isolated rural residents and rural workers north of the Calliope River (Viewpoint 5 from Duck Holes Road and Viewpoints 6 from Fig Tree Road) with moderately distant, partially filtered views (Viewpoint 5) and distant, elevated and open views (Viewpoint 6) toward the Project.

The greatest visual impact identified to occur due to the presence of the Project is anticipated to be ***Moderate*** and ***Not Significant*** but will only impact travellers along the Dawson Highway for a short duration and at very close distances to the Project Area. It is also anticipated that similar views will only be experienced by a small number of rural workers associated with neighbouring rural properties to the Project (noting that the Voewood property is associated with the Project). It has also been determined that, as there are no identified areas of scenic value within the Project Area, as illustrated in the GRCPS *Planning Scheme Overlay – Scenic Amenities Map*, the sensitivity of views toward the Project are low to medium and valued at a local level. Furthermore, these impacts are ***Not Significant*** as a limited number of receptors will experience localised impacts and will not fundamentally impact the character of the region as a whole.

No regionally or locally important scenic viewpoints would be significantly affected by the Project.

9. Construction and decommissioning assessment

9.1. Construction / installation impacts

The OHTL infrastructure will be located predominantly within LCA B2: *Rockfield Undulating and Grazed Uplands* and *LCA C1: West Mount Alma Lowland Rural Plains.* Based on the potential construction phase elements identified in **Section 4.1: Key sources of potential impact**, there are likely to be short term changes and effects to the landscape character, views and visual amenity during the construction of the Project. The timeframe of this is estimated to commence in March 2029 and be completed after approximately 15 months. Nearby towns anticipated to experience these indirect construction impacts during transportation of materials and infrastructure components to the site are Calliope and Biloela, which are outside the LVIA Study Area.

It is anticipated that parts of *LCA D1: Moura Forested Lowlands* and *LCA D3: Doubtful Forested Lowlands* associated with the Project's access tracks will likely also include short terms changes and effects to the landscape character. Views relating to changes within *LCA D3: Doubtful Forested Lowlands* will only be visible from the Dawson Highway and the local road of Duck Holes Road during construction.

Construction within the Project Area would include the presence of plant and equipment including:

- Earthmoving machinery and equipment for site preparation (such as excavators, compactors, rollers and graders)
- Pile-driving equipment (piling rigs)
- Specialised power line aerial stringing equipment
- Cable trenching and laying equipment
- Forklifts and cranes
- Machinery and equipment for substation and inverter infrastructure establishment
- Manual tools, including compressed air and electric tools
- Water trucks for dust suppression
- Diesel generator/s
- Heavy vehicles, utility vehicles and light vehicles.

Visibility of construction activities (including excavation, trenching, earthmoving, vegetation clearance and/or trimming installing the OHTL monopoles and cables) may be more visible within LCTs A, B and C. Due to the low lying, open and generally visible nature of LCT C, construction activities (including excavation, trenching, earthmoving, vegetation clearance and/or trimming, installing the OHTL monopoles and switchyard) are considered likely to be affect the perception of landscape character largely from elevated locations experienced by travellers along short sections of the Dawson Highway. It is also considered that construction activities are likely to temporarily disrupt the long open and distant views experienced from LCT A and LCT B.

Construction activities will be occurring within proximity to the existing 275 kV Wurdong to Calvale OHTL transmission line and easements, and will be less obtrusive than may be the case in a rural or natural landscape free from existing infrastructure elements.

Construction impacts are likely to be evident and experienced by receptors on roads in close proximity to the Project Area such as Fig Tree Road and the Dawson Highway, especially in instances where travellers may need to stop where the Project Area crosses the Dawson Highway. Views along roads in close proximity to the Project may experience a range of views depending on the section of the Project in close proximity including open views in areas with limited vegetation and filtered views through existing roadside vegetation.

Construction impacts are likely to be evident and experienced by nearby isolated rural receptors and rural workers (including those in proximity to Fig Tree Road and the Dawson Highway) due to the potential for views toward the Project from these locations as identified in **Section 8: Visual assessment**. It is anticipated that the construction activity on the Project Area would be less perceptible from other rural localities within the LVIA Study Area, such as Mount Alma and Dumgree. However, it is likely that the transient presence of construction workers, plant and the transport of Project materials and components will be noticeable. In particular, it is anticipated that construction activity around the Project Area would be visible to receptors on the Dawson Highway, as well as local access roads and Fig Tree Road.

It is likely that isolated rural dwellings within the Mount Alma locality closest to the Dawson Highway may experience transient views to construction activities in transit. Because the impacts of construction activities are temporary, it is considered that construction impacts are of lower potential significance than those impacts identified in **Sections 7.2: Landscape character assessment** and **8.2: Viewpoint assessment.**

9.2. Decommissioning impacts

If it is determined that the Project will be decommissioned, as described in **Section 4.1.3** it is considered impacts during the decommissioning phase will be temporary and similar to those during the construction phase. In the instance of decommissioning, it is anticipated that the Project's switchyard as a Powerlink network asset would remain operational. Over the longer term it is anticipated that rehabilitation would reinstate the landscape character, views and visual amenity largely to their former conditions. Consequently, it is expected that following decommissioning, the Project would result in a low or, eventually, even negligible impact on the appearance of the surface landscape.

9.3. Summary of construction, decommission and rehabilitation

In addition to the minimal long–term operational impacts of the OHTL and switchyard, other impacts include short–term impacts arising during construction, decommissioning, rehabilitation and cumulative impacts when viewed with other projects in the area.

Because construction impacts are temporary, they are considered to be of lower potential significance than the operational landscape and visual impacts identified.

Similarly, decommissioning impacts would also be temporary and would ultimately result in largely returning the landscape to its current rural and natural character (over time) and are therefore considered to be of lower significance than the operational landscape and visual impacts identified.

10. Mitigation measures

This section outlines the standard operating procedures and other factors considered to reduce and manage the impact of the Project infrastructure on the landscape, views and visual amenity. It is noted that the specific outcomes outlined in Part 8 of the *Scenic Amenity Overlay Code* in the GRCPS have been considered and, where relevant, addressed in **Table 29** below, specifically Section 8.2.11.2 that states:

'to ensure that development in areas of high scenic amenity is sited and designed to minimise adverse impacts on those scenic amenity values.'

The mitigation measures suggested below also respond to GRCPS 8.2.11 *Scenic Amenity Overlay Code* advice for minimising development impacts on landscapes identified to contain scenic value.

The mitigation framework seeks, as a first priority, to minimise adverse landscape and visual impacts through careful design and siting of infrastructure – it is noted that these factors have been explored iteratively and are therefore 'inherent' in the current design to the greatest extent possible.

Due to the height of the proposed OHTL monopoles, the proposition of providing and maintaining offsite planting to manage and screen all views of the Project is not practical. The mitigation framework focusses on managing the impact of construction activities, including post–construction site rehabilitation activities (e.g. rehabilitating temporary access tracks and storage areas). Tailored mitigation could also be considered in liaison with affected landowners, if required during the detailed design process. **Table 29** describes potential measures identified to mitigate impact.

Table 29: Inherent and potential additional mitigation measures

Proposed mitigation category	Description of measures to minimise landscape and visual impacts
Activities undertaken during design (inherent in existing design)	
Facilities siting and design – detailed design	• After-dark construction lighting will be controlled where consistent and safe construction practice to minimise effects on sensitive visual receptors within close proximity to the Project Area, such as worker or travellers along nearby road, where practicable. Lighting to be directed away from nearby isolated rural residential swellings and roads where possible. Lighting to be directed at the Project Area and relevant infrastructure only.
Monopole siting and detailed design	• Selection of monopole design by the Proponent with the aim of reducing impacts on visual amenity. • Micro–siting of monopole infrastructure will be designed and/or located to minimise tree and other vegetation removal where practicable and consistent with electrical safety legislation and standards. Vegetation clearance should be minimised to the greatest extent possible during construction to avoid creating more visibility to existing infrastructure and proposed components. In particular, attention should be given to the provisions for the protection of vegetation set out within *AS 4970-2025: Protection of Trees on Development Sites.* • To the greatest extent possible, undertake micro-siting of monopoles to minimise visual impact on public viewpoints. • The natural line of the landscape will be used wherever practicable to reduce visibility and assist integration of the Project infrastructure.
Landscape strategy	• No vegetation clearance will be permitted outside of the Project Disturbance Footprint.

Proposed mitigation category	Description of measures to minimise landscape and visual impacts
	• Retain existing vegetation within the Project Disturbance Footprint where possible, as well as existing vegetation along internal access tracks, to the greatest extent compatible with safety and operational issues. • Retain vegetation associated with creek lines within the Project Disturbance Footprint to the greatest extent practicable. In particular, attention should be given to the provisions for the protection of vegetation set out within *AS 4970-2025: Protection of Trees on Development Sites.* • Minimise vegetation clearance to the greatest extent possible, particularly associated with steeply sloping land. • Any new planting undertaken within the Project Disturbance Footprint should consist of mixed plants of local provenance including some fast-growing species, as appropriate to the identified landscape character and in accordance with the Project's relevant environmental management plans. • Retain and reuse existing entrances along the Dawson Highway, Duck Holes Road, and any access tracks within the Project Area where possible to prevent vegetation loss from new roads where possible. It is noted that there are a limited number of existing access tracks within the Project Area. • New proposed access tracks should avoid mature vegetation where possible. Where mature vegetation has been removed, replant relevant or similar species along roadside edges. • Minimise lighting to the greatest extent as required for safety and security reasons. Where required, select lighting fittings and equipment to minimise light spill.
Activities undertaken during construction, operation and decommissioning	
Construction management and rehabilitation	Develop a CEMP and Rehabilitation Management Plan that seeks to control landscape and visual impacts including measures to: • Locate construction compounds within visually unobtrusive location(s) where practicable. • Ensure maintenance of a tidy and contained construction compound. • Manage access tracks within the Project Area for dust and mud, to minimise visual impact of receptors travelling along the Dawson Highway. • Protect valued features adjacent to works (e.g. remnant vegetation, adjacent watercourses), using fencing or signage to keep construction workers within the Project Disturbance Footprint. • Where an unacceptable risk to soils and vegetation exists, avoid bulk earthworks during, and immediately following, heavy rainfall. This has potential to cause damage to existing and/or new vegetation that would mitigate visual impacts. • Instigate progressive rehabilitation of disturbed areas using suitably qualified and experienced contractors. • Where required, undertake any rehabilitation tree and shrub planting using local indigenous species with the primary objective of addressing erosion and sedimentation issues, but also to be consistent with the biodiversity values of the existing surrounding vegetation.

11. Residual impacts

Residual impacts relate to any changes in the overall level of significance for potential impacts after the implementation of mitigation. Although a number of reasonable mitigation measures are suggested in **Section 10: Mitigation measures** that may be applied to help reduce the extent of the Project's effect on landscape character and visual amenity, such mitigation measures are considered unlikely to alter the significance of the level of landscape impact assessed in **Section 7: Landscape assessment** or visual impact assessed in **Section 8: Visual assessment.**

Even the most thorough mitigation strategy has limited potential to screen views of OHTL monopoles at up to 50 m high even if this were to be a desirable outcome. Moreover, it is noted that existing transmission line infrastructure is already present in the landscape so the resulting landscape and visual impacts identified represent an incremental increase to the impacts of the existing OHTL infrastructure.

Subsequently, the residual landscape and visual impacts are considered to be as per those impacts identified and summarised in **7.3: Summary of landscape impact assessment** and **8.3: Summary of visual impact assessment**.

12. Response to planning requirements

The LVIA has addressed the desired policy outcomes specific to landscape and visual impacts identified in **Section 5: Legislative context and standards** and **Table 30** provides a summary of how the LVIA and Project Area has addressed these issues.

Table 30: LVIA response to identified policy issues

Gladstone Regional Council Planning Scheme – Our Place Our Plan 2025 Outcomes		
4.2.22 Rural		
Performance outcomes (PO)	**Acceptable outcomes (AO)**	**Project Outcome**
Built form (if involving building work)		
PO3 Buildings are designed and located so as not to adversely impact on the rural character and amenity of the locality.	**AO3.3** Buildings, other than a roadside stall, are setback a minimum of: (a) 10m from the front and side boundaries for allotments greater than 2 ha.	Complies with AO3.3 No permanent buildings are proposed as part of the Project. Refer **Figure 2a Project Area** and **Figure 2b Project Area – Detail** and **Section 4: Potential Project impacts.**
Amenity		
PO7 Development does not adversely impact on the amenity of the surrounding rural or residential land uses or rural landscape character.	**AO7** Plant and air–conditioning equipment, storage areas and processing activities are screened from view of the road or adjoining residential uses.	Complies with PO7 Impacts on landscape character and views have been identified in **Section 7** and **Section 8** with the greatest impact arising from the Project being of up to Moderate significance (i.e. Not Significant). Mitigation measures, including maintaining screening vegetation, are outlined within **Section 10: Mitigation measures**
Land use		
PO10 Development**:** (a) is consistent with the rural character of the locality (b) supports the primary rural function of the zone; and (c) protects rural, natural and scenic values of the locality.	No acceptable outcome is nominated.	Complies with PO10 No significant impacts on landscape character have been identified as outlined in **Section 7: Landscape assessment**
Design and amenity		
PO14 Development does not unduly impact on the existing amenity and character of the	No acceptable outcome is nominated.	Complies with PO14 No significant impacts were identified on visual amenity or character within the LVIA Study Area as outlined in **Section 8: Visual assessment**. Refer to

locality having regard to: (a) the scale, siting and design of buildings and structures (b) visibility from roads and other public view points, screening vegetation and landscaping (c) the natural landform and avoidance of visual scarring		**Section 4: Potential Project impacts** for specific buildings and structures and **Figure 2a Project Area** and **Figure 2b Project Area – Detail** for the general Project layout. No scenic lookouts were identified within the LVIA Study Area. Refer to Figure 7: **Key Visual Receptors and Tourist Drives** for public attractions.
8.2 Overlay codes **8.2.11 Scenic Amenity**		
Performance outcomes (PO)	**Acceptable outcomes (AO)**	**Project Outcome**
Siting of development		
PO1 Any buildings or structures are sited to minimise the impact on the natural landscape and topographical features.	**AO1** Any buildings or structures are not located on ridgelines.	Complies with AO1 There are no buildings as part of the Project, and any Project structures are no located on any ridgelines as shown in **Figure 3 LVIA Study Area.**
PO2 Development is visually integrated with the landscape elements to maintain or enhance the landscape and scenic amenity values.	No acceptable outcome is nominated. Note—The scenic amenity values of and visible from the land must be assessed and confirmed in a Scenic Amenity Assessment report prepared by a suitably qualified and experienced person. The report is to address strategies and design responses in order to demonstrate compliance with this performance criterion.	Complies with PO2 A Scenic Amenity Assessment report (this LVIA) prepared by a suitably qualified and experienced person has been prepared as required by this policy. The scenic amenity values and landscape character values have been assessed within this report, refer to **Section 7: Landscape assessment** and **Section 8: Visual assessment**. Mitigation measures to further reduce impacts have been addressed in **Section 10: Mitigation measures**.
PO3 The building design: a) minimises visual impact and prevents buildings from dominating the natural landscape b) is compatible with the natural characteristics	No acceptable outcome is nominated.	Complies with PO3 Existing large-scale electricity transmission infrastructure exists within the LVIA Study Area. The Project is located within a flat area of the landscape. While the OHTL monopoles are proposed to be up to 50 m tall and visible at times within the LVIA Study Area, they would not obscure the sky line. Refer **Section 4 Potential Project impacts** for more details.

of the area, and c) avoids skyline intrusion.		Mitigation measures relevant to building design are identified in **Section 10: Mitigation measures.**
P04 Building colours and materials blend in with the natural landscape to soften the visual impact of buildings.	**AO4.1** Buildings utilize external finishes and colours that are of a low to moderate Light Reflectance Value (50% LRV or lower). **AO4.2** Development includes variations in wall and roof lines so as to minimise the appearance of building bulk. No external face of the building in a single continuous plane has a surface area of more than 100 square metres.	Complies with PO4 There are no permanent buildings proposed as part of the Project. The colour of temporary buildings during construction are not considered due to their temporary nature. Project material choices of steel and/or concrete ensures that the visibility of the Project blends somewhat into the natural landscape. Refer to **Section 10: Mitigation measures.**
Visibility of development		
PO7 Development visible from identified significant viewer locations does not adversely impact upon significant views and landscape and scenic amenity values.	No acceptable outcome is nominated.	Complies with PO7 No adverse impact on significant views and/or viewer locations or landscape and scenic amenity values have been identified, as outlined in **7.2: Landscape character assessment** and **Section 8.3 Summary of visual impact assessment**.
Callide Infrastructure Corridor State Development Area: Development Scheme		
Objective		**Project Outcome**
(2) Ensures the integrity and functionality of the CICSDA is maintained and protected from land uses and activities that may be incompatible with, or adversely affect, the continued use of the State development area for co-located underground pipelines (principally for the transportation of gas) of regional, state and national significance.		Please refer to Planning Assessment Report for assessment against this benchmark.
(3) Protection of the CICSDA to ensure the land resource is effectively utilised and uses are appropriately sited such that infrastructure, and distances between infrastructure, does not consume land unnecessarily or compromise future use and ensures the long-term viability of infrastructure within the CICSDA.		Please refer to Planning Assessment Report for assessment against this benchmark.
(4) Ensure the impacts of land use minimises operational impediments on existing infrastructure and surrounding uses and provides orderly development of infrastructure within the CICSDA.		Please refer to Planning Assessment Report for assessment against this benchmark.
(5) Ensures that locations for infrastructure, other than gas transportation infrastructure, to intersect the CICSDA are minimised and rationalised.		Complies with (5) Refer to **Section 5.5: Summary of relevant legislative context and standards** The siting of 2 OHTL monopoles, out of the Project's total of approximately 45

	OHTL monopoles, in the CICSDA is necessary to cross the CICSDA and allow the alignment to connect the proposed Wooderson Solar Farm to the proposed Calvale to Calliope River Transmission Line Reinforcement Project. Siting of OHTL monopoles within the CICSDA is not uncommon and is consistent with the existing landscape character. It is noted that an existing OHTL tower as part of the 275 kV Wurdong to Calvale transmission line located 2 km southwest of the Project Area is located within the CICSDA. Similar efforts to microsite on the rural plain the Project's 2 OHTL monopoles as related to this existing towers conditions will be observed.
(6) Ensure the physical characteristics of land are considered in determining the suitability and location of land uses.	Complies with (6) Located on the lowland rural plain, a suitable location for the Project. Refer to **Section 5.5: Summary of relevant legislative context and standards** and **Section 7.2.2: Landscape Character Type C.** The physical character of the land within the CICSDA is a lowland rural plain, as identified in the landscape character assessment in Section 7.2.2: Landscape Character Type C, which has a low landscape character and magnitude of change rating. The physical characteristics of the lowland rural plain is broadly rural, generally flat to gently sloping, has experienced significant vegetation clearing and limited regrowth, and has a low degree of perceived naturalness due to grazing activities that occur on this land. Because of this, scenic values exist within this landscape only in areas of remnant vegetation usually adjacent to major watercourses. As such, the landscape character has the capacity to accommodate the change.
Scheme 1 – Consistent Use table	**Project Outcome**
Column C: Uses that are considered *likely to compromise* the objectives of the CICSDA: All other uses not specified in Columns A and B.	Please refer to Planning Assessment Report for assessment against this benchmark.

13. Conclusions and recommendations

The purpose of this LVIA is to support the lodgement of 2 separate development applications for a Material Change of Use (major electricity infrastructure) to GRC for the section of the Project Area outside the CICSDA, and to the Queensland Government Office of the Coordinator General for the section of the Project Area within the CICSDA.

It is noted that the Project supports the connection of the Wooderson Solar Farm to the electricity grid. The Solar Farm is a part of a separate DA and is therefore not considered within the LVIA.

This report has been prepared to respond to the requirements of the GRCPS, particularly the recommendations within the *Scenic Amenity Overlay Code,* and the CICSDA Development Scheme. Areas of regional and district scenic value have been identified within the LVIA Study Area and considered within the assessment, as well as landscape features recognised for their scenic value as described by the GRCPS. For completeness, because visual impacts can cross LGA boundaries the relevant policies of the BSPS have been considered, although the Project will not be assessed against that planning scheme. The LVIA has used a range of desktop-based and field-based analysis techniques to assess the impact of the Project on landscape and visual amenity values.

The capacity of a landscape to accommodate additional OHTL infrastructure depends on the degree of impact the development will have on the existing character of the landscape, and the extent to which this impact can be modified and reduced by design especially in regard to the degree of vegetation clearance within the associated Project Disturbance Footprint.

Transmission lines are a common feature of the rural and urban landscape. However, *all* transmission lines will unavoidably result in some changes to the landscape and visual resource (character and views) due to their size, prominence and/or location. The proposed monopoles associated with the OHTL are up to 50 m tall, and are likely to be visible from some locations, primarily while travelling along the Dawson Highway and particularly where the Project crosses the highway The Project will introduce additional OHTL and ancillary infrastructure into the landscape alongside 2 existing OHTL located within the LVIA Study Area, which will incrementally increase the presence of electrical infrastructure within the local landscape.

Further details to address the CICSDA Development Scheme Column C consistent use specification are considered outside of this LVIA. In response to the CICSDA Development Scheme's objective that the infrastructure is minimised and rationalised, the alignment of the Project is necessary to connect the proposed Wooderson Solar Farm to the proposed Powerlink Calvale to Calliope River Transmission Line Reinforcement Project, and that OHTL towers are also currently located within the CICSDA. The physical characteristics of the lowland rural plain within CICSDA was also considered in determining the suitability and location of land uses, and this land was found to have a low level of scenic and landscape value with the capacity to accommodate the change.

Landscapes within the LVIA Study Area considered to be of regional and district scenic value are typically associated with the Calliope Range. The Project does not directly impact any areas within the GRCPS *Planning Scheme Overlay - Scenic Amenity Map.* Where impacts on the identified areas containing scenic amenity values may occur outside of the Project Area, these impacts are anticipated to be indirect and therefore not significant.

The Landscape Character Assessment has defined 5 LCTs across LVIA Study Area. Three of these 5 LCTs are directly impacted by the proposed Project infrastructure. The assessment of impacts upon landscape character within the LVIA Study Area has concluded that there would be no significant impacts with the assessment summarised as follows:

- Direct **Minor**, **Not Significant** impacts on LCT B (LCA B2: *Rockfield Undulating and Grazed Uplands*) due to the noticeable change the Project is anticipated to have on a very localised part of this LCT. The Project is not included within areas of unmapped scenic amenity value.
- Direct **Minor**, **Not Significant** impacts on LCT C (LCA C2: *North Mount Alma Lowland Rural Plains*) due to the noticeable impact of the proposed OHTL infrastructure within a rural area that features existing OHTL infrastructure. The Project will be directly noticeable as it crosses the Dawson Highway, but aside from this, the Project may be visible within the rural landscape in cleared areas and in relation to the existing grazed lowlands. The Project Area is not included within areas of unmapped scenic amenity value.
- Direct **Minor** , **Not Significant** impacts on LCT D (LCA D1: *Moura Forested Lowlands* and *LCA D3 Doubtful Forested Lowlands*) due to barely noticeable impact with access tracks and general site disturbance proposed within a small part of the rural area. The Project may be visible within the rural landscape in cleared areas and in relation to the existing forested lowlands. The Project Area is not included within areas of unmapped scenic amenity value.
- No significant impacts have been identified on LCT A or E.

Impacts relating to LCT B, LCT C and LCT D are identified as **Not Significant** as they will only occur in a localised area and will not fundamentally change the character of these LCTs at a large scale or regional level.

Areas in close proximity to the Project Area are generally sparsely settled. Therefore, most identified representative viewpoints around the Project Area are considered to be of low to medium sensitivity, due to the low number of rural residents with prolonged viewing opportunities toward the Project (albeit noting that individual residents will be highly interested in changes to the view). Whilst motorists along the Dawson Highway account for much higher numbers of receptors, these receptors typically have a passing interest and views are transient.

It is noted that all viewpoints contain distant views toward elevated and vegetated landscapes of district and regional significance scenic value as defined in the GRCPS *Planning Scheme Overlay – Scenic Amenities Map*, and similarly, all views contain landscape features identified by the GRCPS and BSPS as containing unmapped scenic value found in landscape elements and characteristics.

The visual impact assessment has concluded that there would be:

- **Moderate, Not Significant** impacts on passing travellers, isolated rural residents and rural workers along the Dawson Highway (Viewpoint 1, 2a, 2b and 3) who may experience open to somewhat filtered views, and very close to moderate distant views toward the Project.
- **Minor, Not Significant** impacts on passing travellers and rural workers on Duck Holes Road (Viewpoint 4) who may experience transient very close to moderately distant open and somewhat open views toward the Project and on passing travellers and rural workers along the Dawson Highway (Viewpoint 7) who may experience distant, somewhat open views toward the Project.
- **Minor to Negligible, Not Significant** impacts on passing travellers, isolated rural residents and rural workers north of the Calliope River (Viewpoint 5 from Duck Holes Road and Viewpoints 6 from Fig Tree Road) with moderately distant, partially filtered views (Viewpoint 5) and distant, elevated and open views (Viewpoint 6) toward the Project.

The greatest visual impact identified to occur due to the presence of the Project is anticipated to be ***Moderate*** and ***Not Significant*** but will only impact travellers along the Dawson Highway for a short duration and at close and very close distances to the Project. It is also anticipated that similar views will only be experienced by a small number of nearby isolated rural residential receptors and rural workers associated with neighbouring rural properties to the Project.

The key issues identified are the changes in the character of the landscape within the Project Area boundaries, visual impacts on nearby isolated rural receptors, road users of the Dawson Highway, other local roads nearest to the Project. While visual impacts were considered for rural properties within all representative viewpoints, four viewpoints (Viewpoints 1, 2a, 2b, 5, 6) indicated varying

degrees of minimal impact. It is acknowledged that screening views of OHTL monopoles at up to 50 m tall is not practicable, even if this were to be a desirable outcome. However, opportunities to mitigate and enhance the integration of the OHTL infrastructure into the landscape have been described.

The operational phase of the Project is considered to have the greatest visual impact due to the presence of the OHTL infrastructure within the landscape. Both the construction and decommissioning phases will be temporary over the approved lifetime of the Project. During the decommissioning phase, it is considered that the landscape of the Project Area will largely return to its current rural and natural character.

Mitigation measures are recommended to mitigate close and very close distance impacts experienced along the Dawson Highway. Whilst recommending that existing vegetation is retained both within and along the perimeter of the Project Area, associated areas and particularly in proximity to the Project as it crosses the Dawson Highway as a mitigation measure, partial screening views at a very close and close distance may not always be possible. It is also acknowledged that mitigation outside the Project Area is not always possible, especially where there are elevated, unobscured and open views at a distance toward the Project. Ongoing consultation with rural residents who may have the potential to be impacted by the Project should be sought, where possible, to avoid or further reduce the potential impact on views and landscapes identified as containing district, regional or local value.

In conclusion, this assessment has identified ***No Significant*** impacts, the highest impacts being a ***Moderate*** visual impact which relates to the very close and close views of the Project from the Dawson Highway (Viewpoints 1, 2a, 2b and 3). The Project will add additional OHTL monopoles and ancillary infrastructure into a relatively undeveloped landscape, considered to contain landscape features and characteristics of value to rural character and experienced by a moderate number of transient receptors.

With regards to landscape impacts, including the landscapes identified in the GRCPS *Planning Scheme Overlay – Scenic Amenity Map,* the assessment considers that the Project will not result in any significant impacts on the landscape character or general visual amenity of the broader LVIA Study Area, and therefore limiting the significance of the landscape and visual impact of the Project on the region as a whole.

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APPENDIX 1: LVIA PLANS

The following plans support the Landscape and Visual Impact Assessment (prepared by AECOM*):

Figure 1 Regional Context

Figure 2 Project Area

Figure 3 Project Area – Detail

Figure 4 LVIA Study Area

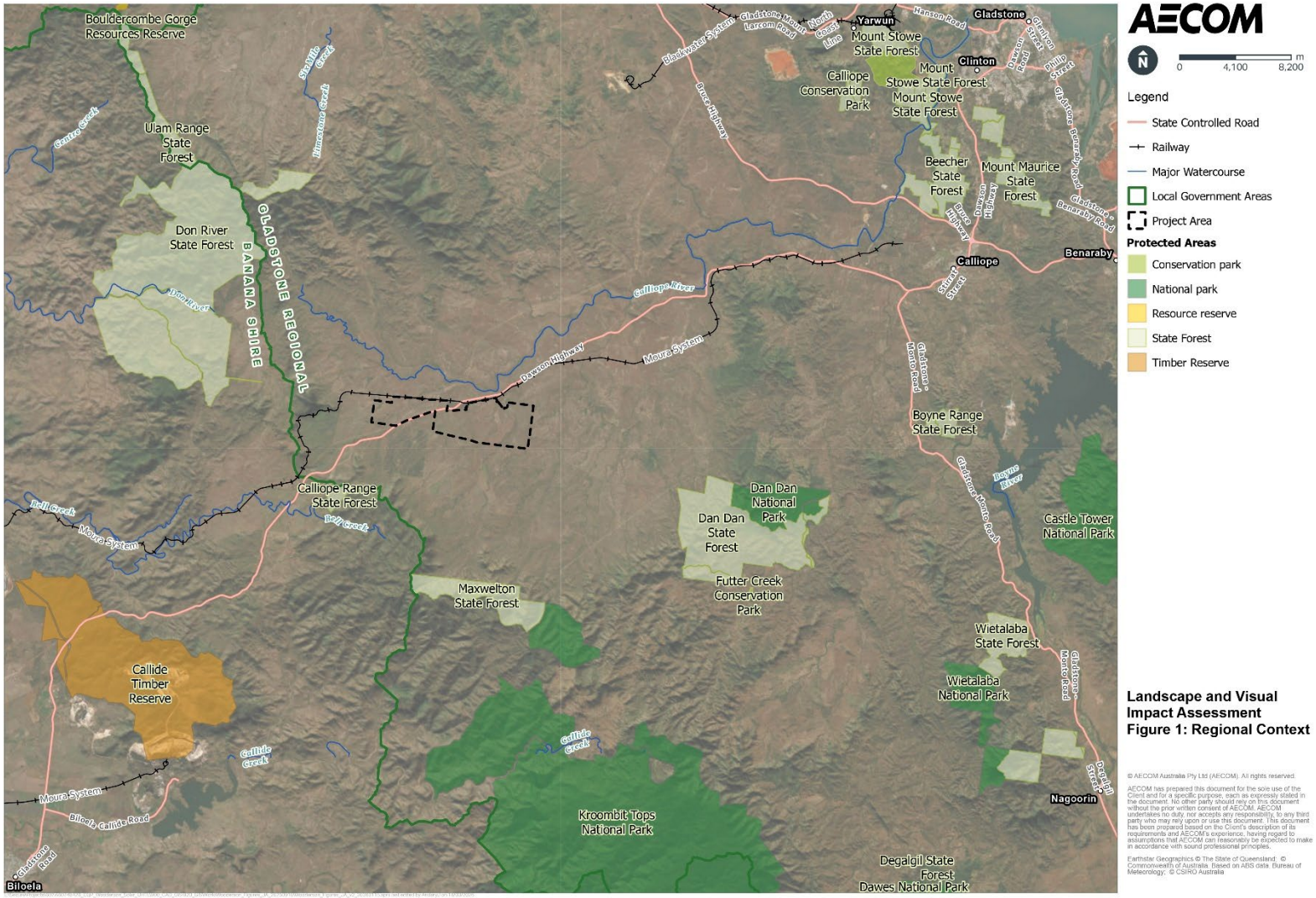
Figure 5 Landscape Planning Designations

Planning Scheme Overlay Map (Authored by Gladstone Regional Council)*

Figure 6 Landform and Hydrology Context

Figure 7 Landscape Character Types

Figure 8 Key Visual Receptors and Tourist Drives

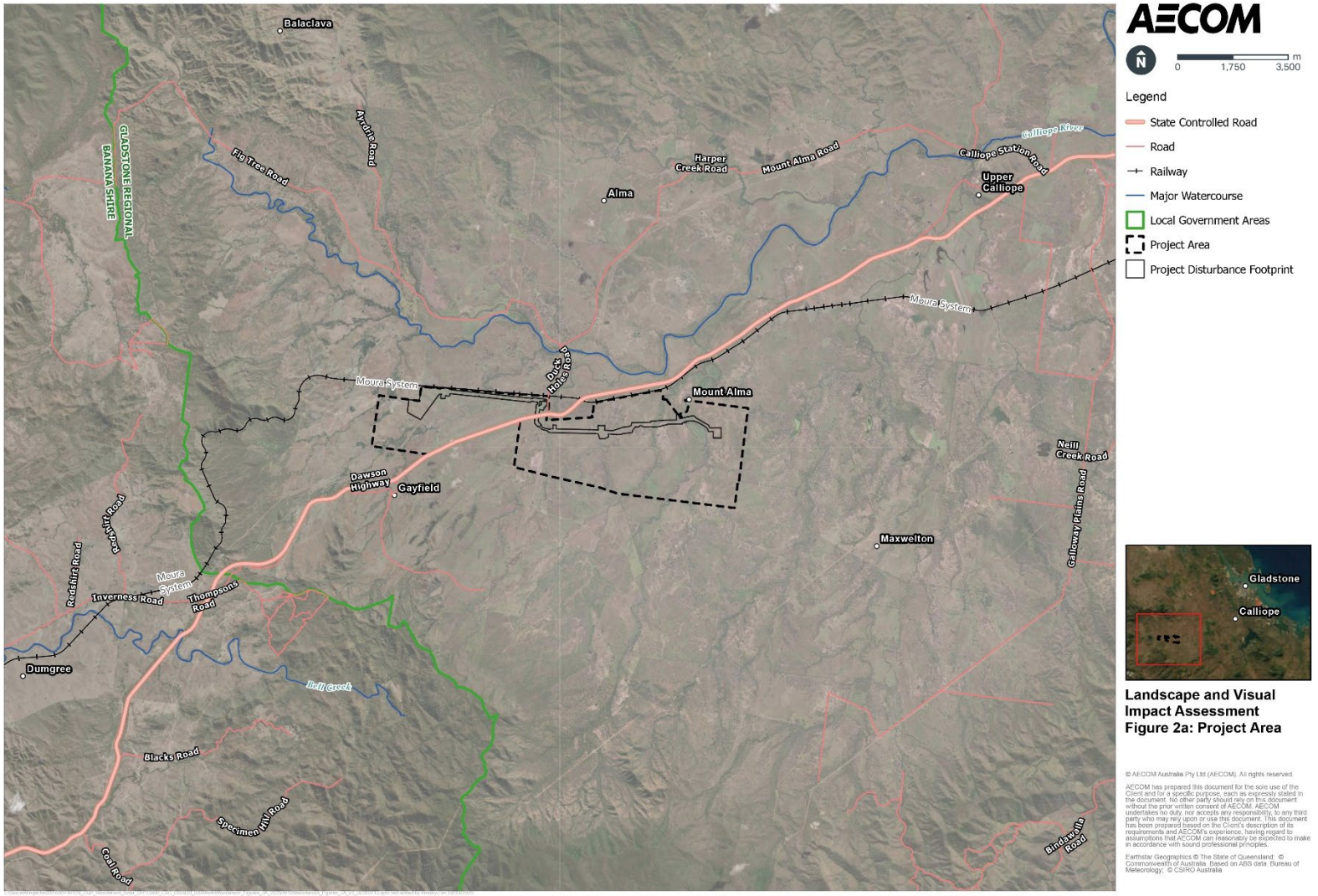


Landscape and Visual Impact Assessment
Figure 1: Regional Context

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Legend

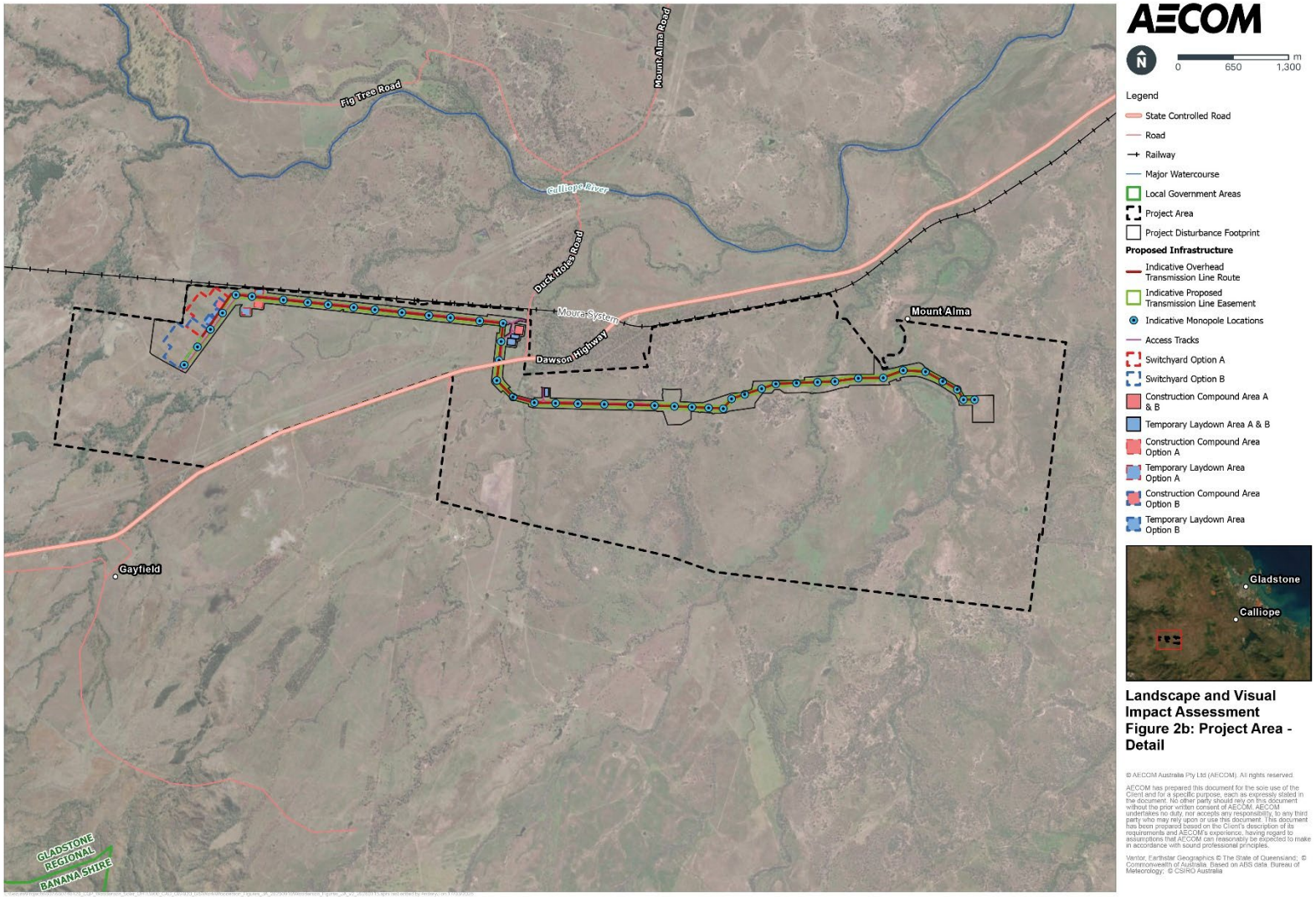
- State Controlled Road
- Road
- Railway
- Major Watercourse
- Local Government Areas
- Project Area
- Project Disturbance Footprint

Landscape and Visual Impact Assessment
Figure 2a: Project Area

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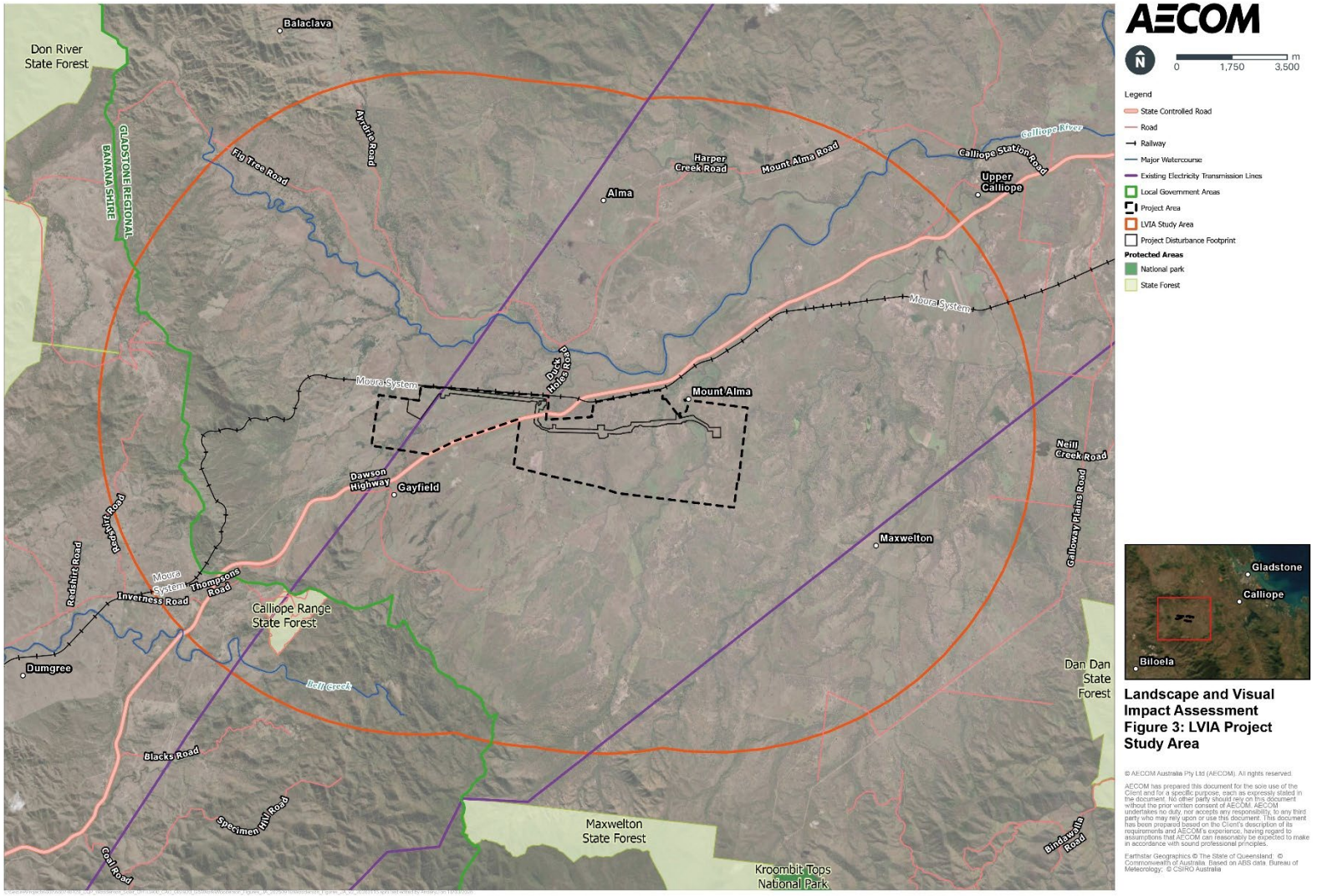
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Landscape and Visual Impact Assessment
Figure 3: LVIA Project Study Area

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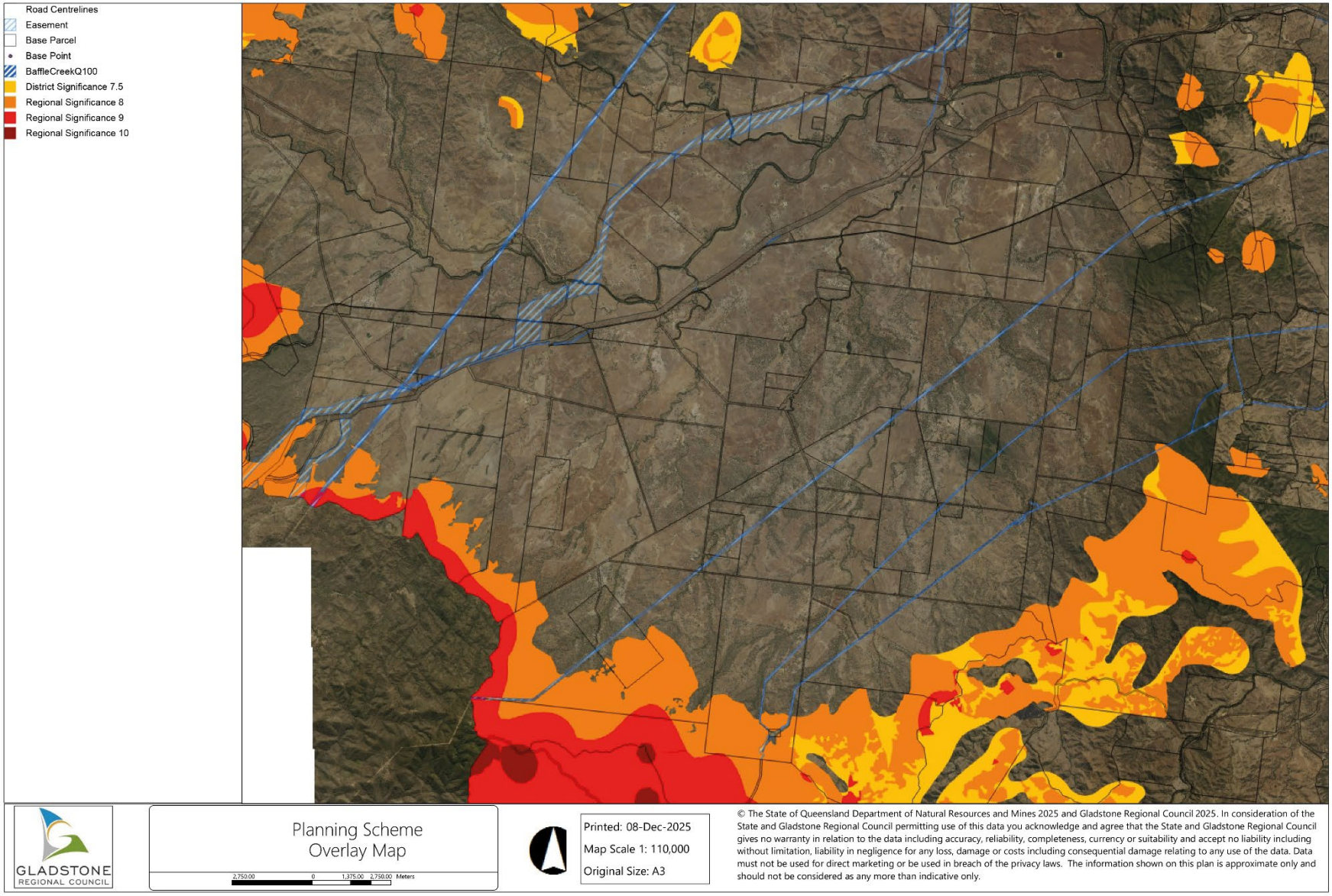


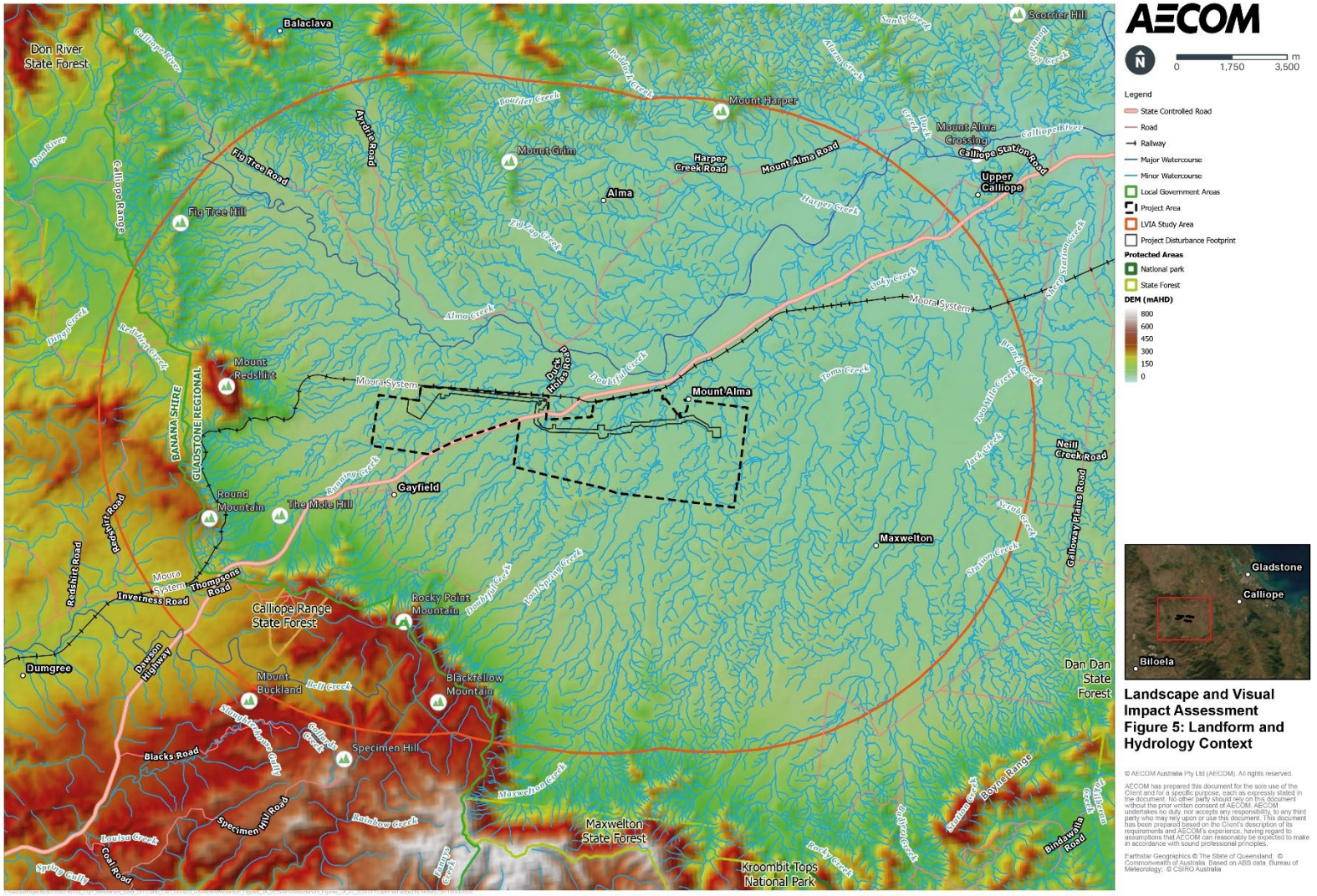
Landscape and Visual Impact Assessment
Figure 4: Planning Scheme Zoning

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Road Centrelines
Easement
Base Parcel
Base Point
BaffleCreekQ100
District Significance 7.5
Regional Significance 8
Regional Significance 9
Regional Significance 10
GLADSTONE
REGIONAL COUNCIL
Planning Scheme
Overlay Map
2,750.00 0 1,375.00 2,750.00 Meters
Printed: 08-Dec-2025
Map Scale 1: 110,000
Original Size: A3
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Legend

- State Controlled Road
- Road
- Railway
- Major Watercourse
- Minor Watercourse
- Local Government Areas
- Project Area
- LVIA Study Area
- Project Disturbance Footprint

Protected Areas

- National park
- State Forest

DEM (mAHD)

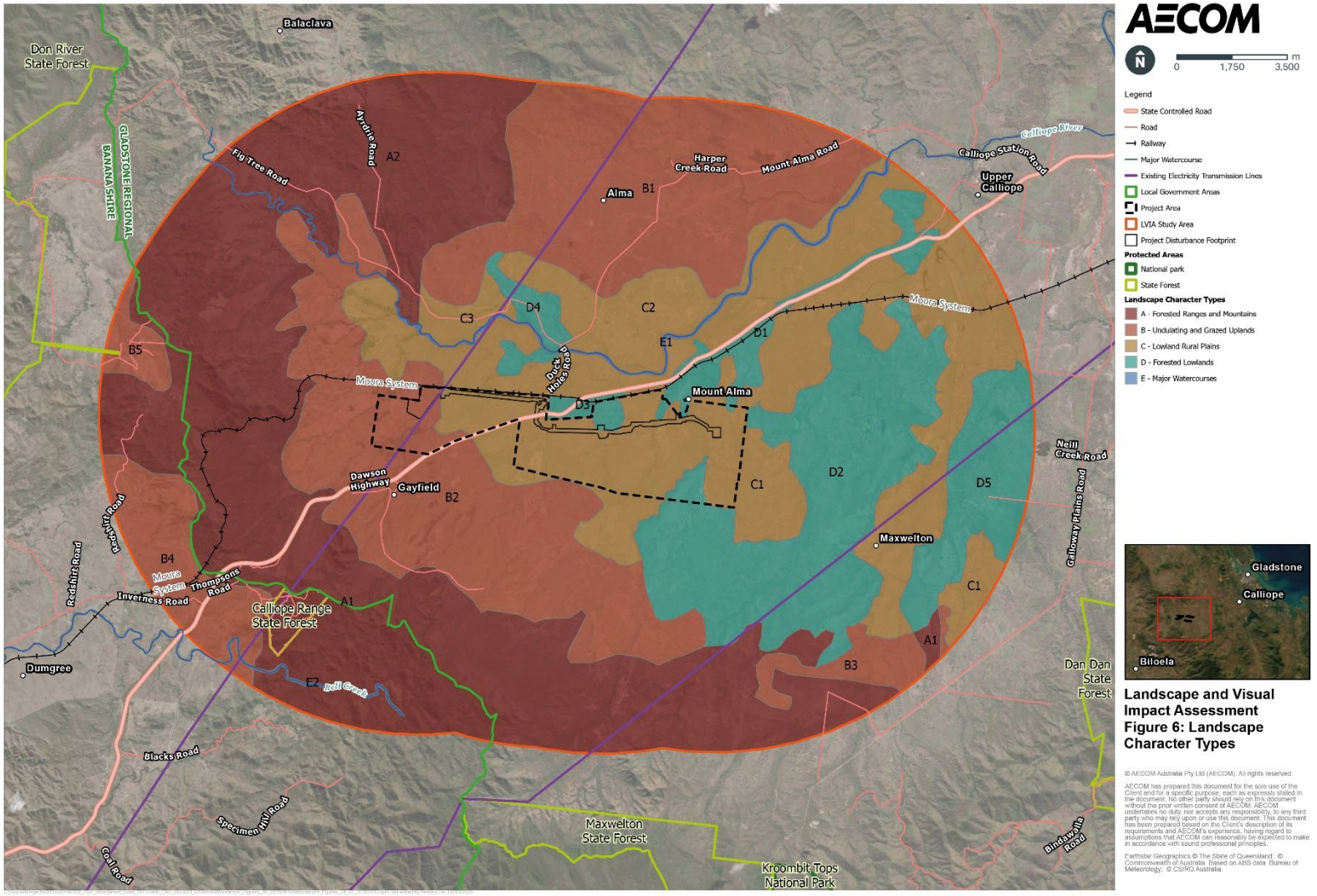
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600
450
300
150
0

Landscape and Visual Impact Assessment
Figure 5: Landform and Hydrology Context

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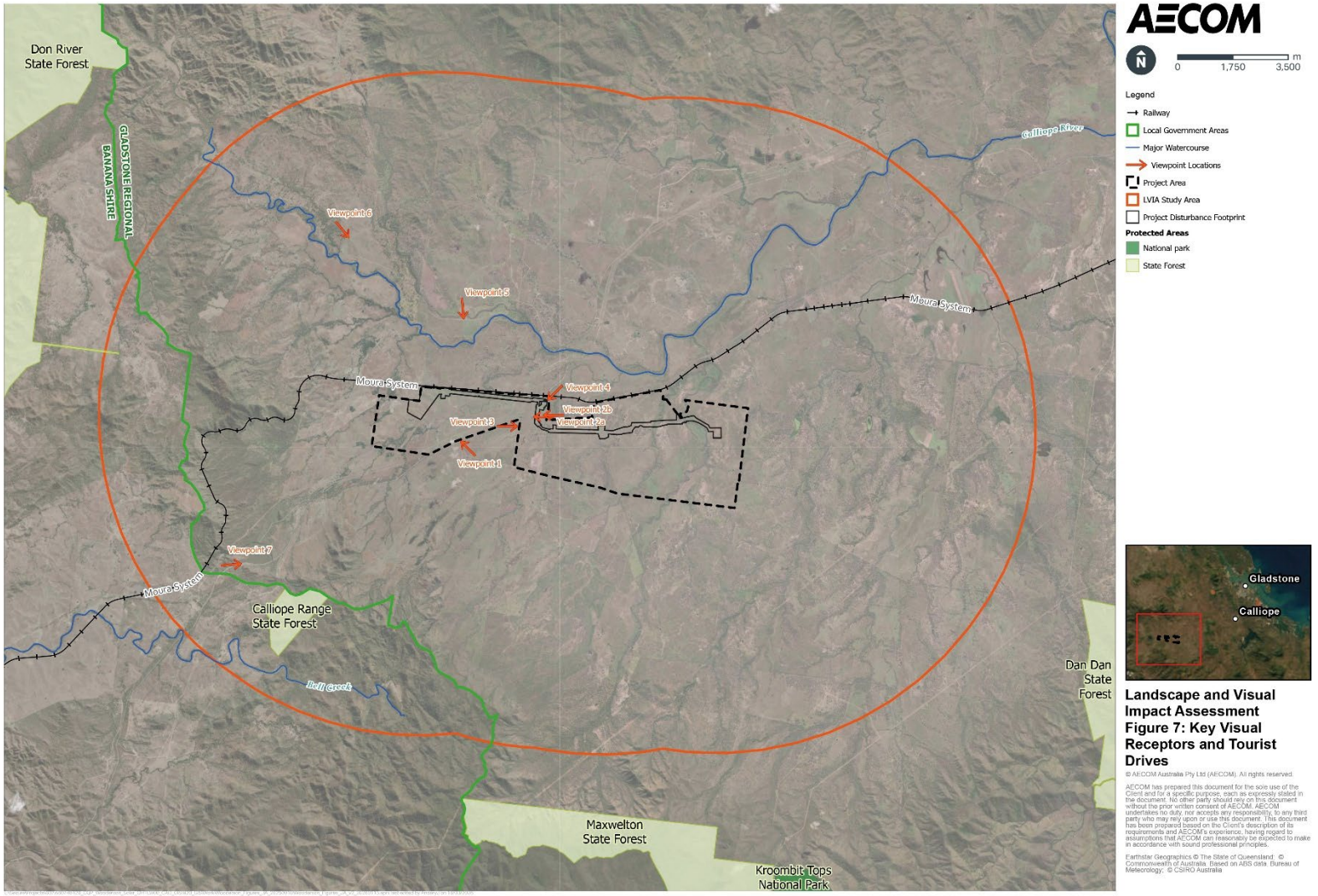
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APPENDIX 2: VIEWPOINTS AND VISUALISATIONS

The following viewpoint figures and visualisations have been prepared based on field photography by LatStudios:

Figure 9 Viewpoint 1: Northwesterly view from Dawson Highway at intersection of Rockford Road – existing view and visualisation (≈ 115° HFoV)

Figure 10 Viewpoint 1: Northerly view from Dawson Highway at intersection of Rockford Road – existing view and visualisation (≈ 75° HFoV)

Figure 11 Viewpoint 2a: Easterly view from Voewood Property gate – existing view (≈ 65° HFoV)

Figure 12 Viewpoint 2b: Westerly view from Dawson Highway near Voewood Property – existing view (≈ 170° HFoV)

Figure 13 Viewpoint 3: Westerly view from Dawson Highway – existing view and visualisation (≈ 170° HFoV)

Figure 14 Viewpoint 3: Westerly view from Dawson Highway – existing view and visualisation (no. 1, 2 and 3 ≈ 75° HFoV) 1 of 3

Figure 15 Viewpoint 3: Westerly view from Dawson Highway – existing view and visualisation (no. 1, 2 and 3 ≈ 75° HFoV) 2 of 3

Figure 16 Viewpoint 3: Westerly view from Dawson Highway – existing view and visualisation (no. 1, 2 and 3 ≈ 75° HFoV) 3 of 3

Figure 17 Viewpoint 4: Southwesterly view from Duck Holes Road – existing view (≈ 170° HFoV and ≈ 85° HFoV)

Figure 18 Viewpoint 5: Southerly view from Fig Tree Toad – existing view (≈ 150° HFoV)

Figure 19 Viewpoint 6: Southeasterly view from Fig Tree Road – existing view (≈ 115° HFoV)

Figure 20 Viewpoint 7: Easterly view from Dawson Highway – existing view (≈ 150° HFoV)

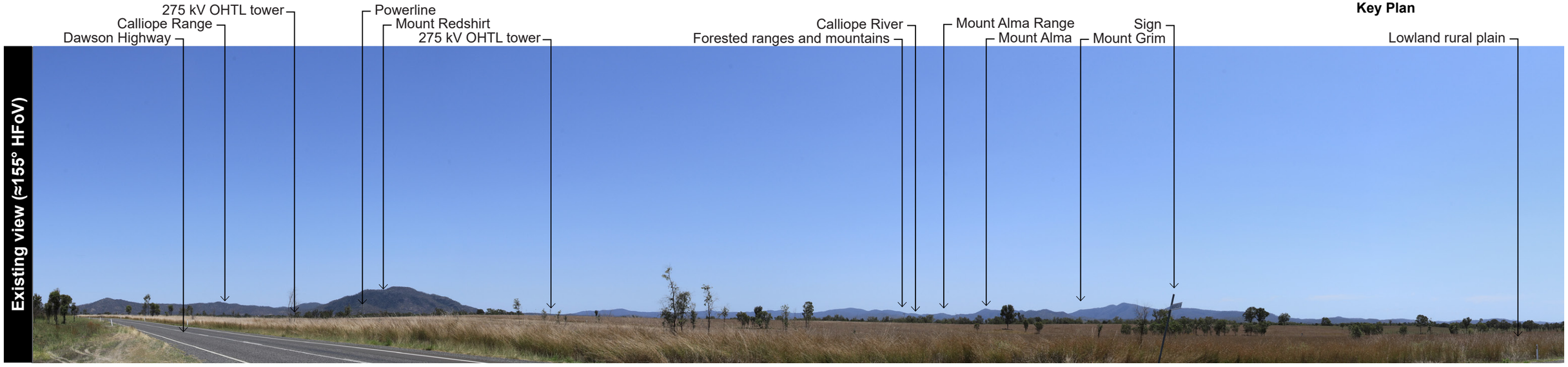
Figure 8: Viewpoint 1: Northwesterly view from Dawson Highway at intersection of Rockford Road - existing view and visualisation (≈ 155° HFoV)

GPS: 24°6'4.758" S 150°48'14.802" E **Elevation: 75.0 m** **Closest point to Project: Approx. 1.5 km from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 155°



Key Plan





**Artists impression only*

Figure 9: Viewpoint 1: Northerly view from Dawson Highway at intersection of Rockford Road - existing view and visualisation (≈ 75° HFoV)

GPS: 24°6'4.758" S 150°48'14.802" E **Elevation: 75.0 m** **Closest point to Project: Approx. 1.5 km from switching station**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 75°



Key Plan

Existing view - View 1 (≈75° HFoV)



Approximate Extent of Project

Visualisation - View 1 (≈ 75° HFoV)



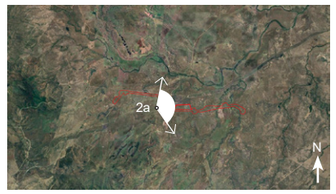
**Artists impression only*

Approximate Extent of Project

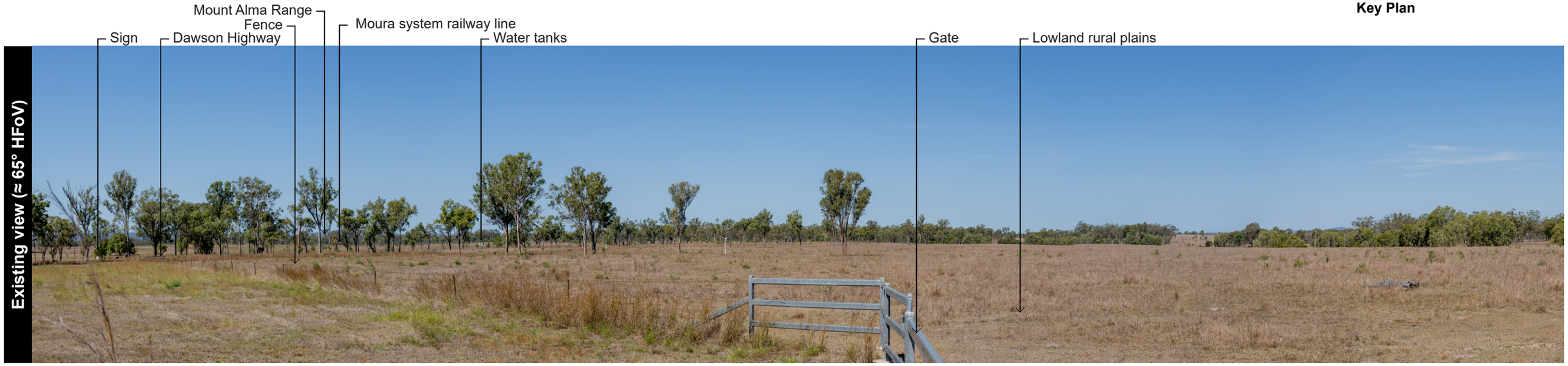
Figure 10: Viewpoint 2a: Easterly view from Voewood Property gate - existing view (≈ 65° HFoV)

GPS: 24°5’51.084” S 150°49’20.376” E **Elevation: 81.2 m** **Closest point to Project: Approx. 580 m from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 65°



Key Plan



Approximate Extent of Project

Note: Please note that no visualisation has been provided for this viewpoint, as discussed in the Wooderson OHTL Landscape and Visual Impact Assessment - Technical Report.

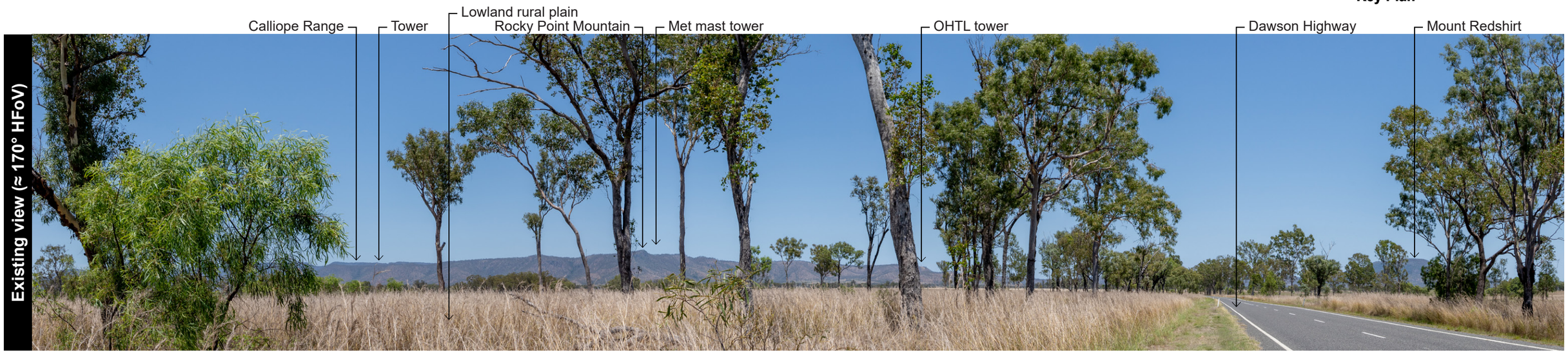
Figure 11: Viewpoint 2b: Westerly view from Dawson Highway near Voewood Property - existing view (≈ 170° HFoV)

GPS: 24°5'41.532" S 150°49'36.618" E **Elevation: 66.1 m** **Closest point to Project: 145 m from OHTL tower (out of view)**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 170°



Key Plan



Approximate Extent of Project →

Note: Please note that no visualisation has been provided for this viewpoint, as discussed in the Wooderson OHTL Landscape and Visual Impact Assessment - Technical Report.

