

4.3 Transport routes

4.3.1 Light vehicles

All staff vehicles will enter and exit the site via the site access described above. Routes taken to access the site by staff vehicles will depend on their origin, with the majority expected to travel from the north, predominantly Launceston and surrounding townships.

4.3.2 Heavy vehicles

Heavy vehicles will be required for transporting materials, plant and equipment to site. Most heavy vehicles are expected to travel to and from Launceston. Resources from the mainland may also arrive by sea to Burnie or Devonport ports and travel along the Bass Highway. Any vehicles travelling to or from Hobart or south will utilise the Midlands Highway.

Heavy vehicles will utilise the approved Tasmanian 26 metre B-double network of roads. Primary transport routes for the Palmerston BESS project are shown in Figure 9, below.

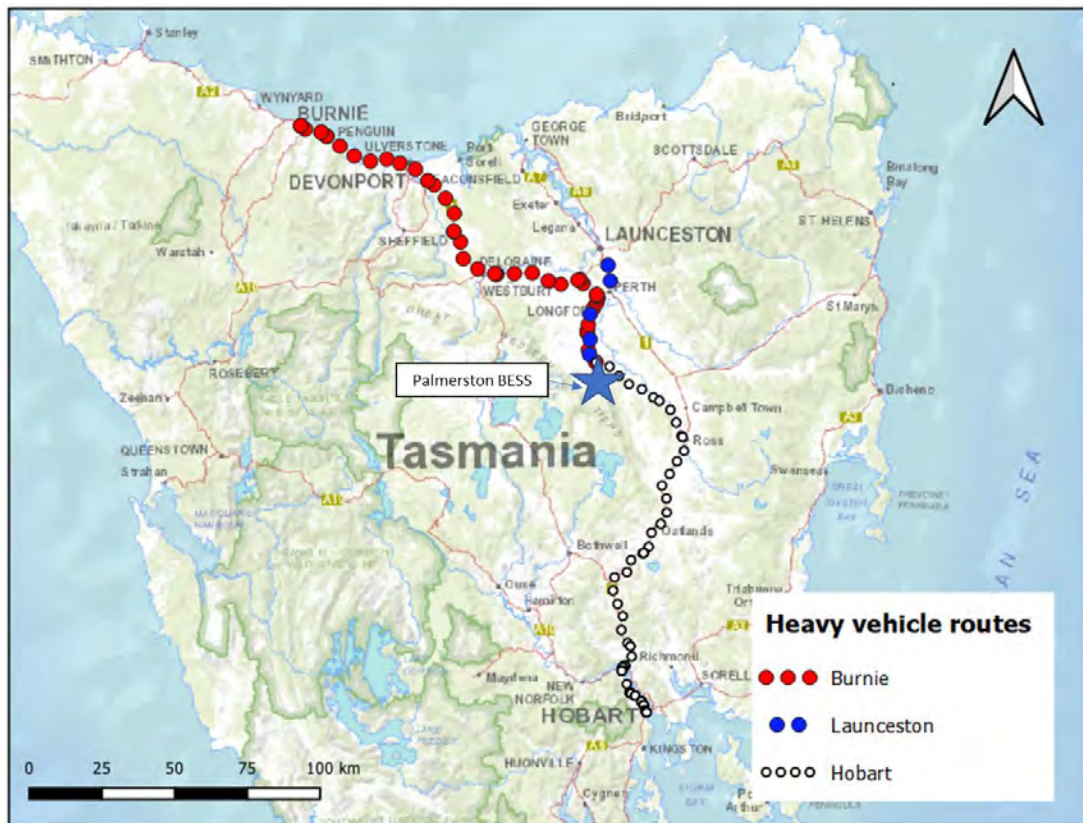
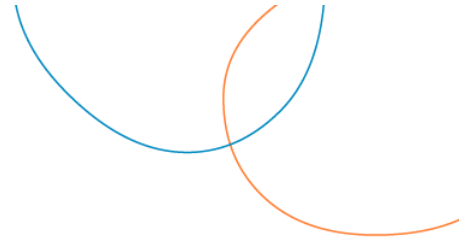


Figure 9: Heavy vehicle transport routes to site



4.4 Parking

Under the Planning scheme, there is no requirement for car parking spaces for Utilities Use developments. A small parking area is included in the concept layout plan which will provide space for approximately 5 light vehicles. This will be adequate for the expected operational demands of 4 light vehicles per day.

However, the client has estimated up to 50 light vehicles may visit the site each day during the construction period and parking areas should be provided for staff and delivery vehicles. It may be overly conservative to assume that all vehicles would be onsite concurrently but allowing sufficient parking for 50 vehicles during the construction phase is considered to be achievable at this site based on the large footprint. The Palmerston BESS site and surrounding land is flat cleared grass land. The ground conditions have not been assessed but placing gravel hardstand areas may be required if the ground is soft (especially during wetter months).

As a reference, the Australian Standard car park layout requirements are shown in Table 3.

Table 3: Car parking layout requirements

Feature	Minimum Requirement
Parking Space Width	2.4m
Parking Space Length	5.4m
Parking Space Aisle Width	5.8m

The parking area should incorporate a loading zone to allow space for delivery vehicles to be clear of other circulating vehicles during unloading. If oversized or heavy loads are required, site checks should be carried out to confirm ground capacity, and height clearances around the high voltage overhead transmission lines.

4.5 Traffic generation

Traffic impacts at the site are expected to occur predominantly during construction which is estimated to take a total of 12 months, including civil works, BESS installation and commissioning period. The client has provided estimates of traffic movements during the construction period, shown in Table 4 below.

