Appendix I Traffic Impact Assessment

Point8
traffic engineering and transport planning

Banana Ranges Transmission Line Traffic Impact Assessment

Powerlink

JBS&G
P24007

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1.0 Introduction

1.1 Background

Point8 has been commissioned by JBS&G to prepare a Traffic Impact Assessment (TIA) for the construction of the proposed Banana Range Wind Farm (BRWF) Connection Project. EDF Renewables (EDF) is the proponent of the proposed BRWF Project. Powerlink Queensland (Powerlink) is the owner, developer and operator of Queensland's electricity transmission network and has been engaged by EDF to connect their project to the network at the existing Calvale Substation via the BRWF Connection Project, which includes:

- A 35km 275kV double circuit transmission line from the existing Calvale Substation to the proposed BRWF Project (via the proposed Mount Benn Substation); and
- A 275kV substation proposed on Lot 47 on SP 232217 (the proposed Mount Benn Substation).

It is expected the project will have an impact on four (4) State Controlled Roads (SCR) locations across Banana Shire Council (BSC).

This report outlines the proposed development's compliance with the relevant criteria specified within the BSC 'Planning Scheme Policy 2021' (PSP), Transport and Main Roads (TMR) Guide to Traffic Impact Assessments (GTIA). In addition, the following documents were referenced:

- *Austroads Guide to Traffic Management (AGTM) Part 6*
- *Austroads Guide to Road Design (AGRD) Part 4A*
- *DTMR Standard Drawing 1807*
- *Austroads Guide to Temporary Traffic Management (AGTTM) Part 3*
- *Australian Standard 1742.3 (AS 1742.3)*

1.2 Purpose

1.2.1 GTIA

Approval for the project is being sought via the Ministerial Infrastructure Designation (MID) Process under the Queensland *Planning Act 2016* (Planning Act). To support approval, this TIA has been prepared in accordance with Queensland's GTIA.

The GTIA provides guidance to stakeholders involved in development the principles and framework to assess and document traffic impacts. A traffic impact assessment documents the impacts a development proposal is likely to have on both the SCR network operation, and any additional transport infrastructure that may be affected, and recommends measures to avoid, manage and mitigate these impacts.

1.2.2 Traffic Management Principles

An additional section regarding traffic management principles associated with the construction of the transmission line has been added. This information is for the benefit of DTMR and BSC, to understand the potential risks that may occur on or near the road network (both SCR and Council controlled roads).

Due to the location of the works, it is anticipated both the SCR network and Council network will provide access to the construction activities.

Additionally, this information is provided for information only to Powerlink to inform future planning. It is understood Powerlink will construct the proposal in a future five (5) to ten (10) year horizon. Where construction may occur within proximity to the road network, a series of risks have been documented to assist Powerlink in the construction planning and phasing to ensure certain controls are put in place to avoid, manage or mitigate risks.

2.0 Site Locality

2.1 Key Roads

There are four (4) key SCRs that will interface with the transmission line. Details of the key roads, including the road form, speed limit and road classification are outlined in Table 2.1. No traffic survey data has been captured for any of the proposed impacted road networks.

