It is noted that the compliance indicated in this report is specific to the conceptual project design detailed in this report, including equipment positions, selections, and associated noise data.

Where changes to the project design occur, continued compliance with the noise limits should be verified. In addition, where more detailed information regarding noise data associated with the operation of the transformers is known, a more representative prediction of tonality modifications for these equipment items may be feasible.

APPENDIX A GLOSSARY OF TERMINOLOGY

A-weighting	A set of frequency-dependent sound level adjustments that are used to better represent how humans hear sounds. Humans are less sensitive to low and very high frequency sounds. Sound levels using an "A" frequency weighting are expressed as dB L_A. Alternative ways of expressing A-weighted decibels are dBA or dB(A).
dB	Decibel. The unit of sound level.
Frequency	Sound occurs over a range of frequencies, extending from the very low (e.g. thunder) to the very high (e.g. mosquito buzz). Measured in units of Hertz (Hz). Humans typically hear sounds between 20 Hz and 20 kHz. High frequency acuity naturally reduces with age most adults can hear up to 15 kHz.
Hertz (Hz)	The unit of frequency, named after Gustav Hertz (1887-1975). One hertz is one pressure cycle of sound per second. One thousand hertz – 1000 cycles per second – is a kilohertz (kHz).
L_{Aeq}	The equivalent continuous A-weighted sound level. Commonly referred to as the average sound level and is measured in dB.
Octave band	The interval between one frequency and its double. Sound is divided into octave bands for analysis. The typical octave band centre frequencies are 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz and 4 kHz.

MARSHALL DAY Acoustics

APPENDIX B CONCEPTUAL LAYOUT PLAN

APPENDIX C NOISE MODELLING METHOD

A computer model was created in the environmental noise modelling program SoundPLANnoise v9.0 to predict noise levels from the proposed development to relevant noise-affected receivers in the vicinity of the subject site. The noise model has been used to calculate noise levels at the nearest noise-affected premises in accordance with ISO-9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* (ISO 9613-2). The noise model enables the calculation of noise levels over a wide area, and accounts for key considerations including site arrangement, terrain, and atmospheric conditions.

The ISO 9613-2 standard specifies an engineering method for calculating noise at a known distance from a variety of sources under meteorological conditions that are favourable to sound propagation. The standard defines favourable conditions as downwind propagation where the source blows from the source to the receiver within an angle of +/-45 degrees from a line connecting the source to the receiver, at wind speeds between approximately 1 m/s and 5 m/s, measured at a height of 3 m to 11 m above the ground. Equivalently, the method accounts for average propagation under a well-developed moderate ground based thermal inversion.

Accordingly, predictions based on ISO 9613-2 account for the instances when local atmospheric conditions at the site favour the propagation of sound to surrounding receptor locations. Under alternative atmospheric conditions, such as when the wind is blowing from a receiver location to the development site, the noise levels would be lower than calculated.

To calculate far-field noise levels according to the ISO 9613-2, the noise levels of each source are firstly characterised in the form of octave band frequency levels. A series of octave band attenuation factors are then calculated for a range of effects including:

- Geometric divergence
- Air absorption
- Reflecting obstacles
- Screening
- Ground reflections.

The octave band attenuation factors are then applied to the noise data to determine the corresponding octave band and total calculated noise level at relevant receiver locations.

The following inputs have been referenced in the noise model to predict noise levels from onsite activities.

- Receivers at 1.5 m (single storey)
- Receiver locations positioned according to client provided data.
- The noise model uses publicly available data.
- Noise emission data for each source at the site as detailed in Section 4.2.
- The ground factor, representing the ground attenuation as a result of sound reflected by the ground surface interfering with the sound propagating directly from source to receiver is variable throughout the model being:
    - G = 0.0 i.e. hard ground, within the project boundary and existing substation to represent an expected concrete footing.
    - G = 0.6 i.e. mixed hard / soft ground outside the project boundary and existing substation to represent surrounding existing landscape between the Project and noise sensitive receivers.

Generally, BESS equipment items are modelled as omnidirectional point sources of noise with associated octave band sound power level noise emissions. Where more detailed tonality assessment has been conducted, third octave band noise data has been considered.

For the combined battery and inverter system, modelling guidance contained in manufacturer data sheets has been followed incorporating the built form of the equipment.

The geometries in the model are simplified representations that have been configured to a level of detail that is appropriate for noise calculation purposes.

RMCG

Bushfire Exemption Report

4740 Poatina Rd, Cressy
23 August 2023

1 Introduction

1.1 OVERVIEW

It is a requirement under the *Land Use Planning and Approvals Act 1993*, that a potential hazardous use that occurs either wholly or partially within a bushfire-prone area is assessed by an accredited person who will provide a Bushfire Hazard Management Report and a Bushfire Hazard Management Plan or a Bushfire Exemption.

1.2 SCOPE

This report has been commissioned to assess the bushfire risk of a proposed battery development in the context of whether it will meet the classification of a 'Hazardous Use' as defined under the *Bushfire-Prone Areas Code* of the *Tasmanian Planning Scheme – Northern Midlands* (the Planning Scheme). The use class for the development under the Planning Scheme is 'utilities'. Utilities that are not for an existing use are a discretionary application under the Planning Scheme.

It has also been identified that the land associated with the site will be leased from the property owner for at least 10 years. Because of this, the development is considered to be a subdivision, as per *Table 3.1 Planning Terms and Definitions* of the Planning Scheme. Hence, the development also needs to be considered against the 'Subdivision' requirements under the *Bushfire-Prone Areas Code*.

All advice is compliant with the *Bushfire-Prone Areas Code* of the *Tasmanian Planning Scheme – Northern Midlands*.

This report has been authored by Michael Tempest (BFP – 153), who is an Accredited Person under part 4A of the '*Fire Service Act 1979'*, scope 1, 2, 3A, 3B & 3C.

1.3 PROPOSAL

The proponents seek to develop a battery for storage of power. The following preliminary information has been provided by the proponent regarding the proposal:

- The battery infrastructure will be comprised of a substation, lighting protection towers, 50 containers of batteries, and 25 containers of inverters, with each container measuring 12m x 2.5m x 2.5m (height), a demountable office measuring 12m x 4m x 3m (height), internal fencing, external fencing 2.4m in height, 20,000L water tank, 4m internal access road, and two car spaces.
- The construction time frame is estimated to be 12 months and the battery lifespan is expected to be 15 years.
- No external lighting is proposed. On-site sensor lights will be provided and only operate when there are workers in the yard. Landscaping/tree planting around the perimeter of the site will be established. As an indicator of scale, it is anticipated that the adjacent TasNetworks Palmerston substation will be the dominant feature of the visual landscape.
- Two electrical transformers will be required on site. Each of these transformers will require between 50,000L to 70,000L of transformer oil.
- The land that will be utilised for the development will be leased by the proponent from the property owner for at least 10 years.

The land is zoned as ‘Agriculture’ and is considered bushfire-prone under the Planning Scheme.

1.4 LIMITATIONS

This report only deals with potential bushfire risk and does not consider any other potential statutory or planning requirements.

2 Site description

The title CT 126579/2 is 754.1ha in area and is farmed in conjunction with other land as part of the 'Woodside' property at 4740 Poatina Rd, Cressy, which is comprised of approximately 1,540ha of land and is utilised for mixed farming, both dryland and irrigated. There are four existing dwellings on the subject title, towards the eastern boundary.

The development site for the battery is 4.1ha and an additional 0.75ha is required for the access road from the north (refer to map in Figure A1-1). The development site is located on the northern boundary of the title, immediately adjacent to the TasNetworks owned Palmerston substation located at 4554 Poatina Rd, Cressy.

The development site is comprised of a triangular shaped paddock corner which is bound by transmission lines to the east, TasNetworks substation to the north-east, transmission lines extending to the north-west, and a pivot circle to the south. The access comes from the north via land belonging to TasNetworks via a Right of Way and is immediately adjacent to the north-eastern and south-eastern boundaries of the TasNetworks substation. The majority of the development site will be hardstand with a variable width grassed buffer between the hardstand area and the perimeter fence. A vegetation screen is also proposed around the internal side of the perimeter fence.

The development site and access are generally flat with a very slight north-easterly aspect and an altitude of 180m ASL. There are two drains which drain to the north-east, eventually joining Woodside Rivulet to the east.

2.1 SURROUNDING AREA

All adjacent land to the east, south, west, and north-west on the subject title (CT 126579/2) is utilised for agricultural production, predominately grazing. The vegetation associated with the grazing land is classed as grassland from a bushfire perspective. There is also a 3-row shelter belt (native species) running in an east-west direction from the eastern side of the TasNetworks site, and cuts through the northern part of the site access.

The adjacent TasNetworks site is developed as a substation, with the entire site managed in a low fuel state.

The nearby property to the north, at 1440 Saundridge Rd (CT 105802/1), is also utilised for grazing, with the vegetation classed as grassland from a bushfire perspective.

3 Risk Assessment

3.1 HAZARDOUS USE

As part of the proposal, there will be two electrical transformers located on the site. For each transformer there will be between 50,000L to 70,000L of transformer oil kept on site. Hence, there may be a total of 140,000L of oil on site at any one time.

A 'Hazardous Use' under the Bushfire-Prone Areas Code of the Planning Scheme is defined as:

a) The amount of hazardous chemicals used, handled, generated or stored on a site exceeds the manifest quantity as specified in the *Work Health and Safety Regulations 2012* (WHS Act); or
b) Explosives are stored on a site and where classified as an explosives location or large explosives location as specified in the *Explosives Act 2012*.

There are no explosives proposed to be stored on site, however, further consideration of the type of oil that will be stored on site is required to determine if its quantities will exceed the defined manifest quantity as per the *WHS Act*.

The oil that will be used as a transformer oil on the site is specifically called Nytro Libra. This substance has a flashpoint of 135ºC. Under the United Nations Globally Harmonised System of Classification and Labelling of Chemicals (GHS), a flammable liquid is a liquid that has a flashpoint of not more than 93ºC (Queensland Government 2018). See Table 3-1 for GHS flammable liquid Classifications.

Table 3-1: GHS Flammable Liquid Categories

GHS CATEGORY	CRITERIA
1	Flashpoint <23ºC and initial boiling point <35ºC
2	Flashpoint <23ºC and initial boiling point >35ºC
3	Flashpoint >23ºC and <60ºC
4	Flashpoint >60ºC and <93ºC

When considering the GHS categories against the *Australian Standard AS1940:217 – Definitions for a Combustible Liquid* (AS1940), the GHS Category 4 aligns with a Combustible Liquid Class C1 (Queensland Government 2018). AS1940 has two defined classes of combustible liquids:

- Class C1 – a combustible liquid that has a closed cup flashpoint of greater than 60ºC and no greater than 93ºC.
- Class C2 – a combustible liquid that has a flashpoint exceeding 93ºC or has been excluded from being a flammable liquid by any of the criteria for sustaining combustion.

As per the above definitions, Nytro Libra is considered a Class C2 combustible liquid under AS1940 and does not meet any of the category classifications for a flammable liquid under the GHS standards. See Appendix 3 for Nytro Libra Product Data Sheet.

When considering Schedule 11 – Placard and Manifest Quantities for hazardous chemicals in the *Work Health and Safety Regulations 2012,* combustible liquids are not one of the hazardous chemical categories that has a defined manifest quantity. While a Class C1 combustible liquid meets the definition of a Category 4 flammable liquid, a Class C2 combustible liquid does not. Because of this, there is no defined manifest quantity for the oil that is proposed to be stored on the site as part of the battery development. Therefore, the proposed development does not meet the definition of a 'Hazardous Use' under the Bushfire-Prone Areas Code (the Code) of the Planning Scheme and is considered exempt from being required to comply with the Code.

3.2 SUBDIVISION

Because the land associated with the proposal will be leased for at least 10 years, it is classed as being part of a subdivision as per Table 3-1 of the Planning Scheme. Because of this, consideration of the subdivision requirements of the Bushfire-Prone Areas Code of the Planning Scheme needs to be undertaken. Because of the proposed use, this section seeks to demonstrate compliance with Clause C13.4 of the code:

C13.4 – Use or development exempt from this Code

The following use or development is exempt from the code:

a) Any use or development that the TFS or an accredited person, having regard to the objectives of all applicable standards in the code, certifies there is an insufficient increase in risk to the use or development from bushfire to warrant any specific bushfire protection measures.

HAZARD MANAGEMENT AREAS

C13.6.1 Subdivision: Provision of hazard management areas

Objective: Subdivision provides for hazard management area that:

a) Facilitate an integrated approach between subdivision and subsequent building on a lot;
b) Provide for sufficient separation of building areas from bushfire-prone vegetation to reduce the radiant heat levels, direct flame attack and ember stack at the building area; and
c) Provide protection for lots at any stage of a staged subdivision.

The hazard management area for the existing dwellings on the subject property will not be affected by the leased area and the proposal will not result in a decreased distance to bushfire-prone vegetation. The leased area will be utilised for utilities and will be maintained in a low fuel state. See Figure A1-2 for site concept plan which includes internal roads and gravel pads. There will be a 5m vegetation buffer around the perimeter of the battery site, however, this is considered a windbreak (low-threat vegetation) which will be separated by the main elements of the utilities use by a minimum 10m wide asset protection zone.

This zone will include internal roadways and/or mown grass. The proposed lease will not result in an increase in risk to the existing dwellings and given that the proposed use in the lease area has not been classed as a 'Hazardous Use' and will manage the land within the area, there are no further specific measures required.

ACCESS

C13.6.2 Subdivision: Public and fire fighting access

Objective: Access roads to, and the layout of roads, tracks and trails, in a subdivision:

a) Allow safe access and egress for residents, fire fighters and emergency service personnel;
b) Provide access to the bushfire-prone vegetation that enable both property to be defended when under bushfire attack and for hazard management works to be undertaken;
c) Are designed and constructed to allow for fire appliances to be manoeuvred;
d) Provide access to water supplies for fire appliances; and
e) Are designed to allow connectivity, and where needed, offering multiple evacuation points.

The main access for all four dwellings is off Poatina Rd to the east. This main access drive is 500m in length and 6m wide. From here, the dwellings are accessed by a network of farm tracks, which are generally 3-4m wide with grass verges and numerous overtaking points. The farm access network is utilised by a mix of domestic vehicles as well as farm machinery. The existing access to the existing dwellings on the subject site will not be impacted by the proposal.

The access to the leased area is still in concept phase but will be at least 6m wide from Poatina Rd and will be designed to accommodate heavy vehicles. The proposed lease will not impact the existing dwelling's accesses and given that the proposed use in the lease area has not been classed as a 'Hazardous Use' and will have access that can accommodate fire appliances, there are no further specific measures required.

FIREFIGHTING WATER SUPPLY

C13.6.3: Provision of water supply for fire fighting purposes.

Objective: Adequate, accessible and reliable water supply for the purpose of fire fighting can be demonstrated at the subdivision stage and allow for the protection of life and property associated with the subsequent use and development of bushfire-prone areas.

There is an existing 14,000L water tank located at the site workshop, which is dedicated for filling mobile fire units in a fire event. The farm has a 2,500L firefighting cart that can be used around the farm in a bushfire situation. In addition, the most eastern house has an 80,000L swimming pool which can be used for fire water. All four houses are connected to the Tas Networks switching station water supply, which provides water from Poatina for domestic use. Furthermore, there is an existing pump on Woodside Rivulet that provides garden water to all four houses, and also serves as a back for domestic water use. The water supply for the existing dwellings will not be impacted by the proposed development. There is also plans to expand the irrigation infrastructure on the property, which will increase the land around the dwellings that is irrigated (see Figure A1-4).

As per the concept plan (Figure A1-2) four 150,000L firefighting tanks will be installed on the lease area. The proposed lease will not impact the existing dwelling's water supplies, and given that the proposed use in the lease area has not been classed as a 'Hazardous Use', and will have a water supply well in excess of the minimum requirements, there are no further specific measures required.

4 Conclusion

The proposed development area is mapped as being bushfire-prone under the *Tasmanian Planning Scheme – Northern Midlands*. As part of the development, it is proposed store up to 140,000L of oil on site. The oil (Nytro Libra) is not classed as a flammable liquid, but rather a Class C2 combustible liquid. This category of combustible liquid does not meet the definition of a 'Hazardous Use' of the Bushfire-Prone Areas Code of the Planning Scheme. There are no other elements of the proposed development that trigger other aspects of the Bushfire-Prone Areas Code. Therefore, the Bushfire-Prone Areas Code does not apply to this aspect of the development.

The existing hazard management areas, access, and water supply for the existing dwellings will not be affected by the proposed development. Furthermore, the proposed use within the leased area is not classed as a hazardous use under the *Bushfire-Prone Areas Code*, and so does not require any specific bushfire protection measures. However, it is noted that the proposed development is designed with fire protection measures that are equal to or greater than the Bushfire Code requirements. Therefore, I consider that there is insufficient increase in risk to warrant any specific bushfire protection measures associated with the proposal.

If any future developments are proposed for either the existing title or the leased area, then a new bushfire assessment will be required.