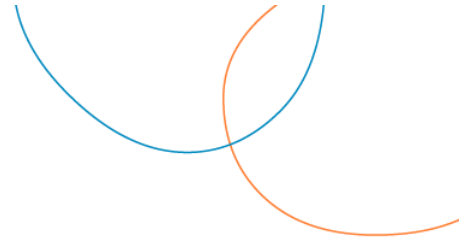
Table 4: Palmerston BESS construction traffic

	Duration (months)	Light Vehicle	Medium Truck	Large Truck
		(Vehicle movements per day)		
Construction period	12 months	100	36	4

4.5.1 Traffic distribution and directional split

It has been assumed that light vehicles will predominantly access the site between 6:00am and 7:00am in the morning, prior to the standard construction start time of 7:00am, and egress the site between 4:00pm and 5:00pm, after the 4:00pm finish time.

It has been assumed that heavy vehicles will access and egress the site intermittently at various times throughout the day from 7:00am to 4:00pm.



4.6 Traffic impacts – during construction

The traffic impact of the construction phase of the Palmerston BESS development has been assessed based on the following assumptions:

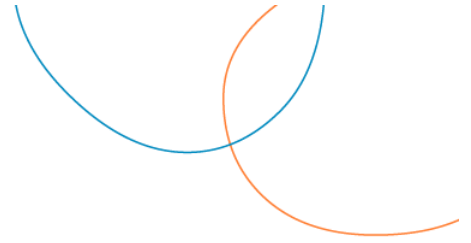
- A growth rate of 3% per year has been applied to the recorded traffic volumes to calculate existing traffic volumes along Poatina Road (see Section 2.4)
- The only other development known of in the vicinity of the site is the Northern Midlands Solar Farm development; and
- Construction staff would predominantly travel to and from the site in line with construction site operational times and therefore have minimal effect on morning peak traffic volumes but will coincide with afternoon peak flows.

As per Table 4, 100 light vehicle movements plus 40 heavy vehicle movements are estimated to and from the site per day during construction. 140 additional vehicle movements per day on Poatina Road would represent an increase in daily traffic volumes of 32%. This does not comply with the Planning Scheme Acceptable Solution requirement of not increasing traffic volumes for other (not major) roads by more than 20% (as per Table C3.1 of the Planning Scheme). However, the local road network is comprised of rural roads with low existing traffic flows operating well below capacity. It is not anticipated that the additional traffic produced by the Palmerston BESS development during the construction phase will negatively impact the function or safety of the local network.

Given heavy vehicle flows are likely to be spread across the day, the contribution to the AM and PM peak flows is likely to be small.

Light vehicle movements are likely to occur in clusters, with 50% arriving between 6:00am-7:00am and 50% departing between 4.00pm-5.00pm, coinciding with the hours of operation of the construction site. The average weekday PM peak hour observed on Poatina Road was 32⁵ vehicles per hour. Therefore, during Palmerston BESS construction the estimated afternoon peak hour volume on Poatina Road is estimated to increase to approximately 88 vehicle movements per hour (allowing for 3% annual growth on the network, using the upper estimate of construction traffic, and including 15% of the daily heavy vehicles during the peak hour). As discussed previously, although the number of vehicles generated is significantly more than the existing volumes, the local road network is comprised of rural roads with low existing traffic flows operating well below capacity and is not anticipated that the additional traffic produced by the Palmerston BESS development during the construction phase will negatively impact the function or safety of the local network during the peak hours.

⁵ Source: Geocounts website, sample period Nov 2021



5. Operational phase assessment

5.1 Traffic generation

Operation of the BESS facility requires minimal ongoing onsite operation/maintenance. Once construction is complete, the ongoing access requirements will reduce dramatically.

Operational jobs are estimated at 1-2 full-time equivalent (FTE) based on similar sized projects. As a conservative estimate it is assumed that 8 vehicle movements per day are expected to be generated by the site post-development.

5.2 Access suitability

Given the significantly lower traffic volumes anticipated during operations compared with during construction, it is assumed that the existing site access used for construction access will more than adequately meet the site's ongoing operational requirements.

5.3 Traffic impacts – post-development

The impact of traffic generated by the ongoing operation of the Palmerston BESS development is expected to be minimal and have a negligible impact on the road network operation.

The number of heavy vehicles accessing the site post construction, is expected to be minimal and infrequent.

The additional traffic generated by the development post-construction represents less than 2% of the existing traffic on Poatina Road and is not expected to impact the function or operation of the surrounding network or affect the existing crash risk.

5.4 Turning treatments

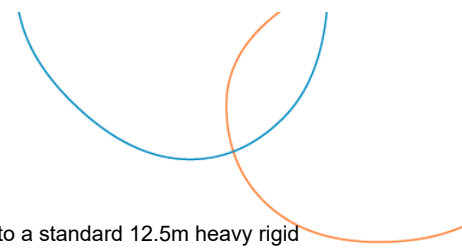
It is not considered necessary to provide left or right turn treatments at the Palmerston Substation Access Road for the following reasons:

- There are low traffic volumes on Poatina Road
- There is good sight distance in both directions along Poatina Road; and
- The proposed development will generate relatively low traffic volumes during the 12 months of construction and very low traffic volumes in the operational phase.

