RUTHERGLEN BATTERY ENERGY STORAGE SYSTEM TRAFFIC IMPACT ASSESSMENT

13 JANUARY 2026

PREPARED FOR

RED HILL RENEWABLE ENERGY PTY LTD

PTT TRAFFIC & TRANSPORT ENGINEERING

ECAAS ISO 9001 CERTIFIED QUALITY MANAGEMENT

DOCUMENT CONTROL RECORD

DOCUMENT						
Report Title:	Rutherglen Battery Energy Storage System – Traffic Impact Assessment					
Client:	Red Hill Renewable Energy Pty Ltd					
Project Number:	24-510					
REV	PURPOSE	DATE	AUTHOR	REVIEWER	APPROVED	SIGNED
A	FINAL	MAY-24	NH	CB	RL (RPEQ 32326)	
B	FINAL	OCT-25	NH / CB	JG	CB (RPEQ 32895)	
C	FINAL	JAN-26	NH / CB	JG	CB (RPEQ 32895)	

COPYRIGHT

DISCLAIMER

This document is produced solely for the benefit of and use by our client in accordance with the terms and conditions of our appointment. PTT does not accept liability to third parties arising from their use of or reliance upon the contents of this report.

CONTENTS

1.0 INTRODUCTION 3
1.1 Background 3
1.2 Aim 3
1.3 Scope of Report 3
2.0 EXISTING CONDITIONS 4
2.1 Subject Site 4
2.2 Access 4
2.3 Road Network 4
2.4 Rail Network 6
2.5 Traffic Volumes 6
2.6 Road Safety 7
2.7 Heavy Vehicle Access 7
3.0 PROPOSED DEVELOPMENT 8
3.1 Site Layout 8
3.2 Construction Phase 8
3.3 Access 9
3.4 Car Parking 10
3.5 Road Upgrades 11
3.6 Haulage Routes 12
3.7 Vehicle Types 13
3.8 Osom Vehicles 13
4.0 TRAFFIC OPERATIONS 15
4.1 Traffic Generation 15
4.2 Directional Distribution 16
4.3 Traffic Impact 16
5.0 CONCLUSIONS AND RECOMMENDATIONS 18
5.1 Conclusions 18
5.2 Recommendations 18

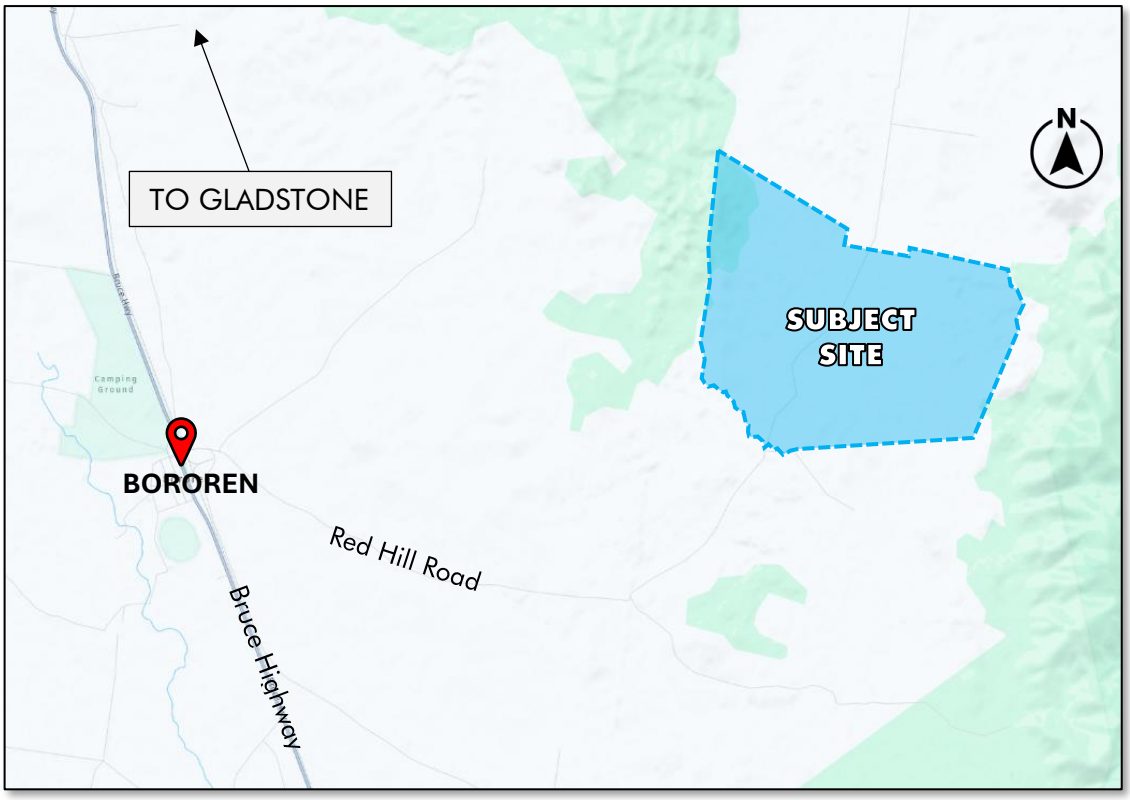
APPENDIX A RED HILL ROAD TRAFFIC DATA
APPENDIX B PLANS OF DEVELOPMENT
APPENDIX C VEHICLE SWEPT PATHS

1.0 INTRODUCTION

1.1 BACKGROUND

In July 2025, Pekol Traffic and Transport (PTT) was commissioned by Gryphon Energy, on behalf of Red Hill Renewable Energy Pty Ltd, to undertake a traffic impact assessment (TIA) for a proposed Battery Energy Storage System (BESS) development at 837 Red Hill Road, Bororen. As shown in Figure 1.1, the subject site is located approximately 8.0km east of the township of Bororen and falls within the jurisdiction of Gladstone Regional Council (Council).

Figure 1.1: SITE LOCALITY



1.2 AIM

The aim of this assessment is to evaluate the proposed development in terms of its likely access arrangements, traffic generation and impact on the surrounding road network.

1.3 SCOPE OF REPORT

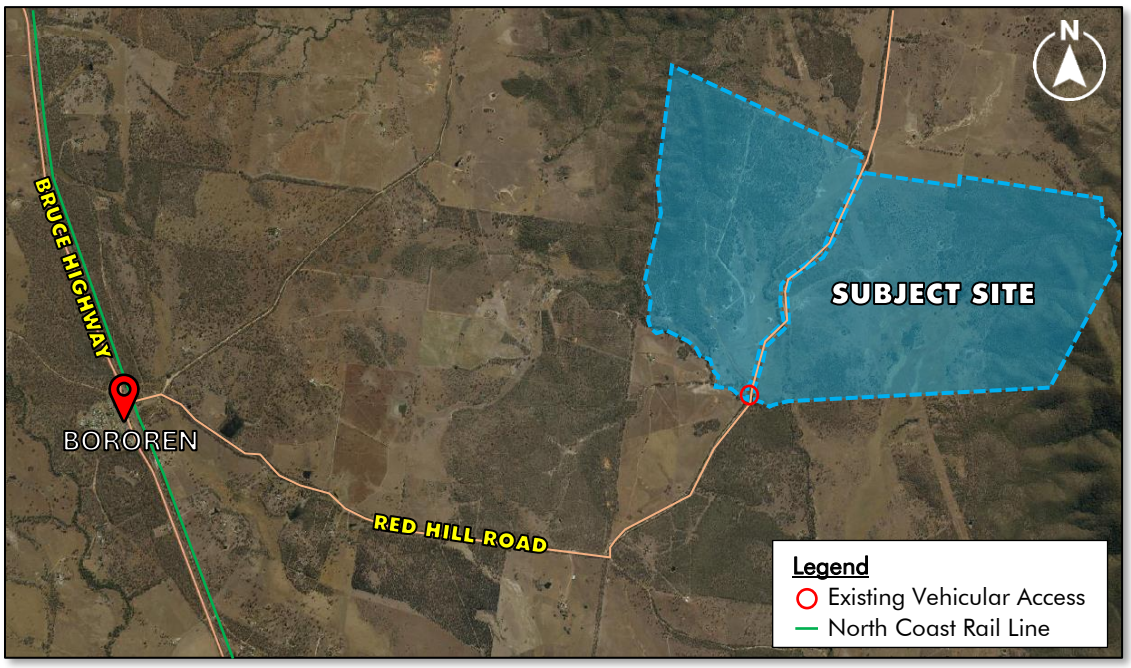
This report begins by summarising the characteristics of the existing road network and traffic operations (Chapter 2), followed by a description of the scope and scale of the development, including a consideration of the access operations, traffic generation, and distribution of development traffic (Chapter 3). The expected impacts of the development are outlined in Chapter 4. The report concludes with a summary of key findings and recommendations (Chapter 5).