Appendix 1: Site Map

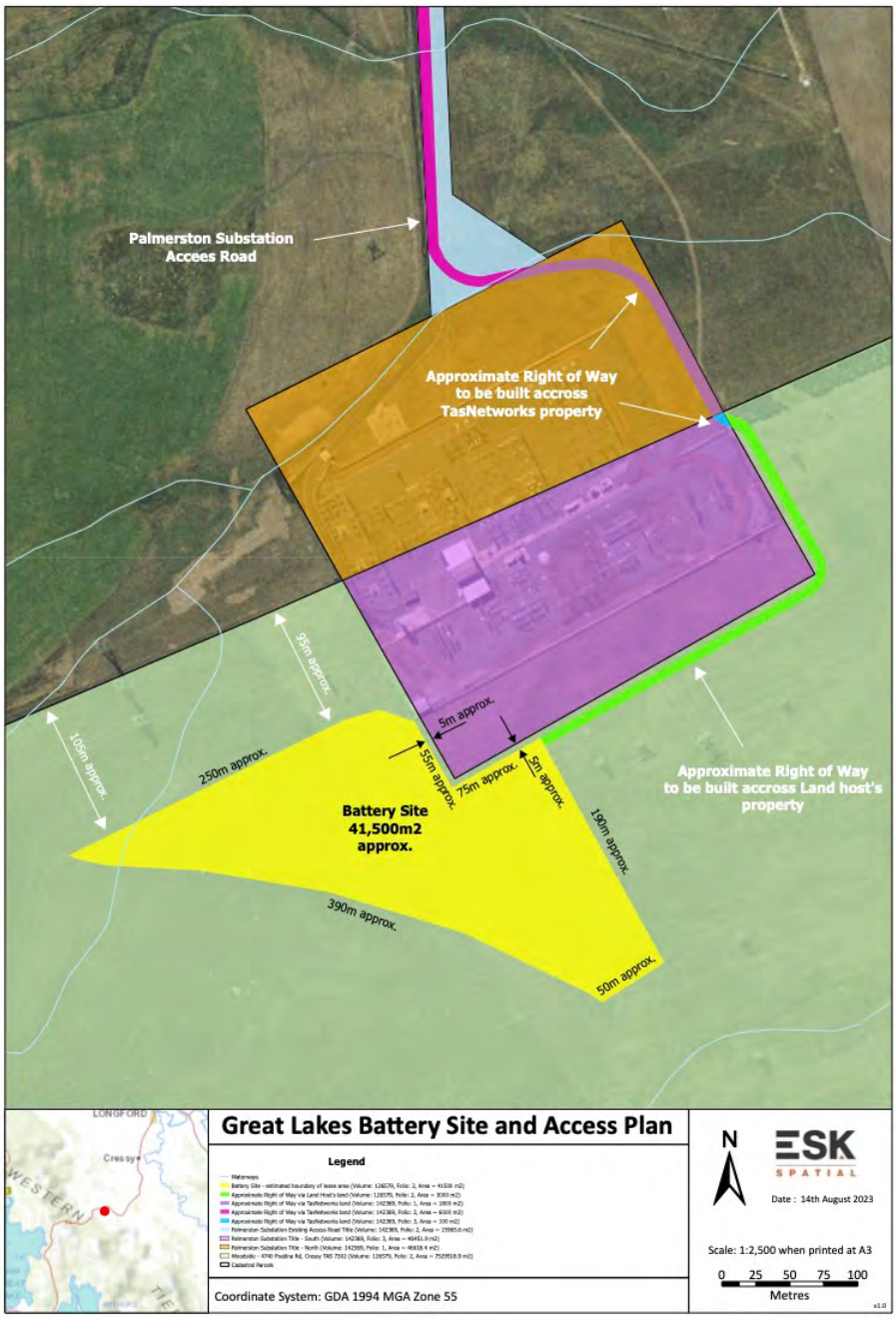

Figure A1-1: Project Area Site Map

Figure A1-2: Site Concept Plan

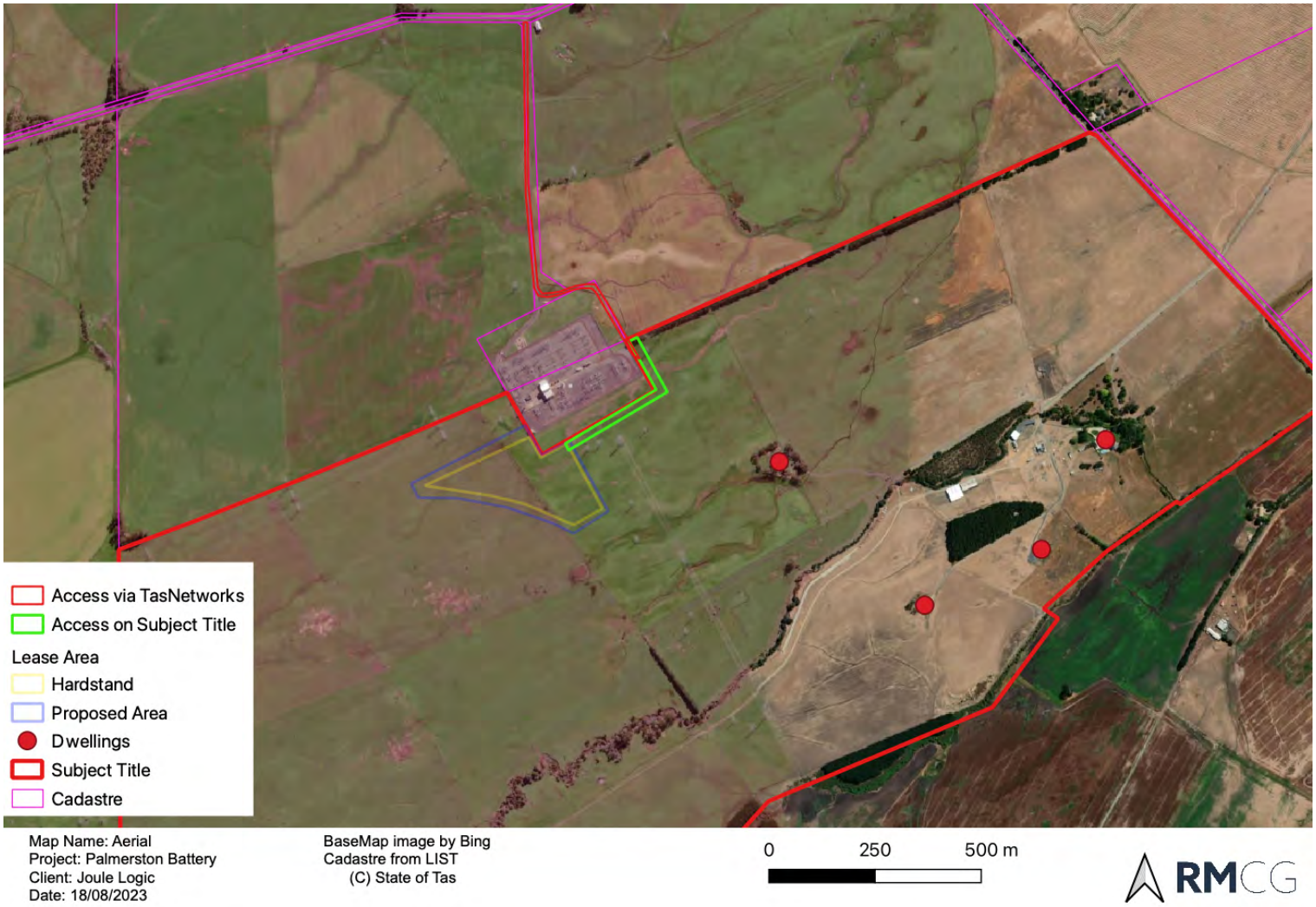

Figure A1-3: Aerial Image of Site

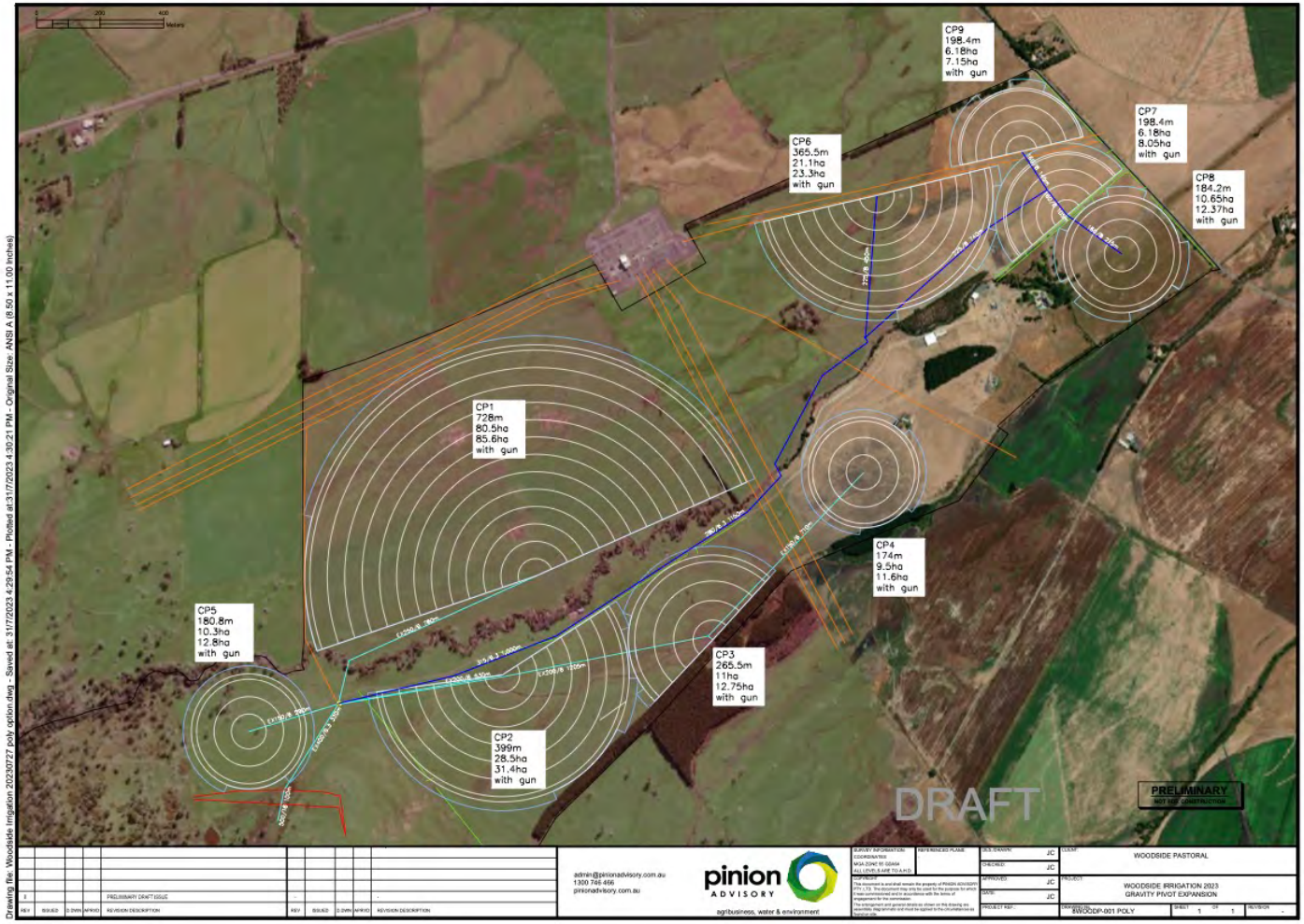

Figure A1-4: Draft Irrigation Site Plan.

Appendix 2: Photos

Figure A2-1: Shelterbelt in the north of the site access

Figure A2-2: Example of the existing grassland vegetation located on the subject property

Appendix 3: Nytro Libra Product Data Sheet

NYNAS

PRODUCT DATA SHEET

NYTRO® LIBRA

Property	Unit	Test Method	Specification Limits		Typical Data
			Min	Max	
1 - Function					
Viscosity, 40°C	mm²/s (cSt)	ISO 3104		12	9.3
Viscosity, -30°C	mm²/s (cSt)	ISO 3104		1800	1050
Pour point	°C	ISO 3016		-40	-51
Water content	mg/kg	IEC 60814		30	< 20
Breakdown voltage	kV	IEC 60156			
- Before treatment	kV	IEC 60156	30		40-60
- After treatment	kV	IEC 60296	70		> 70
Density, 20°C	kg/dm³	ISO 12185		0.895	0.875
DDF at 90°C		IEC 60247		0.005	< 0.001
2 - Refining/stability					
Colour		ISO 2049		1.5	< 0.5
Appearance at 15°C		IEC 60296	Clear, Free from Sediment		Clear, Free from Sediment
Acidity	mg KOH/g	IEC 62021		0.01	< 0.01
Interfacial tension at 25°C	mN/m	IEC 62961	40		47
Corrosive sulphur		DIN 51353	Non-Corrosive		Non-Corrosive
Potentially corrosive sulphur		IEC 62535	Non-Corrosive		Non-Corrosive
Corrosive sulphur		ASTM D1275	Non-Corrosive		Non-Corrosive
DBDS	mg/kg	IEC 62697-1	Not Detectable		Not Detectable
Antioxidants	wt %	IEC 60666	Not Detectable		Not Detectable
Metal passivator additives	mg/kg	IEC 60666	Not Detectable		Not Detectable
Other additives *			None		None
2-Furfural and related compounds content	mg/kg	IEC 61198		< 0.05	< 0.05
Aromatic content	%	IEC 60590			9
3 - Performance					
Oxidation stability at 120°C, 164 h		IEC 61125			
- Total acidity	mg KOH/g	IEC 61125		1.2	0.7
- Sludge	wt %	IEC 61125		0.8	0.17
- DDF at 90°C		IEC 61125		0.500	0.041
4 - Health, safety and environment (HSE)					
Flash Point, PM	°C	ISO 2719	135		150
PCA	wt %	IP 346		< 3.0	< 3.0
PCB	mg/kg	IEC 61619	Not Detectable		Not Detectable

*this product contains no undeclared additives

Severely hydrotreated insulating oil

NYTRO LIBRA is an uninhibited insulating oil meeting IEC 60296 Ed. 5 (2020) and is Type B, TVBU. Breakdown voltage after treatment as per definition in IEC 60296, section 6,4

Issuing date: 10-02-2020

Figure A3-1: Nytro Libra Product Data Sheet

BUSHFIRE-PRONE AREAS CODE

CERTIFICATE[1] UNDER S51(2)(d) *LAND USE PLANNING AND APPROVALS ACT 1993*

1. Land to which certificate applies

The subject site includes property that is proposed for use and development and includes all properties upon which works are proposed for bushfire protection purposes.

Street address:	4740 Poatina Rd, Cressy, 7302
Certificate of Title / PID:	CT 126579/1, PID 6753425

2. Proposed Use or Development

Description of proposed Use and Development:	Proposed Battery Facility with Long term lease (>10 years)
Applicable Planning Scheme:	Tasmanian Planning Scheme – Northern Midlands

3. Documents relied upon

This certificate relates to the following documents:

Title	Author	Date	Version
Bushfire Exemption Report – 4740 Poatina Rd	M. Tempest, RMCG	22/08/23	V2

[1] This document is the approved form of certification for this purpose and must not be altered from its original form.

4. Nature of Certificate

The following requirements are applicable to the proposed use and development:

☒	**E1.4 / C13.4 – Use or development exempt from this Code**	
	Compliance test	**Compliance Requirement**
☒	E1.4(a) / C13.4.1(a)	Insufficient increase in risk

☐	**E1.5.1 / C13.5.1 – Vulnerable Uses**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.5.1 P1 / C13.5.1 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.5.1 A2 / C13.5.1 A2	Emergency management strategy
☐	E1.5.1 A3 / C13.5.1 A2	Bushfire hazard management plan

☐	**E1.5.2 / C13.5.2 – Hazardous Uses**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.5.2 P1 / C13.5.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.5.2 A2 / C13.5.2 A2	Emergency management strategy
☐	E1.5.2 A3 / C13.5.2 A3	Bushfire hazard management plan

☐	**E1.6.1 / C13.6.1 Subdivision: Provision of hazard management areas**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.1 P1 / C13.6.1 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.6.1 A1 (a) / C13.6.1 A1(a)	Insufficient increase in risk
☐	E1.6.1 A1 (b) / C13.6.1 A1(b)	Provides BAL-19 for all lots (including any lot designated as 'balance')
☐	E1.6.1 A1(c) / C13.6.1 A1(c)	Consent for Part 5 Agreement

☐	**E1.6.2 / C13.6.2 Subdivision: Public and fire fighting access**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.2 P1 / C13.6.2 P1	***Planning authority discretion required. A proposal cannot be certified as compliant with P1.***
☐	E1.6.2 A1 (a) / C13.6.2 A1 (a)	Insufficient increase in risk
☐	E1.6.2 A1 (b) / C13.6.2 A1 (b)	Access complies with relevant Tables

☐	**E1.6.3 / C13.1.6.3 Subdivision: Provision of water supply for fire fighting purposes**	
	Acceptable Solution	**Compliance Requirement**
☐	E1.6.3 A1 (a) / C13.6.3 A1 (a)	Insufficient increase in risk
☐	E1.6.3 A1 (b) / C13.6.3 A1 (b)	Reticulated water supply complies with relevant Table
☐	E1.6.3 A1 (c) / C13.6.3 A1 (c)	Water supply consistent with the objective
☐	E1.6.3 A2 (a) / C13.6.3 A2 (a)	Insufficient increase in risk
☐	E1.6.3 A2 (b) / C13.6.3 A2 (b)	Static water supply complies with relevant Table
☐	E1.6.3 A2 (c) / C13.6.3 A2 (c)	Static water supply consistent with the objective

5. Bushfire Hazard Practitioner

Name:	Michael Tempest	**Phone No:**	0467 452 155
Postal Address:	Level 2, 102-104 Cameron Street Launceston TAS 7250	**Email Address:**	michaelt@rmcg.com.au
Accreditation No:	BFP – 153	**Scope:**	1, 2, 3A, 3B, 3C

6. Certification

I certify that in accordance with the authority given under Part 4A of the *Fire Service Act 1979* that the proposed use and development:

☒ Is exempt from the requirement Bushfire-Prone Areas Code because, having regard to the objective of all applicable standards in the Code, there is considered to be an insufficient increase in risk to the use or development from bushfire to warrant any specific bushfire protection measures, or

☐ The Bushfire Hazard Management Plan/s identified in Section 3 of this certificate is/are in accordance with the Chief Officer's requirements and compliant with the relevant **Acceptable Solutions** identified in Section 4 of this Certificate.

Signed:
certifier

Name: Michael Tempest **Date:** 22/08/23

Certificate Number: MT23/117E

(for Practitioner Use only)

This report has been prepared by:

RM Consulting Group Pty Ltd trading as RMCG

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Document review and authorisation

Project Number: #2016

Doc Version	Final/Draft	Date	Author	Project Director review	BST QA review	Release approved by	Issued to
1.0	Final	28/03/2023	M. Tempest	A. Ketelaar	J. Belz	A. Ketelaar	Joule Logic
2.0	Final	23/05/203	M. Tempest	A. Ketelaar	L. McKenzie	A. Ketelaar	Joule Logic

RMCG

3 NOVEMBER 2022

Agricultural Report

Report for: Joule Logic

Property Location: Woodside – 4740 Poatina Rd, Cressy (CT 126579/2)

Prepared by: Astrid Ketelaar
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Victoria — Tasmania — ACT — NSW

SUMMARY	
Client:	Joule Logic
Property identification:	CT 126579/2 (754.1ha), 'Woodside' – 4740 Poatina Rd, Cressy, TAS 7302 Agriculture Zone (Tasmanian Planning Scheme – Northern Midlands, 2022)
Proposal:	Proposed big battery to be established on approximately 4ha of the subject title adjacent to the TasNetworks owned Palmerston substation located at 4554 Poatina Rd, Cressy
Purpose:	To assess the agricultural/primary industry aspects of the proposal
Land Capability:	Published Land Capability at 1:100 000 - Class 4. Assessed Land Capability at 1:10 000 – Class 4.
Assessment comments:	An initial desktop feasibility assessment was undertaken followed by a field inspection on the 28 October 2022 to confirm or otherwise the desktop study findings of the agricultural assessment and primary industries assessment. This report summarises the findings of the desktop and field assessment.
Conclusion:	The proposed lease area is a total of 4ha, including the access road and is limited for agricultural use to dryland grazing, due to the location on the title and the existing infrastructure in proximity to the site. The development site and access is appropriately located to minimise the area of land being converted and the impacts on the adjacent agricultural operations. The loss of this land to the agricultural estate for the term of the lease, is considered to have negligible impact on the agricultural operation of the lessor and the regional agricultural economy. In addition, the conversion is not permanent and the land could be rehabilitated for dryland grazing if required. The proposed Palmerston battery is considered to be compatible with surrounding agricultural use and minimal setbacks with vegetation screening, as proposed, should suffice to minimise the risk that the battery will conflict or interfere with agricultural use in the vicinity.
Assessment by:	 Astrid Ketelaar Associate

Table of Contents

1 Introduction

The subject title CT 126579/2 (754.1ha), 'Woodside' is located at 4740 Poatina Rd, Cressy. This title and the majority of surrounding land is zoned as 'Agriculture' under the Tasmanian Planning Scheme - Northern Midlands (the Planning Scheme).

The use class for the development under the Planning Scheme is 'utilities'. Utilities that are not for an existing use under the Planning Scheme are a discretionary application.

The development site for the battery is 4ha which includes 2-3ha for the battery installation and 0.75ha required for the access road from the north. The land is owned by David Archer and forms part of the 'Woodside' property. An agreement is in place for leasing the land from David Archer. The current land use is pasture for grazing. The intention is for the battery to be linked to the TasNetworks Palmerston substation which is immediately adjacent to the north on land zoned 'Utilities'.

The proponents for the project are Neoen. Joule Logic have been contracted by Neoen to prepare and submit the Development Application (DA). Northern Midlands Council have indicated a Land Capability and Agricultural Assessment and report to demonstrate the impact of the proposal on agricultural uses is required.

The relevant sections of the Planning Scheme in relation to this assessment are as follows:

> *21.0 Agriculture Zone*
>
> *21.3.1 Discretionary uses*
>
> *Performance Criteria*
>
> *P2 A use listed as Discretionary, excluding Residential, must minimise the conversion of agricultural land to non-agricultural use, having regard to:*
>
> *(a) The area of land being converted to non-agricultural use;*
>
> *(b) Whether the use precludes the land from being returned to an agricultural use;*
>
> *(c) Whether the use confines or restrains existing or potential agricultural use on the site or adjoining sites.*

A site assessment was conducted on the 28 October 2022 to confirm or otherwise the desktop study findings. This report assesses the agricultural aspects of the proposal and summarises the findings from the desktop and field assessments to enable Council to make an informed decision.

2 Description

2.1 PROPOSAL

The following proposal preliminary information was provided by Joule Logic:

- The battery infrastructure will be comprised of a substation, lighting protection towers, 50 containers of batteries and 25 containers of inverters - each container measuring 12m by 2.5m by 2.5m (height), a demountable office measuring 12m by 4m by 3m (height), internal fencing, external fencing 2.4m height, 20,000 l water tank, 4m internal access road and 2 car spaces
- The construction time frame is estimated to be 12 months and the battery lifespan is expected to be 15 years
- No external lighting is proposed. On-site sensor lights will be provided and only operate when there are workers in the yard. Landscaping/tree planting around the perimeter of the site will be established. As an indicator of scale it is anticipated that the adjacent TasNetworks Palmerston substation will be the dominant feature of the visual landscape.