Figure 2-1- Locality Figure

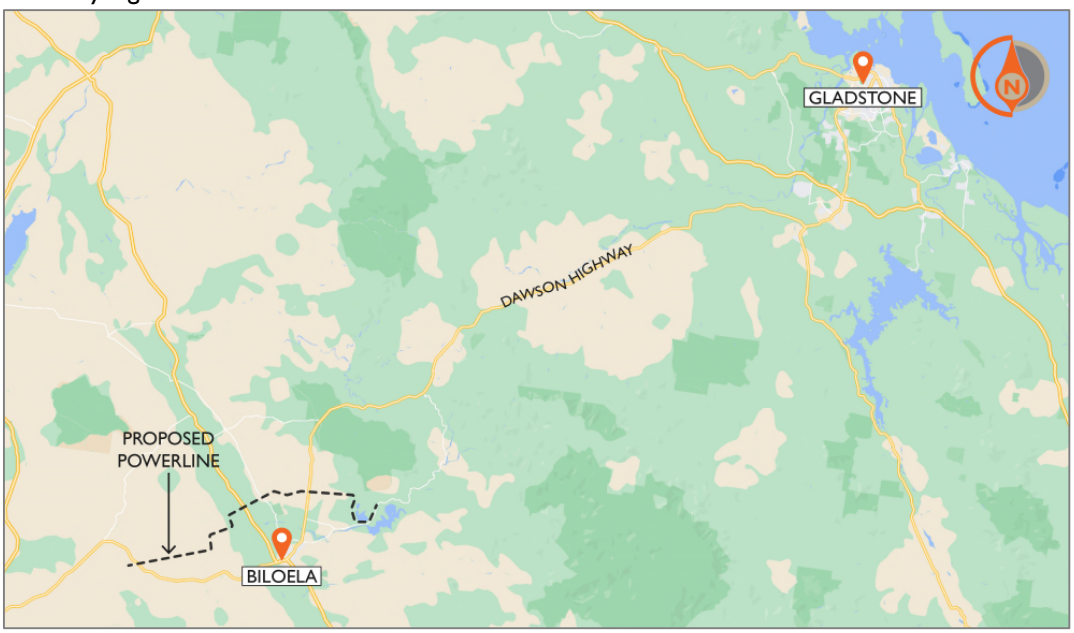


Table 2.1 - Key Road Network Details

ROAD NAME	ASSET OWNER	ROAD DESCRIPTION	ROAD CLASSIFICATION
Biloela Callide Road	DTMR	• Two-lane two-way • Undivided carriageway • 100km/h speed limit	District Road (future)
Dawson Highway (East)	DTMR	• Four-lane two-way • Undivided carriageway • 100km/h speed limit	Regional Road
Burnett Highway	DTMR	• Two-lane two-way • Undivided carriageway • 100km/h speed limit	State Strategic Road
Dawson Highway (West)	DTMR	• Two-lane two-way • Undivided carriageway • 100km/h speed limit	Regional Road

2.2 Site Inspection

A site inspection was undertaken on Tuesday 22nd August to observe and take an inventory of the SCRs interfacing with the transmission line. Speed limits and sight distances were assessed; most locations were deemed to have sufficient sight distance based on the speed environment, and where sight distance was limited, speed reduction measures were recommended.