2.0 EXISTING CONDITIONS

2.1 SUBJECT SITE

The subject site is located at 837 Red Hill Road, Bororen and is formally described as Lot 132 on FD700. The site has a total area of approximately 1,278 hectares and currently accommodates a residential dwelling and associated buildings. An aerial view of the site is shown in Figure 2.1.

Figure 2.1: SUBJECT SITE



The subject site is bounded by rural land in all directions, as shown in Figure 2.1. The site is bisected by Red Hill Road, which runs in a north-south alignment through the site.

The surrounding area is rural.

2.2 ACCESS

Access to the site is currently achieved via a vehicle crossing on the western side of Red Hill Road, as indicated in Figure 2.1.

2.3 ROAD NETWORK

The Bruce Highway is a state-controlled road, which falls under the jurisdiction of the Department of Transport and Main Roads (TMR). It is a sealed, undivided road with one lane of traffic in each direction and has a posted speed limit of 60km/h in the vicinity of the intersection with Red Hill Road. The Bruce Highway forms a four-way priority-controlled intersection with Red Hill Road, approximately 8.0km east of the site.

Red Hill Road is classified as a rural collector road and falls under the jurisdiction of Council. Red Hill Road is subject to a default unposted rural speed limit of 100km/h. However, the desired speeds are likely to be significantly lower based on the horizontal and vertical road alignment and pavement widths. Red Hill Road is sealed for a distance of approximately 3.0km from the

intersection with the Bruce Highway, after which point it is unsealed. The sealed section of Red Hill Road has a pavement width of approximately 5.0m wide with unsealed shoulders. A typical view of the sealed section of Red Hill Road is shown in Figure 2.2.

Figure 2.2: RED HILL ROAD SEALED CROSS-SECTION

The unsealed section of Red Hill Road is generally 6.0m wide on an 8.0m formation. A typical views of the Red Hill Road unsealed cross-section in the vicinity of the site are shown in Figure 2.3.

Figure 2.3: RED HILL ROAD UNSEALED CROSS-SECTION

2.4 RAIL NETWORK

The North Coast rail line runs parallel to the Bruce Highway, as indicated in Figure 2.1. A level crossing is located on Red Hill Road, approximately 55m east of the intersection with the Bruce Highway. The crossing is controlled with flashing lights and boom gates on both approaches. There is approximately 45m of queuing storage between the stop line to the level crossing and the Bruce Highway, as indicated in Figure 2.4.

Figure 2.4: RED HILL ROAD LEVEL CROSSING

2.5 TRAFFIC VOLUMES

2022 Average Annual Daily Traffic (AADT) data has been obtained from TMR for the Bruce Highway from a counter site (ID 60022) located approximately 20km north of the Bruce Highway / Red Hill Road intersection. The data shows that the 2022 AADT volumes on the Bruce Highway, between Miriam Vale to the south and Benaraby to the north, were as follows:

- 3,175 vehicles per day (vpd) travelling in the northbound direction
- 3,175 vpd travelling in the southbound direction
- 6,350 vpd two-way
- 27% heavy vehicles

In January 2025, a seven-day automatic loop counter survey was conducted on Red Hill Road, immediately to the east of the intersection with the Bruce Highway. This survey data (included in Appendix A) recorded the following:

- average daily traffic volumes of 170 vpd
- peak hour traffic volumes of 15 – 20 vph
- 18% heavy vehicles

The traffic volumes on Red Hill Road will decrease to the east, with volumes in the order of 50vpd predicted on the section to the east of Bates Road and less than 20vpd on the section that bifurcates the subject site.

While it is acknowledged that the survey was conducted during the school holiday period, this is unlikely to have a significant impact on the recorded traffic volumes given the rural location and the catchment of Red Hill Road.

2.6 ROAD SAFETY

Historic crash data for the past five years (ie December 2017 – December 2022) was sourced from TMR for the Bruce Highway / Red Hill Road intersection and Red Hill Road in the vicinity of the site. The crash data was analysed to determine the Fatal or Seriously Injured (FSI) rate for the section of road adjacent to the site. It is a typically accepted rule of thumb that an FSI rate of three or more over a five-year period is considered high and potentially indicates that a safety issue is present.

No reported crashes have occurred at the intersection or along Red Hill Road over the five-year period. Therefore, the historic crash data suggests that no existing safety issues are present on the external road network in proximity to the site.

2.7 HEAVY VEHICLE ACCESS

To the north and south of the Bruce Highway / Red Hill Road intersection, the Bruce Highway forms part of the Higher Mass Limits (HML) and 1-Tonne Mass Transfer (1TMT) network. This allows certain vehicles to access additional mass entitlements under specific conditions.

Red Hill Road is not an approved heavy vehicle route and as such, the largest dimensioned vehicle permitted to use this road (as of right) is 20m in length (ie Performance Based Standards Level 1).