2.2 SITE

The title CT 126579/2 is 754.1ha and is farmed in conjunction with other land as part of the 'Woodside' property at 4740 Poatina Rd, Cressy, TAS 7302 which is comprised of approximately 1,540ha of land and is utilised for mixed farming, both dryland and irrigated.

The development site for the battery is 2-3ha and an additional 0.75ha is required for the access road from the north (refer to map in Figure A1-2). The development site is located on the northern boundary of the title immediately adjacent to the TasNetworks owned Palmerston substation located at 4554 Poatina Rd, Cressy. The access to the site also borders the farming title to the north (CT 105802/1) located at 1440 Saundridge Rd, Cressy, owned by Scott-Young Pty Ltd.

The development site is comprised of a triangular shaped paddock corner which is bound by transmission lines to the east, TasNetworks substation to the north and transmission lines extending to the west and a pivot circle to the south. The access comes from the north via land belonging to TasNetworks and Scott-Young Pty Ltd. and is immediately adjacent to the north-eastern and south-eastern boundaries of the TasNetworks substation. The majority of the development site will be hardstand with a variable width grassed buffer between the hardstand area and the perimeter fence. The buffer is approximately 25m between the hardstand and the extent of pivot circle to the south-west and similar to the dryland pasture under the transmission towers to the east and north.

The development site and access is flat with a very slight north-easterly aspect and is at an altitude of 180m ASL. There are two drains which drain to the north-east eventually joining Woodside Rivulet to the east.

Geology for the development site and access is Quaternary deposits (Qh) which is described as sand gravel and mud of alluvial, lacustrine and littoral origin (LIST Geological Polygons 1:250 000). This extends to the north and west. To the south-east is Tertiary sediments (Ts) which is described as dominantly non-marine sequences of gravel, sand, silt, clay and regolith. There are no mining leases in the vicinity of the development site.

Published Land Capability mapping at 1:100 000 scale (Grose & Moreton, 1996 South Esk Report) shows the development site, access and surrounding land to be Class 4 Land Capability. Assessed Land Capability confirmed the Land Capability to be Class 4 with the main limitation being drainage.

Class 4 Land Capability is described as land that is well suited to grazing, but which is limited to occasional cropping or a very restricted range of crops (Grose 1999).

Class 1-3 Land Capability is Prime Agricultural Land as defined under the Protection of Agricultural Land Policy 2009 (PAL Policy). Based on our site assessment, there is no Prime Agricultural Land associated with the site, access or surrounding land.

The drainage lines all carried flowing water at the time of the site visit due to recent rainfall. The salinity of the water in the drainage lines was tested at several points using a handheld Hanna Instrument salinity meter. Salinity was found to be approximately 0.4 dS/m. This is considered to be Class 2 (0.28 – 0.8 Medium salinity levels) (DPIWE 2002). There were no salinity indicators found.

There is no local scale soils mapping for the aera. The nearest local scale soils mapping is 750m to the east (Doyle 1993). As the landform is similar and the published Geology at 1:250 000 and Land Capability extends from the east across the site correlations can be made with the Doyle soil types. The soils between Palmerston Rivulet and Woodside Rivulet are predominantly mapped as Br-Ps. Br-Ps are soils where Brumby soils (Br) and Panshanger soils are co-dominant. Brumby soils are described as poorly drained soils on alluvium above Tertiary clays on flat to gently undulating (0-3%) river terraces. The soils assessed at the site are approximately consistent with those described as Brumby soils.

TASVEG 4.0 (LIST map) shows the development site, access and surrounding land as agricultural land (FAG) with the substation shown as Modified Land (FUM). The FAG is improved pasture, with the pivot circle to the south east being recently cultivated.

The entire title is within a 'bushfire-prone area' under the Bushfire-prone Areas Code. The site is bound by an Electricity Transmission Corridor, Inner Protection Area within the Electricity Infrastructure Protection Code Overlay to the north and east. A portion of the development site and all of the access road is within the substation facility buffer area under the Electricity Infrastructure Protection Code Overlay. The majority of the access road traverses land associated with the Electricity Transmission Corridor, Inner Protection Area within the Electricity Infrastructure Protection Code Overlay. There are no other applicable Planning Scheme overlays.

Average annual rainfall is 795mm (Bureau of Meteorology, Poatina 96081[1]). Prevailing wind is from the North - North West (Bureau of Meteorology, Wind Rose Launceston Airport[2])

The development site is situated within the Brumbys Creek Catchment which is within the South Esk River Hydro-Electric Water District. According to DNRET's Water Information System of Tasmania (WIST) the Archers have three Water Licences (#1924, # 5717 and #5) with several large allocations (winter, summer and flood take). There is also a recently constructed large dam (# 9864 for 805ML shown as proposed in LIST). The property is serviced by substantial irrigation water resources which supports the mixed farming operation.

The development site and access are improved pasture utilised for dryland grazing. Immediately adjacent land use to the development site to the north west is dryland grazing on land associated with the transmission lines, to the north is the battery substation, to the east is dryland grazing on land associated with the transmission lines and to the south west is irrigated pasture under a pivot circle on land used for prime lamb production. The parent title is adjacent on all sides of the development site except to the north where the TasNetworks substation is located.

[1] Available on line and accessed 31/10/22 http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=096081

[2] Available on line and accessed 31/10/22 http://www.bom.gov.au/cgi-bin/climate/cgi_bin_scripts/windrose_selector.cgi?period=Annual&type=9&location=91104&Submit=Get+Rose

For the access road immediately adjacent land to the south, east and north-east is dryland pasture. The north west and west is the TasNetworks substation. The parent title is adjacent to the access road on the southern and western side, with the neighbours dryland grazing land on CT 105802/1, adjacent extending to the north east.

Other than the TasNetworks substation all land in the vicinity is utilised for commercial scale agriculture[3].

3 Discussion

The development site and access road are limited to dryland grazing due to the existing infrastructure on and surrounding the development site and access road. Whilst the Land Capability limitations are likely to be similar to land under irrigation to the south-west it is not feasible to irrigate the development site and access road because of the infrastructure limitations.

Carrying capacity of an area of land is a useful concept for measuring the value of land that will be lost. The carrying capacity is the number of stock that can be carried per hectare through average years. Carrying capacity is expressed as 'dry sheep equivalent' (DSE)[4] per hectare. It is based on a combination of factors such as climate, landform, soils, land use and land management. Carrying capacity in a given area also reflects the stocking rate that other farmers have typically achieved on their farms under commercial conditions.

From this, it is reasonable to assume that commercially oriented farms tend to carry stock at close to the typical carrying capacity of a district. In simple terms, this is the stocking rate typically required to ensure returns exceed costs.

Given the soils and rainfall at this location the land has medium to high agricultural capability.

A theoretical maximum carrying capacity can be determined using the following equation:

The potential carrying capacity[5] = (Rainfall/25) – 10 = DSE/ha

Based on a rainfall of 800mm (average annual rainfall is 795mm) the theoretical maximum carrying capacity is 22 DSE/ha. In practice, however, this is only ever achieved on properties with both high-level management expertise (to maximise pasture utilisation) on the highest quality agricultural land i.e. the best farms and farmers in the district.

Results from the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) Livestock Farm Monitor project (2020/21) show that an average stocking rate of 16.4 DSE/ha was achieved in the major farming area of Gippsland, which had a rainfall of 826mm for 2020/21. The current DEDJTR Livestock Farm Monitoring Project report (or a rolling 3-year average) can be utilised as a comparable DSE/ha in Victoria for the equivalent rainfall in Tasmania. In the previous year Gippsland had an average stocking rate of 16.5 DSE/ha and a rainfall of 796mm. In 2018/19 Gippsland had an average stocking rate of 18DSE/ha and a rainfall of 648mm, Hence Gippsland is relatively comparable to Poatina in terms of rainfall averages.

[3] As defined by RMCG January 2022

[4] DSE or dry sheep equivalent is the standard measure of stocking, where a single unit is equivalent to a 45 kg merino wether. A ewe/lamb is assumed to be 2 units, while beef cattle/steer equates to 10 DSE units and a milking cow is around 15 DSE units.

[5] The potential carrying capacity, expressed in DSE/ha is a theoretical maximum stocking rate based on rainfall only. It will only ever be possible where there is good soil fertility and structure, and pastures are well managed (CLPR, 1991).

The average net effective area of land utilised for the farming operation in Gippsland was 656ha. The Woodside farming operation is larger than average and has substantial irrigation hence is likely to be at the more productive end of the range.

Using the Gippsland Prime Lamb Production Information from the Livestock Farm Monitoring Project 2020/21 a $90 / DSE / ha can be calculated. I have allowed $100 / DSE / ha to allow for higher productivity. Hence using this metric an annual Gross Income of $8,800 (4ha x 22 DSE x $100) is calculated.

The loss of this 4ha of dryland pasture to the mixed farming operation which has a total area of 1540ha is considered to have a minimal impact on productivity from a farm business local and regional perspective. It calculates to less than 1% of the farm business land area and is likely to represent less than 1% of the farm business Gross Income.

Furthermore, the conversion is not considered to be permanent and the site could be rehabilitated to dryland pasture if required.

The potential for any future non-agricultural use to confine or restrain existing adjacent agricultural use during construction and operation also needs to be considered. It is understood the battery will have limited noise and vibration emissions and based on experience in other agricultural settings (aecom 2021) it is unlikely that there would be any impact on the adjacent dryland grazing to the north and west or the irrigated pasture and potential cropping under the pivot to the south-west either during construction or during ongoing operation.

There are a range of activities associated with dryland grazing and irrigated cropping and table A3-1, A3-2 and A3-3 in Appendix 3 detail the activities which could cause conflict with adjacent non-agricultural use. These included spray drift from chemicals which would include fungicide, herbicide, and insecticide, noise from equipment (including shooting for game control), irrigation spray drift, odours, burn offs, and dust. It is unlikely that any of these potential adjacent agricultural activities would create conflict with the proposed Palmerston battery. A minimal perimeter setback, with vegetation screening as proposed is considered appropriate for minimising the risk of constraining agricultural use in the vicinity.

4 Conclusions

The proposed lease area is a total of 4ha, including the access road and is limited for agricultural use to dryland grazing, due to the location on the title and the existing infrastructure in proximity to the site. The development site and access is appropriately located to minimise the area of land being converted and the impacts on the adjacent agricultural operations. The loss of this land to the agricultural estate for the term of the lease, is considered to have negligible impact on the agricultural operation of the lessor and the regional agricultural economy. In addition, the conversion is not permanent and the land could be rehabilitated for dryland grazing if required.

The proposed Palmerston battery is considered to be compatible with surrounding agricultural use and minimal setbacks with vegetation screening, as proposed, should suffice to minimise the risk that the battery will conflict or interfere with agricultural use in the vicinity.

5 References

AECOM 2021 Great Western Battery Environmental Impact Assessment, Prepared for Neoen Australia Pty Ltd.

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Appendix 1: Maps

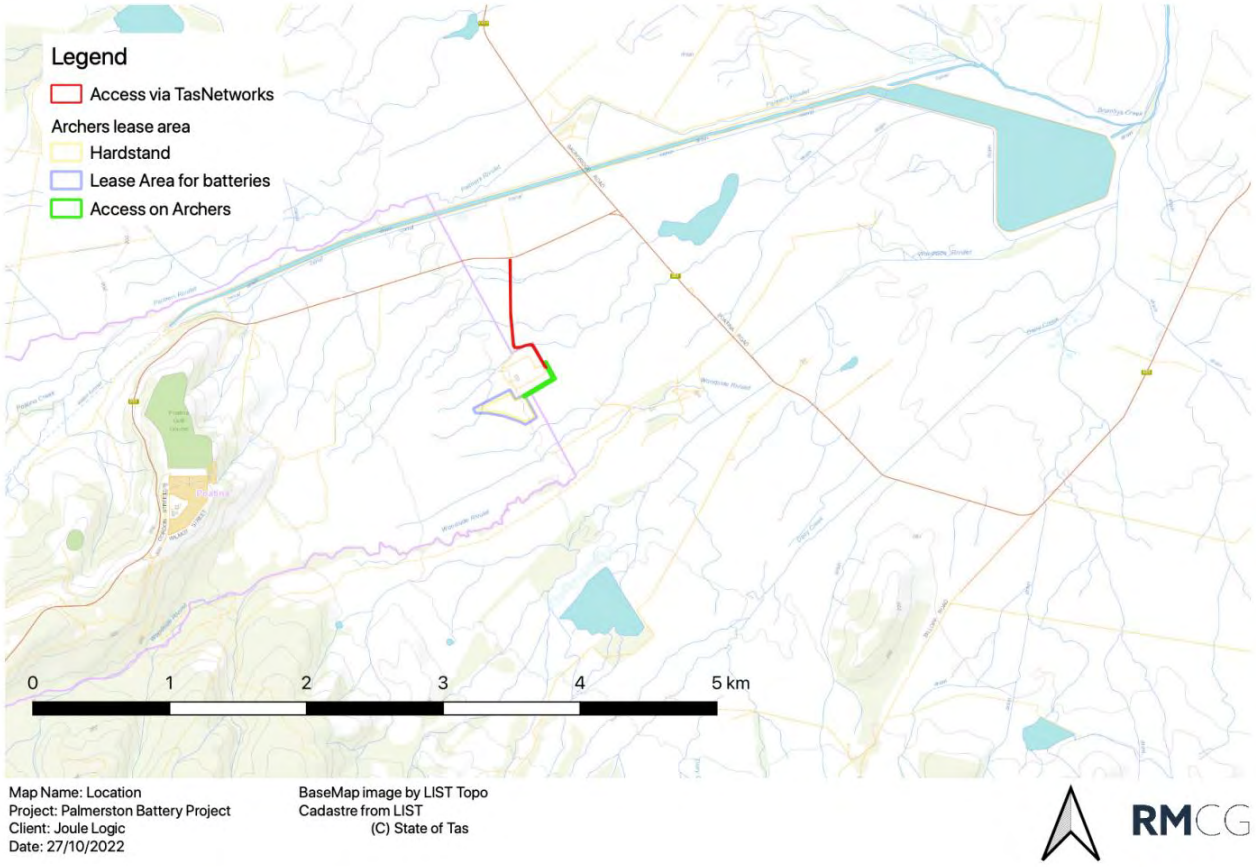

Figure A1-1: Location

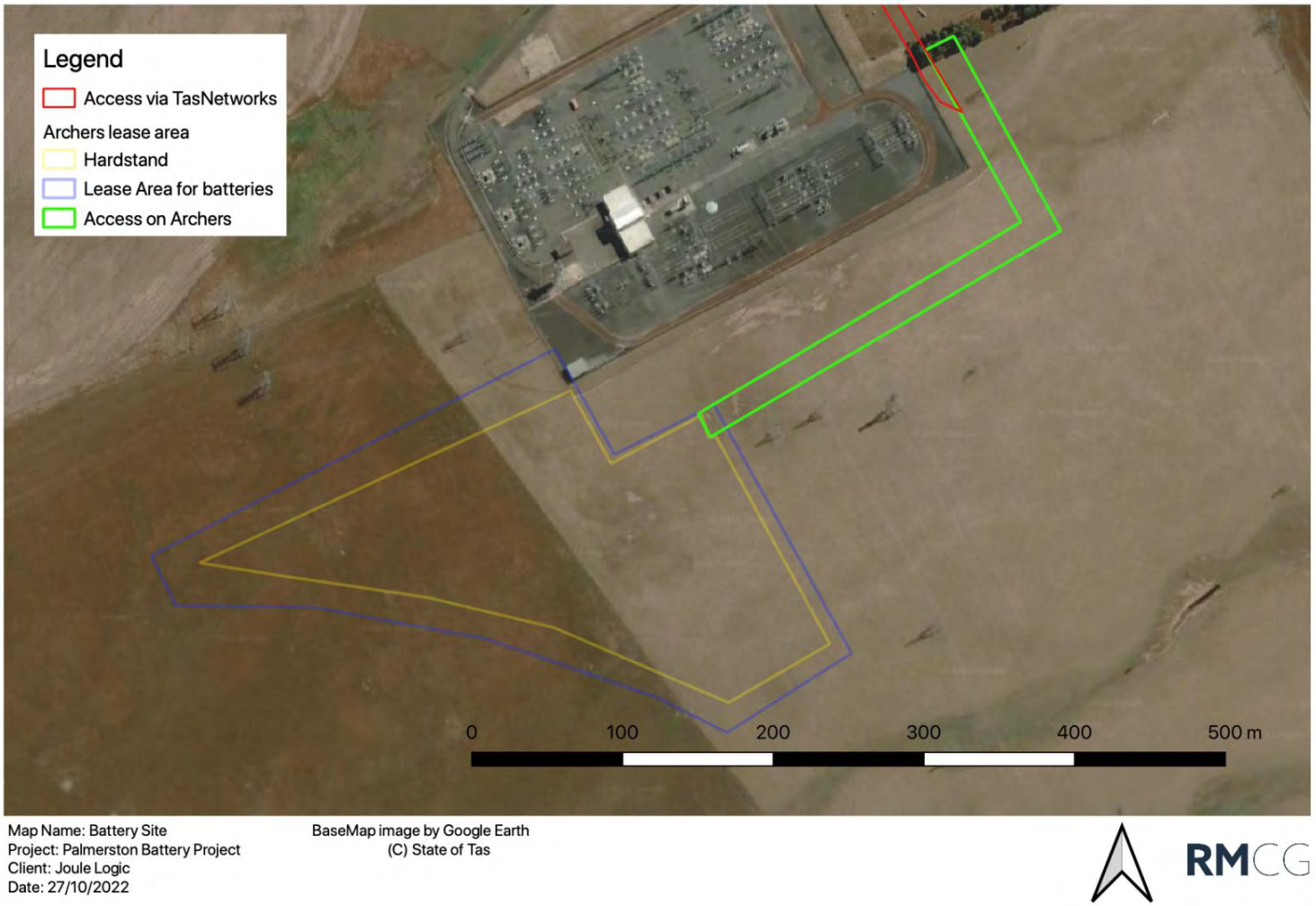

Figure A1-2: Aerial image of battery site

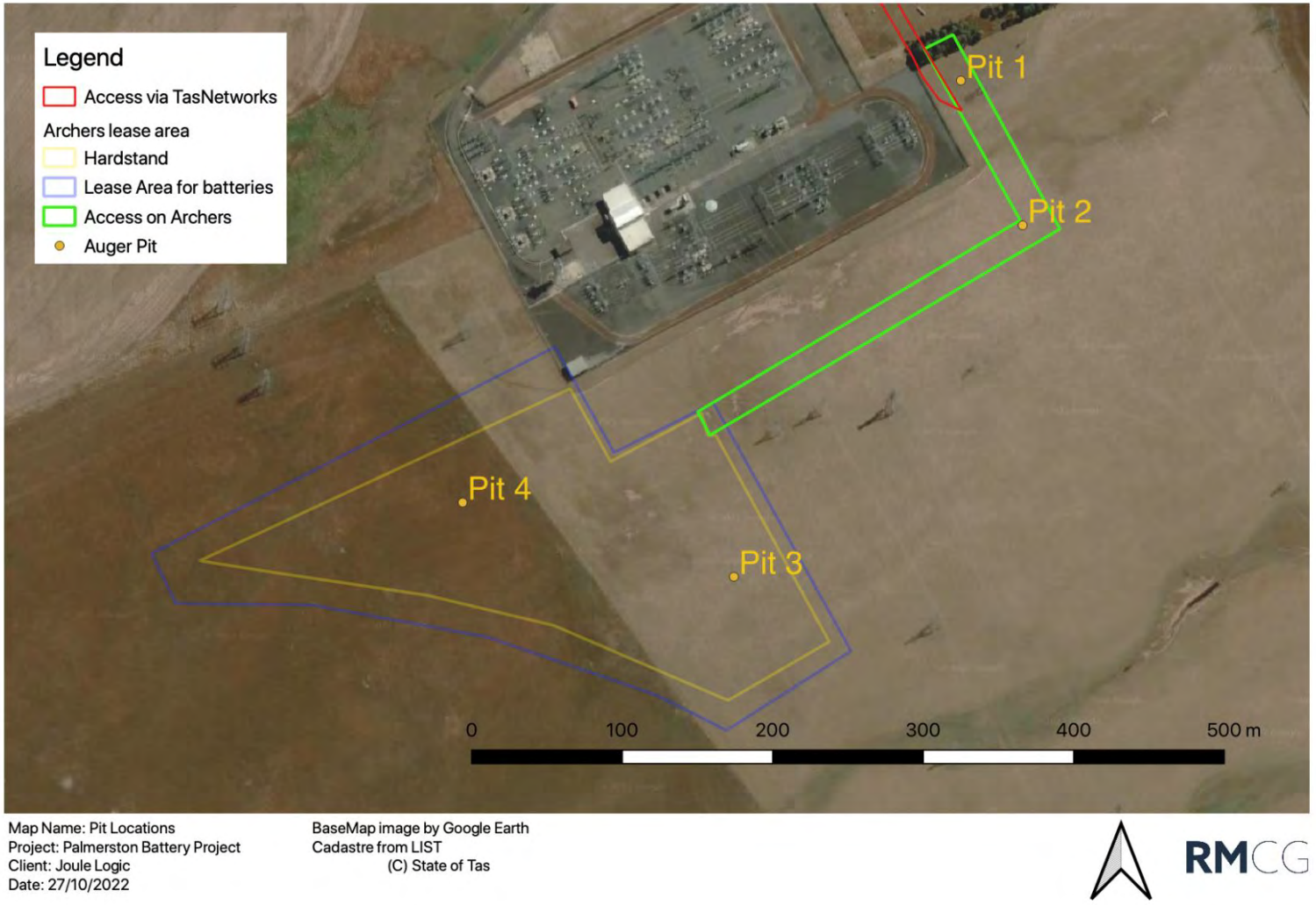

Figure A1-3: Assessment Pits

Appendix 2: Photographs

Figure A2-1: View south from Pit 1 along access. TasNetworks substation on the right.