5.5 Site layout assessment

All vehicles are required to enter and exit the site in a forward direction. The proposed Palmerston BESS Access Roads include a perimeter circuit to facilitate all vehicles including oversize vehicles to turn around on site. Swept paths have been assessed for the largest expected vehicle (Liebherr LTM 1400-7.1 Mobile Crane) as shown in Figure 10. The swept path drawing is included in Appendix B and indicates the road widening that is required to accommodate the crane swept path.

The swept path plan prepared shows that vehicles can access and exit the site in a forward direction and can circulate most of the site in a forward direction. As indicated on the swept path plan, there are two road sections where a reversing manoeuvre is suggested as the extent of widening to accommodate forward vehicle movements would be considerable based on the shape of the site. Reversing manoeuvres are considered suitable due to the low traffic volumes expected at the site. All reversing manoeuvres should be performed with a spotter to ensure the safety of people on the site.



It is noted that the Liebherr LTM 1400-7.1 Mobile Crane has different characteristics to a standard 12.5m heavy rigid vehicle or a 19m semi-trailer. Due to the crane having a pivot point in the centre of the vehicle the crane has greater manoeuvrability than standard trucks of a similar size and therefore the widening proposed would not be suitable to accommodate a 12.5m heavy rigid vehicle or a 19m semi-trailer.

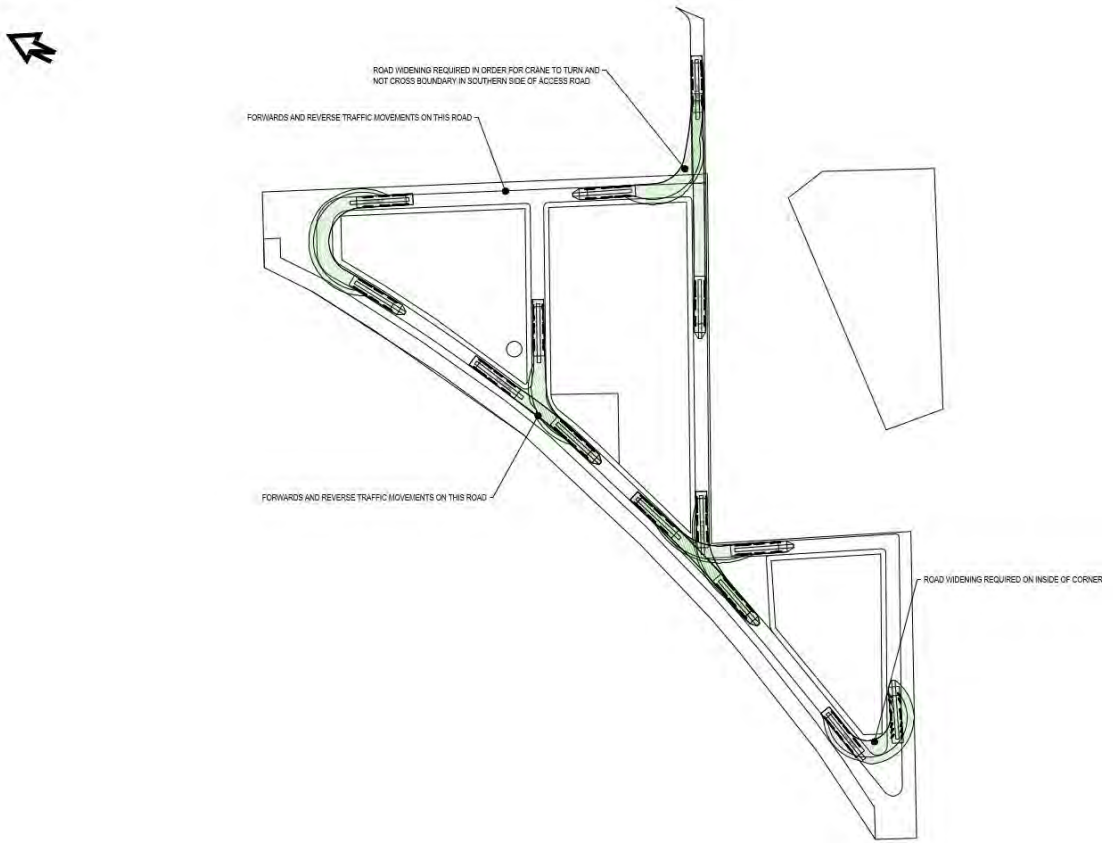
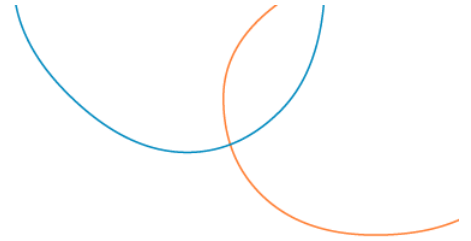


Figure 10: Swept paths for Liebherr LTM 1400-7.1 Mobile Crane



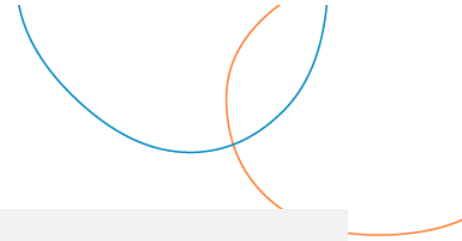
6. Planning Scheme Assessment

6.1 C3.0 Roads and Railway Assets Code

The Palmerston BESS development has been assessed against the Use Standards of the *Tasmanian Planning Scheme – Northern Midlands* (the Planning Scheme) Roads and Railway Assets Code, shown below in Table 5.