3.0 Development Proposal

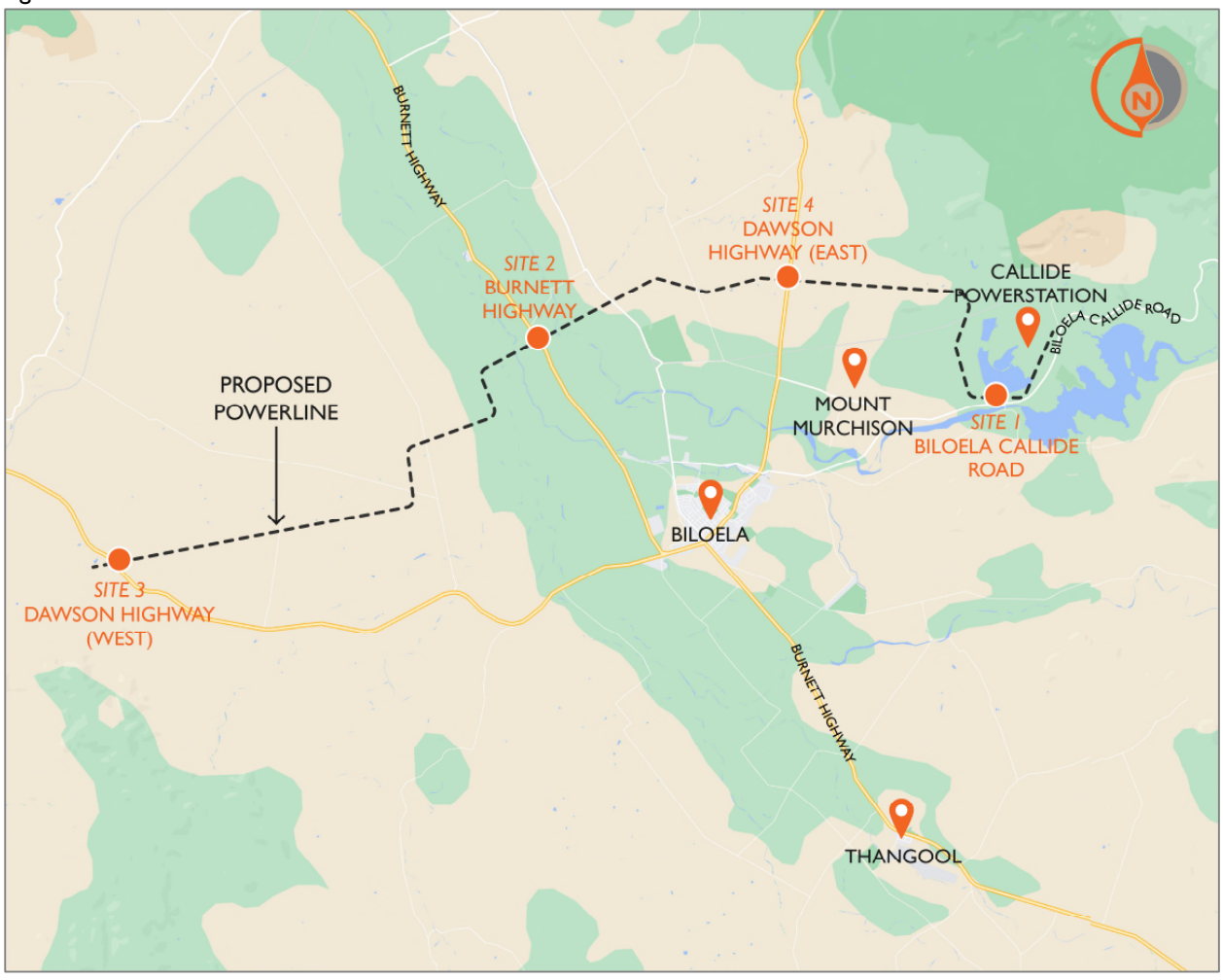
3.1 Overall Development Summary

Powerlink are proposing the construction of a 275kV transmission line to link the proposed BRWF Wind Farm, via the the proposed Mount Benn Substation, west of Biloela, to Powerlink's existing Calvale Substation. The transmission line will run to the north of the Biloela township, crossing rural farmland and four (4) SCRs and a number of BSC roads (see Figure 3-1). The proposed development will entail the construction of approximately 114 steel towers and their associated footings, and the installation of high-voltage transmission line strung between. The construction of the transmission line is expected to start in a future five (5) to ten (10) year horizon and last for an unknown amount of time. Typically, a transmission line has a 50-year operational life. It is noted that this operational life is consistent with the proposed life of the BRWF Project. After this time, the transmission line may:

- Be replaced with a transmission line designed for the revised environmental constraints and electrical system requirements at the time; or
- If the line were no longer required, be dismantled and the easements may be surrendered to the property owner.

The majority of traffic generation will occur from the construction, with ongoing maintenance works to have no impact.

Figure 3-1 - Site Access Locations



3.2 Programme and assumptions

As this TIA is proposed for a proposed construction event and is not expected to be constructed in the near future, several details regarding the proposed development are unknown. Therefore, the following assumptions have been made about the development:

- The construction of the proposed development will start in a future five (5) to ten (10) year horizon.
- Construction processes will entail the construction of tower foundations, the transport of transmission line and tower components, the formation of towers and the stringing of transmission line (not necessarily in that order).
- The construction process will occur for an unknown period of time, but will most likely occur for no greater than two (2) years.
- Construction may occur at all sites at once.
- Most construction works will occur away from the road corridor.
- A maximum of 50vpd (per site) will be required to facilitate the construction of the development, with the majority of the construction period consisting of 10vpd to 30vpd.
- Little to no traffic volumes will occur post-construction.

3.3 Key State Controlled Road Interfaces

There are four (4) key SCR interfaces as a result of the proposed works. The location of these accesses can be seen in Figure 3-1 above. Each interface entails the following:

Site 1 – Biloela Callide Road

The proposed transmission line crosses Biloela Callide Road near the intersection with Cocups Road (coordinates -24.360992, 150.614953). Towers will run in proximity to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h.
- Biloela Callide Road is a District Road.
- The existing intersection with Cocups Road is a priority-controlled give-way intersection.
- The existing intersection is located on the outside of a horizontal curve at the bottom of a dip.