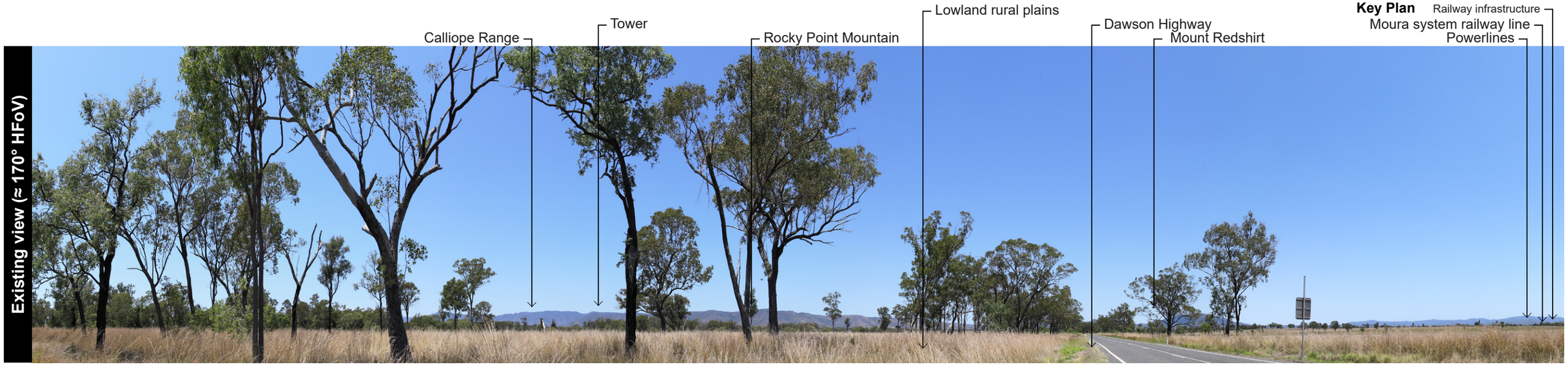
Figure 12: Viewpoint 3: Westerly view from Dawson Highway - existing view and visualisation (≈ 170° HFoV)

GPS: 24°5’39.78” S 150°49’47.478” E **Elevation: 66.4 m** **Closest point to Project: Approx. 175 m from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 170°



Key Plan Railway infrastructure



Approximate Extent of Project



Approximate Extent of Project

**Artists impression only*

Figure 13: Viewpoint 3: Westerly view from Dawson Highway - existing view and visualisation (no. 1, 2 and 3 ≈ 75° HFoV) 1 of 3

GPS: 24°5'39.78" S 150°49'47.478" E **Elevation: 66.4 m** **Closest point to Project: Approx. 175 m from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 170°

Existing view - View 1 (≈ 75° HFoV)



Joins to extent of 75° view #2

Approximate Extent of Project

Visualisation - View 1 (≈ 75° HFoV)



Joins to extent of 75° view #2

**Artists impression only*

Approximate Extent of Project

Figure 13: Viewpoint 3: Westerly view from Dawson Highway - existing view and visualisation (no. 1, 2 and 3 ≈ 75° HFoV) 2 of 3

GPS: 24°5'39.78" S 150°49'47.478" E **Elevation: 66.4 m** **Closest point to Project: Approx. 175 m from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 75°

Joins to extent of 75° view #1

Existing view - View 2 (≈ 75° HFoV)



Joins to extent of 75° view #3

Approximate Extent of Project

Joins to extent of 75° view #1

Visualisation - View 2 (≈ 75° HFoV)



Joins to extent of 75° view #3

**Artists impression only*

Approximate Extent of Project

Figure 13: Viewpoint 3: Westerly view from Dawson Highway - existing view and visualisation (no. 1, 2 and 3 ≈ 75° HFoV) 3 of 3

GPS: 24°5'39.78" S 150°49'47.478" E **Elevation: 66.4 m** **Closest point to Project: Approx. 175 m from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 24mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 75°

Joins to extent of 75° view #2

Existing view - View 3 (≈ 75° HFoV)



Approximate Extent of Project

Joins to extent of 75° view #2

Visualisation - View 3 (≈ 75° HFoV)



**Artists impression only*

Approximate Extent of Project

Figure 14: Viewpoint 4: Southwesterly view from Duck Holes Road - existing view (≈ 170° HFoV and ≈ 85° HFoV)

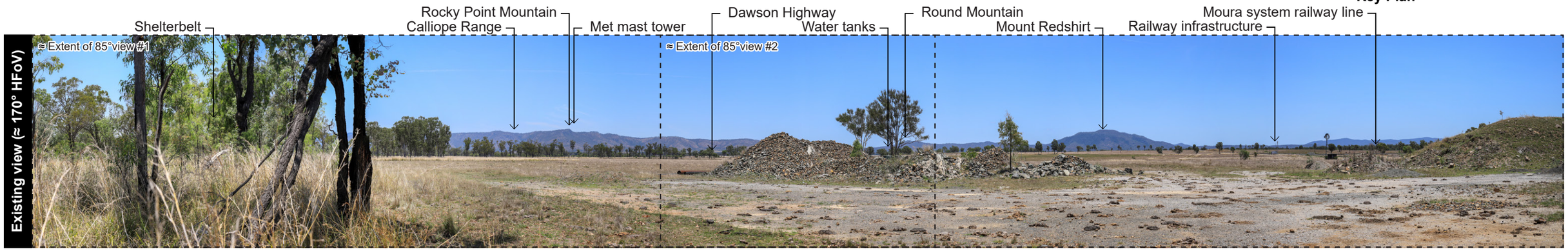
GPS: 24°5'24.828" S 150°49'52.902" E **Elevation: 79.3 m** **Closest point to Project: Approx. 270 m from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 50mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 170° and ≈ 85°

Note: Please note that no visualisation has been provided for this viewpoint, as discussed in the Wooderson OHTL Landscape and Visual Impact Assessment - Technical Report.



Key Plan



Approximate Extent of Project





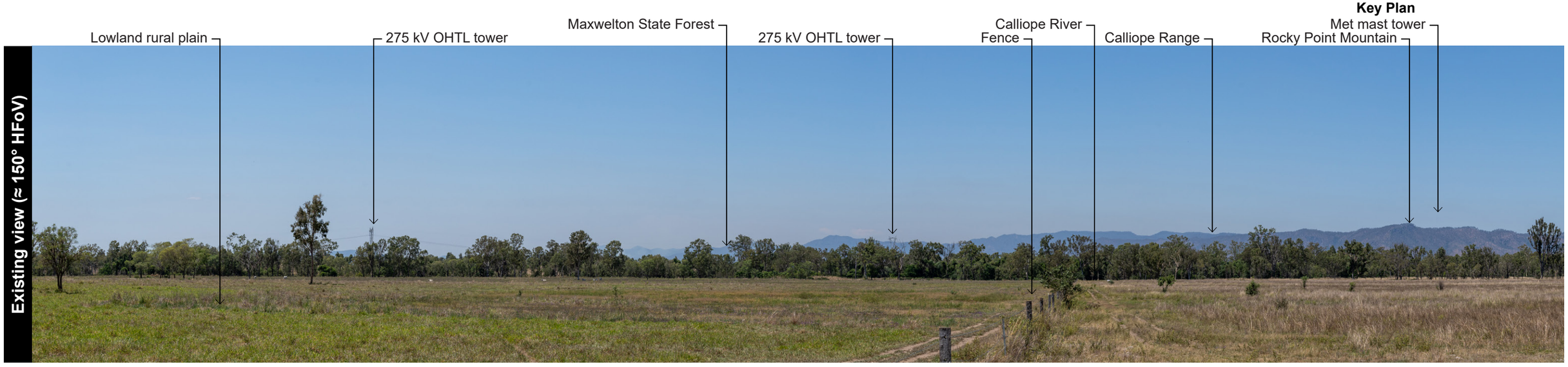
Figure 15: Viewpoint 5: Southerly view from Fig Tree Road - existing view (≈ 150° HFoV)

GPS: 24°4'0.126" S 150°48'20.676" E **Elevation: 93.0 m** **Closest point to Project: Approx. 2.3 km from OHTL tower**

Camera: Canon EOS 6D Mark II
Lens: Sigma 50mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 150°



Key Plan



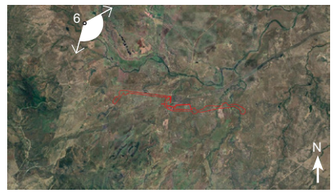
Approximate Extent of Project

Note: Please note that no visualisation has been provided for this viewpoint, as discussed in the Wooderson OHTL Landscape and Visual Impact Assessment - Technical Report.

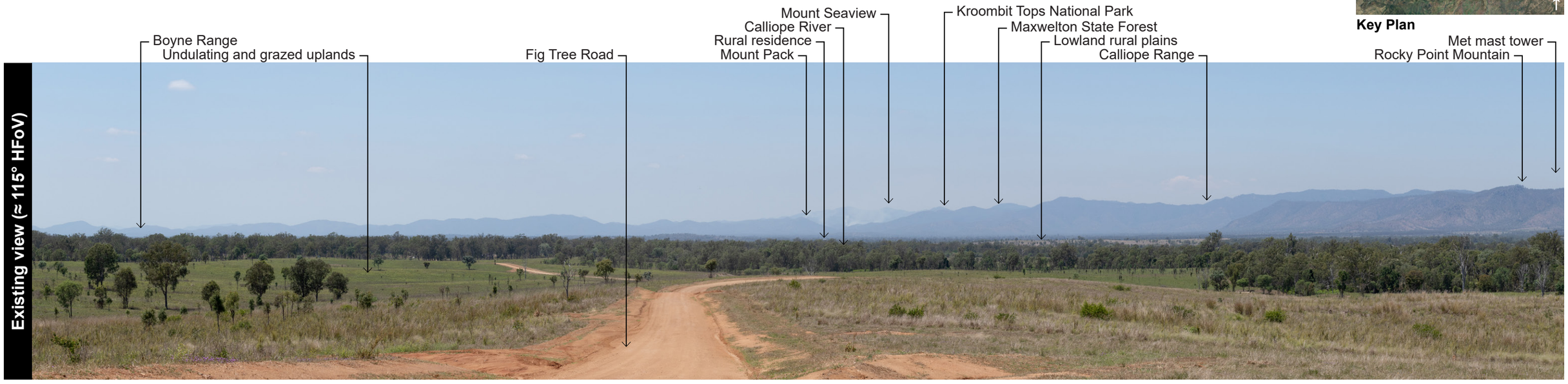
Figure 16: Viewpoint 6: Southeasterly view from Fig Tree road - exsiting view (≈ 115° HFoV)

GPS: 24°2'34.53" S 150°46'14.04" E **Elevation: 122.0 m** **Closest point to Project: Approx. 5.4 km from switching station**

Camera: Canon EOS 6D Mark II
Lens: Sigma 50mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 115°



Key Plan



Approximate Extent of Project

Note: Please note that no visualisation has been provided for this viewpoint, as discussed in the Wooderson OHTL Landscape and Visual Impact Assessment - Technical Report.

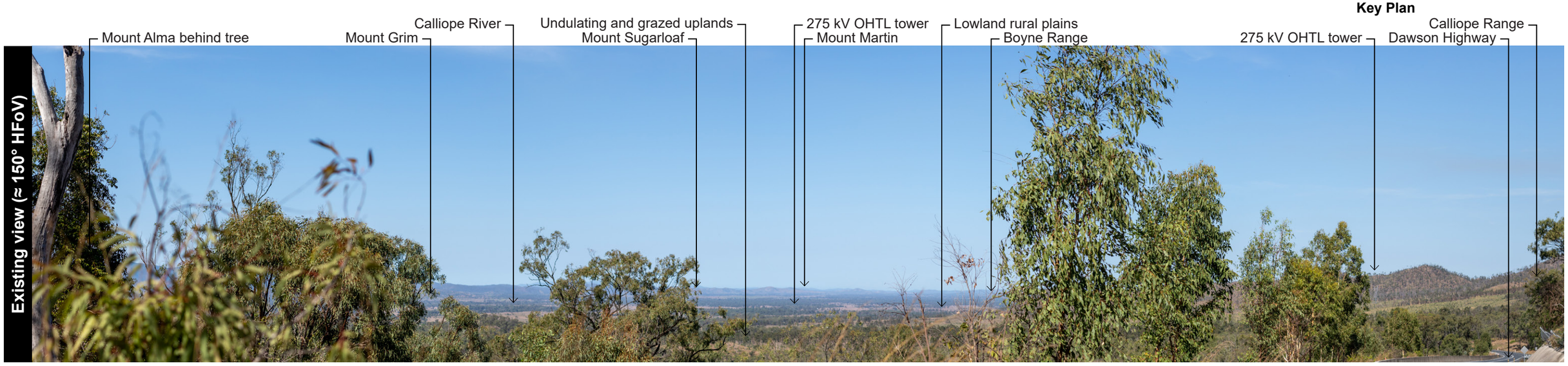
Figure 17: Viewpoint 7: Easterly view from Dawson Highway - existing view (≈ 150° HFoV)

GPS: 24°8'7.974" S 150°44'8.052" E **Elevation: 402.9 m** **Closest point to Project: Approx. 7.2 km from switching station**

Camera: Canon EOS 6D Mark II
Lens: Sigma 50mm f/1.4 DG JSM lens
Horizontal field of view: ≈ 150°



Key Plan

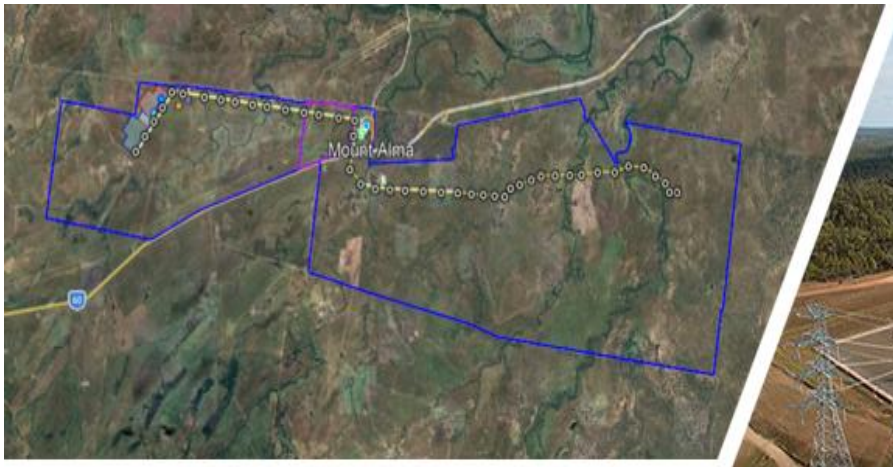


Note: Please note that no visualisation has been provided for this viewpoint, as discussed in the Wooderson OHTL Landscape and Visual Impact Assessment - Technical Report.

Appendix N

Traffic Impact Assessment

ACCESS TRAFFIC
CONSULTING









Wooderson Solar Farm OHTL and Switchyard

Traffic Impact Assessment

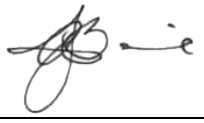
March 2026

Prepared for AECOM Australia Pty Ltd

Quality Information

Document	Traffic Impact Assessment
Client	AECOM Australia Pty Ltd on behalf of Wooderson Solar Development Co Pty Ltd
Reference	AEC0125-003
Date	26 March 2026
Prepared By	Andrew Barrie

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Rev	Revision Date	Details	Authorised	
			Name / Position	Signature
0	03/03/2026	Draft for Client Comment	Andrew Barrie Principal Traffic Engineer	Original Signed
1	18/03/2026	Revised Draft	Andrew Barrie Principal Traffic Engineer	Original Signed
2	26/03/2026	Minor Revisions	Andrew Barrie Principal Traffic Engineer	Original Signed
A	26/03/2026	Final	Andrew Barrie Principal Traffic Engineer RPEQ 12801	

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Executive Summary

Access Traffic Consulting was commissioned by AECOM Australia Pty Ltd on behalf of Wooderson Solar Development Co. Pty Ltd, a wholly owned subsidiary of Central Queensland Power Development Co Pty Ltd (CQP), which is a joint venture between RES Australia Pty Ltd (RES) and Energy Estate (CQP) Holdings Pty Ltd as trustee for Energy Estate (CQP) Holdings Trust (Energy Estate), to undertake a Traffic Impact Assessment (TIA) for the proposed Wooderson Solar Farm OHTL and Switchyard (the Project). The Project is to be located approximately 40 kilometres (km) to the south-west of the regional centre of Gladstone, Queensland, on land within the Gladstone Regional Council (GRC) local government area (LGA).

This report has been prepared to determine the level of potential impacts of both the construction and operations phases of the Project on the operation of the surrounding road network. The outcomes of this TIA will be used in support of 2 development applications (DAs) for the Project as the Project extends across 2 planning instruments, as follows:

- Development Application 2 (DA2) – Transmission Corridor and Switchyard within the GRC LGA to be assessed by GRC with referral to concurrence and advice agencies.
- Development Application 3 (DA3) – Transmission Corridor within the Callide Infrastructure Corridor SDA to be assessed by the Office of the Coordinator General (OCG).

The assessment identified that the Project's construction phase was the most critical in terms of traffic impact, with only negligible traffic volumes (and therefore impacts) expected to be generated by the Project's operations phase.

The assessment identified that the proposed peak construction works were conservatively forecast to lead to varying increases in traffic volumes on the sections of the external road network relevant to the Project. These increases in volumes include:

- Up to 14 vehicles per day (vpd) on the relevant sections of the Gladstone Port Access Road and Gladstone-Mount Larcom Road.
- Approximately 60 vpd on the section of the Dawson Highway between Gladstone and Calliope.
- Up to 126 vpd on the Dawson Highway between Calliope and Duck Holes Road.
- Approximately 68 vpd on the Dawson Highway between Duck Holes Road and the proposed Wooderson Solar Farm site access.
- Up to 20 vpd on the Dawson Highway to the west of the proposed Wooderson Solar Farm site access.
- Up to 136 vpd on the section of the GRC controlled Duck Holes between the Dawson Highway and the proposed Project Area access.

Further to this, the ongoing operations phase of the Project was identified to only generate periodic (i.e. not daily) movements on the external road network associated with scheduled inspection and maintenance works, with traffic volumes in the order of 20 vpd anticipated, including 1 to 2 vpd heavy vehicle (HV) movements.

Based on these expected increases in traffic volumes, the technical assessments completed have identified that the following upgrade works and treatments are required to adequately mitigate the impacts of the construction and operations phases of the Project and maximise the safety and operational performance of the surrounding road network:

- The provision of upgrade works to the existing property access at the proposed Project Area access location on Duck Holes Road. These works are to provide a configuration generally in accordance with the arrangement for articulated vehicles as identified in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General.*

- The provision of upgrade works to the 430 m section of Duck Holes Road between the Dawson Highway and the proposed Project Area access, to provide a 7 m wide unsealed (gravel) road pavement in accordance with a Rural Local Access Road standard (CMDG).

  While these upgrade works could be provided as part of the Upper Calliope Solar Farm prior to the commencement of the Project, it is noted that they will be required to be provided as part of the Project in the event that either the Project proceeds first or the Upper Calliope Solar Farm does not proceed at all.

In addition to the traffic assessments completed, a preliminary desktop pavement impact assessment was also undertaken for the critical construction phase of the Project. The results of the assessment indicated:

- That the HV movements associated with the Project are expected to lead to negligible increases in pavement loadings (<5%) on the majority of the identified sections of the state-controlled road network.
- The results do however identify higher increases on the section of the Dawson Highway between Taragoola Road (Calliope) and Duck Holes Road (approximate Transport and Main Roads [TMR] Chainage [Ch.] 21.750 km to Ch. 64.433 km). It is noted however, that these larger increases in loading are primarily due to the loading generated by the expected road gravel and concrete transport movements for the Project from the local quarry and concrete batch plant operations in Calliope. Therefore, the mitigation of the impacts of these delivery movements on the identified sections of the state-controlled network are expected to fall on both the quarry and batch plant operators and be covered by their typical road maintenance contribution (c/tonne) to TMR as part of the general operation of these facilities.
- In addition to the state-controlled road network, the results also indicated that the additional vehicle movements from the construction phase of the Project were expected to also lead to a significant (>5%) increase in pavement loadings on the relevant section of the GRC controlled link of Duck Holes Road, between the Dawson Highway and the proposed Project Area access.
- Notwithstanding this, it is noted that the proposed upgrade works to Duck Holes Road (widening to 7m) as part of either the Upper Calliope Solar Farm or this Project are considered adequate to offset the additional pavement loading from the Project.
- As such no pavement mitigation works or contributions are deemed to be required from the Project to offset the temporary (15 month) increase in pavement loading on the external road network.

Therefore, conditional on the provision of the identified site access and road upgrade works to Duck Holes Road (either as part of the Upper Calliope Solar Farm or this Project), the traffic impacts of the construction and operational phases of Project can be considered to have been satisfactorily mitigated.

As such, the Project is not expected to adversely impact the relevant sections of the external transport networks or road infrastructure and is recommended to be approved from a traffic engineering perspective.

1.0 Project Description

The proposed Wooderson Solar Farm is located approximately 40 kilometres (km) south-west of Gladstone in Central Queensland, within the Gladstone Regional Council (GRC) Local Government Area (LGA). The Proponent is Wooderson Solar Development Co Pty Ltd, a wholly owned subsidiary of Central Queensland Power Development Co Pty Ltd (CQP), which is a joint venture between RES Australia Pty Ltd (RES) and Energy Estate (CQP) Holdings Pty Ltd as trustee for Energy Estate (CQP) Holdings Trust (Energy Estate).

The solar farm is proposed to have a generating capacity of up to 450-megawatts (MW) with a 450 MW direct current (DC) coupled battery energy storage system (BESS) with storage capacity of up to 3,600 megawatt-hours (MWh). This will be connected to the National Electricity Market (NEM) through a new overhead transmission line and will also include construction of associated infrastructure including access tracks, fencing and operations and maintenance facilities.

The solar farm, BESS and associated infrastructure will be assessed in a Development Application (DA) by the State Assessment and Referral Agency (SARA), identified as Development Application 1 (DA1) and does not form part of this assessment.

The works outlined in this assessment include connection to the NEM through a 275 kilovolt (kV) overhead transmission line (OHTL), switchyard and associated ancillary infrastructure for these elements only (the Project). A total of approximately 11 km of OHTL supported by approximately 45 monopoles is proposed from the solar farm substation (assessed in DA1) to the new switchyard for connection to Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project.

The Project extends over 7 allotments (refer Figure 1), within the GRC LGA, 7 of which (including part Lot 1 on RP616641) are subject to assessment under the *Gladstone Regional Council Planning Scheme 2017 (Version 2)* (Planning Scheme) and one allotment (part Lot 1 on RP616641) requiring assessment under the *Callide Infrastructure Corridor State Development Area* (SDA) subject to the *Callide Infrastructure Corridor State Development Area Development Scheme (September 2012)* (Development Scheme).

As the OHTL extends across 2 planning instruments (refer Figure 2), the assessment provided within this report will support 2 separate DAs:

- Development Application 2 (DA2) – Transmission Corridor and Switchyard within the GRC LGA to be assessed by GRC with referral to concurrence and advice agencies.
- Development Application 3 (DA3) – Transmission Corridor within the Callide Infrastructure Corridor SDA to be assessed by the Office of the Coordinator General (OCG).

1.1 Project Overview

The Project is for the purposes of connecting the solar farm and BESS to the NEM and comprises of the following components:

- Approximately 11 km of 275 kV OHTL, contained within a 60 metre (m) wide easement, discussed further in Section 1.1.1.
- New switchyard for connection to Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project, discussed further in Section 1.1.2.
- Access tracks, discussed further in Section 1.1.3.
- Temporary laydown and construction compound areas, discussed further in Section 1.2.5.

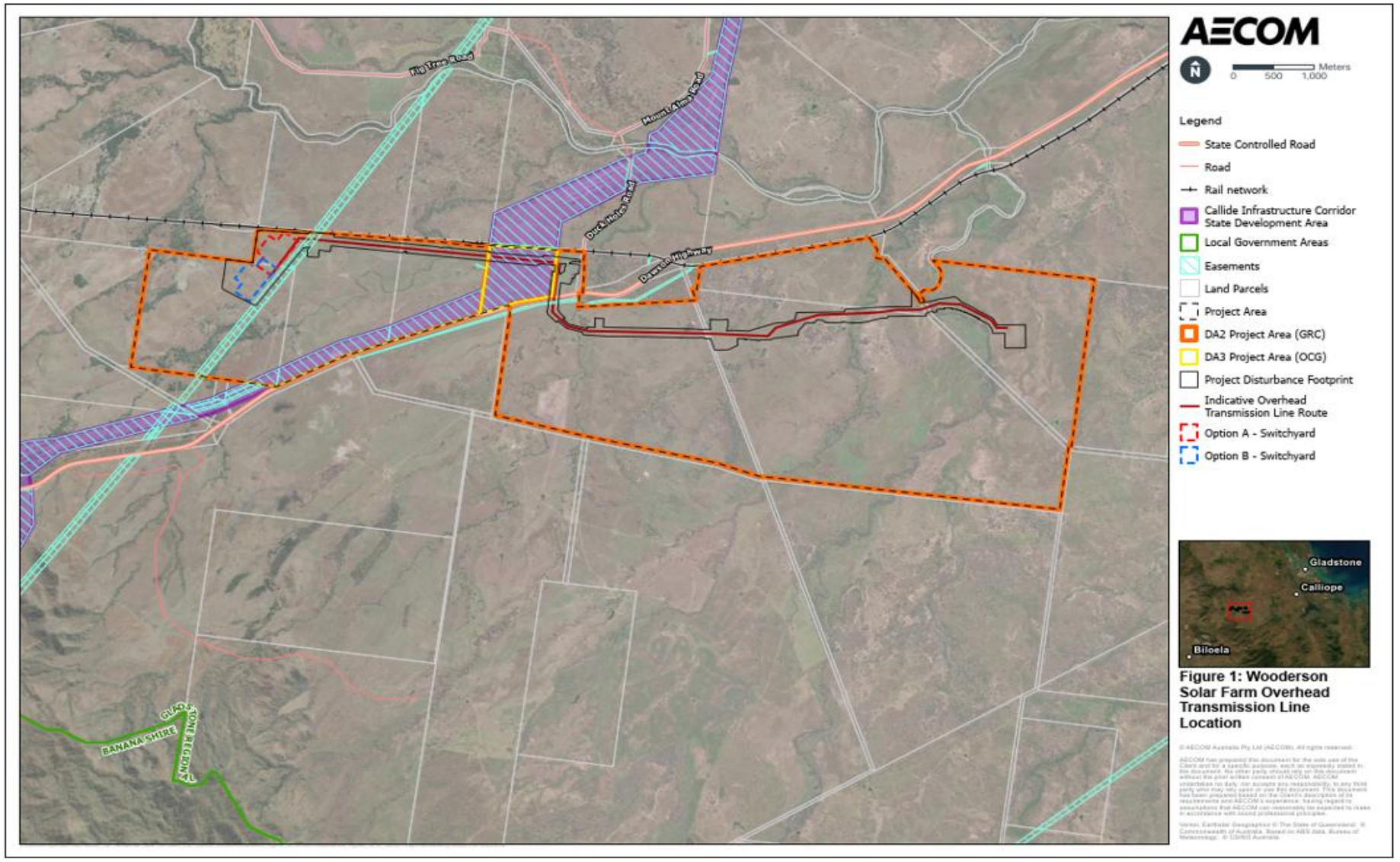


Figure 1: Wooderson Solar Farm Overhead Transmission Line Location

Figure 1 Wooderson Solar Farm Overhead Transmission Line Location [Source: AECOM]

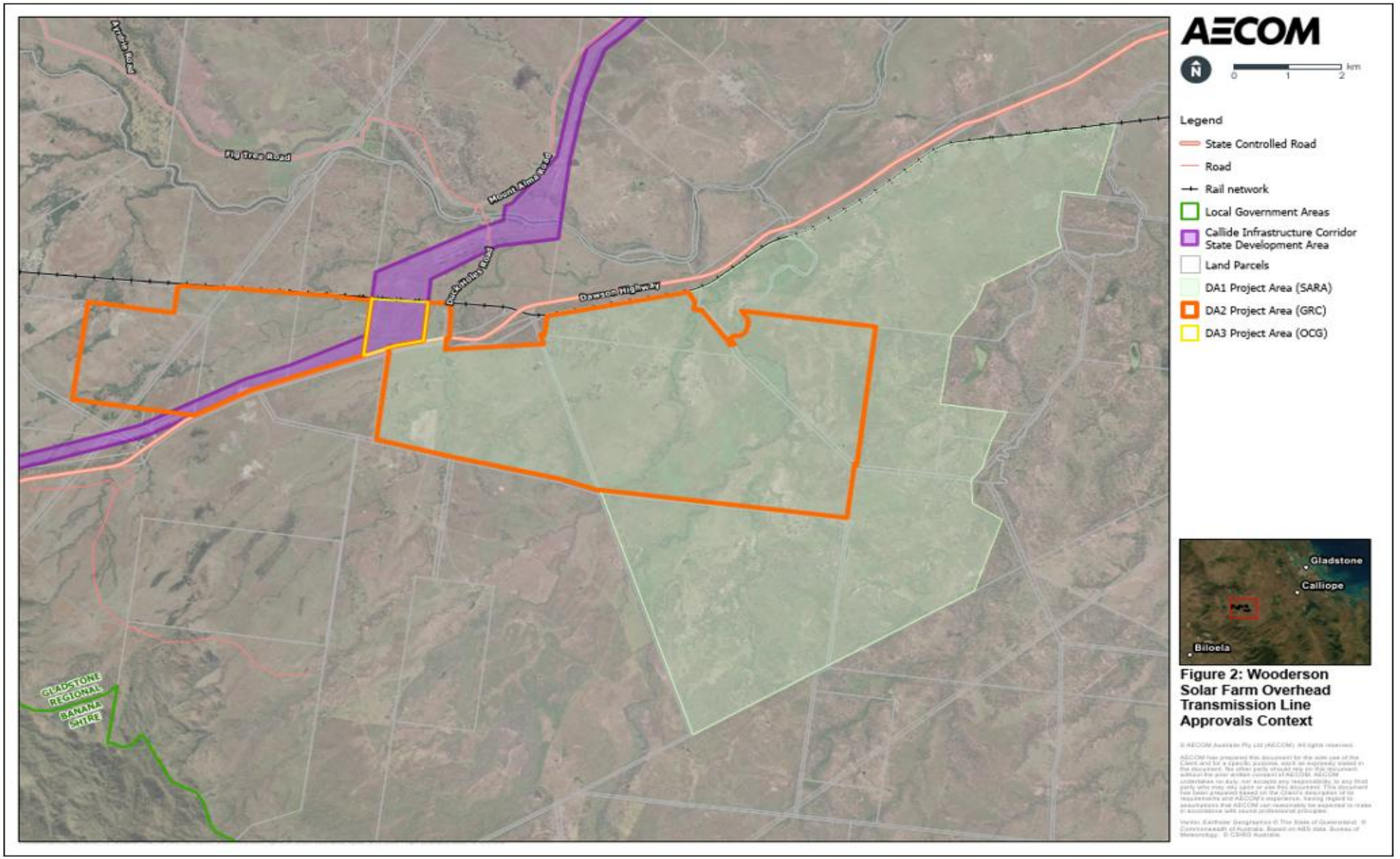


Figure 2: Wooderson Solar Farm Overhead Transmission Line Approvals Context

Figure 2 Wooderson Solar Farm Overhead Transmission Line Approvals Context [Source: AECOM]

For the purposes of this application, the following has been used to define the Project to delineate between permanent impact areas and temporary impact areas and are defined as follows (refer **Figure 5**):

Project Area:

The Project infrastructure and vehicular access will be situated within the bounds of the 'Project Area' which comprises of freehold allotments, Dawson Highway Road Reserve, Duck Holes Road Reserve and two unnamed road reserves. The Project Area has a total area of 2,675.91 hectares (ha).

Project Disturbance Footprint:

The Project Disturbance Footprint (estimated to be 209.619 ha) is defined as including permanent and temporary components for construction.

Permanent components include the following:

- Approximately 11 km of 275 kV OHTL, contained within a 60 m wide easement.
- Approximately 45 monopoles, contained within the 60 m wide easement.
- New switchyard (either Option A or Option B).
- Access tracks located within the 60 m wide easement that will be used for ongoing maintenance.
- Access tracks (where located outside the easement) that will be used for ongoing maintenance.
- Upgrades to Duck Holes Road.
- Vegetation clearing.
- Security fencing.

Temporary components include the following:

- Option A and Option B switchyard construction compound area.
- Option A and Option B switchyard temporary laydown area.
- Vegetation clearing.

The Project Disturbance Footprint includes a buffer around the proposed infrastructure to allow for design refinement during detailed design.

1.1.1 Overhead Transmission Line

The proposed OHTL extends approximately 11 km from the solar farm substation, traverses west to the proposed new switchyard and connects into the Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project.

The OHTL will be contained within a 60 m wide easement (refer **Figure 5**). The OHTL will be located with the jurisdiction of the Planning Scheme and Development Scheme (refer **Figure 2**). The following delineates between the infrastructure and works located in each jurisdiction:

The OHTL within the Planning Scheme jurisdiction will:

- Traverse 7 freehold allotments
- Comprise approximately 10 km of OHTL.
- Be partly within and adjoining Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project and existing Calvale to Wurdong 275kV Transmission Line, where the OHTL will under cross the existing and proposed transmission lines.
- Travel adjacent to Option A and Option B switchyard, construction compound and construction laydown area, which also adjoins Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project.

- Require approximately 43 monopoles with a maximum height of 50 m. The monopoles will be constructed of either steel or concrete. Monopoles will have a foundation radius of approximately 15 m, with some monopoles (particularly corner monopoles) requiring stays. The final requirements for stays will be confirmed during detailed design. Refer to **Figure 3**, **Figure 4** and **Figure 7** depicting indicative monopoles and **Figure 5** for indicative monopole locations.

  It is noted that these are indicative locations only and will be subject to refinement during detailed design which will take into account impact assessment findings and approval requirements.

The OHTL within the Development Scheme jurisdiction will:

- Traverse 1 freehold allotment.
- Approximately 840 m of OHTL.
- Traverse an easement containing gas pipelines and located within the Development Scheme.
- Require up to 2 monopoles with a maximum height of 50 m. The monopoles will be constructed of either steel or concrete. Monopoles will have a foundation radius of appropriately 15 m, some monopoles particularly corner monopoles requiring stays. The foundations of a third monopole may partially be located within the Development Scheme jurisdiction, with the centre of the pole located immediately west of the Development Scheme jurisdiction.

  Refer to **Figure 3**, **Figure 4** and **Figure 7** for example configurations of the monopoles and **Figure 5** for the indicative locations of the monopoles for the Project.



Figure 3 Example 275 kV OHTL under construction (Cowell Electric, 2025)



Figure 4 Example 275 KV OHTL (Australian Power Industry Partners, 2025)

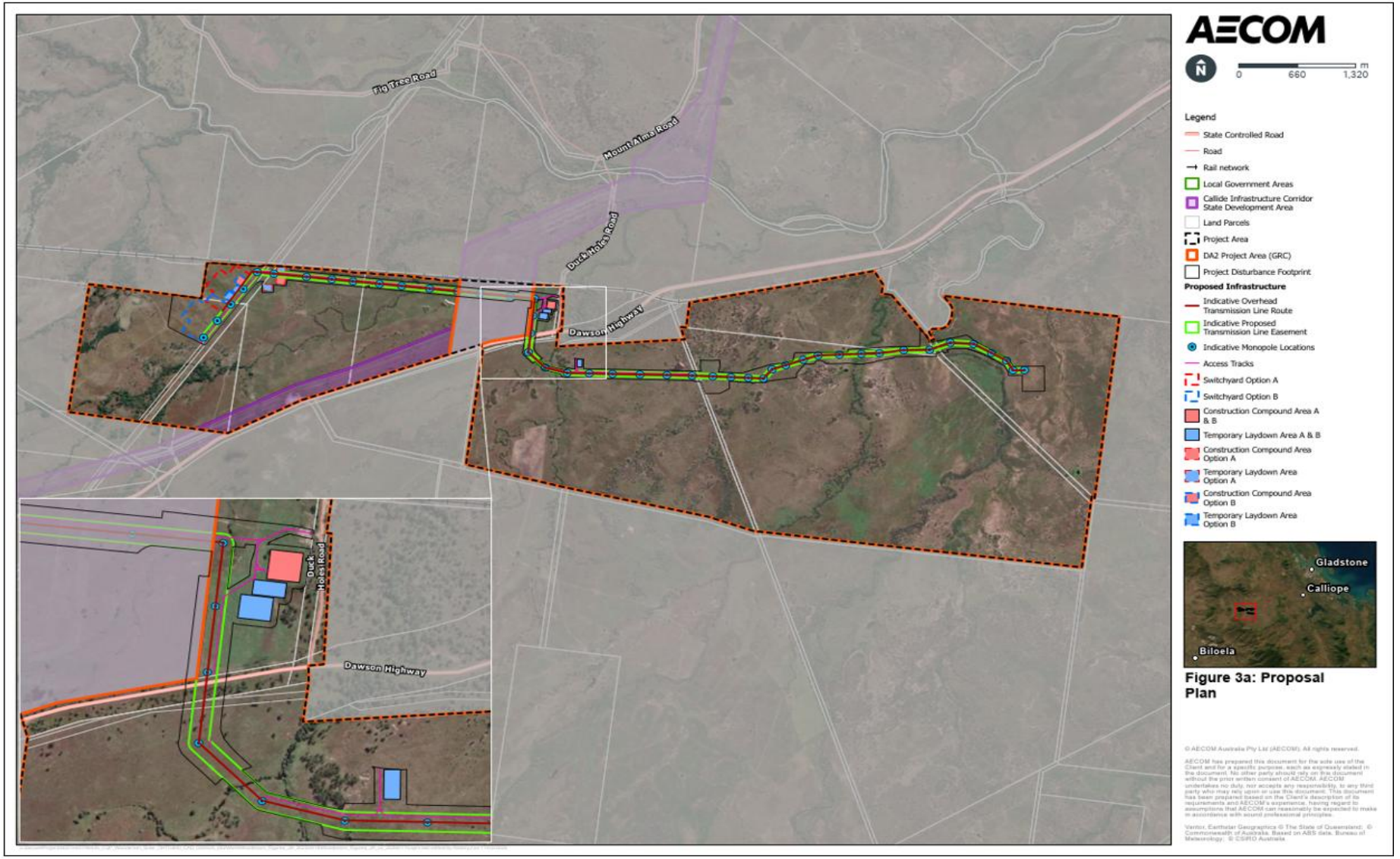


Figure 3a: Proposal Plan

Figure 5 Project Proposal Plan [Source: AECOM]



Figure 3b: Proposal Plan

Figure 6 Project Proposal Plan

[Source: AECOM]



Figure 7 275 kV Example OHTL with access track (Cowell Electric, 2025)

1.1.2 Switchyard

A new switchyard is proposed to be located at the western end of the OHTL for cut-in connection to Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project (Figure 5).

The final location of this switchyard is awaiting confirmation from Powerlink, with 2 potential locations assessed for the purposes of this application being Option A (red) and Option B (blue) (Figure 5). Both options are proposed to be included within the Project Disturbance Footprint to allow for flexibility in the final location and allow for continued discussions with Powerlink.

The switchyard include a cleared level platform of approximately 170 m by 80 m for connection of Wooderson Solar Farm, subject to confirmation with Powerlink. There will also be space for potential future expansion contained within a security fence. It will include switchgear to isolate circuits in an emergency, as well as devices to monitor and communicate the performance or circuits.

The Project Disturbance Footprint includes the maximum possible area required for the switchyard.

The switchyard will ultimately be transferred to the ownership of Powerlink, the Transmission Network Service Provider. This is anticipated to occur upon commissioning of the switchyard, however the timing is subject to confirmation with Powerlink. An example of a Powerlink switchyard shown in Figure 8.



Figure 8 Example Powerlink switchyard (Cowell Electric, 2025)

1.1.3 Site Access and Internal Access Tracks

A proposed new direct access from the Dawson Highway is not proposed as part of DA2 and DA3, however direct assess has been proposed as part of DA1.

DA2 will utilise the proposed new access from the Dawson Highway and will provide construction and maintenance access to the southern Project Area.

To limit disturbance, internal access within the southern section of the Project Area will use the approved access tracks as part of DA1, with the exception of some additional sections that will provide specific access to the OHTL. These additional access tracks will be up to 7 m wide in accordance with Powerlink access track specifications and are shown on **Figure 5**.

Access to the Project Area to the north of the Dawson Highway will be via Duck Holes Road and predominantly within the 60 m wide easement. These access tracks will also be up to 7 m wide in accordance with Powerlink access track specifications. Some sections are located outside the easement to provide access to switchyard Option A and Option B Construction Compound Area and switchyard Option A and Option B Temporary Laydown Area.

Access to the switchyard will be via Duck Holes Road and either via the same track within the OHTL easement, or via a second track immediately adjacent to the OHTL easement. This will be confirmed with Powerlink during detailed design.

Access tracks may cross waterways or watercourses within the Project Area. Where required, culverts will be installed. Where achievable, these will be designed in accordance with the Accepted Development Requirements for operational work that is constructing and raising Waterway Barrier Works (dated September 2025 or as amended) or form part of secondary approvals during detailed design.

1.2 Construction

1.2.1 Timeframes

Construction of the OHTL and switchyard is estimated to take approximately 15 months. It is anticipated that these activities will commence at the same time and indicatively anticipated to commence in March 2029.

Construction timeframes will be dependent on securing Project approvals, timing and staging of construction of other assets including the solar farm and Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project.

Note that these timeframes are based on construction of the assets only. The OHTL will only commence export of electricity during commissioning of the solar farm.

1.2.2 Workforce and Construction Hours

Preliminary estimates of the construction workforce required for the Project will be up to 80 full time equivalent (FTE), comprising up to approximately 50 FTE for the switchyard and 30 FTE for the OHTL.

Construction activities will generally be limited to daylight hours and will vary depending on the season. However, it is expected that most works will occur during standard construction hours of 7 am to 6 pm, Monday to Saturday.

During certain construction activities, works may be required to be undertaken outside of standard hours (i.e. Sunday or night-time periods). In these instances, appropriate mitigation and management measures will be incorporated into the Construction Environmental Management Plan (CEMP). The CEMP will serve as an overarching management plan that will manage and monitor impacts during construction.

1.2.3 Field Activities

The list below provides a standard approach to the progression of construction activities that will occur for the Project:

- Site set out.
- Pre-clearing survey.
- Road and rail approvals.
- Site establishment (construction compounds, laydown areas, equipment and materials).
- Installation of fencing, gates, grides and clean down bays.
- Earthworks for access tracks and hardstand areas.
- Vegetation clearing.
- Monopole site benching.
- Foundation installation.
- Structure assembly and erection.
- Conductor and earth wire stringing.
- Commissioning of all components.
- Reliability testing.
- Rehabilitation of temporary disturbance areas.
- Demobilisation.

Some deviation from the standard approach is anticipated for the sections of Project Disturbance Footprint intersecting gas pipelines. Subject to agreement with the pipeline owner, this may include:

- Temporary protection (i.e. matting, plates, exclusion fencing) over pipelines.
- Access and / or construction controls such as vehicle load limits, vibration restrictions, or controlled access tracks as required.
- Modified stringing set-up, if required, to avoid ground contact or maintain specific clearance over the pipeline.

1.2.4 Site Set Out

Following cadastral survey of the OHTL easement, the location of the OHTL within the easement will be set out. Structure sites will be marked and orientated using design information. Structure locations will be selected based on the technical characteristics of the structures and conductors, topographical constraints, landholder requirements and environmental considerations.

Easement boundaries will be identified, and the Project Disturbance Footprint will be marked prior to vegetation clearing.

1.2.5 Laydown and Construction Compound

Temporary ancillary facilities would be required during construction, and would typically include:

- Construction compounds involving a storage area, offices and meeting room, ablution facilities, canteen and parking.
- Laydown areas involving areas suitable for storing materials, plant and equipment.

While the construction compounds and laydown areas could be located anywhere within the Project Disturbance Footprint, 3 indicative construction compounds and 7 indicative laydown areas are identified in Figure 5.

These facilities would be compacted with gravel to allow for all weather access. Once construction is complete, these areas would be revegetated or have infrastructure installed dependent on their location within the Project layout.

1.2.6 Infrastructure Crossings

Road and Rail:

The Project Disturbance Footprint will traverse 2 unnamed local road corridors and one State-Controlled Road (Dawson Highway). Whilst the Project Disturbance Footprint is located south of the Moura Railway, the Project does not intersect or traverse the railway corridor.

Transmission Lines:

The Project Disturbance Footprint will be partly within and adjoining Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project and Calvale to Wurdong 275kV Transmission Line, where the OHTL will under cross the existing and proposed transmissions lines.

Gas Pipelines:

The Project Disturbance Footprint will be partly within a gas pipeline easement within the Development Scheme. The easement contains gas pipelines owned by Santos GLNG Pty Ltd (Petroleum Pipeline Licence [PPL] 66), Australia Pacific LNG Gladstone Pipeline Limited (PPL 163), and APA WGP Pty Ltd (PPL 154)).

1.2.7 Plant and Equipment

The plant and equipment required for the construction of the Project would include:

- Earthmoving machinery and equipment for site preparation (such as excavators, compactors, rollers and graders).

- Pile-driving equipment (piling rigs).
- Specialised power line stringing equipment.
- Cable trenching and laying equipment.
- Forklifts and cranes.
- Machinery and equipment for substation and inverter infrastructure establishment.
- Manual tools, including compressed air and electric tools.
- Water trucks for dust suppression.
- Diesel generator/s.
- Heavy vehicles, utility vehicles and light vehicles.

1.2.8 Demobilisation and Rehabilitation

All disturbed areas impacted from construction will be reinstated at the end of construction through the implementation of the CEMP.

1.3 Operation and Maintenance

During operation, normal practice is for maintenance staff to carry out scheduled inspections of the OHTL easement, switchyard and access tracks. Maintenance timing will depend on the risk of vegetation growth and the requirement for emergency repairs.

The Project will be operated in accordance with an Operational Environmental Management Plan (OEMP).

1.4 Decommissioning

At the end of the Wooderson Solar Farm's operational life, it is anticipated to either be upgraded (subject to additional planning approvals, as required) or decommissioned. The decommissioning of the solar farm would result in the OHTL being no longer required and so it will also be decommissioned. It is anticipated that switchyard would remain operational as a Powerlink network asset.

Decommissioning the OHTL will be in agreement with the landholders, and would involve removing infrastructure, returning the Project Area to its pre-existing land use as far as practicable, and easements maybe surrendered to the property owner. Some infrastructure such as access tracks may be retained where agreed with and beneficial to the landowner.

Where feasible and practical all dismantled and decommissioned infrastructure and equipment will be recycled. It is anticipated that more material would be recyclable by the end of the operational life than is currently possible, as recycling industries establish. Structures and equipment that cannot be recycled would be disposed of at an approved waste management facility in accordance with all statutory requirements.

Vehicle movements and personnel requirements during the decommissioning phase are expected to be similar or less than the construction phase.

1.5 Traffic Impact Assessment Scope

Access Traffic Consulting was commissioned by AECOM Australia Pty Ltd on behalf of the Proponent to undertake a Traffic Impact Assessment (TIA) for the Project.

This TIA was carried out to identify the traffic volumes expected to be generated by the construction and operations phases of Project and establish the anticipated level of potential traffic impacts of the Project on the operation of the surrounding state and local government controlled road networks.

Further to this, the outcomes of this preliminary TIA will be used in support DA2 and DA3 , with GRC and OCG respectively as the assessment manager and the Department of Transport and Main Roads (DTMR) expected to be an advice agency.

The following methodology was adopted to undertake the required assessments as part of the TIA, as summarised in the key tasks listed below.

- Broadly identify the existing transport infrastructure which is of relevance to the Project.
- Estimate traffic generation associated with the construction and operations phases of the Project and the distribution of this Project traffic on the identified road network, including the movement of materials, plant and equipment in addition to the construction and operational phase workforce.
- Assess the potential impact of the Project on the surrounding transport infrastructure during both the construction and operations phases.
- Identify potential mitigation and management strategies to be implemented during the construction and operations phases to offset the impact of the proposed Project (if required).

The adopted methodology centres on establishing a background or "without Project" traffic scenario for the identified transport routes and comparing this with a scenario including the Project generated traffic, (i.e. the "with Project" scenario).

The process allows for the assessment of the traffic impacts of the Project in regard to road safety, access requirements, intersection operations, road link capacity, pavement and other transport infrastructure. Following this, if required, potential mitigation and/or management measures would be formulated to address the potential traffic impacts caused by the proposed Project.

2.0 Existing Conditions

2.1 Land Use and Zoning

Currently the land contained within the identified Project Area is generally used for agricultural purposes, mainly cattle grazing. The land is identified as a "rural" under the zoning mapping contained within the current Planning Scheme for DA2, as shown in **Figure 9**. It is noted that DA3 located in the Development Scheme does not have any land use zoning applicable, however is generally used for agricultural purposes (being cattle grazing).

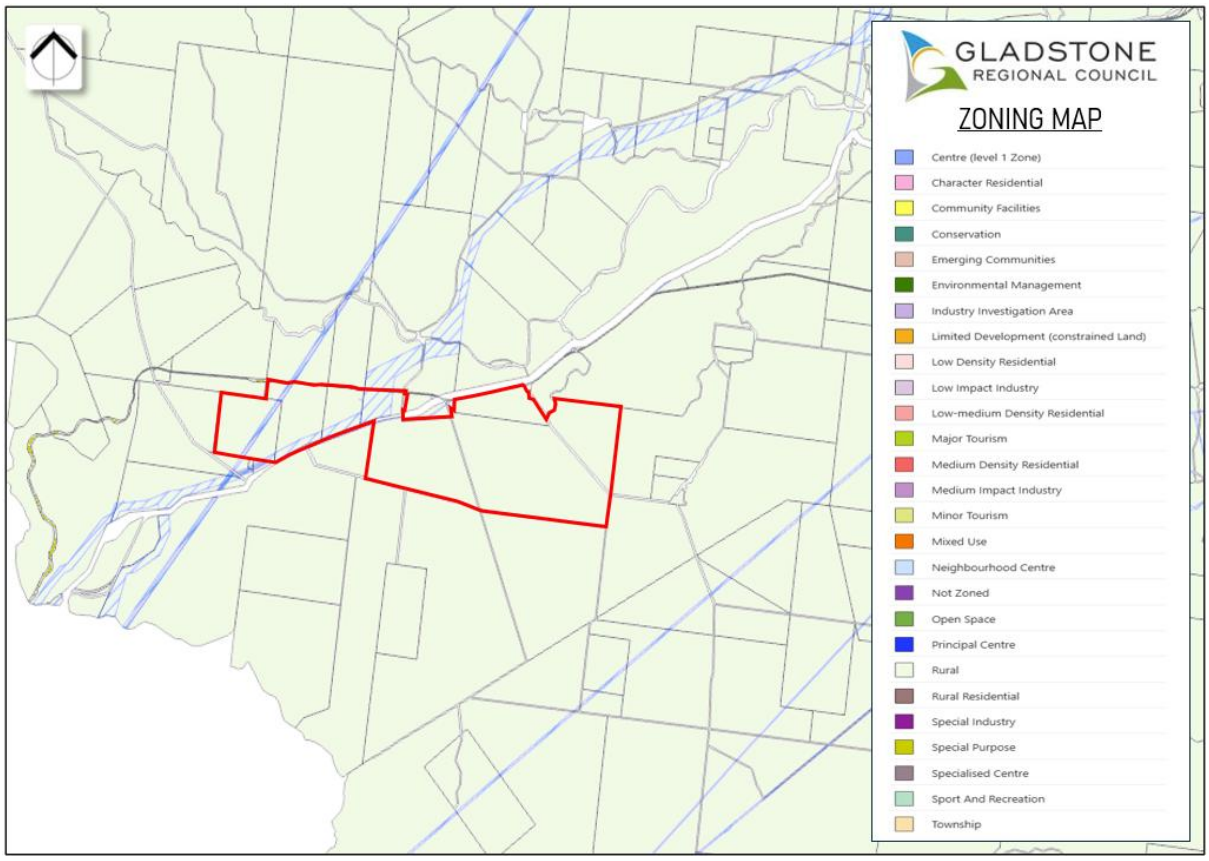


Figure 9 GRC Planning Scheme Zoning Mapping **[Source: GRC Online Mapping]**

As shown in **Figure 9**, the adjacent land parcels to the Project Area in all directions, including on the opposite side of the Dawson Highway are also currently zoned rural land under the Planning Scheme.

2.2 Adjacent Approvals

Further to this, it is understood that 2 other development approvals or applications will be developed in the surrounding areas with proposed construction phases either running concurrently or with some overlap of that proposed for this Project. These include the Upper Calliope Solar Farm (DA/31/2024) on the northern side of the Dawson Highway in the vicinity of the Project Area, and the Wooderson Solar Farm (subject to separate planning approval as part of DA1) on the southern side of the Dawson Highway, which is co-located with the southern portion of the proposed OHTL.

Based on the information available, it is understood that the traffic movements associated with both applications will utilise the adjacent section of the Dawson Highway, with traffic from the Upper Calliope Solar Farm to utilise the adjacent Dawson Highway / Duck Holes Road intersection for access, while the proposed Wooderson Solar Farm will utilise the proposed Dawson Highway / Wooderson Solar Farm Site Access intersection for access.

As such a cumulative assessment of the combined impacts of all 3 approvals / applications on the external road network has been undertaken, with further details of this expected cumulative traffic volumes outlined in Section 4.5, and the cumulative assessment undertaken in Section 5.2 to Section 5.4 below.

2.3 Surrounding Road Network Details

2.3.1 State Controlled Road Links

2.3.1.1 Gladstone Port Access Road (183)

The Gladstone Port Access Road is an approved B-double route approximately 850 m in length and provides a connection from the Port of Gladstone to the external state-controlled road network via Hanson Road (Gladstone-Mount Larcom Road). The road is an approved 25 m B-Double route and currently operates as a two-way, two-lane carriageway with a posted speed limit of 60 kilometres per hour (km/h). It is anticipated that this link will be utilised by Project traffic as part of the delivery movements for the electrical infrastructure components for the switchyard works, which are likely to originate from the Port of Gladstone.

2.3.1.2 Gladstone-Mount Larcom Road (181)

The section of Gladstone – Mount Larcom Road (locally known as Glenlyon Street) relevant to the Project is the short 175 m section of the link between the Gladstone Port Access Road and the Dawson Highway, which is proposed to form part of the transport route from the Port of Gladstone. This section of Gladstone-Mount Larcom Road is also an approved 25 m B-Double route, and is currently configured as a two-way, four-lane, median divided urban arterial road carriageway with a posted speed limit of 60 km/h.

2.3.1.3 Dawson Highway (46A – Gladstone to Biloela)

The full length of the Dawson Highway (46A Gladstone to Biloela) is proposed to be utilised by Project traffic, with section from Gladstone to the proposed Wooderson Solar Farm main site access (approx. TMR Ch. 64.888 km) to be utilised by both material and/or component delivery movements and staff vehicles, while the section to the west of the proposed access expected to primarily be used by staff vehicles only. The configuration of the Dawson Highway varies along its length, with sections provided as lower speed (60 km/h) two- and four-lane arterial roads within built up areas through townships (Gladstone, Calliope and Biloela) with the majority provided as a high speed (100 km/h) rural two-way, two-lane highway. Finally, it is noted that the relevant section of the link is an approved 25 m B-Double route.

2.3.2 Local Government Controlled Road Links

2.3.2.1 Duck Holes Road (GRC)

Duck Holes Road is a rural access road under the control of GRC, which provides a connection from the rural properties along its length to the Dawson Highway. The section of the link deemed relevant to the Project is the 430 m length between the Dawson Highway and the proposed site access to the Project Area, which will form part of the main transport route to and from the Project Area to the north of the Dawson Highway for Project traffic (staff and material and/or component deliveries).

This section of Duck Holes Road is currently operating as a two-way, two-lane unsealed rural road with a general road width of 5.5 m to 6.0 m. The typical cross section of this section of Duck Holes Road is shown in Figure 10, with the link also noted to have a speed limit of 60 km/hr, based on the existing end of 60 km/hr zone signage to the north of the Moura Rail Line level crossing to the north of the proposed site access.



Figure 10 Southern Section of Duck Holes Road

2.3.3 Intersections

In terms of the traffic impact assessment for the Project, the critical intersections on the external road network were identified to be the existing state controlled intersection of Dawson Highway / Duck Holes Road, the proposed Dawson Highway / Wooderson Solar Farm Site Access intersection (proposed as part of DA1), and the proposed access for the Project from Duck Holes Road.

Of these intersections, vehicular access to the portion of the Project Area to the south of the Dawson Highway will be via the proposed Dawson Highway / Wooderson Solar Farm Site Access intersection, while the Project traffic movements to the portion of the Project Area north of the Dawson Highway is proposed to utilise both the Dawson Highway / Duck Holes Road intersection and the proposed access on Duck Holes Road. It is noted that these intersections are expected to be utilised by Project traffic during the both the construction and operations phases of the Project.

Further details of the existing configuration of these critical intersections are provided in the following sections.

2.3.3.1 Dawson Highway / Duck Holes Road

As shown in **Figure 11**, the current configuration of the Dawson Highway / Duck Holes Road intersection (TMR Ch. 64.433 km 46A) is configured as a three-way priority (give way) controlled intersection, with priority given to the Dawson Highway approaches. One lane in each direction of travel is provided on each approach to the intersection, with a basic left (BAL) turn widening and designated short channelised (CHRs) turn treatments provided on the western and eastern Dawson Highway approaches respectively to cater for turning movements into Duck Holes Road.

An assessment of the available sight distances at the intersection was undertaken based on the requirements of Part 4A of Austroads *Guide to Road Design*, which specifies the requirement for the following sight distances to be available at intersection, based on an adopted design speed of 110 km/hr (posted speed + 10 km/hr), with a summary of this assessment provided in **Table 1**.

Table 1 Intersection Sight Distance Requirements

Sight Distance Type	Adopted Parameters	Required Sight Distance (m)	
		Light Vehicles	Trucks
Approach Sight Distance (ASD)	Cars R_T = 2.5 sec / d = 0.36 Trucks R_T = 2.5 sec / d = 0.22	209	241
Safe Intersection Sight Distance (SISD)	Cars R_T = 2.5 sec / d = 0.36 / a = 0% Trucks R_T = 2.5 sec / d = 0.24 / V = 100km/h / a = 0%	300	317
Minimum Gap Sight Distance (MGSD)	Critical Acceptance Gap - Right Turn from Three Lane / Two Way - t_a = 6.5 sec	198.5	

Based on the site inspection completed it was observed that suitable approach site distance (>241 m – Truck ASD) was available along Duck Holes Road to the intersection, while the currently available sight distances to and from the intersection to the east (towards Calliope) and west (towards Biloela) along the Dawson Highway exceeded the requirements for safe intersection sight distance (SISD >300 m light vehicles / >317 m heavy vehicles) as shown in Figure 12 and Figure 13.

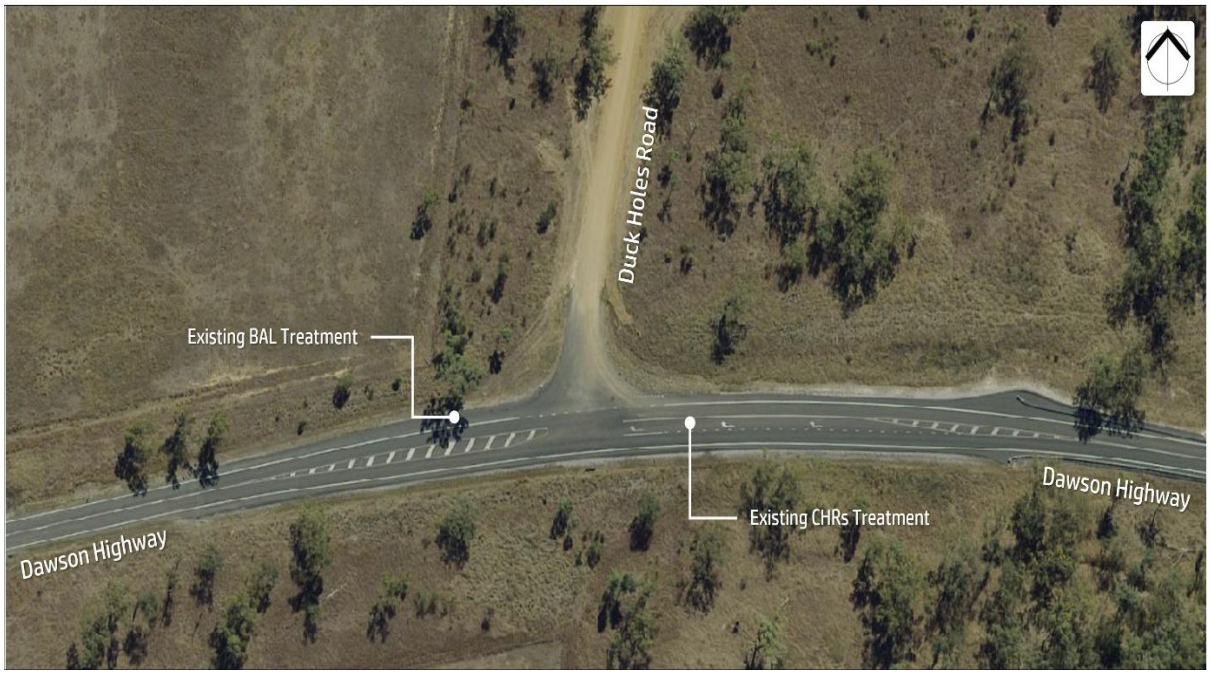


Figure 11 Existing Configuration – Dawson Highway / Duck Holes Road Intersection [Source: QLD Globe]



Figure 12 Sight Distance East of Duck Holes Road



Figure 13 Sight Distance West of Duck Holes Road

2.3.3.2 Duck Holes Road / Project Area Access

The proposed sight access for the northern portion of the Project Area is located on the western side of Duck Holes Road, approximately 430 m to the north of the Dawson Highway, in the position of an existing minor property access, as shown in **Figure 14**. Further to this, based on the frontage road speed limit of 60 km/hr, adequate sight distance is noted to be available to and from the access location in both directions on Duck Holes Road.



Figure 14 Existing Configuration – Site Access Location on Duck Holes Road



Figure 15 Sight Distance South from Site Access



Figure 16 Sight Distance North from Site Access

2.4 Existing Traffic Volumes

2.4.1 Road Link Volumes

The existing background traffic volumes for the road sections relevant to the Project were established using the available Annual Average Daily Traffic (AADT) segment traffic count data provided by DTMR. The provided segment volumes were utilised with the identified 10-year growth rates (average growth rate, compounding annually) for the relevant road sections to establish a forecast of the current (2026) traffic volumes. It is noted that for any segments where a historical 10-year growth rate was negative or below 1.0%, a conservative growth rate of 1.0% was applied to estimate the volume forecasts.

No recent traffic count data was available for the GRC controlled sections of Duck Holes Road. As such, an estimate of the daily volumes on Duck Holes Road was established from the observed network peak hour traffic volumes on the Duck Holes Road leg of the Dawson Highway / Duck Holes Road intersection, with a factor (x5)[1] applied to the combined AM and PM network peak volumes on the leg to convert the peak hour volumes to an estimate of daily volumes.

Based on the volume data and assumptions identified above, estimates of the current (2026) traffic volumes on the roads forming the Project transport routes were established, as summarised in Table 2, noting that the indicative locations of the Site IDs included in **Table 2** are mapped in **Figure 17**.

Table 2 Current (2026) AADT Traffic Volumes

Site ID	Road Segment		Base Data Year	Base Year AADT				10 Yr. GR %	Background AADT (2026)			
	Start (km)	End (km)		Gaz	A-Gaz	Gaz % HV	A-Gaz % HV		Gaz		A-Gaz	
									Total	HV	Total	HV
Gladstone Port Access Road (183)												
61605	0.000	0.858	2024	972	865	30.00%	41.08%	*1.00%*	992	297	882	362
Gladstone-Mount Larcom Road (181)												
160360	0.000	0.175	2023	5,650	5,948	8.85%	8.60%	*1.00%*	5,821	515	6,128	527
Dawson Highway (46A Gladstone – Biloela)												
60061	0.000	1.505	2022	7,771	8,095	6.42%	9.53%	2.18%	8,471	544	8,824	841
61083	1.505	2.250	2022	8,149	9,013	8.58%	7.68%	*1.00%*	8,480	728	9,379	720
60063	2.250	4.445	2023	13,878	13,688	9.92%	8.68%	*1.00%*	14,299	1,418	14,103	1,224
60064	4.445	7.150	2022	11,172	10,928	7.45%	8.55%	*1.00%*	11,626	866	11,372	972
60065	7.150	19.350	2023	3,835	3,659	17.32%	13.62%	*1.00%*	3,951	684	3,770	513
60066	19.350	21.750	2022	4,148	4,141	8.54%	7.16%	*1.00%*	4,316	369	4,309	309
60128	21.750	25.640	2024	1,252	1,256	17.48%	18.13%	1.43%	1,288	225	1,292	234
60005	25.640	64.433	2022	680	680	27.42%	28.07%	3.06%	767	210	767	215
	64.433	64.888	2022	680	680	27.42%	28.07%	3.06%	767	210	767	215
	64.888	113.730	2022	680	680	27.42%	28.07%	3.06%	767	210	767	215
61084	113.730	116.835	2023	834	848	21.73%	23.14%	*1.00%*	859	187	874	202
160067	116.835	119.758	2023	3,260	3,356	11.18%	21.28%	*1.00%*	3,359	376	3,458	736
Duck Holes Road (GRC)												
GRC	0.000	0.430	2024	40	15	25.00%	33.33%	*1.00%*	41	10	15	5

[1] Standard practice is that peak hour volumes are approximately 10% of overall daily volumes. Hence combination of two peak hour periods (AM & PM) would be 20% of overall volumes (i.e. combined peak volumes x5 = daily volumes).



Figure 17 Surrounding Road Network [Source: Google Earth]

2.4.2 Intersection Volumes

The existing (2026) peak hour volumes at the proposed Wooderson Solar Farm site access location on the Dawson Highway, the Dawson Highway / Duck Holes Road intersection and the proposed Project Area access on Duck Holes Road were established from the recorded traffic volumes from the 12-hour (6 am to 6 pm) intersection count undertaken at the Dawson Highway / Duck Holes Road intersection, completed by Austraffic on Thursday 15 February 2024.