Figure A2-2: View west from Pit 1 towards TasNetworks substation.

Figure A2-3: View north from Pit 1 towards Archer property boundary.

Figure A2-4: View east from Pit 1 along transmission lines parallel to Archer property boundary.

Figure A2-5: View east from Pit 3 south towards TasNetworks substation.

Figure A2-6: View east from Pit 3 south towards Archer's pivot circle.

Appendix 3: Land Capability definitions

From Grose (1999)

Prime agricultural land as described in the State Policy on the Protection of Agricultural Land 2009:

CLASS 1: Land well suited to a wide range of intensive cropping and grazing activities. It occurs on flat land with deep, well drained soils, and in a climate that favours a wide variety of crops. While there are virtually no limitations to agricultural usage, reasonable management inputs need to be maintained to prevent degradation of the resource. Such inputs might include very minor soil conservation treatments, fertiliser inputs or occasional pasture phases. Class 1 land is highly productive and capable of being cropped eight to nine years out of ten in a rotation with pasture or equivalent without risk of damage to the soil resource or loss of production, during periods of average climatic conditions.

CLASS 2: Land suitable for a wide range of intensive cropping and grazing activities. Limitations to use are slight, and these can be readily overcome by management and minor conservation practices. However, the level of inputs is greater, and the variety and/or number of crops that can be grown is marginally more restricted, than for Class 1 land. This land is highly productive but there is an increased risk of damage to the soil resource or of yield loss. The land can be cropped five to eight years out of ten in a rotation with pasture or equivalent during 'normal' years, if reasonable management inputs are maintained.

CLASS 3: Land suitable for cropping and intensive grazing. Moderate levels of limitation restrict the choice of crops or reduce productivity in relation to Class 1 or Class 2 land. Soil conservation practices and sound management are needed to overcome the moderate limitations to cropping use. Land is moderately productive, requiring a higher level of inputs than Classes I and 2. Limitations either restrict the range of crops that can be grown or the risk of damage to the soil resource is such that cropping should be confined to three to five yens out of ten in a rotation with pasture or equivalent during normal years.

Non-prime agricultural land as described in the State Policy on the Protection of Agricultural Land 2009:

CLASS 4: Land primarily suitable for grazing but which may be used for occasional cropping. Severe limitations restrict the length of cropping phase and/or severely restrict the range of crops that could be grown. Major conservation treatments and/or careful management is required to minimise degradation. Cropping rotations should be restricted to one to two years out of ten in a rotation with pasture or equivalent, during 'normal' years to avoid damage to the soil resource. In some areas longer cropping phases may be possible but the versatility of the land is very limited. (NB some parts of Tasmania are currently able to crop more frequently on Class 4 land than suggested above. This is due to the climate being drier than 'normal'. However, there is a high risk of crop or soil damage if 'normal' conditions return.).

CLASS 5: This land is unsuitable for cropping, although some areas on easier slopes may be cultivated for pasture establishment or renewal and occasional fodder crops may be possible. The land may have slight to moderate limitations for pastoral use. The effects of limitations on the grazing potential may be reduced by applying appropriate soil conservation measures and land management practices.

CLASS 6: Land marginally suitable for grazing because of severe limitations. This land has low productivity, high risk of erosion, low natural fertility or other limitations that severely restrict agricultural use. This land should be retained under its natural vegetation cover.

CLASS 7: Land with very severe to extreme limitations which make it unsuitable for agricultural use.

Appendix 4: Land Capability assessment

ASSESSMENT PROTOCOL

This protocol outlines the standards and methodology that AK Consultants (now RMCG) uses to assess Land Capability.

In general, we follow the guidelines outlined in the Land Capability Handbook (Grose 1999) and use the survey standards outlined in the Australian Soil and Land Survey Handbooks to describe (McDonald, et al. 1998), survey (Gunn, et al. 1988) and classify (Isbell 2002) soils and landscapes.

Commonly we are requested to assess Land Capability in relation to local government planning schemes. As such the level of intensity of the investigation is usually high and equivalent to a scale of 1:25 000 or better. The choice of scale or intensity of investigation depends on the purpose of the assessment. As the scale increases (becomes more detailed and the scale is a smaller number), the number of observations increases.

An observation can be as much as a detailed soil pit description or as little as measuring the gradient of an area using a clinometer or the published contours in a Geographical Information System and includes soil profile descriptions, auger hole descriptions, and observations confirming soil characteristics, land attributes or vegetation. The table below shows the relationship between scale, observations, minimum distances and areas that can be depicted on a map given the scale and suggested purpose of mapping.

Table A4-1: Assessment scale

SCALE	AREA (HA) PER OBSERVATION	MINIMUM WIDTH OF MAP UNIT ON GROUND	MINIMUM AREA OF MAP UNIT ON GROUND	RECOMMENDED USE
1:100 000	400ha	300m	20ha	Confirmation of published land capability mapping.
1:25 000	25ha	75m	1.25ha	Assessments of farms, fettering or alienation of Prime Agricultural Land.
1:10 000	4ha	30m	2,000m^2	Area assessments of less than 15ha.
1:5 000	1ha	15m	500m^2	Site specific assessments for houses and areas less than 4ha.
1:1 000	0.04ha	3m	20m^2	Not used. Shown for comparison purposes.

Based on 0.25 observations per square cm of map, minimum width of mapping units 3mm on map as per (Gunn, et al. 1988).

ASSESSMENT METHODOLOGY

With all assessments we examine a minimum of three observations per site or mapping unit and determine Land Capability on an average of these observations.

Land Capability is based on limitations to sustainable use of the land, including the risk of erosion, soil, wetness, climate and topography. The most limiting attribute determines the Land Capability class. This is not always a soil limitation and thus soil profile descriptions are not always required for each mapping unit. For example, land with slopes greater than 28%, areas that flood annually and areas greater than 600m in elevation override other soil related limitations.

The availability of irrigation water can affect the Land Capability in some areas. An assessment of the likelihood of irrigation water and quality is made where it is not currently available.

As a minimum all assessment reports include a map showing the subject land boundaries, observation locations, published contours and Land Capability.

DEFINITIONS

Land capability

A ranking of the ability of land to sustain a range of agricultural land uses without degradation of the land resource (Grose 1999).

PROTOCOL REFERENCES

Grose, C J. Land capability Handbook. Guidelines for the Classification of Agricultural Land in Tasmania. Second Edition. Tasmania: Department of Primary Industries, Water and Environment, 1999.

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ON SITE LAND CAPABILITY ASSESSMENT

Published Land Capability at 1:100 000 shows the development site and access road and all surrounding land as Class 4. At the site inspection on the 28th October, four assessment pits were augured across the Development site and access road. One representative pit is described.

The main limiting factor is drainage. The subsurface horizon in the four assessment pits showed mottling consistent with an imperfectly drained profile. This dictates a Land Capability classification of 4d.

Site: Palmerston battery

Date: 28 October 2022

Pit: 1

Flood Risk: Low

Slope: 0–5%

Morphology: Plains; river terrace

Surface condition: improved pasture.

Figure A4-1: Pit 1

PROFILE DESCRIPTION

Table A4-2: Profile description

DEPTH (CM)		MUNSELL COLOUR		STRUCTURE	TEXTURE	GRAVEL	MOTTLE	COMMENTS
0	20	10YR 3/3	Dark brown	S	L			
20	40	10YR 5/3	Brown	M	SiL		4	Gravel at 40cm on top of clay
40	60	10YR 4/4	Dark Yellowish Brown	V	M C		5	

Duplex profile. A well-structured brown Loam over a Silty Loam overlying a Medium Clay. Common and distinct mottling in the Clay horizon indicates an imperfectly drained profile. This dictates a Land Capability classification of Class 4d.

Appendix 5: Potential conflict issues

Tables A5-1 to A5-3 describe the frequency and intensity of adjacent agricultural activities which have potential to be constrained by adjacent non-agricultural use. These are a broad guide only and site specific, cultivar specific and seasonal variations occur.

Table A5-1: Farming activity – Grazing

MANAGEMENT ACTIVITY	ISSUES LIKELY TO CONSTRAIN THE ACTIVITY	COMMENT
Pasture sowing Herbicide spraying Cultivation Drilling	Spray drift, noise Noise, dust Noise, dust	Ground based or aerial – often very early in the morning
Grazing	Noise at certain time e.g. weaning calves, tractor Livestock trespass	
Forage conservation, including mowing, raking, baling, carting bales	Noise, dust	
Fertiliser spreading	Noise	
Insecticide spraying	Spray drift Noise	Ground based or aerial – often very early in the morning

Table A5-2: Farming Activity - Potato crop

MANAGEMENT ACTIVITY	ISSUES LIKELY TO CONSTRAIN THE ACTIVITY	COMMENT
Pre-cultivation spray	Spray drift Noise	Ground based or aerial – often very early in the morning
Cultivation – several passes (2-4)	Noise Dust	Tractor Dust is unlikely as soils are likely to be moist
Planting	Noise	
Herbicide spraying	Spray drift Noise	Ground based or aerial – often very early in the morning
Insecticide & fungicide spraying (5+)	Spray drift Noise	Ground based or aerial – likely to be very early in the morning
Fertiliser Spreading	Noise Odour	From manure/organic fertilisers
Irrigation	Spray drift Noise	Potentially turbid and not potable Pump
Harvesting	Noise	Tractor

Table A5-3: Farming Activity – Poppy crop

MANAGEMENT ACTIVITY	ISSUES LIKELY TO CONSTRAIN THE ACTIVITY	COMMENT
Pre-cultivation spray	Spray drift Noise	Ground based or aerial – often very early in the morning
Cultivation – several passes (2-4)	Noise Dust	Tractor Dust is unlikely as soils are likely to be moist
Lime spreading	Noise	Tractor
Drilling	Noise	Tractor
Herbicide sprays (2)	Spray drift Noise	Ground based or aerial often very early in the morning
Insecticide & fungicide sprays (2-3)	Spray drift Noise	Ground based or aerial – likely to be very early in the morning
Irrigation	Spray drift Noise	Potentially turbid and not potable Pump
Harvesting	Noise	Tractor
Potential forage crops after harvesting, cultivation Broadcast seed & harrow, Irrigate	Noise Noise Noise, spray drift	Tractor Tractor Pump

None of these activities are envisaged to create conflict with the Battery operation.

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Document review and authorisation

Project Number: #1695

Doc Version	Final/Draft	Date	Author	Project Director review	BST QA review	Release approved by	Issued to
1.0	Final	3/11/22	A. Ketelaar	D. Lucas	B. Gravenor	A. Ketelaar	J. Logic

Great Lakes Battery Project

Traffic Impact Assessment (TIA)

Joule Logic Pty Ltd

07 July 2023

→ The Power of Commitment

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S3	Working Draft	A Ye & M Fletcher-Kennedy	M Byrne				
S3	A	A Ye & M Fletcher-Kennedy	M Byrne		M Smith		08/06/23
S3	B	A Ye & M Fletcher-Kennedy	M Byrne				20/6/23
S4	0	A Ye & M Fletcher-Kennedy	M Byrne		M Smith		30/6/23
S4	1	A Ye & M Fletcher-Kennedy	M Byrne		T Cooper		07/07/23

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→ The Power of Commitment

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1. Introduction

1.1 Purpose of this report

GHD has been engaged by Joule Logic Pty Ltd (Joule Logic) to prepare a Traffic Impact Assessment (TIA) report for the proposed Battery Energy Storage System (BESS) located near Poatina in order to support a Development Application for this project. The proposed BESS facility will connect to the Palmerston Substation and is to be developed by Neoen Australia Pty Ltd (Neoen).

The objective of this TIA is to recommend viable transport route options to the proposed site and identify appropriate measures to mitigate any traffic and safety issues that may arise or be exacerbated during the construction and operational phases of the BESS.

This assessment is based on desktop analyses of available data and a site inspection (undertaken on Thursday 1 June 2023) of the road network in the vicinity of the proposed project site. This assessment has been informed by details of the construction activities, including estimated traffic volumes, provided by Neoen.

1.2 Scope and limitations

This report: has been prepared by GHD for Joule Logic Pty Ltd and may only be used and relied on by Joule Logic Pty Ltd for the purpose agreed between GHD and Joule Logic Pty Ltd as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Joule Logic Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Joule Logic Pty Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.3 Assumptions

This report is based on the following assumptions:

- Traffic data obtained is representative of a normal weekday activity in the study area.
- Traffic volumes at the site access are assumed to be approximately equal to those recorded at the traffic counter to the west of the site on Poatina Road.
- The proposed BESS will be developed in two stages, with 140 MW of storage installed in each stage.
- Vehicle trip numbers for a 200 MW battery have been adopted with the heavy vehicle volumes scaled down by 20% to provide a conservative estimation of trip numbers for the proposed 140 MW BESS.
- All heavy vehicles and private staff vehicles will travel to the site via Poatina Road north.
- Shuttle buses may run between the site and a work force camp in the township of Poatina. There have been initial discussions with some residents from the Poatina Village where accommodation may be an option for workers.

1.4 References

The following documents and information have been referenced throughout this report:

– Crash data, Department of State Growth
– Traffic Counts in Tasmania, Tasmanian Government, Drakewell
– LISTmap, Tasmanian Government
– Heavy Vehicle Permit Maps, Tasmanian Government
– Tasmanian Higher Mass Limits (HML) Network, Tasmanian Government
– Height Clearance Under Overhead Structures, Tasmanian Government
– Tasmanian Planning Scheme – Northern Midlands Council (the Planning Scheme)
– *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management*, Austroads, 2020
– Substation Civil Design and Construction Standard, TasNetworks (2018)

2. Existing conditions

2.1 Site location

The subject site is located 2.3km to the east of Poatina, approximately 40km to the southwest of Launceston and 125 km north of Hobart, as shown in Figure 1. This site falls within the Northern Midlands Council area.

Figure 1 Site location

Source: LISTmap (Accessed on 25 May 2023)

The project site is located adjacent to the Palmerton Substation and is located amongst farming land. The Palmerston Substation site is accessed via an existing access road from Poatina Road. The aerial photograph in Figure 2 provides context to the Palmerston Substation and the project site.

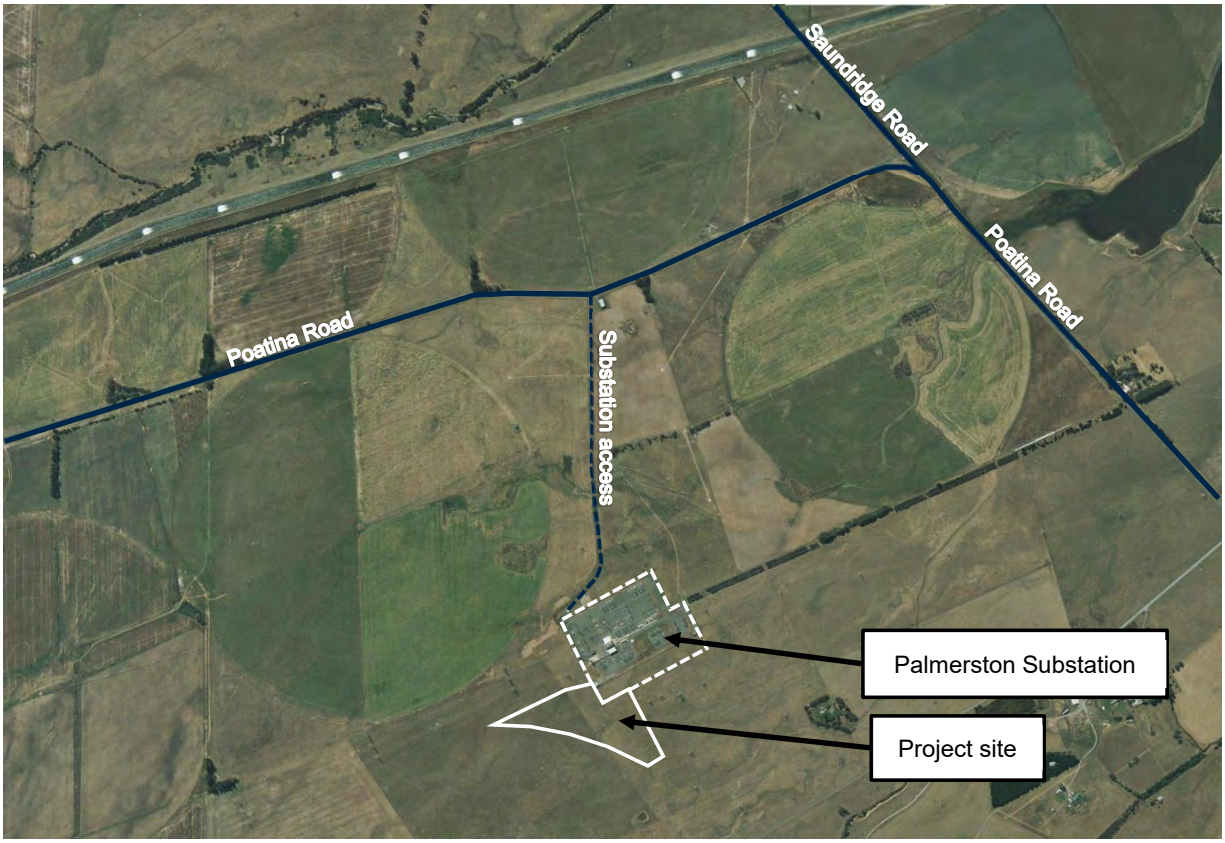

Figure 2 Site context

Source: LISTmap (Accessed on 25 May 2023)

The project site has an area of approximately 4 hectares.

The terrain in the general vicinity of the project site is relatively flat. The land adjacent to the Great Lakes Battery is zoned Agriculture in the Tasmanian Planning Scheme – Northern Midlands and is used for broad acre cropping. The surrounding area is sparsely populated with several residential properties within the township of Poatina. The Great Lake Conservation Area is approximately 16 km west of the site.

2.2 Road network

Poatina Road is a State controlled rural arterial. As a Category 4 road, its function is to provide safe passenger vehicle and tourist movement within the regions of Tasmania according to the state road hierarchy. Poatina Road is approved for use by vehicles up to 26m B-doubles and is subject to a default speed limit of 100 km/hr as a sealed road in a country area.

Poatina Road is approximately 75km long and runs in a generally north-south direction passing through the Great Lake Conservation Area.

The cross-section of Poatina Road is shown in Figure 3 and Figure 4 below, each of which are photographed from the Palmerston Substation site access road.