3.0 PROPOSED DEVELOPMENT

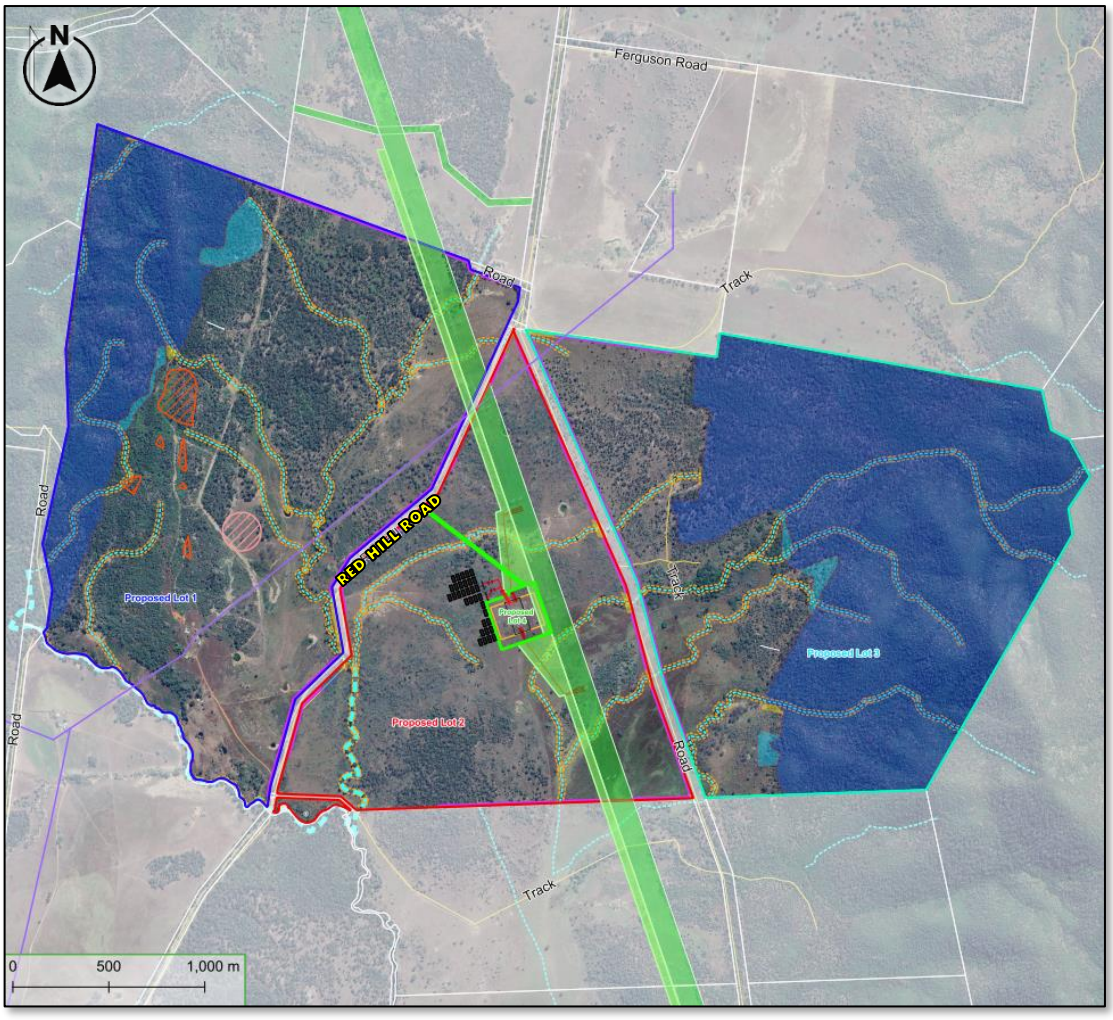
3.1 SITE LAYOUT

The proposed development involves:

- a reconfiguration of a lot (from one lot into four lots), with proposed Lot 2 containing the BESS and proposed Lot 4 accommodating the switchyard
- the construction of a BESS facility comprising 396 x 5MWhr batteries clustered in a traditional battery farm arrangement within Lot 2, on the eastern side of Red Hill Road

An indicative layout of the BESS project is shown in Figure 3.1.

Figure 3.1: BESS LAYOUT



3.2 CONSTRUCTION PHASE

The construction phase of the project is expected to occur over a 9 – 12 month time period.

3.3 ACCESS

3.3.1 Location and Sight Distance

Vehicular access to the site would be facilitated via a single access driveway on Red Hill Road. The proposed access is located on the eastern side of Red Hill Road approximately 9.9km from the Bruce Highway and 1.9km from the southern boundary of Lot 132 on FD700. As demonstrated in Figure 3.2, the access driveway would have good sight distance in each direction and could meet the 139m required under AS2890.1 based on the default rural 100km/h design speed. However, to achieve the required sight distance to and from the north, it would be necessary to remove existing vegetation within the road reserve.

Figure 3.2: ACCESS SIGHT DISTANCE

3.3.2 Design

In terms of the design of the site access driveway, it is proposed that it will be generally be in accordance with Standard Drawing CMDG-R-040 (Accesses Along Gravel Roads) from the Capricorn Municipal Development Guidelines.

The design vehicle for the site accesses is currently unknown. However, it is expected that it will not typically exceed a 26m long B-double. There will be in the order of six Over-Size / Over-Mass (OSOM) vehicle trips associated with the delivery of transformers. As the specifications of these vehicles are yet to be determined, it is recommended that assessment of OSOM vehicle access be undertaken prior to the delivery of relevant components to the site, as part of the OSOM permit and route assessment.

It is recommended that the construction of the site access driveway be designed with the following parameters:

- Red Hill Road widened to 9.0m
- a 9.0m wide access driveway
- corner radii of approximately 15m

No turn treatments are considered necessary at the site accesses on Red Hill Road based on the low background traffic volumes. A concept drawing of the access driveway on Red Hill Road is provided in Figure 3.3. The driveway will effectively operate as right-in / left-out.

Figure 3.3: INDICATIVE ACCESS DESIGN

3.4 CAR PARKING

3.4.1 Construction Phase

It is recommended that a sufficient parking area be designated on-site to ensure no parking occurs on the surrounding road network. It is also recommended that separate provision be made for shuttle buses to be accommodated on-site for staff drop-off / pick-up.

It is not considered necessary to seal the parking areas given the temporary nature of the construction phase. Parking spaces could be delineated using devices such as wheel stops.

3.4.2 Operational Phase

It is recommended that an on-site parking area be constructed in accordance with AS2890.1 to support the operational phase of the development.

3.5 ROAD UPGRADES

The CMDG Annexure D01C outlines design specifications for rural roads. For a rural collector road (ie Red Hill Road), the CMDG specifies an AADT volume of less than 1,000vpd and the following requirements:

- 12.0m wide formation
- 8.0m wide carriageway
- 3.0m wide sealed traffic lanes
- 1.0m wide sealed shoulders

As outlined in Section 2.4, Red Hill Road is currently a low volume rural road. It is expected that the construction phase of the development would generate approximately 50vpd, as detailed in Section 4.1.1. Therefore, the traffic on Red Hill Road would not exceed the AADT volume specified for a rural collector road.

The initial 3.0km long sealed section of Red Hill Road is approximately 5.0m wide. The remaining unsealed section is generally 6.0m wide on an 8.0m formation. Accordingly, the current width of Red Hill Road is insufficient to accommodate safe two-way operations for construction vehicles. Therefore, it is recommended that either:

1. the entire extent of Red Hill Road be widened to a minimum of 7.0m (with additional widening on bends)
2. the existing 5.0-6.0m wide roadway be retained, but passing bays be provided at regular intervals and / or traffic management / control measures be implemented

Given the temporary nature of the project, it is considered that Option 2 is more appropriate as it would mitigate the traffic impacts on Red Hill Road while minimising the extent of upgrade works required.

The passing bays should provide opportunities for safe two-way vehicle operations as follows:

- be located no more than 200m apart, with a shorter separation distance provided where the forward visibility (which is constrained by both the horizontal and vertical alignment) is limited (ie the passing bay separation distance should be equal to the available forward visibility at any point on the road alignment)
- be achieved by widening Red Hill Road to at least 7.0m and be sufficiently long to accommodate one design vehicle (ie a minimum of 25m long plus tapers back to the existing alignment)

On the basis that passing bay locations will need to be identified with regard to both the horizontal and vertical alignment, it is recommended that the design of the Red Hill Road cross-section be undertaken at the detailed design / operational works stage.

It is not considered necessary to seal Red Hill Road and the existing unsealed road surface would be sufficient for the volumes of traffic expected throughout the duration of the construction stage.