From this count the existing AM and PM peak hour traffic volumes at these intersections were established, with the peak hour volumes identified for the expected peak periods of traffic generation from the Project during construction (Project peaks: 6 am to 7 am and 5 pm to 6 pm), as well as the peak periods of traffic volumes on the adjacent road network (i.e. Dawson Highway Network peaks: 8 am to 9 am and 3:45 pm to 4:45 pm). The raw data for the completed intersection count is provided for reference in **Appendix A.**

Using the recorded count data and the identified traffic growth rates, a forecast of the current (2026) peak hour volumes at the Dawson Highway / Duck Holes Road intersection, the proposed Dawson Highway / Wooderson Solar Farm Site Access and the proposed Duck Holes Road / Project Area Access were established for both the identified Project and network peaks. The resultant 2026 peak hour volume forecasts on the network are summarised in **Figure 18** to **Figure 21**, with further details of the intersection volume forecast calculations provided in **Appendix B.**

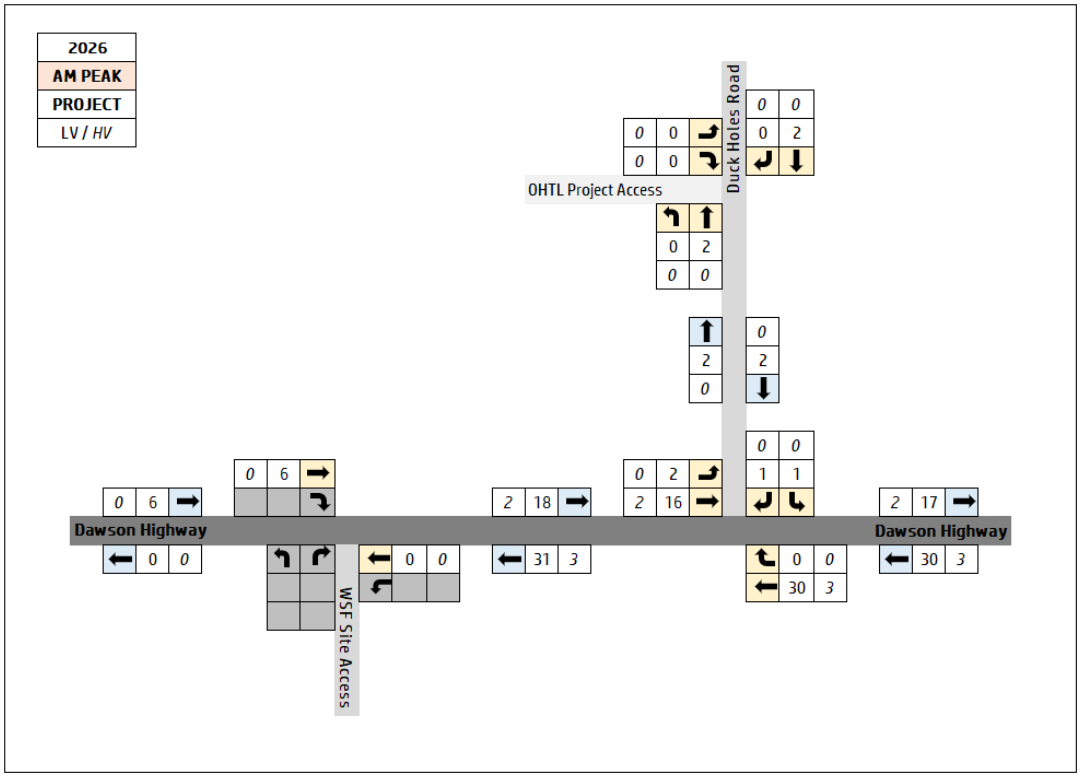


Figure 18 Current (2026) Project AM Peak (6-7am) Traffic Volumes

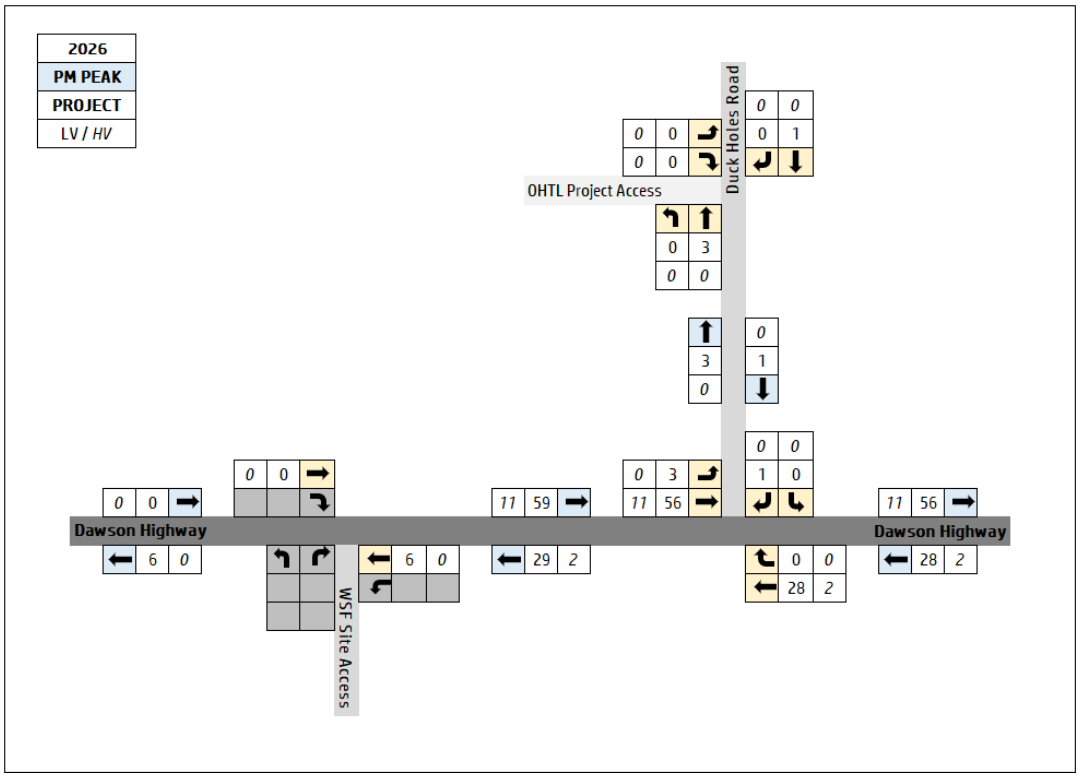


Figure 19 Current (2026) Project PM Peak (5-6pm) Traffic Volumes

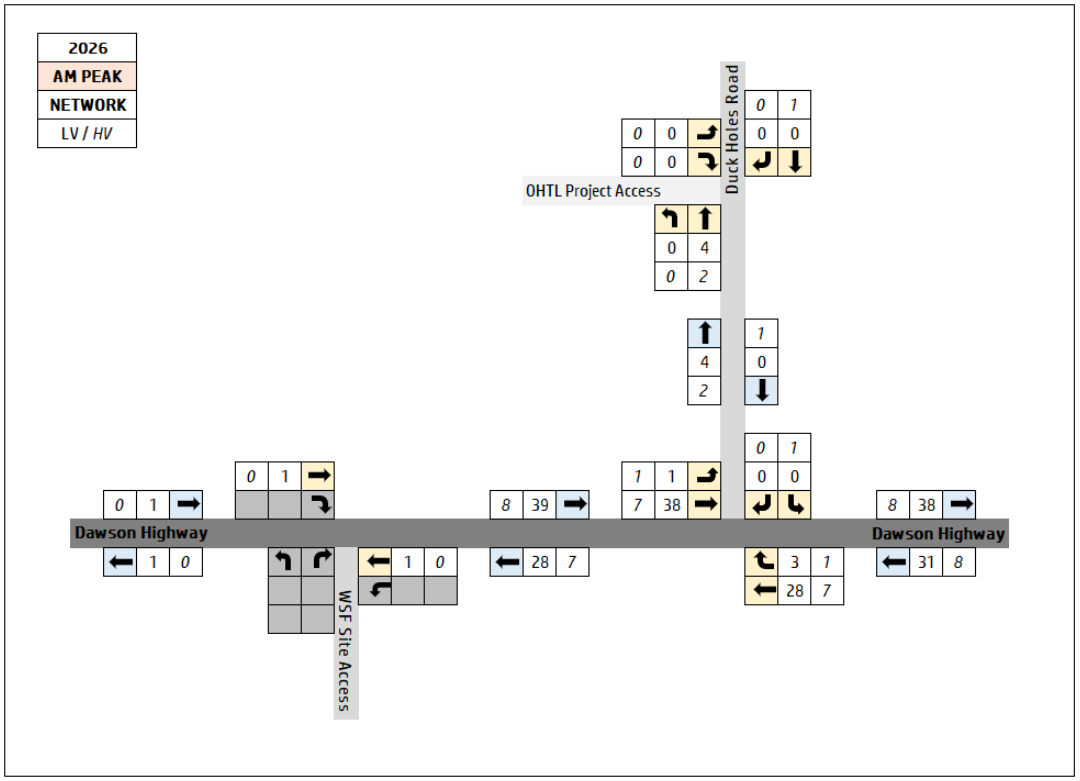


Figure 20 Current (2026) Network AM Peak (8-9am) Traffic Volumes

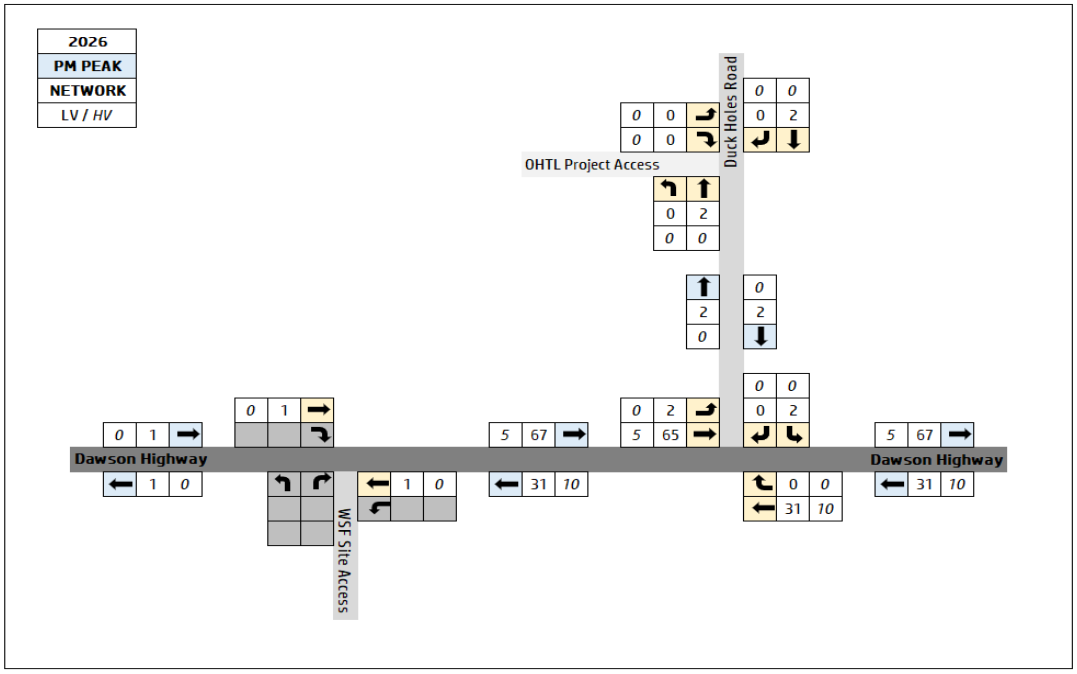


Figure 21 Current (2026) Network PM Peak (3:45-4:45pm) Traffic Volumes

2.5 Road Network Performance

2.5.1 Road Link Capacity

Based on the background traffic volumes forecast and the existing configurations of the road links identified to be relevant to the Project, it is expected that all sections of the proposed Project transport routes would be operating satisfactorily and within capacity for the current (2026) pre-development traffic conditions.

This is based on the standard capacity of two-lane rural highways (12,000 vehicles per day [vpd] to 15,000 vpd) and four-lane urban arterial (40,000 vpd) roads, applicable to the relevant sections of the Gladstone Port Access Road, Gladstone Mount Larcom Road and the Dawson Highway and the nominated capacity of a Rural Access Road (approx. 150 vpd) for the GRC controlled Duck Holes Road.

2.5.2 Intersection Operation

To understand the operational performance of the relevant intersections, detailed intersection analysis was undertaken utilising the Signalised Intersection Design and Research Aid (SIDRA) software package (Ver 9.1). The critical performance metrics of the intersection analysis, and acceptable limits of operation outputs for priority-controlled intersections are provided below.

Degree of Saturation (DOS) – Defined as the ratio of the volume of traffic observed making a movement (in vehicles per hour) compared to the maximum capacity for that movement (vehicles per hour). For priority-controlled intersections, the maximum acceptable degree of saturation is noted to be 80% or 0.800.

Level of Service (LOS) & Average Delay (sec) – Is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The LOS is closely linked to the delay time (in seconds), which can be expected over all vehicles making a movement in the peak hour. The different LOS (Roads and Transport Authority [RTA] New South Wales – now Transport for NSW [TfNSW] criteria in line with DTMR GTIA requirements) are summarised in **Table 3.**

In terms of acceptable limits of operation for priority-controlled intersections, a maximum LOS of C, which relates to the vehicle movements being at or near free flow conditions, and average movement delays between 28.5 and 42.5 seconds applies, as identified in **Table 3**.

95th Percentile (95%ile) Queue – Defined as the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour. For acceptable operation of a priority-controlled intersection, all vehicle queues for individual movements must be contained within the extents of their own lane (in particular for turning lanes), with no vehicle flows or movements to be blocked by queued vehicles.

Table 3 Level of Service (LOS) Criteria

LOS	Description	Average Delay (seconds)
A	Free-flow operation (best conditions)	≤ 14.5
B	Reasonable free-flow operations	14.5 – 28.5
C	At or near free-flow operations	28.5 – 42.5
D	Decreasing free-flow operations	42.5 – 56.5
E	Operations at capacity	56.5 – 70.5
F	A breakdown in vehicular flow (worst conditions)	≥ 70.5

2.5.2.1 Dawson Highway / Duck Holes Road Intersection

The current (2026) Project and network AM and PM peak hour traffic volumes at the Dawson Highway / Duck Holes Road intersection identified in **Figure 18** to **Figure 21** have been utilised to undertake preliminary analysis (using SIDRA software) to establish the existing operational performance of the intersection.

A summary of the results of this assessment is provided in **Table 4** below, with detailed SIDRA outputs included within **Appendix C**.

Table 4 Existing (2026) SIDRA Results – Dawson Highway / Duck Holes Road (Existing Configuration)

Analysis Scenario	Intersection Degree of Saturation	Intersection Level of Service **	Critical Movement Average Delay (seconds)	Maximum 95% Back of Queue Length (m)
Dawson Highway / Duck Holes Road				
2026 AM Project Peak	0.018	LOS A	8.0	0.0
2026 PM Project Peak	0.039	LOS A	6.0	0.0
2026 AM Network Peak	0.027	LOS A	7.0	0.1
2026 PM Project Peak	0.038	LOS A	6.1	0.1

** LOS for worst movements at intersection as no overall intersection LOS available for priority-controlled intersections.

The results above indicate that the existing configuration of the Dawson Highway / Duck Holes Road intersection is expected to operate satisfactorily under the current (2026) traffic conditions at both the identified Project and network AM and PM peak periods, with all calculated values for intersection DOS, LOS, average delay and vehicle queue lengths well within acceptable limits for a priority-controlled intersection.

2.5.2.2 Dawson Highway / Wooderson Solar Farm Site Access Intersection

As the proposed Dawson Highway / Wooderson Solar Farm Site Access intersection currently does not exist, no assessment of the current operational performance of the intersection has been undertaken. Further assessment of the forecast Project traffic volumes at the intersection and the operational performance of the proposed access intersection during both the peak construction and operations phases of the Project are provided in **Section 394.4.2** and **Section 5.2.2**.

2.5.2.3 Duck Holes Road / Project Area Access

As the existing site access to the Project Area on Duck Holes Road is not anticipated to cater for any significant turning movements (based on rural nature of the current use), no assessment of the current operational performance of the access has been undertaken.

However, further assessment of the forecast Project traffic volumes at this access location and its operational performance during both the peak construction and operations phases of the Project are provided in **Section 394.4.2** and **Section 5.2**.

2.6 Road Safety Issues

2.6.1 Road Crash History Review

A review of the road crash history on the relevant section of the Dawson Highway fronting the proposed Project Area (refer **Figure 22**) was undertaken using the road crash data available from the Queensland Globe database (2001-2023).

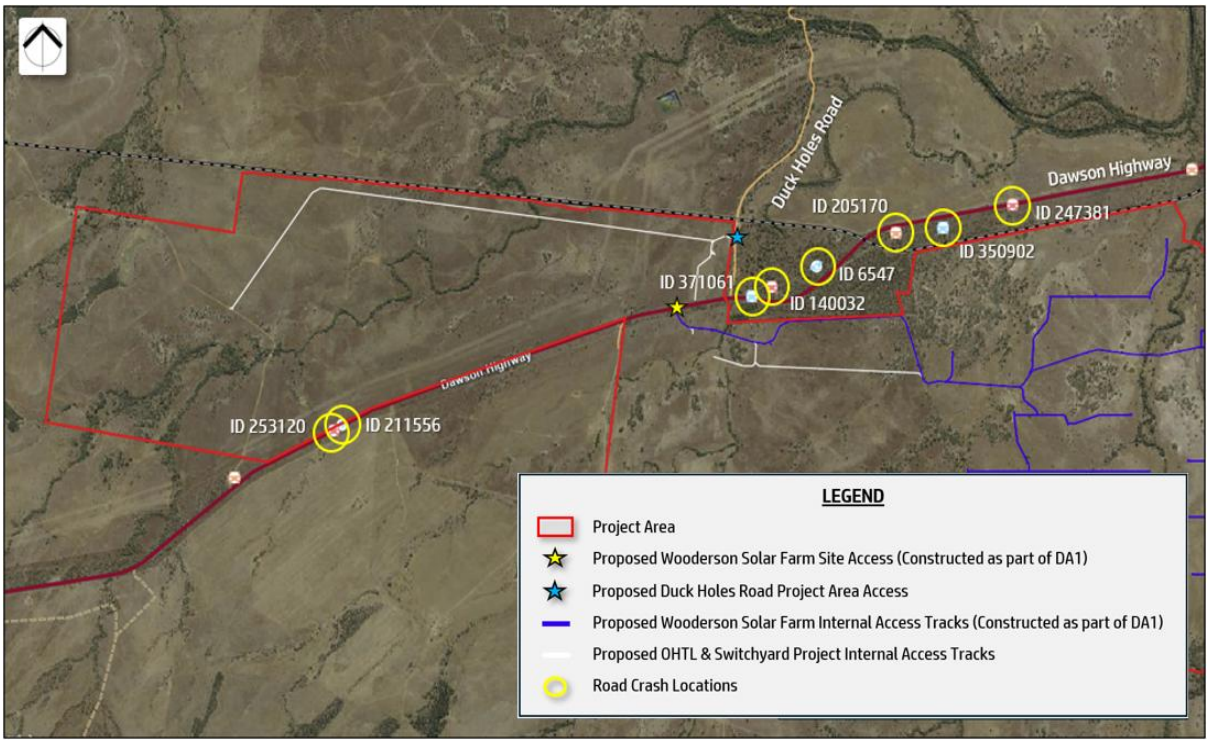


Figure 22 Road Crash Locations (2001-2023) – Dawson Highway

The results of this assessment identified 8 recorded crashes on the approximately 7.8 km long section of the Dawson Highway fronting the Project Area over the 2001-2024 period, with only the single accident (Crash Reference 247381) recorded in the latest 5-years. A summary of the details of the recorded crash data is provided for reference in **Table 5** overpage.

Reviewing this data, in general the majority of the recorded crashes are single vehicle off path type crashes, which is typical for rural high speed areas. Furthermore, it is noted that no crashes were recorded at the proposed location of the new site access for the Project on the Dawson Highway.

Based on this, and the relatively low volume of crashes recorded for this 7.8 km section (8 crashes in 23 years) it can be concluded that there is not any particular existing road feature or design deficiency in the relevant sections of the road network which is likely to be contributing to vehicle crashes and that require mitigation works to accommodate the expected increase in traffic as a result of the Project.

Table 5 Summary of Road Crash History – Dawson Highway

Crash Reference Number	Crash Year	Crash Severity	Crash Type	DCA Code	Crash Description
247381	2022	Hospitalisation	Single Vehicle	701	Off Path-Straight: Left Off Carriageway
205170	2015	Medical treatment	Single Vehicle	803	Off Path-Curve: Off Carriageway Right Hit Object
350902	2009	Property Damage	Single Vehicle	703	Off Path-Straight: Left Off Carriageway Hit Object
140032	2008	Hospitalisation	Single Vehicle	607	Vehicles On Path: Temporary Object On Carriageway
371061	2007	Property Damage	Single Vehicle	704	Off Path-Straight: Right Off Carriageway Hit Object
6547	2005	Property Damage	Multi-Vehicle	500	Vehicles Overtaking: Other
253120	2003	Hospitalisation	Single Vehicle	804	Off Path-Curve: Off Carriageway Left Hit Object
211556	2001	Property Damage	Other	609	Pass & Misc: Hit Animal

2.7 Pavement Loadings

Estimates were generated for the forecast background or pre-development pavement loadings on each of the identified road segments over the proposed peak generating period (construction phase) for the Project.

Traffic loads on the pavement are defined in terms of Equivalent Standard Axle (ESA) for granular pavements and Standard Axle Repetitions (SAR) for other pavement types. The ESAs for the background traffic heavy vehicle component on the network was calculated based on the identified heavy vehicle percentages for the relevant road sections, with the following assumptions applied to this calculation.

- The existing percentage of heavy vehicles will be maintained for future years.
- The impact of light vehicles can be ignored as the contribution to pavement loading (ESAs) is negligible in comparison to heavy vehicles.
- Equivalent Standard Axles per Heavy Vehicle (ESAs/HV) were adopted as follows (based on advice previously received from TMR for similar pavement impact assessments):
  - 2.9 ESAs/HV for the Bruce Highway.
  - 3.2 ESAs/HV for all other roads (including local government roads).
- The background period of the assessment is the proposed duration of construction (i.e. 15 months) which equates to approximately 456 days.
- The background traffic volumes and heavy vehicle percentages utilised as the basis of the calculation are for 2029, which is proposed to be the year in which construction activities for the Project commence.

A summary of the forecast background ESAs for each of the relevant road segments for the proposed duration of construction activities for the site is provided in **Table 6** below. The forecast background ESAs in **Table 6** have been used as the basis for the assessment of the pavement impact of the proposal during the Project's construction phase, with further details of the pavement impact assessment provided in **Section 5.6.1**.

Table 6 Forecast Background ESAs (Project Construction Period)

Segment ID	AADT Segment		Base Data Year	Base Year HV %		Base Year HV Volume		10 Yr. GR %	2029 HV Volumes		ESAs / HV	No. Days	Background ESAs	
	Start (km)	End (km)		Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz			Gaz	A-Gaz
Gladstone Port Access Road (183)														
61605	0.000	0.858	2024	30.00%	41.08%	292	355	*1.00%*	306	373	3.2	456	447,453	545,263
Gladstone-Mount Larcom Road (181)														
160360	0.000	0.175	2023	8.85%	8.60%	500	512	1.00%	531	543	3.2	456	774,948	792,776
Dawson Highway (46A Gladstone – Biloela)														
60061	0.000	1.505	2022	6.42%	9.53%	499	771	2.18%	580	897	3.2	456	847,083	1,309,857
61083	1.505	2.250	2022	8.58%	7.68%	699	692	*1.00%*	750	742	3.2	456	1,094,445	1,083,510
60063	2.250	4.445	2023	9.92%	8.68%	1,377	1,188	*1.00%*	1,461	1,261	3.2	456	2,133,633	1,841,369
60064	4.445	7.150	2022	7.45%	8.55%	832	934	*1.00%*	892	1,002	3.2	456	1,302,836	1,462,545
60065	7.150	19.350	2023	17.32%	13.62%	664	498	*1.00%*	705	529	3.2	456	1,029,424	772,361
60066	19.350	21.750	2022	8.54%	7.16%	354	296	*1.00%*	380	318	3.2	456	554,497	464,110
60128	21.750	25.640	2024	17.48%	18.13%	219	228	1.43%	235	244	3.2	456	343,029	356,921
60005	25.640	64.888	2022	27.42%	28.07%	186	191	3.06%	230	236	3.2	456	336,171	344,140
	64.888	113.730	2022	27.42%	28.07%	186	191	3.06%	230	236	3.2	456	336,171	344,140
61084	113.730	116.835	2022	27.42%	28.07%	186	191	3.06%	230	236	3.2	456	336,171	344,140
160067	116.835	119.758	2023	21.73%	23.14%	181	196	*1.00%*	192	208	3.2	456	280,871	304,117
Duck Holes Road (GRC)														
GRC	0.000	0.430	2024	25.00%	33.33%	10	5	*1.00%*	11	5	3.2	456	15,345	7,672

Gaz (Gazettal) / A-Gaz (Against Gazettal) direction of traffic flow in relation to TMR Road Chainages

TMR Chainage 0.175km (181) – Gladstone-Mount Larcom Road / Gladstone Port Access Road | TMR Chainage 19.350km (46A) – Dawson Highway / Bruce Highway | TMR Chainage 21.750km (46A) –Dawson Highway / Taragoola Road | TMR Chainage 64.433km (46A) – Dawson Highway / Duck Holes Road | TMR Chainage 64.888km (46A) - Dawson Highway / Wooderson Solar Farm Site Access | Chainage 0.430km Duck Holes Road – Proposed Project Area Access

3.0 Proposed Project

3.1 Project Site Plan

A preliminary plan of development for the Project was provided by the Proponent. This layout identified the currently proposed Project Area, site access locations, as well as indicative locations for internal infrastructure including site access tracks, construction compounds, site laydown areas, as well as 2 potential options for the switchyard location, as shown in **Figure 5** and **Figure 6** above, with a detailed copy of the provided Project layout plans is provided for reference in **Appendix D.**

As shown in the provided plan of development, 2 vehicular access points from the external road network are proposed to be utilised by Project traffic during both the construction and operational stages of the Project. These include a new access point on the Dawson Highway to the southern Project Area (to be constructed as part of the Wooderson Solar Farm, subject to approval under DA1) and a second access to the northern Project Area on the GRC controlled Duck Holes Road.

A summary of the key site infrastructure for the Project is provided in **Table 7**, with final design details to be confirmed during detailed design.

Table 7 Key Elements of Wooderson Solar Farm OHTL and Switchyard

Site Element	Northern Project Area	Southern Project Area
	Quantity	Quantity
Site Access Points	1 (via Duck Holes Road Access)	1 (via WSF Site Access)
Switchyards	1	0
Site Construction Compounds	2	0
Site Laydown Areas	4	1
Length of Internal Access Tracks	7,194 m	1,969 m**
Indicative Number OHTL Monopoles	18	27
Approximate Length of OHTL	4,663 m	6,148 m

** Note – The length of internal access tracks identified within the southern project area are noted to be additional to those proposed as part of the Wooderson Solar Farm (DA1).

3.2 Project Details

3.2.1 Construction Phase

Construction of the Project is anticipated to be completed over a 15-month period, which is expected to commence in Q1 2029 (pending approvals) and conclude in Q2 2030. Construction timeframes will be dependent on securing Project approvals, timing and staging of construction of other assets including the solar farm and Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project. As previously identified the proposed hours of the construction operations for the Project will typically be 7 am to 6 pm, Monday to Saturday, equating to approximately 24 working days per month.

Preliminary details of the proposed construction phase activities have been provided, with a high-level summary of the key construction tasks, the likely order of completion and anticipated timeframes provided in **Table 8**. Based on this indicative schedule it is expected that the peak period of construction activities on site will be during the 12-month period between Q1 2029 and Q1 2030.

Table 8 Proposed Construction Schedule

ID	TASK	DURATION (MONTHS)	MONTH														
			Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	37
			Q1	Q2 2029			Q3 2029			Q4 2029			Q1 2030			Q2 2030	
A	Procurement & Mobilisation	1															
B	Clearing and Access Roads	3															
C	Site Establishment (Civil Works)	6															
D	Benching & Foundations	12															
E	Monopole Structures	12															
F	Stringing	12															
G	Electrical Site Infrastructure (Switching Station)	15															
H	Commissioning & Site Demobilisation	2															

3.2.2 Operations Phase

The operations phase of the Project will commence upon the completion of the construction works and grid commissioning activities. As previously identified, the main site activities during the operations of the Project will be scheduled inspections of the OHTL easement, switchyard and access tracks by maintenance staff.

The timing and frequency of any required maintenance works will depend on vegetation growth and the requirement for emergency repairs and is expected to be periodic (i.e. monthly), with limited and/or no daily works required for the Project.

3.2.3 Decommissioning Phase

As identified above, at the end of the Wooderson Solar Farm's operational life, it is anticipated to either be upgraded (subject to additional planning approvals, as required) or decommissioned. The decommissioning of the solar farm would result in the OHTL being no longer required and will also be decommissioned. It is anticipated that switchyard would remain operational as a Powerlink network asset.

Decommissioning the OHTL will be in agreement with the landholders, and would involve removing infrastructure, returning the Project Area to its pre-existing land use as far as practicable, and easements maybe surrendered to the property owner. Some infrastructure such as access tracks may be retained where agreed with and beneficial to the landowner.

Where feasible and practical all dismantled and decommissioned infrastructure and equipment will be recycled. It is anticipated that more material would be recyclable by the end of the operational life than is currently possible, as recycling industries establish. Structures and equipment that cannot be recycled would be disposed of at an approved waste management facility in accordance with all statutory requirements.

Vehicle movements and personnel requirements during the decommissioning phase are expected to be similar or less than the construction phase.

However, as these works are likely to occur 30 years in the future, the exact nature of the decommissioning works and associated traffic movements, and the future condition and configuration of the road network

are difficult to confirm at this stage. As such it is proposed that prior to the start of the decommissioning works, an updated TIA be completed as part of the required decommissioning and rehabilitation strategy for the Project, to clearly outline the proposed decommissioning works, the associated traffic movements, their anticipated impact on the surrounding road network and any management and mitigation measures required.

3.3 Project Transport Routes

The routes anticipated to be utilised by Project traffic are as follows:

3.3.1 Project Construction Phase

- The construction workforce is assumed to commute daily to and from the Project Area from the nearby townships to the east (Gladstone [45%], and Calliope [30%]) and the west (Biloela [25%]), utilising the Dawson Highway and accessing the Project Area via either the proposed Dawson Highway / Wooderson Solar Farm Access intersection (southern Project Area) or the existing Dawson Highway / Duck Holes Road intersection, the relevant section of Duck Holes Road and the proposed Duck Holes Road / Project Area Access (northern Project Area).
- Construction equipment (bulk earthworks plant, prefabricated buildings) and materials (such as reinforcing steel) will primarily be sourced locally (as far as reasonably practical) from Gladstone. These materials have conservatively been assumed to be 100% imported to the Project Area, with the associated transport vehicle movements expected to utilise the Dawson Highway and access the Project Area via either the proposed Dawson Highway / Wooderson Solar Farm Access intersection (southern Project Area) or the existing Dawson Highway / Duck Holes Road intersection, the relevant section of Duck Holes Road and the proposed Duck Holes Road / Project Area Access (northern Project Area).
- Construction quarry materials (road gravels) and concrete will primarily be sourced from local quarry and batch plant operations in Calliope. These materials have also conservatively been assumed to be 100% imported to the Project Area, with the associated transport vehicle movements also expected to utilise the Dawson Highway and access the Project Area via either the proposed Dawson Highway / Wooderson Solar Farm Access intersection (southern Project Area) or the existing Dawson Highway / Duck Holes Road intersection, the relevant section of Duck Holes Road and the proposed Duck Holes Road / Project Area Access (northern Project Area).
- Electrical components for the OHTL and switchyard, as well as any other component that cannot be sourced locally, will be delivered to the Port of Gladstone, before being transported to the Project Area by road using a route consisting of the state-controlled Gladstone Port Access Road, Gladstone-Mount Larcom Road (Glenlyon Road), Dawson Highway, before accessing the Project Area via the existing Dawson Highway / Duck Holes Road intersection, the relevant section of Duck Holes Road and the proposed Duck Holes Road / Project Area Access.

3.3.2 Project Operations Phase

- The periodic staff movements during operations phase of the Project will consist of a small number of local workers who are expected to reside locally to the Project (likely in either Gladstone and/or Calliope), and travel to the Project Area via the Dawson Highway and either the proposed Dawson Highway / Wooderson Solar Farm Access intersection (southern Project Area) or the existing Dawson Highway / Duck Holes Road intersection, the relevant section of Duck Holes Road and the proposed Duck Holes Road / Project Area Access (northern Project Area).
- Any heavy vehicle movements required during the operations stage of the Project are anticipated to be extremely low and periodic, and associated with scheduled maintenance activities for the Project.

These movements are expected to travel to the Project Area from Gladstone utilising the Dawson Highway and either the proposed Dawson Highway / Wooderson Solar Farm Access intersection (southern Project Area) or the existing Dawson Highway / Duck Holes Road intersection, the relevant section of Duck Holes Road and the proposed Duck Holes Road / Project Area Access (northern Project Area).

The operations phase volumes for the Project are anticipated to only be periodic and very low, with negligible volumes of heavy vehicles. As such the impact of the ongoing operations phase of the Project is anticipated to be negligible from a traffic impact perspective.

3.4 Site Access Arrangements

As outlined above, vehicular access to the Project Area is proposed to be provided 2 access locations, including:

- The proposed new Dawson Highway / Wooderson Solar Farm Site Access intersection to be constructed as part of the proposed solar farm development (DA1), which will be utilised to access the Project Area south of the Dawson Highway.
- The proposed Duck Holes Road / Project Area Access, which is proposed to be provided as part of this Project and be utilised by Project traffic to access the Project Area north of the Dawson Highway. This site access will align with the existing driveway access off Duck Holes Road at this location to minimise impacts to landholder agricultural activities and ecology.

Further details of these proposed accesses for the Project are provided in the following sections.

3.4.1 Dawson Highway / Wooderson Solar Farm Site Access

This access is proposed to be the primary access for Project traffic to the portion of the Project Area to the south of the Dawson Highway, and cater for all staff movements, material, equipment and component delivery movements associated with the Project.

Approval for this access is being sought as part of the scope of DA1 as a BAR and CHR turn treatment, generally in accordance with Figure 8.2 and Figure 7.2 of Part 4A of Austroads' *Guide to Road Design* respectively. This access is excluded from the scope of DA2 and DA3 as the access intersection works to be provided as part of the Wooderson Solar Farm project, prior to the commencement of this Project.

3.4.2 Duck Holes Road / Project Area Access

As identified above, this access is proposed to be the primary access for Project traffic to the portion of the Project Area to the north of the Dawson Highway, and cater for all staff movements, material, equipment and component delivery movements associated with the Project.

Based on the relatively low volumes at this access location, it is recommended that the existing property access at this location be upgraded to provide a configuration generally in accordance with the arrangement for articulated vehicles as identified in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General,* as shown in Figure 20 below, with these works to be provided as part of the external upgrade works for the Project.

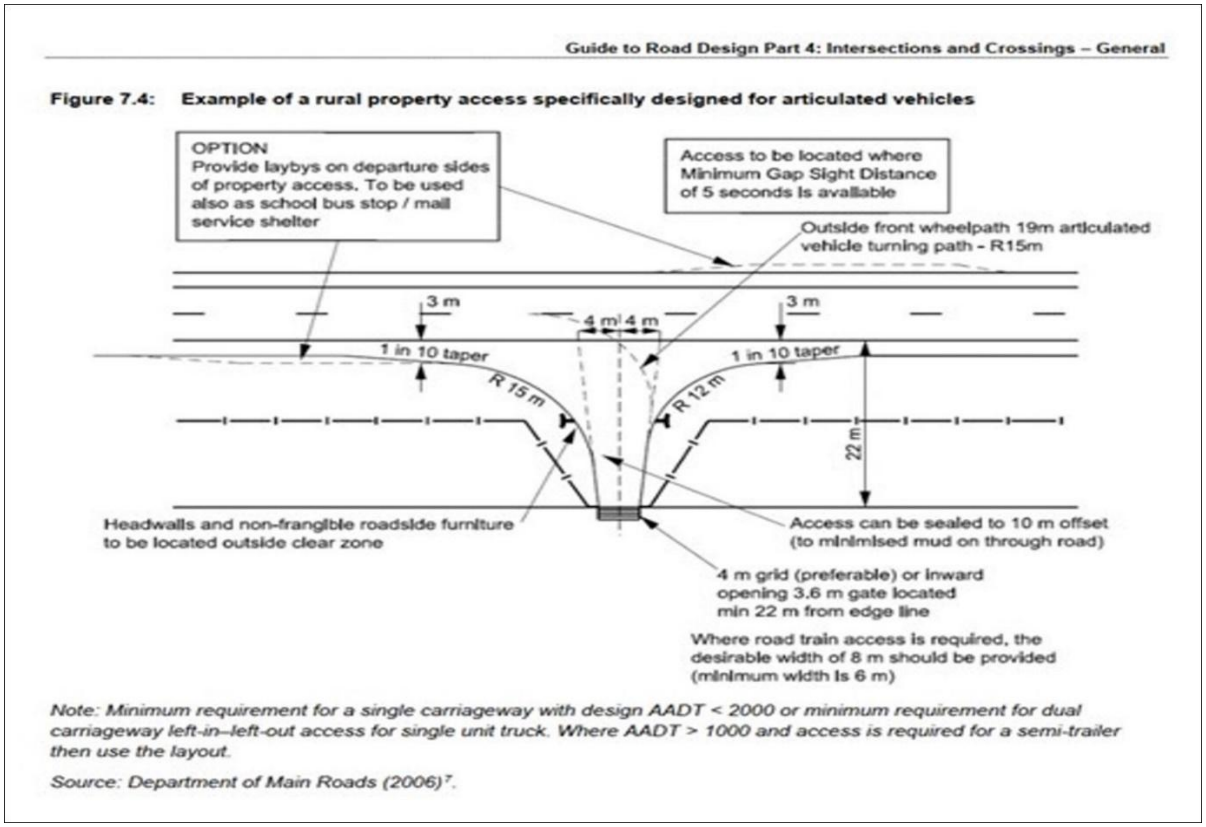


Figure 23 Proposed Site Access Configuration [Source: Fig 7.4 Austroads GTRD Pt 4]

3.4.3 Road Link Upgrades

In addition to the proposed site access works, the requirement for upgrade works to be provided to the 430 m section of Duck Holes Road between the Dawson Highway and the proposed Project Area access.

These works are recommended to include the upgrade of this section of Duck Holes Road, noting that similar upgrade works have been conditioned to be provided as part of the Upper Calliope Solar Farm, which includes the provision of a 7 m wide road pavement in accordance with a Rural Local Access Road standard as per Annexure D10C of the Capricorn Municipal Design Guidelines (CMDG) – D1 Geometric Road Design.

While these upgrade works could be provided as part of the Upper Calliope Solar Farm prior to the commencement of the Project, it is noted that they will be required to be provided as part of the Project in the event that either the Project proceeds first or the Upper Calliope Solar Farm does not proceed at all.

3.5 Internal Site Facilities

Whilst not specifically shown on the proposed Project layout, suitable on-site workforce parking facilities for the Project will be provided for within the Project Area adjacent to the proposed construction compounds and laydowns (but within the Project Disturbance Footprint). These workforce parking facilities for the Project will be adequately sized to cater for the expected staff vehicles movements and be designed and constructed in accordance with the requirements of all relevant standards, guidelines and policies.

Based on the proposed provision of adequate parking areas on site, in conjunction with the current setbacks from the external road network, it is not anticipated that either the construction or operations phase of the proposed Project will lead to an overspill of parking or vehicle queuing at either of the identified access locations that would lead to negative impacts to the operation of the surrounding road network.

4.0 Development Traffic

Based on the assessment of similar Projects, it is noted that there will be 3 distinct periods of traffic generation for the Project, being during the construction, operations and decommissioning phases. The expected traffic generation and distribution during both these phases of the Project is discussed in the sections below.

4.1 Construction Phase

Construction works for the Project are proposed to commence in Q1 2029 (pending approvals), with all construction activities across the site anticipated to be completed within 15 months (i.e. Q2 2030) with the peak period of construction expected to occur within Q1 2029 and Q1 2030. The timing and duration of construction is subject to confirmation during detailed design.

The main traffic generating activities occurring within the construction phase of the Project will be the transport of the general construction materials, plant and equipment, OHTL monopoles and cables and electrical infrastructure (switchyard components) to the Project Area, and the daily construction staff movements.

Further details of these construction activities, including the Project traffic generation and its expected distribution on the surrounding road network, are provided in the following sections.

4.1.1 Materials and Equipment Delivery Movements

The preliminary information and assumptions regarding the expected construction phase traffic movements for the Project have been based on information previously utilised for the assessment of similar OHTL and switchyard projects. This information has been used to calculate the expected material and equipment quantities for the various construction activities for the Project and the associated vehicle movements for the delivery of these items, based on the following general assumptions regarding the expected Project traffic numbers.

- General construction plant, materials and equipment will be sourced from the main regional centre of Gladstone.
- For the purpose of this assessment, it has been conservatively assumed 100% of the construction gravel, road pavement and site water requirements will be imported to the Project Area from external sources, with the following material source locations proposed:
  - Gravel and road pavement materials for the internal access tracks, road upgrade works, site areas will be sourced from local quarries, in particular the Graymont Calliope Quarry.
  - Site water will be sourced from local public water standpipe facilities, in particular those located in Calliope.
  - Concrete will be sourced from local batch plants, in particular those located in Calliope.
- The required OHTL monopole structure and cables will be sourced from the main regional centre of Gladstone, or imported to the region if not locally available.
- The electrical components for the switchyard construction works are proposed to be delivered to the port facilities in Gladstone, before being transported by road to the proposed Project Area using standard semi-trailers.

A breakdown of the anticipated Project traffic movements by construction task, is summarised in **Table 9** overpage, while the detailed first principles calculations completed to establish these construction phase traffic volumes are included for reference in **Appendix E**.

Table 9 Summary of Construction Phase Material / Equipment / Component Transport Vehicle Volumes

Task	Transport Task Duration	Total Vehicles	Type of Vehicles	Average Vehicles per Day
Task A – Procurement & Mobilisation	1 month	40 vehicles (including 40 semi-trailer movements from Gladstone)	Semi-Trailers Semi / Low Loaders	2 vehicles / day (external)
Task B – Clearing & Access Roads	3 months	386 vehicles (including 2 semi-trailer movements from Gladstone and 384 truck and dog movements from Calliope quarry)	Semi-Trailers Truck and Dogs	6 vehicles / day (external)
Task C – Site Establishment (Civil Works)	6 months	1,445 vehicles (including 151 semi-trailer movements from Gladstone, 989 truck and dog movements from Calliope quarry and 305 concrete truck movements from Calliope)	Semi-Trailers Truck and Dogs Concrete Truck	11 vehicles / day (external)
Task D – Benching & Foundations	12 months overall / 9 months transport	452 vehicles (including 137 semi-trailer movements from Gladstone and 90 truck and dog movements from Calliope quarry and 225 concrete truck movements from Calliope)	Semi-Trailers Truck and Dogs Concrete Truck	3 vehicles / day (external)
Task E – Monopole Structures	12 months overall / 6 months transport	139 vehicles (including 135 semi-trailer and 4 crane movements from Gladstone)	Semi-Trailers Crane	1 vehicle / day (external)
Task F – Stringing	12 months overall / 3 months transport	20 vehicles (including 20 semi-trailer movements from Gladstone)	Semi-Trailers	1 vehicle / day (external)
Task G – Electrical Site Infrastructure (Switching Station)	15 months overall / 3 months transport	500 vehicles (including 500 semi-trailer movements from Port of Gladstone)	Semi-Trailers	7 vehicles / day (external)
Task H – Commissioning & Site Demobilisation	2 months	115 vehicles (including 115 semi-trailer movements from Gladstone)	Semi-Trailers Semi / Low Loaders	3 vehicles / day (external)
Site Water (Does not include internal water truck movements)	15 months	1,440 vehicles (including 1,440 15KL water truck movements from Calliope standpipe)	15KL 3 Axle Rigid Water Trucks	4 vehicles / day (external)
Waste Collection	15 months	240 vehicles (including 240 to Calliope waste transfer station)	Semi-Trailers	1 vehicles / day (external)

4.1.2 Construction Staff Movements

Construction staff movement assumptions for the proposed construction phase of the Project are as follows:

- The period of peak construction activities on site is anticipated to span a 12-month period with peak staff numbers during this period of 80 staff,(full time equivalent – FTE) including 30 staff for the OHTL works and 50 staff for the switchyard works.
- For the remaining 3 months of the proposed construction period, staff numbers are expected to be in the order of 50 staff, including 20 staff for the OHTL works and 30 staff for the switchyard works.
- The construction staff for the Project are expected to be sourced from local residential areas including Gladstone (45%) Calliope (30%) and Biloela (25%).
- Construction staff are conservatively expected to commute to and from site daily using a private vehicles (light vehicles and 4WDs), with an average capacity of 2 staff per light or private vehicle.

Based on the staff numbers per month and the general staff assumptions above, the expected staff vehicle movements to and from the Project Area were established as summarised in Table 10.

Table 10 Daily Staff Vehicle Volumes (Peak Construction) – Wooderson Solar Farm OHTL and Switchyard Project

				MONTH														
				Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
				Q1	Q2 2029			Q3 2029			Q4 2029			Q1 2030			Q2 2030	
Peak Total Staff Numbers				80	80	80	80	80	80	80	80	80	80	80	80	50	50	50
Staff	Vehicle	100% Capacity	Utilisation by Staff	*80*	*80*	*80*	*80*	*80*	*80*	*80*	*80*	*80*	*80*	*80*	*80*	*50*	*50*	*50*
Required Staff Vehicle Movements	LV (Gladstone)	2	45%	18	18	18	18	18	18	18	18	18	18	18	18	12	12	12
	LV (Calliope)	2	30%	12	12	12	12	12	12	12	12	12	12	12	12	8	8	8
	LV (Biloela)	2	25%	10	10	10	10	10	10	10	10	10	10	10	10	7	7	7
Total Daily Staff Vehicle Movements				40	40	40	40	40	40	40	40	40	40	40	40	27	27	27

4.2 Operations Phase

As noted above, the traffic volumes during the operations phase of the Project are anticipated to be periodic (i.e. not daily) and associated with scheduled inspections and maintenance works on the OHTL, access roads and switchyard.

Notwithstanding this, for the purpose of this traffic assessment minor traffic volumes have been assumed to represent these periodic maintenance movements, including:

- During the Project peak periods (6 am to 7 am and 5 pm to 6 pm) it is assumed that a small number of light (5 vehicles per hour [vph]) and heavy (1 vph) will travel to the Project Area in the AM peak and from the Project Area in the PM peak.
- During the Network peak periods (8 am to 9am and 3:45 pm to 4:45pm) a smaller number of light (1 vph) and heavy (1 vph) will travel to the Project Area in the AM peak and from the Project Area in the PM peak.
- These vehicle movements have been assumed to travel to and from the site from either Gladstone or Calliope to the west of the Project Area.

4.3 Decommissioning Phase

As previously identified, as any decommissioning works for the Project will occur in more than 30 years' time, the exact nature of the works and associated traffic movements are difficult to confirm at this stage. It is therefore recommended that prior to the start of the decommissioning works, an assessment of the traffic impacts of the Project be completed as part of the required decommissioning and rehabilitation strategy, to clearly outline the proposed decommissioning works, the associated traffic movements, their anticipated impact on the surrounding road network and any management and mitigation required.

As such no estimate of Project traffic volumes has been established for the decommissioning phase as part of this assessment.

In light of the information regarding the Project traffic volumes provided above, it can clearly be seen that the construction stage of the Project is critical in terms of the impact upon the public road network and has been used as the basis of the assessment of this impact considering road safety, road capacity, and pavement impact.

4.4 Project Traffic Volumes on the Network

4.4.1 Road Links

As previously identified, the use of the external road network by typical day to day Project traffic is anticipated to be generally limited to the state-controlled network and the short 430 m section of Duck Holes Road between the Dawson Highway and the proposed Project Area access.

A summary of the calculated Project traffic volumes (conservatively based on the total of the individual maximum movements from concurrently scheduled construction activities) for each identified road link is provided in **Table 11** below, noting that typically these peak volumes are experienced during the construction period where Tasks B, C, D, E, G (refer **Table 8** above) are being completed simultaneously with typical site water, waste collection and staff vehicle movements on the network.

Table 11 Forecast Average Project Traffic Volumes on External Road Network

Road ID	Road Description	AADT Segment ID	AADT Segment		Average Daily Project Traffic		
			Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir
183	Gladstone Port Access Road	61605	0.000	0.858	7	7	14
181	Gladstone - Mount Larcom Road	160360	0.000	0.175	7	7	14
46A	Dawson Highway (Gladstone - Biloela)	60061	0.000	1.505	30	30	60
		61083	1.505	2.250	30	30	60
		60063	2.250	4.445	30	30	60
		60064	4.445	7.150	30	30	60
		60065	7.150	19.350	30	30	60
		60066	19.350	21.750	42	42	84
		60128	21.750	25.640	62	62	124
		60005	25.640	64.433	62	62	124
			64.433	64.888	34	34	68
			64.888	113.730	10	10	20
		61084	113.730	116.835	10	10	20
		160067	116.835	119.758	10	10	20
GRC	Duck Holes Road	-	0.000	0.430	68	68	136

4.4.2 Intersections

From the information above, the forecast Project traffic movements during the identified Project (6 am to 7 am and 5 pm to 6 pm) and road network (8 am to 9 am and 3:45 pm to 4:45 pm) AM and PM peak periods for both the construction and operations phase of the Project were established for the relevant section of the external road network, in particular the key intersections of Dawson Highway / Duck Holes Road, the proposed Dawson Highway / Wooderson Solar Farm Site Access and the proposed Duck Holes Road / Project Area Access.

It is noted that the Project traffic volumes at each of the proposed access points to the Project Area were established using the volumes from each concurrent construction and operations phase task that would occur within each of the northern (via Duck Holes Road access) and southern (via the Dawson Highway / Wooderson Solar Farm Access intersection) sections of the Project, which in turn were determined based on the percentage of the project infrastructure (including access tracks, monopoles, OHTL length and site areas) located within each area.

A summary of the resultant Project only traffic volumes at these intersections for the identified Project and Network AM and PM peak periods is outlined in **Figure 24** to **Figure 31**, with further details of the calculations undertaken to establish these volumes are provided for reference in **Appendix B.**

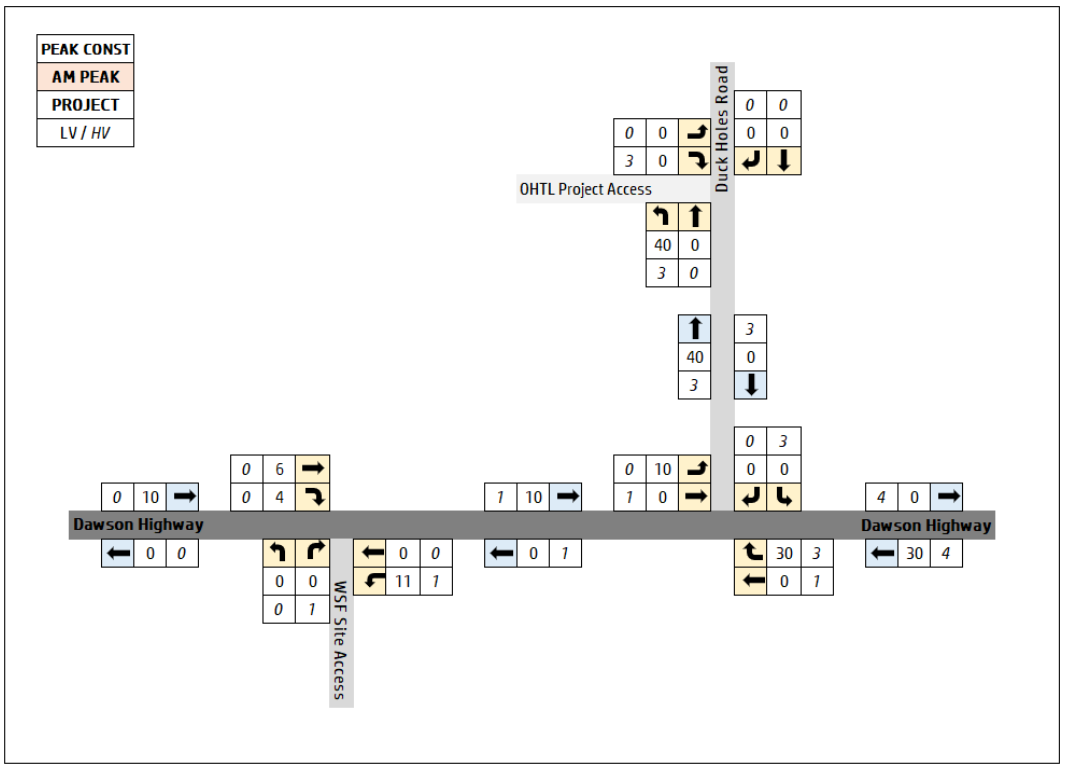


Figure 24 Project Peak Construction – Project AM Peak (6am-7am) Traffic Volumes

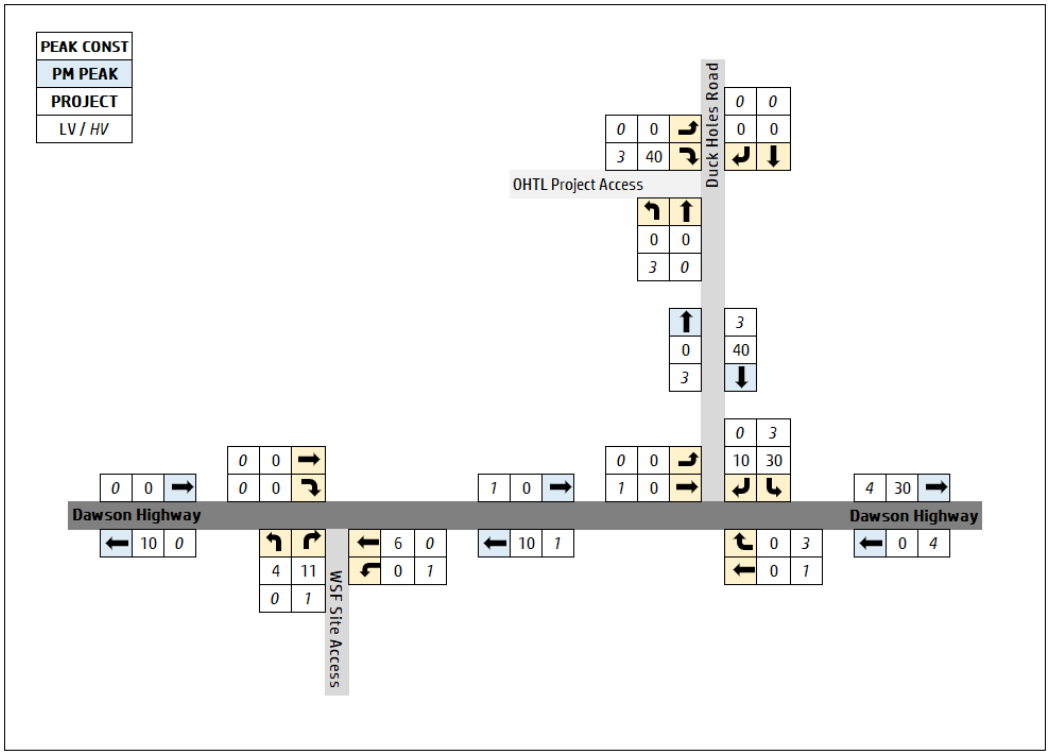


Figure 25 Project Peak Construction – Project PM Peak (5pm-6pm) Traffic Volumes

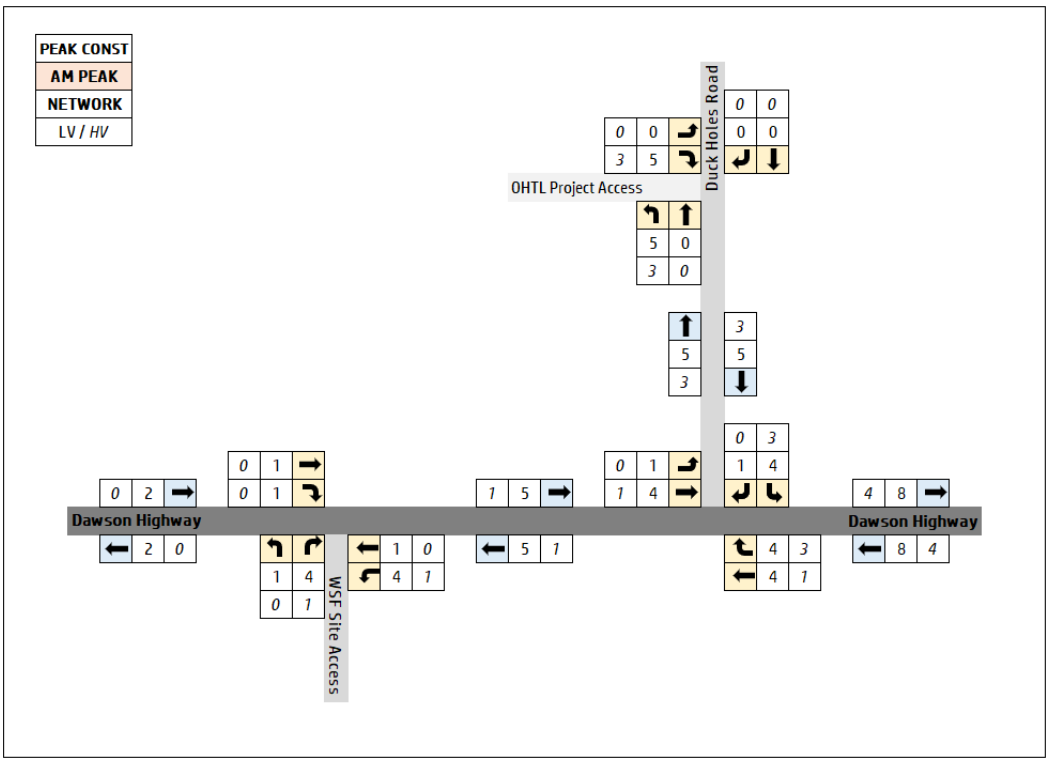


Figure 26 Project Peak Construction – Network AM Peak (8am-9am) Traffic Volumes

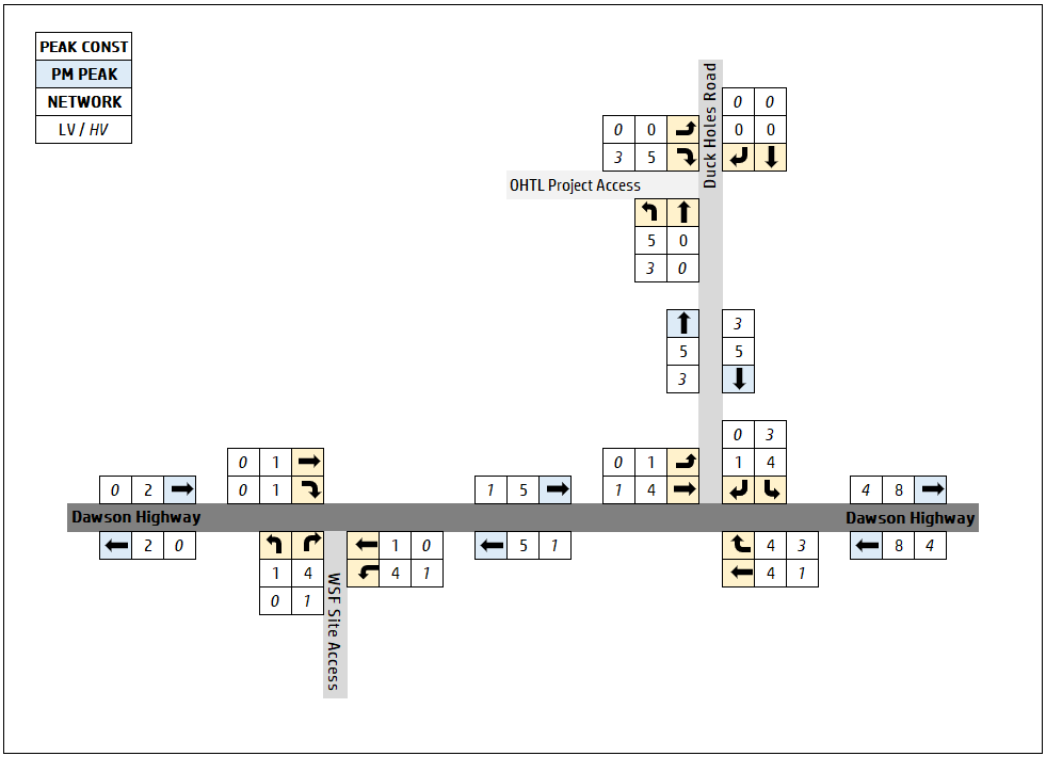


Figure 27 Project Peak Construction – Network PM Peak (3:45pm-4:45pm) Traffic Volumes

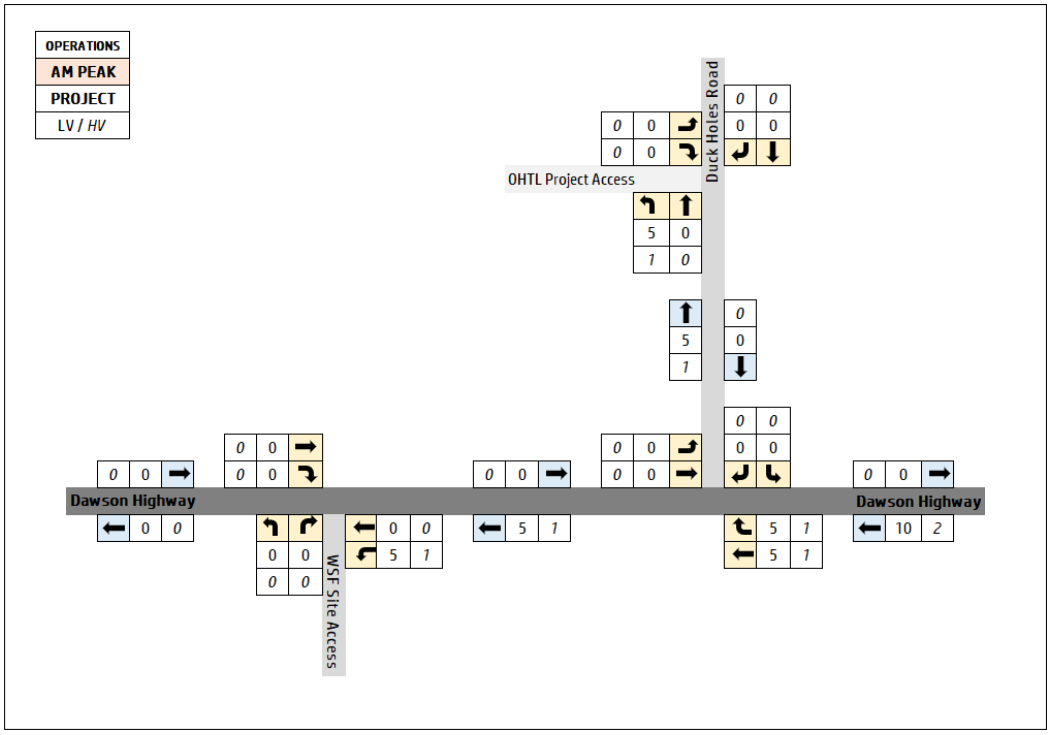


Figure 28 Project Operations – Project AM Peak (6am-7am) Traffic Volumes

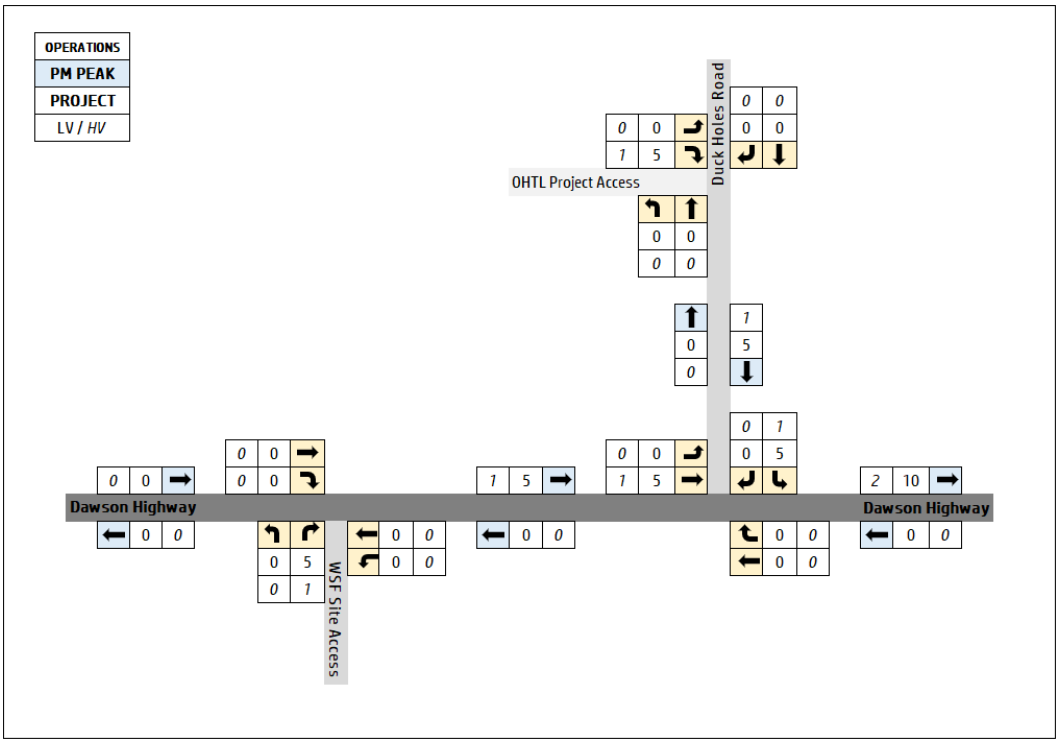


Figure 29 Project Operations – Project PM Peak (5pm-6pm) Traffic Volumes

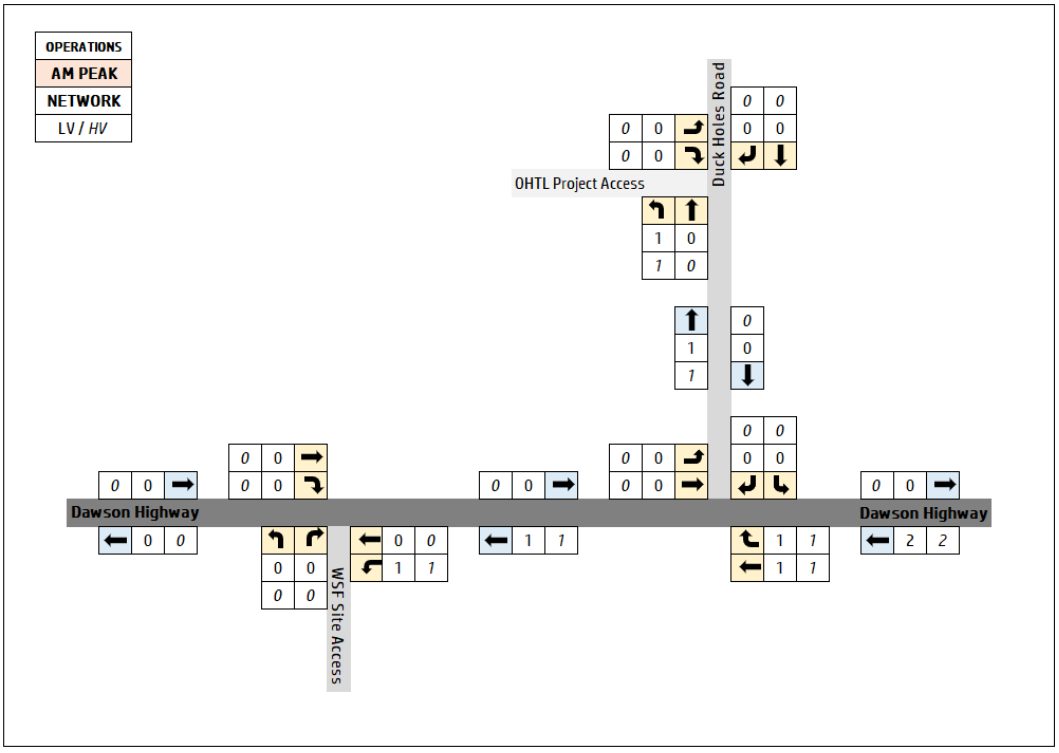


Figure 30 Project Operations – Network AM Peak (8am-9am) Traffic Volumes

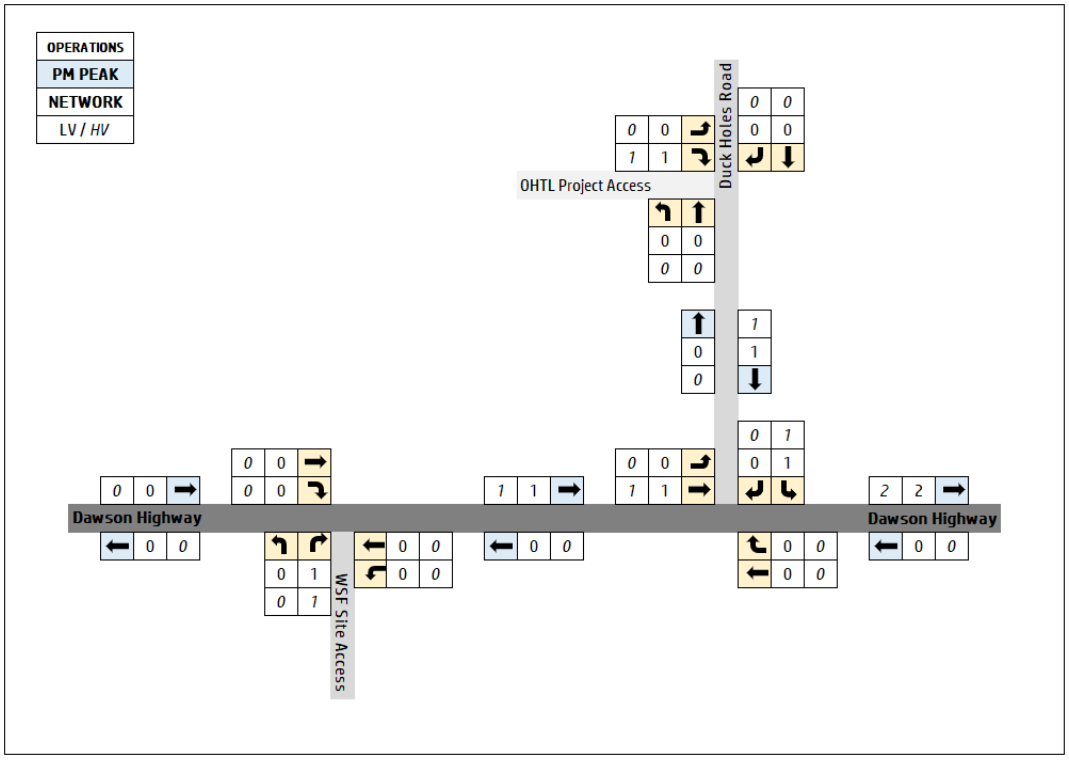


Figure 31 Project Operations – Network PM Peak (3:45pm-4:45pm) Traffic Volumes

4.5 Cumulative Project Traffic Volumes

As previously identified, based on the expected overlap or concurrent nature of the construction phases of the adjacent Upper Calliope and Wooderson Solar Farm (DA1) developments, a cumulative assessment of the combined impacts of these approvals / applications with the proposed Project has been undertaken for the relevant road links forming the identified transport routes, as well as the key intersections of Dawson Highway / Duck Holes Road, Dawson Highway / Wooderson Solar Farm Site Access and Duck Holes Road / Project Area Access.