Table 5: Road and Railway Assets Code - Use Standards

C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction	
Objective: To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.	
Acceptable Solution	Comment
<p>A1.1 For a category 1 road or a limited access road, vehicular traffic to and from the site will not require:</p> <ul style="list-style-type: none"> (a) A new junction (b) A new vehicle crossing; or (c) A new level crossing. <p>A1.2 For a road, excluding a category 1 road or a limited access road, written consent for a new junction, vehicle crossing, or level crossing to serve the use and development has been issued by the road authority.</p> <p>A1.3 For the rail network, written consent for a new private level crossing to serve the use and development has been issued by the rail authority.</p> <p>A1.4 Vehicular traffic to and from the site, using an existing vehicle crossing or private level crossing, will not increase by more than:</p> <ul style="list-style-type: none"> (a) The amounts in Table C3.1; or (b) Allowed by a licence issued under Part IVA of the Roads and Jetties Act 1935 in respect to a limited access road. <p>A1.5 Vehicular traffic must be able to enter and leave a major road in a forward direction.</p>	<p>Complies with acceptable solution A1 during the operational phase</p> <p>The A1 criteria are addressed below.</p> <ul style="list-style-type: none"> 1.1. Poatina Road is not a Category 1 or a limited access road. 1.2. The Palmerston BESS project will make use of the existing access road and therefore will not create any new junctions or access points. 1.3. No rail in the vicinity - not applicable 1.4. Amount of increase in annual average daily traffic to and from the site is estimated to be 4 vehicles per day (post-development) which is a 2% increase to existing volumes on Poatina Road and satisfies criteria of Table C3.1 of 20% for other roads 1.5. Proposed access roads around the site will facilitate vehicles to enter and exit in a forwards direction. <p>Satisfies Performance Criteria P1 during the construction phase</p> <p>The Performance Criteria are addressed as follows:</p> <ul style="list-style-type: none"> (a) During construction daily vehicle movements are estimated at 100 light vehicles and 40 heavy vehicles. These increases amount to 32% and exceed the criteria of Table C3.1 of 20% for other roads. This report determines, however, that due to the existing low volumes of traffic the additional traffic is not expected to compromise the safety or function of the road network



C3.5.1 Traffic generation at a vehicle crossing, level crossing or new junction

Objective:

To minimise any adverse effects on the safety and efficiency of the road or rail network from vehicular traffic generated from the site at an existing or new vehicle crossing or level crossing or new junction.

Acceptable Solution	Comment
<p>P1 Vehicular traffic to and from the site must minimise any adverse effects on the safety of a junction, vehicle crossing or level crossing or safety or efficiency of the road or rail network, having regard to:</p> <ul style="list-style-type: none"> (a) Any increase in traffic caused by the use (b) The nature of the traffic generated by the use (c) The nature of the road (d) The speed limit and traffic flow of the road (e) Any alternative access to a road (f) The need for the use (g) Any traffic impact assessment; and (h) Any advice received from the rail or road authority. 	<ul style="list-style-type: none"> (b) The development will generate a mix of light and heavy vehicles during construction. There is already a significant proportion of heavy vehicles on the road network and the construction traffic is consistent with this (c) There are no new access points proposed on the major roads in the vicinity. The site access is situated on the Palmerston Substation private access road (d) There are no new access points proposed on the major roads in the vicinity. The site access is situated on the Palmerston Substation private access road which experiences low vehicle speeds (e) There is no suitable alternative access (f) The BESS contributes to renewable energy storage (g) This traffic impact assessment has been completed for the development and assesses that the construction of the Palmerston BESS would not be expected to compromise the function or safety of the surrounding road network; and (h) No advice has been received.

6.2 C2.0 Parking and Sustainable Transport Code

The Palmerston BESS development has been assessed against the Use Standards and Development Standards of the *Tasmanian Planning Scheme – Northern Midlands* (the Planning Scheme) Parking and Sustainable Transport Code, shown below in Table 6 and Table 7, respectively.

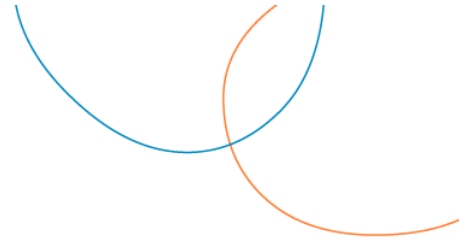


Table 6: Parking and Sustainable Transport Code – Use Standards

C2.5.1 Car parking numbers

Objective:

To ensure that an appropriate level of car parking spaces are provided to meet the needs of the use.

Acceptable Solution	Comment
<p>Acceptable Solution A1</p> <p>The number of on-site car parking spaces must be no less than the number specified in Table C2.1</p>	<p>Complies with Acceptable Solution A1</p> <p>Utilities Use Class – there is no requirement for car parking spaces (as per Table C2.1)</p> <p>The site is large and there is expected to be sufficient space for all vehicles associated with the Palmerston BESS construction to park. The small proposed carpark area is sufficient for the low numbers of vehicles expected to visit site during operation.</p>

C2.5.2 Bicycle parking numbers

Objective:

To ensure that an appropriate level of bicycle parking spaces are provided to meet the needs of the use.