Figure 3 Poatina Road looking east

Figure 4 Poatina Road looking west

2.3 Sustainable transport

There is no existing active travel infrastructure for pedestrians or cyclists and no public transport located in close walking distance of the subject site. The nearest bus stops are located approximately 14 km northeast of the site on the Main Street at Cressy.

2.4 Traffic volumes

Daily traffic volumes (including heavy vehicles as a percentage of total traffic) using the state managed roads in the vicinity of the project site are shown in Figure 5. These volumes represent the Annual Average Daily Traffic (AADT) in 2021 and were sourced from the Department of State Growth.

Where Poatina Road approaches the town of Cressy, volumes are approximately 709 vehicles per day, 25% being heavy vehicles. The section of Poatina Road to the west of the project site carries 406 vehicles per day (17% heavy vehicles). Growth in traffic volumes along this corridor is forecast to be low, as development and population growth in the region is also low and there are no known approved developments that will attract or generate significant numbers of vehicle trips.

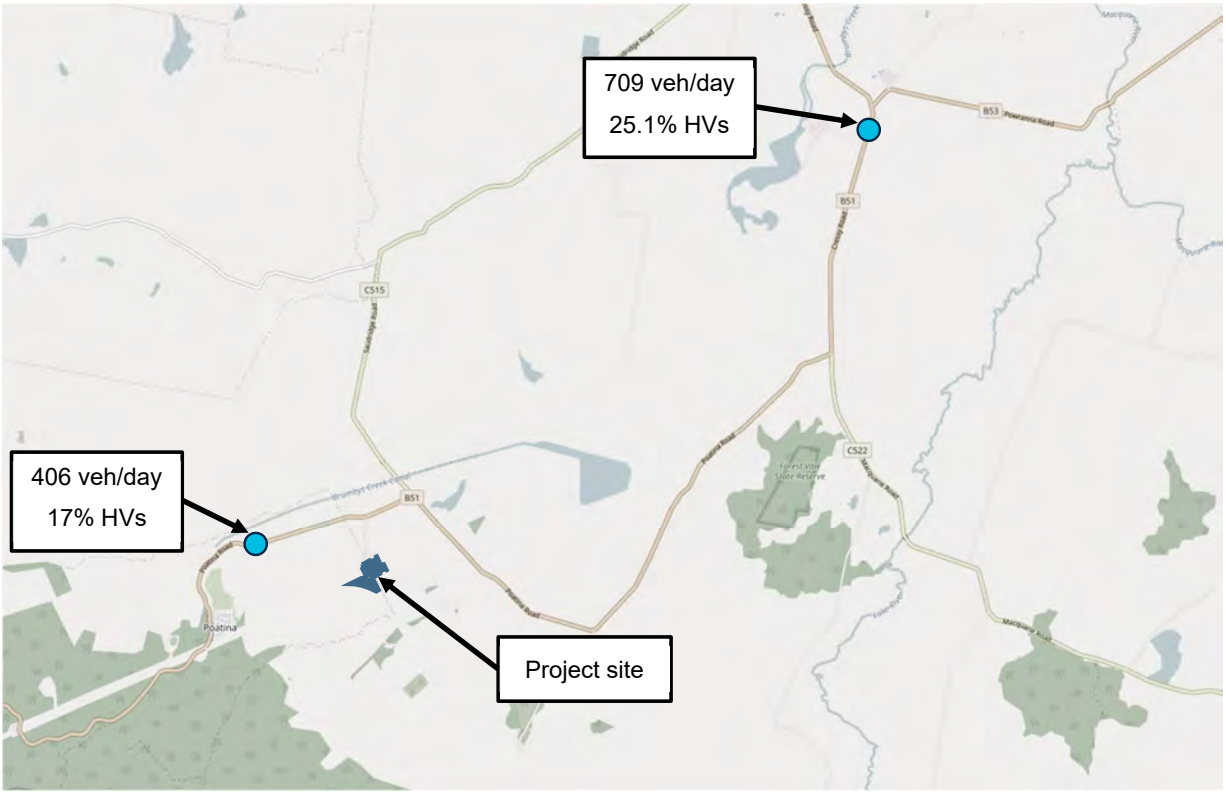

Figure 5 Traffic volumes (AADT and % HVs)

Data source: Tasmanian Traffic Data, Drakewell

Traffic volumes were obtained from each counter on Thursday 22 April 2021 to determine peak hour flows. This date was selected to provide a complete 24-hour data set at each site on the same date.

Based on the recorded volumes, the peak hour flow at the counter to the west of the site was 49 veh/hr between 16:00 and 17:00, with traffic approximately split 70% to the east and 30% to the west. The counter to the north of the site saw 84 veh/hr recorded between 8:00 and 9:00 with traffic approximately evenly split between north and south.

For the purposes of further assessment, it will be assumed that the volumes recorded at the traffic counter to the west of the site are indicative of the volumes at the site access.

2.5 Crash history

Crash data in the vicinity of the site was obtained from the Department of State Growth for the 5-year period from February 2018 until January 2023. Crashes reported within 5km of the project site are presented in Figure 6 and summarised in Table 1.

There have been nine crashes in the vicinity of the site in the last five years, seven of which occurred on Poatina Road with the remaining two occurring on Saundridge Road. There have been no fatal accidents.

Figure 6 Crash locations surrounding subject site (2018 – 2023, YTD)

Data source: Department of State Growth

Table 1 Summary of crash statistics (2018 – 2023, YTD)

Location	Number of crashes					Crash types
	Fatal	Other injury	Property damage	Unknown	Total	
Midblock locations						
Poatina Road	0	2	3	2	7	Other straight (1), Animal (1), Other manoeuvring (1), Right off carriageway into object or parked vehicle (1), Off right bend into object/parked vehicle (1), Other curve (1), Wrong side/other head on (not overtaking) (1)
Saundridge Road	0	2	0	0	2	Other curve (1), Animal (1)
Total	**0**	**4**	**3**	**2**	**9**	

3. Proposed development

3.1 General

The proposed project is the development of a Battery Energy Storage System (BESS) of 280 MW. Such a development falls under the 'utilities' land use in the Northern Midlands Planning Scheme. The BESS is proposed to be built in two stages of 140 MW each, with the delivery of the second stage dependant on external market factors. The BESS will include batteries and inverters, a control building and an operations building.

The development will be connected to the adjacent substation and is strategically placed to support the TasNetwork's transmission network.

The proposed site layout is shown below in Figure 7.

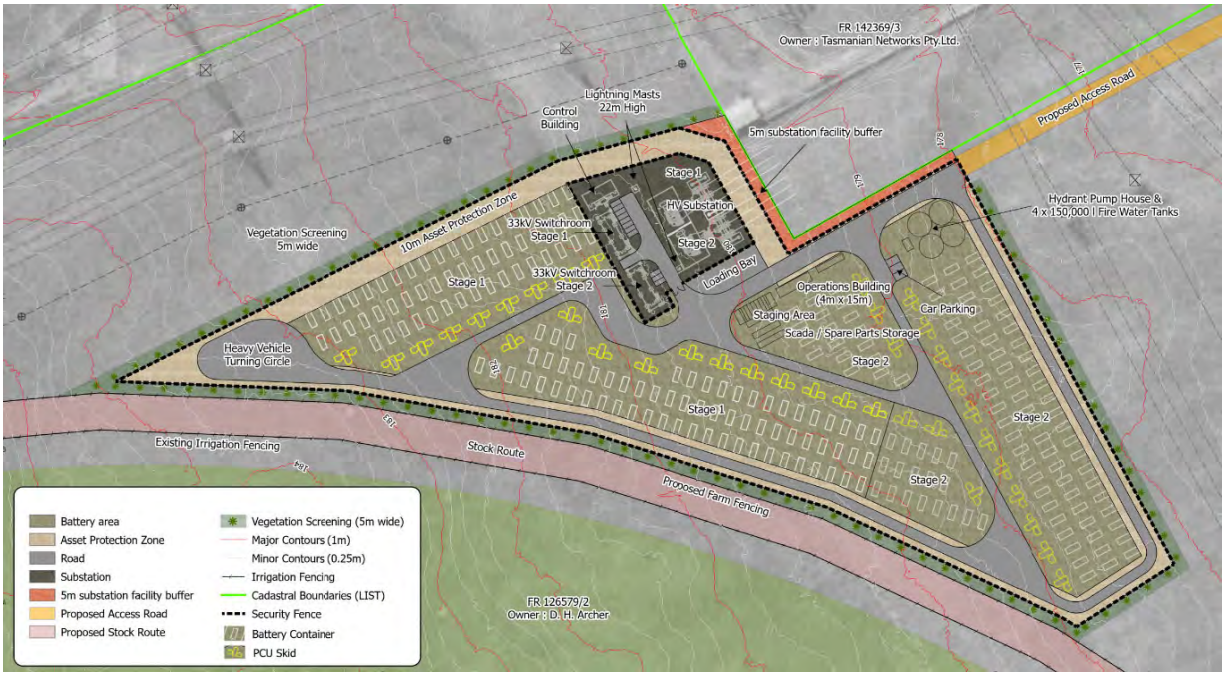

Figure 7 Proposed site layout

Source: Neoen

3.2 Site access, loading & parking

All access to the project site will be provided via a purpose-built access road that connects to the existing Palmerston Substation access road, from Poatina Road. In order to access the project site, the existing access road will be extended from the entry to the Palmerston Substation, wrapping around the east of the substation before reaching the project site generally to the north of the site.

The site has been designed to include a loading bay, capable of accommodating vehicles up to a B-double. While there is not expected to be demand for the loading bay during operation, the bay will be required during both construction and decommissioning.

A total of three car parking spaces will be provided on-site for staff who may be required to visit the BESS.

3.2.1 Access road and interface with TasNetworks infrastructure

There are a number of overhead transmission lines which connect directly to the adjacent Palmerston Substation. A site visit was held on Thursday 1 June 2023 along with representatives from TasNetworks who own, operate

and maintain the electricity transmission and distribution network in Tasmania. TasNetworks have advised that the statutory clearance of transmission line infrastructure is 7.6 metres.

During the construction and operational phases of the project, sufficient clearance will be required where vehicles and their loads move underneath the existing transmission lines. Engagement will be required with TasNetworks during the construction planning stages to ensure that sufficient clearances to their infrastructure are met and approved.

The approximate locations of transmission lines are shown in Figure 8 below, along with the proposed access road from the existing substation access to the project site.

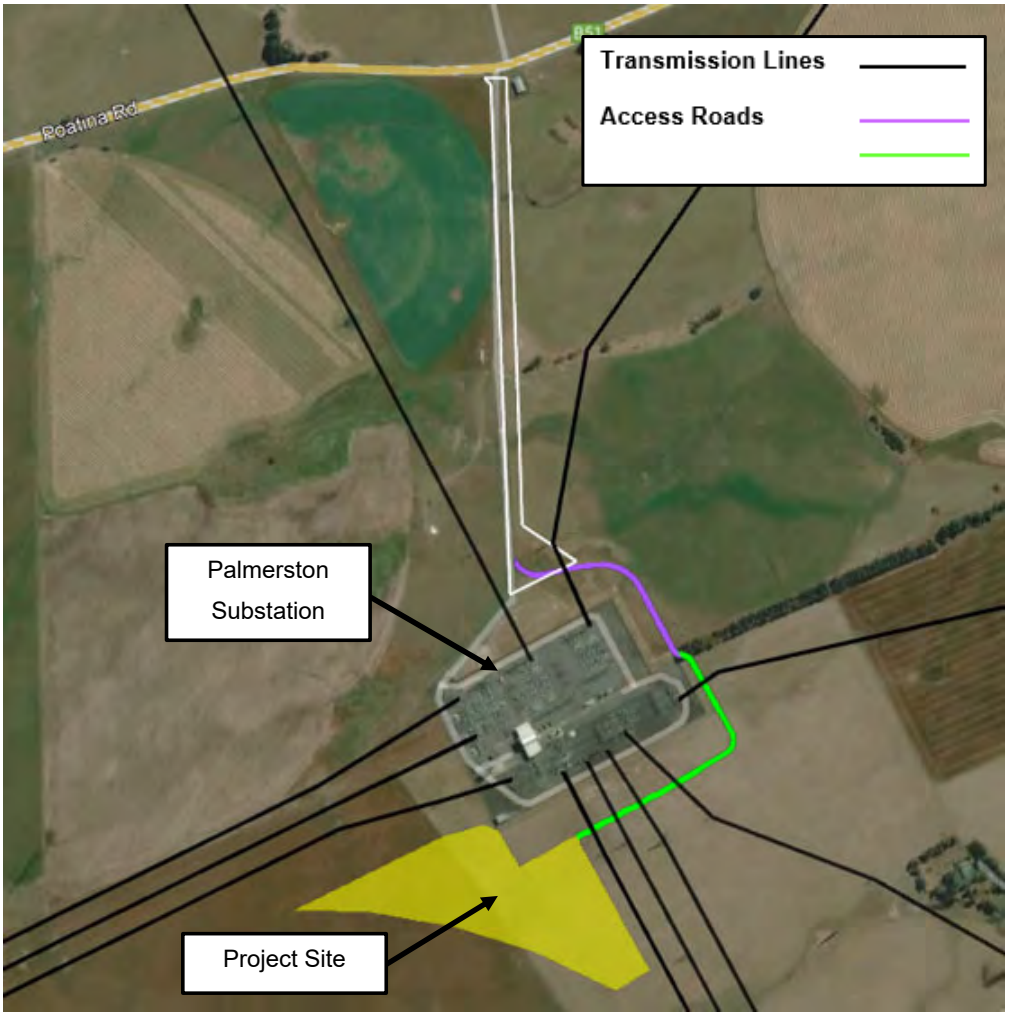

Figure 8 *Site context with access road and layout of existing transmission lines*

Source: LISTmap (Accessed on 25 May 2023)

3.3 Construction

Based on information provided by Neoen, it is understood that Stage 1 of the development will occur over 18 months, while Stage 2, if it goes ahead, will also span 18 months. During the Stage 1 works, construction will peak over a 6-month period.

The construction and commissioning activities include:

- Site mobilisation – general earthworks to clear and level the site, preparation of hardstand areas, stormwater management, erection of fencing, placement of any temporary buildings and sheds
- Balance of plant (BoP) works – further civil works, placement of any concrete pads / footings, erection of structures
- Containers transportation – delivery of battery equipment in containers direct from the port of importation
- Substation and BESS works – battery and transmission line installation
- Commissioning and testing – low intensity activities to finalise the installation and commission the facility.

Across the construction period, the operator has advised that the site will receive rigid trucks, including Heavy Rigid Vehicles (HRVs) and Medium Rigid Vehicles (MRVs). Additionally, the BESS will need to be able to facilitate loading by semi-trailers, B-doubles and truck & dog combinations on an ad-hoc basis.

4. Proposed haulage route

The majority of construction traffic will comprise standard heavy vehicles, which will travel to the site from the broader Launceston area. These standard heavy vehicles (HRVs, MRVs, semi-trailers etc.) do not require a permit to travel on the Tasmanian Heavy Vehicle network.

There will however be some equipment that is transported to the site by oversize over mass (OSOM) vehicles including cranes as required and the transportation of the transformer. As such, a detailed route assessment must be undertaken from the port of entry, and appropriate permits obtained from the National Heavy Vehicle Regulator (NHVR).

GHD has undertaken a preliminary review of the heavy vehicle road network to propose haulage route options from each of Bell Bay (via Launceston) and Hobart. While these routes provide an early indication of potential haulage routes, the ultimate route will need to be further assessed based on the specifications of the OSOM vehicles and the haulage operator. This should include a pavement assessment, swept path assessments at intersections, and a height clearance assessment. Furthermore, the ultimate route will need to be confirmed by the haulage operator. An indication of the requirements for the delivery of critical infrastructure to site, including the transformer, is provided in Section 7.1.1.

The following sections outline the proposed haulage routes from Bell Bay (via Launceston) and from Hobart. Routes from Bell Bay and Hobart have been reviewed as these are the likely origins for the delivery of large infrastructure to the project site, including cranes, transformers and inverters. For these identified routes, the following sections outline identified risks and constraints for OSOM vehicles.

Sections of these routes are also likely to be used by other heavy vehicles providing plant and materials during construction depending on their origin.

4.1 Bell Bay (Launceston) route

Figure 9 shows the proposed haulage route from Bell Bay to Launceston (red) and from Launceston to the site (blue). It is noted that the standard heavy vehicles accessing the site from greater Launceston will follow the second part of this route.

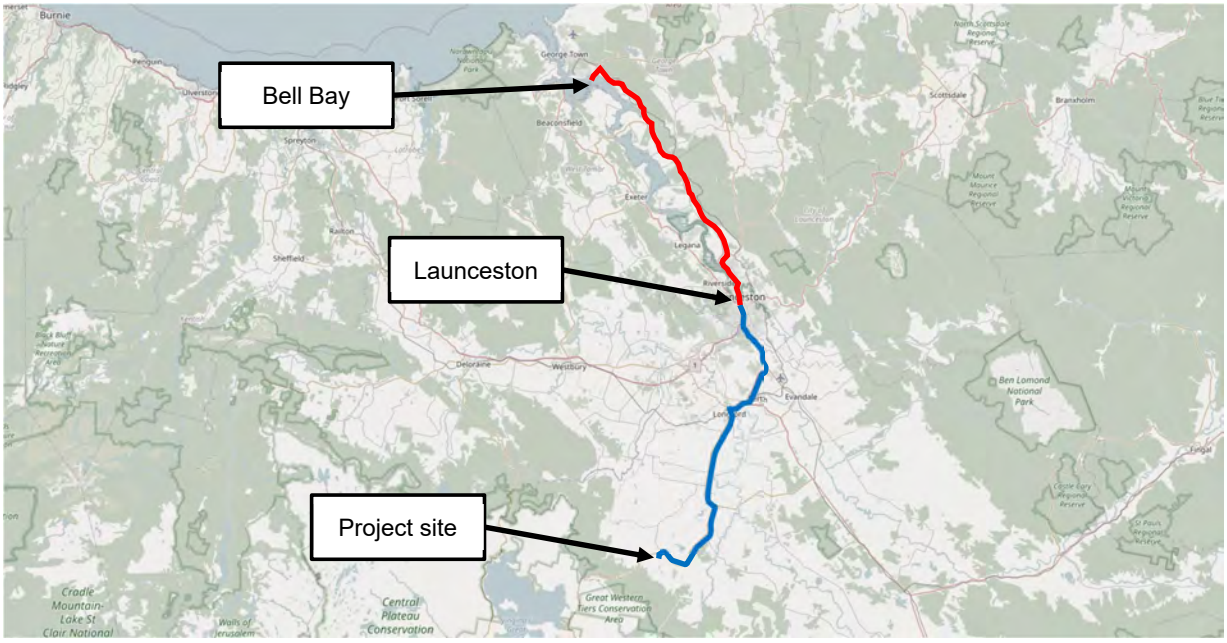

Figure 9 Bell Bay (Launceston) route

Base map source: OpenStreetMap

Preliminary review of the OSOM route from Bell Bay to the project site has identified several road network constraints as outlined in Table 2.

Table 2 Road network risks and constraints (Bell Bay route)

Constraint	Location	Details
Roundabout	Bell Bay Road / East Tamar Highway	Right-turn swept paths to be tested from Bell Bay Road onto East Tamar Highway (southbound)
East Tamar Rail Overpass #2	East Tamar Highway, Long Reach (north)	5.4m height restriction
East Tamar Highway Rail O'Pass (TasRail)	East Tamar Highway, Long Reach (south)	5.4m height restriction
TCAE Pedestrian Overpass	East Tamar Highway, near the University of Tasmania Newnham Campus	5.5m height restriction
Roundabout	East Tamar Highway / Mowbray Link	Swept paths to continue southbound through the roundabout from East Tamar Highway (north)
Mayne Street Overpass	East Tamar Highway / Mayne Street	5.3m height restriction
Thistle Street Ped Overpass	Midland Highway / Thistle Street	5.4m height restriction
Glen Dhu Overpass	Midland Highway / Pipeworks Road	5.5m height clearance
Roundabout	Illawarra Road / Wellington Street	Left-turn swept paths to be tested from Illawarra Road (east) onto Wellington Street (southbound)
T-intersection	Macquarie Road / Poatina Road	Right-turn swept paths to be tested from Macquarie Road (north) into Poatina Road
Site access	Poatina Road / site access	Left-turn swept paths to be tested from Poatina Road into the site access road

The potential risks and constraints as noted above would need to be confirmed as part of a more detailed assessment, such as a Construction Traffic Management Plan (CTMP) via consultation with the haulage operator, once the transport task and haulage routes are fully understood.