The relevant daily road link volumes and intersection volumes during the construction phase for each external project have been obtained from the relevant traffic impact assessments, with a summary of the expected daily link volumes provided in **Table 12**, with the peak hour volumes at the relevant intersections shown in **Figure 32** to **Figure 35**.

Table 12 External Project "Peak Construction" Traffic Volumes

Site ID	Road Segment		Upper Calliope Solar Farm Traffic Volumes		Wooderson Solar Farm Traffic Volumes		Total External Project Traffic Volumes	
	Start (km)	End (km)	Construction		Construction		Construction	
			Gaz	Gaz	Gaz	A-Gaz	Gaz	A-Gaz
Gladstone Port Access Road (183)								
61605	0.000	0.858	21	21	19	7	40	28
Gladstone-Mount Larcom Road (181)								
160360	0.000	0.175	58	58	16	7	74	65
Dawson Highway (46A Gladstone – Biloela)								
60061	0.000	1.505	62	62	108	108	170	170
61083	1.505	2.250	62	62	108	108	170	170
60063	2.250	4.445	62	62	108	108	170	170
60064	4.445	7.150	62	62	108	108	170	170
60065	7.150	19.350	62	62	111	111	173	173
	19.350	21.750	90	90	166	166	256	256
60128	21.750	25.640	119	119	190	190	309	309
60005	25.640	64.433	119	119	190	190	309	309
	64.433	64.888	28	28	190	190	218	218
	64.888	113.730	28	28	45	45	73	73
61084	113.730	116.835	28	28	45	45	73	73
160067	116.835	119.758	28	28	45	45	73	73
Duck Holes Road (GRC)								
GRC	0.000	0.430	147	147	0	0	147	147

Gaz (Gazettal) / A-Gaz (Against Gazettal) direction of traffic flow in relation to TMR Road Chainages

TMR Chainage 0.175km (181) – Gladstone-Mount Larcom Road / Gladstone Port Access Road | TMR Chainage 19.350km (46A) – Dawson Highway / Bruce Highway | TMR Chainage 21.750km (46A) –Dawson Highway / Taragoola Road | TMR Chainage 64.433km (46A) – Dawson Highway / Duck Holes Road | TMR Chainage 64.888km (46A) - Dawson Highway / Wooderson Solar Farm Site Access | Chainage 0.430km Duck Holes Road – Proposed Project Area Access

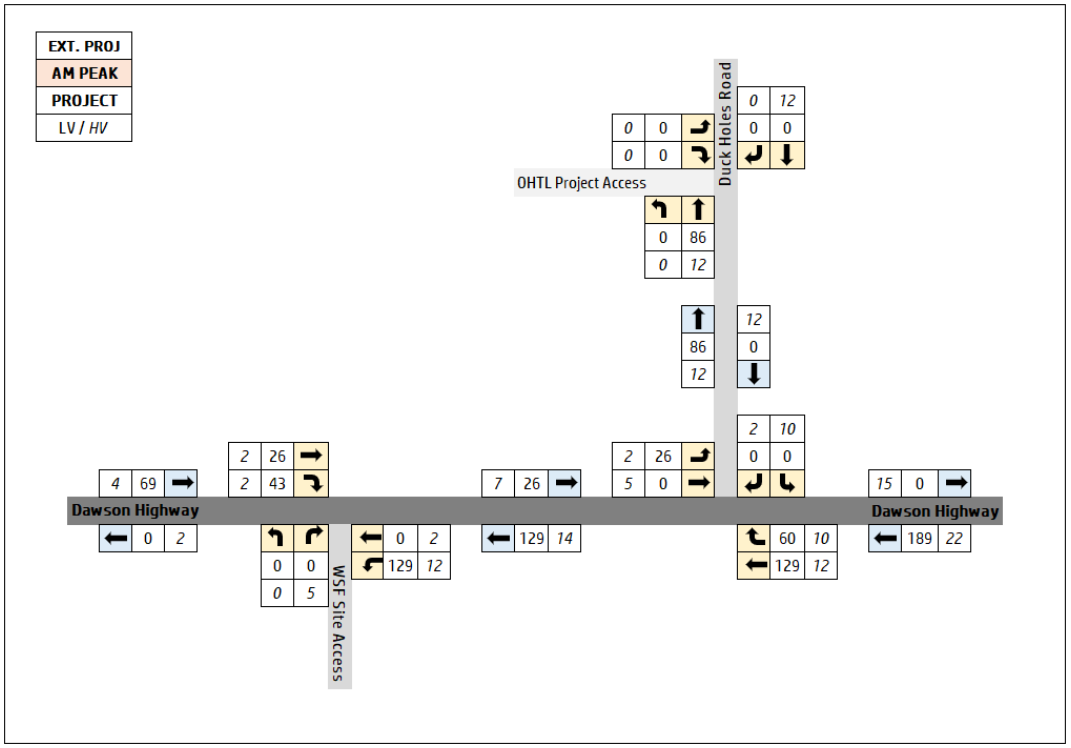


Figure 32 External Project (Construction) – Project AM Peak (6am-7am) Traffic Volumes

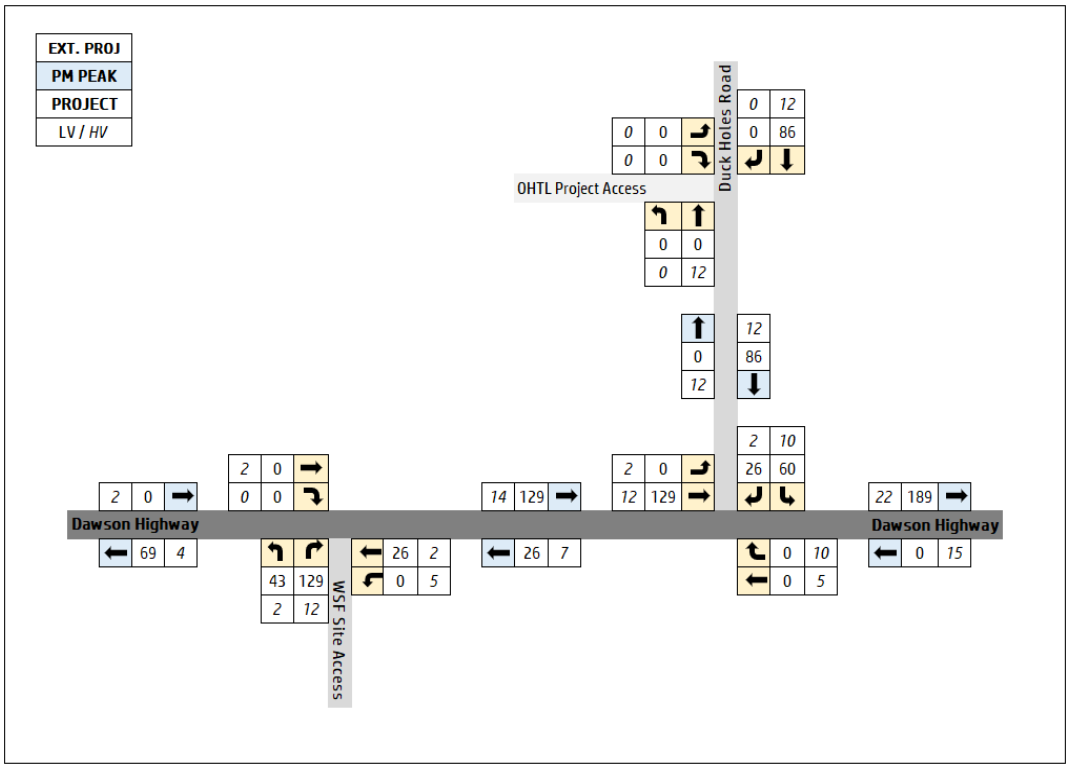


Figure 33 External Project (Construction) – Project PM Peak (5pm-6pm) Traffic Volumes

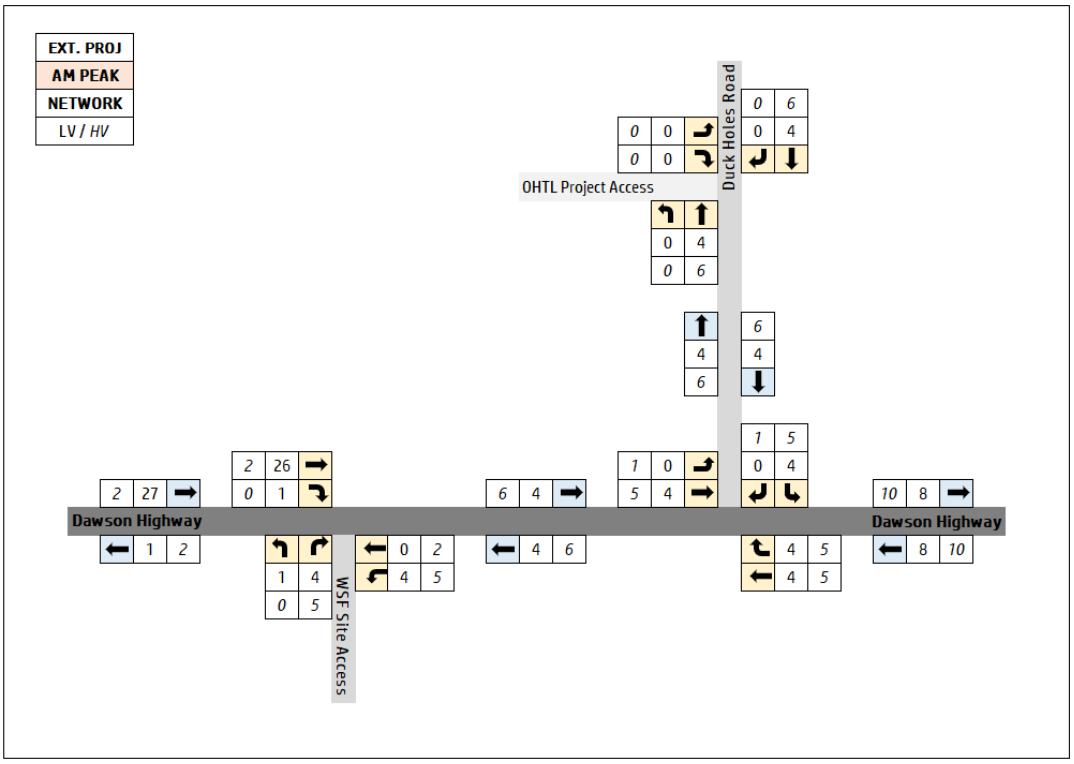


Figure 34 External Project (Construction) – Network AM Peak (8am-9am) Traffic Volumes

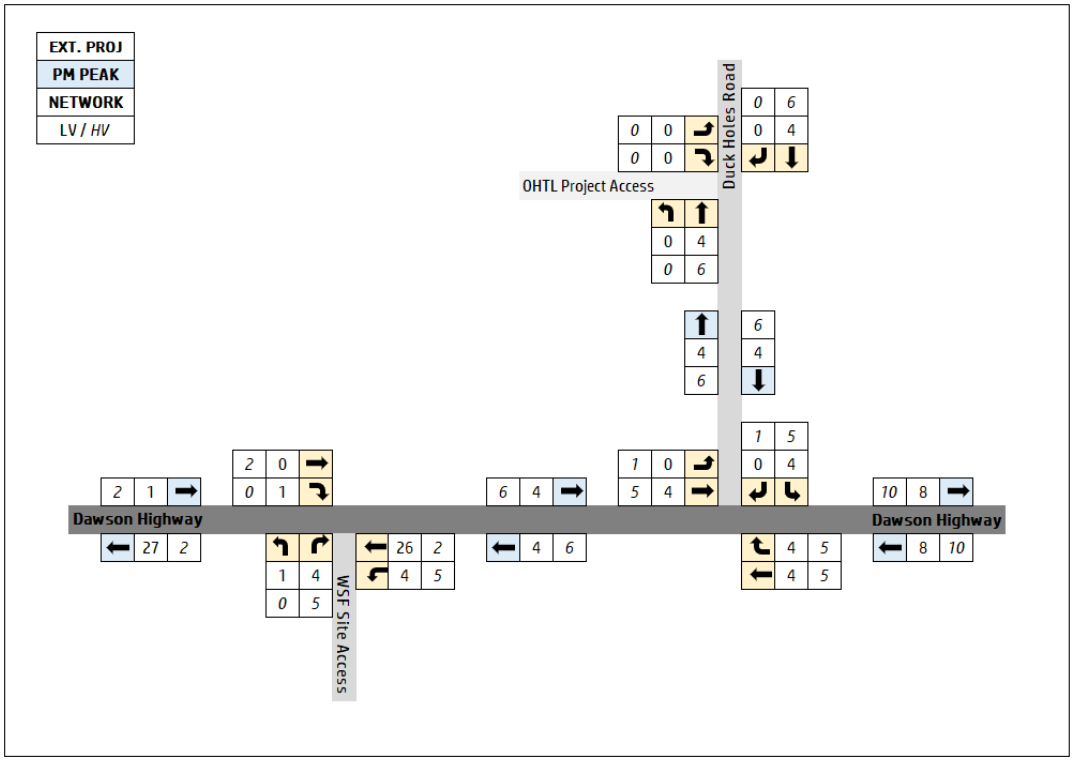


Figure 35 External Project (Construction) – Network PM Peak (3:45pm-4:45pm) Traffic Volumes

5.0 Impact Assessment and Mitigation

Based on the information provided above, it was determined that the critical elements of the surrounding road network in terms of the potential impact of the Project were the identified road links forming the proposed transport routes for the Project, the Dawson Highway / Duck Holes Road and proposed Dawson Highway / Wooderson Solar Farm Site Access intersections and proposed Project Area access off Duck Holes Road.

Further assessment of the impact of the Project on these elements of the external road network is provided in the following sections.

5.1 With and Without Project Traffic Volumes

5.1.1 Road Link Volumes

5.1.1.1 Construction Phase

As identified above, the peak traffic generation from the Project is expected to occur during the peak construction period (2030) for the Project, with the expected maximum traffic volumes identified in **Table 11** above.

The volumes of traffic forecast to be generated by staff, equipment and materials delivery movements have been distributed onto the public road network based upon an understanding of the source and destinations of the movements and other Project operational information.

Based on these volumes and the adopted distribution identified in **Section 4.4.1** above, as well as the traffic volumes expected from the concurrent construction phases of the identified external projects (see **Section 4.5** above) the forecast background (pre project), Project "peak construction" and "cumulative construction" traffic volumes on the relevant sections of the road network were established, as summarised in **Table 13.**

5.1.1.2 Operations Phase

The predominant Project traffic volumes during the operations phase will be the movements to and from the Project Area as part of the scheduled inspection and maintenance activities associated the OHTL, access track or switchyard infrastructure. These movements are expected to be periodic (i.e. not daily) but are conservatively assumed to be in the order of 20 vpd (approx. 10 vpd inbound and 10 vpd outbound), including 1 to 2 heavy vehicle movements.

Based on the above, the increase in traffic volumes on the road network as a result of the operations phase of the Project can be seen to be very minor. As such, the corresponding traffic impacts of the ongoing operation of the Project are considered to be negligible, and no further traffic assessment of the relevant road links is deemed necessary.

5.1.2 Intersection Volumes

To establish the anticipated traffic volumes at the key Dawson Highway / Wooderson Solar Farm Site Access intersection during the critical peak construction and operations phases of the Project, the Project volumes identified in **Section 4.4.2** above were added to forecast 2030 and 2040 (10-year horizon from construction completion) background traffic volumes at the intersection respectively.

The resulting turning volumes at the intersections are summarised in **Figure 36** to **Figure 47** below, with further details of the intersection volume forecast calculations provided in **Appendix B**.

Table 13 Forecast Background / Project "Peak Construction" & "Cumulative Construction" Daily Traffic Volumes

Site ID	Road Segment		Background Daily Volumes		Project Const. Traffic (Daily)		Peak Construction Daily Volumes		Total External Projects Traffic (Daily)		Cumulative Construction Daily Volumes	
	Start (km)	End (km)	2030		Gaz	A-Gaz	2030		Gaz	A-Gaz	2030	
			Gaz	A-Gaz			Gaz	A-Gaz			Gaz	A-Gaz
Gladstone Port Access Road (183)												
61605	0.000	0.858	1,032	918	7	7	1,039	925	40	28	1,079	953
Gladstone-Mount Larcom Road (181)												
160360	0.000	0.175	6,058	6,377	7	7	6,065	6,384	74	65	6,139	6,449
Dawson Highway (46A Gladstone – Biloela)												
60061	0.000	1.505	9,234	9,619	30	30	9,264	9,649	170	170	9,434	9,819
61083	1.505	2.250	8,824	9,760	30	30	8,854	9,790	170	170	9,024	9,960
60063	2.250	4.445	14,879	14,675	30	30	14,909	14,705	170	170	15,079	14,875
60064	4.445	7.150	12,098	11,833	30	30	12,128	11,863	170	170	12,298	12,033
60065	7.150	19.350	4,112	3,923	30	30	4,142	3,953	173	173	4,315	4,126
	19.350	21.750	4,492	4,484	42	42	4,534	4,526	256	256	4,790	4,782
60128	21.750	25.640	1,363	1,368	63	63	1,426	1,431	309	309	1,735	1,740
60005	25.640	64.433	865	865	63	63	928	928	309	309	1,237	1,237
	64.433	64.888	865	865	34	34	899	899	218	218	1,117	1,117
	64.888	113.730	865	865	10	10	875	875	73	73	948	948
61084	113.730	116.835	894	909	10	10	904	919	73	73	977	992
160067	116.835	119.758	3,495	3,598	10	10	3,505	3,608	73	73	3,578	3,681
Duck Holes Road (GRC)												
GRC	0.000	0.430	42	16	68	68	110	84	147	147	257	231

Gaz (Gazettal) / A-Gaz (Against Gazettal) direction of traffic flow in relation to TMR Road Chainages

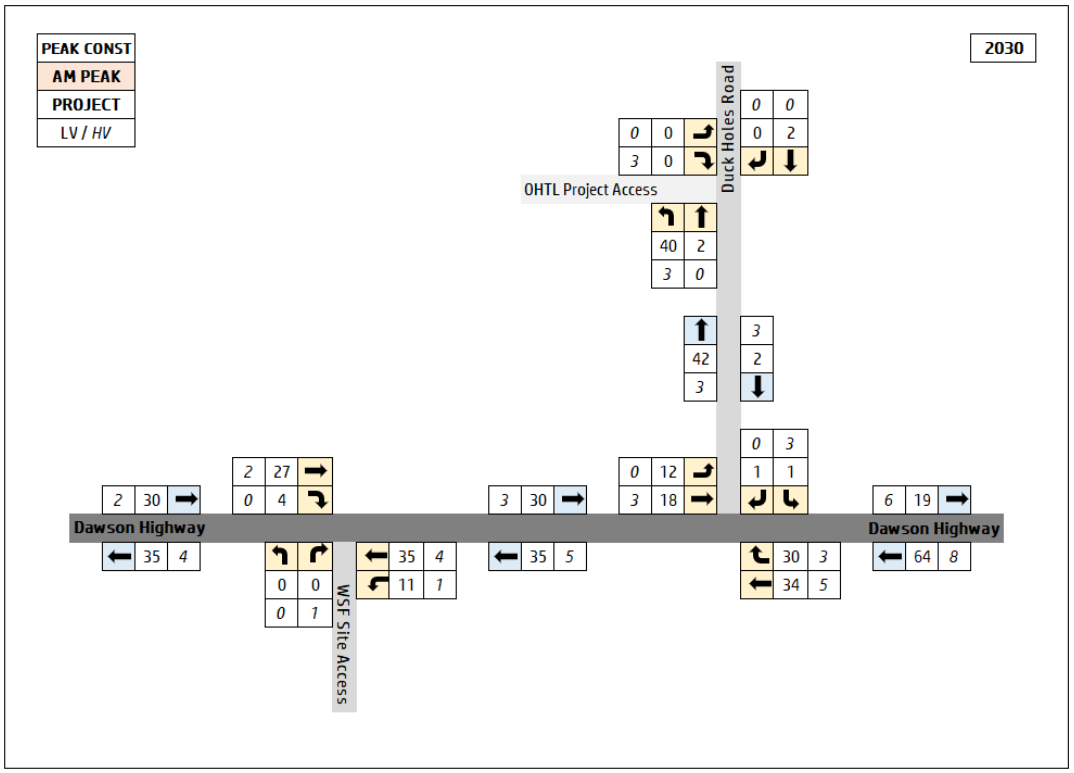


Figure 36 Peak Construction - 2030 AM & PM (Project) Peak Traffic Volumes

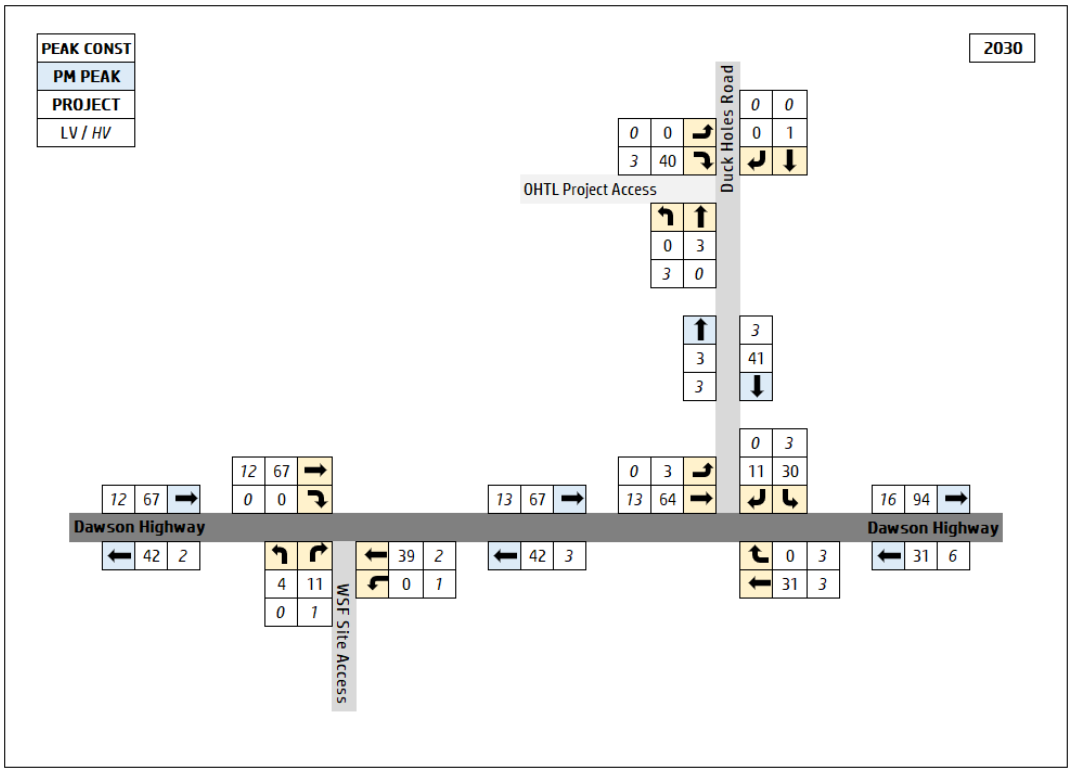


Figure 37 Peak Construction - 2030 AM & PM (Project) Peak Traffic Volumes

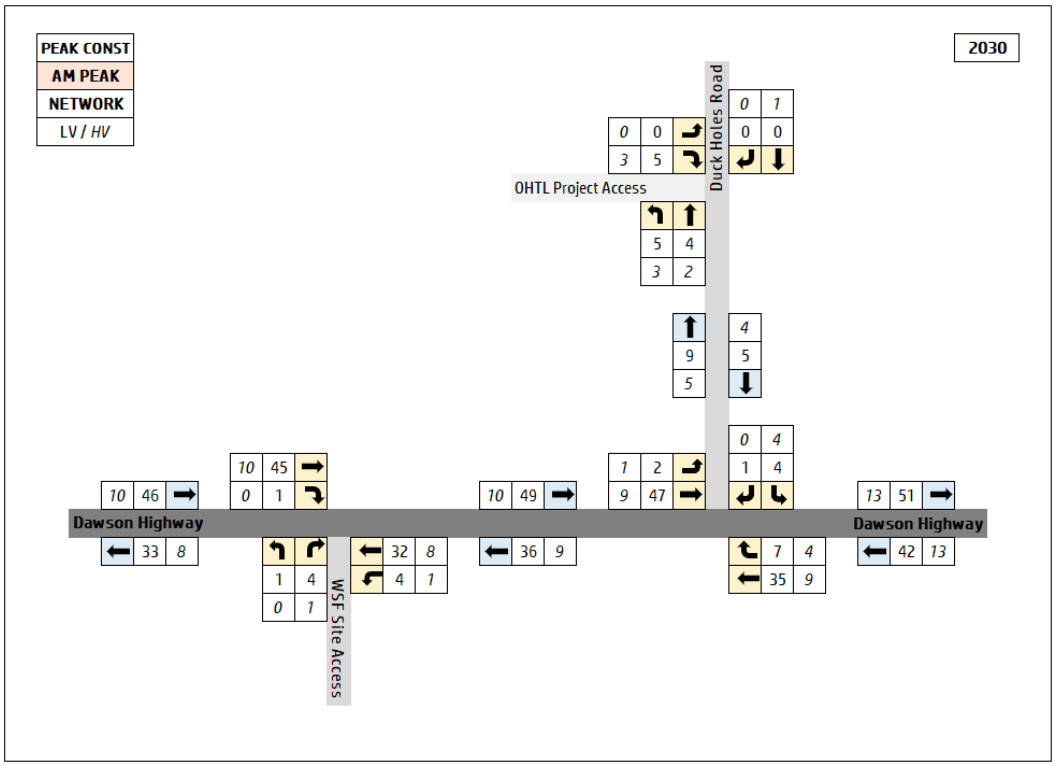


Figure 38 Peak Construction - 2030 AM & PM (Network) Peak Traffic Volumes

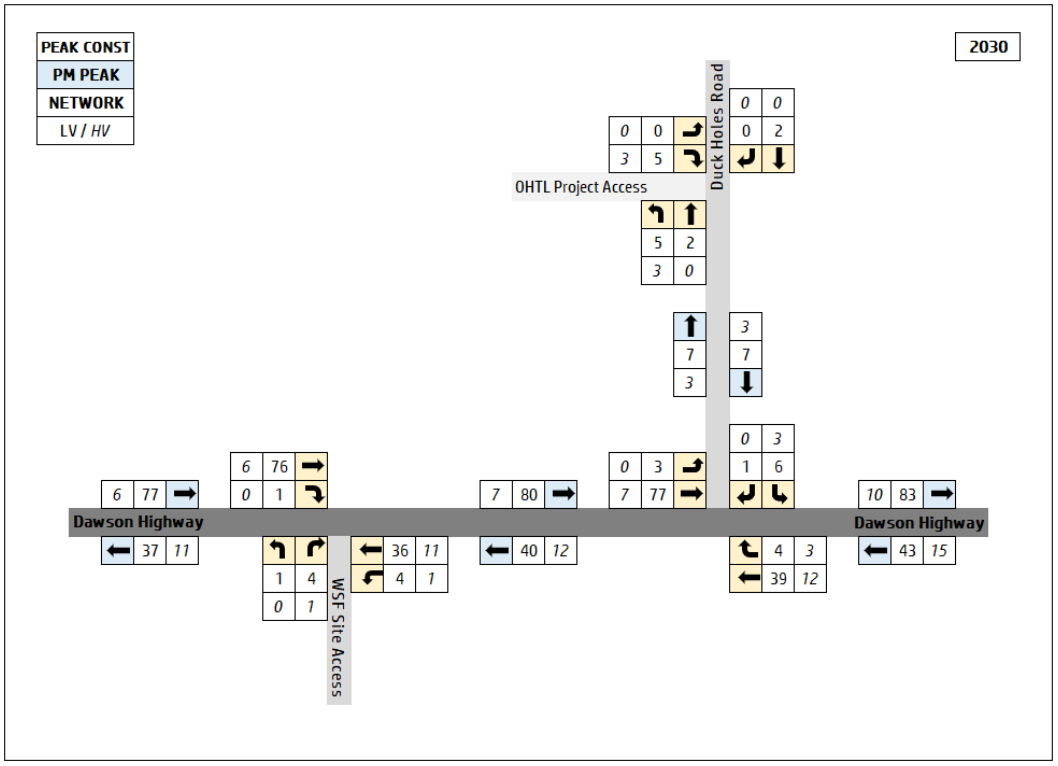


Figure 39 Peak Construction - 2030 AM & PM (Network) Peak Traffic Volumes

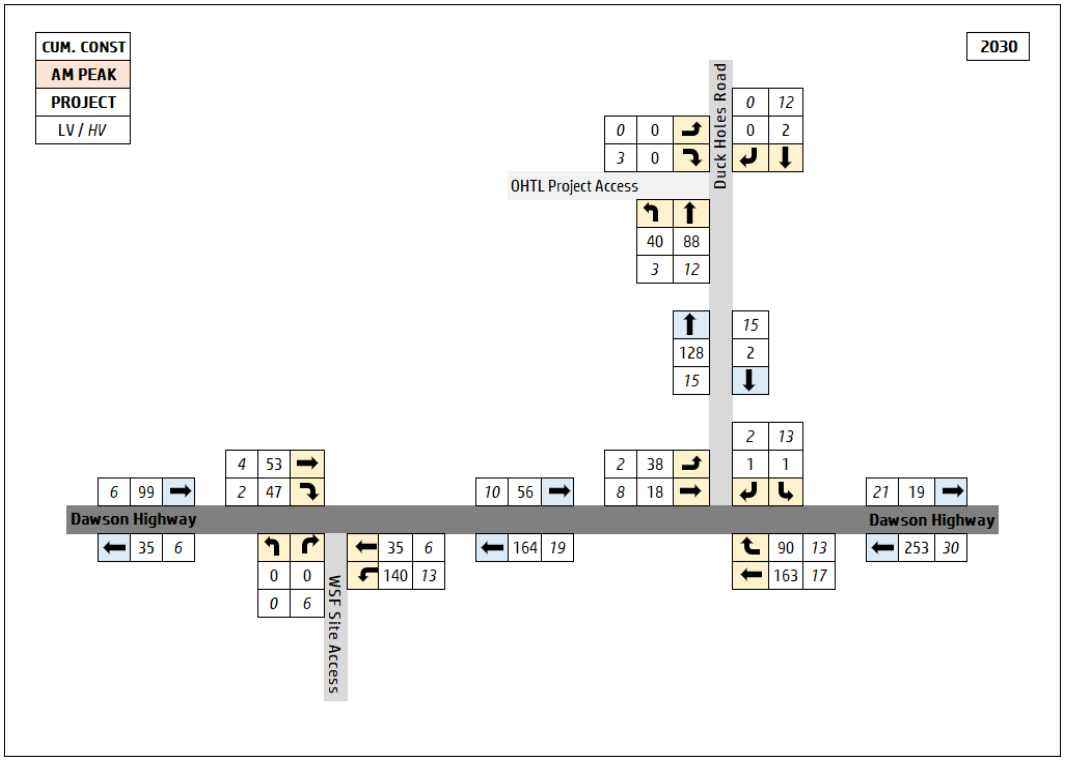


Figure 40 Cumulative Construction - 2030 AM & PM (Project) Peak Traffic Volumes

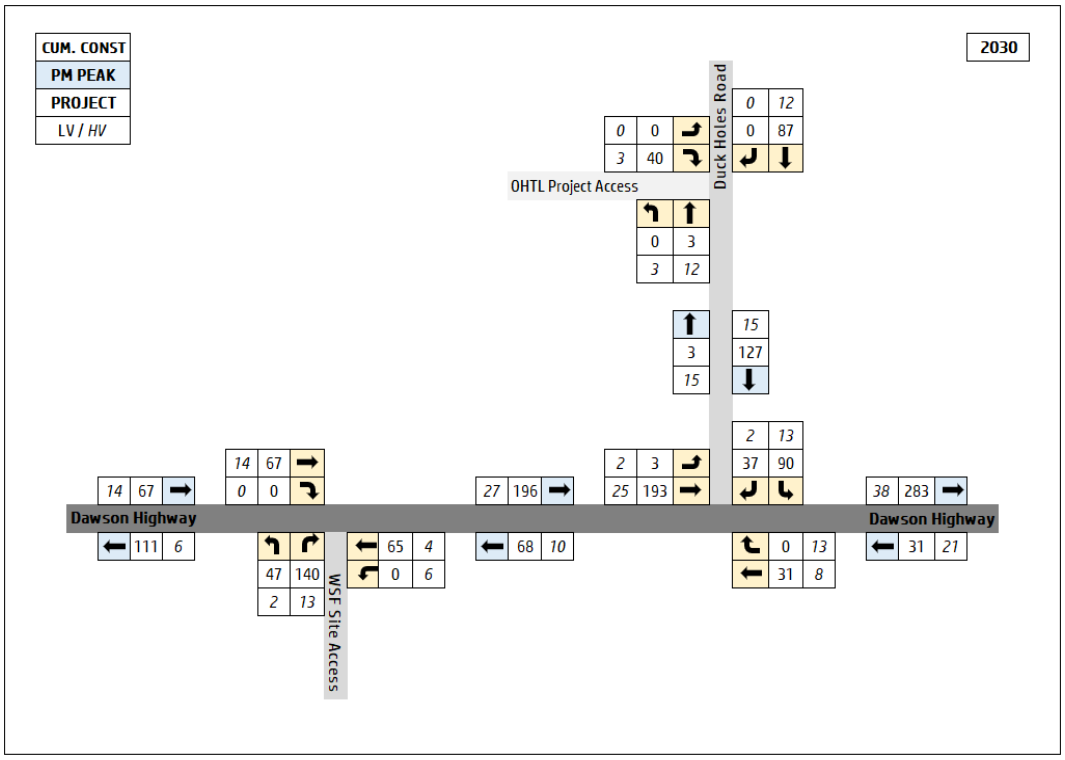


Figure 41 Cumulative Construction - 2030 AM & PM (Project) Peak Traffic Volumes

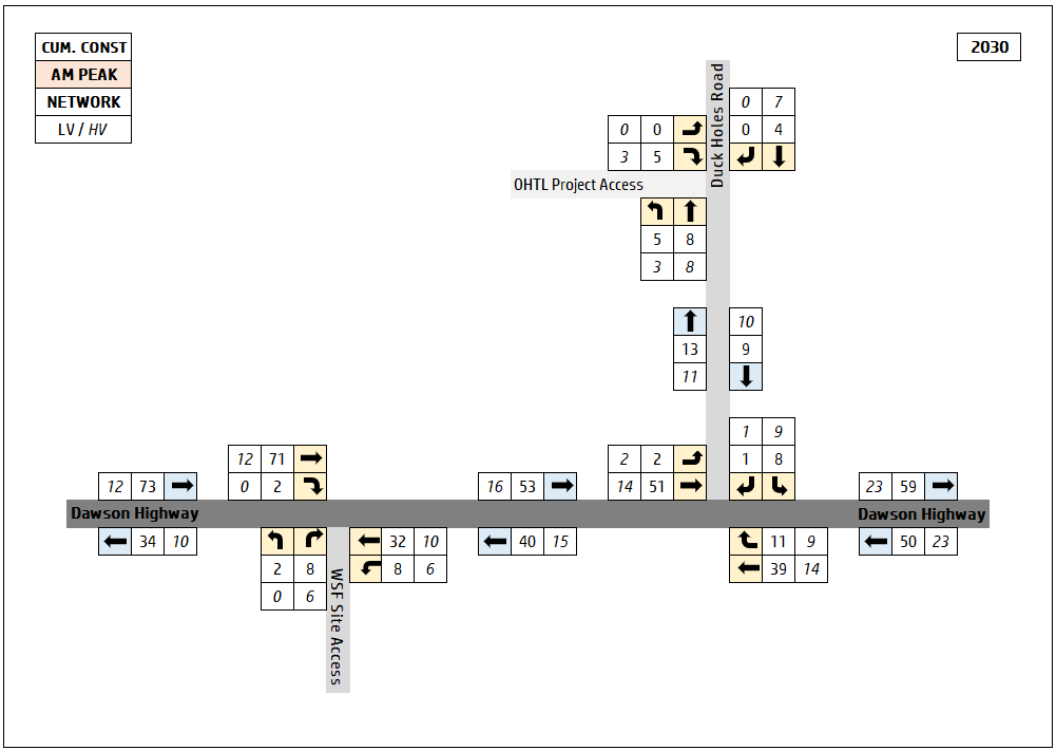


Figure 42 Cumulative Construction - 2030 AM & PM (Network) Peak Traffic Volumes

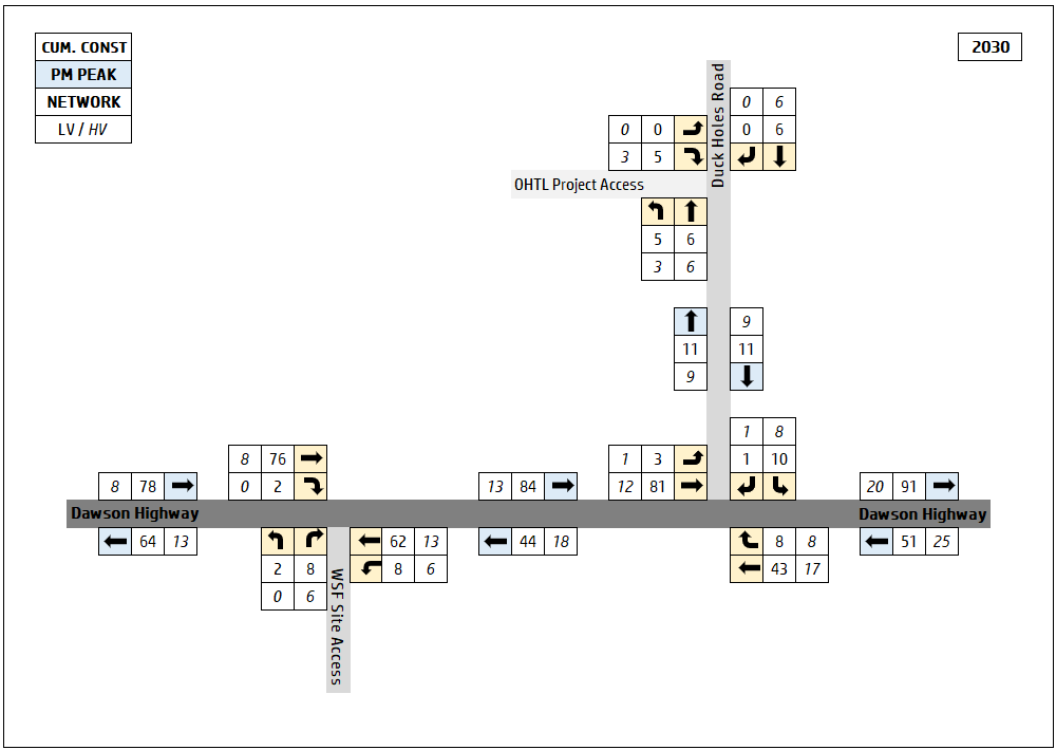


Figure 43 Cumulative Construction - 2030 AM & PM (Network) Peak Traffic Volumes

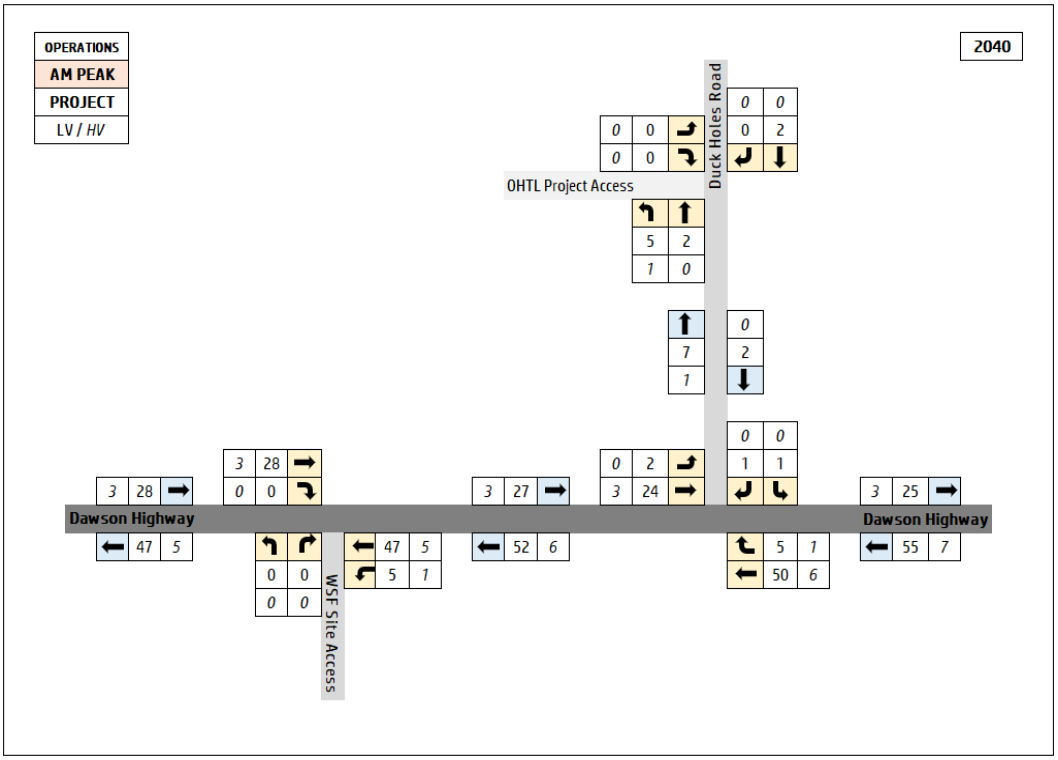


Figure 44 Project Operations - 2040 AM & PM (Project) Peak Traffic Volumes

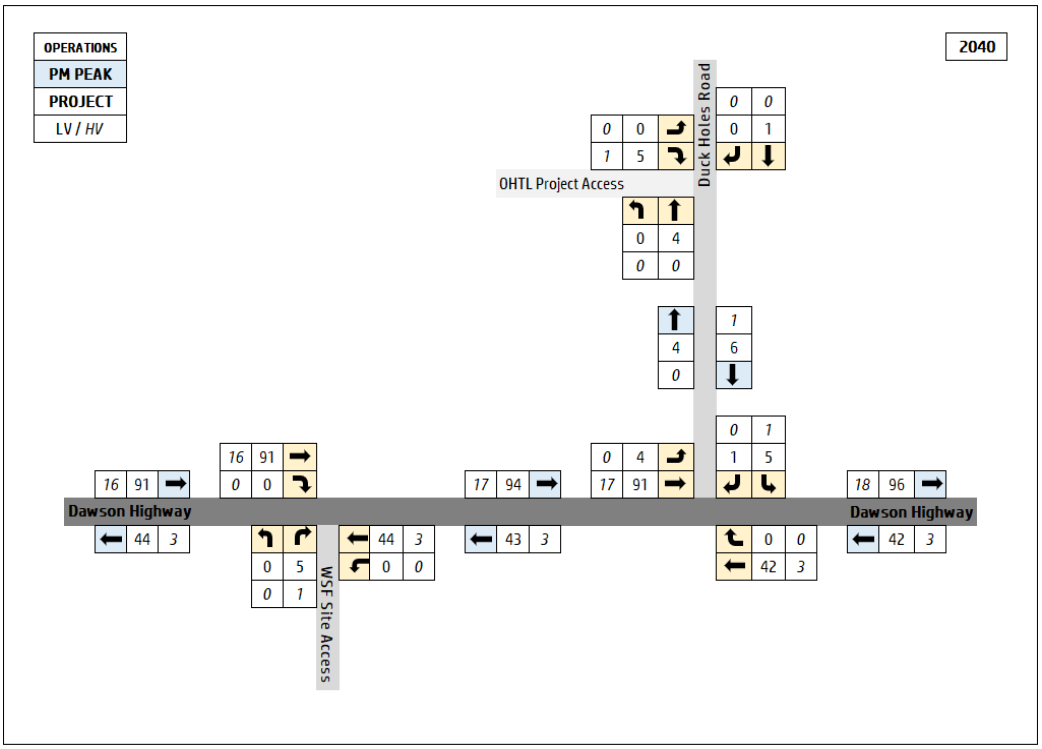


Figure 45 Project Operations - 2040 AM & PM (Project) Peak Traffic Volumes

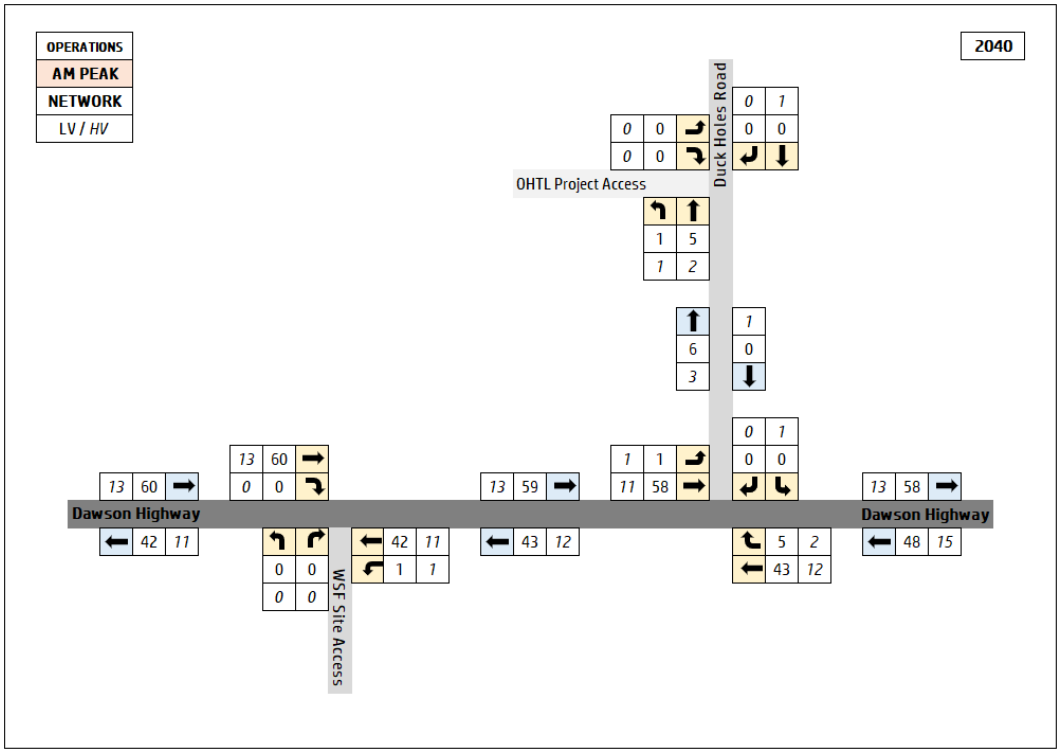


Figure 46 Project Operations - 2040 AM & PM (Network) Peak Traffic Volumes

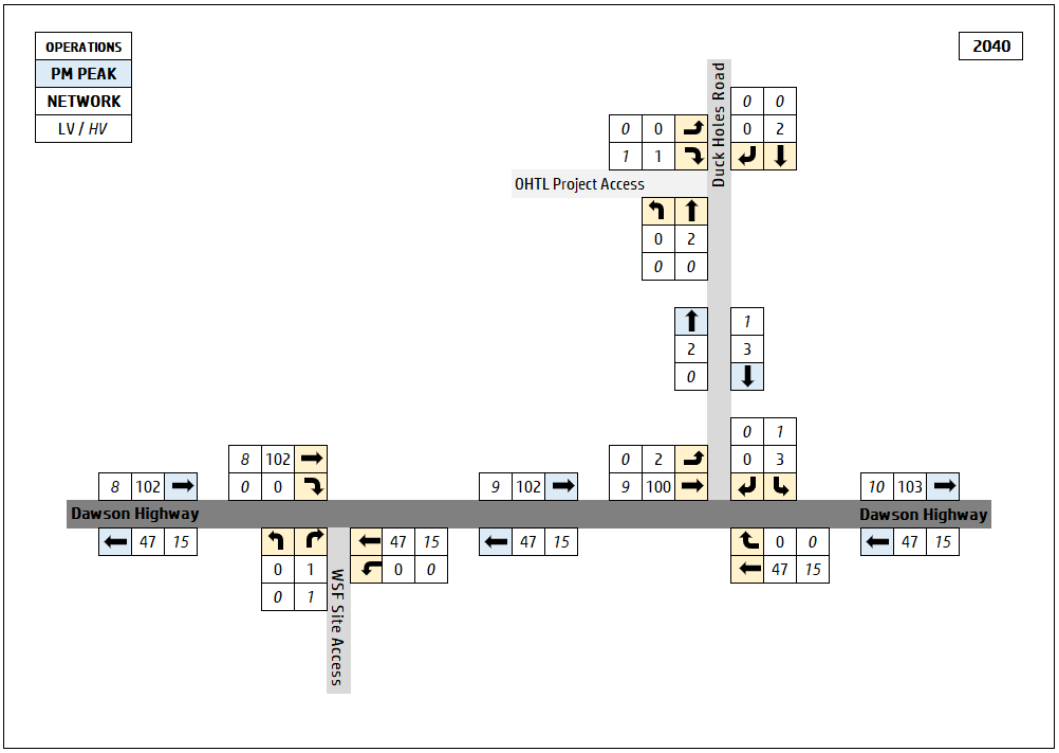


Figure 47 Project Operations - 2040 AM & PM (Network) Peak Traffic Volumes

5.2 Access and Frontage Impact Assessment and Mitigation

5.2.1 Duck Holes Road / Project Area Access

To establish the expected operational performance and confirm the suitability of the proposed upgraded Duck Holes Road / Project Area Access configuration detailed traffic analysis using SIDRA software was undertaken for the forecast traffic volumes at the access under the identified peak construction, cumulative construction and operations phase traffic scenarios for Project.

This modelling considered the AM and PM peak periods at the critical design horizons for each phase as outlined in Section 5.1.2 above. A summary of the results of the completed analysis of the Duck Holes Road / Project Area Access is provided in Table 14, with detailed SIDRA output summaries included for reference in Appendix F.

Table 14 SIDRA Results – Duck Holes Road / Project Area Access

Analysis Scenario	Intersection Degree of Saturation	Intersection Level of Service **	Critical Movement Average Delay (seconds)	Maximum 95% Back of Queue Length (m)
Project Peak Construction				
2030 AM Peak (Project)	0.025	LOS A	6.7	0.2
2030 PM Peak (Project)	0.035	LOS A	6.7	0.8
2030 AM Peak (Network)	0.009	LOS A	6.0	0.2
2030 PM Peak (Network)	0.008	LOS A	6.0	0.2
Cumulative Construction				
2030 AM Peak (Project)	0.079	LOS A	7.7	0.2
2030 PM Peak (Project)	0.055	LOS A	6.7	0.9
2030 AM Peak (Network)	0.016	LOS A	6.1	0.2
2030 PM Peak (Network)	0.013	LOS A	6.1	0.2
Project Operations (10-year Design Horizon from Completion)				
2040 AM Peak (Project)	0.005	LOS A	5.7	0.0
2040 PM Peak (Project)	0.006	LOS A	5.7	0.1
2040 AM Peak (Network)	0.006	LOS A	6.1	0.0
2040 PM Peak (Network)	0.003	LOS A	6.1	0.1

** LOS value identified is for worst movement at the intersection, not the overall intersection.

The results above indicate that the proposed standard property access configuration of the Duck Holes Road / Project Area Access is expected to operate satisfactorily during all Project traffic scenarios assessed, with all calculated values for intersection DOS, LOS, average delay and vehicle queue lengths were modelled to be well within acceptable limits of operation for a priority-controlled (give-way) intersection.

As such, it can therefore be concluded that the proposed upgraded configuration of the Duck Holes Road / Project Area Access, will be adequate to cater for the additional traffic volumes generated by the critical construction and operations phases of the Project, as well as the cumulative construction phase traffic volumes from the identified, adjacent external Projects.

5.2.2 Dawson Highway / Wooderson Solar Farm Site Access

5.2.2.1 Turn Warrant Assessment

As previously identified, the main vehicular access point to the southern portion of the Project Area is the proposed Dawson Highway / Wooderson Solar Farm Site Access intersection, which is anticipated to be constructed as part of the Wooderson Solar Farm development (DA1).

To confirm that the proposed configuration (BAL and CHRs) of this new access intersection would be suitable for use by traffic associated with the Project in addition to the Wooderson Solar Farm traffic (as assessed under DA1), a turn warrant assessment has been undertaken based on the turn treatment warrants graph as per Figure 2.26(a) of Austroads *Guide to Traffic Management - Part 6: Intersections, Interchanges and Crossings* to reflect the high-speed rural highway traffic environment.

The forecast turning movement volumes at the proposed site access intersection during the AM and PM peak periods (both Project and network peaks) of the construction, cumulative construction (including external project volumes) and operations phases of the Project as identified in Figure 36 to Figure 47 above have been used as the basis of this assessment, with a summary of the resultant turn warrants from the assessment shown in Table 15. Further details of the turn warrant calculations for each of the identified traffic scenarios included for reference as Appendix G.

Table 15 Intersection Turn Warrants Assessment – Dawson Highway / Wooderson Solar Farm Site Access Intersection

Project Traffic Scenario	Recommended Turn Warrants	
	Left Turn Treatment	Right Turn Treatment
Project Peak Construction		
2030 AM Peak (Project)	BAL	BAR
2030 PM Peak (Project)	BAL	BAR
2030 AM Peak (Network)	BAL	BAR
2030 PM Peak (Network)	BAL	BAR
Cumulative Construction (Project + External Projects)		
2030 AM Peak (Project)	BAL	CHRs
2030 PM Peak (Project)	BAL	BAR
2030 AM Peak (Network)	BAL	BAR
2030 PM Peak (Network)	BAL	BAR
Project Operations (10-year Design Horizon from Completion)		
2040 AM Peak (Project)	BAL	BAR
2040 PM Peak (Project)	BAL	BAR
2040 AM Peak (Network)	BAL	BAR
2040 PM Peak (Network)	BAL	BAR
Recommended Intersection Turn Treatments	**BAL**	**CHRs**

As shown in Table 15, based on the forecast peak hour traffic volumes at the intersection during the critical periods of the construction (Project and cumulative) and operations phases of the Project, it was shown that the required intersection treatments at the proposed Dawson Highway / Wooderson Solar Farm Site Access intersection were BAL and CHRs treatments. As such it is noted that the proposed (BAL and CHRs) configuration, anticipated to be provided as part of the Wooderson Solar Farm development (DA1), will

provide suitable turn treatments to cater for the traffic volumes generated by the critical construction and operations phases of the Project.

5.2.2.2 Intersection Operation Assessment

In addition to the turn warrant assessment undertaken, detailed traffic analysis using SIDRA software was also undertaken to establish the operational performance of the proposed new Dawson Highway / Wooderson Solar Farm Site Access intersection under the forecast peak construction, cumulative construction and operations phase traffic volume scenarios for Project.

This modelling considered the AM and PM peak periods at the critical design horizons for each phase as outlined in Section 5.1.2 above. A summary of the results of the completed analysis of the Dawson Highway / Wooderson Solar Farm Site Access intersection is provided in Table 16, with detailed SIDRA output summaries included for reference in Appendix H.

Table 16 SIDRA Results – Dawson Highway / Wooderson Solar Farm Site Access Intersection

Analysis Scenario	Intersection Degree of Saturation	Intersection Level of Service **	Critical Movement Average Delay (seconds)	Maximum 95% Back of Queue Length (m)
Project Peak Construction				
2030 AM Peak (Project)	0.028	LOS A	8.1	0.1
2030 PM Peak (Project)	0.044	LOS A	10.4	0.4
2030 AM Peak (Network)	0.031	LOS A	8.4	0.2
2030 PM Peak (Network)	0.044	LOS A	8.4	0.2
Cumulative Construction				
2030 AM Peak (Project)	0.110	LOS A	9.6	1.1
2030 PM Peak (Project)	0.194	LOS A	10.4	6.4
2030 AM Peak (Network)	0.046	LOS A	9.0	0.7
2030 PM Peak (Network)	0.053	LOS A	9.0	0.7
Project Operations (10-year Design Horizon from Completion)				
2040 AM Peak (Project)	0.032	LOS A	8.3	0.0
2040 PM Peak (Project)	0.060	LOS A	7.8	0..2
2040 AM Peak (Network)	0.041	LOS A	9.1	0.0
2040 PM Peak (Network)	0.058	LOS A	7.8	0.1

** LOS value identified is for worst movement at the intersection, not the overall intersection.

The results above indicate that the proposed BAL and CHRs configuration of the new Dawson Highway / Wooderson Solar Farm Site Access intersection, anticipated to be constructed as part of the Wooderson Solar Farm development (DA1), is expected to operate satisfactorily during all Project traffic scenarios assessed, with all calculated values for intersection DOS, LOS, average delay and vehicle queue lengths were modelled to be within acceptable limits of operation for a priority-controlled (give-way) intersection.

As such, it can therefore be concluded that the proposed BAL and CHRs configuration of the new Dawson Highway / Wooderson Solar Farm Site Access intersection, will be adequate to cater for the additional traffic volumes generated by the critical construction and operations phases of the Project, as well as the cumulative construction phase traffic volumes from the adjacent external Projects, in particular the proposed Wooderson Solar Farm development.

5.3 Intersection Impact Assessment and Mitigation

5.3.1 Dawson Highway / Duck Holes Road

5.3.1.1 Turn Warrant Assessment

As previously identified, Project is expected to utilise the existing Dawson Highway / Duck Holes Road intersection to travel to and from the northern portion of the Project Area located on the northern side of the Dawson Highway.

As such a turn warrant assessment has been undertaken to confirm the recommended turn treatments at the intersection for the forecast Project traffic volume scenarios (refer **Figure 36** to **Figure 47** above), with this assessment again utilising the treatment warrants graph as per Figure 2.26(a) of Austroads *Guide to Traffic Management - Part 6: Intersections, Interchanges and Crossings* based on the current high-speed rural highway traffic environment at the intersection.

A summary of the resultant turn warrants from the assessment shown in **Table 17**, with further details of the turn warrant calculations for each of the identified traffic scenarios included for reference as **Appendix G.**

Table 17 Intersection Turn Warrants Assessment – Dawson Highway / Duck Holes Road Intersection

Project Traffic Scenario	Recommended Turn Warrants	
	Left Turn Treatment	Right Turn Treatment
Project Peak Construction		
2030 AM Peak (Project)	BAL	BAR
2030 PM Peak (Project)	BAL	BAR
2030 AM Peak (Network)	BAL	BAR
2030 PM Peak (Network)	BAL	BAR
Cumulative Construction (Project + External Projects)		
2030 AM Peak (Project)	BAL	CHR
2030 PM Peak (Project)	BAL	CHRs
2030 AM Peak (Network)	BAL	BAR
2030 PM Peak (Network)	BAL	BAR
Project Operations (10-year Design Horizon from Completion)		
2040 AM Peak (Project)	BAL	BAR
2040 PM Peak (Project)	BAL	BAR
2040 AM Peak (Network)	BAL	BAR
2040 PM Peak (Network)	BAL	BAR
Recommended Intersection Turn Treatments	**BAL**	**CHRs**

As shown above, based on the forecast peak hour traffic volumes at the intersection for the peak construction, cumulative construction and operations phases of the Project, it was shown that the recommended intersection treatments at the Dawson Highway / Duck Holes Road intersection were a BAL and CHRs treatments.

It is noted that the assessment for the AM Project peak for the cumulative construction scenario identified that the forecast volumes for this scenario warranted a CHR treatment. However, as the cumulative construction volumes are considered conservative as the peak construction periods of the 2 other

approvals / applications (Upper Calliope Solar Farm and Wooderson Solar Farm) are unlikely to align perfectly with the period of peak construction from the Project, or for any significant period of time. Further to this, it is noted that the higher warrant was only observed in the AM Project peak period, with all other periods of the day noted to be well contained within the current CHRs treatment.

Finally, it is noted that based on the close proximity of the intersection to the Doubtful Creek bridge structure to the east, the provision of works to extend the existing right hand turn lane to provide the full CHR treatment would not be possible without widening the existing bridge structure, which is seen as an unrealistic requirement for any Project.

Furthermore, as the higher CHR treatment was only warranted during a theoretical AM period of peak cumulative construction, with all other scenarios Project shown to only require a minor BAR right turn treatment, the provision of a full CHR treatment at the intersection is not considered to be necessary as part of the Project.

Instead, it is recommended that traffic management measures, in particular advanced warning signage of the intersection and truck turning movements, be implemented on the Dawson Highway approach to the intersection to highlight to travelling motorists the potential for turning vehicle movements into and out of Duck Holes Road at the intersection.

Based on the above, it is therefore concluded that conditional to the provision of suitable traffic management measures (advanced warning signage), the current configuration of the Dawson Highway / Duck Holes Road intersection will be adequate to cater for the additional traffic volumes generated by the critical construction and operations phases of the Project.

5.3.1.2 Intersection Operation Assessment

In addition to the turn warrant assessment undertaken, detailed traffic analysis using SIDRA software was also undertaken to establish the operational performance of the existing configuration of the Dawson Highway / Duck Holes Road intersection under the forecast peak construction, cumulative construction and operations phase traffic volume scenarios for Project.

This modelling considered the AM and PM peak periods at the critical design horizons for each phase as outlined in Section 5.1.2 above. A summary of the results of the completed analysis of the Dawson Highway / Duck Holes Road intersection is provided in Table 18, with detailed SIDRA output summaries included for reference in Appendix C.

Table 18 SIDRA Results – Dawson Highway / Duck Holes Road Intersection

Analysis Scenario	Intersection Degree of Saturation	Intersection Level of Service **	Critical Movement Average Delay (seconds)	Maximum 95% Back of Queue Length (m)
Project Peak Construction				
2030 AM Peak (Project)	0.021	LOS A	6.5	0.7
2030 PM Peak (Project)	0.045	LOS A	7.2	1.0
2030 AM Peak (Network)	0.033	LOS A	6.4	0.3
2030 PM Peak (Network)	0.047	LOS A	6.4	0.3
Cumulative Construction				
2030 AM Peak (Project)	0.097	LOS A	10.3	2.3
2030 PM Peak (Project)	0.131	LOS A	8.4	4.1
2030 AM Peak (Network)	0.041	LOS A	7.4	0.7

Analysis Scenario	Intersection Degree of Saturation	Intersection Level of Service **	Critical Movement Average Delay (seconds)	Maximum 95% Back of Queue Length (m)
2030 PM Peak (Network)	0.054	LOS A	7.7	0.7
Project Operations (10-year Design Horizon from Completion)				
2040 AM Peak (Project)	0.030	LOS A	6.0	0.1
2040 PM Peak (Project)	0.063	LOS A	6.3	0.2
2040 AM Peak (Network)	0.040	LOS A	6.2	0.2
2040 PM Peak (Network)	0.059	LOS A	6.4	0.1

** LOS value identified is for worst movement at the intersection, not the overall intersection.

The results above indicate that the current configuration (BAL and CHRs) of the Dawson Highway / Duck Holes Road intersection is expected to operate satisfactorily during all Project traffic scenarios assessed, with all calculated values for intersection DOS, LOS, average delay and vehicle queue lengths were modelled to be within acceptable limits of operation for a priority-controlled (give-way) intersection.

As such, it can therefore be concluded that the existing configuration of the Dawson Highway / Duck Holes Road intersection, will be adequate to cater for the additional traffic volumes generated by the critical construction and operations phases of the Project, as well as the cumulative construction phase traffic volumes from the identified, adjacent external Projects.

5.4 Road Link Capacity Assessment and Mitigation

In addition to the analysis of the Project's impact to the relevant external intersections, an assessment of the impact of the additional traffic generated by the various phases of the Project on the operation of the key external road links has also been completed. This assessment identifies the expected increase in daily traffic volumes on the road network during the critical construction phase of the Project, and comments on the level of impact the increase in traffic is anticipated to have on the operation of the road links.

A summary of the assessment of the percentage increase in daily traffic volumes on the road network as a result of the peak construction phase traffic from the Project, as well as the cumulative construction traffic from the Project and the adjacent Upper Calliope Solar Farm and proposed Wooderson Solar Farm developments is shown in **Table 19**, with further details of the calculations undertaken provided in **Appendix I.**

As can be seen by the results in **Table 19**, the addition of the expected peak construction phase traffic volumes from the Project in isolation is shown to have a minimal impact on the majority of identified sections of the state-controlled road network. The results did however reveal that the daily traffic volumes on the section of the state-controlled Dawson Road between the Gladstone-Monto Road and Duck Holes Road (TMR chainages Ch. 25.640 km to Ch. 64.433 km) are expected to increase slightly more (7.28%) than the standard TMR trigger of 5% (as shown in red) during the temporary peak construction period.

Notwithstanding this, it is noted that this higher percentage increase (>5%) is primarily due to the low background volumes (1,731 vpd), with the Project only expected to temporarily add a maximum of 126 vpd on this section of the Dawson Highway. Furthermore, it is noted that the "peak construction" daily traffic volumes for this section (i.e. background + Project traffic) is only in the order of 1,857 vpd, which is well within the capacity of the current two-lane rural road highway configuration of this link (approx. 12,000 to 15,000 vpd).

Table 19 Road Link Daily Traffic Volume Comparison (Construction Phase)

Site ID	Road Segment		Daily Background Traffic Volumes (2030)		Daily Project Peak Construction Traffic		% Increase in Daily Traffic Volume		Daily Cumulative Construction Traffic		% Increase in Daily Traffic Volume	
	Start (km)	End (km)	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz
Gladstone Port Access Road (183)												
61605	0.000	0.858	1,032	918	7	7	0.68%	0.76%	47	35	4.56%	3.81%
Gladstone-Mount Larcom Road (181)												
160360	0.000	0.175	6,058	6,377	7	7	0.12%	0.11%	81	72	1.34%	1.13%
Dawson Highway (46A Gladstone – Biloela)												
60061	0.000	1.505	9,234	9,619	30	30	0.32%	0.31%	200	200	2.17%	2.08%
61083	1.505	2.250	8,824	9,760	30	30	0.34%	0.31%	200	200	2.27%	2.05%
60063	2.250	4.445	14,879	14,675	30	30	0.20%	0.20%	200	200	1.34%	1.36%
60064	4.445	7.150	12,098	11,833	30	30	0.25%	0.25%	200	200	1.65%	1.69%
60065	7.150	19.350	4,112	3,923	30	30	0.73%	0.76%	203	203	4.94%	5.17%
60066	19.350	21.750	4,492	4,484	42	42	0.94%	0.94%	298	298	6.63%	6.65%
60128	21.750	25.640	1,363	1,368	63	63	4.62%	4.61%	372	372	27.29%	27.20%
60005	25.640	64.433	865	865	63	63	7.28%	7.28%	372	372	42.98%	42.98%
	64.433	64.888	865	865	34	34	3.93%	3.93%	252	252	29.12%	29.12%
	64.888	113.730	865	865	10	10	1.16%	1.16%	83	83	9.59%	9.59%
61084	113.730	116.835	894	909	10	10	1.12%	1.10%	83	83	9.28%	9.13%
160067	116.835	119.758	3,495	3,598	10	10	0.29%	0.28%	83	83	2.37%	2.31%
Duck Holes Road (GRC)												
GRC	0.000	0.430	42	16	68	68	160.2%	427.1%	215	215	506.4%	1350.3%

Gaz (Gazettal) / A-Gaz (Against Gazettal) / Bi-Dir (Bi Directional) - direction of traffic flow in relation to TMR Road Chainages

TMR Chainage 0.175km (181) – Gladstone-Mount Larcom Road / Gladstone Port Access Road | TMR Chainage 19.350km (46A) – Dawson Highway / Bruce Highway | TMR Chainage 21.750km (46A) –Dawson Highway / Taragoola Road | TMR Chainage 64.433km (46A) – Dawson Highway / Duck Holes Road | TMR Chainage 64.888km (46A) - Dawson Highway / Wooderson Solar Farm Site Access | Chainage 0.430km Duck Holes Road – Proposed Project Area Access

In regard to the local government controlled links, the results above also identified substantial (>5%) increases in traffic volumes for the relevant length of Duck Holes Road (between the Dawson Highway and the proposed Project Area access). Again, the primary reason for the large percentage increase calculated on this link is the low background traffic volumes (<100 vpd), with the expected maximum increase in traffic volumes due to the peak construction phase of the Project only in the order of 136 vpd.