Any road upgrade works and / or traffic management arrangements required as part of the development would be determined at an operational works stage. A Pavement Impact

Assessment is not considered to be required. Instead, it is proposed that the following be conditioned:

- a dilapidation report be prepared for the relevant sections of Red Hill Road, prior to the commencement of construction
- a condition assessment be undertaken for the relevant sections of Red Hill Road following the completion of the construction phase
- a construction traffic management plan be prepared which details the traffic management strategies and upgrades to Red Hill Road required to maintain safe operations during the construction phase including:
  - road widening / provision of passing bays / traffic management measures
  - upgrades to existing culverts, drainage structures and cattle grids
  - traffic control and signage
  - car parking arrangements
  - maintenance and rehabilitation

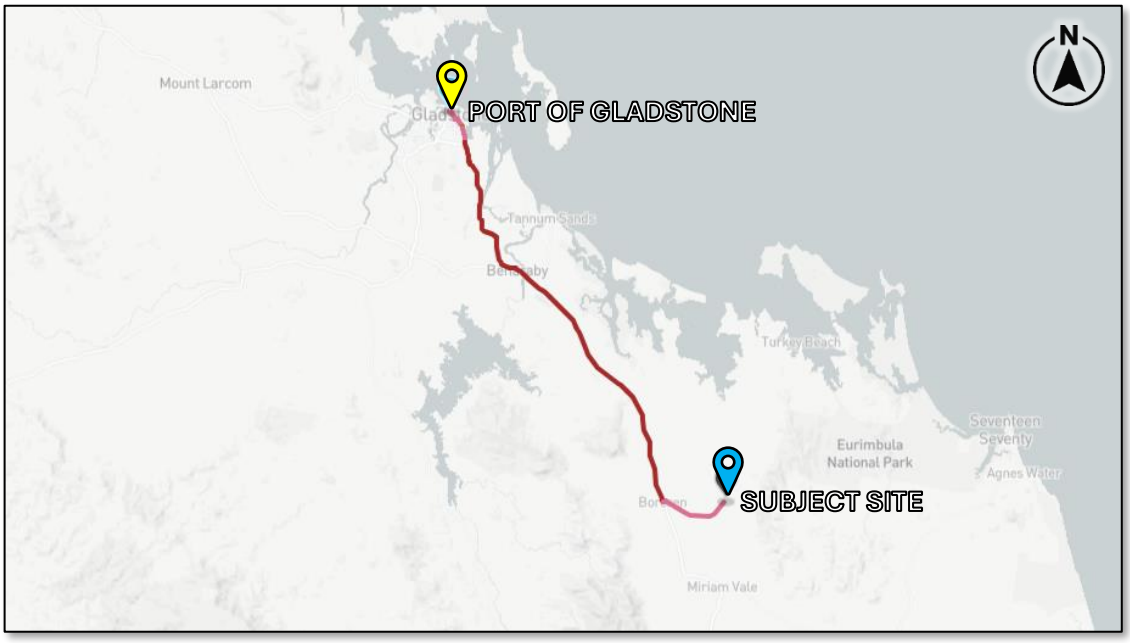
There are two floodways and one cattle grid on Red Hill Road as it passes through the subject site. It is recommended that these structures be upgraded and replaced. Based on a visual assessment, there are no other structures on Red Hill Road that require upgrade. However, this is subject to road widening requirements and the findings of the dilapidation report / condition survey.

3.6 HAULAGE ROUTES

Heavy vehicles are expected to travel to the site from the Port of Gladstone. The shortest route to the site, as determined by the National Heavy Vehicle Regulator (NHVR) route planner, is shown in Figure 3.4 and is outlined below:

Port of Gladstone > Gladstone Benaraby Road > Bruce Highway > Red Hill Road

Figure 3.4: HEAVY VEHICLE ACCESS ROUTE



3.7 VEHICLE TYPES

The expected vehicle fleet associated with the construction phase of the project is as follows:

- 12m long semi-trailers
- 25t Franna cranes
- Over-Size / Over-Mass (OSOM) vehicles
- forklifts (on-site only)
- small tractors (on-site only)
- PEG trailer and 4WD bikes (on-site only)

3.8 OSOM VEHICLES

It is estimated that there will be in the order of six OSOM vehicle trips associated with the delivery of transformers and battery modules. Depending on the final specifications of each OSOM vehicle (which are yet to be confirmed), the use of pilot or escort vehicles may be required in addition to the appropriate OSOM permits.

Prior to any OSOM vehicles travelling to the site, the engaged contractor will assess the load characteristics and dimensional requirements and confirm the need for any pilot or escort vehicles. As part of the permitting process, it is recommended that a risk assessment and a detailed route assessment be undertaken to identify any access constraints or operational limitations along the proposed haul route for each specific vehicle.

The engaged transport contractor will be responsible for applying for the necessary OSOM permits from the NHVR, supported by all relevant documentation. This is expected to include vehicle and combination details (including vehicle type, overall length, width and height, axle masses and spacings), load descriptions, and nominated access routes.

It is expected that all OSOM vehicle movements would originate from the Port of Gladstone and, as such, these vehicles would travel to / from the north of the site. The detailed OSOM route assessment would need to consider the following matters:

- time of travel restrictions including off-peak travel requirements, having regard to scheduled train movements on the North Coast rail line and operations at the Red Hill Road level crossing
- vehicle trailer configuration and loading
- haul route geometric design, clearances and infrastructure suitability, including bridge and culvert capacities, road widths, intersection turning paths, clearances to roadside hazards and infrastructure and vertical clearance constraints
- traffic control and escort requirements including the need for pilot or escort vehicles and any temporary traffic control measures along the route

4.0 TRAFFIC OPERATIONS

4.1 TRAFFIC GENERATION

4.1.1 Daily Traffic Generation

The anticipated traffic generation of the project has been determined based on information provided by Gryphon Energy based on other BESS projects of a similar scale. In terms of heavy vehicle movements, a total of 566 trips are predicted over the project construction period, as summarised in Table 4.1.

Table 4.2: CONSTRUCTION PHASE TRAFFIC GENERATION

ACTIVITY	VEHICLE TYPE	NO. OF VEHICLES	TOTAL TRIPS
Mobilisation to site	12m Semi-trailer	5	10
Crane to site	25t Franna Crane	2	4
Inverter delivery	12m Semi-trailer	50	100
BESS unit delivery	12m Semi-trailer	200	400
Transformer delivery	Over-Size / Over-Mass (OSOM)	6	12
Miscellaneous deliveries	12m Semi-trailer	20	40
Total		**283**	**566**

The light vehicles have been estimated based on a peak construction workforce of 100 personnel, with a mix of shuttle buses (50%) and private transport (50%). It has been assumed that all vehicles would arrive and depart the site each day and that across a 12 month construction period, activities would occur over approximately 280 days (ie six days per week). As shown in Table 4.2, the predicted traffic generation during the construction phase is estimated to be around 50vpd.

Table 4.2: CONSTRUCTION PHASE TRAFFIC GENERATION

TYPE	TOTAL		DAILY	
	VEHICLES	TRIPS	VEHICLES	TRIPS (VPD)
Heavy Vehicles (deliveries)	283	566	3	6
Shuttle Buses (worker transportation)	560	1,120	2	4
Light Vehicles	4,200	8,400	20	40
Total	**5,043**	**10,086**	**25**	**50**

The operational phase of the development would be expected to generate significantly less traffic per day compared to the construction phase.

4.1.2 Peak Hour Traffic Generation

It is expected that light vehicles and shuttle buses would travel to / from the site during the commuter peak hours. No deliveries would be expected to occur outside of working hours. Accordingly, heavy vehicle movements are not expected to align with the weekday commuter peak periods. Therefore, it is estimated that the peak hour construction traffic generation would

be around 20vph during the morning and evening peak periods. The impact of the operational phase would be immaterial.