Figure 3-2 shows an example of the road environment.

Figure 3-2 - Site 1 Typical Crossing Section (eastbound direction)

Site 2 – Burnett Highway

The proposed transmission line crosses the Burnett Highway near the four-way intersection with Hodgetts Road and Harchs Road (coordinates -24.342100, 150.457318). Towers will run perpendicular to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h.
- Burnett Highway is a State Strategic Road.
- The existing intersection with Hodgetts Road and Harchs Road is a four-way priority-controlled give-way intersection.
- The existing intersection is located along a flat stretch of road with good sight distance in either direction.

Figure 3-3 shows an example of the road environment.

Figure 3-3 - Site 2 Typical Cross Section (northbound direction)

Site 3 – Dawson Highway (West)

The proposed transmission line crosses the Dawson Highway twice. This particular location is approximately 21km to the west of the township of Biloela (coordinates -24.326070, 150.538936). Towers will run perpendicular to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h.
- Dawson Highway is a Regional Road.
- An existing property access is located within the western verge.
- The road corridor on approach is windy and undulating.
- The proposed Mount Benn Substation will likely utilise this access for its permanent access road
- The access point is located in the middle of a 1.2km straight section with good sight distance in both directions.

Figure 3-4 shows an example of the road environment.

Figure 3-4 - Site 3 Typical Crossing Section (westbound direction)

Site 4 – Dawson Highway (East)

The proposed transmission line crosses the Dawson Highway twice. This particular location is approximately 9km to the east of the township of Biloela (coordinates -24.410844, 150.326673). Towers will run perpendicular to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h.
- Dawson Highway is a Regional Road.
- An existing property access is located within the western verge.
- The road corridor on approach is straight, with a slight crest to the south.
- The access point is located in the middle of a long straight section with good sight distance in both directions.

Figure 3-5 shows an example of the road environment.

Figure 3-5 - Typical Cross Section (northbound direction)

4.0 Global Site Assessment

4.1 Intersection Delay

In accordance with GTIA Part C Section 11, an assessment of intersection delay for all impacted intersections is required. This is to assess if there is an economic and social impact on the community through increased travel times, driver impatience and associated economic cost of these delays.

Across all SCR interfaces, the current traffic volumes at each intersection are well below the capacity of an unsignalised priority-controlled intersection. Whilst some traffic generation will occur from the construction activities, it is expected these volumes will be low and will only occur for a short period of time. Therefore, no intersection delay is expected to occur across all sites.

4.2 Road link capacity

In accordance with GTIA Part C Section 12, an assessment of the road link capacity (between intersections) is required. This is to assess the impacts based on incremental worsening of level of service (LOS), whereby increases in development-generated traffic may result in safety impacts on road links. The desired outcome is to ensure that traffic generated by the development does not significantly worsen the operational capacity of the SCR road links.

Across all site locations that interface SCRs, minimal impact on the road link capacity is expected. Whilst the existing volumes are low and there is a potential for construction traffic to exceed 5% of the existing volumes, the total traffic volumes expected to be experienced by the road corridors are still well below their capacity. Additionally, the majority of traffic volumes generated by the development will be in the construction phase which will be for a relatively short period of time, with negligible traffic impacts thereafter. Therefore, the development is not expected to have an impact on the existing network.

5.0 Development Impact and Mitigation

5.1 Site 1 – Biloela Callide Road

5.1.1 Road safety

Site access will likely occur off Cocups Road. Therefore, the majority of construction movements will occur through the existing intersection with Cocups Road and Biloela Callide Road. In accordance with AGRD Part 4A Table 3.2, more than 250m of sight distance is provided in both directions from the intersection. It is expected that with adequate SISD provided and a posted speed of 100km/h, there will be minimal safety implications on the existing road network. No warning signage is currently implemented in proximity to the intersection. As part of the implementation of work areas, an investigation into an advanced warning signage scheme and speed reduction on approach to the SCR interfaces should be undertaken for the site, prior to the commencement of works.