Notwithstanding this, it is noted that the proposed upgrade works to the relevant sections of Duck Holes Road provided either as part of the Upper Calliope Solar Farm or this Project (dependant on order of construction) are expected to provide an adequate road configuration (width) to accommodate the additional traffic volumes generated by the Project.

Further assessment was also undertaken to investigate the impact of the cumulative increase in daily traffic volumes on the external road network as a result of the Project and the Upper Calliope Solar Farm

and proposed Wooderson Solar Farm projects. Based on the results of this assessment it was again shown that the cumulative traffic volumes would lead to additional sections of the Dawson Highway where the increase in daily volumes was shown to be >5% during the combined peak construction phases of these projects. This additional section of the Dawson Highway was between Don Young Drive (in Gladstone) and Gladstone-Monto Road west of Calliope.

However, it is again noted that the higher percentage increase calculated on these sections of the Dawson Highway was again primarily due to the low background volumes, with the resultant "cumulative construction" traffic volumes calculated all within the capacities of the identified state-controlled road links.

In relation to the GRC controlled Duck Holes Road, it was again identified that the cumulative traffic volumes from the 3 identified projects[2] would result in a significant (>5%) increase in daily traffic volumes, but that the main reason for the large percentage increase was the low background traffic volumes. It is considered that the upgraded configuration (width) of Duck Holes Road provided either as part of the Upper Calliope Solar Farm or this Project, will be adequate to cater for the additional cumulative traffic volumes calculated for the link (approx. 430 vpd), based on the temporary nature of the construction phases of the relevant projects.

5.5 Pavement Impact Assessment and Mitigation

5.5.1 Construction Phase

The assessment of potential pavement impacts during the construction phase of the Project involved the comparison of the pavement loadings (ESA) associated with the background traffic volumes on the road links to the ESAs estimated to be generated by the heavy vehicle movements across the proposed 15-month construction period.

Table 20 shows the assumed heavy vehicle classes that are expected to be used throughout the construction phase of the Project and the average loaded and unloaded ESAs/HV values for each configuration. While Table 21 provides a summary of the comparison of the calculated background and Project generated pavement loadings during the critical construction phase of the Project, with further details of the Project pavement loading calculations undertaken included for reference in Appendix J.

Table 20 Project Traffic Vehicle Classes and ESA/HV Values

Vehicle Class	Vehicle Configuration	Task	Average Loaded ESAs / HV	Average Unloaded ESAs / HV
3 Axle Rigid		Water truck	3.57	0.50
4 Axle Rigid		Concrete transport	4.13	0.36
6 Axle Semi-trailer (GML)		General material and equipment transport / fuel (tanker) transport	4.93	0.51
Truck and 4 Axle Dog (GML)		Gravel material transport	6.15	1.64

[2] Note – The proposed Wooderson Solar Farm development (DA1) is note anticipated to lead to any increase in traffic volumes on the identified section of the GRC controlled Duck Holes Road.

Table 21 Project Pavement Loading Comparison

Site ID	Road Segment		Background ESA		Project-Generated ESA		% Increase in ESAs	
	Start (km)	End (km)	Gaz	A-Gaz	Gaz	A-Gaz	Gaz	A-Gaz
Gladstone Port Access Road (183)								
61605	0.000	0.858	447,453	545,263	255	2,465	0.06%	0.45%
Gladstone-Mount Larcom Road (181)								
160360	0.000	0.175	774,948	792,776	255	2,465	0.03%	0.31%
Dawson Highway (46A Gladstone – Biloela)								
60061	0.000	1.505	847,083	1,309,857	4,934	1,071	0.58%	0.08%
61083	1.505	2.250	1,094,445	1,083,510	4,934	1,071	0.45%	0.10%
60063	2.250	4.445	2,133,633	1,841,369	4,934	1,071	0.23%	0.06%
60064	4.445	7.150	1,302,836	1,462,545	4,934	1,071	0.38%	0.07%
60065	7.150	19.350	1,029,424	772,361	4,934	1,071	0.48%	0.14%
60066	19.350	21.750	554,497	464,110	4,934	1,071	0.89%	0.23%
60128	21.750	25.640	343,029	356,921	21,363	7,358	6.23%	2.06%
60005	25.640	64.433	336,171	344,140	21,363	7,358	6.35%	2.14%
	64.433	64.888	336,171	344,140	5,180	1,479	1.54%	0.43%
	64.888	113.730	336,171	344,140	0	0	0.00%	0.00%
61084	113.730	116.835	336,171	344,140	0	0	0.00%	0.00%
160067	116.835	119.758	280,871	304,117	0	0	0.00%	0.00%
Duck Holes Road (GRC)								
GRC	0.000	0.430	15,345	7,672	16,183	4,138	105.46%	53.94%

Gaz (Gazettal) / A-Gaz (Against Gazettal) direction of traffic flow in relation to TMR Road Chainages

TMR Chainage 0.175km (181) – Gladstone-Mount Larcom Road / Gladstone Port Access Road | TMR Chainage 19.350km (46A) – Dawson Highway / Bruce Highway | TMR Chainage 21.750km (46A) –Dawson Highway / Taragoola Road | TMR Chainage 64.433km (46A) – Dawson Highway / Duck Holes Road | TMR Chainage 64.888km (46A) - Dawson Highway / Wooderson Solar Farm Site Access | Chainage 0.430km Duck Holes Road – Proposed Project Area Access

The results in Table 21 indicate that the heavy vehicle movements associated with the construction of the Project works are expected to lead to negligible increases in pavement loadings on the majority of the identified sections of the state-controlled road network, with calculated values of loading increase generally below the TMR standard 5% increase trigger threshold.

The results do however identify higher increases on the section of the Dawson Highway between Taragoola Road (Calliope) and the Duck Holes Road (Ch. 21.750 km to Ch. 64.433 km), as shown in red. It is noted however, that these larger increases in loading are primarily due to the loading generated by the expected road grave and concrete transport movements for the Project from the local quarry and concrete batch plant operations in Calliope. Therefore, the mitigation of the impacts of these delivery movements on the identified sections of the state-controlled network are expected to fall on both the quarry and batch plant operators and be covered by their typical road maintenance contribution (c/tonne) to TMR as part of the general operation of these facilities.

As such no pavement mitigation works or financial contributions are deemed to be required from the Project to offset the temporary (15 month) increase in pavement loading on the external state-controlled road network.

In addition to the state-controlled road network, the results also indicated that the additional vehicle movements from the construction phase of the Project were expected to also lead to a significant (>5%) increase in pavement loadings on the relevant section of the GRC controlled link of Duck Holes Road, between the Dawson Highway and the proposed Project Area access.

Notwithstanding this, it is noted that the proposed upgrade works to Duck Holes Road as part of either the Upper Calliope Solar Farm project or this Project are considered adequate to offset the additional pavement loading from the Project.

5.5.2 Operations Phase

As identified above, it is understood that the operations phase of the Project will only generate minimal traffic volumes on the network associated with periodic inspection and maintenance works of the transmission line infrastructure, including negligible and infrequent heavy vehicle movements.

Further noting that the majority of vehicle movements during the Project's operations phase will be related to the general operation movements (staff, maintenance and servicing) of the Wooderson Solar Farm development (DA1).

As such it can be considered that the operations phase of the Project will generate negligible additional vehicle loading and as such have a negligible impact to the operation (and pavement loadings) of all relevant road links.

5.6 Road Safety Impact Assessment and Mitigation

A high-level road safety assessment has also been undertaken to establish the existing and post development road safety risks relevant to the Project. To establish the level of risk regarding the existing and expected Project road safety considerations identified, a safety risk score matrix as shown in Figure 48 was utilised, with the results of the road safety risk assessment summarised in Table 22.

Figure 9.3.2(a) – Safety risk score matrix

		Potential consequence				
		Property only (1)	Minor injury (2)	Medical treatment (3)	Hospitalisation (4)	Fatality (5)
Potential likelihood	Almost certain (5)	M	M	H	H	H
	Likely (4)	M	M	M	H	H
	Moderate (3)	L	M	M	M	H
	Unlikely (2)	L	L	M	M	M
	Rare (1)	L	L	L	M	M

L: Low risk
M: Medium risk
H: High risk

Figure 48 Adopted Risk Score Matrix [Source: TMR GTIA]

Table 22 Project Road Safety Assessment – Wooderson Solar OHTL and Switchyard Project

		Existing / Pre-Development			Project Peak Construction				Peak Construction with Mitigation		
Risk Item		Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score	Mitigation Measure	Likelihood	Consequence	Risk Score
1	The Project is expected to lead to an increase in turning vehicle movements at the proposed Dawson Highway / Wooderson Solar Farm Site Access intersection (subject to approval under DA1). This increase in turning vehicles has the potential to lead to an increase in vehicle conflicts at this access intersection.	Rare	Hospitalisation	**Medium**	Unlikely	Hospitalisation	**Medium**	**No mitigation works required.** Based on the results of the turn warrant assessment it was identified that the BAL and CHRs treatments provided as part of the new access intersection for the Wooderson Solar Farm (to be constructed prior to commencement of the Project and subject to DA1) will be adequate to cater for the additional Project traffic. Further to this, the detailed intersection analysis also identified that the proposed configuration of the access intersection would operate satisfactorily under all Project traffic volume scenarios assessed.	Unlikely	Hospitalisation	**Medium**
2	The Project is expected to lead to an increase in daily traffic volumes on the identified Project transport routes including the state-controlled Dawson Highway, Gladstone-Mount Larcom Road (Gladstone Port Access Road to Dawson Highway), Gladstone Port Access Road and the GRC controlled Duck Holes Road. This increase of daily traffic on these links has the potential to lead to an increase in vehicle conflicts.	Rare	Medical Treatment / Hospitalisation	**Low - Medium**	Unlikely	Medical Treatment / Hospitalisation	**Medium**	**No mitigation works proposed to state controlled network.** **Provide upgrade works to 430 m section of Duck Holes Road between Dawson Highway and proposed Project Area Access.** The road link impact assessment undertaken identified that while increases in daily traffic volumes >5% were identified on some sections of the Dawson Highway, this was due to the low background traffic volumes, with all relevant external road sections shown to have adequate capacity to cater for the additional Project traffic volumes. Provision of upgrade works (widening to 7m) to Duck Holes Road either as part of the Upper Calliope Project or this Project is proposed to increase the capacity (vpd) of the link in line with CMDG requirements for a Rural Local Access Road.	Unlikely	Medical Treatment / Hospitalisation	**Medium**

		Existing / Pre-Development			Project Peak Construction				Peak Construction with Mitigation		
Risk Item		Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score	Mitigation Measure	Likelihood	Consequence	Risk Score
3	The Project is also expected to lead to an increase in turning vehicle movements at the proposed site access location on Duck Holes Road. This increase in turning vehicles has the potential to lead to an increase in vehicle conflicts at the access.	Rare	Hospitalisation	**Medium**	Unlikely	Hospitalisation	**Medium**	**Provide upgrade of current property access to provide configuration in accordance with the arrangement for articulated vehicles as identified in Figure 7.4 of Austroads Guide to Road Design Part 4: Intersections and Crossings – General.** Based on the detailed analysis undertaken on the operation of the proposed upgraded access configuration, it was identified that the proposed upgraded access would operate satisfactorily under all Project traffic volumes assessed.	Unlikely	Hospitalisation	**Medium**
4	The Project is also expected to lead to an increase in turning vehicle movements at the existing Dawson Highway / Duck Holes Road intersection. This increase in turning vehicles has the potential to lead to an increase in vehicle conflicts at this intersection.	Unlikely	Hospitalisation	**Medium**	Unlikely	Hospitalisation	**Medium**	**No mitigation works required.** Based on the assessment undertaken it was identified that the current BAL and CHRs treatments at the intersection will be adequate to cater for the additional Project traffic at the intersection. Further to this, the detailed intersection analysis undertaken identified that the current configuration of the intersection would operate satisfactorily under all Project traffic volumes assessed.	Unlikely	Medical Treatment	**Medium**

5.7 Planning Assessment Benchmark Considerations

As discussed in **Section 1.0**, part of the Project is located within the Planning Scheme and part within the Development Scheme. The Project is subject to 2 separate DAs. The DAs will trigger Impact Assessment, therefore, the Project will need to be assessed against the whole of the Planning Scheme and Development Scheme.

A detailed assessment of the Project against the Planning Scheme assessment benchmarks Performance Outcome 31 of the Planning Scheme's Development Design Code has been included in **Table 23** below.

Table 23 Planning Scheme PO31 Response

Road Design		
PO31 Roads providing access to the site are provided, constructed and maintained to a standard which is adequate for the traffic type and volume likely to be generated by the activities on site.	**AO31** External road works are provided in accordance with the requirements of the Engineering design planning scheme policy.	**Response** As identified above, Duck Holes Road is proposed to be the primary access for Project traffic to the portion of the Project Area to the north of the Dawson Highway, and cater for all staff movements, material, equipment and component delivery movements associated with the Project. Based on the relatively low volumes at this access location, it is recommended that the existing property access at this location be upgraded to provide a configuration generally in accordance with the arrangement for articulated vehicles as identified in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General,* as shown in **Figure 23**, with these works to be provided as part of the external upgrade works for the Project.

No conflicts with the applicable assessment benchmarks have been identified.

It is acknowledged that Development Scheme contains no specific Assessment Benchmarks relating to traffic under the Development Scheme, noting the there are no roads currently located within the Callide Infrastructure Corridor State Development Area. The traffic impacts on the external roads identified in this report relate to roads within the DA2 Project Area only.

Further to this, an assessment is required against the applicable State Code 1: Development in a State Controlled Road Environment as referral to TMR will be required for both applications. This assessment has also been included in the Planning Assessment Report appendix and no conflicts with the applicable assessment benchmarks have been identified.

6.0 Conclusions and Recommendations

6.1 Summary of Impacts and Mitigation Measures Proposed

6.1.1 Traffic Impacts

Based on the identified increase in traffic numbers anticipated as a result of the construction and operational phases of the proposed development, it is anticipated that the Project will generally have a minimal ongoing impact on the traffic operation of the surrounding road network, from a capacity perspective.

Notwithstanding this, the following mitigation treatments are recommended to maximise vehicle safety on the sections of the road network utilised by Project traffic:

- The provision of upgrade works to the existing property access at the proposed Project Area access location on Duck Holes Road. These works are to provide a configuration generally in accordance with the arrangement for articulated vehicles as identified in Figure 7.4 of Austroads *Guide to Road Design Part 4: Intersections and Crossings – General.*
- The provision of upgrade works to the 430 m section of Duck Holes Road between the Dawson Highway and the proposed Project Area access, to provide a 7 m wide unsealed (gravel) road pavement in accordance with a Rural Local Access Road standard (CMDG).

  While these upgrade works could be provided as part of the Upper Calliope Solar Farm prior to the commencement of the Project, it is noted that they will be required to be provided as part of the Project in the event that either the Project proceeds first or the Upper Calliope Solar Farm does not proceed at all.

6.1.2 Pavement Impacts

In addition to the traffic assessments completed, a preliminary desktop pavement impact assessment was also undertaken for the critical construction phase of the Project. The results of the assessment indicated that the heavy vehicle movements associated with the Project are expected to lead to negligible increases in pavement loadings (<5%) on the majority of the identified sections of the state-controlled road network.

The results do however identify higher increases on the section of the Dawson Highway between Taragoola Road (Calliope) and the Duck Holes Road Project (Ch. 21.750 km to Ch. 64.433 km). It is noted however, that these larger increases in loading are primarily due to the loading generated by the expected road grave and concrete transport movements for the Project from the local quarry and concrete batch plant operations in Calliope. Therefore, the mitigation of the impacts of these delivery movements on the identified sections of the state-controlled network are expected to fall on both the quarry and batch plant operators and be covered by their typical road maintenance contribution (c/tonne) to TMR as part of the general operation of these facilities.

In addition to the state-controlled road network, the results also indicated that the additional vehicle movements from the construction phase of the Project were expected to also lead to a significant (>5%) increase in pavement loadings on the relevant section of the GRC controlled link of Duck Holes Road, between the Dawson Highway and the proposed Project Area access.

Notwithstanding this, it is noted that the proposed upgrade works to Duck Holes Road (widening to 7m) as part of either the Upper Calliope Solar Farm or this Project are considered adequate to offset the additional pavement loading from the Project.

As such no pavement mitigation works or contributions are deemed to be required from the Project to offset the temporary (15 month) increase in pavement loading on the external road network.

6.1.3 Recommendations

In light of the information provided above, it can be considered that conditional to the provision of the identified site access and road upgrade works to Duck Holes Road (either as part of the Upper Calliope Solar Farm or this Project), that the construction and operations phases of the Project will have minimal impact on the relevant sections of the local government and state controlled road networks. Access Traffic Consulting therefore recommends that the Project be approved from a traffic engineering and traffic impact viewpoint.

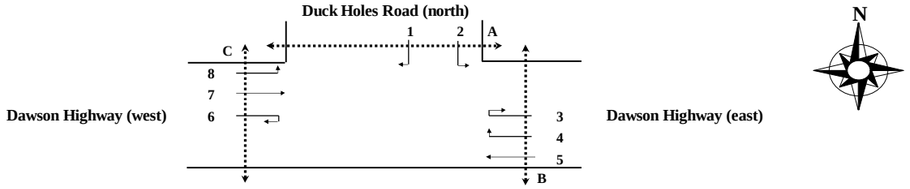
6.2 Certification Statement and Authorisation

A copy of the RPEQ certification and authorisation statement covering this assessment of the proposed Wooderson Solar Farm OHTL and Switchyard Project is included for reference as **Appendix K**.

Appendix A – Intersection Count Data

AUSTRAFFIC INTERSECTION COUNT

Site No.: 1 **Weather:** Occasional shower
Location: Dawson Highway/Duck Holes Road, between Calliope & Biloela
Day/Date: Thursday, 15 February 2024
AM Peak: *Hour ending - 9:00 AM*
PM Peak: *Hour ending - 4:45 PM*



TIME (1/4 hr end)	Movement 1				Movement 2				Movement 3				Movement 4				Movement 5				Movement 6				Movement 7				Movement 8				Pedestrian Movements		
	Light Vehicles	*Heavy Vehicles*	***Total***	*Cyclists*	*Light Vehicles*	*Heavy Vehicles*	***Total***	*Cyclists*	*Light Vehicles*	*Heavy Vehicles*	***Total***	*Cyclists*	*Light Vehicles*	*Heavy Vehicles*	***Total***	*Cyclists*	*Light Vehicles*	*Heavy Vehicles*	***Total***	*Cyclists*	*Light Vehicles*	*Heavy Vehicles*	***Total***	*Cyclists*	*Light Vehicles*	*Heavy Vehicles*	***Total***	*Cyclists*	*Light Vehicles*	*Heavy Vehicles*	***Total***	*Cyclists*	**A**	**B**	**C**
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6:30 AM	1	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	10	0	**10**	0	0	0	**0**	0	2	1	**3**	0	0	0	**0**	0	0	0	0
6:45 AM	0	0	**0**	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	0	5	1	**6**	0	0	0	**0**	0	6	0	**6**	0	0	0	**0**	0	0	0	0
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5:45 PM	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	7	1	**8**	0	1	0	**1**	0	15	4	**19**	0	2	0	**2**	0	0	0	0
6:00 PM	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	4	0	**4**	0	0	0	**0**	0	14	3	**17**	0	0	0	**0**	0	0	0	0
12 hr Total	**7**	**2**	**9**	**0**	**11**	**1**	**12**	**0**	**0**	**0**	**0**	**0**	**9**	**2**	**11**	**0**	**289**	**57**	**346**	**0**	**1**	**0**	**1**	**0**	**413**	**77**	**490**	**0**	**13**	**1**	**14**	**0**	**0**	**0**	**0**
AM Peak	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**4**	**0**	**26**	**7**	**33**	**0**	**0**	**0**	**0**	**0**	**36**	**7**	**43**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**
PM Peak	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**9**	**38**	**0**	**0**	**0**	**0**	**0**	**61**	**5**	**66**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**

Appendix B – Intersection Volume Forecast Calculations

AEC0125-003 | Wooderson SF OHTL

Dawson Highway / Wooderson Solar Farm Site Access

Project Peak Hour Intersection Volume Forecasts

AM PEAK (6:00-7:00am)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	17	2	0	0	0	0	0	0	0	0	29	3
2025	18	2	0	0	0	0	0	0	0	0	30	3
2026	18	2	0	0	0	0	0	0	0	0	31	3
2027	19	2	0	0	0	0	0	0	0	0	32	3
2028	19	2	0	0	0	0	0	0	0	0	33	3
2029	20	2	0	0	0	0	0	0	0	0	34	3
2030	20	2	0	0	0	0	0	0	0	0	35	4
2031	21	2	0	0	0	0	0	0	0	0	36	4
2032	22	3	0	0	0	0	0	0	0	0	37	4
2033	22	3	0	0	0	0	0	0	0	0	38	4
2034	23	3	0	0	0	0	0	0	0	0	39	4
2035	24	3	0	0	0	0	0	0	0	0	40	4
2036	24	3	0	0	0	0	0	0	0	0	42	4
2037	25	3	0	0	0	0	0	0	0	0	43	4
2038	26	3	0	0	0	0	0	0	0	0	44	5
2039	27	3	0	0	0	0	0	0	0	0	46	5
2040	28	3	0	0	0	0	0	0	0	0	47	5
PEAK CONSTRUCTION PHASE	6	0	4	0	0	0	0	1	11	1	0	0
2030 PEAK CONSTRUCTION	27	2	4	0	0	0	0	1	11	1	35	4
OPERATIONS PHASE	0	0	0	0	0	0	0	0	5	1	0	0
2040 PROJECT OPERATIONS	28	3	0	0	0	0	0	0	5	1	47	5
EXTERNAL PROJECTS	26	2	43	2	0	0	0	5	129	12	0	2
CUMUL. PEAK CONSTRUCTION	53	4	47	2	0	0	0	6	140	13	35	6

PM PEAK (5:00-6:00pm)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	56	10	0	0	0	0	0	0	0	0	27	2
2025	58	10	0	0	0	0	0	0	0	0	28	2
2026	59	11	0	0	0	0	0	0	0	0	29	2
2027	61	11	0	0	0	0	0	0	0	0	30	2
2028	63	11	0	0	0	0	0	0	0	0	30	2
2029	65	12	0	0	0	0	0	0	0	0	31	2
2030	67	12	0	0	0	0	0	0	0	0	32	2
2031	69	12	0	0	0	0	0	0	0	0	33	2
2032	71	13	0	0	0	0	0	0	0	0	34	3
2033	73	13	0	0	0	0	0	0	0	0	35	3
2034	76	14	0	0	0	0	0	0	0	0	36	3
2035	78	14	0	0	0	0	0	0	0	0	38	3
2036	80	14	0	0	0	0	0	0	0	0	39	3
2037	83	15	0	0	0	0	0	0	0	0	40	3
2038	85	15	0	0	0	0	0	0	0	0	41	3
2039	88	16	0	0	0	0	0	0	0	0	42	3
2040	91	16	0	0	0	0	0	0	0	0	44	3
PEAK CONSTRUCTION PHASE	0	0	0	0	4	0	11	1	0	1	6	0
2030 PEAK CONSTRUCTION	67	12	0	0	4	0	11	1	0	1	39	2
OPERATIONS PHASE	0	0	0	0	0	0	5	1	0	0	0	0
2040 PROJECT OPERATIONS	91	16	0	0	0	0	5	1	0	0	44	3
EXTERNAL PROJECTS	0	2	0	0	43	2	129	12	0	5	26	2
CUMUL. PEAK CONSTRUCTION	67	14	0	0	47	2	140	13	0	6	65	4

Project Scenario - Schedule Tasks B + C + D + E + G + Site Water + Waste Removal + Project Staff

Staff Movements - Peak Construction

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	6	0	4	0	0	0	0	0	11	0	0	0
PM Peak Staff	0	0	0	0	4	0	11	0	0	0	6	0

Vehicle Movements - Operations

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	0	0	0	0	0	0	5	0	0	0
AM HV	0	0	0	0	0	0	0	0	0	1	0	0
PM Peak Staff	0	0	0	0	0	0	5	1	0	0	0	0
PM HV	0	0	0	0	0	0	0	0	0	0	0	0

Heavy Vehicle Movements - Peak Construction

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Daily - B	0	0	0	0	0	0	0	2	0	2	0	0
Daily - C	0	0	0	0	0	0	0	1	0	1	0	0
Daily - D	0	0	0	0	0	0	0	2	0	2	0	0
Daily - E	0	0	0	0	0	0	0	1	0	1	0	0
Daily - G	0	0	0	0	0	0	0	0	0	0	0	0
Daily - Water	0	0	0	0	0	0	0	2	0	2	0	0
Daily - Waste	0	0	0	0	0	0	0	1	0	1	0	0
Total (11 hrs)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**9**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**

External Project Traffic Movements - Cumulative Construction (AM Peak)

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	26	2	0	0	0	0	0	0	0	0	0	2
Wooderson SF Project	0	0	43	2	0	0	0	5	129	12	0	0
AM Peak Hour	**26**	**2**	**43**	**2**	**0**	**0**	**0**	**5**	**129**	**12**	**0**	**2**

External Project Traffic Movements - Cumulative Construction (PM Peak)

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	0	2	0	0	0	0	0	0	0	0	26	2
Wooderson SF Project	0	0	0	0	43	2	129	12	0	5	0	0
PM Peak Hour	**0**	**2**	**0**	**0**	**43**	**2**	**129**	**12**	**0**	**5**	**26**	**2**

AEC0125-003 | Wooderson SF OHTL

Dawson Highway / Wooderson Solar Farm Site Access

Project Peak Hour Intersection Volume Forecasts

AM PEAK (8:00-9:00am)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	37	8	0	0	0	0	0	0	0	0	26	7
2025	38	8	0	0	0	0	0	0	0	0	27	7
2026	39	8	0	0	0	0	0	0	0	0	28	7
2027	41	9	0	0	0	0	0	0	0	0	28	8
2028	42	9	0	0	0	0	0	0	0	0	29	8
2029	43	9	0	0	0	0	0	0	0	0	30	8
2030	44	10	0	0	0	0	0	0	0	0	31	8
2031	46	10	0	0	0	0	0	0	0	0	32	9
2032	47	10	0	0	0	0	0	0	0	0	33	9
2033	49	10	0	0	0	0	0	0	0	0	34	9
2034	50	11	0	0	0	0	0	0	0	0	35	9
2035	52	11	0	0	0	0	0	0	0	0	36	10
2036	53	11	0	0	0	0	0	0	0	0	37	10
2037	55	12	0	0	0	0	0	0	0	0	38	10
2038	56	12	0	0	0	0	0	0	0	0	40	11
2039	58	13	0	0	0	0	0	0	0	0	41	11
2040	60	13	0	0	0	0	0	0	0	0	42	11
PEAK CONSTRUCTION PHASE	1	0	1	0	1	0	4	1	4	1	1	0
2030 PEAK CONSTRUCTION	45	10	1	0	1	0	4	1	4	1	32	8
OPERATIONS PHASE	0	0	0	0	0	0	0	0	1	1	0	0
2040 PROJECT OPERATIONS	60	13	0	0	0	0	0	0	1	1	42	11
EXTERNAL PROJECTS	26	2	1	0	1	0	4	5	4	5	0	2
CUMUL. PEAK CONSTRUCTION	71	12	2	0	2	0	8	6	8	6	32	10

PM PEAK (3:45-4:45pm)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	63	5	0	0	0	0	0	0	0	0	29	9
2025	65	5	0	0	0	0	0	0	0	0	30	9
2026	67	5	0	0	0	0	0	0	0	0	31	10
2027	69	5	0	0	0	0	0	0	0	0	32	10
2028	71	6	0	0	0	0	0	0	0	0	33	10
2029	73	6	0	0	0	0	0	0	0	0	34	10
2030	75	6	0	0	0	0	0	0	0	0	35	11
2031	78	6	0	0	0	0	0	0	0	0	36	11
2032	80	6	0	0	0	0	0	0	0	0	37	11
2033	83	7	0	0	0	0	0	0	0	0	38	12
2034	85	7	0	0	0	0	0	0	0	0	39	12
2035	88	7	0	0	0	0	0	0	0	0	40	13
2036	90	7	0	0	0	0	0	0	0	0	42	13
2037	93	7	0	0	0	0	0	0	0	0	43	13
2038	96	8	0	0	0	0	0	0	0	0	44	14
2039	99	8	0	0	0	0	0	0	0	0	46	14
2040	102	8	0	0	0	0	0	0	0	0	47	15
PEAK CONSTRUCTION PHASE	1	0	1	0	1	0	4	1	4	1	1	0
2030 PEAK CONSTRUCTION	76	6	1	0	1	0	4	1	4	1	36	11
OPERATIONS PHASE	0	0	0	0	0	0	1	1	0	0	0	0
2040 PROJECT OPERATIONS	102	8	0	0	0	0	1	1	0	0	47	15
EXTERNAL PROJECTS	0	2	1	0	1	0	4	5	4	5	26	2
CUMUL. PEAK CONSTRUCTION	76	8	2	0	2	0	8	6	8	6	62	13

Project Scenario - Schedule Tasks B + C + D + E + G + Site Water + Waste Removal + Project Staff

Staff Movements - Peak Construction

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	1	0	1	0	1	0	4	0	4	0	1	0
PM Peak Staff	1	0	1	0	1	0	4	0	4	0	1	0

Vehicle Movements - Operations

Task	Dawson Highway - W				Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	0	0	0	0	0	0	1	0	0	0
AM HV	0	0	0	0	0	0	0	0	0	1	0	0
PM Peak Staff	0	0	0	0	0	0	1	0	0	0	0	0
PM HV	0	0	0	0	0	0	0	1	0	0	0	0

Heavy Vehicle Movements - Peak Construction

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Daily - B	0	0	0	0	0	0	0	2	0	2	0	0
Daily - C	0	0	0	0	0	0	0	1	0	1	0	0
Daily - D	0	0	0	0	0	0	0	2	0	2	0	0
Daily - E	0	0	0	0	0	0	0	1	0	1	0	0
Daily - G	0	0	0	0	0	0	0	0	0	0	0	0
Daily - Water	0	0	0	0	0	0	0	2	0	2	0	0
Daily - Waste	0	0	0	0	0	0	0	1	0	1	0	0
Total (11 hrs)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**9**	**0**	**0**
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**

External Project Traffic Movements - Cumulative Construction (AM Peak)

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	26	2	0	0	0	0	0	0	0	0	0	2
Wooderson SF Project	0	0	1	0	1	0	4	5	4	5	0	0
AM Peak Hour	**26**	**2**	**1**	**0**	**1**	**0**	**4**	**5**	**4**	**5**	**0**	**2**

External Project Traffic Movements - Cumulative Construction (PM Peak)

Task	Dawson Highway - W				WSF Site Access - S				Dawson Highway - E			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	0	2	0	0	0	0	0	0	0	0	26	2
Wooderson SF Project	0	0	1	0	1	0	4	5	4	5	0	0
PM Peak Hour	**0**	**2**	**1**	**0**	**1**	**0**	**4**	**5**	**4**	**5**	**26**	**2**

AEC0125-003 | Wooderson SF OHTL

Dawson Highway / Duck Holes Road

Project Peak Hour Intersection Volume Forecasts

AM PEAK (6:00-7:00am)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	28	3	0	0	1	0	1	0	2	0	15	2
2025	29	3	0	0	1	0	1	0	2	0	15	2
2026	30	3	0	0	1	0	1	0	2	0	16	2
2027	31	3	0	0	1	0	1	0	2	0	16	2
2028	32	3	0	0	1	0	1	0	2	0	17	2
2029	33	3	0	0	1	0	1	0	2	0	17	2
2030	34	4	0	0	1	0	1	0	2	0	18	2
2031	35	4	0	0	1	0	1	0	2	0	19	2
2032	36	4	0	0	1	0	1	0	2	0	19	3
2033	37	4	0	0	1	0	1	0	2	0	20	3
2034	38	4	0	0	1	0	1	0	2	0	20	3
2035	39	4	0	0	1	0	1	0	2	0	21	3
2036	40	4	0	0	1	0	1	0	2	0	22	3
2037	41	4	0	0	1	0	1	0	2	0	22	3
2038	43	5	0	0	1	0	1	0	2	0	23	3
2039	44	5	0	0	1	0	1	0	2	0	24	3
2040	45	5	0	0	1	0	1	0	2	0	24	3
PEAK CONSTRUCTION PHASE	0	1	30	3	0	3	0	0	10	0	0	1
2030 PEAK CONSTRUCTION	34	5	30	3	1	3	1	0	12	0	18	3
OPERATIONS PHASE	5	1	5	1	0	0	0	0	0	0	0	0
2040 PROJECT OPERATIONS	50	6	5	1	1	0	1	0	2	0	24	3
EXTERNAL PROJECTS	129	12	60	10	0	10	0	2	26	2	0	5
CUMUL. PEAK CONSTRUCTION	163	17	90	13	1	13	1	2	38	2	18	8

PM PEAK (5:00-6:00pm)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	26	2	0	0	0	0	1	0	3	0	53	10
2025	27	2	0	0	0	0	1	0	3	0	55	10
2026	28	2	0	0	0	0	1	0	3	0	56	11
2027	28	2	0	0	0	0	1	0	3	0	58	11
2028	29	2	0	0	0	0	1	0	3	0	60	11
2029	30	2	0	0	0	0	1	0	3	0	62	12
2030	31	2	0	0	0	0	1	0	3	0	64	12
2031	32	2	0	0	0	0	1	0	3	0	65	12
2032	33	3	0	0	0	0	1	0	3	0	67	13
2033	34	3	0	0	0	0	1	0	3	0	70	13
2034	35	3	0	0	0	0	1	0	3	0	72	14
2035	36	3	0	0	0	0	1	0	3	0	74	14
2036	37	3	0	0	0	0	1	0	3	0	76	14
2037	38	3	0	0	0	0	1	0	3	0	78	15
2038	40	3	0	0	0	0	1	0	3	0	81	15
2039	41	3	0	0	0	0	1	0	3	0	83	16
2040	42	3	0	0	0	0	1	0	4	0	86	16
PEAK CONSTRUCTION PHASE	0	1	0	3	30	3	10	0	0	0	0	1
2030 PEAK CONSTRUCTION	31	3	0	3	30	3	11	0	3	0	64	13
OPERATIONS PHASE	0	0	0	0	5	1	0	0	0	0	5	1
2040 PROJECT OPERATIONS	42	3	0	0	5	1	1	0	4	0	91	17
EXTERNAL PROJECTS	0	5	0	10	60	10	26	2	0	2	129	12
CUMUL. PEAK CONSTRUCTION	31	8	0	13	90	13	37	2	3	2	193	25

Project Scenario - Schedule Tasks B + C + D + E + G + Site Water + Waste Removal + Project Staff

Staff Movements - Peak Construction

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	0	0	30	0	0	0	0	0	10	0	0	0
PM Peak Staff	0	0	0	0	30	0	10	0	0	0	0	0

Vehicle Movements - Operations

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	5	0	5	0	0	0	0	0	0	0	0	0
AM HV	0	1	0	1	0	0	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	5	0	0	0	0	0	5	0
PM HV	0	0	0	0	0	1	0	0	0	0	0	1

Heavy Vehicle Movements - Peak Construction

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Daily - B	0	2	0	5	0	5	0	0	0	0	0	2
Daily - C	0	1	0	11	0	11	0	0	0	0	0	1
Daily - D	0	2	0	1	0	1	0	0	0	0	0	2
Daily - E	0	1	0	1	0	1	0	0	0	0	0	1
Daily - G	0	0	0	7	0	7	0	0	0	0	0	0
Daily - Water	0	2	0	2	0	2	0	0	0	0	0	2
Daily - Waste	0	1	0	1	0	1	0	0	0	0	0	1
Total (11 hrs)	**0**	**9**	**0**	**28**	**0**	**28**	**0**	**0**	**0**	**0**	**0**	**9**
Peak Hour	**0**	**1**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**

External Project Traffic Movements - Cumulative Construction (AM Peak)

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	0	0	60	10	0	10	0	2	26	2	0	0
Wooderson SF Project	129	12	0	0	0	0	0	0	0	0	0	5
AM Peak Hour	**129**	**12**	**60**	**10**	**0**	**10**	**0**	**2**	**26**	**2**	**0**	**5**

External Project Traffic Movements - Cumulative Construction (PM Peak)

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	0	0	0	10	60	10	26	2	0	2	0	0
Wooderson SF Project	0	5	0	0	0	0	0	0	0	0	129	12
PM Peak Hour	**0**	**5**	**0**	**10**	**60**	**10**	**26**	**2**	**0**	**2**	**129**	**12**

AEC0125-003 | Wooderson SF OHTL

Dawson Highway / Duck Holes Road

Network Peak Hour Intersection Volume Forecasts

AM PEAK (8:00-9:00am)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	26	7	3	1	0	1	0	0	1	1	36	7
2025	27	7	3	1	0	1	0	0	1	1	37	7
2026	28	7	3	1	0	1	0	0	1	1	38	7
2027	28	8	3	1	0	1	0	0	1	1	39	8
2028	29	8	3	1	0	1	0	0	1	1	41	8
2029	30	8	3	1	0	1	0	0	1	1	42	8
2030	31	8	3	1	0	1	0	0	1	1	43	8
2031	32	9	3	1	0	1	0	0	1	1	44	9
2032	33	9	3	1	0	1	0	0	1	1	46	9
2033	34	9	3	1	0	1	0	0	1	1	47	9
2034	35	9	3	1	0	1	0	0	1	1	49	9
2035	36	10	3	1	0	1	0	0	1	1	50	10
2036	37	10	3	1	0	1	0	0	1	1	52	10
2037	38	10	3	1	0	1	0	0	1	1	53	10
2038	40	11	3	1	0	1	0	0	1	1	55	11
2039	41	11	3	1	0	1	0	0	1	1	57	11
2040	42	11	4	1	0	1	0	0	1	1	58	11
PEAK CONSTRUCTION PHASE	4	1	4	3	4	3	1	0	1	0	4	1
2030 PEAK CONSTRUCTION	35	9	7	4	4	4	1	0	2	1	47	9
OPERATIONS PHASE	1	1	1	1	0	0	0	0	0	0	0	0
2040 PROJECT OPERATIONS	43	12	5	2	0	1	0	0	1	1	58	11
EXTERNAL PROJECTS	4	5	4	5	4	5	0	1	0	1	4	5
CUMUL. PEAK CONSTRUCTION	39	14	11	9	8	9	1	1	2	2	51	14

PM PEAK (3:45-4:45pm)

GR %	3.06%	3.06%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	3.06%	3.06%
YEAR	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2024	29	9	0	0	2	0	0	0	2	0	61	5
2025	30	9	0	0	2	0	0	0	2	0	63	5
2026	31	10	0	0	2	0	0	0	2	0	65	5
2027	32	10	0	0	2	0	0	0	2	0	67	5
2028	33	10	0	0	2	0	0	0	2	0	69	6
2029	34	10	0	0	2	0	0	0	2	0	71	6
2030	35	11	0	0	2	0	0	0	2	0	73	6
2031	36	11	0	0	2	0	0	0	2	0	75	6
2032	37	11	0	0	2	0	0	0	2	0	78	6
2033	38	12	0	0	2	0	0	0	2	0	80	7
2034	39	12	0	0	2	0	0	0	2	0	82	7
2035	40	13	0	0	2	0	0	0	2	0	85	7
2036	42	13	0	0	2	0	0	0	2	0	88	7
2037	43	13	0	0	2	0	0	0	2	0	90	7
2038	44	14	0	0	2	0	0	0	2	0	93	8
2039	46	14	0	0	2	0	0	0	2	0	96	8
2040	47	15	0	0	2	0	0	0	2	0	99	8
PEAK CONSTRUCTION PHASE	4	1	4	3	4	3	1	0	1	0	4	1
2030 PEAK CONSTRUCTION	39	12	4	3	6	3	1	0	3	0	77	7
OPERATIONS PHASE	0	0	0	0	1	1	0	0	0	0	1	1
2040 PROJECT OPERATIONS	47	15	0	0	3	1	0	0	2	0	100	9
EXTERNAL PROJECTS	4	5	4	5	4	5	0	1	0	1	4	5
CUMUL. PEAK CONSTRUCTION	43	17	8	8	10	8	1	1	3	1	81	12

Project Scenario - Schedule Tasks B + C + D + E + G + Site Water + Waste Removal + Project Staff

Staff Movements - Peak Construction

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	4	0	4	0	4	0	1	0	1	0	4	0
PM Peak Staff	4	0	4	0	4	0	1	0	1	0	4	0

Vehicle Movements - Operations

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
AM Peak Staff	1	0	1	0	0	0	0	0	0	0	0	0
AM HV	0	1	0	1	0	0	0	0	0	0	0	0
PM Peak Staff	0	0	0	0	1	0	0	0	0	0	1	0
PM HV	0	0	0	0	0	1	0	0	0	0	0	1

Heavy Vehicle Movements - Peak Construction

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Daily - B	0	2	0	5	0	5	0	0	0	0	0	2
Daily - C	0	1	0	11	0	11	0	0	0	0	0	1
Daily - D	0	2	0	1	0	1	0	0	0	0	0	2
Daily - E	0	1	0	1	0	1	0	0	0	0	0	1
Daily - G	0	0	0	7	0	7	0	0	0	0	0	0
Daily - Water	0	2	0	2	0	2	0	0	0	0	0	2
Daily - Waste	0	1	0	1	0	1	0	0	0	0	0	1
Total (11 hrs)	**0**	**9**	**0**	**28**	**0**	**28**	**0**	**0**	**0**	**0**	**0**	**9**
Peak Hour	**0**	**1**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**

External Project Traffic Movements - Cumulative Construction (AM Peak)

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	0	0	4	5	4	5	0	1	0	1	0	0
Wooderson SF Project	4	5	0	0	0	0	0	0	0	0	4	5
AM Peak Hour	**4**	**5**	**4**	**5**	**4**	**5**	**0**	**1**	**0**	**1**	**4**	**5**

External Project Traffic Movements - Cumulative Construction (PM Peak)

Task	Dawson Highway - NE				Duck Holes Road - N				Dawson Highway - SW			
	T		R		L		R		L		T	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
Upper Calliope Solar Farm	0	0	4	5	4	5	0	1	0	1	0	0
Wooderson SF Project	4	5	0	0	0	0	0	0	0	0	4	5
PM Peak Hour	**4**	**5**	**4**	**5**	**4**	**5**	**0**	**1**	**0**	**1**	**4**	**5**

Appendix C – SIDRA Results – Dawson Highway / Duck Holes Road

MOVEMENT SUMMARY

Site: 1 [EXIST 2026 AM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	33	9.1	33	9.1	0.018	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
6	R2	All MCs	1	0.0	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.08	0.63	0.08	74.2
Approach			34	8.8	34	8.8	0.018	0.2	NA	0.0	0.0	0.00	0.02	0.00	99.0
North: Duck Holes Road															
7	L2	All MCs	1	0.0	1	0.0	0.002	7.9	LOS A	0.0	0.0	0.09	0.61	0.09	73.9
9	R2	All MCs	1	0.0	1	0.0	0.002	8.0	LOS A	0.0	0.0	0.09	0.61	0.09	73.9
Approach			2	0.0	2	0.0	0.002	7.9	LOS A	0.0	0.0	0.09	0.61	0.09	73.9
West: Dawson Highway															
10	L2	All MCs	2	0.0	2	0.0	0.011	7.8	LOS A	0.0	0.0	0.00	0.07	0.00	85.6
11	T1	All MCs	18	11.1	18	11.1	0.011	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	97.7
Approach			20	10.0	20	10.0	0.011	0.8	NA	0.0	0.0	0.00	0.07	0.00	96.3
All Vehicles			56	8.9	56	8.9	0.018	0.7	NA	0.0	0.0	0.00	0.06	0.00	96.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [EXIST 2026 PM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	30	6.7	30	6.7	0.016	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	1	0.0	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.17	0.53	0.17	61.1
Approach			31	6.5	31	6.5	0.016	0.2	NA	0.0	0.0	0.01	0.02	0.01	60.0
North: Duck Holes Road															
7	L2	All MCs	1	0.0	1	0.0	0.002	5.7	LOS A	0.0	0.0	0.18	0.52	0.18	61.0
9	R2	All MCs	1	0.0	1	0.0	0.002	6.0	LOS A	0.0	0.0	0.18	0.52	0.18	61.0
Approach			2	0.0	2	0.0	0.002	5.9	LOS A	0.0	0.0	0.18	0.52	0.18	61.0
West: Dawson Highway															
10	L2	All MCs	3	0.0	3	0.0	0.039	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	57.2
11	T1	All MCs	67	16.4	67	16.4	0.039	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach			70	15.7	70	15.7	0.039	0.2	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles			103	12.6	103	12.6	0.039	0.3	NA	0.0	0.0	0.01	0.03	0.01	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [EXIST 2026 AM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	35	20.0	35	20.0	0.020	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	4	25.0	4	25.0	0.003	5.9	LOS A	0.0	0.1	0.14	0.54	0.14	54.8
Approach			39	20.5	39	20.5	0.020	0.6	NA	0.0	0.1	0.01	0.06	0.01	59.4
North: Duck Holes Road															
7	L2	All MCs	1	100.0	1	100.0	0.002	7.0	LOS A	0.0	0.1	0.17	0.52	0.17	46.5
9	R2	All MCs	1	0.0	1	0.0	0.002	5.9	LOS A	0.0	0.1	0.17	0.52	0.17	59.9
Approach			2	50.0	2	50.0	0.002	6.5	LOS A	0.0	0.1	0.17	0.52	0.17	52.3
West: Dawson Highway															
10	L2	All MCs	2	50.0	2	50.0	0.027	6.1	LOS A	0.0	0.0	0.00	0.02	0.00	55.0
11	T1	All MCs	45	15.6	45	15.6	0.027	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			47	17.0	47	17.0	0.027	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			88	19.3	88	19.3	0.027	0.6	NA	0.0	0.1	0.01	0.05	0.01	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [EXIST 2026 PM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	41	24.4	41	24.4	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	1	0.0	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.17	0.53	0.17	61.1
Approach			42	23.8	42	23.8	0.024	0.1	NA	0.0	0.0	0.00	0.01	0.00	60.0
North: Duck Holes Road															
7	L2	All MCs	2	0.0	2	0.0	0.002	5.7	LOS A	0.0	0.1	0.18	0.53	0.18	61.0
9	R2	All MCs	1	0.0	1	0.0	0.002	6.1	LOS A	0.0	0.1	0.18	0.53	0.18	61.0
Approach			3	0.0	3	0.0	0.002	5.8	LOS A	0.0	0.1	0.18	0.53	0.18	61.0
West: Dawson Highway															
10	L2	All MCs	2	0.0	2	0.0	0.038	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
11	T1	All MCs	70	7.1	70	7.1	0.038	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			72	6.9	72	6.9	0.038	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles			117	12.8	117	12.8	0.038	0.3	NA	0.0	0.1	0.01	0.03	0.01	59.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CONST 2030 AM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	39	12.8	39	12.8	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	33	9.1	33	9.1	0.020	5.7	LOS A	0.1	0.7	0.11	0.55	0.11	58.5
Approach			72	11.1	72	11.1	0.021	2.6	NA	0.1	0.7	0.05	0.25	0.05	59.3
North: Duck Holes Road															
7	L2	All MCs	4	75.0	4	75.0	0.004	6.5	LOS A	0.0	0.2	0.10	0.53	0.10	46.3
9	R2	All MCs	1	0.0	1	0.0	0.004	6.0	LOS A	0.0	0.2	0.10	0.53	0.10	60.8
Approach			5	60.0	5	60.0	0.004	6.4	LOS A	0.0	0.2	0.10	0.53	0.10	48.6
West: Dawson Highway															
10	L2	All MCs	12	0.0	12	0.0	0.018	5.5	LOS A	0.0	0.0	0.00	0.22	0.00	55.6
11	T1	All MCs	21	14.3	21	14.3	0.018	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	57.9
Approach			33	9.1	33	9.1	0.018	2.0	NA	0.0	0.0	0.00	0.22	0.00	57.0
All Vehicles			110	12.7	110	12.7	0.021	2.6	NA	0.1	0.7	0.04	0.26	0.04	58.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CONST 2030 PM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	34	8.8	34	8.8	0.018	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	3	100.0	3	100.0	0.003	7.2	LOS A	0.0	0.2	0.23	0.53	0.23	45.3
Approach			37	16.2	37	16.2	0.018	0.6	NA	0.0	0.2	0.02	0.04	0.02	58.5
North: Duck Holes Road															
7	L2	All MCs	33	9.1	33	9.1	0.033	5.9	LOS A	0.1	1.0	0.19	0.54	0.19	58.3
9	R2	All MCs	11	0.0	11	0.0	0.033	6.2	LOS A	0.1	1.0	0.19	0.54	0.19	60.4
Approach			44	6.8	44	6.8	0.033	6.0	LOS A	0.1	1.0	0.19	0.54	0.19	58.8
West: Dawson Highway															
10	L2	All MCs	3	0.0	3	0.0	0.045	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
11	T1	All MCs	77	16.9	77	16.9	0.045	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			80	16.3	80	16.3	0.045	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			161	13.7	161	13.7	0.045	1.9	NA	0.1	1.0	0.06	0.17	0.06	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CONST 2030 AM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	44	20.5	44	20.5	0.025	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	11	36.4	11	36.4	0.008	6.2	LOS A	0.0	0.3	0.17	0.54	0.17	52.3
Approach			55	23.6	55	23.6	0.025	1.2	NA	0.0	0.3	0.03	0.11	0.03	58.3
North: Duck Holes Road															
7	L2	All MCs	8	50.0	8	50.0	0.007	6.4	LOS A	0.0	0.3	0.16	0.53	0.16	50.2
9	R2	All MCs	1	0.0	1	0.0	0.007	6.1	LOS A	0.0	0.3	0.16	0.53	0.16	60.6
Approach			9	44.4	9	44.4	0.007	6.3	LOS A	0.0	0.3	0.16	0.53	0.16	51.1
West: Dawson Highway															
10	L2	All MCs	3	33.3	3	33.3	0.033	5.9	LOS A	0.0	0.0	0.00	0.03	0.00	55.7
11	T1	All MCs	56	16.1	56	16.1	0.033	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.8
Approach			59	16.9	59	16.9	0.033	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehicles			123	22.0	123	22.0	0.033	1.2	NA	0.0	0.3	0.03	0.10	0.03	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CONST 2030 PM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	51	23.5	51	23.5	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	7	42.9	7	42.9	0.005	6.4	LOS A	0.0	0.2	0.21	0.54	0.21	51.0
Approach			58	25.9	58	25.9	0.030	0.8	NA	0.0	0.2	0.03	0.06	0.03	58.7
North: Duck Holes Road															
7	L2	All MCs	9	33.3	9	33.3	0.008	6.3	LOS A	0.0	0.3	0.19	0.53	0.19	53.1
9	R2	All MCs	1	0.0	1	0.0	0.008	6.3	LOS A	0.0	0.3	0.19	0.53	0.19	60.4
Approach			10	30.0	10	30.0	0.008	6.3	LOS A	0.0	0.3	0.19	0.53	0.19	53.8
West: Dawson Highway															
10	L2	All MCs	3	0.0	3	0.0	0.047	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
11	T1	All MCs	84	8.3	84	8.3	0.047	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			87	8.0	87	8.0	0.047	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles			155	16.1	155	16.1	0.047	0.8	NA	0.0	0.3	0.02	0.07	0.02	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CUM. CONST 2030 AM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	180	9.4	180	9.4	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	103	12.6	103	12.6	0.065	5.9	LOS A	0.3	2.3	0.18	0.55	0.18	57.5
Approach			283	10.6	283	10.6	0.097	2.2	NA	0.3	2.3	0.06	0.20	0.06	59.0
North: Duck Holes Road															
7	L2	All MCs	14	92.9	14	92.9	0.019	6.8	LOS A	0.1	0.9	0.14	0.53	0.14	43.6
9	R2	All MCs	3	66.7	3	66.7	0.019	10.3	LOS A	0.1	0.9	0.14	0.53	0.14	47.2
Approach			17	88.2	17	88.2	0.019	7.4	LOS A	0.1	0.9	0.14	0.53	0.14	44.2
West: Dawson Highway															
10	L2	All MCs	40	5.0	40	5.0	0.038	5.6	LOS A	0.0	0.0	0.00	0.36	0.00	54.1
11	T1	All MCs	26	30.8	26	30.8	0.038	0.0	LOS A	0.0	0.0	0.00	0.36	0.00	56.5
Approach			66	15.2	66	15.2	0.038	3.4	NA	0.0	0.0	0.00	0.36	0.00	55.0
All Vehicles			366	15.0	366	15.0	0.097	2.6	NA	0.3	2.3	0.06	0.24	0.06	57.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CUM. CONST 2030 PM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	39	20.5	39	20.5	0.022	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	13	100.0	13	100.0	0.015	8.4	LOS A	0.1	0.8	0.41	0.58	0.41	44.8
Approach			52	40.4	52	40.4	0.022	2.1	NA	0.1	0.8	0.10	0.15	0.10	55.3
North: Duck Holes Road															
7	L2	All MCs	103	12.6	103	12.6	0.131	6.6	LOS A	0.5	4.1	0.37	0.61	0.37	56.8
9	R2	All MCs	39	5.1	39	5.1	0.131	7.6	LOS A	0.5	4.1	0.37	0.61	0.37	58.5
Approach			142	10.6	142	10.6	0.131	6.9	LOS A	0.5	4.1	0.37	0.61	0.37	57.3
West: Dawson Highway															
10	L2	All MCs	5	40.0	5	40.0	0.122	6.0	LOS A	0.0	0.0	0.00	0.01	0.00	55.5
11	T1	All MCs	218	11.5	218	11.5	0.122	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			223	12.1	223	12.1	0.122	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles			417	15.1	417	15.1	0.131	2.7	NA	0.5	4.1	0.14	0.23	0.14	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CUM. CONST 2030 AM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	53	26.4	53	26.4	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	20	45.0	20	45.0	0.015	6.3	LOS A	0.1	0.6	0.19	0.54	0.19	50.6
Approach			73	31.5	73	31.5	0.032	1.7	NA	0.1	0.6	0.05	0.15	0.05	57.1
North: Duck Holes Road															
7	L2	All MCs	17	52.9	17	52.9	0.017	6.5	LOS A	0.1	0.7	0.19	0.53	0.19	49.6
9	R2	All MCs	2	50.0	2	50.0	0.017	7.4	LOS A	0.1	0.7	0.19	0.53	0.19	50.0
Approach			19	52.6	19	52.6	0.017	6.6	LOS A	0.1	0.7	0.19	0.53	0.19	49.6
West: Dawson Highway															
10	L2	All MCs	4	50.0	4	50.0	0.041	6.1	LOS A	0.0	0.0	0.00	0.03	0.00	54.9
11	T1	All MCs	65	21.5	65	21.5	0.041	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.8
Approach			69	23.2	69	23.2	0.041	0.4	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Vehicles			161	30.4	161	30.4	0.041	1.7	NA	0.1	0.7	0.05	0.14	0.05	57.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CUM. CONST 2030 PM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	60	28.3	60	28.3	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	16	50.0	16	50.0	0.012	6.5	LOS A	0.1	0.6	0.23	0.54	0.23	49.6
Approach			76	32.9	76	32.9	0.036	1.4	NA	0.1	0.6	0.05	0.11	0.05	57.5
North: Duck Holes Road															
7	L2	All MCs	18	44.4	18	44.4	0.018	6.5	LOS A	0.1	0.7	0.22	0.53	0.22	51.0
9	R2	All MCs	2	50.0	2	50.0	0.018	7.7	LOS A	0.1	0.7	0.22	0.53	0.22	49.9
Approach			20	45.0	20	45.0	0.018	6.6	LOS A	0.1	0.7	0.22	0.53	0.22	50.9
West: Dawson Highway															
10	L2	All MCs	4	25.0	4	25.0	0.054	5.8	LOS A	0.0	0.0	0.00	0.02	0.00	56.1
11	T1	All MCs	93	12.9	93	12.9	0.054	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			97	13.4	97	13.4	0.054	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			193	24.4	193	24.4	0.054	1.4	NA	0.1	0.7	0.04	0.11	0.04	57.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPS 2040 AM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	56	10.7	56	10.7	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	6	16.7	6	16.7	0.004	5.8	LOS A	0.0	0.1	0.10	0.55	0.10	56.7
Approach			62	11.3	62	11.3	0.030	0.6	NA	0.0	0.1	0.01	0.05	0.01	59.7
North: Duck Holes Road															
7	L2	All MCs	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.0	0.12	0.53	0.12	61.2
9	R2	All MCs	1	0.0	1	0.0	0.002	6.0	LOS A	0.0	0.0	0.12	0.53	0.12	61.2
Approach			2	0.0	2	0.0	0.002	5.8	LOS A	0.0	0.0	0.12	0.53	0.12	61.2
West: Dawson Highway															
10	L2	All MCs	2	0.0	2	0.0	0.016	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	57.1
11	T1	All MCs	27	11.1	27	11.1	0.016	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach			29	10.3	29	10.3	0.016	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.4
All Vehicles			93	10.8	93	10.8	0.030	0.6	NA	0.0	0.1	0.01	0.06	0.01	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPS 2040 PM Project Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	45	6.7	45	6.7	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	1	0.0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.22	0.52	0.22	60.9
Approach			46	6.5	46	6.5	0.024	0.1	NA	0.0	0.0	0.00	0.01	0.00	60.0
North: Duck Holes Road															
7	L2	All MCs	6	16.7	6	16.7	0.005	6.1	LOS A	0.0	0.2	0.22	0.53	0.22	56.4
9	R2	All MCs	1	0.0	1	0.0	0.005	6.3	LOS A	0.0	0.2	0.22	0.53	0.22	60.3
Approach			7	14.3	7	14.3	0.005	6.1	LOS A	0.0	0.2	0.22	0.53	0.22	57.0
West: Dawson Highway															
10	L2	All MCs	4	0.0	4	0.0	0.063	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
11	T1	All MCs	108	15.7	108	15.7	0.063	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			112	15.2	112	15.2	0.063	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles			165	12.7	165	12.7	0.063	0.4	NA	0.0	0.2	0.01	0.04	0.01	59.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPS 2040 AM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	55	21.8	55	21.8	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	7	28.6	7	28.6	0.005	6.1	LOS A	0.0	0.2	0.18	0.54	0.18	53.9
Approach			62	22.6	62	22.6	0.032	0.7	NA	0.0	0.2	0.02	0.06	0.02	59.2
North: Duck Holes Road															
7	L2	All MCs	1	0.0	1	0.0	0.002	5.7	LOS A	0.0	0.0	0.20	0.52	0.20	60.9
9	R2	All MCs	1	0.0	1	0.0	0.002	6.2	LOS A	0.0	0.0	0.20	0.52	0.20	60.9
Approach			2	0.0	2	0.0	0.002	6.0	LOS A	0.0	0.0	0.20	0.52	0.20	60.9
West: Dawson Highway															
10	L2	All MCs	2	50.0	2	50.0	0.040	6.1	LOS A	0.0	0.0	0.00	0.02	0.00	55.0
11	T1	All MCs	69	15.9	69	15.9	0.040	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.9
Approach			71	16.9	71	16.9	0.040	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles			135	19.3	135	19.3	0.040	0.5	NA	0.0	0.2	0.01	0.04	0.01	59.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPS 2040 PM Network Peak (Site Folder: 2. Dawson Highway / Duck Holes Road)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Duck Holes Road
Existing Intersection Configuration (BAL / CHRs)
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dawson Highway															
5	T1	All MCs	62	24.2	62	24.2	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	1	0.0	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.21	0.52	0.21	60.9
Approach			63	23.8	63	23.8	0.036	0.1	NA	0.0	0.0	0.00	0.01	0.00	60.0
North: Duck Holes Road															
7	L2	All MCs	4	25.0	4	25.0	0.004	6.2	LOS A	0.0	0.1	0.23	0.53	0.23	54.6
9	R2	All MCs	1	0.0	1	0.0	0.004	6.4	LOS A	0.0	0.1	0.23	0.53	0.23	60.3
Approach			5	20.0	5	20.0	0.004	6.3	LOS A	0.0	0.1	0.23	0.53	0.23	55.7
West: Dawson Highway															
10	L2	All MCs	2	0.0	2	0.0	0.059	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.4
11	T1	All MCs	109	8.3	109	8.3	0.059	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			111	8.1	111	8.1	0.059	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles			179	14.0	179	14.0	0.059	0.3	NA	0.0	0.1	0.01	0.02	0.01	59.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

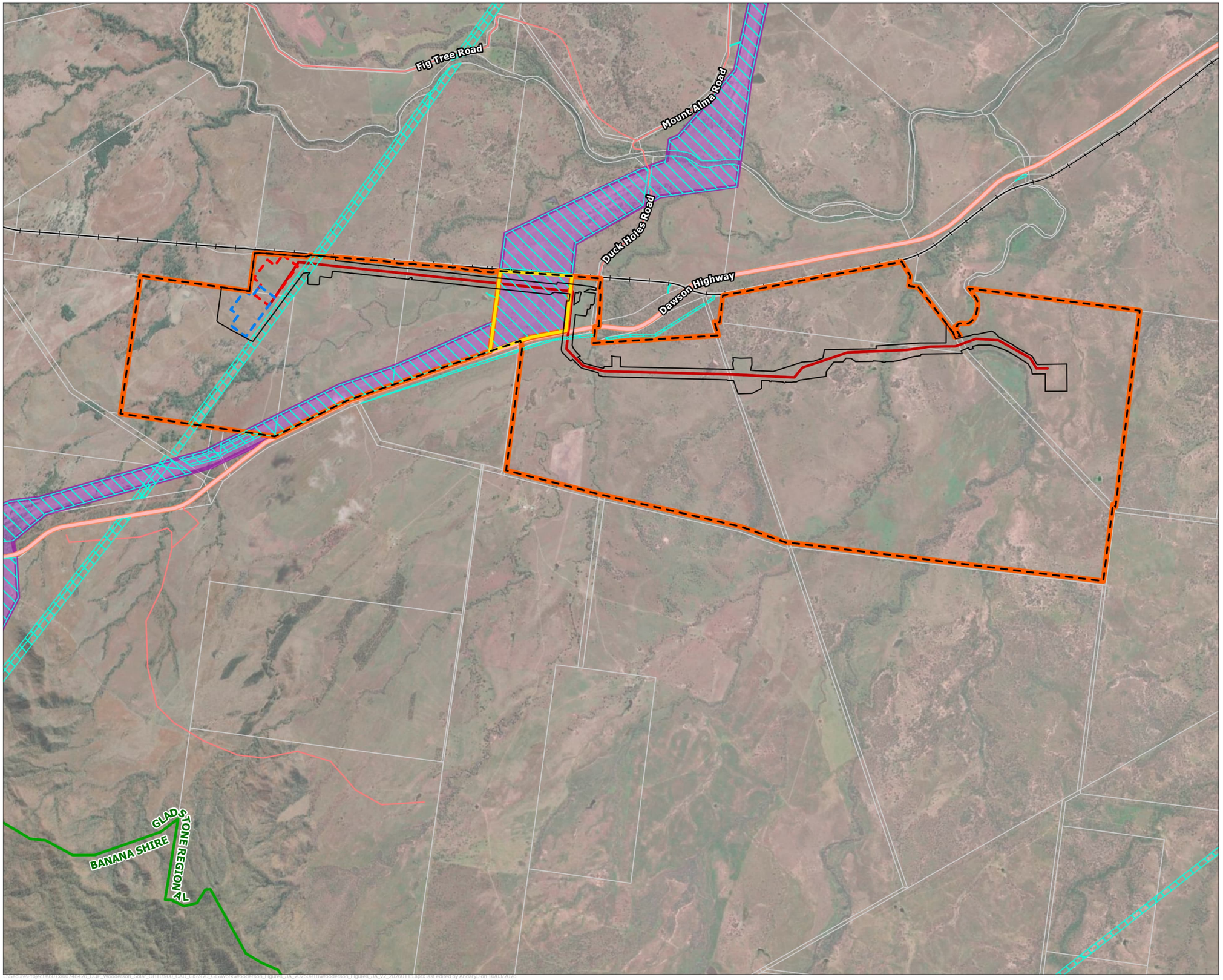
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix D – Proposed Plan of Development



AECOM

N

0 500 1,000 Meters

Legend

- State Controlled Road
- Road
- Rail network
- Callide Infrastructure Corridor State Development Area
- Local Government Areas
- Easements
- Land Parcels
- Project Area
- DA2 Project Area (GRC)
- DA3 Project Area (OCG)
- Project Disturbance Footprint
- Indicative Overhead Transmission Line Route
- Option A - Switchyard
- Option B - Switchyard

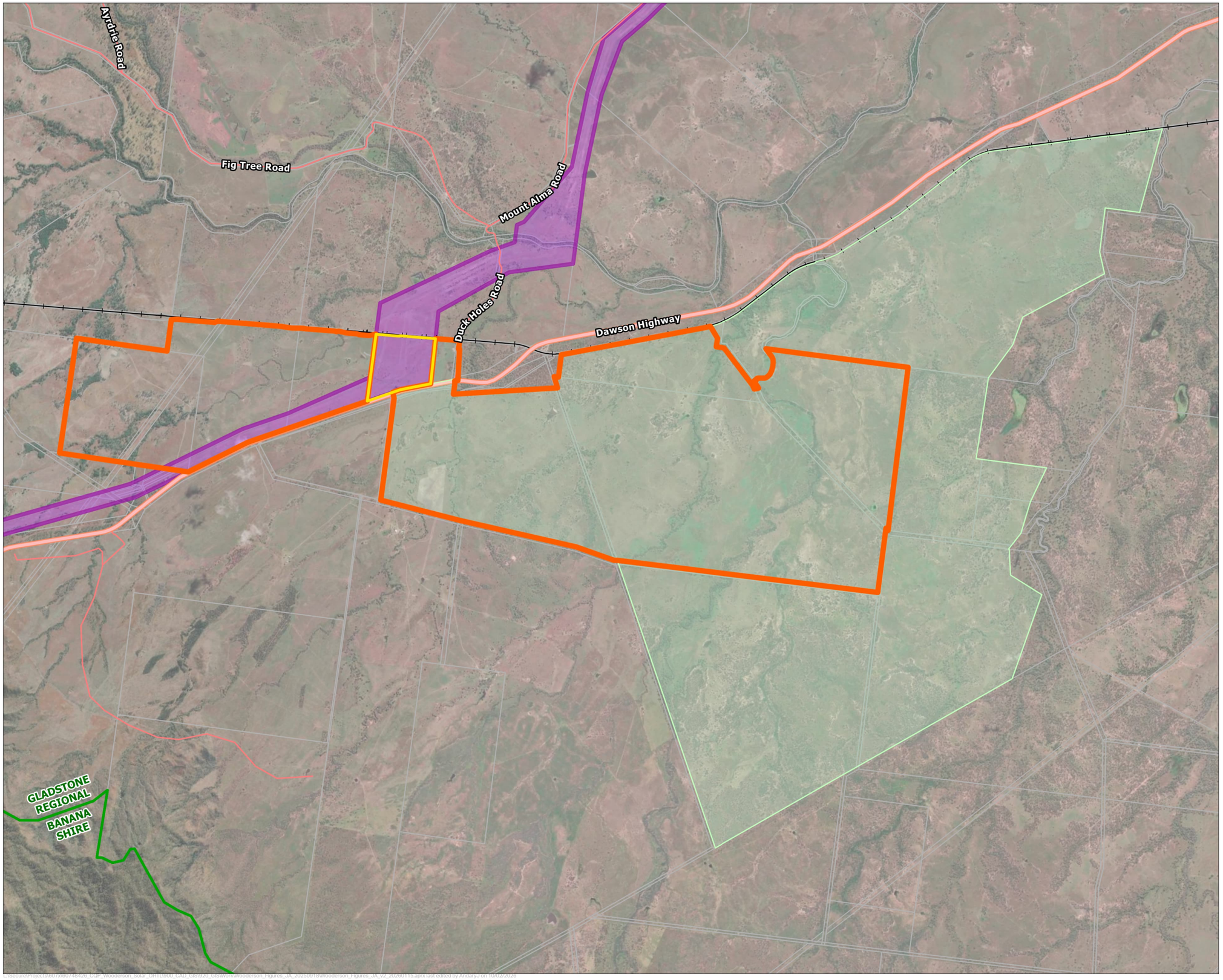


Figure 1: Wooderson Solar Farm Overhead Transmission Line Location

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AECOM

N

0 1 2 km

Legend

- State Controlled Road
- Road
- Rail network
- Local Government Areas
- Callide Infrastructure Corridor State Development Area
- Land Parcels
- DA1 Project Area (SARA)
- DA2 Project Area (GRC)
- DA3 Project Area (OCG)