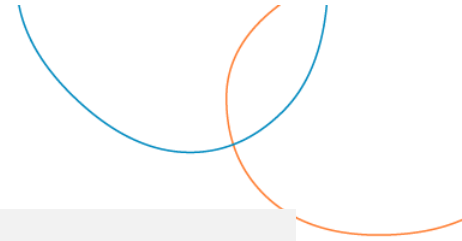
Acceptable Solution	Comment
<p>Acceptable Solution A1</p> <p>Bicycle parking spaces must:</p> <ul style="list-style-type: none"> (a) Be provided on the site or within 50m of the site; and (b) Be no less than the number specified in table c2.1. 	<p>Complies with Acceptable Solution A1</p> <p>Utilities Use Class – there is no requirement for bicycle parking spaces (as per Table C2.1)</p> <p>The likelihood of travel to site by bicycle is considered unlikely given the remote location.</p>

C2.5.3 Motorcycle parking numbers

Objective:

To ensure that an appropriate level of motorcycle parking spaces are provided to meet the needs of the use.

Acceptable Solution	Comment
<p>Acceptable Solution A1</p> <p>The number of on-site motorcycle parking spaces for all uses must:</p> <ul style="list-style-type: none"> (a) Be no less than the number specified in Table C2.4; and (b) If an existing use or development is extended or intensified, the number of on-site motorcycle parking spaces must be based on the proposed extension or intensification, provided the existing number of motorcycle parking spaces is maintained. 	<p>Complies with Acceptable Solution A1</p> <p>Utilities Use Class – there is no requirement for motorcycle parking spaces (as per Table C2.4)</p> <p>The site is large and there is expected to be sufficient space for any motorcycles associated with the Palmerston BESS to park.</p>



C2.5.4 Loading bays

Objective:

That adequate access for goods delivery and collection is provided, and to avoid unreasonable loss of amenity and adverse impacts on traffic flows.

Acceptable Solution	Comment
<p>Acceptable Solution A1 A loading bay must be provided for uses with a floor area of more than 1000m² in a single occupancy.</p>	<p>Complies with Acceptable Solution A1 The Palmerston BESS development does not have a floor area of >1000m², therefore no requirement applies. However, as the site is large there is expected to be sufficient space for required vehicle loading.</p>

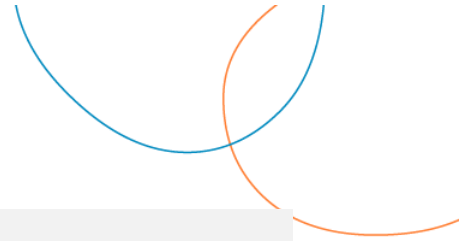
Table 7: Parking and Sustainable Transport Code – Development Standards

C2.6.1 Construction of parking areas

Objective:

That parking areas are constructed to an appropriate standard.

Acceptable Solution	Comment
<p>Acceptable Solution A1 All parking, access ways, manoeuvring and circulation spaces must:</p> <ul style="list-style-type: none"> (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. 	<p>Can Comply with Acceptable Solution A1 Access ways, parking areas and turning areas etc, will be required to be suitably constructed including appropriate drainage, and well maintained to ensure all weather access to site, particularly throughout the wetter months. Palmerston BESS is in a Rural zone and therefore sealing of the parking areas and additional access ways is not required.</p>



C2.6.2 Design and layout of parking areas

Objective:

That parking areas are designed and laid out to provide convenient, safe and efficient parking.

Performance Criteria	Comment
<p>Performance Criteria P1</p> <p>All parking, access ways, manoeuvring and circulation spaces must be designed and readily identifiable to provide convenient, safe and efficient parking, having regard to:</p> <ul style="list-style-type: none"> (a) The characteristics of the site (b) The proposed slope, dimensions and layout (c) Useability in all weather conditions (d) Vehicle and pedestrian traffic safety (e) The nature and use of the development (f) The expected number and type of vehicles (g) The likely use of the parking areas by persons with a disability (h) The nature of traffic in the surrounding area (i) The proposed means of parking delineation; and (j) The provisions of Australian standard AS 2890.1:2004 - parking facilities, part 1: off-street car parking and AS 2890.2 -2002 parking facilities, part 2: off-street commercial vehicle facilities. 	<p>Satisfies Performance Criteria P1</p> <p>The site is only expected to receive occasional vehicles during ongoing operations. A small carpark is proposed which is expected to be adequate. Given the infrequent use by vehicles, the car park area is expected to operate satisfactorily without delineation. Given the nature of the site, it is unlikely the parking area will be used by persons with a disability.</p>

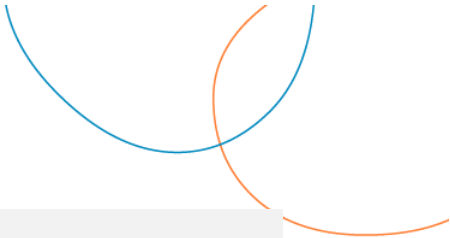
C2.6.3 Site Access

Objective:

That:

- (a) Access to land is provided which is safe and efficient for users of the land and all road network users, including but not limited to drivers, passengers, pedestrians and cyclists by minimising the number of vehicle accesses
- (b) Accesses do not cause an unreasonable loss of amenity of adjoining uses; and
- (c) The number of accesses minimise impacts on the streetscape.

Acceptable Solution	Comment
<p>Acceptable Solution A1</p> <p>The number of accesses provided for each frontage must:</p> <ul style="list-style-type: none"> (a) Be no more than 1; or (b) No more than the existing number of accesses, whichever is the greater. 	<p>Complies with Acceptable Solution A1</p> <p>The Palmerston BESS project will make use of the existing access road to Palmerston Substation and therefore will not create any new access points. Direct access to the site will be from the Palmerston Substation private road.</p>

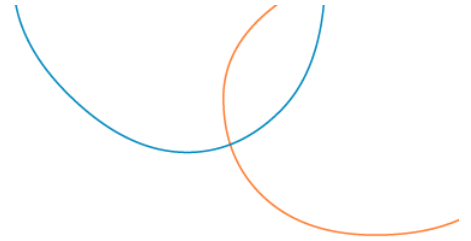


C2.6.6 Loading bays

Objective:

That the area and dimensions of loading bays are adequate to provide safe and efficient delivery and collection of goods.