5.1.2 Access and frontage

The majority of the development traffic movements will occur through the existing intersection located to the south of Biloela Callide Road, where there are no turn treatments currently present at the intersection with Cocups Road. The warrants for selection of turn treatments are outlined in AGTM Part 6 Section 3.3.6, whereby a major road with a design speed of 100km/h or greater requires certain turn movements. As the development volumes and existing corridor volumes are low, the existing BAR and BAL intersection form will be appropriate for the construction activities.

5.2 Site 2 – Burnett Highway

5.2.1 Road safety

Site access is expected to occur to the east and west of the Burnett Highway. In accordance with AGRD Part 4A Table 3.2, more than 250m of sight distance is provided in both directions from the proposed access location. It is expected that with adequate SISD provided at the proposed access location, there will be minimal safety implications on the existing road network. No warning signage is currently implemented in proximity to the intersection. As part of the implementation of work areas, an investigation into an advanced warning signage scheme and speed reduction on approach to the SCR interfaces should be undertaken for the site, prior to the commencement of works.

5.2.2 Access and frontage

The majority of the development traffic movements will occur to the east and west of the Burnett Highway, through the existing intersection with Harchs Road and Hodgetts Road. The warrants for selection of turn treatments are outlined in AGTM Part 6 Section 3.3.6. As the proposed access to site is via the side roads and the existing intersection with Hodgetts Road and Harchs Road already feature appropriate turn treatments, no further access needs are required.

5.3 Site 3 – Dawson Highway (west)

5.3.1 Road safety

Site access will occur at an existing rural property access. It is likely that the proposed Mount Benn substation will also utilise this access on a permanent basis. In accordance with AGRD Part 4A Table 3.2, more than 250m of sight distance is provided in both directions from the intersection. It is expected that with adequate SISD provided and a posted speed of 100km/h, there will be minimal safety implications on the existing road network. No warning signage is currently implemented in proximity to the intersection. As part of the implementation of work areas, an investigation into an advanced warning signage scheme and speed reduction on approach to the SCR interfaces should be undertaken for the site.

5.3.2 Access and frontage

Site access will occur to the south-east of the Dawson highway at an existing property access. No turn treatments are currently present at the site. The warrants for selection of turn treatments are outlined in AGTM Part 6 Section 3.3.6, whereby a major road with a design speed of 100km/h or greater requires certain turn movements. As the development volumes and existing corridor volumes are low, it is recommended a compliant access is installed as per TMR Standard Drawing 1807.

5.4 Site 4 – Dawson Highway (east)

5.4.1 Road safety

Site access will occur at a new access to the east and west of the Dawson Highway. In accordance with AGRD Part 4A Table 3.2, more than 250m of sight distance is provided in both directions from the intersection. It is expected that with adequate SISD provided and a posted speed of 100km/h, there will be minimal safety implications on the existing road network. No warning signage is currently implemented in proximity to the intersection. As part of the implementation of work areas, an investigation into an advanced warning signage scheme and speed reduction on approach to the SCR interfaces should be undertaken for the site.

5.4.2 Access and frontage

Site access will occur on the eastern and western verge of Dawson Highway. No formal access or turn treatments are currently present at the site access. The warrants for selection of turn treatments are outlined in AGTM Part 6 Section 3.3.6, whereby a major road with a design speed of 100km/h or greater requires certain turn movements. As the development volumes and existing corridor volumes are low, it is recommended a compliant access is installed as per TMR Standard Drawing 1807.

6.0 Temporary Traffic Management Principles

A schedule of traffic management principles have been included below. This schedule is to provide DTMR and BSC an understanding of the potential traffic impacts that may occur as a result of the proposed development construction. Additionally, this schedule is to provide guidance to Powerlink for the planning of the construction processes. This schedule may help to appropriately construct the transmission line with respect to the safety of the road network users and assist in creating safe construction processes.