4.2 Hobart route

Figure 10 shows the proposed OSOM haulage route from Hobart to the site.

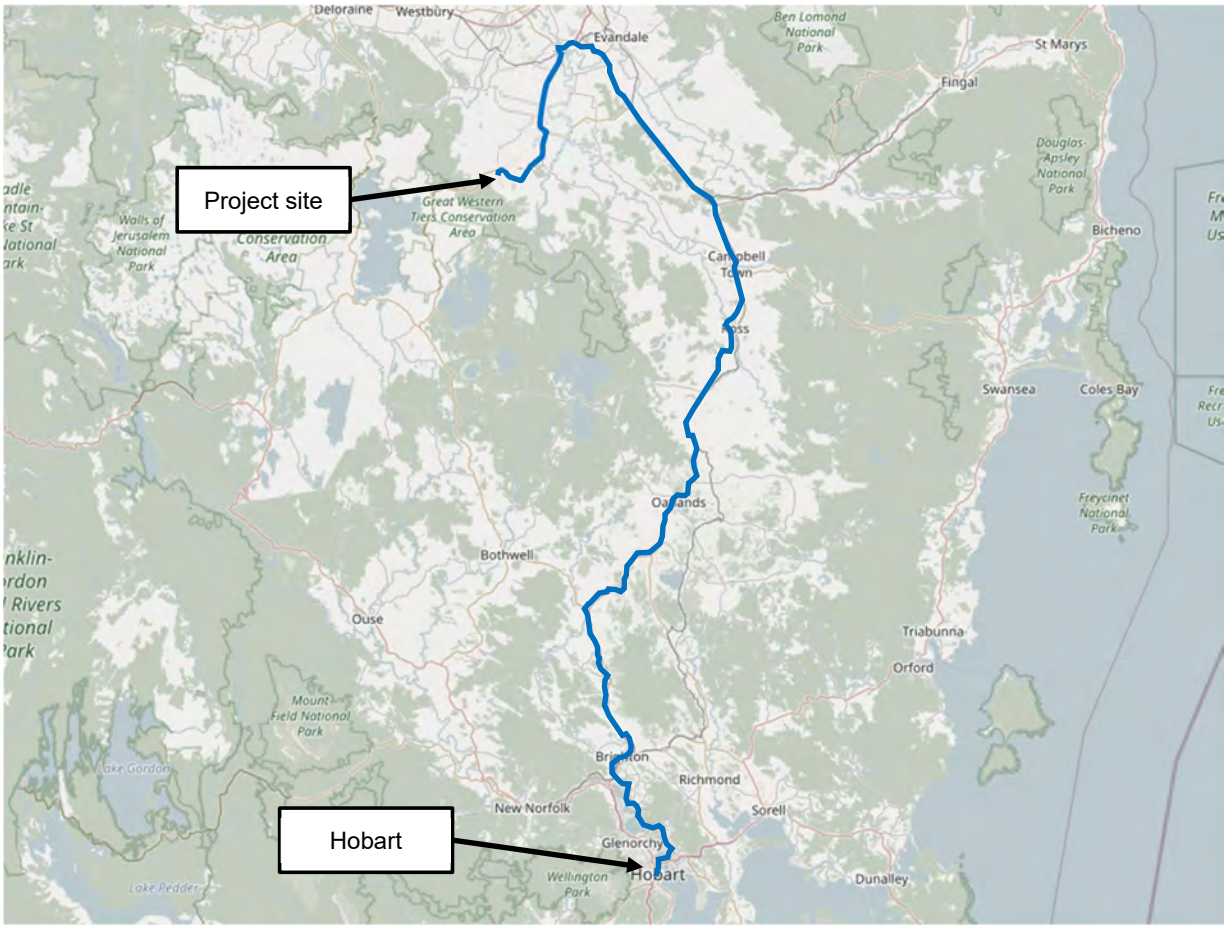

Figure 10 Hobart route

Base map source: OpenStreetMap

Preliminary review of the OSOM route from Bell Bay to the project site has identified several road network constraints as outlined in Table 3.

Table 3 Road network risks and constraints (Hobart route)

Constraint	Location	Details
Tasman Bridge Interchange W	Tasman Highway / Domain Highway	4.7m height restriction
Tasman Bridge	Tasman Highway	5.4m height restriction 3m width restriction (could potentially be exceeded with a permit)
Yolla Street Pedestrian Overpass	East Derwent Highway / Yolla Street	5.8m height restriction
Roundabout	East Derwent Highway / Grasstree Hill Road	Left-turn swept paths to be tested from East Derwent Highway (southeast) onto East Derwent Highway (southwest)

Constraint	Location	Details
Roundabout	East Derwent Highway / Midland Highway	Right-turn swept paths to be tested from East Derwent Highway (east) onto the Midland Highway (north)
Roundabout	Midland Highway / Brighton Road	Right-turn swept paths to be tested form Midland Highway (east) onto the Midland Highway (northbound)
Roundabout	Illawarra Road / Wellington Street	Left-turn swept paths to be tested from Illawarra Road (east) onto Wellington Street (southbound)
T-intersection	Macquarie Road / Poatina Road	Right-turn swept paths to be tested from Macquarie Road (north) into Poatina Road
Site access	Poatina Road / site access	Left-turn swept paths to be tested from Poatina Road into the site access road

The potential risks and constraints as noted above would need to be confirmed as part of a more detailed assessment, such as a Construction Traffic Management Plan (CTMP) via consultation with the haulage operator, once the transport task and haulage routes are fully understood.

4.3 Oversize over mass vehicles

It is understood that OSOM transport will be required for delivery of transformers and cranes, which would be the largest and heaviest items transported to the site. It is proposed that a single transformer would be delivered to site at each development stage only. As noted in Section 3.1, the development of Stage 2 of the Great Lakes Battery project depends on several uncontrollable and external market factors and should this development become a reality, then a power transformer (similar to that required for Stage 1) will be required to be delivered to site in a similar manner described for Stage 1.

The operator has provided specifications for a potential transformer for the site. This transformer has a transport mass of 121,300kg and is shown in Figure 11. The transformer selection process is still underway and therefore the exact specifications are yet to be confirmed. It is possible that the transformer installed on site will be, when compared to the one shown in Figure 11, of a reduced rating and weight.

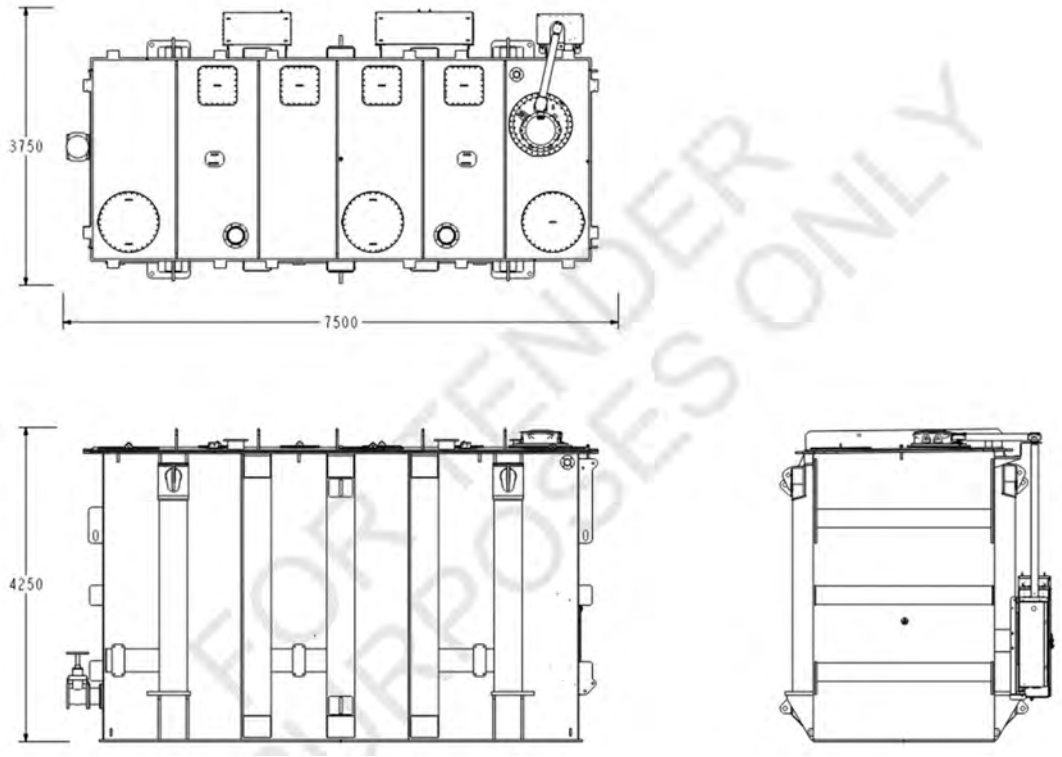

Figure 11 Transformer specifications (to be confirmed)

The transformer will likely be procured from overseas and imported via either Bell Bay or Hobart. At this stage, it is assumed that the transformer would be delivered to the site using a multi-axle low loader trailer. When planning for the OSOM transport routes, both horizontal and vertical clearances will need to be assessed. Over size over mass deliveries to site will be confirmed through the development of a Construction Traffic Management Plan (CTMP) via consultation with the haulage operator. As noted in Section 3.2.1, engagement with TasNetworks will be required to ensure appropriate clearances are provided to TasNetworks transmission lines.

5. Parking assessment

5.1 Car parking

The car parking requirements for the subject site are identified in Clause C2.5.1-A1 of the Planning Scheme. In this regard, Clause C2.5.1-A1 states that "*The number of on-site car parking spaces must be no less than the number specified in Table C2.1".*

Based on the proposed use of the site for utilities, Table C2.1 specifies "no requirement". This means the use or development is not required to provide any onsite parking. Nevertheless, the site provides a total of three car parking spaces for use by staff who may visit the development.

5.2 Bicycle parking

The bicycle parking requirements for the subject site are identified in Clause C2.5.2-A1 of the Planning Scheme which states that there must '*be no less than the number specified in Table C2.1'*.

Based on the proposed use of the site for utilities, Table C2.1 specifies "no requirement". This means the use or development is not required to provide any onsite parking. Accordingly, no onsite bicycle parking has been provided.

5.3 Loading bays

The Planning Scheme does not define loading bay requirements for land used for utilities, such as the proposed. As such, no loading bays are specifically required and instead should be considered based on the proposed operation of the site.

Noting the requirement for loading and unloading by rigid trucks, semi-trailers and B-doubles, an on-site loading bay has been provided which is approximately 34m long and 13m wide. As such, it is anticipated that the proposed loading bay will be able to comfortably accommodate vehicles up to a B-double in size. It is noted that this should be confirmed through swept path assessment.

The provision for on-site loading is therefore considered acceptable.

6. Design assessment

6.1 Construction of parking areas

The acceptable solution in Clause C2.6.1 of the Planning Scheme states:

All parking, access ways, manoeuvring and circulation spaces must:

(a) Be constructed with a durable all weather pavement;

(b) Be drained to the public stormwater system, or contain stormwater on the site; and

(c) Excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.

The proposed additional accessways, car parking spaces and drive through lanes are proposed to be constructed of either crushed rock aggregate, concrete or asphalt with appropriate drainage.

6.2 Car park design

The acceptable solution in Clause C2.6.2 of the Planning Scheme states:

Parking, access ways, manoeuvring and circulation spaces must either:

(a) comply with the following:

(i) have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6;

(ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces;

(iii) have an access width not less than the requirements in Table C2.2;

(iv) have car parking space dimensions which satisfy the requirements in Table C2.3;

(v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces;

(vi) have a vertical clearance of not less than 2.1m above the parking surface level; and

(vii) excluding a single dwelling, be delineated by line marking or other clear physical means; or

(b) comply with Australian Standard AS 2890- Parking facilities, Parts 1-6.

Table 4 summarises the Planning Scheme requirements for an acceptable solution for the internal accessway widths and car parking space dimensions.

Table 4 Clause C2.6.2 – Acceptable solution assessment

Planning Scheme Requirement	Comments
A1.1	Parking, access ways, manoeuvring and circulation spaces
Have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6	**Satisfied:** It is understood that the car park will be relatively flat, with grades not exceeding 1:16
Provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces	**Satisfied**: All vehicles can enter and exit the car park in a forward direction
Have an access width not less than the requirements in Table C2.2	**Satisfied:** The accessway widths are appropriate for a site with three car spaces, with a width of approximately 6m for the first 100m, narrowing to a width of approximately 4m for the remainder of the site. Furthermore, the access way widths are no less than 4.2m at changes of direction.

Planning Scheme Requirement	Comments
Have car parking space dimensions which satisfy the requirements in Table C2.3	**Satisfied:** Car parking spaces have been designed in exceedance of the Planning Scheme requirements to provide comfortable parking for all vehicle types. In this regard, all spaces have a minimum width of 3.5m and a length of over 6m.
Have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces	**Satisfied**: The accessway adjacent the car spaces has a width of no less than 4.8m.
Have a vertical clearance of not less than 2.1m above the parking surface level	**Satisfied:** All car parking is provided as open-air parking and as such there are no overhead obstructions
Excluding a single dwelling, be delineated by line marking or other clear physical means	**Satisfied**: All parking will be line marked
A1.2	Parking spaces provided for use by persons with a disability
Be located as close as practicable to the main entry point to the building	**N/A:** As no car parking is required for the development there is no requirement to provide accessible parking.
Be incorporated into the overall car park design	
Be designed and constructed in accordance with *Australian/New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities*	

Based on the above, the proposed car park design meets the acceptable design criteria of the Planning Scheme and is therefore considered appropriate.

6.3 Vehicle accessways

The acceptable solution in Clause C2.6.3 of the Planning Scheme states:

The number of accesses provided for each frontage must:

(a) be no more than 1; or

(b) no more than the existing number of accesses, whichever is greater.

The proposal seeks to utilise the existing Palmerston Substation access road which if necessary, will be repaired in line with the standards set out in TasNetworks requirements for access roads as outlined within their Substation Civil Design and Construction Standard (Section 6.1.1 – Access Roads). Furthermore, the proposed access road will connect to the Substation access road and wrap around the east of the Substation, providing access to the site. This proposed access road will be constructed in accordance with the access road requirements outlined within the same TasNetworks document (Section 6.1.1 – Access Roads).

Based on the foregoing, the proposal complies with the acceptable solution within the Planning Scheme as no new accesses are proposed to the public road network.

6.4 Sight distance assessment

AS/NZS 2890.1 requires a minimum sight distance of 153m for a frontage road with a speed of 100km/h such as Poatina Road. Sightlines were assessed during the site visit, which indicated no major obstructions to sight distance such that the requirements are exceeded at the proposed site egress point in both directions. In this regard, to the west of the site access, sight distance exceeds 300m while to the east of the site access, sight distance exceeds 800m.

6.5 Pedestrian access

The acceptable solution in Clause 2.6.5 of the Planning Scheme states:

Uses that require 10 or more car parking spaces must:

(a) have a 1m wide footpath that is separated from the access ways or parking aisles, excluding where crossing access ways or parking aisles by:

(i) a horizontal distance of 2.5m between the edge of the footpath and the access way or parking aisle; or

(ii) protective devices such as bollards, guard rails or planters between the footpath and the access way or parking aisle; and

(iii) be signed and line marked at points where pedestrians cross access ways or parking aisles.

Noting the use does not require car parking, no pedestrian paths are required. The proposal is therefore considered acceptable.

6.6 Loading bays

The acceptable solution in Clause 2.6.6-A2 of the Planning Scheme states:

The type of commercial vehicle likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with Australian Standard AS 2890.2-2022, Parking Facilities, Part 2: Parking facilities Offstreet commercial vehicle facilities.

As outlined within Section 5.3, the site is required to accommodate loading by both rigid vehicles and semi-trailers on a regular basis, as well as vehicles up to a 26m length B-double on an ad hoc basis. While swept paths have not been undertaken, based on the width of the access aisles, it is expected that all loading vehicles will be able to enter and exit the site in a forward direction. The site does provide for full circulation with the exception of a single dead end which provides a vehicle turning facility.

7. Traffic Assessment

7.1 Traffic generation

7.1.1 Construction

As noted in Section 3.1, the project is intended to be developed in two even stages, with each stage providing 140 MW. Neoen has provided GHD with vehicle trip numbers for a 200 MW BESS project. In order to ensure a conservative traffic assessment, it was recommended to adopt the light vehicle and shuttle bus volumes from an equivalent 200 MW project (approximately 43% bigger than the proposed 140 MW project stages), and to adopt 80% of the heavy vehicle volumes.

It is noted that the shuttle buses may run between the site and a work force camp in the township of Poatina. There have been initial discussions with some residents from the Poatina Village where accommodation may be an option for workers, however this is all yet to be confirmed.

Based on these assumptions, the estimated construction traffic volumes are outlined in Table 5.

Table 5 Estimated construction traffic

Load Type	Average trip volumes		Peak trip volumes	
	Daily	Peak hours	Daily	Peak hours
Light Vehicles	30	15	50	25
Shuttle buses	2	1	4	2
MRV/HRV (8-13m long rigid vehicle) (e.g. water and concrete trucks)	15	8	24	10
Truck and Dog	5	2	12	4
AV (semi-trailer)	0.1	0.1	4	2
B-Double	1	1	4	2
Total	**53.1**	**27.1**	**98**	**45**

7.1.2 Operation

Once in operation, it is expected that any trips to the BESS site will be for ongoing maintenance purposes only. Maintenance will occur on an ad-hoc basis with trips amounting to less than one (1) per day on average. Peak traffic generation may occur during a shutdown period or maintenance campaign, where there may be up to three (3) trips to the site per day.

The traffic generated by the site during the operational phase will therefore be minimal, with all additional vehicle trips expected to be easily absorbed into the existing road network with negligible impact to surrounding land or road users.

7.2 Traffic distribution

Noting that operational stage traffic is negligible, the traffic distribution has been assessed for construction stage traffic. In this regard, it is assumed that:

– All heavy vehicle traffic will be generated to/from the north
– All light vehicle traffic will be generated to/from the north
– Shuttle buses may run to/from Poatina, to the west where some project accommodation may be provided based on initial discussions with members from the Poatina community

Based on this distribution, during the peak hours in the peak construction period, the proposal is expected to generate:

– 2 vehicle trips to/from the west
– 43 vehicle trips to/from the north

7.3 Traffic impact

The requirements for acceptable traffic generation at vehicle crossings at the subject site are identified in Clause C3.5.1-A1.4 of the Planning Scheme, which states:

Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than:

(a) The amounts in Table C3.1; or

(b) Allowed by a license under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road.

The acceptable increase in average annual daily traffic as outlined within Table C3.1 includes:

– An increase in vehicles up to 5.5m long of 20% or 40 vehicle movements per day (whichever is greater)
– An increase in vehicles longer than 5.5m long of 20% or 5 vehicle movements per day (whichever is greater)

7.3.1 Construction

The Planning Scheme requirements for traffic impact typically relate to the operational phase of a development with the construction traffic to be assessed within a Construction Traffic Management Plan (CTMP). Nevertheless, noting the extended construction period of 18 months for Stage 1, with a 6-month peak, the projected construction volumes have been assessed here.

Based on the traffic volumes outlined in Section 7.1, the site will see up to 50 additional light vehicles accessing the site per day and an additional 48 heavy vehicles accessing the site per day. In this regard, both the light and heavy vehicle traffic generation will exceed the permitted increases outlined within the Planning Scheme.

The Highway Capacity Manual (HCM 2016) indicates that the capacity of two-lane highways is 1,700 equivalent passenger car movements per direction, per hour. With current daily traffic volumes of around 406 vehicles per day observed on Poatina Road, it is considered that the additional 98 vehicle movements during the construction stage would be well accommodated by the existing road network and considered acceptable.

It is noted that large heavy vehicles such as B-doubles, OSOM trucks and cranes can cause wear to road infrastructure. As such, mitigation measures for this damage should be included as part of the Traffic Management Plan. Neoen would reinstate any damage to public infrastructure should, under the unlikely scenario, this occurs while transporting B-doubles, OSOM vehicles or cranes to the project site.