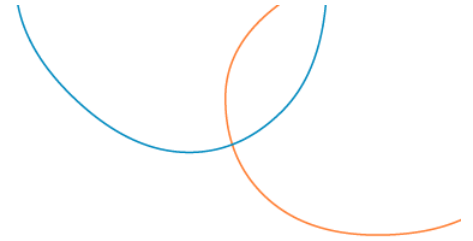
Performance Criteria	Comment
<p>Performance Criteria P1</p> <p>Loading bays must have an area and dimensions suitable for the use, having regard to:</p> <ul style="list-style-type: none"> (a) The types of vehicles likely to use the site (b) The nature of the use (c) The frequency of loading and unloading (d) The area and dimensions of the site (e) The topography of the site (f) The location of existing buildings on the site; and (g) Any constraints imposed by existing development. 	<p>Satisfies Performance Criteria P1</p> <p>There is not a specific loading bay on site, however due to the size of the site there is sufficient space for loading to be accommodated.</p>
<p>Acceptable Solution A2</p> <p>The type of commercial vehicles likely to use the site must be able to enter, park and exit the site in a forward direction in accordance with <i>Australian Standard AS 2890.2 – 2002, Parking Facilities, Part 2: Parking facilities Offstreet commercial vehicle facilities</i>.</p>	<p>Complies with Acceptable Solution A1</p> <p>The site's size and accesses provide sufficient space for commercial vehicles to enter, park, turn and exit the site in a forward direction. Swept paths have been undertaken for the largest expected vehicle - Liebherr LTM 1400-7.1 Mobile crane.</p>



7. Conclusion

Cogency Australia, on behalf of Akaysha Energy, engaged pitt&sherry to undertake a Traffic Impact Assessment for the Palmerston BESS. The analysis and discussion presented in this TIA report may be summarised as follows:

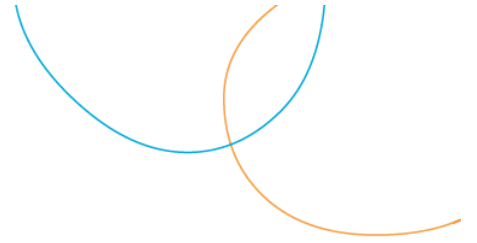
- The crash history for Poatina Road in the vicinity of the site is consistent with that of a rural road with no crash patterns of concern observed
- The existing access road has good sight distance in both directions and meets the Austroads requirements
- It is recommended that potholes on Palmerston Substation Access Road be repaired prior to the commencement of the proposed works at the substation as these pavement defects are likely to worsen with increased use and may pose a safety hazard
- The proposed transport route is expected to have sufficient capacity to accommodate the additional traffic generated during construction of the proposed development
- The proposed car park area is expected to provide adequate parking to meet ongoing operational demands. During construction additional temporary parking will be required to accommodate staff and delivery vehicles on the site
- Construction traffic volumes are expected to be significantly greater than existing traffic flows, however the local road network is assessed to have available capacity to accommodate the additional traffic without negatively impacting the function or safety of the local network
- Operational traffic volumes of Palmerston BESS are estimated to be minimal and are not expected to have any noticeable impact to the safety and function of the surrounding road network after construction; and
- The site layout is sufficient for vehicles to enter and exit in a forward direction, swept path plans indicate minor widening is required to accommodate the largest vehicles within the site.



Important information about your report

In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. The Report may only be used and relied on by the Client for the purpose set out in the Report. Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, is the responsibility of the Client or such third parties.

The services undertaken by pitt&sherry in connection with preparing the Report were limited to those specifically detailed in the report and are subject to the restrictions, limitations and exclusions set out in the Report. The Report's accuracy is limited to the time period and circumstances existing at the time the Report was prepared. The opinions, conclusions and any recommendations in the Report are based on conditions encountered and information reviewed at the date of preparation of the Report. pitt&sherry has no responsibility or obligation to update the Report to account for events or changes occurring after the date that the report was prepared. If such events or changes occurred after the date that the report was prepared render the Report inaccurate, in whole or in part, pitt&sherry accepts no responsibility, and disclaims any liability whatsoever for any injury, loss or damage suffered by anyone arising from or in connection with their use of, reliance upon, or decisions or actions based on the Report, in whole or in part, for whatever purpose.



Concept Layout Plan

Appendix A

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Concept Layout Plan

2225 - Palmerston BESS

- Parcels
- Existing 220 kV Transmission Line
- Proposed Features**
- Battery Storage and Inverter Area
- Operations and Maintenance
- Native Vegetation Screening (5m)
- Water Tank
- Access Roads (4m)
- Parking
- Fence
- 220 - 33 kV Substation Extension
- 33 kV Underground Reticulation