Table 6.1 - Temporary Traffic Management Principles

WORK ACTIVITY	MANAGEMENT
Legislative compliance	• Traffic management is to comply with the relevant AGTTM Part 3 and AS 1742.3 standards and guidance. • Ensure workers preparing or implementing traffic management are appropriately qualified.
Works need to be completed in close proximity to the roadway	• Ensure two-way flow is maintained. • Ensure minimum lane widths are provided. • Provide adequate worker protection (such as barriers). • Ensure B-double vehicle manoeuvring is maintained at all times. • Avoid static long-term detours.
Works need to be conducted on both sides of the road concurrently	• Ensure two-way flow is maintained. • Ensure minimum lane widths are provided. • Provide adequate worker protection (such as barriers). • Ensure B-double vehicle manoeuvring is maintained at all times. • Avoid static long-term detours.
Works to be conducted in or across the roadway	• Ensure no greater than 15mins delay is incurred as a result of the works. • Undertake works at night where possible. • Provide short-term detours or side tracks where possible.
Works need to be conducted off the roadway	• Maintain minimum sight distance requirements for access. • Maintain minimum turn warrant design specifications for access.
Site Compliance	• Ensure regular safety inspections are undertaken of the site. • Ensure accurate documentation of traffic management arrangements is undertaken.
Oversize or overmass vehicle transport	• Ensure relevant permits and loading/unloading plans are organised.

These work activities and associated management techniques are provided as an overarching guideline only. They are listed to provide an understanding of the potential impacts that may be faced by DTMR and BSC as the road asset owners, and Powerlink as a mechanism to plan for the construction processes as principal contractor. These activities are all in relation to long-term works. All short-term works should be analysed separately.

7.0 Conclusions

7.1 Summary of Findings

Point8 has been commissioned by JBS&G to prepare a Traffic Impact Assessment (TIA) for the construction of the proposed Banana Range Wind Farm (BRWF) Connection Project. EDF Renewables (EDF) is the proponent of the proposed BRWF Project. Powerlink Queensland (Powerlink) is the owner, developer and operator of Queensland's electricity transmission network and has been engaged by EDF to connect their project to the network at the existing Calvale Substation via the BRWF Connection Project, which includes:

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Powerlink are proposing the construction of a 275kV transmission line to link the proposed BRWF Wind Farm, via the the proposed Mount Benn Substation, west of Biloela, and Powerlink's existing Calvale Substation. The transmission line will run to the north of the Biloela township, crossing rural farmland and four (4) SCRs and a number of BSC roads.

The proposed construction works is expected to produce the largest traffic generation, with the ongoing operational impacts being negligible. The construction will entail a variety of tasks and is expected to be built in a future five (5) to ten (10) year horizon and last for an unknown amount of time (no longer than two (2) years). During the construction phase, no more than 50vpd (per site) will be required to facilitate the construction of the development, with the majority of the construction period consisting of 10vpd to 30vpd.

The four (4) SCR interfaces include:

Biloela Callide Road

- Two-way two-lane 100km/h district road.
- Adequate sight distance to both approaches.
- Access will be via the existing intersection with Cocups Road to the south-east.

Burnett Highway

- Two-way two-lane 100km/h state strategic road.
- Adequate sight distance to both approaches.
- Access will be via the existing intersection with Harchs Road to the west and Hodgetts Road to the east.

Dawson Highway (west)

- This is a two-way two-lane 100km/h regional road.
- Adequate sight distance to both approaches.
- Access will be via an existing property access to the south-west.
- The proposed Mount Benn Substation will likely utilise this access for its permanent access road.

Dawson Highway (east)

- This is a two-way two-lane 100km/h regional road.
- Adequate sight distance to both approaches.
- Access will be via a new access to the east and west.

Across all four (4) sites, the impact on the road link capacity, intersection delay, road safety and access and frontage for each respective SCR is expected to be minor, with some recommendations below. The additional traffic volumes on the existing road network as a result of the development are negligible.

7.2 Recommendations

The recommendations outlined in this report are summarised below:

- Undertake an investigation into an advanced warning signage scheme for all SCR interfaces.
- Accesses to sites 3 and 4 are to be designed and installed in accordance with TMD Standard Drawing 1807.
- Undertake an investigation into reducing the posted speed on approach to all SCR interfaces during the construction phase.

Appendix A

Received Data