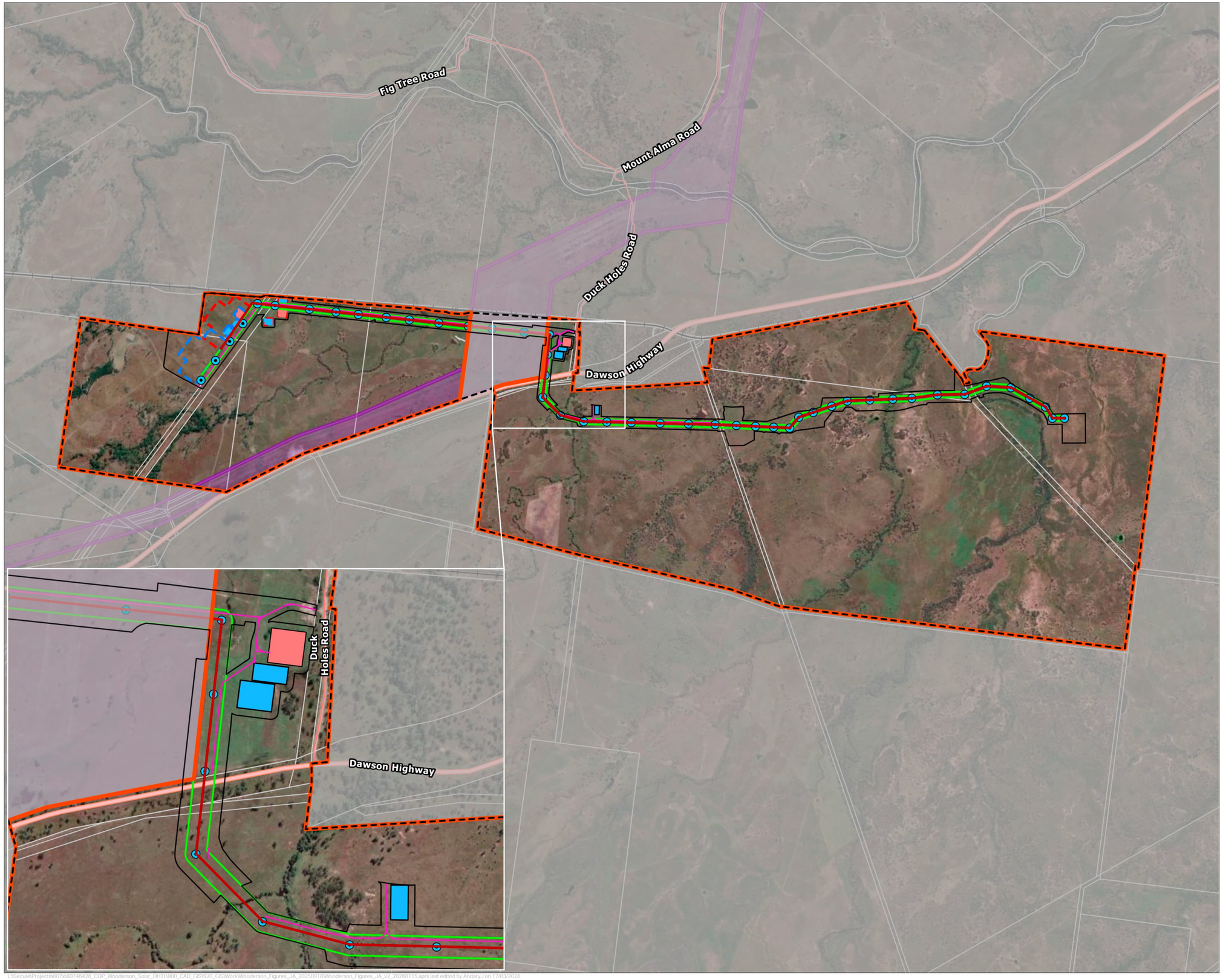


Figure 2: Wooderson Solar Farm Overhead Transmission Line Approvals Context

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AECOM

N

0 660 1,320 m

Legend

- State Controlled Road
- Road
- Rail network
- Local Government Areas
- Callide Infrastructure Corridor State Development Area
- Land Parcels
- Project Area
- DA2 Project Area (GRC)
- Project Disturbance Footprint

Proposed Infrastructure

- Indicative Overhead Transmission Line Route
- Indicative Proposed Transmission Line Easement
- Indicative Monopole Locations
- Access Tracks
- Switchyard Option A
- Switchyard Option B
- Construction Compound Area A & B
- Temporary Laydown Area A & B
- Construction Compound Area Option A
- Temporary Laydown Area Option A
- Construction Compound Area Option B
- Temporary Laydown Area Option B

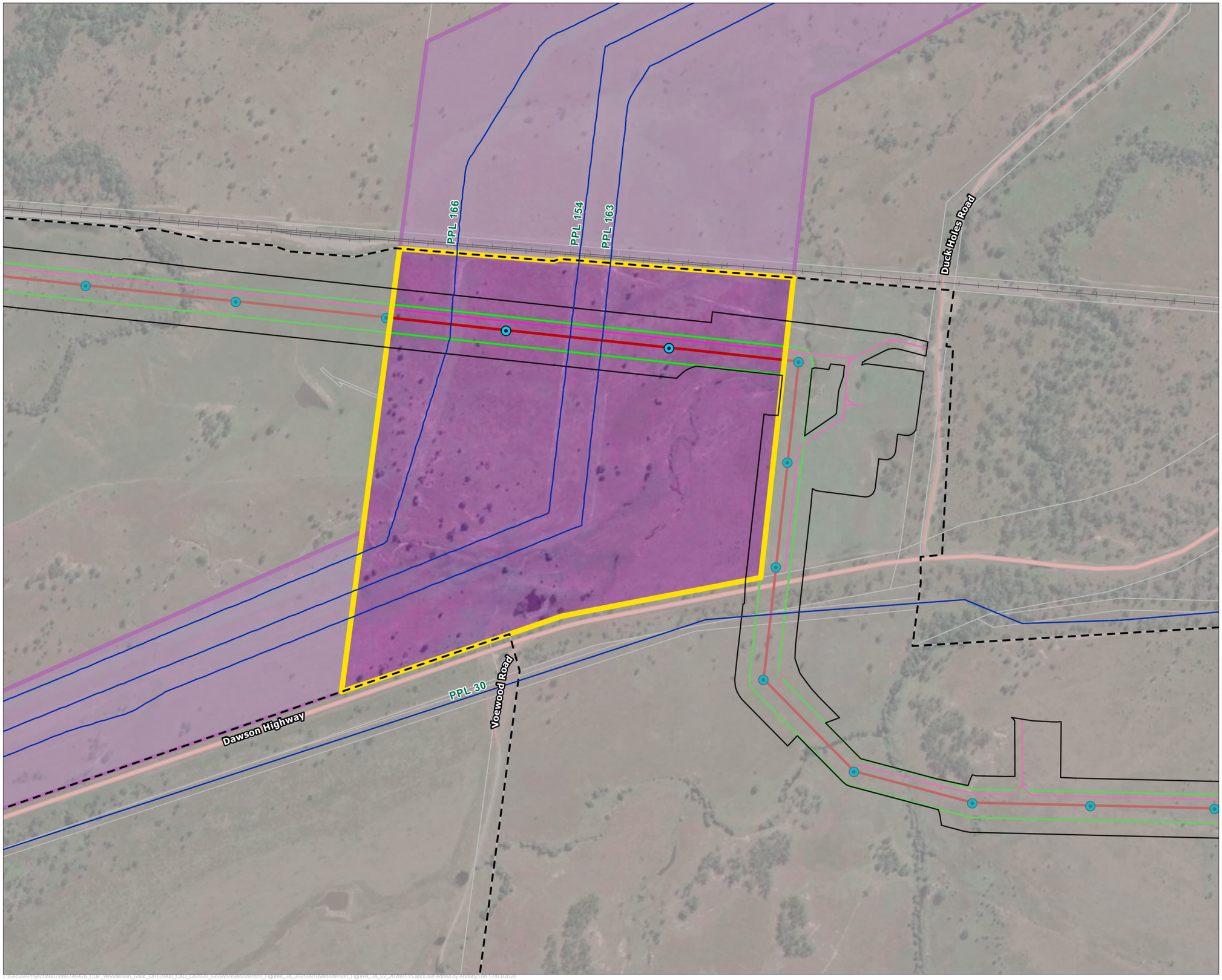


Figure 3a: Proposal Plan

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AECOM

N

0 130 260 m

Legend

- State Controlled Road
- Road
- Rail network
- Petroleum pipeline licence (PPL) centreline
- Local Government Areas
- Callide Infrastructure Corridor State Development Area
- Land Parcels
- Project Area
- DA3 Project Area (OCG)
- Project Disturbance Footprint

Proposed Infrastructure

- Indicative Overhead Transmission Line Route
- Indicative Proposed Transmission Line Easement
- Indicative Monopole Locations
- Access Tracks



Figure 3b: Proposal Plan

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Appendix E – Project Traffic Volume Calculations

AEC0125-003 | Wooderson SF OHTL

OHTL Project - Site Properties

Site Components

Element	Qty	Unit	
Number of Project Site Access Locations	2	ea	
Length of Internal Access Tracks - Northern Project Area	7,194	m	Based on quantitiy from provided shapefile
Length of Internal Access Tracks - Southern Project Area	1,969	m	Based on quantitiy from provided shapefile
Number of Switching Substations - Northern Project Area	1	ea	Based on quantitiy from provided shapefile
Number of Switching Substations - Southern Project Area	0	ea	Based on quantitiy from provided shapefile
Number of Site Laydown Areas - Northern Project Area	4	ea	Based on quantitiy from provided shapefile
Number of Site Laydown Areas - Southern Project Area	1	ea	Based on quantitiy from provided shapefile
Number of Construction Compound Areas - Northern Project Area	2	ea	Based on quantitiy from provided shapefile
Number of Construction Compound Areas - Southern Project Area	0	ea	Based on quantitiy from provided shapefile
Length of Overhead Transmission Line - Northern Project Area	4,663	m	Based on quantitiy from provided shapefile
Length of Overhead Transmission Line - Southern Project Area	6,148	m	Based on quantitiy from provided shapefile
Number OHTL Monopoles - Northern Project Area	18	ea	Based on quantitiy from provided shapefile
Number OHTL Monopoles - Southern Project Area	27	ea	Based on quantitiy from provided shapefile
Length Fencing - Northern Project Area	3,920	ea	Based on quantitiy from provided shapefile
Length Fencing - Southern Project Area	300	ea	Based on quantitiy from provided shapefile
% of Road Pavement Materials Sourced Onsite	0%	%	
% of Road Pavement Materials Imported	100%	%	
% of Gravel/Aggregate Materials Sourced Onsite	0%	%	
% of Gravel/Aggregate Materials Imported	100%	%	
% of Water Sourced Onsite	0%	%	
% of Water Imported	100%	%	
% of Bedding Sand (Electrical) Sourced Onsite	0%	%	
% of Bedding Sand (Electrical) Imported	100%	%	

Site Areas (Each Area)

Element	Number	Hardstand Area	Unit	% Gravel	Gravel Area	% Concrete	Concrete Area	Unit
Site Laydown Area A	1	5,000	m2	100%	5,000	0%	0	m2
Site Laydown Area B	1	8,000	m2	100%	8,000	0%	0	m2
Site Laydown Area C	1	5,000	m2	100%	5,000	0%	0	m2
Site Laydown Area D	1	5,000	m2	100%	5,000	0%	0	m2
Site Laydown Area E	1	8,000	m2	100%	8,000	0%	0	m2
Switching Station Area	1	155,380	m2	95%	147,611	5%	7,769	m2
Construction Compound Area A	1	10,000	m2	95%	9,500	5%	500	m2
Construction Compound Area B	1	10,000	m2	95%	9,500	5%	500	m2
Monopole Site Benching Area	1	400	m2	100%	400	0%	0	m2

Concrete Composition

Element	Composition	Unit
Cement	15%	%
Sand/Aggregates	75%	%
Steel	5%	%
Water	5%	%
Total	100%	%

Material Assumptions

Element	Qty	Unit
Internal Access Track Width	5.5	m
Internal Access Track Pavement Depth	0.15	m
Switching Station Area Slab Concrete Depth	0.2	m
Construction Compound Area Slab Concrete Depth	0.2	m
Switching Station Area Gravel Depth	0.1	m
Laydown Area Gravel Depth	0.1	m
Construction Compound Area Gravel Depth	0.1	m
Monopole Benching Area Gravel Depth	0.1	m
Concrete Sand/Aggregates Mass	1.8	t/m3
Concrete Cement Mass	1.51	t/m3
Concrete Steel Mass	7.8	t/m3
Concrete Water Mass	1	t/m3
Wet Concrete Mass	2.5	t/m3
Power Line Length per Roll / Drum	250	m
Power Line Mass per Roll / Drum	2.925	tonnes

Movements

Mobilisation / Site Establishment

Element	Task	Qty per Area	Unit	Site Qty	Vehicle Type	Vehicle Capacity	Movements
Project Mobilisation to Site (Primary Plant) - Northern Project Area	A	10	each	10	Semi	1	10
Project Mobilisation to Site (Primary Plant) -Southern Project Area	A	10	each	10	Semi	1	10
Project Mobilisation to Site (EW Plant) - Northern Project Area	A	10	each	10	Semi / Low Loader	1	10
Project Mobilisation to Site (EW Plant) - Southern Project Area	A	10	each	10	Semi / Low Loader	1	10
Switching Station Area Establishment & Buildings	C	25	each	25	Semi	1	25
Construction Compound A Establishment & Buildings	C	25	each	25	Semi	1	25
Construction Compound B Establishment & Buildings	C	25	each	25	Semi	1	25
						Total	**115**

Electrical Components & Equipment

Element	Task	MW per Container	Unit	Site Qty	Vehicle Type	Vehicle Capacity	Movements
Switching Station (Electrical Components)	F			500	Semi	1	500
						Total	**500**

Construction Materials

Element	Task	Qty per Unit	Unit	Volume (m3)	Site Qty	Transport Qty	Vehicle Type	Vehicle Capacity	Movements
Switching Station Slab Wet Concrete	C	2.5	t/m3	1,554	3,885	3,885	Concrete Truck	14.4	270
Switching Station Slab Reinforcing Steel	C	7.8	t/m3	78	606	606	Semi	26.5	23
Construction Compounds A & B Slab Wet Concrete	C	2.5	t/m3	200	500	500	Concrete Truck	14.4	35
Construction Compound A & B Slab Reinforcing Steel	C	7.8	t/m3	10	78	78	Semi	26.5	3
Northern Site Access (Duck Ponds Road) Pavement Materials	B	1.8	t/m3	100	180	180	Truck & Dog Trailer	36	5
Internal Access Road Gravel Materials - Northern Project Area	B	1.8	t/m3	5,935	10,683	10,683	Truck & Dog Trailer	36	297
Internal Access Road Culverts - Northern Project Area	B				7	7	Semi	10	1
Internal Access Road Gravel Materials -Southern Project Area	B	1.8	t/m3	1,624	2,924	2,924	Truck & Dog Trailer	36	82
Internal Access Road Culverts - Southern Project Area	B				2	2	Semi	10	1
Switching Station Area Gravel	C	1.8	t/m3	14,761	26,570	26,570	Truck & Dog Trailer	36	739
Site Laydown Area Gravel - Northern Project Area	C	1.8	t/m3	2,600	4,680	4,680	Truck & Dog Trailer	36	130
Site Laydown Area Gravel - Southern Project Area	C	1.8	t/m3	500	900	900	Truck & Dog Trailer	36	25
Construction Compounds A & B Gravel	C	1.8	t/m3	1,900	3,420	3,420	Truck & Dog Trailer	36	95
Perimeter Fencing Materials - Northern Project Area	C				45	45	Semi	1	45
Perimeter Fencing Materials - Southern Project Area	C				5	5	Semi	1	5
Monopole Site Benching Area Gravel - Northern Project Area	D	1.8	t/m3	720	1,296	1,296	Truck & Dog Trailer	36	36
Monopole Site Benching Area Gravel - Southern Project Area	D	1.8	t/m3	1,080	1,944	1,944	Truck & Dog Trailer	36	54
Monopole Foundation Concrete Trucks - Northern Project Area	D	5	Monopole		90	90	Concrete Truck	1	90
Monopole Foundation Concrete Trucks - Southern Project Area	D	5	Monopole		135	135	Concrete Truck	1	135
Monopole Foundation Reinforcing Steel - Northern Project Area	D	3	Monopole		54	54	Semi	1	54
Monopole Foundation Reinforcing Steel - Southern Project Area	D	3	Monopole		81	81	Semi	1	81
Monopole Foundation Drill Rig - Northern Project Area	D				1	1	Semi	1	1
Monopole Foundation Drill Rig - Southern Project Area	D				1	1	Semi	1	1
Monopole Structure Components - Northern Project Area	E	3	Monopole		54	54	Semi	1	54
Monopole Structure Components - Southern Project Area	E	3	Monopole		81	81	Semi	1	81
Monopole Structure Crane - Northern Project Area	E				2	2	Semi / Crane	1	2
Monopole Structure Crane - Southern Project Area	E				2	2	Semi / Crane	1	2
OHTL Cable - Northern Project Area	F				218	218	Semi	26.5	9
OHTL Cable - Southern Project Area	F				288	288	Semi	26.5	11
Water - Northern Project Area	W				720	720	15KL 3 Axle Rigid	1	720
Water - Southern Project Area	W				720	720	15KL 3 Axle Rigid	1	720
Waste Removal - Northern Project Area	WR				120	120	Semi	1	120
Waste Removal - Southern Project Area	WR				120	120	Semi	1	120
								Total	**3,927**

Site Demobilisation

Element	Task	Qty per Unit	Unit	Site Qty	Vehicle Type	Vehicle Capacity	Movements
Project Demobilisation from Site (Ancilliary Equipment) - Northern Project Area	G	10	each	10	Semi	1	10
Project Demobilisation from Site (Ancilliary Equipment) - Southern Project Area	G	10	each	10	Semi	1	10
Project Demobilisation from Site (EW Plant) - Northern Project Area	G	10	each	10	Semi	1	10
Project Demobilisation from Site (EW Plant) - Southern Project Area	G	10	each	10	Semi	1	10
Switching Station Demobilisation	G	25	each	25	Semi	1	25
Construction Compound A Demobilisation	G	25	each	25	Semi	1	25
Construction Compound B Demobilisation	G	25	each	25	Semi	1	25
						Total	**115**

AEC0125-003 | Wooderson SF OHTL

OHTL Project - Site Vehicle Movement Summary

Assumed Work Days per Month 24 days

TASK A - PROCUREMENT & MOBILISTATION

Task Transport Duration 1 months A

Description	Project Volume	Vehicle	Origin	Route	
Project Mobilisation to Site (Primary Plant) - Northern Project Area	10	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Project Mobilisation to Site (Primary Plant) -Southern Project Area	10	Semi	Gladstone	Dawson Highway - WSF Site Access	A
Project Mobilisation to Site (EW Plant) - Northern Project Area	10	Semi / Low Loader	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Project Mobilisation to Site (EW Plant) - Southern Project Area	10	Semi / Low Loader	Gladstone	Dawson Highway - WSF Site Access	A

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	40	40	***2***
Dawson Highway (Calliope to Duck Holes Road)	40	40	***2***
Dawson Highway (Duck Holes Road to WSF Site Access)	20	20	***1***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	20	20	***1***

TASK B - CLEARING AND ACCESS ROADS

Task Transport Duration (External Road Upgrades) 3 months A
Task Transport Duration (Access Roads) 3 months B

Description	Project Volume	Vehicle	Origin	Route	
Northern Site Access (Duck Ponds Road) Pavement Materials	5	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	A
Internal Access Road Gravel Materials - Northern Project Area	297	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	B
Internal Access Road Culverts - Northern Project Area	1	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	B
Internal Access Road Gravel Materials -Southern Project Area	82	Truck & Dog Trailer	Calliope	Dawson Highway - WSF Site Access	B
Internal Access Road Culverts - Southern Project Area	1	Semi	Gladstone	Dawson Highway - WSF Site Access	B

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	2	1	***1***
Dawson Highway (Calliope to Duck Holes Road)	386	129	***6***
Dawson Highway (Duck Holes Road to WSF Site Access)	83	28	***2***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	303	101	***5***

TASK C - SITE ESTABLISHMENT (CIVIL WORKS)

Task Transport Duration (Site Establishment) 3 months A
Task Transport Duration (Civil Works) 6 months B

Description	Project Volume	Vehicle	Origin	Route	
Switching Station Area Establishment & Buildings	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Construction Compound A Establishment & Buildings	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Construction Compound B Establishment & Buildings	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Switching Station Slab Wet Concrete	270	Concrete Truck	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	B
Switching Station Slab Reinforcing Steel	23	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	B
Construction Compounds A & B Slab Wet Concrete	35	Concrete Truck	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	B
Construction Compound A & B Slab Reinforcing Steel	3	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	B
Switching Station Area Gravel	739	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	B
Site Laydown Area Gravel - Northern Project Area	130	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	B
Site Laydown Area Gravel - Southern Project Area	25	Truck & Dog Trailer	Calliope	Dawson Highway - WSF Site Access	
Construction Compounds A & B Gravel	95	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	B
Perimeter Fencing Materials - Northern Project Area	45	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	B
Perimeter Fencing Materials - Southern Project Area	5	Semi	Gladstone	Dawson Highway - WSF Site Access	B

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	151	38	***2***
Dawson Highway (Calliope to Duck Holes Road)	1,445	253	***11***
Dawson Highway (Duck Holes Road to WSF Site Access)	30	5	***1***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	1,415	248	***11***

TASK D - BENCHING & FOUNDATIONS

Task Transport Duration 9 months A

Description	Project Volume	Vehicle	Origin	Route	
Monopole Site Benching Area Gravel - Northern Project Area	36	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Site Benching Area Gravel - Southern Project Area	54	Truck & Dog Trailer	Calliope	Dawson Highway - WSF Site Access	A
Monopole Foundation Concrete Trucks - Northern Project Area	90	Concrete Truck	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Foundation Concrete Trucks - Southern Project Area	135	Concrete Truck	Calliope	Dawson Highway - WSF Site Access	A
Monopole Foundation Reinforcing Steel - Northern Project Area	54	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Foundation Reinforcing Steel - Southern Project Area	81	Semi	Gladstone	Dawson Highway - WSF Site Access	A
Monopole Foundation Drill Rig - Northern Project Area	1	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Foundation Drill Rig - Southern Project Area	1	Semi	Gladstone	Dawson Highway - WSF Site Access	A

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	137	15	***1***
Dawson Highway (Calliope to Duck Holes Road)	452	50	***3***
Dawson Highway (Duck Holes Road to WSF Site Access)	271	30	***2***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	181	20	***1***

TASK E - MONOPOLE STRUCTURES

Task Transport Duration 6 months A

Description	Project Volume	Vehicle	Origin	Route	
Monopole Structure Components - Northern Project Area	54	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Structure Components - Southern Project Area	81	Semi	Gladstone	Dawson Highway - WSF Site Access	A
Monopole Structure Crane - Northern Project Area	2	Semi / Crane	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Structure Crane - Southern Project Area	2	Semi / Crane	Gladstone	Dawson Highway - WSF Site Access	A

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	139	23	***1***
Dawson Highway (Calliope to Duck Holes Road)	139	23	***1***
Dawson Highway (Duck Holes Road to WSF Site Access)	83	14	***1***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	56	6	***1***

TASK F - STRINGING

Task Transport Duration (Cable) 3 month A

Description	Project Volume	Vehicle	Origin	Route	
OHTL Cable - Northern Project Area	9	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
OHTL Cable - Southern Project Area	11	Semi	Gladstone	Dawson Highway - WSF Site Access	A

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	20	7	***1***
Dawson Highway (Calliope to Duck Holes Road)	20	7	***1***
Dawson Highway (Duck Holes Road to WSF Site Access)	11	4	***1***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	9	3	***1***

TASK G - ELECTRICAL SITE INFRASTRUCTURE (SWITCHING STATION)

Task Transport Duration (Substation Component Delivery) 3 months A

Description	Project Volume	Vehicle	Origin	Route	
Switching Station (Electrical Components)	500	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A

Road Section	Total Trips	Trips / Month	Max Trips / Day
Gladstone Port Access Road	500	167	***7***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	500	167	***7***
Dawson Highway (Gladstone to Calliope)	500	167	***7***
Dawson Highway (Calliope to Duck Holes Road)	500	167	***7***
Dawson Highway (Duck Holes Road to WSF Site Access)	0	0	***0***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	500	167	***7***

TASK H - COMMISSIONING & SITE DEMOBILISATION

Task Transport Duration (Demobilisation) 2 months A

Description	Project Volume	Vehicle	Origin	Route	
Project Demobilisation from Site (Ancilliary Equipment) - Northern Project Area	10	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Project Demobilisation from Site (Ancilliary Equipment) - Southern Project Area	10	Semi	Gladstone	Dawson Highway - WSF Site Access	
Project Demobilisation from Site (EW Plant) - Northern Project Area	10	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Project Demobilisation from Site (EW Plant) - Southern Project Area	10	Semi	Gladstone	Dawson Highway - WSF Site Access	
Switching Station Demobilisation	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Construction Compound A Demobilisation	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Construction Compound B Demobilisation	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	115	58	***3***
Dawson Highway (Calliope to Duck Holes Road)	115	58	***3***
Dawson Highway (Duck Holes Road to WSF Site Access)	20	10	***1***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	95	48	***2***

SITE WATER

Task Transport Duration (Site Water) 15 months A

Description	Project Volume	Vehicle	Origin	Route	
Water - Northern Project Area	720	15KL 3 Axle Rigid	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	A
Water - Southern Project Area	720	15KL 3 Axle Rigid	Calliope	Dawson Highway - WSF Site Access	A

Road Section	Total Trips	Trips / Month	Max Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	0	0	***0***
Dawson Highway (Calliope to Duck Holes Road)	1,440	96	***4***
Dawson Highway (Duck Holes Road to WSF Site Access)	720	48	***2***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	720	48	***2***

SITE WASTE REMOVAL

Task Transport Duration (Site Water) 15 months A

Description	Project Volume	Vehicle	Origin	Route	
Waste Removal - Northern Project Area	120	Semi	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access	A
Waste Removal - Southern Project Area	120	Semi	Calliope	Dawson Highway - WSF Site Access	A

Road Section	Total Trips	Trips / Month	Avg Trips / Day
Gladstone Port Access Road	0	0	***0***
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0	***0***
Dawson Highway (Gladstone to Calliope)	0	0	***0***
Dawson Highway (Calliope to Duck Holes Road)	240	16	***1***
Dawson Highway (Duck Holes Road to WSF Site Access)	120	8	***1***
Dawson Highway (Main Site Access to Biloela)	0	0	***0***
Duck Holes Road (Dawson Hwy to Nth Site Access)	120	8	***1***

Appendix F – SIDRA Results – Duck Holes Road / Project Area Access

MOVEMENT SUMMARY

Site: 3 [CONS 2030 AM Project Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	43	7.0	43	7.0	0.025	5.6	LOS A	0.0	0.0	0.00	0.55	0.00	52.8
2	T1	All MCs	2	0.0	2	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.55	0.00	55.2
Approach			45	6.7	45	6.7	0.025	5.4	NA	0.0	0.0	0.00	0.55	0.00	52.9
North: Duck Holes Road															
8	T1	All MCs	2	0.0	2	0.0	0.002	0.1	LOS A	0.0	0.0	0.08	0.20	0.08	57.9
9	R2	All MCs	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.0	0.08	0.20	0.08	55.3
Approach			3	0.0	3	0.0	0.002	1.9	NA	0.0	0.0	0.08	0.20	0.08	57.0
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.004	5.5	LOS A	0.0	0.2	0.04	0.58	0.04	52.1
12	R2	All MCs	3	100.0	3	100.0	0.004	6.7	LOS A	0.0	0.2	0.04	0.58	0.04	47.8
Approach			4	75.0	4	75.0	0.004	6.4	LOS A	0.0	0.2	0.04	0.58	0.04	48.8
All Vehicles			52	11.5	52	11.5	0.025	5.3	NA	0.0	0.2	0.01	0.53	0.01	52.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [CONS 2030 PM Project Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	3	100.0	3	100.0	0.004	6.7	LOS A	0.0	0.0	0.00	0.28	0.00	50.5
2	T1	All MCs	3	0.0	3	0.0	0.004	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	56.9
Approach			6	50.0	6	50.0	0.004	3.3	NA	0.0	0.0	0.00	0.28	0.00	53.5
North: Duck Holes Road															
8	T1	All MCs	1	0.0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.04	0.30	0.04	57.3
9	R2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.04	0.30	0.04	54.7
Approach			2	0.0	2	0.0	0.001	2.7	NA	0.0	0.0	0.04	0.30	0.04	56.0
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.035	5.5	LOS A	0.1	0.8	0.04	0.59	0.04	52.8
12	R2	All MCs	43	7.0	43	7.0	0.035	5.5	LOS A	0.1	0.8	0.04	0.59	0.04	52.2
Approach			44	6.8	44	6.8	0.035	5.5	LOS A	0.1	0.8	0.04	0.59	0.04	52.3
All Vehicles			52	11.5	52	11.5	0.035	5.2	NA	0.1	0.8	0.03	0.54	0.03	52.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [CONS 2030 AM Network Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	8	37.5	8	37.5	0.009	6.0	LOS A	0.0	0.0	0.00	0.33	0.00	53.2
2	T1	All MCs	6	33.3	6	33.3	0.009	0.0	LOS A	0.0	0.0	0.00	0.33	0.00	57.1
Approach			14	35.7	14	35.7	0.009	3.4	NA	0.0	0.0	0.00	0.33	0.00	54.8
North: Duck Holes Road															
8	T1	All MCs	1	100.0	1	100.0	0.001	0.0	LOS A	0.0	0.0	0.05	0.30	0.05	57.2
9	R2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.05	0.30	0.05	54.6
Approach			2	50.0	2	50.0	0.001	2.7	NA	0.0	0.0	0.05	0.30	0.05	55.9
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.008	5.6	LOS A	0.0	0.2	0.05	0.58	0.05	52.8
12	R2	All MCs	8	37.5	8	37.5	0.008	5.9	LOS A	0.0	0.2	0.05	0.58	0.05	50.9
Approach			9	33.3	9	33.3	0.008	5.9	LOS A	0.0	0.2	0.05	0.58	0.05	51.1
All Vehicles			25	36.0	25	36.0	0.009	4.3	NA	0.0	0.2	0.02	0.42	0.02	53.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [CONS 2030 PM Network Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	8	37.5	8	37.5	0.006	6.0	LOS A	0.0	0.0	0.00	0.46	0.00	52.5
2	T1	All MCs	2	0.0	2	0.0	0.006	0.0	LOS A	0.0	0.0	0.00	0.46	0.00	56.3
Approach			10	30.0	10	30.0	0.006	4.8	NA	0.0	0.0	0.00	0.46	0.00	53.2
North: Duck Holes Road															
8	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.04	0.20	0.04	58.1
9	R2	All MCs	1	0.0	1	0.0	0.002	5.5	LOS A	0.0	0.0	0.04	0.20	0.04	55.4
Approach			3	0.0	3	0.0	0.002	1.8	NA	0.0	0.0	0.04	0.20	0.04	57.2
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.008	5.5	LOS A	0.0	0.2	0.04	0.58	0.04	52.8
12	R2	All MCs	8	37.5	8	37.5	0.008	5.9	LOS A	0.0	0.2	0.04	0.58	0.04	50.9
Approach			9	33.3	9	33.3	0.008	5.9	LOS A	0.0	0.2	0.04	0.58	0.04	51.1
All Vehicles			22	27.3	22	27.3	0.008	4.8	NA	0.0	0.2	0.02	0.48	0.02	52.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 3 [CUM. CONS 2030 AM Project Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	43	7.0	43	7.0	0.079	5.6	LOS A	0.0	0.0	0.00	0.18	0.00	55.6
2	T1	All MCs	100	12.0	100	12.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	58.3
Approach			143	10.5	143	10.5	0.079	1.7	NA	0.0	0.0	0.00	0.18	0.00	57.5
North: Duck Holes Road															
8	T1	All MCs	14	85.7	14	85.7	0.011	0.0	LOS A	0.0	0.1	0.03	0.05	0.03	58.1
9	R2	All MCs	1	0.0	1	0.0	0.011	5.8	LOS A	0.0	0.1	0.03	0.05	0.03	55.5
Approach			15	80.0	15	80.0	0.011	0.4	NA	0.0	0.1	0.03	0.05	0.03	58.0
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.005	5.8	LOS A	0.0	0.2	0.25	0.56	0.25	51.5
12	R2	All MCs	3	100.0	3	100.0	0.005	7.7	LOS A	0.0	0.2	0.25	0.56	0.25	47.3
Approach			4	75.0	4	75.0	0.005	7.3	LOS A	0.0	0.2	0.25	0.56	0.25	48.2
All Vehicles			162	18.5	162	18.5	0.079	1.7	NA	0.0	0.2	0.01	0.18	0.01	57.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [CUM. CONS 2030 PM Project Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	3	100.0	3	100.0	0.014	6.7	LOS A	0.0	0.0	0.00	0.09	0.00	50.5
2	T1	All MCs	15	80.0	15	80.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	56.9
Approach			18	83.3	18	83.3	0.014	1.1	NA	0.0	0.0	0.00	0.09	0.00	55.7
North: Duck Holes Road															
8	T1	All MCs	99	12.1	99	12.1	0.055	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
9	R2	All MCs	1	0.0	1	0.0	0.055	5.4	LOS A	0.0	0.0	0.00	0.01	0.00	57.1
Approach			100	12.0	100	12.0	0.055	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.039	5.6	LOS A	0.1	0.9	0.19	0.57	0.19	52.4
12	R2	All MCs	43	7.0	43	7.0	0.039	6.0	LOS A	0.1	0.9	0.19	0.57	0.19	51.8
Approach			44	6.8	44	6.8	0.039	6.0	LOS A	0.1	0.9	0.19	0.57	0.19	51.8
All Vehicles			162	18.5	162	18.5	0.055	1.8	NA	0.1	0.9	0.05	0.17	0.05	57.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [CUM. CONS 2030 PM Network Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	8	37.5	8	37.5	0.016	6.0	LOS A	0.0	0.0	0.00	0.19	0.00	53.9
2	T1	All MCs	16	50.0	16	50.0	0.016	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	58.0
Approach			24	45.8	24	45.8	0.016	2.0	NA	0.0	0.0	0.00	0.19	0.00	56.5
North: Duck Holes Road															
8	T1	All MCs	11	63.6	11	63.6	0.008	0.0	LOS A	0.0	0.1	0.01	0.05	0.01	58.9
9	R2	All MCs	1	0.0	1	0.0	0.008	5.5	LOS A	0.0	0.1	0.01	0.05	0.01	56.1
Approach			12	58.3	12	58.3	0.008	0.5	NA	0.0	0.1	0.01	0.05	0.01	58.6
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.008	5.6	LOS A	0.0	0.2	0.10	0.57	0.10	52.6
12	R2	All MCs	8	37.5	8	37.5	0.008	6.1	LOS A	0.0	0.2	0.10	0.57	0.10	50.7
Approach			9	33.3	9	33.3	0.008	6.0	LOS A	0.0	0.2	0.10	0.57	0.10	50.9
All Vehicles			45	46.7	45	46.7	0.016	2.4	NA	0.0	0.2	0.02	0.23	0.02	55.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [CUM. CONS 2030 AM Network Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	8	37.5	8	37.5	0.013	6.0	LOS A	0.0	0.0	0.00	0.23	0.00	53.6
2	T1	All MCs	12	50.0	12	50.0	0.013	0.0	LOS A	0.0	0.0	0.00	0.23	0.00	57.6
Approach			20	45.0	20	45.0	0.013	2.4	NA	0.0	0.0	0.00	0.23	0.00	55.9
North: Duck Holes Road															
8	T1	All MCs	12	50.0	12	50.0	0.009	0.0	LOS A	0.0	0.1	0.01	0.05	0.01	59.2
9	R2	All MCs	1	0.0	1	0.0	0.009	5.5	LOS A	0.0	0.1	0.01	0.05	0.01	56.4
Approach			13	46.2	13	46.2	0.009	0.4	NA	0.0	0.1	0.01	0.05	0.01	59.0
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.008	5.6	LOS A	0.0	0.2	0.09	0.57	0.09	52.7
12	R2	All MCs	8	37.5	8	37.5	0.008	6.1	LOS A	0.0	0.2	0.09	0.57	0.09	50.8
Approach			9	33.3	9	33.3	0.008	6.0	LOS A	0.0	0.2	0.09	0.57	0.09	51.0
All Vehicles			42	42.9	42	42.9	0.013	2.6	NA	0.0	0.2	0.02	0.25	0.02	55.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [OPS 2040 AM Project Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	6	16.7	6	16.7	0.005	5.7	LOS A	0.0	0.0	0.00	0.44	0.00	53.4
2	T1	All MCs	2	0.0	2	0.0	0.005	0.0	LOS A	0.0	0.0	0.00	0.44	0.00	56.3
Approach			8	12.5	8	12.5	0.005	4.3	NA	0.0	0.0	0.00	0.44	0.00	54.1
North: Duck Holes Road															
8	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.03	0.20	0.03	58.1
9	R2	All MCs	1	0.0	1	0.0	0.002	5.5	LOS A	0.0	0.0	0.03	0.20	0.03	55.5
Approach			3	0.0	3	0.0	0.002	1.8	NA	0.0	0.0	0.03	0.20	0.03	57.2
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.02	0.58	0.02	52.9
12	R2	All MCs	1	0.0	1	0.0	0.001	5.4	LOS A	0.0	0.0	0.02	0.58	0.02	52.6
Approach			2	0.0	2	0.0	0.001	5.5	LOS A	0.0	0.0	0.02	0.58	0.02	52.7
All Vehicles			13	7.7	13	7.7	0.005	3.9	NA	0.0	0.0	0.01	0.40	0.01	54.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 3 [OPS 2040 PM Project Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Project Peak Hours (6-7am & 5-6pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	1	0.0	1	0.0	0.003	5.5	LOS A	0.0	0.0	0.00	0.12	0.00	56.5
2	T1	All MCs	4	0.0	4	0.0	0.003	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	58.9
Approach			5	0.0	5	0.0	0.003	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.4
North: Duck Holes Road															
8	T1	All MCs	1	0.0	1	0.0	0.001	0.0	LOS A	0.0	0.0	0.03	0.30	0.03	57.3
9	R2	All MCs	1	0.0	1	0.0	0.001	5.4	LOS A	0.0	0.0	0.03	0.30	0.03	54.7
Approach			2	0.0	2	0.0	0.001	2.7	NA	0.0	0.0	0.03	0.30	0.03	56.0
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.006	5.5	LOS A	0.0	0.1	0.03	0.58	0.03	52.8
12	R2	All MCs	6	16.7	6	16.7	0.006	5.7	LOS A	0.0	0.1	0.03	0.58	0.03	51.8
Approach			7	14.3	7	14.3	0.006	5.6	LOS A	0.0	0.1	0.03	0.58	0.03	52.0
All Vehicles			14	7.1	14	7.1	0.006	3.6	NA	0.0	0.1	0.02	0.38	0.02	54.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [OPS 2040 PM Network Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	2	50.0	2	50.0	0.006	6.1	LOS A	0.0	0.0	0.00	0.13	0.00	54.3
2	T1	All MCs	7	28.6	7	28.6	0.006	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	59.1
Approach			9	33.3	9	33.3	0.006	1.4	NA	0.0	0.0	0.00	0.13	0.00	58.0
North: Duck Holes Road															
8	T1	All MCs	1	100.0	1	100.0	0.001	0.0	LOS A	0.0	0.0	0.04	0.30	0.04	57.2
9	R2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.04	0.30	0.04	54.6
Approach			2	50.0	2	50.0	0.001	2.7	NA	0.0	0.0	0.04	0.30	0.04	55.9
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.04	0.57	0.04	52.8
12	R2	All MCs	1	0.0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.04	0.57	0.04	52.5
Approach			2	0.0	2	0.0	0.001	5.5	LOS A	0.0	0.0	0.04	0.57	0.04	52.7
All Vehicles			13	30.8	13	30.8	0.006	2.2	NA	0.0	0.0	0.01	0.22	0.01	56.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 3 [OPS 2040 AM Network Peak (Site Folder: 3. Duck Holes Road / Project Area Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Duck Holes Road / Project Area Access
Proposed Property Access Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
Site Category: NA
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Duck Holes Road															
1	L2	All MCs	1	0.0	1	0.0	0.002	5.5	LOS A	0.0	0.0	0.00	0.20	0.00	55.9
2	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	58.2
Approach			3	0.0	3	0.0	0.002	1.8	NA	0.0	0.0	0.00	0.20	0.00	57.4
North: Duck Holes Road															
8	T1	All MCs	2	0.0	2	0.0	0.002	0.0	LOS A	0.0	0.0	0.02	0.20	0.02	58.2
9	R2	All MCs	1	0.0	1	0.0	0.002	5.4	LOS A	0.0	0.0	0.02	0.20	0.02	55.5
Approach			3	0.0	3	0.0	0.002	1.8	NA	0.0	0.0	0.02	0.20	0.02	57.3
West: OHTL Project Site Access															
10	L2	All MCs	1	0.0	1	0.0	0.003	5.5	LOS A	0.0	0.1	0.03	0.58	0.03	52.8
12	R2	All MCs	2	50.0	2	50.0	0.003	6.1	LOS A	0.0	0.1	0.03	0.58	0.03	50.4
Approach			3	33.3	3	33.3	0.003	5.9	LOS A	0.0	0.1	0.03	0.58	0.03	51.2
All Vehicles			9	11.1	9	11.1	0.003	3.2	NA	0.0	0.1	0.01	0.33	0.01	55.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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 G – Turn Warrant Assessments

Turn Warrant Assessment

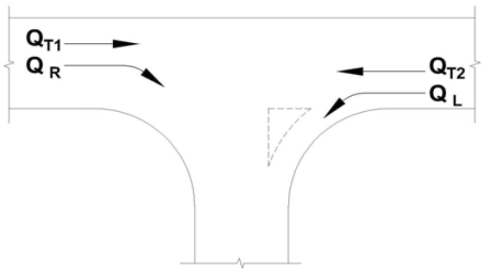
Intersection:	**Dawson Highway / Wooderson Solar Farm Site Access**
Year / Peak:	**2030 AM & PM Project Peak** Scenario: **Peak Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	29	79
Q_R =	*4*	*0*

Splitter Island? No

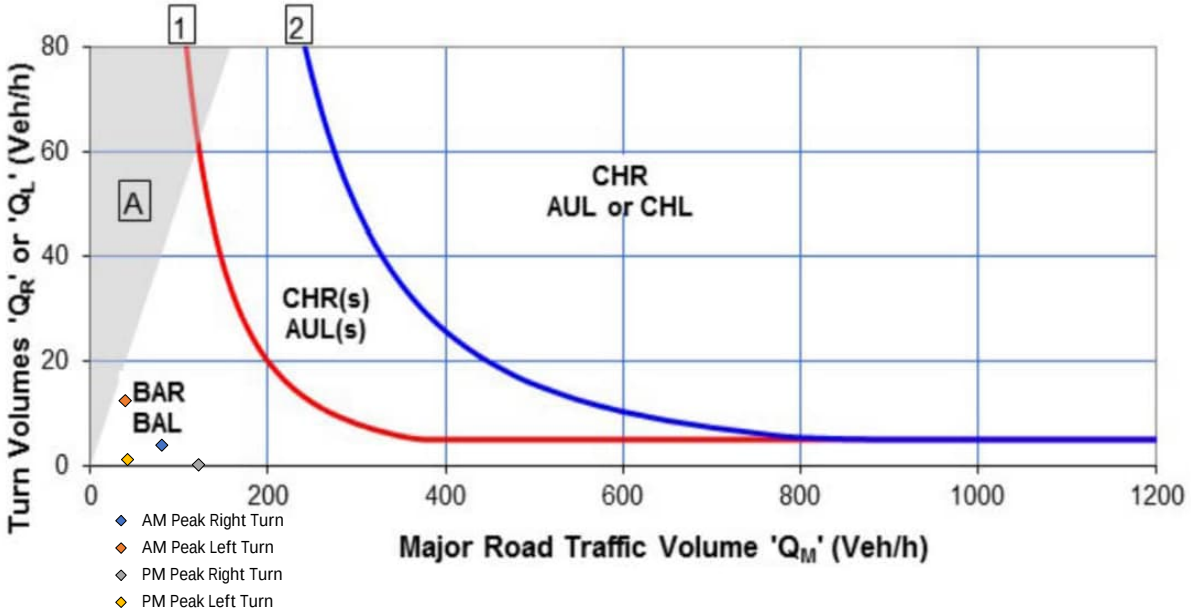
Design speed (km/h) 110



WSF Site Access

	AM Peak	PM Peak
Q_{T2} =	38	41
Q_L =	12	*1*

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	80	4
Left	38	12
PM Peak		
Right	121	0
Left	41	1



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

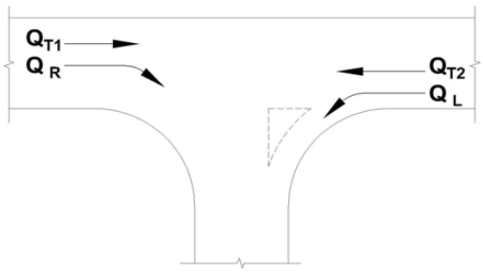
Intersection:	**Dawson Highway / Wooderson Solar Farm Site Access**
Year / Peak:	**2030 AM & PM Project Peak**
Scenario:	**Peak Cumulative Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	57	81
Q_R =	*49*	*0*

Splitter Island? No

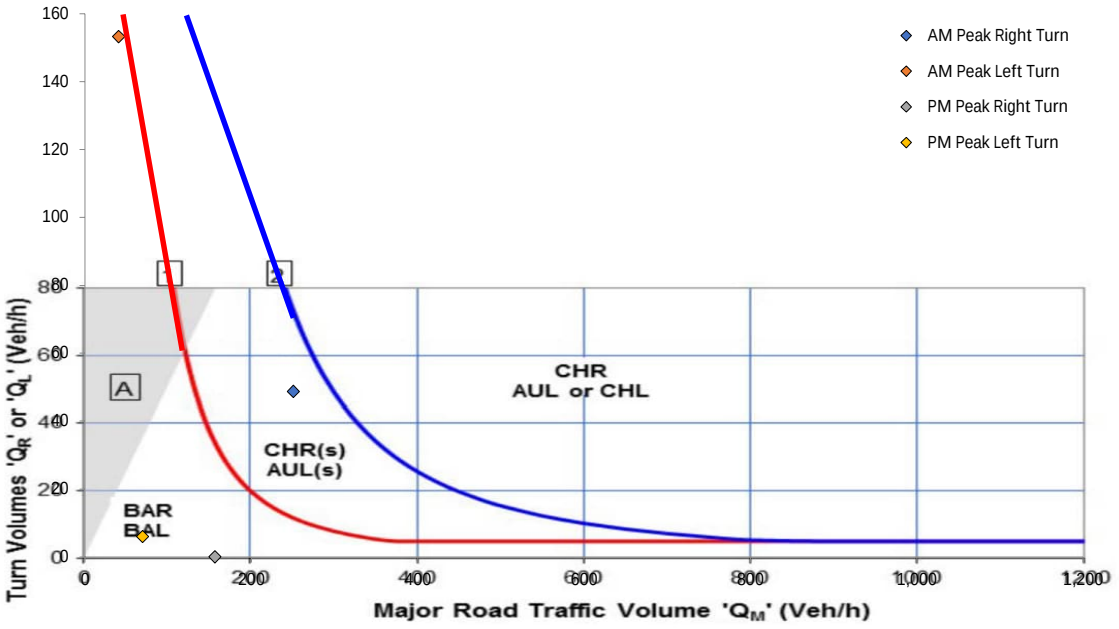
Design speed (km/h) 110



WSF Site Access

	AM Peak	PM Peak
Q_{T2} =	40	69
Q_L =	153	*6*

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	251	49
Left	40	153
PM Peak		
Right	156	0
Left	69	6



Recommended treatments:

Right Turn	CHRs
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

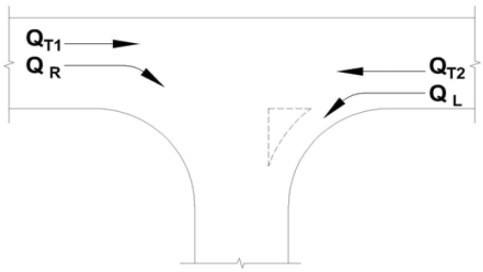
Intersection:	**Dawson Highway / Wooderson Solar Farm Site Access**
Year / Peak:	**2040 AM & PM Project Peak** Scenario: **Operations**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	31	107
Q_R =	*0*	*0*

Splitter Island? No

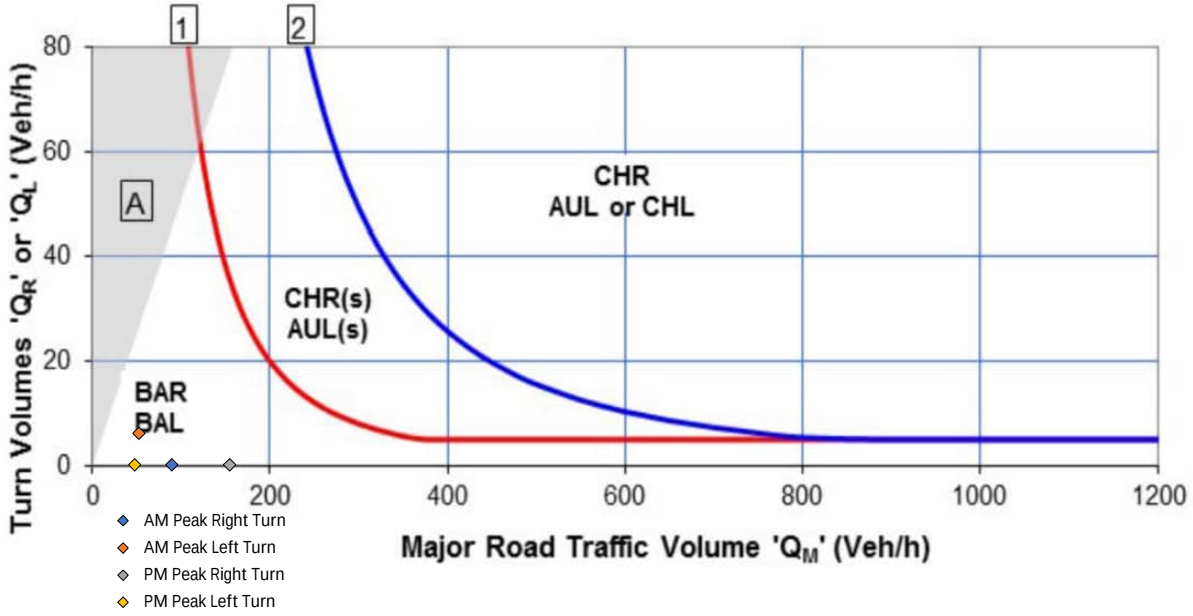
Design speed (km/h) 110



WSF Site Access

	AM Peak	PM Peak
Q_{T2} =	52	47
Q_L =	6	*0*

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	89	0
Left	52	6
PM Peak		
Right	154	0
Left	47	0



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

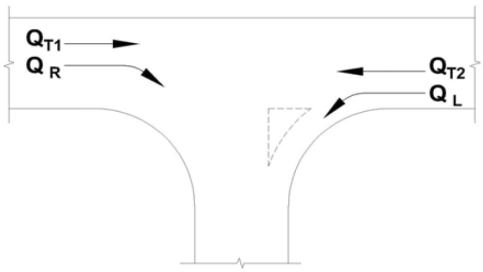
Intersection:	**Dawson Highway / Wooderson Solar Farm Site Access**
Year / Peak:	**2030 AM & PM Network Peak** Scenario: **Peak Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	55	82
Q_R =	*1*	*1*

Splitter Island? No

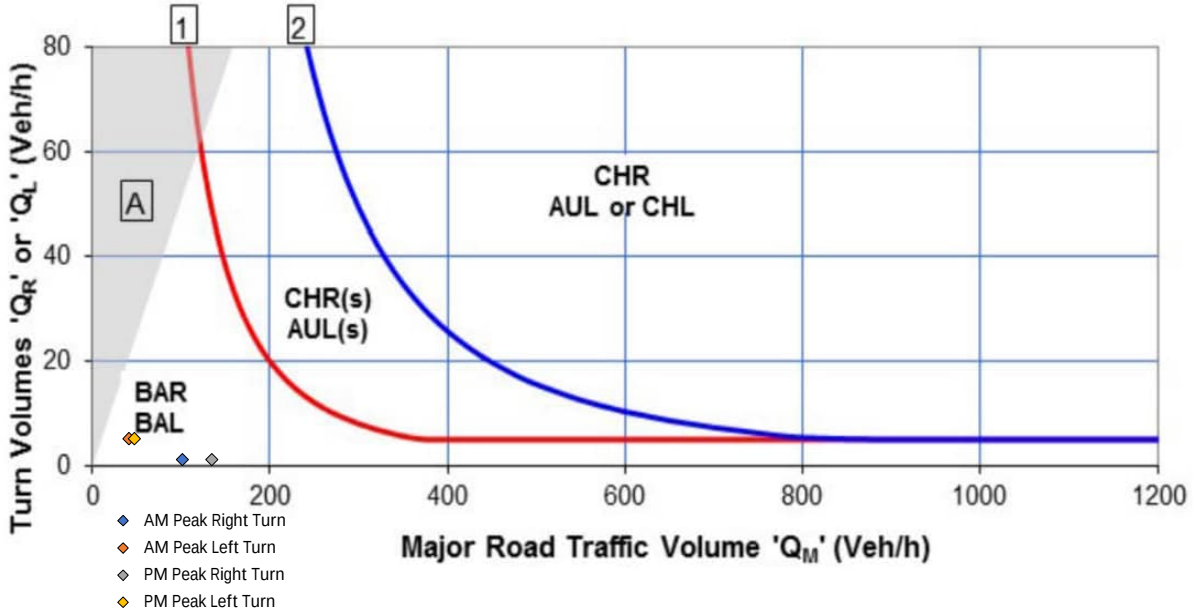
Design speed (km/h) 110



WSF Site Access

	AM Peak	*PM Peak*
Q_{T2} =	41	47
Q_L =	5	*5*

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	100	1
Left	41	5
PM Peak		
Right	134	1
Left	47	5



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

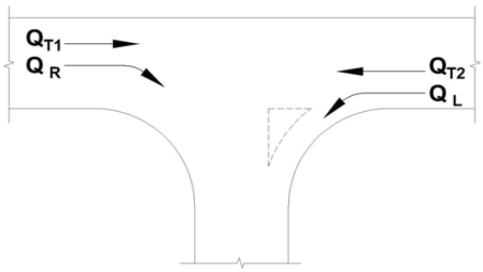
Intersection:	**Dawson Highway / Wooderson Solar Farm Site Access**
Year / Peak:	**2030 AM & PM Network Peak**
Scenario:	**Peak Cumulative Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	83	84
Q_R =	*2*	*2*

Splitter Island? No

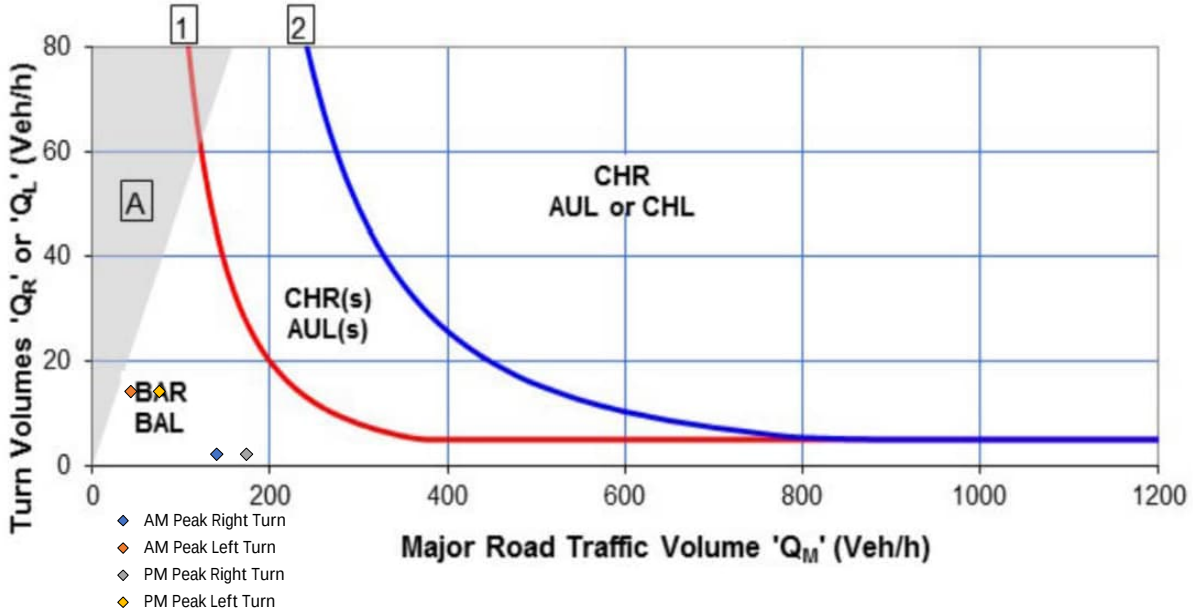
Design speed (km/h) 110



WSF Site Access

	AM Peak	*PM Peak*
Q_{T2} =	43	75
Q_L =	14	*14*

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	139	2
Left	43	14
PM Peak		
Right	173	2
Left	75	14



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

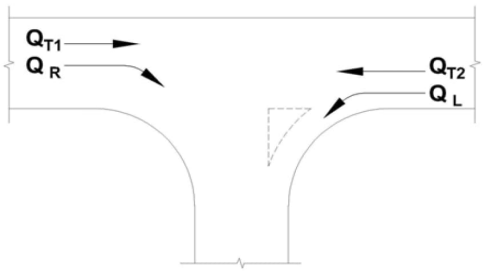
Intersection:	**Dawson Highway / Wooderson Solar Farm Site Access**
Year / Peak:	**2040 AM & PM Network Peak** Scenario: **Operations**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	73	110
Q_R =	*0*	*0*

Splitter Island? No

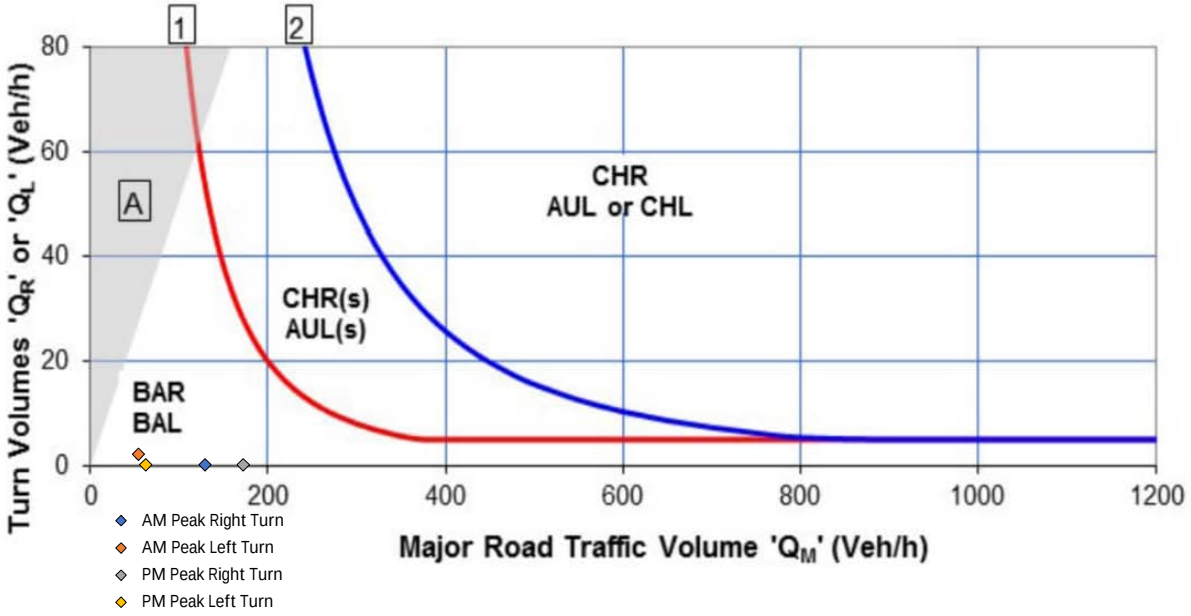
Design speed (km/h) 110



WSF Site Access

	AM Peak	PM Peak
Q_{T2} =	53	62
Q_L =	2	*0*

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	128	0
Left	53	2
PM Peak		
Right	172	0
Left	62	0



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

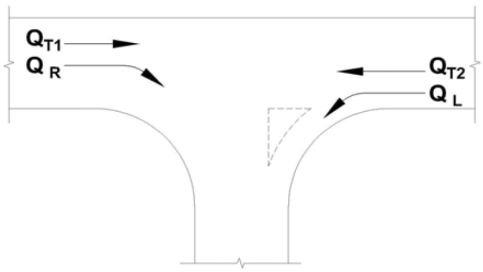
Intersection:	**Dawson Highway / Duck Holes Road**
Year / Peak:	**2030 AM & PM Project Peak**
Scenario:	**Peak Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	38	35
Q_R =	33	3

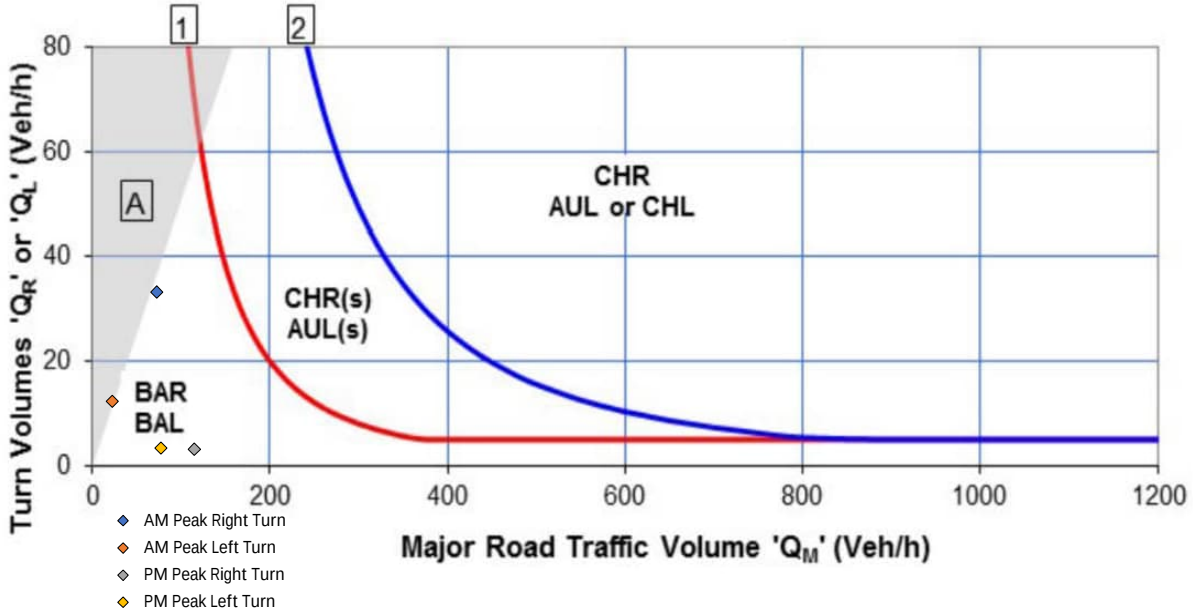
Splitter Island? No

Design speed (km/h) 110



	AM Peak	PM Peak
Q_{T2} =	21	76
Q_L =	12	3

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	72	33
Left	21	12
PM Peak		
Right	114	3
Left	76	3



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

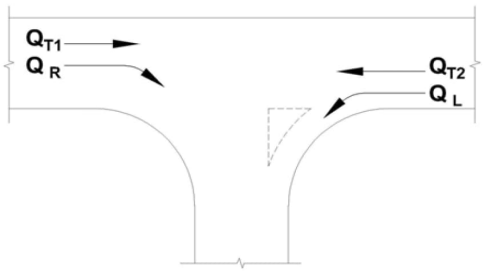
Intersection:	**Dawson Highway / Duck Holes Road**
Year / Peak:	**2030 AM & PM Project Peak**
Scenario:	**Peak Cumulative Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	179	40
Q_R =	*103*	*13*

Splitter Island? No

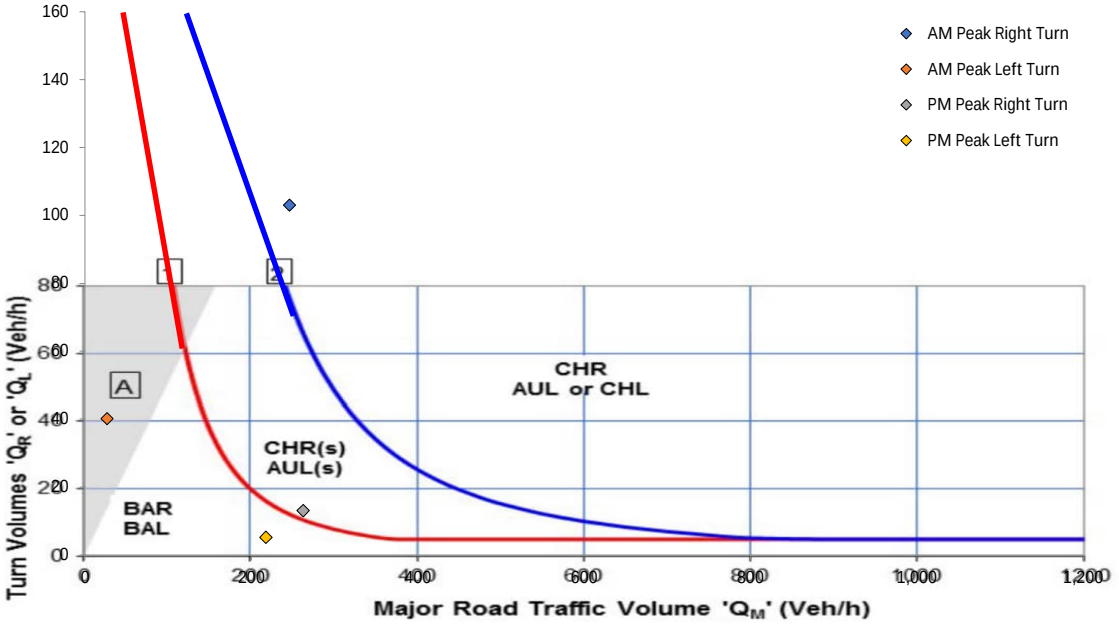
Design speed (km/h) 110



WSF Site Access

	AM Peak	PM Peak
Q_{T2} =	26	217
Q_L =	40	*5*

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	246	103
Left	26	40
PM Peak		
Right	262	13
Left	217	5



Recommended treatments:

Right Turn	CHRs
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

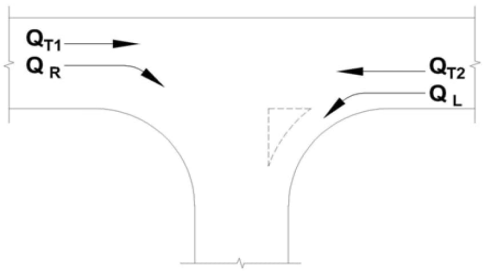
Intersection:	**Dawson Highway / Duck Holes Road**
Year / Peak:	**2040 AM & PM Project Peak** Scenario: **Operations**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	*PM Peak*
Q_{T1} =	56	45
Q_R =	*6*	*0*

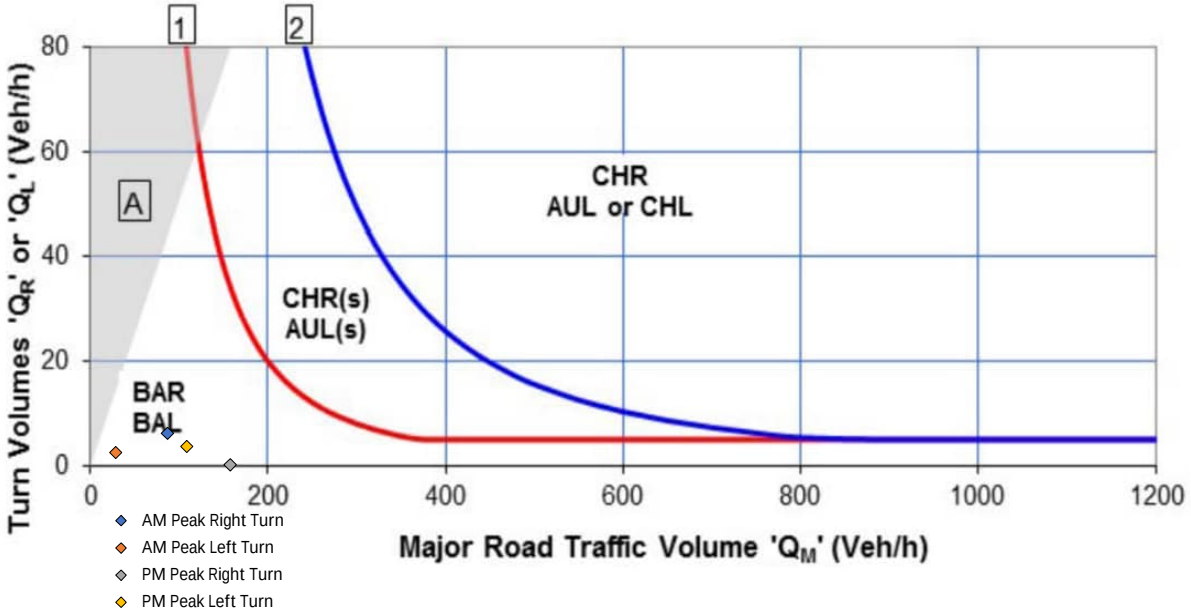
Splitter Island? No

Design speed (km/h) 110



	AM Peak	*PM Peak*
Q_{T2} =	28	108
Q_L =	2	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	86	6
Left	28	2
PM Peak		
Right	157	0
Left	108	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

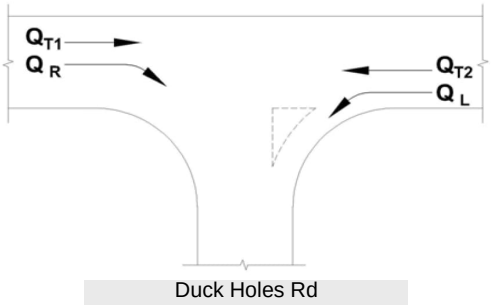
Intersection:	**Dawson Highway / Duck Holes Road**
Year / Peak:	**2030 AM & PM Network Peak**
Scenario:	**Peak Cum. Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	45	51
Q_R =	*11*	7

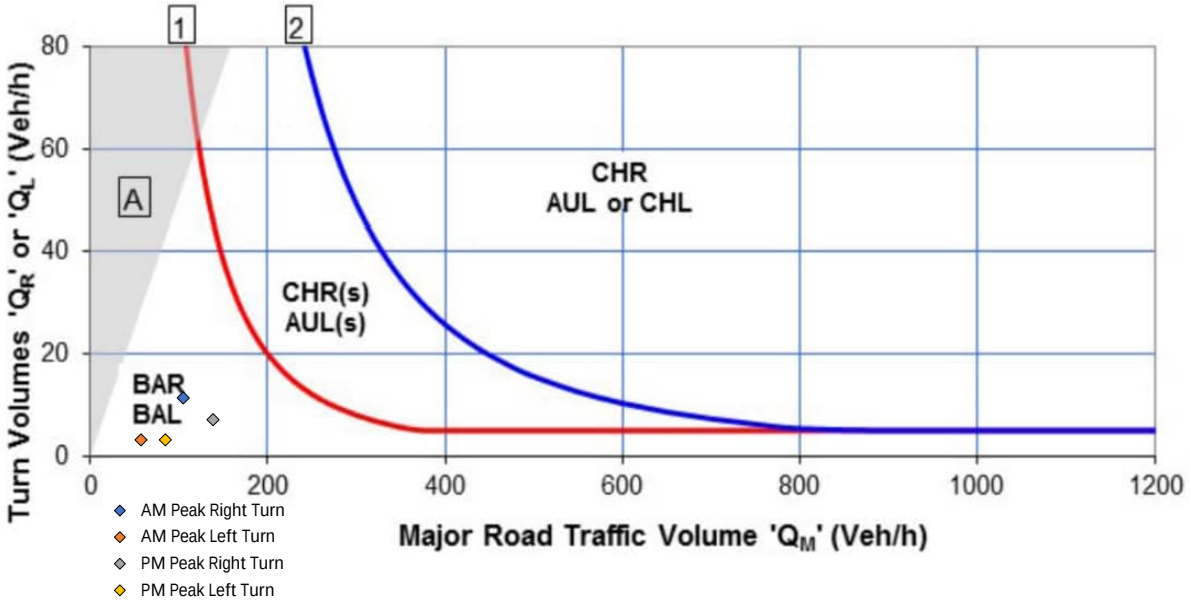
Splitter Island? No

Design speed (km/h) 110



	AM Peak	PM Peak
Q_{T2} =	57	84
Q_L =	3	3

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	104	11
Left	57	3
PM Peak		
Right	138	7
Left	84	3



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Turn Warrant Assessment

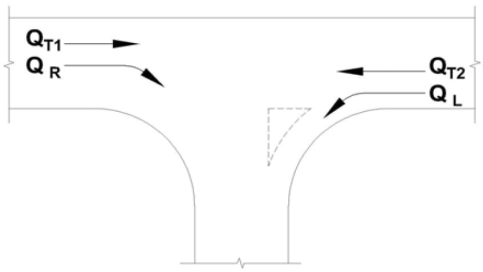
Intersection:	**Dawson Highway / Duck Holes Road**
Year / Peak:	**2030 AM & PM Network Peak**
Scenario:	**Peak Cumulative Construction**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	54	60
Q_R =	*20*	*16*

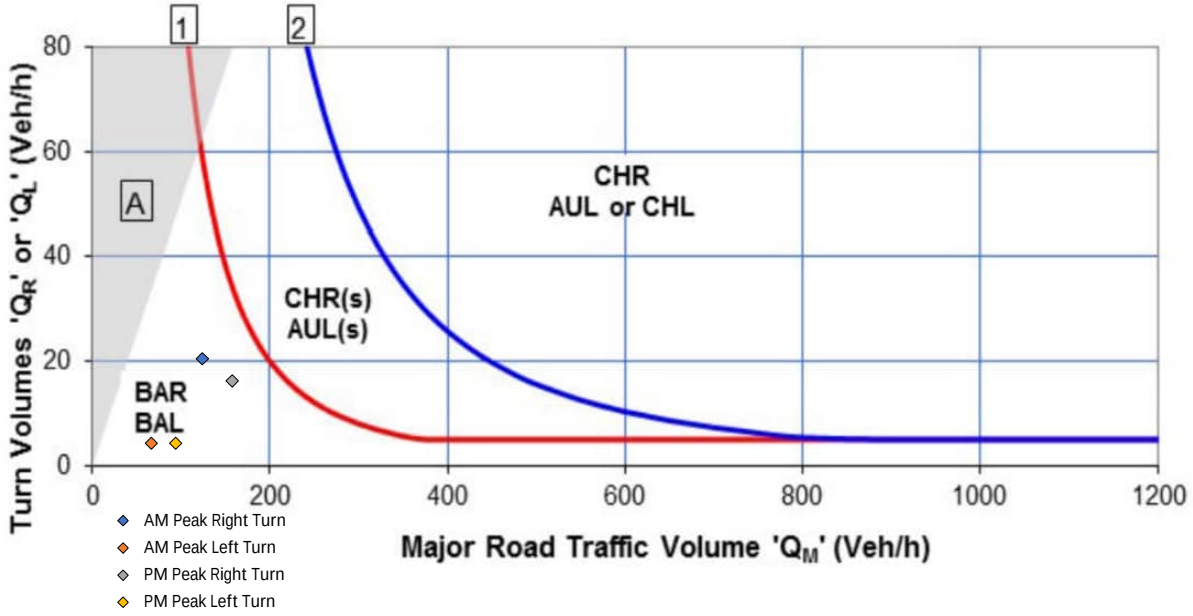
Splitter Island? No

Design speed (km/h) 110



	AM Peak	PM Peak
Q_{T2} =	66	93
Q_L =	4	4

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	123	20
Left	66	4
PM Peak		
Right	157	16
Left	93	4



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

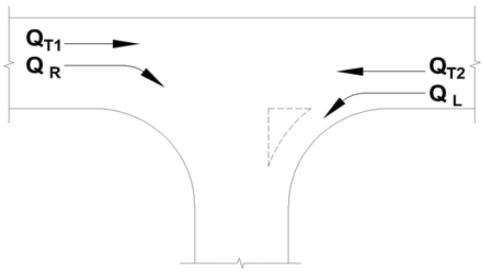
Turn Warrant Assessment

Intersection:	**Dawson Highway / Duck Holes Road**
Year / Peak:	**2040 AM & PM Network Peak**
Scenario:	**Operations**

Assessment based on Austroads Guide to Traffic Management Part 6. This warrant assessment applies only to turning movements from the major road only.