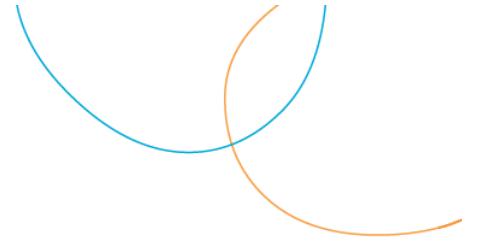
Version: 7.0

Date: 17/07/2023

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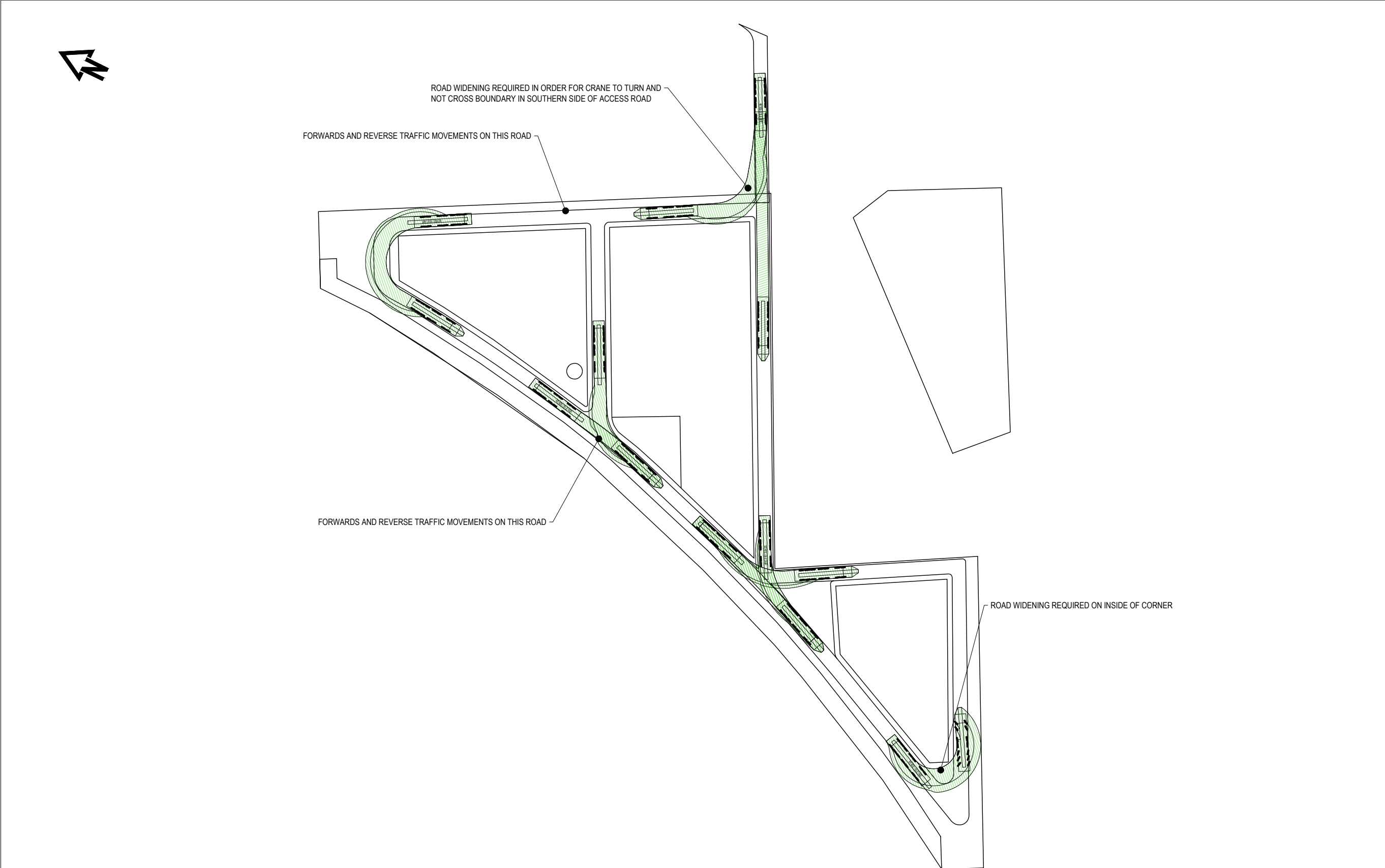




Swept Paths

Appendix B

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REFERENCE FILES ATTACHED: S-P.22.1632-01-CIV-XRF-1500; S-P.22.1632-01-CIV-XRF-1125

DRAWING REVISION HISTORY					
No.	DESCRIPTION	DRAWN	DESIGNED	REVIEWED	DATE
B	FOR COMMENT	GT	SD	RR	31/07/2023
A	UNDER REVIEW	GT	SD	RR	18/04/2023
		GT	SD	RR	18/04/2023

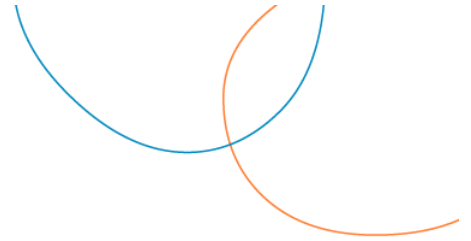
APPROVED
ORIGINAL COPY ON FILE
"e" SIGNED BY

SCALE (PLOTTED FULL SIZE) 1:1000m (A3)
SHEET SIZE A3
SCALE IN METRES - 1:1000

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CLIENT AKAYSHA ENERGY P/L
PROJECT PALMERSTON BESS TRAFFIC IMPACT ASSESSMENT
STATUS **PRELIMINARY**

DRAWING TITLE SWEPT PATH ANALYSIS LIEBHERR LTM 1400-7.1 MOBILE CRANE
DATUMS: AHD / MGA CLIENT No. -
DRAWING No. S-P.22.1632-01-CIV-SKT-001 REVISION B
Aug. 9. 23 - 09:13:40 Name: S-P.22.1632-01-CIV-SKT-001.dwg