4.2 DIRECTIONAL DISTRIBUTION

Considering the Port of Gladstone as the point of origin / destination for heavy vehicles, it has been assumed that 100% of heavy vehicle development traffic will travel to / from the north of the Bruce Highway / Red Hill Road intersection (ie via a left-turn into Red Hill Road and a right-turn out of Red Hill Road). Staff access routes would be dependent on accommodation locations. However, based on the surrounding area, it is expected that around 50% of staff would travel to / from the north of the Bruce Highway / Red Hill Road intersection and 50% would travel to / from the south.

4.3 TRAFFIC IMPACT

4.3.1 Road Network

As outlined in Section 2.5, the 2022 AADT data obtained from TMR for the Bruce Highway recorded an AADT of approximately 6,350vpd in both directions. The data also indicates an average traffic growth rate of 1.0% per annum over the most recent ten-year period for which data is available (ie 2012 – 2022). Therefore, a background traffic growth rate of 1.0% per annum has been adopted to estimate the 2027 (ie the assumed year of construction) AADT volumes on the road. The application of this rate equates to a 2027 AADT volume of approximately 6,675 vehicles.

Based on the above, the addition of development generated traffic during the construction phase would equate to around 0.6% of the estimated 2027 daily volumes on the Bruce Highway. It is expected that the percentage impact on Red Hill Road would be much higher due to the significantly low background traffic volumes. However, Council's Level of Service ratings indicates that an unsealed rural collector road (ie Red Hill Road) would be expected to carry around 300vpd. Therefore, there is sufficient capacity for Red Hill Road to accommodate the traffic generated by the construction phase of the development.

Furthermore, the traffic generation associated with the construction phase of the development is expected to be temporary and would cease upon completion. Therefore, the addition of traffic generated by the construction and operational phases is not expected to have a significant adverse impact on surrounding road network operations.

The upgrades to Red Hill Road to accommodate construction traffic are summarised in Section 3.5.

4.3.2 Rail Network

As outlined in Section 4.1.2, the largest proportion of daily construction trips would be expected to occur during the morning and afternoon peak hours. As vehicles would be expected to turn right / left into Red Hill Road from the Bruce Highway during the morning peak hour, this is the most critical peak in terms of the impact on the level crossing.

There is 45m of queuing storage between the stop line to the level crossing and the Bruce Highway. Based on an average vehicle length of 6.0m, this equates to sufficient storage for seven queued light vehicles. The peak hour traffic generation of 20vph equates to approximately one vehicle every three minutes, or a queuing requirement of 6.0m every two minutes. The peak hour traffic generation during the operational phase is expected to be immaterial. Therefore, the available queuing storage is expected to be sufficient to cater for the construction and operational traffic generation.

It is expected that construction heavy vehicle manoeuvring at this location, particularly for OSOM vehicles which may exceed 45m (ie the available queue storage) in length, would be managed through a construction traffic management plan.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The proposed BESS facility at 837 Red Hill Road, Bororen has been evaluated in terms of its likely access arrangements, traffic generation and impact on the surrounding road network. The main points to note are:

- the construction phase is expected to occur over a 9-12 month period
- vehicular access to the site would be facilitated via an access driveway on the eastern side of Red Hill Road
- the proposed access location on Red Hill Road is appropriately located in terms of available sight distance
- heavy vehicles are expected to travel to the site from the Port of Gladstone
- the predicted traffic generation during the construction phase is estimated to be around 50vpd and 20vph during the peak periods
- the operational phase of the development would be expected to generate significantly less traffic per day compared to the construction phase
- the addition of traffic generated by the construction and operational phases is not expected to have a significant adverse impact on surrounding road network operations

5.2 RECOMMENDATIONS

Based on the above, it is recommended that:

- the site access driveway be designed in accordance with Standard Drawing CMDG-R-040 (Accesses Along Gravel Roads) from the Capricorn Municipal Development Guidelines
- the construction site access driveway be designed with the following parameters:
  - Red Hill Road widened to 9.0m
  - a 9.0m wide access driveway
  - corner radii of approximately 15m
- existing vegetation within the road reserve to the north of the site access driveway be removed so that the available sight distance in this direction can be achieved
- an assessment of OSOM vehicle access be undertaken prior to the delivery of relevant components to the site, as part of the OSOM permit process
- a sufficient parking area(s) be designated on-site to ensure no parking occurs on the surrounding road network
- the on-site parking area be constructed in accordance with AS2890.1 for the operational phase of the development
- with respect to upgrades on Red Hill Road either:
  1. the entire extent of Red Hill Road be widened to a minimum of 7.0m (with additional widening on bends)
  2. the existing 5.0-6.0m wide roadway be retained, but passing bays be provided at regular intervals and / or traffic management / control measures be implemented

Given the temporary nature of the project, it is considered that Option 2 is more appropriate as it would mitigate the traffic impacts on Red Hill Road while minimising the extent of upgrade works required

- a Pavement Impact Assessment for Red Hill Road is not considered to be required, instead the following is proposed:
  - a dilapidation report be prepared for the relevant sections of Red Hill Road, prior to the commencement of construction
  - a condition assessment be undertaken for the relevant sections of Red Hill Road following the completion of the construction phase
  - the two floodways and one cattle grid on Red Hill Road as it passes through the subject site be replaced, with other existing drainage structures reviewed as part of the dilapidation report / condition survey
- a detailed route assessment be prepared to confirm OSOM vehicle specifications and requirements and identify any constraints along the approved haul route

APPENDIX A
RED HILL ROAD TRAFFIC DATA

Job	21805		
Client	Pekol Traffic and Transport	**GPS Ref**	-24.241527, 151.495832
Road	Red Hill Road	**Road Class**	
Location	Between Bruce Hwy and Anzac Pl (50kmh)	**File Ref**	21805 PTT.txt
Suburb	Bororen	**Speed Limit**	50
Site No.	1		
Start	Thursday 16/01/2025	**End**	Wednesday 22/01/2025
Direction 1	**Eastbound**	**Direction 2**	**Westbound**
Max Speed	55.2 Kmh	**Max Speed**	47.5 Kmh
Time Date	10:15 AM 17/01/2025	**Time Date**	3:15 PM 17/01/2025

Click on the reports you would like to view or
Select tick box for the reports you would like to printout

ALL Sheets ☐

1	**Summary - Speed/Class Overview**	Portrait	☐
2	**Summary - Traffic Count & Basic Stats** (Optional Site Location Map)		☐
3	**Summary - Volume Table & Graph**		☐
4	**Summary - Class Table, Speed Stats** (13 Bins xDay, Speed Stats - 24Hr, AM/PM Peak, 15Kmh Pace)	Direction 1	☐
7	**Classification, 4 bins, Table/Graph** (Select Direction, Day, Week)		☐
8	**Classification, Speed Table/Graph** (13 Bins, Spd Avg & 85%ile, Select Dir, Day, Week - Graph Daily Av)		☐
9	**Austroads Classification & Speed** (Detailed table, 24Hr Aggr, Spd Avg, Mean 85%ile, Max)		☐
11	**Speed 10Kmh Bins - Summary & Stats**		☐
12	**Speed 10Kmh Bins Table & Stats** Speed Mean, 85%il, continous for duration		☐
14	**Volume Hourly Table, WeekDay Avg** (AM/PM Peak, Continuous for Duration)		☐
17	**Graph Volume - Single Day** (Select Dir, Day, Week)		☐
18	**Graph Volume & Speed** (Average Speed and 85%ile Hourly/Day - Select Dir. Day, Week)		☐
19	**Weekly Volume Graph** (Select Week, Dir)		☐
20	**Class Speed Matrix**		☐
21	**Graph Volume & Speed (Car Vs Truck)** (Average Speed and 85%ile Hourly/Day - Select Dir. Day, Week)		☐