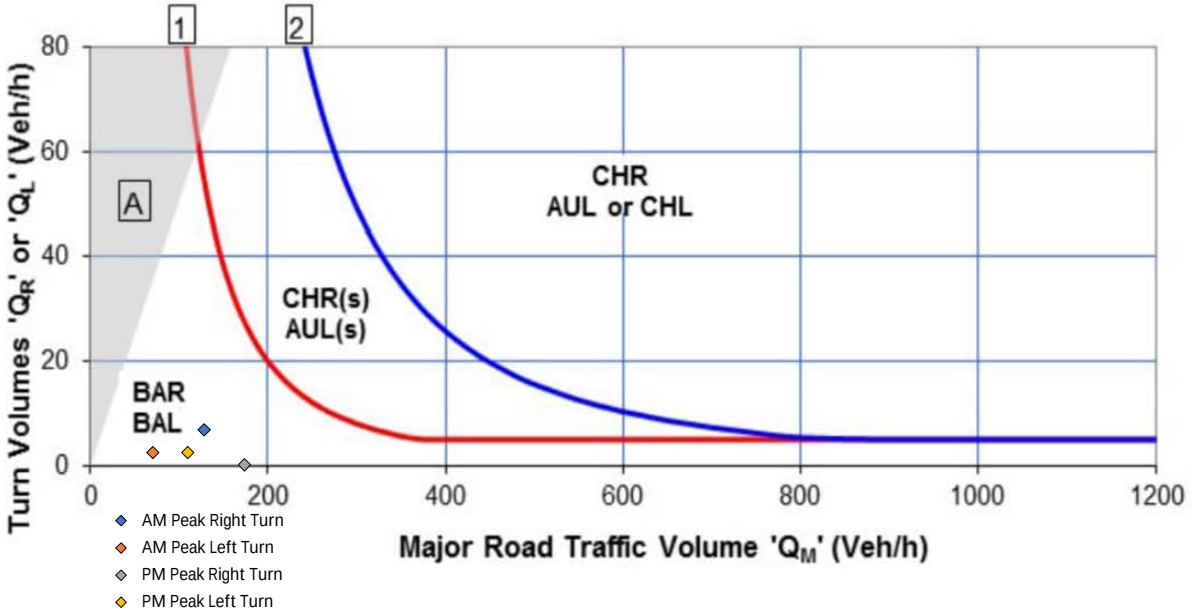
	AM Peak	PM Peak
Q_{T1} =	55	62
Q_R =	7	0

	AM Peak	PM Peak
Q_{T2} =	70	109
Q_L =	2	2



Splitter Island?	No
Design speed (km/h)	110

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	127	7
Left	70	2
PM Peak		
Right	173	0
Left	109	2



Recommended treatments:

Right Turn	BAR
Left Turn	BAL

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

Prepared by:	A.Barrie
Reviewed by:	A.Barrie
Date:	13/02/2026

Appendix H – SIDRA Results – Dawson Highway / Wooderson Solar Farm Site Access

MOVEMENT SUMMARY

Site: 1 [CONS 2030 AM Project Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Project Peak Hours (6-7am & 5-6pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.002	5.6	LOS A	0.0	0.1	0.16	0.52	0.16	59.9
3	R2	All MCs	1	100.0	1	100.0	0.002	7.5	LOS A	0.0	0.1	0.16	0.52	0.16	46.2
Approach			2	50.0	2	50.0	0.002	6.6	LOS A	0.0	0.1	0.16	0.52	0.16	52.2
East: Dawson Highway															
4	L2	All MCs	12	8.3	12	8.3	0.028	8.1	LOS A	0.0	0.0	0.00	0.16	0.00	79.8
5	T1	All MCs	39	10.3	39	10.3	0.028	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	95.1
Approach			51	9.8	51	9.8	0.028	1.9	NA	0.0	0.0	0.00	0.16	0.00	91.0
West: Dawson Highway															
11	T1	All MCs	29	6.9	29	6.9	0.015	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	4	0.0	4	0.0	0.002	7.6	LOS A	0.0	0.1	0.14	0.61	0.14	61.4
Approach			33	6.1	33	6.1	0.015	0.9	NA	0.0	0.1	0.02	0.07	0.02	92.9
All Vehicles			86	9.3	86	9.3	0.028	1.6	NA	0.0	0.1	0.01	0.14	0.01	90.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CONS 2030 PM Project Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Project Peak Hours (6-7am & 5-6pm)
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: Wooderson SF Site Access															
1	L2	All MCs	4	0.0	4	0.0	0.015	5.7	LOS A	0.1	0.4	0.20	0.54	0.20	60.4
3	R2	All MCs	12	8.3	12	8.3	0.015	6.3	LOS A	0.1	0.4	0.20	0.54	0.20	58.4
Approach			16	6.3	16	6.3	0.015	6.2	LOS A	0.1	0.4	0.20	0.54	0.20	58.9
East: Dawson Highway															
4	L2	All MCs	1	100.0	1	100.0	0.023	10.4	LOS A	0.0	0.0	0.00	0.02	0.00	61.2
5	T1	All MCs	41	4.9	41	4.9	0.023	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	99.3
Approach			42	7.1	42	7.1	0.023	0.3	NA	0.0	0.0	0.00	0.02	0.00	97.8
West: Dawson Highway															
11	T1	All MCs	79	15.2	79	15.2	0.044	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.12	0.61	0.12	61.4
Approach			80	15.0	80	15.0	0.044	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.2
All Vehicles			138	11.6	138	11.6	0.044	0.8	NA	0.1	0.4	0.02	0.07	0.02	91.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CONS 2030 AM Network Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.006	5.7	LOS A	0.0	0.2	0.20	0.53	0.20	60.4
3	R2	All MCs	5	20.0	5	20.0	0.006	6.4	LOS A	0.0	0.2	0.20	0.53	0.20	55.7
Approach			6	16.7	6	16.7	0.006	6.3	LOS A	0.0	0.2	0.20	0.53	0.20	56.5
East: Dawson Highway															
4	L2	All MCs	5	20.0	5	20.0	0.027	8.4	LOS A	0.0	0.0	0.00	0.07	0.00	76.6
5	T1	All MCs	41	19.5	41	19.5	0.027	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	97.7
Approach			46	19.6	46	19.6	0.027	0.9	NA	0.0	0.0	0.00	0.07	0.00	94.9
West: Dawson Highway															
11	T1	All MCs	55	18.2	55	18.2	0.031	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.13	0.61	0.13	61.4
Approach			56	17.9	56	17.9	0.031	0.1	NA	0.0	0.0	0.00	0.01	0.00	98.9
All Vehicles			108	18.5	108	18.5	0.031	0.8	NA	0.0	0.2	0.01	0.07	0.01	93.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CONS 2030 AM Network Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.006	5.7	LOS A	0.0	0.2	0.24	0.53	0.24	60.3
3	R2	All MCs	5	20.0	5	20.0	0.006	6.6	LOS A	0.0	0.2	0.24	0.53	0.24	55.6
Approach			6	16.7	6	16.7	0.006	6.5	LOS A	0.0	0.2	0.24	0.53	0.24	56.3
East: Dawson Highway															
4	L2	All MCs	5	20.0	5	20.0	0.031	8.4	LOS A	0.0	0.0	0.00	0.07	0.00	76.7
5	T1	All MCs	47	23.4	47	23.4	0.031	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	97.9
Approach			52	23.1	52	23.1	0.031	0.8	NA	0.0	0.0	0.00	0.07	0.00	95.4
West: Dawson Highway															
11	T1	All MCs	82	7.3	82	7.3	0.044	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.14	0.60	0.14	61.3
Approach			83	7.2	83	7.2	0.044	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.2
All Vehicles			141	13.5	141	13.5	0.044	0.6	NA	0.0	0.2	0.01	0.05	0.01	94.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 1 [CUM. CONS 2030 AM Project Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Project Peak Hours (6-7am & 5-6pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.012	5.7	LOS A	0.0	0.5	0.35	0.55	0.35	57.9
3	R2	All MCs	6	100.0	6	100.0	0.012	9.6	LOS A	0.0	0.5	0.35	0.55	0.35	45.0
Approach			7	85.7	7	85.7	0.012	9.0	LOS A	0.0	0.5	0.35	0.55	0.35	46.5
East: Dawson Highway															
4	L2	All MCs	153	8.5	153	8.5	0.110	8.1	LOS A	0.0	0.0	0.00	0.53	0.00	72.8
5	T1	All MCs	41	14.6	41	14.6	0.110	0.0	LOS A	0.0	0.0	0.00	0.53	0.00	85.3
Approach			194	9.8	194	9.8	0.110	6.4	NA	0.0	0.0	0.00	0.53	0.00	75.1
West: Dawson Highway															
11	T1	All MCs	57	7.0	57	7.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	49	4.1	49	4.1	0.034	8.3	LOS A	0.1	1.1	0.31	0.62	0.31	60.5
Approach			106	5.7	106	5.7	0.034	3.8	NA	0.1	1.1	0.14	0.29	0.14	76.8
All Vehicles			307	10.1	307	10.1	0.110	5.5	NA	0.1	1.1	0.06	0.45	0.06	74.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CUM. CONS 2030 PM Project Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Project Peak Hours (6-7am & 5-6pm)
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: Wooderson SF Site Access															
1	L2	All MCs	49	4.1	49	4.1	0.194	5.8	LOS A	0.9	6.4	0.29	0.57	0.29	59.1
3	R2	All MCs	153	8.5	153	8.5	0.194	6.8	LOS A	0.9	6.4	0.29	0.57	0.29	58.0
Approach			202	7.4	202	7.4	0.194	6.6	LOS A	0.9	6.4	0.29	0.57	0.29	58.3
East: Dawson Highway															
4	L2	All MCs	6	100.0	6	100.0	0.042	10.4	LOS A	0.0	0.0	0.00	0.05	0.00	60.5
5	T1	All MCs	69	5.8	69	5.8	0.042	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	97.6
Approach			75	13.3	75	13.3	0.042	0.8	NA	0.0	0.0	0.00	0.05	0.00	93.1
West: Dawson Highway															
11	T1	All MCs	81	17.3	81	17.3	0.046	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.17	0.59	0.17	61.2
Approach			82	17.1	82	17.1	0.046	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.2
All Vehicles			359	10.9	359	10.9	0.194	3.9	NA	0.9	6.4	0.16	0.33	0.16	70.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CUM. CONS 2030 AM Network Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
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: Wooderson SF Site Access															
1	L2	All MCs	2	0.0	2	0.0	0.019	5.7	LOS A	0.1	0.7	0.26	0.55	0.26	60.2
3	R2	All MCs	14	42.9	14	42.9	0.019	7.2	LOS A	0.1	0.7	0.26	0.55	0.26	51.0
Approach			16	37.5	16	37.5	0.019	7.0	LOS A	0.1	0.7	0.26	0.55	0.26	52.0
East: Dawson Highway															
4	L2	All MCs	14	42.9	14	42.9	0.035	9.0	LOS A	0.0	0.0	0.00	0.17	0.00	67.5
5	T1	All MCs	42	23.8	42	23.8	0.035	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	95.9
Approach			56	28.6	56	28.6	0.035	2.2	NA	0.0	0.0	0.00	0.17	0.00	86.7
West: Dawson Highway															
11	T1	All MCs	83	14.5	83	14.5	0.046	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	2	0.0	2	0.0	0.001	7.7	LOS A	0.0	0.0	0.15	0.60	0.15	61.3
Approach			85	14.1	85	14.1	0.046	0.2	NA	0.0	0.0	0.00	0.01	0.00	98.5
All Vehicles			157	21.7	157	21.7	0.046	1.6	NA	0.1	0.7	0.03	0.12	0.03	86.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [CUM. CONS 2030 AM Network Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
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: Wooderson SF Site Access															
1	L2	All MCs	2	0.0	2	0.0	0.020	5.8	LOS A	0.1	0.7	0.31	0.56	0.31	59.9
3	R2	All MCs	14	42.9	14	42.9	0.020	7.5	LOS A	0.1	0.7	0.31	0.56	0.31	50.8
Approach			16	37.5	16	37.5	0.020	7.3	LOS A	0.1	0.7	0.31	0.56	0.31	51.8
East: Dawson Highway															
4	L2	All MCs	14	42.9	14	42.9	0.053	9.0	LOS A	0.0	0.0	0.00	0.11	0.00	68.3
5	T1	All MCs	75	17.3	75	17.3	0.053	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	97.6
Approach			89	21.3	89	21.3	0.053	1.4	NA	0.0	0.0	0.00	0.11	0.00	91.4
West: Dawson Highway															
11	T1	All MCs	84	9.5	84	9.5	0.045	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	2	0.0	2	0.0	0.001	7.8	LOS A	0.0	0.0	0.19	0.59	0.19	61.1
Approach			86	9.3	86	9.3	0.045	0.2	NA	0.0	0.0	0.00	0.01	0.00	98.5
All Vehicles			191	17.3	191	17.3	0.053	1.3	NA	0.1	0.7	0.03	0.10	0.03	88.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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: 1 [OPS 2040 AM Project Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Project Peak Hours (6-7am & 5-6pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.002	5.7	LOS A	0.0	0.0	0.16	0.53	0.16	61.1
3	R2	All MCs	1	0.0	1	0.0	0.002	5.9	LOS A	0.0	0.0	0.16	0.53	0.16	61.1
Approach			2	0.0	2	0.0	0.002	5.8	LOS A	0.0	0.0	0.16	0.53	0.16	61.1
East: Dawson Highway															
4	L2	All MCs	6	16.7	6	16.7	0.032	8.3	LOS A	0.0	0.0	0.00	0.07	0.00	78.2
5	T1	All MCs	52	9.6	52	9.6	0.032	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	98.0
Approach			58	10.3	58	10.3	0.032	0.9	NA	0.0	0.0	0.00	0.07	0.00	95.5
West: Dawson Highway															
11	T1	All MCs	31	9.7	31	9.7	0.017	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.15	0.60	0.15	61.3
Approach			32	9.4	32	9.4	0.017	0.2	NA	0.0	0.0	0.00	0.02	0.00	98.1
All Vehicles			92	9.8	92	9.8	0.032	0.8	NA	0.0	0.0	0.01	0.06	0.01	95.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPS 2040 PM Project Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Project Peak Hours (6-7am & 5-6pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.007	5.7	LOS A	0.0	0.2	0.25	0.54	0.25	60.2
3	R2	All MCs	6	16.7	6	16.7	0.007	6.7	LOS A	0.0	0.2	0.25	0.54	0.25	56.3
Approach			7	14.3	7	14.3	0.007	6.6	LOS A	0.0	0.2	0.25	0.54	0.25	56.8
East: Dawson Highway															
4	L2	All MCs	1	0.0	1	0.0	0.026	7.8	LOS A	0.0	0.0	0.00	0.01	0.00	87.1
5	T1	All MCs	47	6.4	47	6.4	0.026	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	99.5
Approach			48	6.3	48	6.3	0.026	0.2	NA	0.0	0.0	0.00	0.01	0.00	99.2
West: Dawson Highway															
11	T1	All MCs	107	15.0	107	15.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.6	LOS A	0.0	0.0	0.13	0.61	0.13	61.4
Approach			108	14.8	108	14.8	0.060	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.4
All Vehicles			163	12.3	163	12.3	0.060	0.4	NA	0.0	0.2	0.01	0.03	0.01	96.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPS 2040 AM Network Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.002	5.7	LOS A	0.0	0.0	0.18	0.52	0.18	61.0
3	R2	All MCs	1	0.0	1	0.0	0.002	6.2	LOS A	0.0	0.0	0.18	0.52	0.18	61.0
Approach			2	0.0	2	0.0	0.002	5.9	LOS A	0.0	0.0	0.18	0.52	0.18	61.0
East: Dawson Highway															
4	L2	All MCs	2	50.0	2	50.0	0.032	9.1	LOS A	0.0	0.0	0.00	0.02	0.00	67.0
5	T1	All MCs	53	20.8	53	20.8	0.032	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	99.5
Approach			55	21.8	55	21.8	0.032	0.3	NA	0.0	0.0	0.00	0.02	0.00	97.8
West: Dawson Highway															
11	T1	All MCs	73	17.8	73	17.8	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.15	0.60	0.15	61.3
Approach			74	17.6	74	17.6	0.041	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.1
All Vehicles			131	19.1	131	19.1	0.041	0.3	NA	0.0	0.0	0.00	0.02	0.00	97.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 1 [OPS 2040 PM Network Peak (Site Folder: 1. Dawson Highway / WSF Site Access)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Dawson Highway / Wooderson Solar Farm Site Access Intersection
Proposed CHRs / BAL Configuration
Network Peak Hours (8-9am & 3:45-4:45pm)
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: Wooderson SF Site Access															
1	L2	All MCs	1	0.0	1	0.0	0.003	5.7	LOS A	0.0	0.1	0.26	0.52	0.26	60.2
3	R2	All MCs	2	50.0	2	50.0	0.003	7.6	LOS A	0.0	0.1	0.26	0.52	0.26	49.7
Approach			3	33.3	3	33.3	0.003	7.0	LOS A	0.0	0.1	0.26	0.52	0.26	52.8
East: Dawson Highway															
4	L2	All MCs	1	0.0	1	0.0	0.037	7.8	LOS A	0.0	0.0	0.00	0.01	0.00	87.1
5	T1	All MCs	62	24.2	62	24.2	0.037	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	99.5
Approach			63	23.8	63	23.8	0.037	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.3
West: Dawson Highway															
11	T1	All MCs	110	7.3	110	7.3	0.058	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
12	R2	All MCs	1	0.0	1	0.0	0.001	7.7	LOS A	0.0	0.0	0.16	0.60	0.16	61.3
Approach			111	7.2	111	7.2	0.058	0.1	NA	0.0	0.0	0.00	0.01	0.00	99.4
All Vehicles			177	13.6	177	13.6	0.058	0.2	NA	0.0	0.1	0.01	0.02	0.01	97.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix I – Project Traffic Impact Calculations

AEC0125-003 | Wooderson SF OHTL & Switchyard

Project Traffic Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	2030 AADT			2030 HV	
			Start (km)	End (km)		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz
183	Gladstone Port Access Road	61605	0.000	0.858	2024	972	865	1,837	30.00%	41.08%	292	355	*1.00%*	1,032	918	1,950	310	377
181	Gladstone - Mount Larcom Road	160360	0.000	**0.175**	2023	5,650	5,948	11,598	8.85%	8.60%	500	512	*1.00%*	6,058	6,377	12,435	536	548
46A	Dawson Highway (Gladstone - Biloela)	60061	0.000	1.505	2022	7,771	8,095	15,866	6.42%	9.53%	499	771	2.18%	9,234	9,619	18,854	593	917
		61083	1.505	2.250	2022	8,149	9,013	17,162	8.58%	7.68%	699	692	*1.00%*	8,824	9,760	18,584	757	750
		60063	2.250	4.445	2023	13,878	13,688	27,566	9.92%	8.68%	1,377	1,188	*1.00%*	14,879	14,675	29,554	1,476	1,274
		60064	4.445	7.150	2022	11,172	10,928	22,100	7.45%	8.55%	832	934	*1.00%*	12,098	11,833	23,931	901	1,012
		60065	7.150	**19.305**	2023	3,835	3,659	7,494	17.32%	13.62%	664	498	*1.00%*	4,112	3,923	8,035	712	534
		60066	**19.305**	**21.715**	2022	4,148	4,141	8,289	8.54%	7.16%	354	296	*1.00%*	4,492	4,484	8,976	384	321
		60128	**21.715**	25.640	2024	1,252	1,256	2,508	17.48%	18.13%	219	228	1.43%	1,363	1,368	2,731	238	248
		60005	25.640	**64.433**	2022	680	680	1,360	27.42%	28.07%	186	191	3.06%	865	865	1,731	237	243
			64.433	**64.888**	2022	680	680	1,360	27.42%	28.07%	186	191	3.06%	865	865	1,731	237	243
			64.888	113.730	2022	680	680	1,360	27.42%	28.07%	186	191	3.06%	865	865	1,731	237	243
		61084	113.730	116.835	2023	834	848	1,682	21.73%	23.14%	181	196	*1.00%*	894	909	1,803	194	210
		160067	116.835	119.758	2023	3,260	3,356	6,616	11.18%	21.28%	364	714	*1.00%*	3,495	3,598	7,093	391	766
GRC	Duck Holes Road	-	0.000	0.433	2024	40	15	55	25.00%	33.33%	10	5	*1.00%*	42	16	58	11	5

Road ID	Road Description	AADT Segment	AADT Segment		Project Traffic (Daily) - Construction																								Bi-Dir
					Gazettal													A-Gazettal												
			Start (km)	End (km)	A	B	C	D	E	F	G	H	Water	Waste	Staff	Max		A	B	C	D	E	F	G	H	Water	Waste	Staff	Max	
183	Gladstone Port Access Road	61605	0.000	0.858	0	0	0	0	0	0	7	0	0	0	0	**7**		0	0	0	0	0	0	7	0	0	0	0	**7**	**14**
181	Gladstone - Mount Larcom Road	160360	0.000	**0.175**	0	0	0	0	0	0	7	0	0	0	0	**7**		0	0	0	0	0	0	7	0	0	0	0	**7**	**14**
46A	Dawson Highway (Gladstone - Biloela)	60061	0.000	1.505	2	1	2	1	1	1	7	3	0	0	18	**30**		2	1	2	1	1	1	7	3	0	0	18	**30**	**60**
		61083	1.505	2.250	2	1	2	1	1	1	7	3	0	0	18	**30**		2	1	2	1	1	1	7	3	0	0	18	**30**	**60**
		60063	2.250	4.445	2	1	2	1	1	1	7	3	0	0	18	**30**		2	1	2	1	1	1	7	3	0	0	18	**30**	**60**
		60064	4.445	7.150	2	1	2	1	1	1	7	3	0	0	18	**30**		2	1	2	1	1	1	7	3	0	0	18	**30**	**60**
		60065	7.150	**19.350**	2	1	2	1	1	1	7	3	0	0	18	**30**		2	1	2	1	1	1	7	3	0	0	18	**30**	**60**
		60066	**19.350**	**21.750**	2	1	2	1	1	1	7	3	0	0	30	**42**		2	1	2	1	1	1	7	3	0	0	30	**42**	**84**
		60128	**21.750**	25.640	2	6	11	3	1	1	7	3	4	1	30	**63**		2	6	11	3	1	1	7	3	4	1	30	**63**	**126**
		60005	25.640	**64.433**	2	6	11	3	1	1	7	3	4	1	30	**63**		2	6	11	3	1	1	7	3	4	1	30	**63**	**126**
			64.433	**64.888**	1	2	1	2	1	1	0	1	2	1	25	**34**		1	2	1	2	1	1	0	1	2	1	25	**34**	**68**
			64.888	113.730	0	0	0	0	0	0	0	0	0	0	10	**10**		0	0	0	0	0	0	0	0	0	0	10	**10**	**20**
		61084	113.730	116.835	0	0	0	0	0	0	0	0	0	0	10	**10**		0	0	0	0	0	0	0	0	0	0	10	**10**	**20**
		160067	116.835	119.758	0	0	0	0	0	0	0	0	0	0	10	**10**		0	0	0	0	0	0	0	0	0	0	10	**10**	**20**
GRC	Duck Holes Road	-	0.000	0.433	1	5	11	1	1	1	7	2	2	1	40	**68**		1	5	11	1	1	1	7	2	2	1	40	**68**	**136**

Dev Traffic % Impact -		
Gaz %	A-Gaz %	Bi-Dir %
0.68%	0.76%	0.72%
0.12%	0.11%	0.11%
0.32%	0.31%	0.32%
0.34%	0.31%	0.32%
0.20%	0.20%	0.20%
0.25%	0.25%	0.25%
0.73%	0.76%	0.75%
0.94%	0.94%	0.94%
4.62%	4.61%	4.61%
7.28%	7.28%	7.28%
3.93%	3.93%	3.93%
1.16%	1.16%	1.16%
1.12%	1.10%	1.11%
0.29%	0.28%	0.28%
160.15%	427.06%	232.94%

Peak Construction		
Gaz	A-Gaz	Bi-Dir
1,039	925	1,964
6,065	6,384	12,449
9,264	9,649	18,914
8,854	9,790	18,644
14,909	14,705	29,614
12,128	11,863	23,991
4,142	3,953	8,095
4,534	4,526	9,060
1,426	1,431	2,857
928	928	1,857
899	899	1,799
875	875	1,751
904	919	1,823
3,505	3,608	7,113
110	84	194

Road ID	Road Description	AADT Segment	AADT Segment		Upper Calliope SF			Wooderson SF			Total External Project		
			Start (km)	End (km)	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Bi-Dir
183	Gladstone Port Access Road	61605	0.000	0.858	21	21	42	19	7	26	40	28	68
181	Gladstone - Mount Larcom Road	160360	0.000	**0.175**	58	58	116	16	7	23	74	65	139
46A	Dawson Highway (Gladstone - Biloela)	60061	0.000	1.505	62	62	124	108	108	216	170	170	340
		61083	1.505	2.250	62	62	124	108	108	216	170	170	340
		60063	2.250	4.445	62	62	124	108	108	216	170	170	340
		60064	4.445	7.150	62	62	124	108	108	216	170	170	340
		60065	7.150	**19.350**	62	62	124	111	111	222	173	173	346
		60066	**19.350**	**21.750**	90	90	180	166	166	332	256	256	512
		60128	**21.750**	25.640	119	119	238	190	190	380	309	309	618
		60005	25.640	**64.433**	119	119	238	190	190	380	309	309	618
			64.433	**64.888**	28	28	56	190	190	380	218	218	436
			64.888	113.730	28	28	56	45	45	90	73	73	146
		61084	113.730	116.835	28	28	56	45	45	90	73	73	146
		160067	116.835	119.758	28	28	56	45	45	90	73	73	146
GRC	Duck Holes Road	-	0.000	0.433	147	147	294	0	0	0	147	147	294

Total Cumulative Traffic		
Gaz	A-Gaz	Bi-Dir
47	35	82
81	72	153
200	200	400
200	200	400
200	200	400
200	200	400
203	203	406
298	298	596
372	372	744
372	372	744
252	252	504
83	83	166
83	83	166
83	83	166
215	215	430

2030 Cum. Construction		
Gaz	A-Gaz	Bi-Dir
1,079	953	2,032
6,139	6,449	12,588
9,434	9,819	19,254
9,024	9,960	18,984
15,079	14,875	29,954
12,298	12,033	24,331
4,315	4,126	8,441
4,790	4,782	9,572
1,735	1,740	3,475
1,237	1,237	2,475
1,117	1,117	2,235
948	948	1,897
977	992	1,969
3,578	3,681	7,259
257	231	488

Cum Const Traffic %		
Gaz	A-Gaz	Bi-Dir
4.56%	3.81%	4.21%
1.34%	1.13%	1.23%
2.17%	2.08%	2.12%
2.27%	2.05%	2.15%
1.34%	1.36%	1.35%
1.65%	1.69%	1.67%
4.94%	5.17%	5.05%
6.63%	6.65%	6.64%
27.29%	27.20%	27.24%
42.98%	42.98%	42.98%
29.12%	29.12%	29.12%
9.59%	9.59%	9.59%
9.28%	9.13%	9.21%
2.37%	2.31%	2.34%
506.35%	1350.26%	736.51%

Appendix J – Project Pavement Loading and Impact Calculations

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Project Traffic Vehicle Loading

Assumed Work Days per Month 24 days

TASK A - MOBILISTATION

Description	Project Volume	Vehicle	Origin	Route
Project Mobilisation to Site (Primary Plant) - Northern Project Area	10	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Project Mobilisation to Site (Primary Plant) -Southern Project Area	10	Semi	Gladstone	Dawson Highway - WSF Site Access
Project Mobilisation to Site (EW Plant) - Northern Project Area	10	Semi / Low Loader	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Project Mobilisation to Site (EW Plant) - Southern Project Area	10	Semi / Low Loader	Gladstone	Dawson Highway - WSF Site Access

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	197	20
Dawson Highway (Calliope to Duck Holes Road)	197	20
Dawson Highway (Duck Holes Road to WSF Site Access)	99	10
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	99	10

TASK B - EXTERNAL AND INTERNAL ACCESS ROADS

Description	Project Volume	Vehicle	Origin	Route
Northern Site Access (Duck Ponds Road) Pavement Materials	5	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Internal Access Road Gravel Materials - Northern Project Area	297	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Internal Access Road Culverts - Northern Project Area	1	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Internal Access Road Gravel Materials -Southern Project Area	82	Truck & Dog Trailer	Calliope	Dawson Highway - WSF Site Access
Internal Access Road Culverts - Southern Project Area	1	Semi	Gladstone	Dawson Highway - WSF Site Access

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	10	1
Dawson Highway (Calliope to Duck Holes Road)	2,371	2,371
Dawson Highway (Duck Holes Road to WSF Site Access)	509	135
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	1,862	496

TASK C - SITE ESTABLISHMENT (CIVIL WORKS)

Description	Project Volume	Vehicle	Origin	Route
Switching Station Area Establishment & Buildings	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Construction Compound A Establishment & Buildings	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Construction Compound B Establishment & Buildings	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Switching Station Slab Wet Concrete	270	Concrete Truck	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Switching Station Slab Reinforcing Steel	23	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Construction Compounds A & B Slab Wet Concrete	35	Concrete Truck	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Construction Compound A & B Slab Reinforcing Steel	3	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Switching Station Area Gravel	739	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Site Laydown Area Gravel - Northern Project Area	130	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Site Laydown Area Gravel - Southern Project Area	25	Truck & Dog Trailer	Calliope	Dawson Highway - WSF Site Access
Construction Compounds A & B Gravel	95	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Perimeter Fencing Materials - Northern Project Area	45	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Perimeter Fencing Materials - Southern Project Area	5	Semi	Gladstone	Dawson Highway - WSF Site Access

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Concrete Truck (4 Axle Rigid) Unloaded (0%)	0.46	ESAs
Concrete Truck (4 Axle Rigid) Loaded (100%)	4.09	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	744	77
Dawson Highway (Calliope to Duck Holes Road)	8,074	1,839
Dawson Highway (Duck Holes Road to WSF Site Access)	178	44
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	7,896	1,796

TASK D - BENCHING & FOUNDATIONS

Description	Project Volume	Vehicle	Origin	Route
Monopole Site Benching Area Gravel - Northern Project Area	36	Truck & Dog Trailer	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Monopole Site Benching Area Gravel - Southern Project Area	54	Truck & Dog Trailer	Calliope	Dawson Highway - WSF Site Access
Monopole Foundation Concrete Trucks - Northern Project Area	90	Concrete Truck	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Monopole Foundation Concrete Trucks - Southern Project Area	135	Concrete Truck	Calliope	Dawson Highway - WSF Site Access
Monopole Foundation Reinforcing Steel - Northern Project Area	54	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Monopole Foundation Reinforcing Steel - Southern Project Area	81	Semi	Gladstone	Dawson Highway - WSF Site Access
Monopole Foundation Drill Rig - Northern Project Area	1	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
Monopole Foundation Drill Rig - Southern Project Area	1	Semi	Gladstone	Dawson Highway - WSF Site Access

Truck & 4 Axle Dog Unloaded (0%)	1.64	ESAs
Truck & 4 Axle Dog Loaded (100%)	6.15	ESAs
Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs
Concrete Truck (4 Axle Rigid) Unloaded (0%)	0.46	ESAs
Concrete Truck (4 Axle Rigid) Loaded (100%)	4.09	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	675	70
Dawson Highway (Calliope to Duck Holes Road)	2,149	321
Dawson Highway (Duck Holes Road to WSF Site Access)	1,289	192
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	861	128

TASK E - MONOPOLE STRUCTURES

Description	Project Volume	Vehicle	Origin	Route	
Monopole Structure Components - Northern Project Area	54	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Structure Components - Southern Project Area	81	Semi	Gladstone	Dawson Highway - WSF Site Access	A
Monopole Structure Crane - Northern Project Area	2	Semi / Crane	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Monopole Structure Crane - Southern Project Area	2	Semi / Crane	Gladstone	Dawson Highway - WSF Site Access	A

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	685	71
Dawson Highway (Calliope to Duck Holes Road)	685	71
Dawson Highway (Duck Holes Road to WSF Site Access)	409	42
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	276	29

TASK F - STRINGING

Description	Project Volume	Vehicle	Origin	Route
OHTL Cable - Northern Project Area	9	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access
OHTL Cable - Southern Project Area	11	Semi	Gladstone	Dawson Highway - WSF Site Access

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	99	10
Dawson Highway (Calliope to Duck Holes Road)	99	10
Dawson Highway (Duck Holes Road to WSF Site Access)	54	6
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	44	5

TASK G - ELECTRICAL SITE INFRASTRUCTURE (SWITCHING STATION)

Description	Project Volume	Vehicle	Origin	Route	
Switching Station (Electrical Components)	500	Semi	Port of Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	255	2,465
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	255	2,465
Dawson Highway (Gladstone to Calliope)	2,465	255
Dawson Highway (Calliope to Duck Holes Road)	2,465	255
Dawson Highway (Duck Holes Road to WSF Site Access)	0	0
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	2,465	255

TASK H - COMMISSIONING / DEMOBILISATION

Description	Project Volume	Vehicle	Origin	Route	
Project Demobilisation from Site (Ancilliary Equipment) - Northern Project Area	10	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Project Demobilisation from Site (Ancilliary Equipment) - Southern Project Area	10	Semi	Gladstone	Dawson Highway - WSF Site Access	
Project Demobilisation from Site (EW Plant) - Northern Project Area	10	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Project Demobilisation from Site (EW Plant) - Southern Project Area	10	Semi	Gladstone	Dawson Highway - WSF Site Access	
Switching Station Demobilisation	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	
Construction Compound A Demobilisation	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A
Construction Compound B Demobilisation	25	Semi	Gladstone	Dawson Highway - Duck Holes Road - Nth Site Access	A

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	59	567
Dawson Highway (Calliope to Duck Holes Road)	59	567
Dawson Highway (Duck Holes Road to WSF Site Access)	10	99
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	48	468

SITE WATER

Description	Project Volume	Vehicle	Origin	Route
Water - Northern Project Area	720	15KL 3 Axle Rigid	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Water - Southern Project Area	720	15KL 3 Axle Rigid	Calliope	Dawson Highway - WSF Site Access

3-Axle Rigid Unloaded (0%)	0.50	ESAs
3-Axle Rigid Loaded (100%)	3.57	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	0	0
Dawson Highway (Calliope to Duck Holes Road)	5,141	720
Dawson Highway (Duck Holes Road to WSF Site Access)	2,570	360
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	2,570	360

SITE WASTE REMOVAL

Description	Project Volume	Vehicle	Origin	Route
Waste Removal - Northern Project Area	120	Semi	Calliope	Dawson Highway - Duck Holes Road - Nth Site Access
Waste Removal - Southern Project Area	120	Semi	Calliope	Dawson Highway - WSF Site Access

Semi Unloaded (0%)	0.51	ESAs
Semi Loaded (100%)	4.93	ESAs

Road Section	ESAs Gaz	ESAs A-Gaz
Gladstone Port Access Road	0	0
Gladstone Mount Larcom Road (GPAR to Dawson Highway)	0	0
Dawson Highway (Gladstone to Calliope)	0	0
Dawson Highway (Calliope to Duck Holes Road)	122	1,183
Dawson Highway (Duck Holes Road to WSF Site Access)	61	592
Dawson Highway (Main Site Access to Biloela)	0	0
Duck Holes Road (Dawson Hwy to Nth Site Access)	61	592

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Project Pavement Loading Impact % Calculations

Road ID	Road Description	AADT Segment	AADT Segment		Base Data Year	Base Year AADT			Base Year HV%		Base Year HV		10 Yr GR%	2029 AADT			2029 HV		ESAs / HV	Duration (Days)	B'ground Pvt Loading ESAs		
			Start (km)	End (km)		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz	Gaz	A-Gaz		Gaz	A-Gaz	Bi-Dir	Gaz	A-Gaz			Gaz	A-Gaz	Bi-Dir
183	Gladstone Port Access Road	61605	0.000	0.858	2024	972	865	1,837	30.00%	41.08%	292	355	*1.00%*	1,022	909	1,931	306	373	3.2	456	447,453	545,263	992,716
181	Gladstone - Mount Larcom Road	160360	0.000	**0.175**	2023	5,650	5,948	11,598	8.85%	8.60%	500	512	*1.00%*	5,998	6,314	12,312	531	543	3.2	456	774,948	792,776	1,567,724
46A	Dawson Highway (Gladstone - Biloela)	60061	0.000	1.505	2022	7,771	8,095	15,866	6.42%	9.53%	499	771	2.18%	9,037	9,414	18,451	580	897	3.2	456	847,083	1,309,857	2,156,940
		61083	1.505	2.250	2022	8,149	9,013	17,162	8.58%	7.68%	699	692	*1.00%*	8,737	9,663	18,400	750	742	3.2	456	1,094,445	1,083,510	2,177,956
		60063	2.250	4.445	2023	13,878	13,688	27,566	9.92%	8.68%	1,377	1,188	*1.00%*	14,732	14,530	29,262	1,461	1,261	3.2	456	2,133,633	1,841,369	3,975,002
		60064	4.445	7.150	2022	11,172	10,928	22,100	7.45%	8.55%	832	934	*1.00%*	11,978	11,716	23,694	892	1,002	3.2	456	1,302,836	1,462,545	2,765,381
		60065	7.150	**19.350**	2023	3,835	3,659	7,494	17.32%	13.62%	664	498	*1.00%*	4,071	3,884	7,955	705	529	3.2	456	1,029,424	772,361	1,801,786
		60066	**19.350**	**21.750**	2022	4,148	4,141	8,289	8.54%	7.16%	354	296	*1.00%*	4,447	4,440	8,887	380	318	3.2	456	554,497	464,110	1,018,607
		60128	**21.750**	25.640	2024	1,252	1,256	2,508	17.48%	18.13%	219	228	1.43%	1,344	1,348	2,693	235	244	3.2	456	343,029	356,921	699,950
		60005	25.640	**64.433**	2022	680	680	1,360	27.42%	28.07%	186	191	3.06%	840	840	1,679	230	236	3.2	456	336,171	344,140	680,311
			64.433	**64.888**	2022	680	680	1,360	27.42%	28.07%	186	191	3.06%	840	840	1,679	230	236	3.2	456	336,171	344,140	680,311
			64.888	113.730	2022	680	680	1,360	27.42%	28.07%	186	191	3.06%	840	840	1,679	230	236	3.2	456	336,171	344,140	680,311
		61084	113.730	116.835	2023	834	848	1,682	21.73%	23.14%	181	196	*1.00%*	885	900	1,785	192	208	3.2	456	280,871	304,117	584,988
		160067	116.835	119.758	2023	3,260	3,356	6,616	11.18%	21.28%	364	714	*1.00%*	3,461	3,562	7,023	387	758	3.2	456	564,860	1,106,814	1,671,674
GRC	Duck Holes Road	-	0.000	0.433	2024	40	15	55	25.00%	33.33%	10	5	*1.00%*	42	16	58	11	5	3.2	456	15,345	7,672	23,017

Road ID	Road Description	AADT Segment	AADT Segment		Project Pavement Loading - Construction																							Dev Traffic % Impact - Construction		
			Start (km)	End (km)	Gazettal													A-Gazettal											Bi-Dir	Gaz %	A-Gaz %	Bi-Dir %
					A	B	C	D	E	F	G	H	Water	Waste	Staff	Max	A	B	C	D	E	F	G	H	Water	Waste	Staff	Max				
183	Gladstone Port Access Road	61605	0.000	0.858	0	0	0	0	0	0	255	0	0	0	0	**255**	0	0	0	0	0	0	2,465	0	0	0	0	**2,465**	**2,720**	0.06%	0.45%	0.27%
181	Gladstone - Mount Larcom Road	160360	0.000	**0.175**	0	0	0	0	0	0	255	0	0	0	0	**255**	0	0	0	0	0	0	2,465	0	0	0	0	**2,465**	**2,720**	0.03%	0.31%	0.17%
46A	Dawson Highway (Gladstone - Biloela)	60061	0.000	1.505	197	10	744	675	685	99	2,465	59	0	0	0	**4,934**	20	1	77	70	71	10	255	567	0	0	0	**1,071**	**6,006**	0.58%	0.08%	0.28%
		61083	1.505	2.250	197	10	744	675	685	99	2,465	59	0	0	0	**4,934**	20	1	77	70	71	10	255	567	0	0	0	**1,071**	**6,006**	0.45%	0.10%	0.28%
		60063	2.250	4.445	197	10	744	675	685	99	2,465	59	0	0	0	**4,934**	20	1	77	70	71	10	255	567	0	0	0	**1,071**	**6,006**	0.23%	0.06%	0.15%
		60064	4.445	7.150	197	10	744	675	685	99	2,465	59	0	0	0	**4,934**	20	1	77	70	71	10	255	567	0	0	0	**1,071**	**6,006**	0.38%	0.07%	0.22%
		60065	7.150	**19.350**	197	10	744	675	685	99	2,465	59	0	0	0	**4,934**	20	1	77	70	71	10	255	567	0	0	0	**1,071**	**6,006**	0.48%	0.14%	0.33%
		60066	**19.350**	**21.750**	197	10	744	675	685	99	2,465	59	0	0	0	**4,934**	20	1	77	70	71	10	255	567	0	0	0	**1,071**	**6,006**	0.89%	0.23%	0.59%
		60128	**21.750**	25.640	197	2,371	8,074	2,149	685	99	2,465	59	5,141	122	0	**21,363**	20	2,371	1,839	321	71	10	255	567	720	1,183	0	**7,358**	**28,721**	6.23%	2.06%	4.10%
		60005	25.640	**64.433**	197	2,371	8,074	2,149	685	99	2,465	59	5,141	122	0	**21,363**	20	2,371	1,839	321	71	10	255	567	720	1,183	0	**7,358**	**28,721**	6.35%	2.14%	4.22%
			64.433	**64.888**	99	509	178	1,289	409	54	0	10	2,570	61	0	**5,180**	10	135	44	192	42	6	0	99	360	592	0	**1,479**	**6,659**	1.54%	0.43%	0.98%
			64.888	113.730	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	0.00%	0.00%	0.00%
		61084	113.730	116.835	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	0.00%	0.00%	0.00%
		160067	116.835	119.758	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**	0.00%	0.00%	0.00%
GRC	Duck Holes Road	-	0.000	0.433	99	1862	7,896	861	276	44	2,465	48	2,570	61	0	**16,183**	10	496	1,796	128	29	5	255	468	360	592	0	**4,138**	**20,321**	105.46%	53.94%	88.29%

Appendix K – TIA RPEQ Certification and Authorisation

Certification of Traffic Impact Assessment Report

Registered Professional Engineer Queensland

for

Project Title:	Wooderson Solar Farm OHTL and Switchyard TIA

As a professional engineer registered by the Board of Professional Engineers of Queensland pursuant to the *Professional Engineers Act 2002* as competent in my areas of nominated expertise, I understand and recognise:

- the significant role of engineering as a profession, and that
- the community has a legitimate expectation that my certification affixed to this engineering work can be trusted, and that
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible RPEQ, I certify:

i) I am satisfied that all submitted components comprising this traffic impact assessment, listed in the following table, have been completed in accordance with the *Guide to Traffic Impact Assessment* published by the Queensland Department of Transport and Main Roads and using sound engineering principles, and

ii) where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment, and that

iii) the outcomes of this traffic impact assessment are a true reflection of results of assessment, and that

iv) I believe the strategies recommended for mitigating impacts by this traffic impact assessment,

v) embrace contemporary practice initiatives and will deliver the desired outcomes.

Name:	Andrew Barrie	RPEQ No:	12801
RPEQ Competencies:	Civil	Date:	26 March 2026
Signature:			
Postal Address:	PO Box 9864, Frenchville QLD 4701		
Email:	andrew.barrie@accesstraffic.com.au		

Traffic impact assessment components to which this certification applies	✓
1. Introduction	
Background	✓
Scope and study area	✓
Pre-lodgement meeting notes	N/A
2. Existing Conditions	
Land use and zoning	✓
Adjacent land uses / approvals	✓
Surrounding road network details	✓
Traffic volumes	✓
Intersection and network performance	✓
Road safety issues	✓
Site access	✓
Public transport (if applicable)	N/A
Active transport (if applicable)	N/A
Parking (if applicable)	N/A
Pavement (if applicable)	✓
Transport infrastructure (if applicable)	N/A
3. Proposed Development Details	
Development site plan	✓
Operational details (including year of opening of each stage and any relevant catchment / market analysis)	✓
Proposed access and parking	✓
4. Development Traffic	
Traffic generation (by development stage if relevant and considering light and heavy vehicle trips)	✓
Trip distribution	✓
Development traffic volumes on the network	✓
5. Impact Assessment and Mitigation	
With and without development traffic volumes	✓
Construction traffic impact assessment and mitigation (if applicable)	✓
Road safety impact assessment and mitigation	✓
Access and frontage impact assessment and mitigation	✓
Intersection delay impact assessment and mitigation	✓
Road link capacity assessment and mitigation	✓
Pavement impact assessment and mitigation	✓
Transport infrastructure impact assessment and mitigation	N/A
Other impacts assessment relevant to the specific development type / location (if applicable)	N/A
6. Conclusions and Recommendations	
Summary of impacts and mitigation measures proposed	✓
Certification statement and authorisation	✓



ACCESS TRAFFIC
CONSULTING

TRAFFIC IMPACT ASSESSMENTS | SITE FEASIBILITY STUDIES | INTERSECTION ANALYSIS
ROAD SAFETY AUDITS | ROAD SAFETY INVESTIGATIONS | PAVEMENT IMPACT ASSESSMENTS
TRANSPORT ROUTE ASSESSMENTS | TRANSPORT PLANNING | ACCESS MANAGEMENT STATEGIES
PEER REVIEWS | PARKING FACILITY DESIGN | SERVICE FACILITY DESIGN

Appendix O

Bushfire Management Plan

Land and environment consultants

Bushfire management plan

Proposed overhead transmission line and switchyard | Wooderson Solar Farm | Dawson Highway
Mount Alma | Queensland
Prepared for AECOM Australia | 14 April 2026

Land and Environment Consultants Pty Ltd
Suite 5, 66 Bay Terrace
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Bushfire management plan

Final

Report 26014 | AECOM Australia Pty Ltd | 14 April 2026

Approved by Robert Janssen

Position Managing principal

Signature 

Date 14 April 2026

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at or under the times and conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

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Document control

Version	Date	Prepared by	Reviewed by
Draft	16 March 2026	R. Janssen	LEC
Draft V1	2 April 2026	R. Janssen	LEC
Final	14 April 2026	R. Janssen	LEC

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Appendix

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Appendix 2 Wooderson Solar Farm Overhead Transmission Line Approvals Context
Appendix 3 Bushfire overlay mapping
Appendix 4 Proposal Plans
Appendix 5 Radiant heat exposure assessment
Appendix 6 Bushfire hazard overlay code
Appendix 7 Objectives of the Development Scheme

Disclaimer

Notwithstanding the precautions adopted in this report, it should always be remembered that bushfires burn under a range of conditions. An element of risk, no matter how small always remains, and although AS 3959-2018 is designed to improve the performance of such buildings, there can be no guarantee, because of the variable nature of bushfires, that any building will withstand bushfire attack on every occasion.

It should be noted that upon lodgement of a development proposal, State Government, council and/or the fire service may recommend additional construction requirements.

Although every care has been taken in the preparation of this report, Land and Environment Consultants Pty Ltd accept no responsibility resulting from the use of the information in this report.

1 Introduction

The proposed Wooderson Solar Farm is located approximately 40 kilometres (**km**) south-west of Gladstone in Central Queensland, within the Gladstone Regional Council (**GRC**) Local Government Area (**LGA**). The Proponent is Wooderson Solar Development Co Pty Ltd, a wholly owned subsidiary of Central Queensland Power Development Co Pty Ltd (**CQP**), which is a joint venture between RES Australia Pty Ltd (RES) and Energy Estate (CQP) Holdings Pty Ltd as trustee for Energy Estate (CQP) Holdings Trust (Energy Estate).

The solar farm is proposed to have a generating capacity of up to 450-megawatts (**MW**) with a 450 MW direct current coupled battery energy storage system (**BESS**) with storage capacity of up to 3,600 megawatt-hours. This will be connected to the National Electricity Market (**NEM**) through a new overhead transmission line and will also include construction of associated infrastructure including access tracks, fencing and operations and maintenance facilities.

The solar farm, BESS and associated infrastructure will be assessed in a Development Application (**DA**) by the State Assessment and Referral Agency, identified as Development Application 1 (**DA1**) and does not form part of this assessment.

The works outlined in this assessment include connection to the NEM through a 275 kilovolt (**kV**) overhead transmission line (**OHTL**), switchyard and associated ancillary infrastructure for these elements only (**the Project**). A total of approximately 11 km of OHTL supported by approximately 45 monopoles is proposed from the solar farm substation (assessed in DA1) to the new switchyard for connection to Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project.

The Project extends over seven allotments within the GRC LGA which (including part Lot 1 on RP616641) are subject to assessment under the Gladstone Regional Council Planning Scheme 2017 (Version 2) (**Planning Scheme**) and one allotment (part Lot 1 on RP616641) requiring assessment under the Callide Infrastructure Corridor State Development Area (**SDA**) subject to the Callide Infrastructure Corridor State Development Area Development Scheme (September 2012) (**Development Scheme**). The location of the Project is shown in the Wooderson Solar Farm Overhead Transmission Line Location plan provided in Appendix 1.

As the OHTL extends across two planning instruments, the assessment provided within this report will support two separate DAs:

- Development Application 2 (**DA2**) – Transmission Corridor and Switchyard within the GRC LGA to be assessed by GRC with referral to concurrence and advice agencies.
- Development Application 3 (**DA3**) – Transmission Corridor within the Callide Infrastructure Corridor SDA to be assessed by the Office of the Coordinator General (OCG).

The areas subject to DA2 and D3 are shown in the Wooderson Solar Farm Overhead Transmission Line Approvals Context plan provided in Appendix 2.

Parts of the allotments subject to DA2 and DA3 are identified as bushfire hazard areas by the *Bushfire hazard overlay map* in the Planning Scheme online mapping system (GRC 2026) (**Bushfire hazard overlay map**) and the *Bushfire prone area map* in the State Planning Policy interactive mapping system (DSDILGP 2026) (**Bushfire prone area map**). Therefore, with respect to bushfire hazard, DA2 is subject to compliance with the Planning Scheme *Bushfire hazard overlay code* (**Bushfire hazard overlay code**) and DA3 is subject to compliance with objectives of the Development Scheme that are relevant to the mitigation of bushfire hazard.

This bushfire management plan (**BMP**) has been prepared in general accordance with technical guidelines in *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire* (QFES 2019) (**BRC guide**) which was prepared to provide technical guidance for the implementation of *Natural Hazards, Risk and Resilience – Bushfire, State Planning Policy State Interest guidance material* (DSDMIP 2019) (**SPP guidance**

material – bushfire). It documents the bushfire hazard assessment and demonstrates how the Project will comply with the Bushfire hazard overlay code and Objectives of the Development Scheme. It includes:

- an introduction (this section) and description of methods and information resources used for the preparation of this BMP;
- project description;
- bushfire hazard assessment;
- identification of bushfire hazards associated with the Project Area and Project;
- a plan for mitigating bushfire hazards; and
- assessment of the Project against the Bushfire hazard overlay code and Objectives of the Development Scheme.

1.1 Method

To meet requirements of the BRC guide, the following tasks were undertaken:

- desktop review of relevant information, including:
  - Bushfire hazard overlay map and Bushfire prone area map;
  - fire history data in Queensland Globe (DR 2026); and
  - data in the Queensland Spatial Data Catalogue (DNRMMRRD 2026) (**Qspatial**) which is referenced in the *Bushfire Resilient Communities Mapviewer User Guide* (QFD 2025), ie regional ecosystem (**RE**) map, vegetation hazard class (**VHC**) map and severe fire weather map;
- inspection of land adjacent to the Project for vegetation characteristics, current land management practices, slope and evidence of previous fires;
- bushfire hazard assessment in general accordance with the method in the BRC guide;
- radiant heat exposure assessment using the Fire Protection Association of Australia *BAL calculator V4.9* (**BAL calculator**) which models the 'method 2' bushfire attack level assessment procedure in the *Australian Standard* (**AS 3959-2018**) *Construction of buildings in bushfire prone areas*; and
- assessment of the Project against the Bushfire hazard overlay code and Objectives of the Development Scheme.

Aerial imagery of the Project Area and measuring tools were accessed online from Google Earth and Queensland Globe to assist with validating observations and measurements made during the field inspection.

1.2 Bushfire overlay mapping

The Bushfire hazard overlay map and Bushfire prone area map are provided in Appendix 3. They identify that parts of the allotments subject to DA2 and DA3 are affected by medium potential bushfire intensity areas and potential impact buffer areas. They do not identify grassfire prone areas which are identified in this BMP on the basis of VHCs defined as grassfire prone in figure 14 of the BRC guide.

Please note, the terms 'bushfire hazard area' and 'bushfire prone area' have the same meaning. Both terms mean an area of vegetation that is determined to have a potential bushfire intensity > 4,000 kilowatts/metre (**kW/m**) and the land within 100 m of this vegetation. The term bushfire hazard area is favoured in this BMP.

1.3 Suitably qualified person

This BMP was prepared by Robert Janssen who is a suitably qualified and experienced bushfire management consultant with respect to criteria in section 10.2 of the BRC guide.

Robert is the managing principal at LEC and has over 25 years of experience in bushfire planning and operations. He has prepared bushfire management plans for residential, commercial and industrial property developments, utilities, government facilities and conservation estates.

Robert's formal qualifications as an environmental scientist and consulting experience are coupled with 10 years of experience as a nationally accredited fire-fighter with the national parks and wildlife service in New South Wales and Queensland.

2 Project description

This chapter provides a description of the Project.

2.1 Project overview

The Project is for the purposes of connecting the solar farm and BESS to the NEM and comprises of the following components:

- approximately 11 km of 275 kV OHTL, contained within a 60 m wide easement;
- new switchyard for connection to Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project;
- access tracks; and
- temporary laydown and construction compound areas.

For the purposes of this application, the terms Project Area and Project Disturbance Footprint have been used to define the Project and to delineate between permanent impact areas and temporary impact areas. They are identified in the Proposal Plans in Appendix 4 and are explained as follows.

Project Area

The Project infrastructure and vehicular access will be situated within the bounds of the Project Area which comprises of freehold allotments, Dawson Highway Road Reserve, Duck Holes Road Reserve and two unnamed road reserves. The Project Area has a total area of 2675.91 hectares (**ha**).

Project Disturbance Footprint

The Project Disturbance Footprint (estimated to be 206.619 ha) is defined as including permanent and temporary components for construction:

- Permanent components include the following:
  - approximately 11 km of 275 kV OHTL, contained within a 60 m wide easement;
  - approximately 45 monopoles, contained within the 60 m wide easement;
  - new switchyard (either Option A or Option B);
  - access tracks located within the 60 m wide easement that will be used for ongoing maintenance;
  - access tracks (where located outside the easement) that will be used for ongoing maintenance;
  - vegetation clearing; and
  - security fencing.
- Temporary components include the following:
  - Option A and Option B switchyard construction compound area;
  - Option A and Option B switchyard temporary laydown area; and
  - vegetation clearing.

The Project Disturbance Footprint includes a buffer around the proposed infrastructure to allow for design refinement during detailed design.

2.1.1 Overhead transmission line

The proposed OHTL extends approximately 11 km from the solar farm substation, traverses west to the proposed new switchyard and connects into the Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project.

The OHTL will be contained within a 60 m wide easement, which is shown in the Proposal Plans provided in Appendix 4. The OHTL will be located with the jurisdiction of the Planning Scheme and Development Scheme as shown in the Wooderson Solar Farm Overhead Transmission Line Approvals Context plan provided in Appendix 2. The following delineates between the infrastructure and works located within each jurisdiction:

The OHTL within the Planning Scheme jurisdiction will:

- traverse 7 freehold allotments;
- comprise approximately 10 km of OHTL;
- be partly within and adjoining Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project and existing Calvale to Wurdong 275kV Transmission Line, where the OHTL will under cross the existing and proposed transmission lines;
- travel adjacent to Option A and Option B switchyard, construction compound and construction laydown area, which also adjoins Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project; and
- require approximately 43 monopoles with a maximum height of 50 m.

  The monopoles will be constructed of either steel or concrete. Monopoles will have a foundation radius of approximately 15 m, with some monopoles (particularly corner monopoles) requiring stays. The final requirements for stays will be confirmed during detailed design stage.

  The indicative monopoles are shown in Photographs 2.1-2.3 and the indicative monopole locations are shown in the Proposal Plans in Appendix 4.

  It is noted that these are indicative locations only and will be subject to refinement during detailed design which will consider impact assessment findings and approval requirements.

The OHTL within the Development Scheme jurisdiction will:

- traverse 1 freehold allotment;
- comprise approximately 840 m of OHTL;
- traverse an easement containing gas pipelines within the Development Scheme; and
- require up to 2 monopoles with a maximum height of 50 m.

  The monopoles will be constructed of either steel or concrete. Monopoles will have a foundation radius of appropriately 15 m, some monopoles particularly corner monopoles requiring stays. The foundations of a third monopole may partially be located within the Development Scheme jurisdiction, with the centre of the pole located immediately west of the Development Scheme jurisdiction.

  The indicative monopoles are shown in Photographs 2.1-2.3 and the indicative monopole locations are shown in the Proposal Plans in Appendix 4.



Photograph 2.1 Example of 275 kV OHTL under construction (Cowell Electric, 2025)



Photograph 2.2 Example of 275 kV OHTL (Australian Power Industry Partners, 2025)



Photograph 2.3 275 kV Example of OHTL with access track (Cowell Electric, 2025)



Photograph 2.4 Example of Powerlink switchyard (Cowell Electric, 2025)

2.1.2 Switchyard

A new switchyard is proposed to be located at the western end of the OHTL for a cut-in connection to Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement. The final location of this switchyard is awaiting confirmation from Powerlink, with two potential locations assessed for the purposes of this application being Option A (red) and Option B (blue), shown in the Proposal Plans in Appendix 4. Both options are proposed to be included within the Project Disturbance Footprint to allow for flexibility in the final location and allow for continued discussions with Powerlink.

The switchyard includes a cleared level platform of approximately 170 m by 80 m for connection of Wooderson Solar Farm, subject to confirmation with Powerlink. There will also be space for potential future expansion contained within a security fence. It will include switchgear to isolate circuits in an emergency, as well as devices to monitor and communicate the performance or circuits.

The Project Disturbance Footprint includes the maximum possible area required for the switchyard.

The switchyard will ultimately be transferred to the ownership of Powerlink, the Transmission Network Service Provider. This is anticipated to occur upon commissioning of the switchyard. However, the timing is subject to confirmation with Powerlink. An example of a Powerlink switchyard is shown in Photograph 2.4.

2.1.3 Site access and internal access tracks

A proposed new direct access from the Dawson Highway is not proposed as part of DA2 and DA3. However, direct assess has been proposed as part of DA1.

DA2 will utilise the proposed new access from the Dawson Highway and will provide construction and maintenance access to the southern Project Area.