7.3.2 Operation

During the operation phase, traffic generated by the site will be very low and infrequent with no more than three vehicle trips per day to the site. Accordingly, the operational traffic will not exceed the acceptable limits listed within the Planning Scheme.

7.4 Sight access arrangement

Noting all vehicles are proposed to access the site from the existing access to Poatina Road, a turn lane warrant assessment has been undertaken based on the Austroads *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management* (2020).

As discussed in Section 2.4, Poatina Road currently carries approximately 406 vehicles per day along the frontage of the site, including 49 vehicles per hour in peak hour from 16:00 to 17:00. The peak hour movements are comprised of 34 eastbound vehicles and 15 westbound vehicles.

Based on the traffic generation projections for the site, and assuming the site peak coincides with the network peak, the corresponding turn lane warrants are shown in Figure 12.

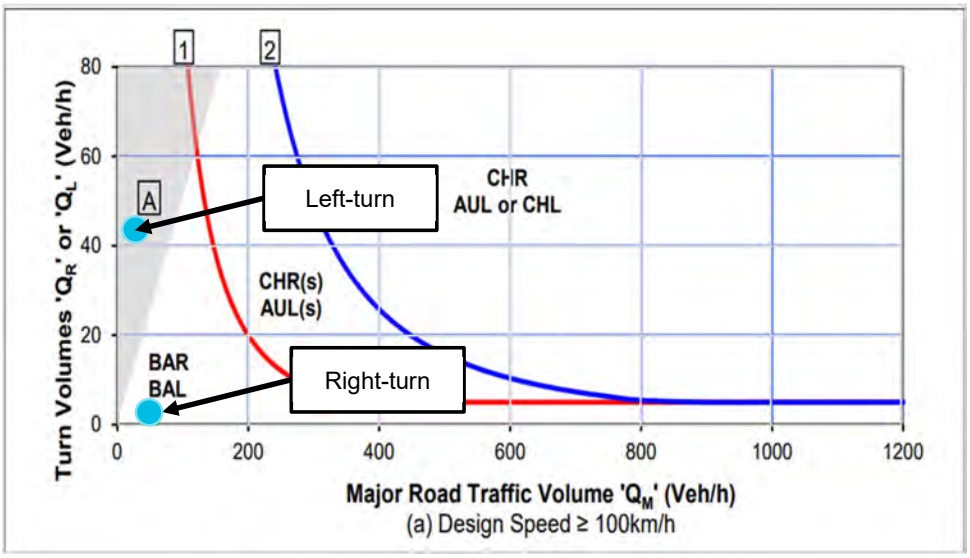

Figure 12 *Warrants for Turn Treatments on Major Roads*

Source: Austroads

Based on the traffic volumes, which include very low through volumes along Poatina Road, no additional turn treatments are required at the site access road.

8. Conclusion

This Traffic Impact Assessment has investigated the potential traffic and transport related impacts associated with the proposed BESS facility near Poatina, Tasmania. The key findings are as follows:

- General heavy vehicle use is permitted on State approved roads. Further development of the haulage route is required from the port of entry to site. This should be captured in the Traffic Management Plan.
- Over size over mass (OSOM) vehicle use requires NHVR approval and haulage route development, including swept path analysis and possible road dilapidation survey, to be undertaken with the OSOM haulage operator.
- A Construction Traffic Management Plan (CTMP) would need to be developed for the project in order to manage and account for broader impacts to road infrastructure, including use of OSOM vehicles. The CTMP would also include engagement requirements including liaison with TasNetworks to ensure safe clearance of their assets.
- No parking is strictly required for the proposed development. The provision of three car spaces is considered acceptable.
- The design of car parking, access and loading areas meets the Planning Scheme requirements and is therefore considered acceptable.
- Site access is proposed to be from Poatina Road. Available sight distances were found to be adequate based on the relevant design guidelines.
- The loading bay is expected to accommodate loading vehicles as required. Swept paths should be undertaken to confirm the size and number of vehicles which can access the loading bay simultaneously.
- The volume of additional vehicles using the road network is not expected to significantly impact the function of the road network and would be accommodated given existing traffic volumes and available capacity.

Based on the findings of this report, and subject to any recommendations listed above, the proposed development is supported on traffic and transport grounds.

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Great Lakes Battery Project

Preliminary Traffic Management Plan (TMP)

Joule Logic Pty Ltd

07 July 2023

→ **The Power of Commitment**

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1. Introduction

1.1 Purpose of this report

GHD has been engaged by Joule Logic Pty Ltd (Joule Logic) to prepare a Preliminary Traffic Management Plan (TMP) report for the proposed Battery Energy Storage System (BESS) located near Poatina. The proposed BESS facility will connect to the Palmerston Substation and is to be developed by Neoen Australia Pty Ltd (Neoen).

The objective of this TMP is to set out the commitments Neoen will make to ensure that the construction of the BESS does not adversely impact on either the condition or operation of the surrounding road network.

This assessment is based on desktop analyses of available data and a site inspection (undertaken on Thursday 1 June 2023) of the road network in the vicinity of the proposed project site. This assessment has been informed by details of the construction activities, including estimated traffic volumes, provided by Neoen.

1.2 Scope and limitations

This report: has been prepared by GHD for Joule Logic Pty Ltd and may only be used and relied on by Joule Logic Pty Ltd for the purpose agreed between GHD and Joule Logic Pty Ltd as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Joule Logic Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Joule Logic Pty Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.3 References

The following documents and information have been referenced throughout this report:

- Crash data, Department of State Growth
- Traffic Counts in Tasmania, Tasmanian Government, Drakewell
- Tasmanian Higher Mass Limits (HML) Network, Tasmanian Government
- Height Clearance Under Overhead Structures, Tasmanian Government
- LISTmap, Tasmanian Government
- Substation Civil Design and Construction Standard, TasNetworks (2018)

1.4 Glossary of terms

The key terms and abbreviations used in this report are provided in the following table.

Table 1 Key terms and abbreviations

Term	Definition
AADT	Average Annual Daily Traffic
BESS	Battery Energy Storage System
DSG	Department of State Growth
JSEA	Job Safety and Environment Analysis
OSOM	Over Size Over Mass vehicles
SWMS	Safe Work Method Statement
vpd	vehicles per day

2. Project information

2.1 Project location and key features

The Great Lakes Battery Project is located 2.3km to the east of Poatina, approximately 40km to the southwest of Launceston and 125 km north of Hobart. The site is located within the Northern Midlands Council area.

The project site is adjacent to the Palmerton Substation and is located amongst farming land. There is an existing access road from Poatina Road to the Palmerston Substation. A new road will be built to access the Project site. This proposed access road can be viewed in Figure 1 as the yellow road. The aerial photograph in Figure 1 provides context to the Palmerston Substation and the project site as well as the proposed access road.

The facility will install batteries to store and dispatch energy, contributing to improved stability and reliability to the network. The project will be developed in two equally split stages, ultimately comprising:

– New access road
– Battery/BESS modules (140 MW / 280 MWh in each stage)
– Medium voltage transformers
– Inverters
– A power transofrmer (one for each stage)
– An elevated 33 kV switch room (one for each stage)
– A control building
– Hydrant pump house and fire water tanks
– Internal roads
– Construction laydown area
– Operation and maintenance building

It is noted that at this stage, the delivery of the second stage of the BESS will be dependant on external market factors.

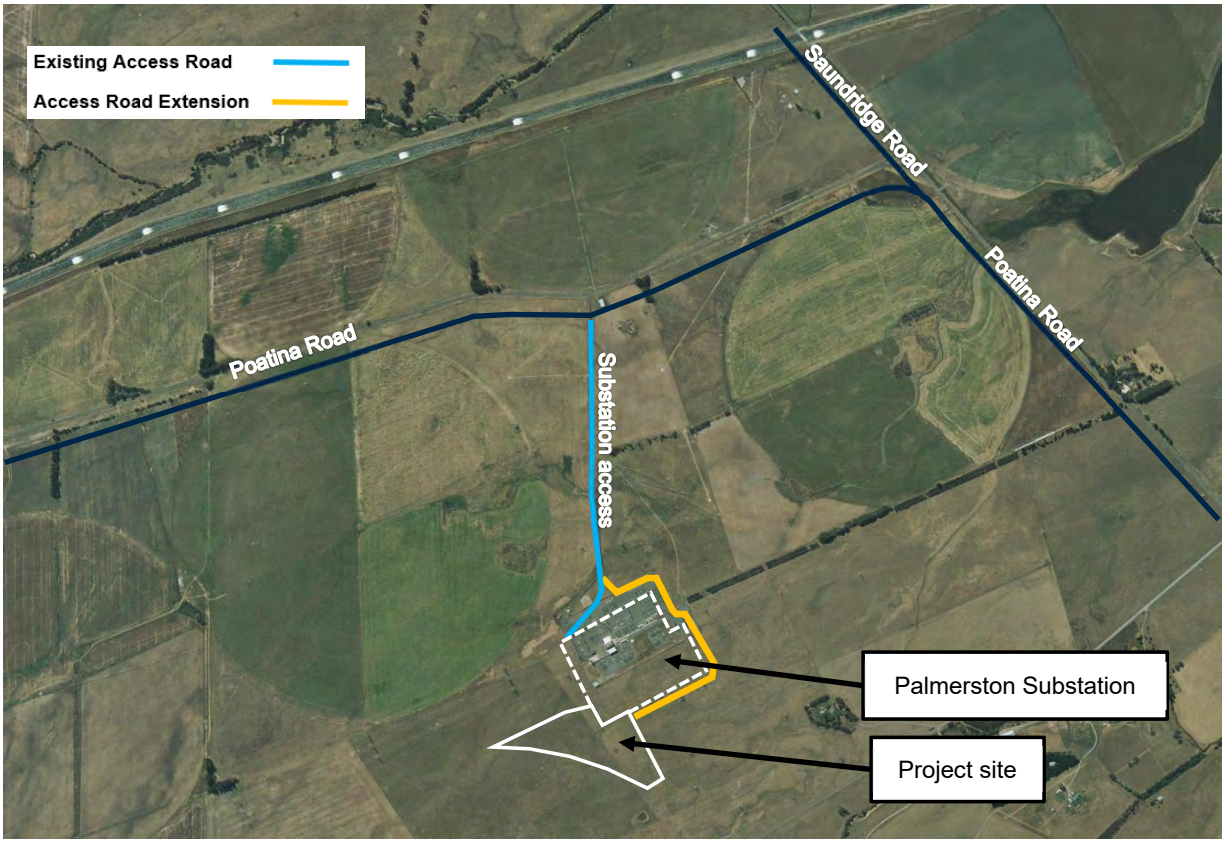

Figure 1 Site context

Source: LISTmap (Accessed on 25 May 2023)

2.2 Site layout and access

For the duration of construction, it is proposed that temporary construction facilities will be installed within the project area. A staging area has been provided centrally within the site, which will be used to house the construction compounds and material lay down throughout each stage of construction.

As noted in Section 2.1 and shown in Figure 1, site access is to be provided via the proposed access road to the Palmerston Substation which will connect to the existing Substation access road. The proposed access road will wrap around the northeast and southeast perimeter of the Substation. The proposed access road will be designed and graded to a quality all weather road for construction, as per Section 6.1.1 (Access Roads) within TasNetwork's Substation Civil Design and Construction Standards.

The site access point will be at the north of the project site. Based on this arrangement, construction vehicles will be able to queue along the extended access road if required, therefore ensuring no impact to the Substation or the public road network.

The majority of construction vehicles will travel to the site from the north via Poatina Road, with the majority of construction vehicles traveling from the greater Launceston area.

2.3 Construction program

Based on information provided by Neoen, it is understood that the delivery of stage 1 of the BESS, from mobilisation to practical completion, is scheduled to occur over approximately 18 months. Stage 2 will also be constructed over a similar period of 18 months. During the Stage 1 works, construction will peak over a 6-month period.

The construction and commissioning activities include:

- Site mobilisation – general earthworks to clear and level the site, preparation of hardstand areas, stormwater management, erection of fencing, placement of any temporary buildings and sheds
- Balance of plant (BoP) works – further civil works, placement of any concrete pads / footings, erection of structures
- Containers transportation – delivery of battery equipment direct from the port of importation
- Substation and BESS works – battery and transmission line installation
- Commissioning and testing – low intensity activities to finalise the installation and commission the facility.

Across the construction period, the operator has advised that the site will receive rigid trucks, including Heavy Rigid Vehicles (HRVs) and Medium Rigid Vehicles (MRVs). Additionally, the BESS will need to be able to facilitate loading by semi-trailers, B-doubles and truck & dog combinations on an ad-hoc basis.

3. Existing conditions

3.1 Key roads

There are a number of roads that will be used by construction related activity. These roads include:

– Midland Highway
– Illawarra Road
– Wellington Street
– Marlborough Street
– Cressy Road
– Poatina Road
– Saundridge Road

In addition to the above, additional roads will be used for the transport of oversized/over mass (OSOM) loads, as further detailed in Section 5.2. Noting the port of entry for the OSOM loads is yet to be confirmed, the routes from both Bell Bay and Hobart have been included. Accordingly, the following roads may also be utilised for the BESS construction:

– From Bell Bay:
  a) Bell Bay Road
  b) East Tamar Highway
– From Hobart:
  a) Tasman Highway
  b) East Derwent Highway

3.2 Traffic volumes

Traffic volume data has been obtained from the Department of State Growth's Drakewell website. The data has been taken from 2021 and 2022 depending on availability and is summarised in Table 2.

Table 2 Traffic volumes on key roads (AADT and HV %)

Road Name	Estimated AADT	% Heavy Vehicles
Midland Highway	11,800-31,000 (2021)	12-17% (2021)
Illawarra Road	10,384 (2021)	10.6% (2021)
Wellington Street	10,100vpd (2022)	14.3% (2021)
Cressy Road	1,350-3,500vpd (2022)	16-24% (2021)
Poatina Road	400-700vpd (2021)	17-25% (2021)
Bell Bay Road	1,100-2,200vpd (2021)	30-77% (2021)
East Tamar Highway	5,000-25,500vpd (2022)	10-17% (2022)
Tasman Highway	72,200vpd (2022)	8.3% (2022)
East Derwent Highway	9,100-18,800 (2021)	8.2-8.6% (2021)

Data source: Department of State Growth

The roads listed below do not currently have traffic volume data available. Based on the road environment and volumes obtained across the network the daily traffic has been estimated.

– Marlborough Street (estimated 3500-5000vpd)
– Saundridge Road (estimated 250-500vpd)

3.3 Crash history

Crash data in the vicinity of the site was obtained from the Department of State Growth for the 5-year period from February 2018 until January 2023. Crashes reported within 5km of the project site are presented in Figure 2 and summarised in Table 3.

There have been nine crashes in the vicinity of the site in the last five years, seven of which occurred on Poatina Road with the remaining two occurring on Saundridge Road. There have been no fatal accidents.

Figure 2 *Crash locations surrounding subject site (2018 – 2023, YTD)*

Data source: Department of State Growth

Table 3 *Summary of crash statistics (2018 – 2023, YTD)*

Location	Number of crashes					Crash types
	Fatal	Other injury	Property damage	Unknown	Total	
Midblock locations						
Poatina Road	0	2	3	2	7	Other straight (1), Animal (1), Other manoeuvring (1), Right off carriageway into object or parked vehicle (1), Off right bend into object/parked vehicle (1), Other curve (1), Wrong side/other head on (not overtaking) (1)
Saundridge Road	0	2	0	0	2	Other curve (1), Animal (1)
Total	**0**	**4**	**3**	**2**	**9**	

4. Traffic generation

4.1 Key assumptions

The traffic generation estimates for this project have been made based on information provided by Joule Logic and Neoen. In using this information, the following key assumptions have been made:

– Traffic data obtained is representative of a normal weekday activity in the study area.
– Traffic volumes at the site access are assumed to be approximately equal to those recorded at the traffic counter to the west of the site on Poatina Road.
– The proposed BESS will be developed in two stages, with 140 MW of storage installed in each stage.
– Vehicle trip numbers for a 200 MW battery have been adopted with the heavy vehicle volumes scaled down by 20% to provide a conservative estimation of trip numbers for the proposed 140 MW BESS.
– All heavy vehicles and private staff vehicles will travel to the site via Poatina Road north.
– Shuttle buses may run between the site and a work force camp in the township of Poatina. There have been initial discussions with some residents from the Poatina Village where accommodation may be an option for workers.

4.2 Traffic generation estimates

Based on the assumptions outlined in Section 4.1, the estimated daily construction traffic volumes are outlined in Table 4.

Table 4 Estimated construction traffic

Load Type	Average trip volumes		Peak trip volumes	
	Daily	Peak hours	Daily	Peak hours
Light Vehicles	30	15	50	25
Shuttle buses	2	1	4	2
MRV/HRV (8-13m long rigid vehicle) (e.g. water and concrete trucks)	15	8	24	10
Truck and Dog	5	2	12	4
AV (semi-trailer)	0.1	0.1	4	2
B-Double	1	1	4	2
Total	**53.1**	**27.1**	**98**	**45**

5. Access routes

5.1 General vehicles

5.1.1 Workforce

The bulk of the construction workforce are expected to travel to the project area using private cars. Depending on demand and pending further engagement with members living in Poatina, a shuttle bus may also run from a worker's village in Poatina. The volume of construction traffic will vary depending on the activities being undertaken at the time. As standard passenger vehicles (and potentially a small bus) will be used, no approval is required to use the public roads.

It is anticipated that all workers travelling in private vehicles will originate from the broader Launceston area and will therefore access the site via the B51 from the north. Proposed shuttle buses may run between the site and Poatina, with use of the public road network therefore limited to Poatina Road.

5.1.2 General materials and equipment

The majority of construction traffic will consist of standard trucks and will vary depending on the construction activity being undertaken at the time. The types of trucks will range from semi-trucks, water carts to skip trucks and concrete trucks. As these all represent a standard truck size, no approval will be required to use the public roads.

It is understood that the bulk of the materials and equipment will come from the broader Launceston area. In this regard, all contractors will be advised to travel to the site via arterial roads where possible. It is therefore expected that construction traffic will largely utilise the route prescribed in Section 5.3, from Launceston to the site via B51.

5.2 OSOM vehicles

In addition to the traffic outlined in Section 5.1, there will be a small number of OSOM vehicle movements associated with the delivery of the cranes and transformers, which will be the largest and heaviest items transported to the site. In this regard, there will be one transformer delivered to the site to complete Stage 1 of the BESS (140 MW). As noted in Section 2.1, the development of Stage 2 of the Great Lakes Battery project depends on several uncontrollable and external market factors and should this development occur, then a power transformer (similar to that required for Stage 1) will be required to be delivered to site in a similar manner described for Stage 1.

The operator has provided specifications for a potential transformer for the site. This transformer has a transport mass of 121,300kg and is shown in Figure 3. It is however noted that the transformer selection is still underway and therefore the exact specifications are yet to be confirmed. It is possible that the transformer installed on site will be, when compared to the one shown in Figure 3, of a reduced rating and weight.

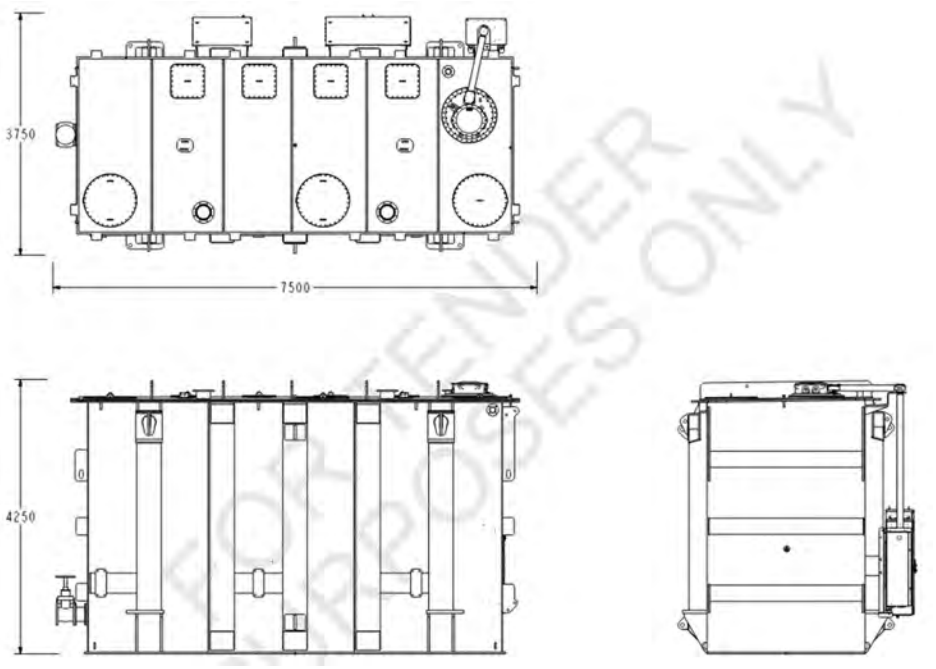

Figure 3 Transformer specifications (to be confirmed)

The transformer(s) will likely be procured from overseas and imported via either Bell Bay or Hobart. At this stage, it is assumed that the transformer would be delivered to the site using a multi-axle low loader trailer. When planning for the OSOM transport routes, both horizontal and vertical clearances will need to be assessed. OSOM deliveries to site will be confirmed through the development of a Construction Traffic Management Plan (CTMP) via consultation with the haulage operator.