All Directions | All Weeks | All Days

Print Selected Sheets

DatXL 3.1.36 Template: 2.46

Traffic Count Site Summary

STREET NAME :	Red Hill Road	LOCATION:	Between Bruce Hwy and Anzac Pl (50kmh)
SUBURB:	Bororen	START DATE :	Thursday 16 Jan 2025
FILE NAME :	21805 PTT.txt	FINISH DATE :	Wednesday 22 Jan 2025
SITE ID NUMBER :	1	SPEED ZONE :	50
PREPARED BY :	Austraffic	ROAD CLASSIFICATION:	

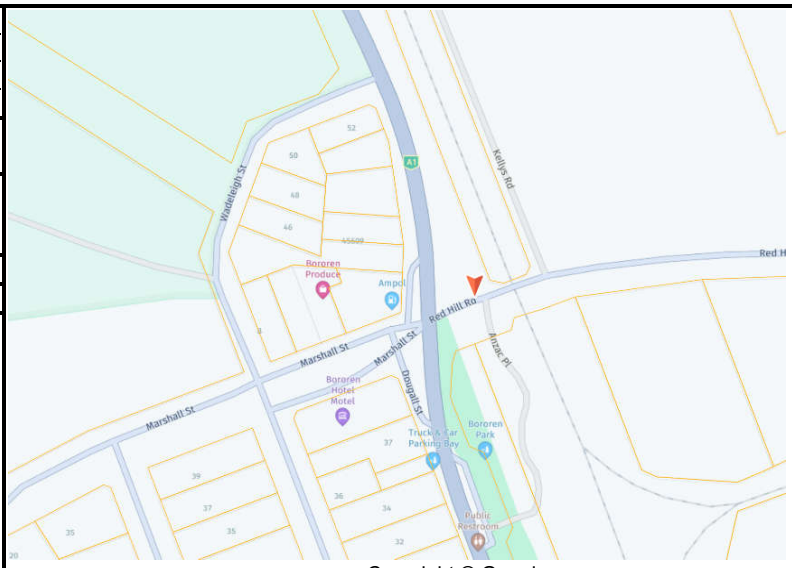
		DIRECTION OF TRAVEL		
		TWO-WAY	Eastbound	Westbound
TRAFFIC VOLUME: [VEH/DAY]	Week Days Only Average	167	83	83
	Total Survey Average	169	84	85
WEEK DAY PEAK HOUR VOLUME: AM	11:00	14	6	9
PM	17:00	15	11	6
PEAK DAY		Sat 18 Jan 2025	Thu 16 Jan 2025	Sat 18 Jan 2025
PEAK DAY VOLUME		191	98	99
WEEKDAY PACE	15Kph Pace Starts	23	23	23
	% Pace Volume	69%	72%	67%
TOTAL SPEEDS: Km/Hr	85th Percentile	37.2	37.1	36.2
	Average	28.9	29.9	27.9
95th Percentile	Thursday 16/01/25	41.3	41.8	38.8
	Friday 17/01/25	41.6	42.9	40.8
	Saturday 18/01/25	40.5	41.4	38.7
	Sunday 19/01/25	40.2	43.2	39.4
	Monday 20/01/25	40.1	42.5	40.0
	Tuesday 21/01/25	40.4	40.3	39.9
	Wednesday 22/01/25	40.7	41.5	39.8
CLASSIFICATION % *:	Week Days CLASS 1 %	78.8%	86.8%	70.7%
	Week Days Commercial	18.6%	11.0%	26.2%

NOTES : (OBSERVATIONS)

* CLASS 1 - Short Vehicles up to 5.5m
Commercial - Classes 3 to 12 inclusive

Automatic Traffic Counts - Site Data

Site No:	1
Date:	Thursday 16 Jan 2025
Start Time:	0:00
Officer:	ATS
Road:	Red Hill Road
Suburb:	Bororen
LOCATION: Between Bruce Hwy and Anzac Pl (50kmh)	
Map/GPS Ref:	-24.241527, 151.495832
Comments:	



austraffic

Hourly Volume by Day

Site No.	1	**Suburb**	Bororen	**Surveyed**	Thu 16 Jan 25 to Wed 22 Jan 25	**Job#**	21805
Location	Red Hill Road Between Bruce Hwy and Anzac Pl (50kmh)					**Direction**	Eastbound

Hourly Traffic Volume Summary

Time (hour starting)	Thursday 16/01/25	Friday 17/1/25	Saturday 18/1/25	Sunday 19/1/25	Monday 20/1/25	Tuesday 21/1/25	Wednesday 22/1/25	Total 7 day Volumes	Average Weekday Volumes	Average Daily Volumes
0:00	0	0	1	1	0	1	0	**3**	**0**	**0**
1:00	0	0	0	0	0	0	0	**0**	**0**	**0**
2:00	0	0	0	0	0	0	0	**0**	**0**	**0**
3:00	0	0	0	0	0	0	0	**0**	**0**	**0**
4:00	0	1	0	0	1	0	0	**2**	**0**	**0**
5:00	7	5	3	1	2	1	3	**22**	**4**	**3**
6:00	5	2	7	6	5	2	2	**29**	**3**	**4**
7:00	7	2	7	3	3	5	4	**31**	**4**	**4**
8:00	5	6	7	3	3	7	10	**41**	**6**	**6**
9:00	7	4	3	5	8	9	2	**38**	**6**	**5**
10:00	5	5	11	3	6	9	2	**41**	**5**	**6**
11:00	6	4	8	14	5	4	11	**52**	**6**	**7**
12:00	3	8	10	7	1	3	7	**39**	**4**	**6**
13:00	5	9	2	4	4	3	5	**32**	**5**	**5**
14:00	8	6	6	4	7	7	6	**44**	**7**	**6**
15:00	10	8	11	8	6	7	2	**52**	**7**	**7**
16:00	6	6	3	10	4	3	9	**41**	**6**	**6**
17:00	16	9	7	3	11	10	7	**63**	**11**	**9**
18:00	1	0	1	2	6	4	3	**17**	**3**	**2**
19:00	4	5	3	2	2	2	3	**21**	**3**	**3**
20:00	2	0	1	1	1	0	0	**5**	**1**	**1**
21:00	1	0	0	0	1	3	1	**6**	**1**	**1**
22:00	0	2	0	0	2	1	1	**6**	**1**	**1**
23:00	0	0	1	0	0	0	0	**1**	**0**	**0**
Daily Total Traffic Volumes	**98**	**82**	**92**	**77**	**78**	**81**	**78**	**586**	**83**	**84**
Peak Hourly Traffic Volumes	**16**	**9**	**11**	**14**	**11**	**10**	**11**	**63**	**11**	**9**

AM Peak	**7 5:00:00 AM**	**6 8:00:00 AM**	**11 10:00:00 AM**	**14 11:00:00 AM**	**8 9:00:00 AM**	**9 9:00:00 AM**	**11 11:00:00 AM**	**52 11:00:00 AM**	**6 8:00:00 AM**	**7 11:00:00 AM**
PM Peak	**16 5:00:00 PM**	**9 1:00:00 PM**	**11 3:00:00 PM**	**10 4:00:00 PM**	**11 5:00:00 PM**	**10 5:00:00 PM**	**9 4:00:00 PM**	**63 5:00:00 PM**	**11 5:00:00 PM**	**9 5:00:00 PM**