To limit disturbance, internal access within the southern section of the Project Area will use the approved access tracks as part of DA1, with the exception of some additional sections that will provide specific access to the OHTL. These additional access tracks will be up to 7 m wide in accordance with Powerlink access track specifications and are shown in the Proposal Plans in Appendix 4.

Access to the Project Area to the north of the Dawson Highway will be via Duck Holes Road and predominantly within the 60 m wide easement. These access tracks will also be up to 7 m wide in accordance with Powerlink access track specifications. Some sections are located outside the easement to provide access to switchyard Option A and Option B Construction Compound Area and switchyard Option A and Option B Temporary Laydown Area.

Access to the switchyard will be via Duck Holes Road and either via the same track within the OHTL easement, or via a second track immediately adjacent to the OHTL easement. This will be confirmed with Powerlink during detailed design.

Access tracks may cross waterways or watercourses within the Project Area. Where required, culverts will be installed. Where achievable, these will be designed in accordance with the *Accepted Development Requirements for operational work that is constructing and raising Waterway Barrier Works* (FQ 2025) or as amended, or form part of secondary approvals during detailed design.

2.2 Construction

2.2.1 Timeframes

Construction of the OHTL and switchyard is estimated to take approximately 15 months. It is anticipated that these activities will commence at the same time and indicatively anticipated to commence in March 2029.

Construction timeframes will be dependent on securing Project approvals, timing and staging of construction of other assets including the solar farm and Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project.

Note that these timeframes are based on construction of the assets only. The OHTL will only commence export of electricity during commissioning of the solar farm.

2.2.2 Workforce and construction hours

Preliminary estimates of the construction workforce required for the Project will be up to 80 full time equivalent (**FTE**), comprising up to approximately 50 FTE for the switchyard and 30 FTE for the OHTL.

Construction activities will generally be limited to daylight hours and will vary depending on the season. However, it is expected that most works will occur during standard construction hours of 7 am to 6 pm, Monday to Saturday.

During certain construction activities, works may be required to be undertaken outside of standard hours, ie Sunday or night-time periods. In these instances, appropriate mitigation and management measures will be incorporated into the Construction Environmental Management Plan (**CEMP**). The

CEMP will serve as an overarching management plan that will manage and monitor impacts during construction.

2.2.3 Field activities

The list below provides a standard approach to the progression of construction activities that will occur for the Project:

- site set out;
- pre-clearing survey;
- road and rail approvals;
- site establishment (construction compounds, laydown areas, equipment and materials);
- installation of fencing, gates, grides and clean down bays;
- earthworks for access tracks and hardstand areas;
- vegetation clearing;
- monopole site benching;
- foundation installation;
- structure assembly and erection;
- conductor and earth wire stringing;
- commissioning of all components;
- reliability testing;
- rehabilitation of temporary disturbance areas; and
- demobilisation.

Some deviation from the standard approach is anticipated for the sections of Project Disturbance Footprint intersecting gas pipelines. Subject to agreement with the pipeline owner, this may include:

- temporary protection, ie matting, plates, exclusion fencing, over pipelines.
- access and/or construction controls such as vehicle load limits, vibration restrictions, or controlled access tracks as required; and
- modified stringing set-up, if required, to avoid ground contact or maintain specific clearance over the pipeline.

2.2.4 Site set out

Following cadastral survey of the OHTL easement, the location of the OHTL within the easement will be set out. Structure sites will be marked and orientated using design information. Structure locations will be selected based on the technical characteristics of the structures and conductors, topographical constraints, landholder requirements and environmental considerations.

Easement boundaries will be identified, and the Project Disturbance Footprint will be marked prior to vegetation clearing.

2.2.5 Laydown and construction compound

Temporary ancillary facilities would be required during construction, and would typically include:

- construction compounds involving a storage area, offices and meeting room, ablution facilities, canteen and parking; and
- laydown areas involving areas suitable for storing materials, plant and equipment.

While the construction compounds and laydown areas could be located anywhere within the Project Disturbance Footprint, three indicative construction compounds and seven indicative laydown areas are identified in the Proposal Plans provided in Appendix 4.

These facilities would be compacted with gravel to allow for all weather access. Once construction is complete, they would be revegetated or have infrastructure installed dependent on their location within the Project layout.

2.2.6 Infrastructure crossings

Road and Rail

The Project Disturbance Footprint will traverse two unnamed local road corridors and one State-controlled road, ie the Dawson Highway. Whilst the Project Disturbance Footprint is located south of the Moura Railway, the Project does not intersect or traverse the railway corridor.

Transmission line

The Project Disturbance Footprint will be partly within and adjoining Powerlink's proposed Calvale to Calliope River Transmission Line Reinforcement Project and Calvale to Wurdong 275kV Transmission Line, where the OHTL will under cross the existing and proposed transmissions lines.

Gas pipelines

The Project Disturbance Footprint will be partly within a gas pipeline easement within the within the Callide Infrastructure Corridor SDA. The easement contains gas pipelines owned by Santos GLNG Pty Ltd (Petroleum Pipeline Licence [PPL] 66), Australia Pacific LNG Gladstone Pipeline Limited (PPL 163), and APA WGP Pty Ltd (PPL 154).

2.2.7 Plant and equipment

The plant and equipment required for the construction of the Project would include:

- earthmoving machinery and equipment for site preparation, ie excavators, compactors, rollers and graders;
- pile-driving equipment, ie piling rigs;
- specialised power line stringing equipment;
- cable trenching and laying equipment;
- forklifts and cranes;
- machinery and equipment for substation and inverter infrastructure establishment;
- manual tools, including compressed air and electric tools;
- water trucks for dust suppression;
- diesel generator/s; and
- heavy vehicles, utility vehicles and light vehicles.

2.2.8 Demobilisation and rehabilitation

All disturbed areas impacted from construction will be reinstated at the end of construction through the implementation of the CEMP.

2.3 Operation and maintenance

During operation, normal practice is for maintenance staff to carry out scheduled inspections of the OHTL easement, switchyard and access tracks. Maintenance timing will depend on the risk of vegetation growth and the requirement for emergency repairs.

The Project will be operated in accordance with an Operational Environmental Management Plan.

2.4 Decommissioning

At the end of the Wooderson Solar Farm's operational life, it is anticipated to either be upgraded (subject to additional planning approvals, as required) or decommissioned. The decommissioning of the solar farm would result in the OHTL being no longer required and so it will also be decommissioned. It is anticipated that the switchyard would remain operational as a Powerlink network asset.

Decommissioning the OHTL would be in agreement with the landholders, and would involve removing infrastructure, returning the Project Area to its pre-existing land use as far as practicable, and easements maybe surrendered to the property owner. Some infrastructure such as access tracks may be retained where agreed with and beneficial to the landowner.

Where feasible and practical all dismantled and decommissioned infrastructure and equipment will be recycled. It is anticipated that more material would be recyclable by the end of the operational life than is currently possible, as recycling industries establish. Structures and equipment that cannot be recycled would be disposed of at an approved waste management facility in accordance with statutory requirements.

Vehicle movements and personnel requirements during the decommissioning phase are expected to be similar or less than the construction phase.

3 Bushfire hazard assessment

This chapter provides details about the desktop review, field inspection and bushfire hazard assessment.

3.1 Severe fire weather

The severe fire weather map in Qspatial indicates the 5 % annual exceedance probability forest fire danger index (**FFDI**) for the Project Area is 66. This FFDI value has been used for the potential bushfire intensity calculations in Section 3.4 and the radiant heat exposure assessment in Section 5.6.

For the radiant heat exposure assessment of grassfire attack, the FFDI value of 66 has been converted to a grassfire danger index (**GFDI**) value of 94, based on the FFDI to GFDI conversion in Table B1 of AS 3959-2018.

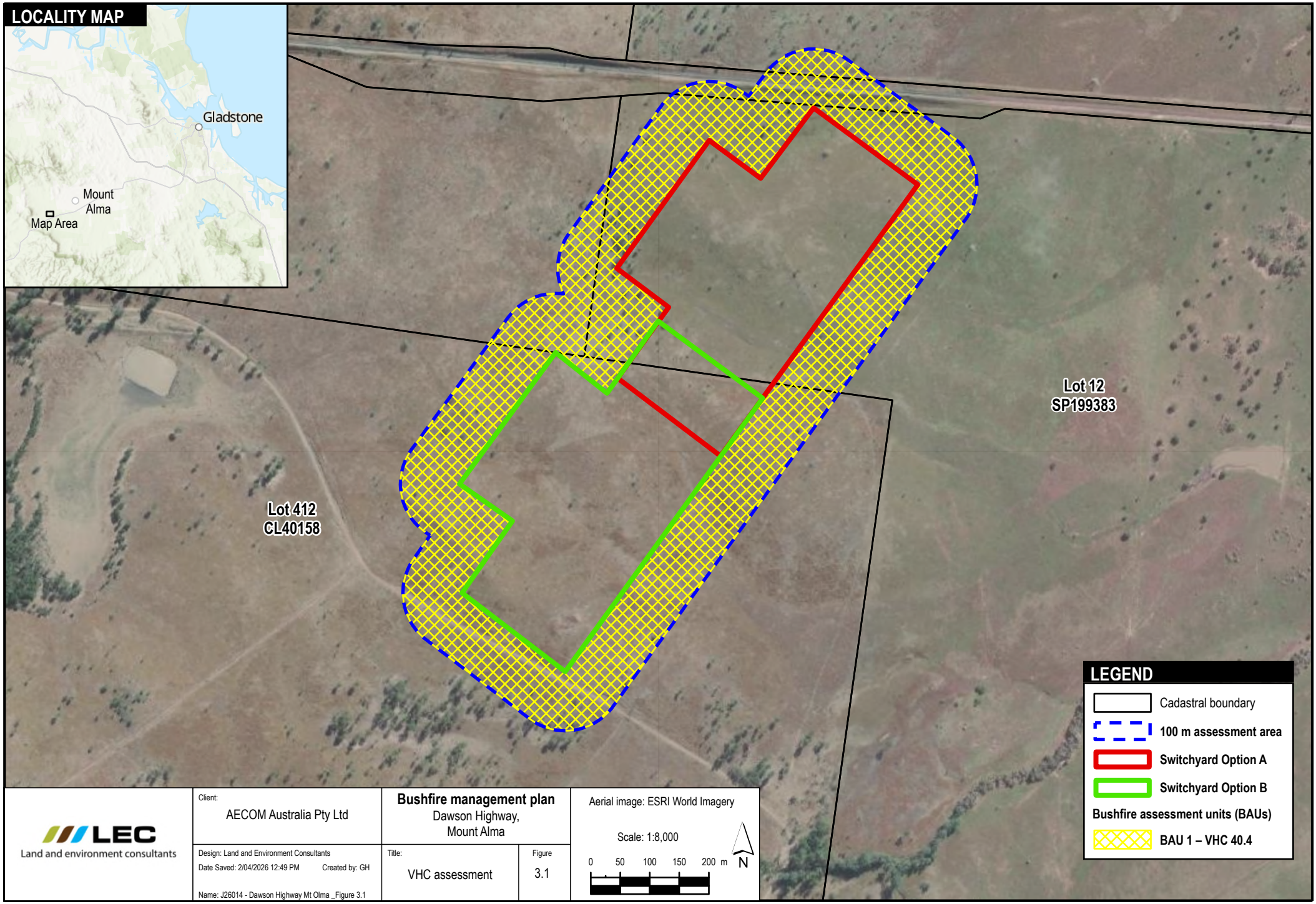
3.2 Fire history

Fire history data indicates there have been numerous bushfires within and adjoining the Project Area during the past 20 years. The data does not indicate whether the fires were planned burns or bushfire emergencies.

3.3 Field inspection

LEC inspected the Project Area from 13-15 November 2024 and 2 March 2026. The site inspection from 13-15 November 2024 was undertaken for the Wooderson Solar Farm BMP, while the Project Area inspection on 2 March 2026 focused on the switchyard options for the Project. Observations were recorded about current land use and management, vegetation characteristics, the slope of land and evidence of previous fires.

A bushfire assessment unit (**BAU**) has been used to describe characteristics of vegetation within 100 m of the switchyard options and is shown in Figure 3.1. Table 3.1 provides a summary of the VHC data in Qspatial, observations from the site inspection and notes about the VHC assessment of the BAU. Features of the BAU are shown in Photographs 3.1-3.4.



LEC
Land and environment consultants

Client: AECOM Australia Pty Ltd

Design: Land and Environment Consultants
Date Saved: 2/04/2026 12:49 PM Created by: GH
Name: J26014 - Dawson Highway Mt Olma _Figure 3.1

Bushfire management plan
Dawson Highway,
Mount Alma

Title: VHC assessment

Figure 3.1

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Table 3.1 Site observations

BAU	VHC data in Qspatial	VHC	Notes
BAU 1	VHC 40.4 *Continuous low grass or tree cover* (**VHC 40.4**)	VHC 40.4	BAU 1 consists of grasslands which are used for grazing livestock. The entirety of the BAU appeared to have been burnt recently. VHC 40.4 has continuous grassfire fuel and is classified as grassfire prone in figure 14 of the BRC guide.

Inspection beyond the assessment area shown in Figure 3.1 identified bushland vegetation (including regrowth) on steeper sloping land, creeks and drainage lines to correlate with VHC 17.2 *Dry woodlands dominated by poplar box, silver leaved ironbark or White's ironbark on sand or depositional plains* (**VHC 17.2**) and VHC 16.2 *Eucalyptus dominated woodland on drainage lines and alluvial plains* (**VHC 16.2**). Examples of these VHCs are shown in Photograph 3.5 and Photograph 3.6, respectively.



Photograph 3.1 VHC 40.4 to the north of the switchyard options



Photograph 3.2 VHC 40.4 to the south of the switchyard options



Photograph 3.3 VHC 40.4 to the east of the switchyard options



Photograph 3.4 VHC 40.4 to the west of the switchyard options



Photograph 3.5 Example of VHC 17.2 beyond the assessment area



Photograph 3.6 Example of VHC 16.2 beyond the assessment area

3.4 Potential bushfire intensity calculations

The potential bushfire intensity of BAUs was determined using the Queensland Public Safety Business Agency *Potential Bushfire Intensity Calculator* (version November 2014) which is an Excel spreadsheet calculator that models the bushfire hazard assessment method in Section 4.2.4 of the BRC guide.

Section 3.1 of the BRC guide defines bushfire hazard classes as follows:

- very high – potential bushfire intensity > 40,000 kW/m;
- high – potential bushfire intensity 20,000-40,000 kW/m;
- medium – potential bushfire intensity 4,000-20,000 kW/m; and
- non-bushfire hazard – potential bushfire intensity < 4,000 kW/m.

Results of the potential bushfire intensity calculations which determine the bushfire hazard class of the BAU shown in Figure 3.1 is presented in Table 3.2.

Table 3.2 Potential bushfire intensity

BAU	VHC	Potential fuel load tonnes/ha[1]	Slope (°)	Potential bushfire intensity (kW/m)	Bushfire hazard class
BAU 1	VHC 40.4	5	5	1,444[2]	Non-bushfire hazard class

Notes 1 Potential fuel load taken from the BRC guide.
2 VHC 40.4 is classified as grassfire prone in figure 14 of the BRC guide.

Results of potential bushfire intensity calculations for areas of VHC 17.2 and VHC 16.2 on steeper sloping land, creeks and drainage lines beyond the assessment area determined they have a potential bushfire intensity of 4,395 kW/m to 6,757 kW/m and are medium potential bushfire intensity areas.

3.5 Bushfire hazard areas

Results of the potential bushfire intensity calculations in Table 3.2 and areas of VHC 17.2 and VHC 16.2 generally align with the Bushfire hazard overlay map and Bushfire prone area map, ie medium potential bushfire intensity areas are confined to steeper sloping land, creeks and drainage lines. Most of the Project Area, including the location of the switchyard options, is classified as VHC 40.4 and is a grassfire hazard. Grassfire hazard is not a hazard category acknowledged by the Bushfire hazard overlay map and Bushfire prone area map.

Results confirm that DA2 must comply with the Bushfire hazard overlay code and DA3 must comply with Objectives of the Development scheme that are relevant to the mitigation of bushfire hazard.

4 Bushfire hazards associated with the Project Area

This chapter identifies bushfire hazards associated with the Project Area.

4.1 Fire danger season

The fire danger season at the Project Area starts in August, peaks in September and will begin to fall when consistent summer rainfall occurs. Typically, the worst fire weather conditions will be experienced during the fire danger season when the wind direction is from the north or west.

An FFDI of 66 will be associated with hot, dry and windy conditions. If a bushfire starts and takes hold under these conditions, it will be difficult to control and fast moving in large areas of unmanaged vegetation.

4.2 Fire history

As discussed in Section 3.2, fire history data indicates there have been numerous bushfires within and adjoining the Project Area during the past 20 years. Given the Project is surrounded by grassfire prone vegetation, it is almost certain that the Project will be exposed to grassfire attack in the future.

4.3 Potential directions of bushfire attack

The Project could be exposed to grassfire attack from any direction. Grassfire attack on the switchyard options is further analysed in Section 5.6.

4.4 Potential bushfire hazard from adjacent land use

The Project Area adjoins farming land which has large continuous areas of grassland vegetation. The operation of equipment and machinery and hot works associated with agricultural activities could result in unplanned fires that impact on the Project Area, particularly on days with a fire danger rating of high or above. In addition, landowners may light fires to burn waste or for fuel hazard reduction. Therefore, the adjoining agricultural land use is a potential bushfire hazard to the Project.

The Moura system railway and the Dawson Highway are adjacent to the Project Area. Activities within these railway and highway corridors, eg trains breaking, hot works, smoking, etc, have potential to cause a bushfire which could have an impact on the Project.

Operation of the Wooderson Solar Farm is not considered to be a bushfire hazard to the Project. Perimeter fire breaks, asset protection zones (**APZs**), access tracks and fire-fighter water supply tanks will be maintained inside the Project Disturbance Footprint and will reduce the risk of a facility fire escaping and having an impact on the adjoining landscape.

4.5 Water and access for emergency services

The Project Area is not serviced by mains water or hydrants.

There are numerous dams within and adjacent to the Project Area. However, the standard of vehicle access to these dams and the reliability of their supply is unknown and they should not be relied upon.

For the section of OHTL to the south of the Dawson Highway, the Project Disturbance Footprint partially intersects with the Wooderson Solar Farm (subject to a separate planning approval). Wooderson Solar Farm will have fire-fighter water storage tanks within each security fence compound and at the operations and maintenance facility. No additional fire-fighting water tanks are required to support any fire-fighting activities related to this section of the OHTL.

The Project Area is serviced by the Dawson Highway which will provide access and egress for emergency services.

5 Bushfire hazards associated with the Project

This chapter identifies potential bushfire hazards associated with the Project.

5.1 Siting and design

The Project will be designed to mitigate the risk of bushfire hazard determined by the bushfire hazard assessment in this BMP.

The topography of the Project Disturbance Footprint and Project Area does not involve landscape features that exacerbate the risk of bushfire hazard or grassfire hazard or influence the layout of the Project, ie there are no steep slopes or ridgelines.

5.2 Land use

The Project does not involve uses listed in acceptable outcome AO2 of the Bushfire hazard overlay code that are not to be located on land within a confirmed medium, high or very high bushfire hazard area.

The Bushfire hazard overlay code requires 'community infrastructure' to be located and designed to function effectively at all times. Although schedule 1 of the Planning Scheme does not define community infrastructure, the Project is treated as community infrastructure in this BMP, which is consistent with informal advice previously received from the Bushfire Resilience and Operations Support Branch of the Rural Fire Service Queensland.

With respect to Objectives of the Development Scheme and the mitigation of bushfire hazards, the Project is considered to be a compatible land use with underground pipelines.

5.3 Hazardous materials

The Project does not involve hazardous materials in the context of bushfire hazard as explained in the core concepts of the SPP guidance material – bushfire. In the context of bushfire hazard, hazardous materials are:

- hazardous chemicals that are present at the levels or in the quantities that would constitute the use being a hazardous chemical facility (as defined in the *Planning Regulation 2017*); and
- hazardous materials that are present in the quantities identified in the *Work Health and Safety Regulation*, schedule 15.

During the construction and operation of the Project, any storage or handling of hazardous materials will be in accordance with *Managing risks of hazardous chemicals in the workplace – Code of Practice* (SWA 2023), applicable safety data sheets, and otherwise in accordance with Queensland *Work Health and Safety Act 2011* and its regulations.

5.4 Fire-fighter water supply

The Project will include a static water supply tank (s) near the switchyard with fire-fighter fittings designed to comply with specifications for water storage tanks in the Bushfire hazard overlay code.

5.5 Access and egress

Access and egress for the Project will be as described in Section 2.1.3.

5.6 Radiant heat exposure

The Bushfire hazard overlay code does not identify a radiant heat exposure outcome to determine setbacks from hazardous vegetation and above ground infrastructure. Therefore, this BMP defers to the SPP guidance material – bushfire and BRC guide.

The SPP guidance material – bushfire and BRC guide require above ground infrastructure to be set back from hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 29 kW/m^2 at the above ground infrastructure. The exception is where the above ground infrastructure is associated with community infrastructure for essential services, ie the switchyard, which must be setback from hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 10 kW/m^2.

The setback required to achieve a radiant heat flux level ≤ 10 kW/m^2 at the switchyard is referred to in this BMP as an APZ. The purpose of the APZ is to minimise the impact of bushfire attack on above ground infrastructure and to provide access and space for fire-fighters to operate.

The radiant heat profile of grassfire attack on the switchyard was analysed with the BAL calculator. Inputs used in the BAL calculator and results are provided in Appendix 3. Results have been used to design the APZ specified in Section 6.1.

During the construction phase of the Project there will be a temporary construction compound and laydown area for the switchyard. An APZ with a nominal cleared width of 10 m is recommended around the perimeter of the temporary infrastructure.

Please note, the 275 kV OHTL and monopoles will be located within a 60 m wide easement where vegetation will be managed during construction and operation phases in accordance with Powerlink's vegetation management specifications for high voltage transmission lines (Powerlink 2023), which is illustrated in Figure 5.1. Therefore, a radiant heat exposure assessment to advise an APZ is not required for this infrastructure, ie Powerlink's vegetation management specifications are designed to provide the necessary APZ of the 275 kV OHTL.

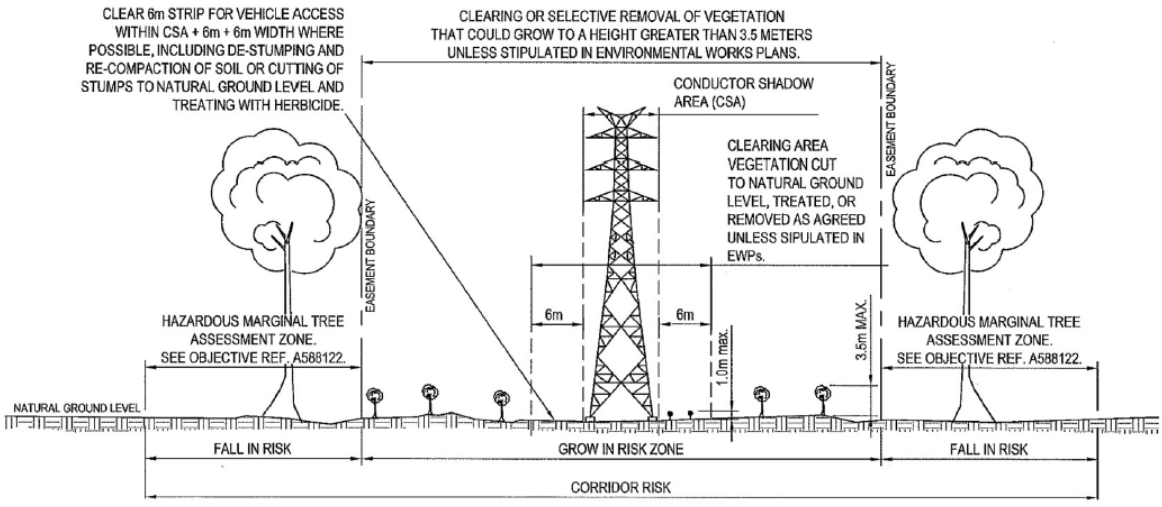


Figure 5.1 Vegetation management specification for high voltage overhead transmission lines

6 Bushfire mitigation plan

This chapter identifies mitigation measures that must be implemented as part of the Project to comply with the Bushfire hazard overlay code.

It is the total of the mitigation measures in this chapter that will reduce the risk of bushfire hazard to a tolerable level. Failure to implement all actions in their entirety could result in an increased level of exposure to bushfire hazards.

6.1 Asset protection zone

A 25 m wide APZ is required around the switchyard infrastructure (either option A or option B) as indicatively shown in Figure 6.1. The APZ will be finalised during detailed design based on the final infrastructure layout and will be contained within the Project Disturbance Footprint.

The APZ must be cleared of all vegetation and have a mineral earth or grass surface. If a grass surface is chosen, it must be maintained at a nominal height of ≤ 10 centimetres (or as low as slashing machinery will permit) during the fire danger season.

An access track must be provided within the APZ at the switchyard. Specifications for the access track are provided in Section 6.4.

A 10 m wide APZ must be established and maintained around temporary construction facilities. An access track is not required within these APZs.

6.2 Overhead transmission line easement

Vegetation within the 60 m wide easement for the 275 kV OHTL and monopoles must be maintained during operation in accordance with Powerlink's vegetation management specifications for high voltage transmission lines (Powerlink 2023), which is illustrated in Figure 5.1.

6.3 Switchyard compound

The switchyard must have a mineral earth surface and be maintained free of vegetation.

6.4 Access tracks

Access tracks must be designed, constructed and maintained in accordance with Powerlink's guideline for transmission line access tracks (Powerlink 2021).

6.5 Fire-fighting water supply

A 20,000 litre fire-fighter water storage tank must be installed adjacent to the switchyard. It must be made of metal or concrete and be kept full of water. It must not be used for activities other than fire management.

The fire-fighter water storage tanks must be fitted with Rural Fire Brigade (**RFB**) fire-fighter fittings – it is recommended contacting the local RFB to confirm the standard RFB fittings in use at the locality. All above ground fittings, ie connections, valves and pipes, must be made of metal.

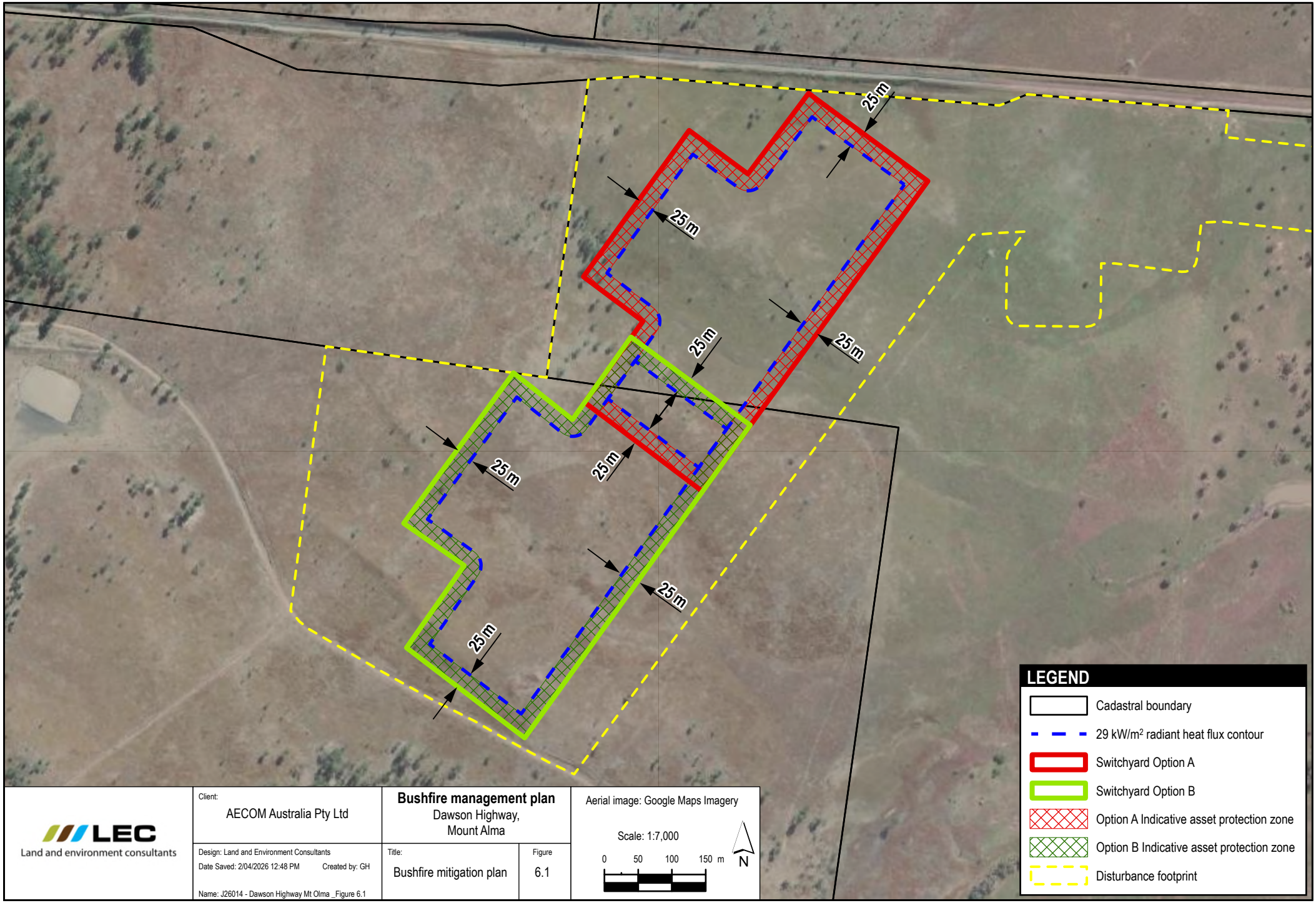
The fire-fighter water storage tank must have a hardstand area within 4 m of the outlet point. The hardstand areas must have a load bearing capacity and dimensions suitable for a vehicle with a mass of 15 t and an axel load of 9 t.

The water outlet point for the fire-fighter water storage tank must be identified by reflective wayfinding signage. An example of the wayfinding signage is provided below. It must have a reflective white background and black symbology which is at least 125 millimetres high.



6.6 Vegetation waste

Woody vegetation cleared from the Project Disturbance Footprint during the construction phase must be removed from the Project Area or mulched, in which case the mulch can be re-used within the Project Disturbance Footprint for rehabilitation.



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Land and environment consultants

Client:
AECOM Australia Pty Ltd

Bushfire management plan
Dawson Highway,
Mount Alma

Aerial image: Google Maps Imagery

Scale: 1:7,000

0 50 100 150 m

N

Design: Land and Environment Consultants
Date Saved: 2/04/2026 12:48 PM Created by: GH
Name: J26014 - Dawson Highway Mt Olma _Figure 6.1

Title: Bushfire mitigation plan

Figure: 6.1

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7 Conclusion

This BMP was prepared by a suitably qualified and experienced person based on the criteria in section 10.2 of the BRC guide and is in general accordance with the BRC guide.

A bushfire hazard assessment determined the Project Disturbance Footprint is primarily affected by grassfire hazard area and it is recommended that the Project is subject to compliance with the Bushfire hazard overlay code and Objectives of the Development scheme that are relevant to the mitigation of bushfire hazard.

Mitigation measures that must be implemented as part of the Project are specified in Chapter 6. With the implementation of these mitigation measures the Project complies with the Bushfire hazard overlay code as demonstrated in Appendix 6 and achieves relevant Objectives of the Development scheme as demonstrated in Appendix 7.

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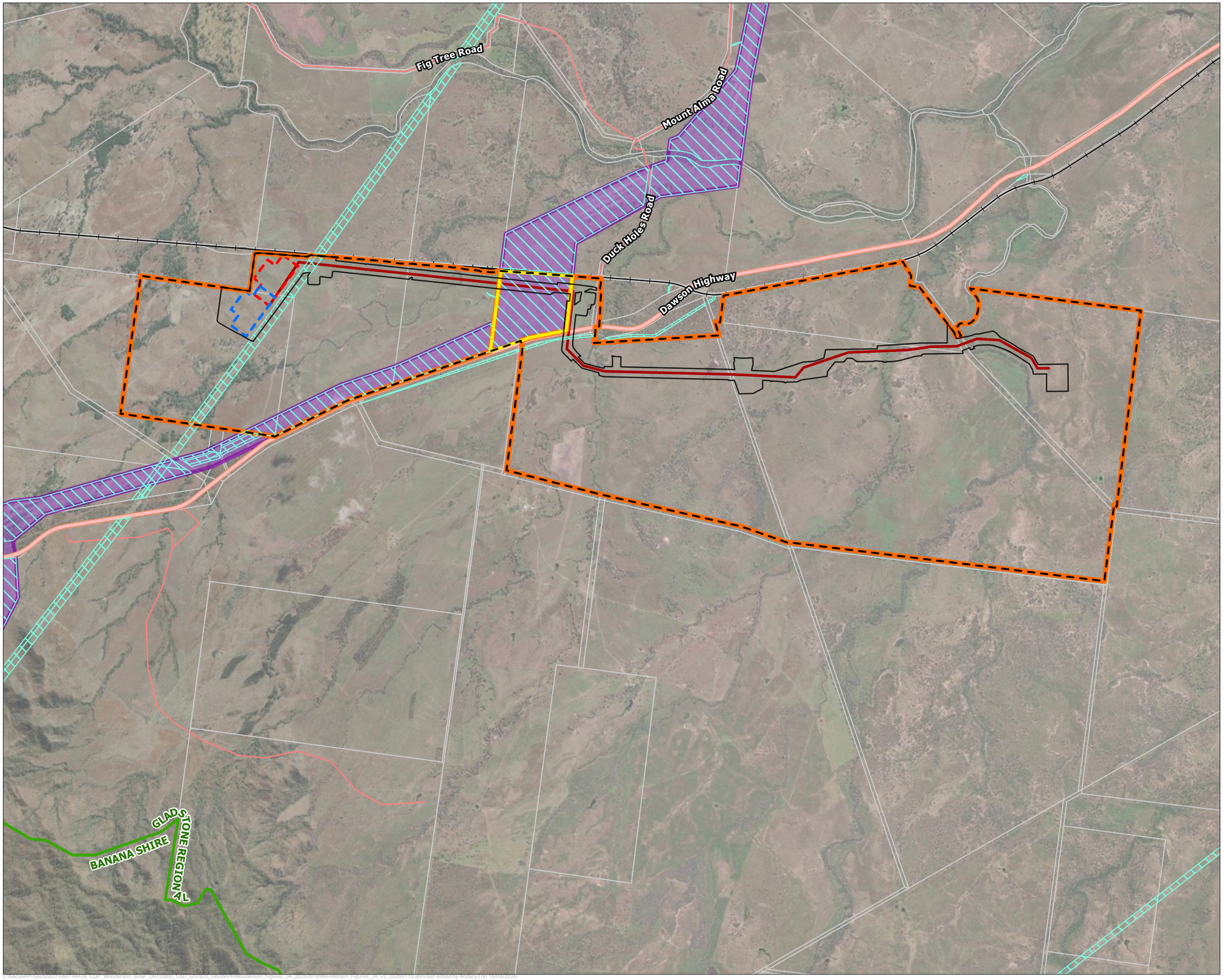
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Appendix 1 Wooderson Solar Farm Overhead Transmission Line Location



AECOM

N

0 500 1,000 Meters

Legend

- State Controlled Road
- Road
- Rail network
- Callide Infrastructure Corridor State Development Area
- Local Government Areas
- Easements
- Land Parcels
- Project Area
- DA2 Project Area (GRC)
- DA3 Project Area (OCG)
- Project Disturbance Footprint
- Indicative Overhead Transmission Line Route
- Option A - Switchyard
- Option B - Switchyard



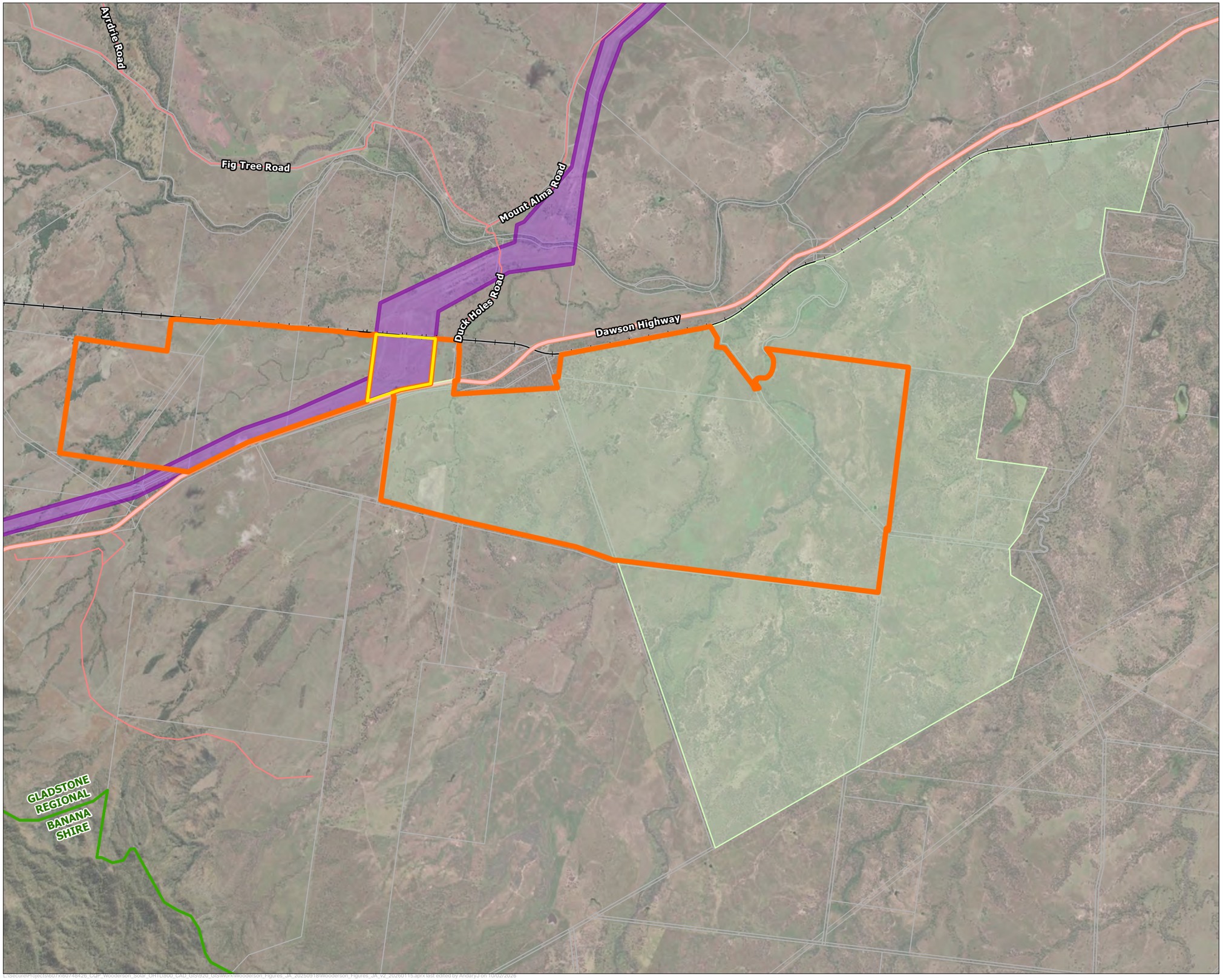
Figure 1: Wooderson Solar Farm Overhead Transmission Line Location

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Appendix 2 Wooderson Solar Farm Overhead Transmission Line Approvals Context



AECOM

N

0 1 2 km

Legend

- State Controlled Road
- Road
- Rail network
- Local Government Areas
- Callide Infrastructure Corridor State Development Area
- Land Parcels
- DA1 Project Area (SARA)
- DA2 Project Area (GRC)
- DA3 Project Area (OCG)



Figure 2: Wooderson Solar Farm Overhead Transmission Line Approvals Context

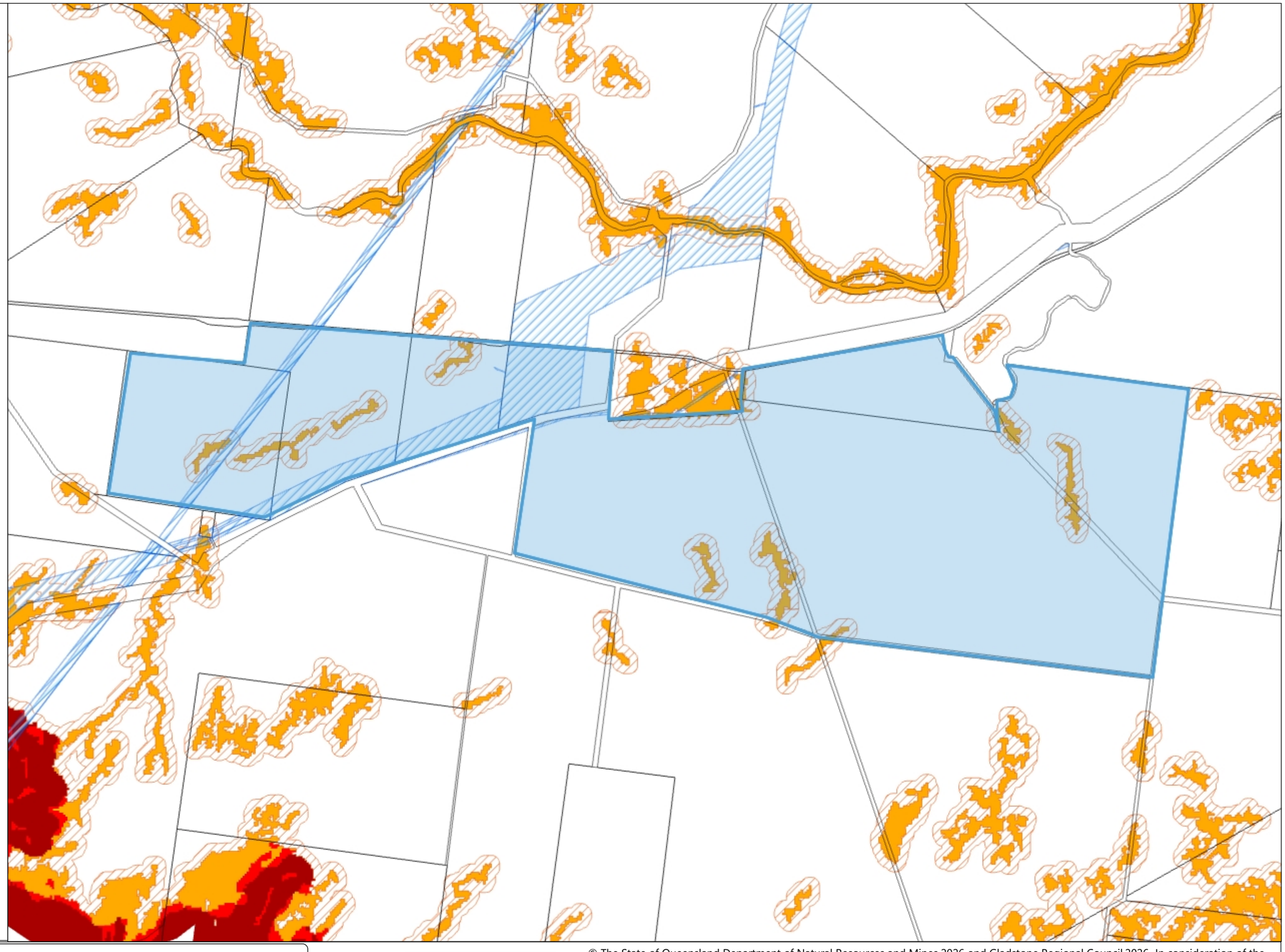
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Appendix 3 Bushfire overlay mapping

Road Centrelines
Easement
Base Parcel
Base Point
BaffleCreekQ100
BushFire Hazard
- Very High Potential Bushfire Intensity
- High Potential Bushfire Intensity
- Medium Potential Bushfire Intensity
- Potential Impact Buffer



GLADSTONE REGIONAL COUNCIL

Map Title

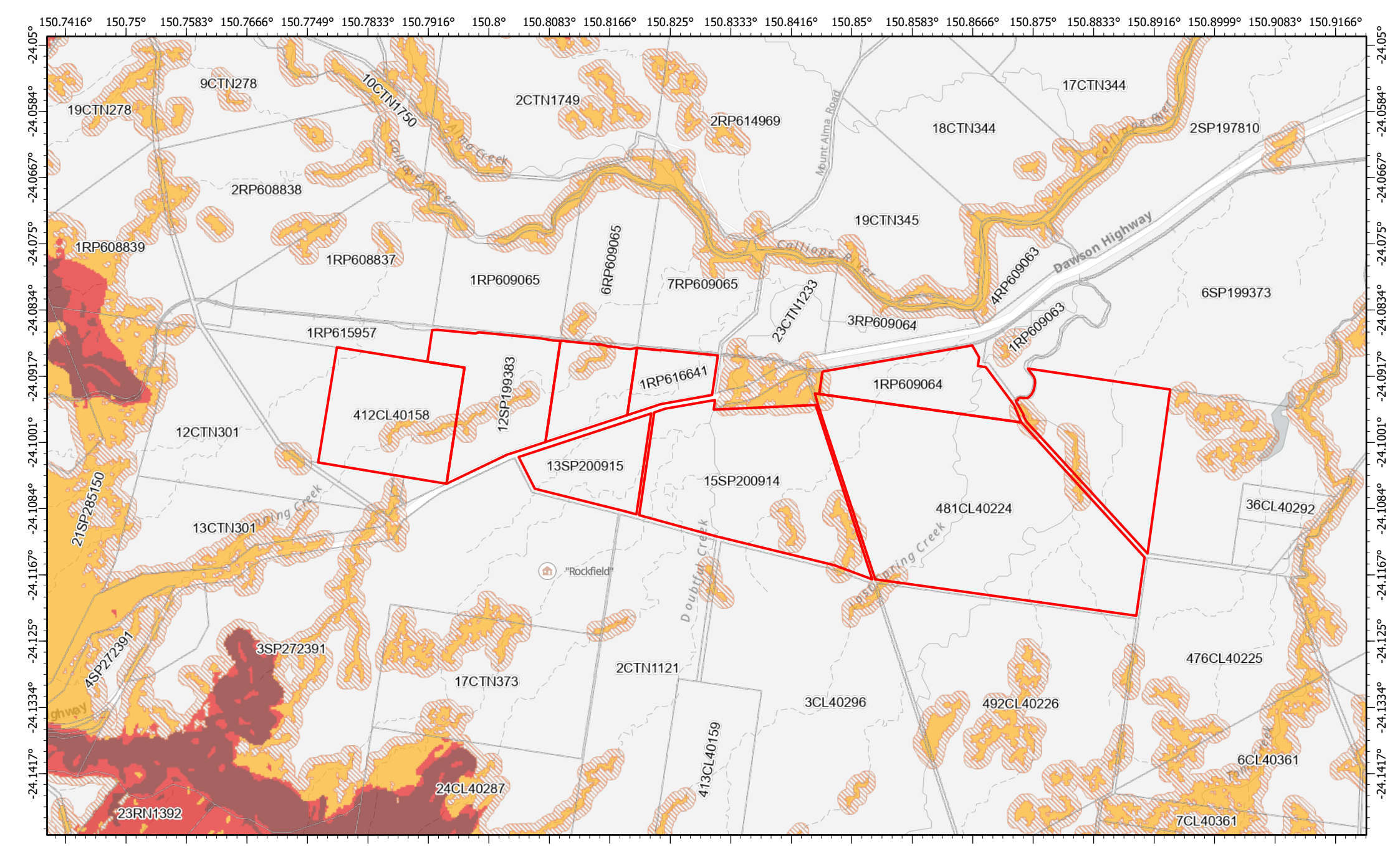
1,040.35 0 520.17 1,040.35 Meters

Printed: 14-Mar-2026

Map Scale 1: 41,614

Original Size: A3

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State Planning Policy IMS - Export Map

Making or amending a local planning instrument and designing land for local infrastructure

Date: 14/03/2026

N

Scale: 1:72,300

0 1,000 2,000 3,000

Metres

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Queensland Government

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Cadastre (100k)

Bushfire prone area

CLASS


Very High Potential Bushfire Intensity


High Potential Bushfire Intensity

Medium Potential Bushfire Intensity


Potential Impact Buffer

State Planning Policy IMS - Export Map

Making or amending a local planning instrument and designing land for local infrastructure

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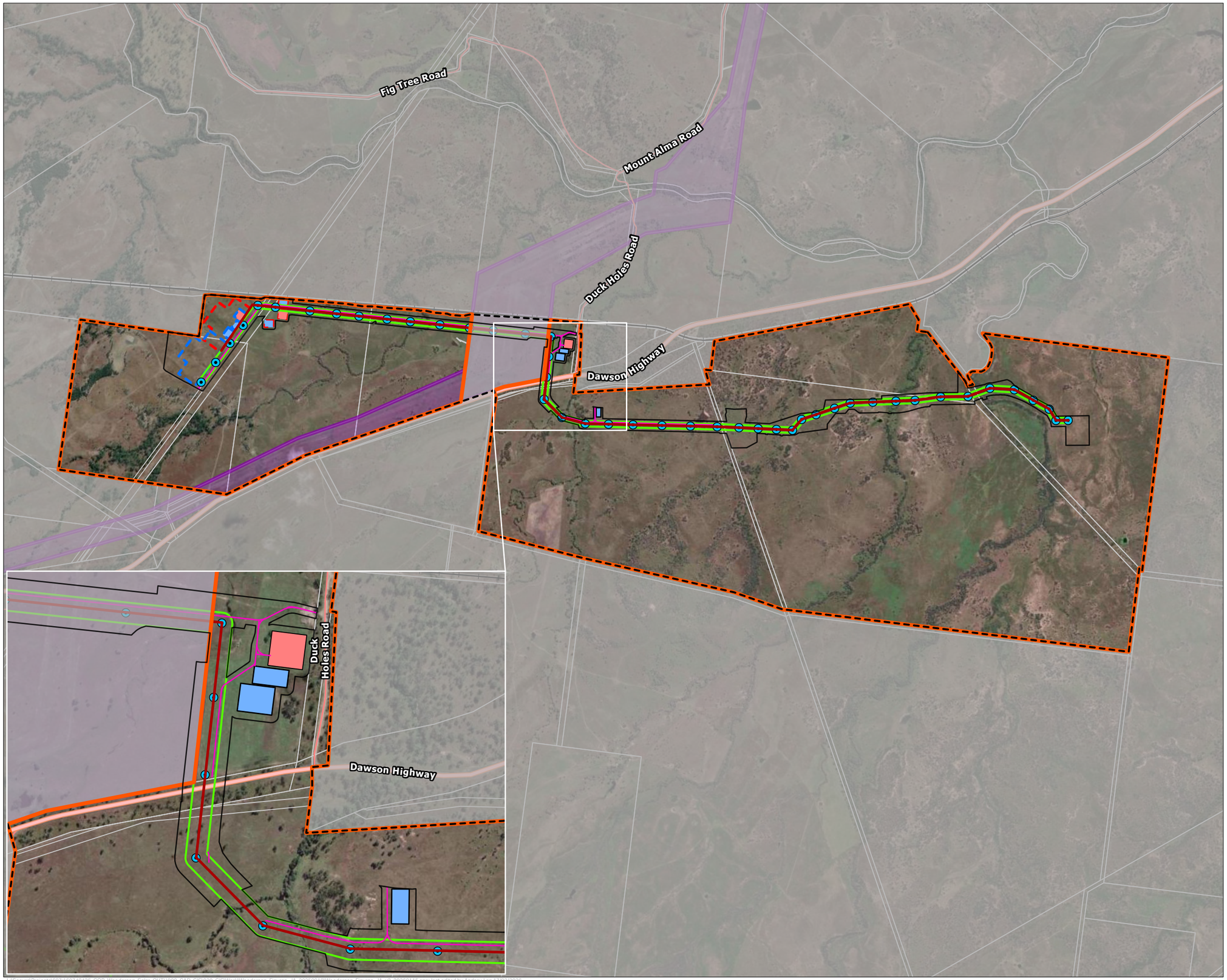
Date: 14/03/2026

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Appendix 4 Proposal Plans



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N

0 660 1,320 m

Legend

- State Controlled Road
- Road
- Rail network
- Local Government Areas
- Callide Infrastructure Corridor State Development Area
- Land Parcels
- Project Area
- DA2 Project Area (GRC)
- Project Disturbance Footprint

Proposed Infrastructure

- Indicative Overhead Transmission Line Route
- Indicative Proposed Transmission Line Easement
- Indicative Monopole Locations
- Access Tracks
- Switchyard Option A
- Switchyard Option B
- Construction Compound Area A & B
- Temporary Laydown Area A & B
- Construction Compound Area Option A
- Temporary Laydown Area Option A
- Construction Compound Area Option B
- Temporary Laydown Area Option B



Figure 3a: Proposal Plan

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AECOM

N

0 130 260 m

Legend

- State Controlled Road
- Road
- Rail network
- Petroleum pipeline licence (PPL) centreline
- Local Government Areas
- Callide Infrastructure Corridor State Development Area
- Land Parcels
- Project Area
- DA3 Project Area (OCG)
- Project Disturbance Footprint

Proposed Infrastructure

- Indicative Overhead Transmission Line Route
- Indicative Proposed Transmission Line Easement
- Indicative Monopole Locations
- Access Tracks

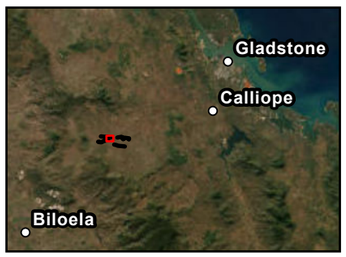


Figure 3b: Proposal Plan

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Appendix 5 Radiant heat exposure assessment

Bushfire attack through BAU 1

- Forest fire danger index – 66
- Grass fire danger index -94 (conversion from Table B2 of AS 3959-2018)
- Vegetation – VHC 40.4 *Continuous low grass or tree cover*
- Understorey fuel load – 4.5 tonnes/hectare (**t/ha**)
- Total fuel load – 5 t/ha
- Effective slope – 5° slope (range of slopes measured from 1°-4.5°)
- Site slope – 0° slope (constructed landform)
- Flame width – 100 metres

FLAMESOL
FPA AUSTRALIA

Calculated March 7, 2026, 12:03 am (MDc v.4.9)

J26014

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Grassland Fire Danger Index	94	Rate of spread	17.25 km/h
Vegetation Classification	Grassland	Flame length	7.95 m
Understorey fuel load	4.5 t/ha	Flame angle	54 °, 64 °, 73 °, 78 °, 80 ° & 85 °
Total fuel load	5 t/ha	Elevation of receiver	3.21 m, 3.57 m, 3.8 m, 3.89 m, 3.91 m & 3.96 m
Vegetation height	n/a	Fire intensity	44,574 kW/m
Effective slope	5 °	Transmissivity	0.885, 0.873, 0.855, 0.834, 0.821 & 0.749
Site slope	0 °	Viewfactor	0.5936, 0.4318, 0.2907, 0.1969, 0.1593 & 0.0438
Flame width	100 m	Minimum distance to < 40 kW/m²	6.6 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	9.1 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	13.5 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	19.8 m
		Minimum distance to < 10 kW/m²	24.1 m

Rate of Spread - Noble et al. 1980

Flame length - Purton, 1982

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Appendix 6 Bushfire hazard overlay code

8.2.4 Bushfire hazard

8.2.4.1 Application

This code applies to development where the code is identified as applicable in the table of assessment for the bushfire hazard overlay code. When using this code, reference should be made to section 5.3.2 and where applicable, section 5.3.3 located in Part 5.

8.2.4.2 Purpose

1. The purpose of the bushfire hazard overlay code is to ensure that:

   Note—Relationship with the building assessment provisions. For the building assessment provisions, the bushfire prone area defined by this planning scheme under map is also designated to be the bushfire prone area for the BCA or QDC pursuant to section 12 of the Building Regulation 2006.

   a. The risks to life, property, community, economic activity and the environment during uncontrolled bushfire events are minimised.

   b. Development does not increase the potential for bushfire damage or risk on–site or to other property.

2. The purpose of the code will be achieved through the following overall outcomes:

   a. Development is compatible with the nature of the bushfire hazard except where there is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposal.

   b. Development siting, layout, design and access minimises the risks to personal safety, and damage to property, infrastructure and other assets.

   c. Development directly, indirectly and cumulatively avoids an unacceptable increase in severity of bushfires and does not increase the potential for damage on the site or to other properties.

   d. The potential for the release of hazardous material as a result of a bushfire event is avoided.

   e. Evacuation and disaster management response including firefighting and access for emergency services during bushfire events is facilitated.

   f. Community infrastructure is located and designed to function effectively at all times.

8.2.4.3 Assessment benchmarks

Table 8.2.4.3.1—Accepted development subject to requirements and assessable development

Performance outcomes	Acceptable outcomes	Comments
Site suitability		
PO1 Development maintains the safety of people and property by not exposing them to an unacceptable risk from bushfire. Note—A site specific bushfire hazard assessment may demonstrate that the site is not within a bushfire hazard area or has a low degree of bushfire risk.	No acceptable outcome is nominated.	**Complies with PO1** A bushfire management plan (BMP) has been prepared for the Wooderson Solar Farm connection to the National Electricity Market through a 275 kilovolt (**kV**) overhead transmission line (**OHTL**), switchyard and associated ancillary infrastructure (**the Project**). The BMP outlines how compliance with this Bushfire hazard overlay code will be achieved. The bushfire hazard assessment and radiant heat exposure assessment in the BMP has been undertaken in accordance with *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire' 2019* (**BRC guide**) which was prepared to provide technical guidance for the implementation of *Natural Hazards, Risk and Resilience – Bushfire, State Planning Policy State Interest guidance material 2019* (**SPP guidance material – bushfire**). The bushfire hazard assessment confirmed the site has medium potential bushfire intensity areas which are confined to steeper sloping land, creeks and drainage lines. However, most of the site, including the location of the switchyard options is a grassfire hazard. Two switchyard options have been assessed in the BMP. The final location of the switchyard is awaiting confirmation from Powerlink Queensland (**Powerlink**) and will be within the Project Disturbance Footprint. Radiant heat exposure modelling was undertaken to advise an asset protection zone (**APZ**) for the switchyard options.

Performance outcomes	Acceptable outcomes	Comments
		The OHTL and monopoles will be located within a 60 metre (**m**) wide easement where vegetation will be managed in accordance with Powerlink's vegetation management guidelines. Specifications in these guidelines are designed to provide an APZ for an OHTL. Therefore, a radiant heat exposure assessment to advise an APZ is not required for this infrastructure.
PO2 Development does not result in a higher concentration of people living, working or congregating in a high or very high bushfire hazard area unless it can be demonstrated: a. there is an overriding community need in the public interest, and b. no other site is suitable and reasonably available. Note—A 'medium, high or very high bushfire risk hazard area' means land mapped on the bushfire overlay map as having medium, high or very high potential bushfire risk.	**AO2** The following uses are not located on land within a confirmed medium, high or very high bushfire hazard area: a. child care facility b. community care centre c. educational establishment d. hostel e. hospital f. multiple dwelling g. non–resident workforce accommodation h. residential care facility i. retirement facility j. shopping centre k. short–term accommodation l. tourist attraction m. tourist park.	**Complies with AO2** The Project does not involve the land uses identified in AO2a-m.
Water supply		
PO3 Development in areas with a reticulated water supply has adequate flow and pressure for fire–fighting purposes at all times.	**AO3** The water supply network has a minimum sustained pressure and flow of at least 10L per second at 200kPa.	**PO3 and AO3 are not applicable** The Project is not in a reticulated water supply area.

Performance outcomes	Acceptable outcomes	Comments
PO4 Development in areas without a reticulated water supply has an appropriate dedicated water supply for fire–fighting purposes that are safely located and freely accessible for fire–fighting purposes at all times.	**AO4.1** Development involving a gross floor area greater than 50m2 where a reticulated water supply is not available is: a. provided with an easily accessible fire resistant on–site water storage of not less than 5,000L (e.g. concrete tank with fire brigade fittings, in–ground swimming pool, dam fed by a permanent water source) that is within 100m of each class 1, 2, 3, or 4 building, and b. has a hard standing area allowing a heavy rigid fire appliance safe access to within 6m of the storage facility. Note—Plastic water tanks are not considered to be fire resistant unless they are submerged.	**Complies with PO4** The BMP identifies the Project will have a water storage tank for the purpose of bushfire fighting. It will be located at the switchyard, with the final location to be confirmed during the detail design stage. Section 6.5 of the BMP provides specifications for the water storage tank (which are based on compliance with AO4.1).
	AO4.2 The location of water supplies is readily identifiable from the street frontage with clear signage directing firefighters to its access point.	**Complies with AO4.2** Section 6.5 of the BMP requires the water storage tank to be identified with reflective wayfinding signage.
Roads, fire access trails and firebreaks		
PO5 Roads and fire access trails are designed and constructed to: a. enable efficient access to buildings and structures for fire–fighting purposes for emergency services, and b. swift evacuation in emergency situations.	**AO5.1** Roads and fire access trails are designed and constructed to: a. separate the development from the hazardous vegetation b. have a maximum gradient of 12.5% c. a minimum cleared width of 6m and a minimum formed width of 4m	**Complies with A05.1** Access tracks will be designed, constructed and maintained in accordance with Powerlink's guideline for transmission line access easements and generally comply with AO5.1.

Performance outcomes	Acceptable outcomes	Comments
	d. have adequate drainage and erosion control devices e. provides passing and turning areas for fire–fighting appliances at intervals of not less than 200m f. have a vehicular access at each end to roads or a bushfire trail g. not involve any cul–de–sac h. have gates locked with a system authorised by QFES, and i. have suitable arrangements in place to ensure maintenance in perpetuity.	
	AO5.2 Development has direct access to an evacuation route with a potential fire intensity exposure no greater than 2kw/m2. Note—The distance from hazardous vegetation to achieve 2kw/m2 is generally: • 58m in a very high bushfire hazard areas • 52m in a high bushfire hazard area, and • 44 m in a medium bushfire hazard area.	**Complies with AO5.2** Access to the Project Area from the Dawson Highway is not through a medium, high or very high bushfire hazard area.
	AO5.3 Development incorporates an area of managed vegetation that separates lot boundaries from hazardous vegetation by a distance of: a. 20m to a high or very high bushfire risk area, or	**Alternative solution to AO5.3 proposed** Radiant heat exposure modelling has been used to advise the width of the APZ around the switchyard. It has been designed to separate infrastructure within the switchyard compound from hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 10 kW/m^2 at the infrastructure.

Performance outcomes	Acceptable outcomes	Comments
	b. 10 to a medium risk bushfire area and includes a fire access trail.	The APZ around the switchyard options are shown in Figure 6.1 of the BMP. An access track will be located within the APZ. The alternative solution complies with the SPP guidance material – bushfire and BRC guide.
PO6 Development provides for adequate fire breaks that minimise bushfire hazard by: a. separating hazardous vegetation from development areas, and b. facilitating access for firefighting and emergency vehicles.	No acceptable outcome is nominated.	**Complies with PO6** Section 6.1 of the BMP requires an APZ to be established maintained around the switchyard options as shown in Figure 6.1 of the BMP. An access track will be located within the APZ. The OHTL and monopoles will be located within a 60 m wide easement where vegetation will be managed in accordance with Powerlink's vegetation management guidelines. Specifications in these guidelines are designed to provide an APZ for an OHTL. Therefore, a radiant heat exposure assessment to advise an APZ is not required for this infrastructure.
Hazardous materials		
PO7 The potential for the release of hazardous materials as a result of a bushfire event is avoided. Note—The term 'hazardous material' is defined in the Glossary of the relevant State Planning Policy.	**AO7** Development involving the production or storage of hazardous materials in bulk: a. is not located within a high or very high bushfire hazard area, or b. complies with a site specific bushfire management plan	**Complies with PO7** The Project does not involve hazardous materials in the context of bushfire hazard as explained in the core concepts of the SPP guidance material – bushfire. In the context of bushfire hazard, hazardous materials are: • hazardous chemicals that are present at the levels or in the quantities that would constitute the use being a hazardous chemical facility (as defined in the Planning Regulation 2017); and • hazardous materials that are present in the quantities

Performance outcomes	Acceptable outcomes	Comments
		identified in the Work Health and Safety Regulation, schedule 15. During the construction and operation of the Project, any storage or handling of hazardous materials will be in accordance with *Managing risks of hazardous chemicals in the workplace – Code of Practice 2023*, applicable safety data sheets, and otherwise in accordance with Queensland *Work Health and Safety Act 2011* and its regulations.
Reconfiguration of a lot		
PO8 Additional lots avoid the risk of bushfire hazard to personal and property safety and increased risk of damage to assets. Note—A site specific bushfire hazard assessment may demonstrate that the site is not within a bushfire hazard area or has a low degree of bushfire risk. Any site specific bushfire assessment should be carried out in accordance with the method set out in Appendix 3 of *State Planning Policy 1/03 Guideline Mitigating the adverse impacts of Flood, Bushfire and Landslide*.	**AO8** New residential lots (including rear lots) do not occur in a bushfire hazard area.	**PO8 is not applicable** The Project does not involve the reconfiguration of a lot.
Community infrastructure		
PO9 Development for community infrastructure is located, designed and sited to: a. protect the safety of people during a bushfire b. not increase the exposure of people to the risk from a bushfire event, and c. function effectively during and immediately after bushfire events.	No acceptable outcome is nominated	**Complies with PO9** Schedule 1 of the Gladstone Regional Council Planning Scheme 2017 (version 2) does not define 'community infrastructure'. Nonetheless, the Project is treated in the BMP as 'community infrastructure providing essential services' which is consistent with informal advice previously received from the Bushfire Resilience and Operations Support Branch of the Rural Fire Service Queensland.

Performance outcomes	Acceptable outcomes	Comments
		As a result, the APZ for the switchyard options is designed to separate infrastructure within the switchyard compound from hazardous vegetation by a distance which achieves a radiant heat flux level ≤ 10 kW/m^2. This outcome is consistent with the site planning recommendation for community infrastructure providing essential services in the BRC guide.

Appendix 7 Objectives of the Development Scheme

A response to Objectives of the Callide Infrastructure Corridor State Development Area Development scheme (September 2012) is provided in the table below.

Objectives	Response
1. Provide, manage and plan land for the establishment of an efficient and effective infrastructure corridor of regional, state and national significance for co-located underground pipelines (principally for the transportation of gas) between Callide and the Gladstone State Development Area (GSDA), to facilitate economic development.	Not applicable in the context of the BMP and the mitigation of bushfire hazard
2. Ensure the integrity and functionality of the Callide Infrastructure Corridor State Development Area (**CICSDA**) is maintained and protected from land uses and activities that may be incompatible with, or adversely affect, the continued use of the State development area for co-located underground pipelines (principally for the transportation of gas) of regional, state and national significance.	Not applicable in the context of the BMP and the mitigation of bushfire hazard
3. Protection of the CICSDA to ensure the land resource is effectively utilised and uses are appropriately sited such that infrastructure, and distances between infrastructure, does not consume land unnecessarily or compromise future use and ensures the long-term viability of infrastructure within the CICSDA.	Not applicable in the context of the BMP and the mitigation of bushfire hazard
4. Ensure the impacts of land use minimises operational impediments on existing infrastructure and surrounding uses and provides orderly development of infrastructure within the CICSDA.	Not applicable in the context of the BMP and the mitigation of bushfire hazard
5. Ensure locations for infrastructure, other than gas transportation infrastructure, to intersect the CICSDA are minimised and rationalised.	Not applicable in the context of the BMP and the mitigation of bushfire hazard
6. Ensure the physical characteristics of land are considered in determining the suitability and location of land uses.	**Complies with Objective 6** The topography of the Project Disturbance Footprint and Project Area does not involve landscape features that exacerbate the risk of bushfire hazard or grassfire hazard or influence the layout of the Project, ie there are no steep slopes or ridgelines.
7. Ensure land use recognises and appropriately addresses environmental, cultural heritage and community values.	**Complies with Objective 7** The transmission corridor that will be located within the CICSDA was assessed in the attached bushfire management plan (**BMP**) as being affected by a grassfire prone vegetation hazard class. The 275 kV OHTL and monopoles will be located in a 60 metre wide easement. Grassfire hazard will be managed within the easement through compliance with Powerlink Queensland's vegetation management specifications for

Objectives	Response
	high voltage transmission lines, which is illustrated in Figure 5.1 of the BMP. The topography of the transmission corridor and adjoining land does not involve landscape features that exacerbate the risk of bushfire or grassfire hazard or influence the layout of the transmission corridor, ie there are no steep slopes or ridgelines.

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