5.3 Proposed routes

5.3.1 Overview

Various access routes will be utilised throughout the construction of the Great Lakes Battery project as shown in Figure 4 and outlined in the following sections. As a summary, the workforce, general materials and equipment are all expected to come from the greater Launceston area, generally following the blue route (heavy vehicles) with some workers potentially choosing the orange route as a shorter option (light vehicles only). The red and green routes show the potential OSOM routes from Bell Bay and Hobart respectively, up to the point where they join the blue route which they will then follow to the site.

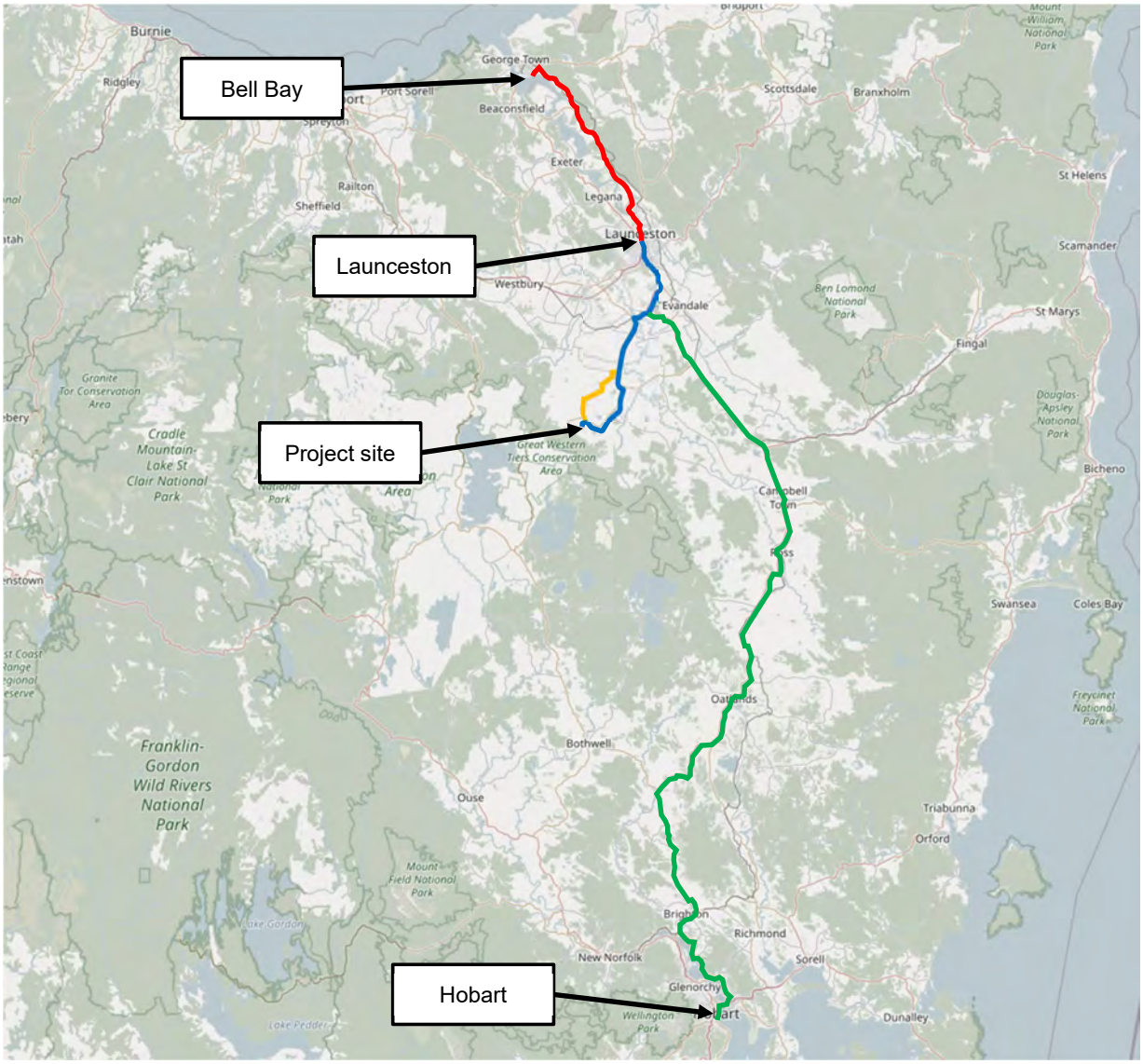

Figure 4 Access routes

Base map source: OpenStreetMap

5.3.2 Blue route (Launceston to the site via B51)

The blue route runs from Launceston to the project site and generally follows the B51 from Longford to the site. The road sections utilised along this route are summarised in Table 5 with images of the typical road environment along each section shown in Figure 5 to Figure 11.

Table 5 Blue route summary

Road	Section	Road classification	Road authority	Speed limit	B-double and Higher mass limit network
Midland Highway (1)	Launceston – Illawarra Road	National / State Highway	DSG	90-110km/h	Yes
Illawarra Road (B52)	Midland Highway – Wellington Street	National / State Highway	DSG	100km/h	Yes
Wellington Street (B51)	Illawarra Road – Marlborough Street	Arterial Road	DSG	50km/h	Yes
Marlborough Street (B51)	Wellington Street – Cressy Road	Arterial Road	DSG	50km/h	Yes
Cressy Road (B51)	Marlborough Street – Poatina Road	Arterial Road	DSG	60-100km/h	Yes
Poatina Road (B51)	Cressy Road – Project site	Arterial Road	DSG	100km/h	Yes

Figure 5 Midland Highway (looking southeast near Prospect)

Figure 6 Illawarra Road (looking southwest near Longford)

Figure 7 *Wellington Street (looking south, Longford)*

Figure 8 *Marlborough Street (looking south, Longford)*

Figure 9 *Cressy Road (looking south, Cressy)*

Figure 10 *Poatina Road (looking southwest near Cressy)*

Figure 11 Poatina Road (looking west near the site access)

5.3.3 Orange route

The orange route is a shorter option, which is likely to provide a reduced travel time when travelling between the site and Launceston. Noting Saundridge Road is a Council controlled collector road, this route will not be recommended to contractors in heavy vehicles, it is however expected that some of the workforce may elect to utilise this route. Figure 12 shows the typical cross-section on Saundridge Road.

Figure 12 Saundridge Road (looking southeast near Cressy)

5.3.4 Red route (Bell Bay to Launceston)

In the case that OSOM trips are required from Bell Bay to the site, the red route will be followed by the OSOM vehicles until they reach Launceston where the East Tamar Highway becomes the Midland Highway. OSOM vehicles will then follow the blue route to the site. Table 6 provides a summary of the red route, while Figure 13 and Figure 14 show the typical cross-sections along the route.

Table 6 Red route summary

Road	Section	Road classification	Road authority	Speed limit	B-double and Higher mass limit network
Bell Bay Road	Bell Bay Port – East Tamar Highway	National / State Highway	DSG	80km/h	Yes
East Tamar Highway	Bell Bay Road – Midland Highway	National / State Highway	DSG	100km/h	Yes

Figure 13 Bell Bay Road (looking south, Bell Bay)

Figure 14 East Tamar Highway (looking southeast, Mount Direction)

5.3.5 Green route (Hobart to Illawarra Road)

In the case that OSOM trips are required from Hobart to the site, the green route will be followed by OSOM vehicles until they reach Illawarra from which point they will join the blue route at Illawarra Road, continuing to the site. Table 7 provides a summary of the green route, while Figure 15 and Figure 16 show the typical cross-sections along the route.

Table 7 Green route summary

Road	Section	Road classification	Road authority	Speed limit	B-double and Higher mass limit network
Tasman Highway	Port of Hobart – East Derwent Highway	National / State Highway	DSG	70km/h	Yes
East Derwent Highway	Tasman Highway (Tasman Bridge) – Illawarra Road	National / State Highway	DSG	70-110km/h	Yes (restricted structures)

Figure 15 Tasman Highway (looking west, Tasman Bridge)

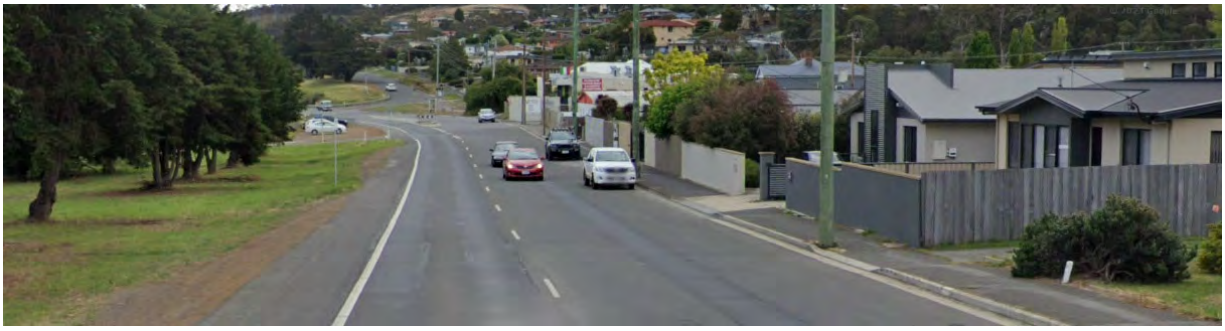

Figure 16 East Derwent Highway (looking North, Geilston Bay)

6. Traffic management measures

6.1 OSOM vehicle routes

OSOM vehicles will be used to transport large or heavy mass items to site including cranes, which will require permits to travel on public roads.

OSOM vehicle routes have been identified in Section 5. These routes have been established on arterial roads appropriate for OSOM vehicles. Route surveys and swept path analyses will need to be completed by the relevant haulage contractors to understand the feasibility of the route and identify any relevant constraints. Prior to their respective delivery, the logistics contractor shall apply for necessary permits to NHVR in order to obtain approval for transport.

6.2 General vehicle routes

Standard heavy vehicles and passenger cars will be used to travel to site. These do not require permits to travel on public roads.

As discussed in Section 5.1, where possible, these haulage routes have been established on arterial roads where increased traffic would not introduce new safety risks. Prior to commencement of construction, a pavement condition survey will be arranged by Neoen (refer Section 6.4.6) and submitted to DSG and Northern Midlands Council.

6.3 Local access routes

Traffic associated with the construction of the BESS will utilise the existing Palmerston Substation access road from Poatina Road from which point they will utilise the proposed access road to access the site.

Prior to the construction of the BESS, any required repairs to the existing Substation access road will be undertaken by Neoen to ensure the road is consistent with the TasNetworks requirements for access roads as per the guidelines in their Substation Civil Design and Construction Standard (Section 6.1.1 – Access Roads). Furthermore, the proposed access road to be built will be designed and graded to a quality all weather road for construction. Therefore, this will be constructed to a standard acceptable for the construction requirements of the project.

6.4 Mitigation measures

In order to minimise the impacts of construction traffic on the local road network, the following mitigation measures will be implemented:

- The access point from Poatina Road will be clearly defined, with appropriate signage.
- The access point will provide space for waiting construction vehicles to minimise disruption to vehicles travelling on Poatina Road.
- Engagement will be required with TasNetworks during the construction planning stages to ensure that sufficient clearances to their infrastructure are met and approved, as well as accommodating TasNetworks site access needs to the existing substation site.
- Monthly construction traffic monitoring and road quality auditing to assess impact. Frequency should comply with relevant road authority Road Management Plan assessment framework.
- Truck warning signage and speed limit signage will be installed by a suitably qualified traffic management contractor on all approaches to the work zone, in accordance with an approved Traffic Guidance Scheme.
- Heavy vehicles will be restricted to the approved haulage routes, which are confined to the arterial road network only (or as required during the construction process).
- Neoen has been engaging directly with relevant stakeholders. This will continue throughout construction to ensure they are informed as works progress and receive adequate advance notice, where required.

– All vehicles entering and exiting work zones shall be free of mud and debris. If vehicles are carrying mud or debris they shall be cleaned immediately. Appropriate measures shall be positioned at each work zone entry to mitigate dirtying of public roads. Any mud or debris identified on public roads in the vicinity of the work zone shall be removed within 24 hours of being identified.

6.4.1 Overhead obstructions

A preliminary assessment of the proposed OSOM routes has identified several overhead obstructions along the route from Bell Bay with a minimum clearance of 5.3m, while review of the route from Hobart has identified three overhead obstructions providing a minimum clearance of 4.7m. Further details of these constraints is provided in the Traffic Impact Assessment prepared by GHD for this project.

Further to the above, the haulage contractor will undertake a detailed transport route survey, which will identify any locations where vertical clearances may be restrictive.

In addition, there are several overhead transmission lines connecting into the Palmerston Substation. Should the detailed transport route survey deem it necessary, Neoen will be required to liaise with TasNetworks to have any overhead transmission lines temporarily raised if additional vertical clearance is required by OSOM vehicles when navigating the access road to the project site.

6.4.2 Loading areas

Loading and unloading of materials brought to the site will be limited to within the project area and the defined laydown areas. All laydown and/or stockpile areas will be within the project area and be left clean, level with the surrounding area and free of weeds.

6.4.3 Roadside vegetation

If the haulage contractor, in their pre-transport route assessment, identifies the removal of any vegetation that might potentially cause an obstruction Neoen will liaise with the relevant Responsible Authority regarding this issue.

6.4.4 Roadside infrastructure

If the haulage contractor, in their pre-transport route assessment, identifies the removal of any roadside infrastructure that might potentially cause an obstruction Neoen will liaise with the relevant Responsible Authority regarding this issue.

6.4.5 Mud and dust control

Vehicle mud, dust and seed control measures will be implemented as follows:

– All ground-breaking plant/machinery will be inspected on arrival & exit and a weed hygiene declaration completed by the plant operator. Any vehicles/plant/machinery which is determined to contain soil, plant material or compounds which may contain any seed or plant parts capable of growing must be clean and free from debris, before entering the surrounding road network.
– All materials and products including soil, sand, gravel, rock, water, fertiliser, mulch, seed, plants and packaging are to be sourced from appropriately licenced quarries and suppliers and free of pest plant material before entering the site.
– Ground-breaking equipment will be washed down on site by a mobile trailer before moving out of the project site or onto another property.

Various techniques will be used to mitigate the production of dust, including the spraying of water (potentially with wetting or binding agents added) onto road surfaces, including internal access tracks. This is likely to be especially important during summer.

Neoen will be responsible for ensuring contractors monitor all roads utilised for vehicle access daily for mud or debris generated by the construction of the BESS. If it is determined that mud is impacting on the operation or safety of the road, Neoen or their contractors will arrange for the road to be washed down at its expense.

6.4.6 Maintenance of roads

Prior to the commencement of construction, an audit of the existing road infrastructure conditions will be undertaken along the proposed route to the site, as agreed between Neoen and DSG. For the duration of heavy vehicle movements to the site, Neoen will be responsible for monitoring the pavement condition along these routes and, if necessary, undertaking remedial actions. Specifically:

- Neoen will undertake repairs to the existing Substation access road, to ensure it complies with TasNetworks requirements for access roads, as per the guidelines in their Substation Civil Design and Construction Standards. As noted within Section 6.1.1 (Access Roads) of this Standard, access roads must:
  a) *provide connectivity between the public road and the main entrance of the substation yard;*
  b) *be designed to accommodate the turning movement paths of the vehicles and machinery required to move the substation equipment to and from the Site;*
  c) *comply with geometry requirements of the relevant road authority; and*
  d) *allow for the general continuous flow of traffic to and from the yard.*
- Neoen will be responsible for any damage caused to the road side, road pavement including road furniture.
- Neoen is to prevent gravel, mud or any other material from being carted on to the road.
- It is Neoen's responsibility to maintain the road surface from causing a safety hazard for vehicles travelling on the roadway.
- Neoen is required to sweep the road surface as required.
- Any pavement failures arising from construction traffic that result in safety concerns for other road users, shall be repaired immediately and in accordance with the relevant road authority's specifications, as directed by a DSG representative.

6.5 Contractor behaviour on roads

Each contractor will put in place a safety management plan, to which all staff, contractors and subcontractors are required to adhere to, which sets standards for safe behaviour and practices including when travelling to and from the site or working near roads as appropriate and to the satisfaction of Neoen. The safety management plan applies in addition to other legislative and regulatory requirements that may also be in force.

Each contractor and their staff will be required to undergo project induction. Each contractor will be required to develop Safe Work Method Statements (SWMS) and Job Safety and Environment Analysis (JSEA) for their activities on the project as appropriate to the satisfaction of Neoen.

6.6 Operational Phase

The BESS will generate significantly less traffic once operational than during construction. The majority of the facility operations are to be remotely accessed, which will require minimal staff to visit the site. There will be no permanent staff at the site and visits to the site are not expected to exceed 3 trips per day by light vehicles.

It is understood that up to three car parking spaces will be provided on site and this is considered appropriate.

7. Traffic Management Administration

7.1 Responsibilities

The implementation of this traffic management plan will ultimately be the responsibility of Neoen and its contractors. However day-to-day traffic management will involve a number of different stakeholders, as outlined in Table 8.

Table 8 Traffic management plan primary stakeholders

Role	Organisation
Client	Neoen
Road Authority	Department of State Growth
	Northern Midlands Council

Neoen will induct all contractors into the TMP to ensure compliance with all requirements.

7.2 Management Reviews

The success of the TMP will depend on its continued relevance and usefulness under the various conditions that will be encountered during the construction period.

A review of the TMP will be undertaken two months following commencement of construction, unless inspections raise a significant issue that requires early attention. A stakeholder meeting will be undertaken for the review with all relevant stakeholders in attendance (Neoen, DSG, Northern Midlands Council) to ensure the review is meaningful during the early construction period. The review will involve Neoen, the main construction and haulage contractors, with DSG, Council, and other stakeholders as considered appropriate. In the event of significant traffic management issues being identified, Neoen will liaise with the relevant stakeholder to resolve. Supplementary documentation, or an update to this TMP, may be appropriate.

Further TMP reviews may be appropriate throughout the construction period as the situation warrants.

8. Summary of Traffic Management Commitments

The following list summarises the measures that will be in place prior to commencement of, and during the execution of, each stage of the construction period.

8.1 Pre-Construction

– The access and egress to the construction site will be in accordance with the roads outlined within Section 5. No other roads will be used as alternate access routes without the prior approval of Northern Midlands Council or DSG (as appropriate) and then only in the event that the established routes are temporarily unavailable.
– A road condition audit will be undertaken prior to the commencement of construction. Repairs will occur in the timeframes specified by DSG.

8.2 Construction Period Road Infrastructure Management

– Heavy vehicle volumes on key roads are anticipated to be relatively low and therefore no road upgrades are required.
– Roads that form part of construction routes may be subject to condition inspections throughout the construction period from the relevant responsible authority.
– Traffic control around the site access during its construction will be undertaken in accordance with DSG or Northern Midlands Council requirements.
– A review of this traffic management plan will be undertaken by Neoen, the main construction and haulage contractors, DSG, Council and other stakeholders as appropriate. Updates will be made as needed.

8.3 Post-Construction Period Road Infrastructure Management

– A final pavement condition survey and audit, with repairs (as needed) will be undertaken.
– All required repairs identified in the audit shall be addressed to the satisfaction of DSG and Council as appropriate.

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