Hourly Volume by Day

Site No.	1	**Suburb**	Bororen	**Surveyed**	Thu 16 Jan 25 to Wed 22 Jan 25	**Job#**	21805
Location	Red Hill Road Between Bruce Hwy and Anzac Pl (50kmh)					**Direction**	Westbound

Hourly Traffic Volume Summary

Time (hour starting)	Thursday 16/01/25	Friday 17/1/25	Saturday 18/1/25	Sunday 19/1/25	Monday 20/1/25	Tuesday 21/1/25	Wednesday 22/1/25	Total 7 day Volumes	Average Weekday Volumes	Average Daily Volumes
0:00	0	0	0	0	0	3	0	**3**	**1**	**0**
1:00	0	0	0	0	0	0	0	**0**	**0**	**0**
2:00	0	2	0	0	0	0	0	**2**	**0**	**0**
3:00	0	0	0	0	0	0	0	**0**	**0**	**0**
4:00	4	1	1	1	3	3	2	**15**	**3**	**2**
5:00	6	10	3	2	10	10	7	**48**	**9**	**7**
6:00	5	2	9	5	7	5	6	**39**	**5**	**6**
7:00	11	3	12	7	8	9	7	**57**	**8**	**8**
8:00	5	8	9	3	6	9	7	**47**	**7**	**7**
9:00	2	9	6	8	5	6	5	**41**	**5**	**6**
10:00	8	4	11	8	8	4	2	**45**	**5**	**6**
11:00	5	10	8	9	8	4	11	**55**	**8**	**8**
12:00	3	5	5	6	2	4	6	**31**	**4**	**4**
13:00	4	7	4	4	5	7	6	**37**	**6**	**5**
14:00	9	4	6	8	0	4	4	**35**	**4**	**5**
15:00	5	8	8	6	6	6	7	**46**	**6**	**7**
16:00	2	3	4	3	2	4	4	**22**	**3**	**3**
17:00	7	6	6	1	7	2	0	**29**	**4**	**4**
18:00	4	2	2	5	4	1	6	**24**	**3**	**3**
19:00	0	0	0	3	0	1	3	**7**	**1**	**1**
20:00	0	0	0	0	0	0	0	**0**	**0**	**0**
21:00	1	1	2	0	0	1	1	**6**	**1**	**1**
22:00	1	1	0	0	0	0	0	**2**	**0**	**0**
23:00	0	0	3	0	0	0	0	**3**	**0**	**0**
Daily Total Traffic Volumes	**82**	**86**	**99**	**79**	**81**	**83**	**84**	**594**	**83**	**85**
Peak Hourly Traffic Volumes	**11**	**10**	**12**	**9**	**10**	**10**	**11**	**57**	**9**	**8**

AM Peak	**11** **7:00:00 AM**	**10** **5:00:00 AM**	**12** **7:00:00 AM**	**9** **11:00:00 AM**	**10** **5:00:00 AM**	**10** **5:00:00 AM**	**11** **11:00:00 AM**	**57** **7:00:00 AM**	**9** **5:00:00 AM**	**8** **7:00:00 AM**
PM Peak	**9** **2:00:00 PM**	**8** **3:00:00 PM**	**8** **3:00:00 PM**	**8** **2:00:00 PM**	**7** **5:00:00 PM**	**7** **1:00:00 PM**	**7** **3:00:00 PM**	**46** **3:00:00 PM**	**6** **3:00:00 PM**	**7** **3:00:00 PM**

Hourly Volume by Day

Site No.	1	**Suburb**	Bororen	**Surveyed**	Thu 16 Jan 25 to Wed 22 Jan 25	**Job#**	21805
Location	Red Hill Road Between Bruce Hwy and Anzac Pl (50kmh)					**Direction**	Two ways

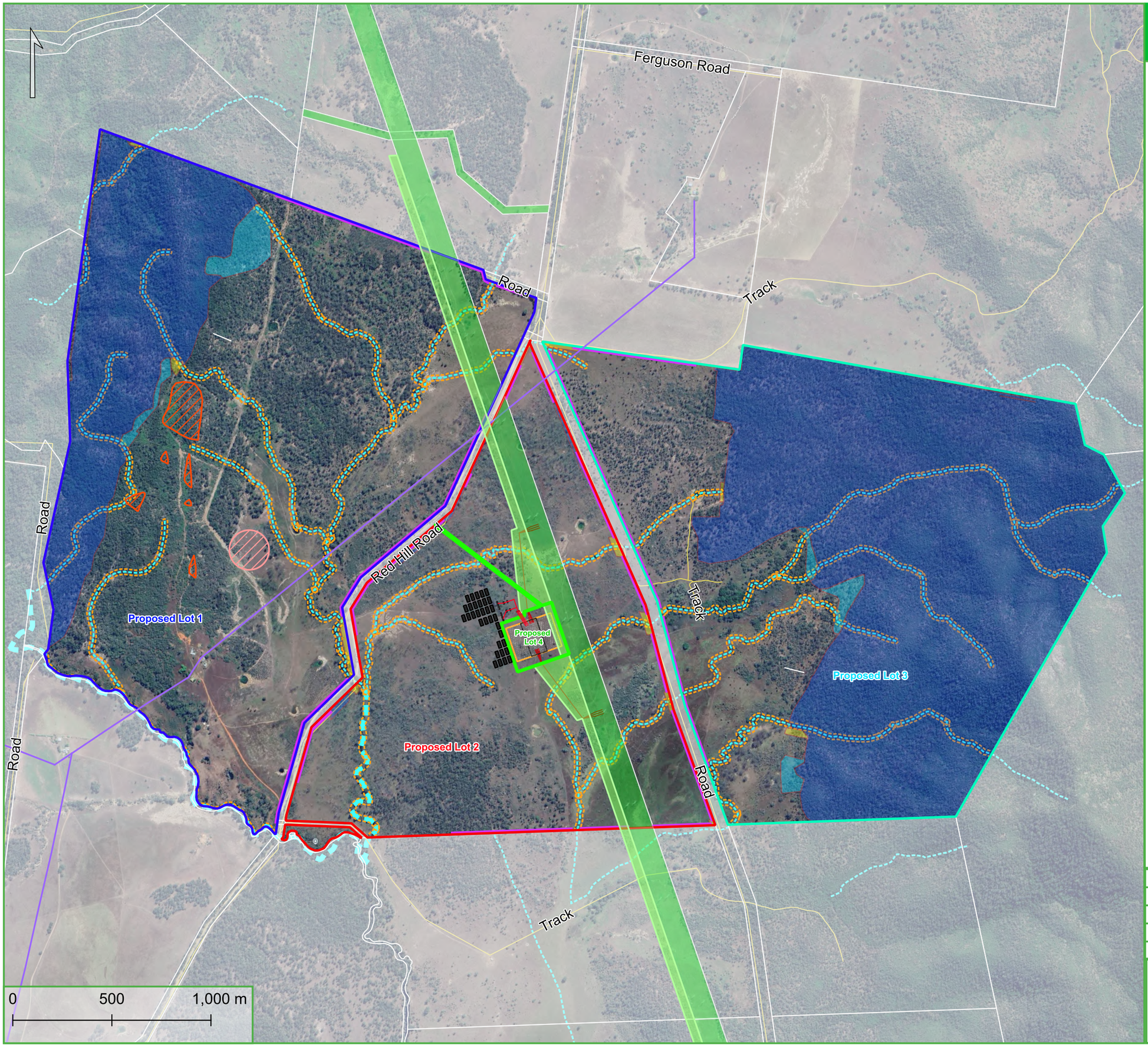
Hourly Traffic Volume Summary

Time (hour starting)	Thursday 16/01/25	Friday 17/1/25	Saturday 18/1/25	Sunday 19/1/25	Monday 20/1/25	Tuesday 21/1/25	Wednesday 22/1/25	Total 7 day Volumes	Average Weekday Volumes	Average Daily Volumes
0:00	0	0	1	1	0	4	0	**6**	**1**	**1**
1:00	0	0	0	0	0	0	0	**0**	**0**	**0**
2:00	0	2	0	0	0	0	0	**2**	**0**	**0**
3:00	0	0	0	0	0	0	0	**0**	**0**	**0**
4:00	4	2	1	1	4	3	2	**17**	**3**	**2**
5:00	13	15	6	3	12	11	10	**70**	**12**	**10**
6:00	10	4	16	11	12	7	8	**68**	**8**	**10**
7:00	18	5	19	10	11	14	11	**88**	**12**	**13**
8:00	10	14	16	6	9	16	17	**88**	**13**	**13**
9:00	9	13	9	13	13	15	7	**79**	**11**	**11**
10:00	13	9	22	11	14	13	4	**86**	**11**	**12**
11:00	11	14	16	23	13	8	22	**107**	**14**	**15**
12:00	6	13	15	13	3	7	13	**70**	**8**	**10**
13:00	9	16	6	8	9	10	11	**69**	**11**	**10**
14:00	17	10	12	12	7	11	10	**79**	**11**	**11**
15:00	15	16	19	14	12	13	9	**98**	**13**	**14**
16:00	8	9	7	13	6	7	13	**63**	**9**	**9**
17:00	23	15	13	4	18	12	7	**92**	**15**	**13**
18:00	5	2	3	7	10	5	9	**41**	**6**	**6**
19:00	4	5	3	5	2	3	6	**28**	**4**	**4**
20:00	2	0	1	1	1	0	0	**5**	**1**	**1**
21:00	2	1	2	0	1	4	2	**12**	**2**	**2**
22:00	1	3	0	0	2	1	1	**8**	**2**	**1**
23:00	0	0	4	0	0	0	0	**4**	**0**	**1**
Daily Total Traffic Volumes	**180**	**168**	**191**	**156**	**159**	**164**	**162**	**1180**	**167**	**169**
Peak Hourly Traffic Volumes	**23**	**16**	**22**	**23**	**18**	**16**	**22**	**107**	**15**	**15**

AM Peak	**18 7:00:00 AM**	**15 5:00:00 AM**	**22 10:00:00 AM**	**23 11:00:00 AM**	**14 10:00:00 AM**	**16 8:00:00 AM**	**22 11:00:00 AM**	**107 11:00:00 AM**	**14 11:00:00 AM**	**15 11:00:00 AM**
PM Peak	**23 5:00:00 PM**	**16 1:00:00 PM**	**19 3:00:00 PM**	**14 3:00:00 PM**	**18 5:00:00 PM**	**13 3:00:00 PM**	**13 12:00:00 PM**	**98 3:00:00 PM**	**15 5:00:00 PM**	**14 3:00:00 PM**

APPENDIX B
PLANS OF DEVELOPMENT

Rutherglen Project
Site Plan



Project Site (Lot 132 on FD700)

- Proposed Lot 1 - 513.9ha
- Proposed Lot 2 - 282.7ha (Contains BESS)
- Proposed Lot 3 - 472.2ha
- Proposed Lot 4 - 7.8ha (Contains Switchyard)
- Proposed 275 kV Transmission Cut-In
- Property Boundary 10m Setback
- Roads and Tracks
- Watercourse - Stream Order 1 or 2
- Watercourse - Stream Order 3
- 15m Watercourse Buffer
- Energex LV Network
- Easement
- Future Easement - 40m Wide (Up to 185m Wide at Transmission Cut-In)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegatation)
- Salinity Expression Area
- Gladstone Regional Council Steep Land Overlay

BESS and Switchyard Layouts by Gryphon Energy

Please note these plans are indicative only and will be subject to further refinement at a later stage. Refer to the Switchyard and BESS Plan for further lot dimension detail.

SCALE:	1 : 20,000 @ A3
COORDINATE SYSTEM:	WGS84/Pseudo-Mercator EPSG:3857
JOB NUMBER:	J001639
CLIENT:	Gryphon Energy Pty Ltd
DATE:	15/10/2025

gilvear planning
GENUINE | VERSATILE | DEDICATED

Rutherglen Project
Subdivision Plan - Lot 132 on FD700

Billycan Road
Ferguson Road
Road
Track
Proposed Lot 1
Road
Red Hill Road
Proposed Lot 4
Proposed Lot 2
Track
Proposed Lot 3
Road
Road
Track
0
500
1,000 m

- Roads and Tracks
- Existing Easement
- Future Easement - 40m Wide (Up to 185m Wide at Transmission Cut-In)
- Energex LV Network
- Cadastre
- Proposed Lot 1 - 513.9ha
- Proposed Lot 2 - 282.7ha - Contains BESS
- Proposed Lot 3 - 472.2ha
- Proposed Lot 4 - 7.8ha - Contains Switchyard

BESS and Switchyard Layouts by Gryphon Energy

Please note these plans are indicative only and will be subject to further refinement at a later stage. Refer to the Switchyard and BESS Plan for further lot dimension detail.

SCALE:	MAIN: 1 : 20,000 / INSET: 1:1000000 @ A3
COORDINATE SYSTEM:	WGS84/Pseudo-Mercator EPSG:3857
JOB NUMBER:	J001639
CLIENT:	Gryphon Energy Pty Ltd
DATE:	15/10/2025

gilvear planning
GENUINE | VERSATILE | DEDICATED

Rutherglen Project
Switchyard and BESS

- HV Switchyard (235m x 175m - 4.1ha)
- Existing Easement
- Future Easement - 40m Wide (Up to 185m Wide at Transmission Cut-In)
- Proposed Lot 4 - 7.8ha
- Proposed 275 kV Transmission Line Cut-In
- MSES Regulated Vegetation
  - Intersecting a Watercourse
  - Stream Order 1 and 2

BESS, Switchyard Layouts, and Contour Plan provided by Gryphon Energy

Please note these plans are indicative only and will be subject to further refinement at a later stage.

SCALE:	1:2000 @ A3
COORDINATE SYSTEM:	EPSG:3857 / WGS84
JOB NUMBER:	J001639
CLIENT:	GRYPHON ENERGY PTY LTD
DATE:	15/10/2025

gilvear planning
GENUINE | VERSATILE | DEDICATED

APPENDIX C
VEHICLE SWEPT PATHS

N

RED HILL ROAD

9.0

R15.0

R15.0

9.0

BESS ACCESS ROAD

B-DOUBLE 26M
meters

Tractor Width	: 2.50	Lock to Lock Time	: 8.0
Trailer Width	: 2.50	Steering Angle	: 23.4
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

PTT
TRAFFIC & TRANSPORT ENGINEERING
PTT
ABN 96 067 593 962
P 07 3839 6771 WWW.PTT.COM.AU
Level 2, 62 Astor Tce, Spring Hill QLD 4000

REV.	AMENDMENTS	DRN	DATE

PROJECT TITLE: RUTHERGLEN BESS PROJECT

DRAWING TITLE: B-DOUBLE SWEPT PATHS

CLIENT: RED HILL RENEWABLE ENERGY PTY LTD

DATE:	SCALE:	DRAWN:	APPROVED:
24/07/2025	1:500@A3	CB	JG

DRAWING NO.	REV	JOB NO.
24-510-002		24-510