Palmerston BESS – Traffic Impact Assessment

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Melbourne
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Brisbane
Hobart
Launceston
Newcastle
Devonport





Palmerston Battery Energy Storage System (BESS)
Landscape & Visual Impact Assessment


Site:
**1440 Saundridge Rd,
Cressy TAS 7302**

For:
Akaysha Energy Pty Ltd

Date:
05 June 2023

LANDSCAPE & VISUAL IMPACT ASSESSMENT **CONTENTS** **2**

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TERM	ABBREVIATION	DEFINITION
Battery Energy Storage System	BESS	Devices that enable energy from renewables, like solar and wind, to be stored and then released depending on energy demands.
Bureau of Land Management	BLM	The Bureau of Land Management (BLM) is an agency within the United States Department of the Interior responsible for administering federal lands.
Critical Visual Influences	CVI	A collection of design principles that are used for visual assessment through Colour, Texture, Scale, Line, Form/Shape and Spatial Character.
Degree of Contrast	DOC	A systematic process to analyze potential visual impact of proposed projects and activities using the basic principles of design in the resolution of visual impacts.
Department of Environment, Land, Water, Planning	DELWP	A government department in Victoria, Australia responsible for policy areas including: Environment, Energy, Wildlife, Heritage, Climate change, Waste and resource recovery, Planning, Marine and coasts, Property and land titles, Water and catchments.
Key Observation Point	KOP	Critical viewpoints where there is public sensitivity to visual change due to the type of user, level of use, orientation to proposed project, etc., such as points or a series of points on a travel route, or at a use area or a potential use area.
Landscape and Visual Impact Assessment	LVIA	A report that evaluates the potential impacts of a proposed development on the surrounding landscape and visual environment. It involves a systematic analysis of the existing landscape character, and an assessment of how the proposed development may affect the landscape and visual resources.
Landscape Sensitivity	LS	Capacity of a landscape to accommodate change without losing valued attributes. Includes the value placed on a landscape or view within planning scheme protection, and the type and number receivers.
Landscape Values	LV	The relative value or importance attached to different landscapes by society on account of their landscape characteristics. These may be reflected in Local, State or Federal planning regulations, other published documents or be established through community consultation and engagement, or as professionally assessed.
Local Government Area	LGA	Local Government Areas are gazetted local government boundaries as defined by each State or Territory.
Magnitude of Change	MOC	The basis for conducting visual impact assessment to characterize impacts to visual resources (i.e., the landscape) and potential viewers. The outcome confirms whether the potential visual impacts from proposed surface-disturbing activities will meet the Visual Resource Management (VRM) Class objectives and be deemed acceptable for the area that includes the proposed project, or if design adjustments or additional visual impact mitigation will be required.
People's Situation	PS	A component contributing towards Receptor Sensitivity dealing with a number of factors related to affected users such as type, amount, public interest, adjacent land uses, special areas, travel routes, observation points.
People's Values	PV	A collection of ideas or beliefs held by those who may be impacted by the proposal in terms of aesthetic, economic, educational, historical, residential, health and recreational, social values. These may be reflected in Local, State or Federal planning regulations, other published documents or be established through community consultation and engagement, or as professionally assessed.
Photomontages	PM	A visual representation of a proposal from a particular receptor viewpoint, on a photographic base.
Receptor	-	A viewer or interest group which may receive an effect and require assessment.

TERM	ABBREVIATION	DEFINITION
Receptor Sensitivity	RS	A component which contributes towards the assessment of Visual Absorption Capacity related to viewer or interest groups which may receive an effect and require assessment.
Viewpoint	VP	The specific location of a view, typically used for analysis purposes.
Viewshed	-	Areas theoretically visible from a particular location (GIS modelled and field-validated).
Visual Absorption Capacity	VAC	The potential for a place's physical features to absorb a particular change without losing valued attributes are determined by considering both the existing landscape characteristics and the values of the community.
Visual Character Units	VCU	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, and often conveys a distinctive 'sense of place'. This term does not imply a level of value or importance. It comprises of Landform/Water, Vegetation, Structure.
Visual Compatibility	VC	Refers to the changes introduced by the proposal in comparison to the Visual Absorption Capacity resulting in a assessment outcome of either satisfying or not satisfying the VRM Class objectives.
Visual Impact	VI	The categorisation of effects. Legislative context should be considered in defining 'impacts' and their significance.
Visual Resource Management Class	VRM Class	Defines the acceptable Magnitude of Change within a characteristic landscape. Each class has an objective that prescribes the amount of change deemed acceptable by the proposal.
Visual Situation	VS	Perceptual factors (observer-related variables, social variables, observer position factors).
Zone of Theoretical View	ZTV	A geographic region around a particular point of interest where the potential visibility of the object is not entirely obstructed by the terrain or other visual obstructions from different vantage points within the surrounding area.

Tasmania, with its abundant hydro and wind resources, is strategically leveraging these assets through Renewables, Climate and Future Industries Tasmania (ReCFIT) to maximize the development and utilization of renewable energy in the region. The government has outlined its vision and priorities in The Tasmanian Renewable Energy Action Plan (TREAP), recognizing renewable energy as a key economic driver for the future. Additionally, the identification of Renewable Energy Zones (REZ) further enhances the focus on high-quality resource areas where large-scale renewable energy projects can be developed, taking advantage of favorable weather patterns, existing land uses, proximity to grid infrastructure, or a combination of these factors.

The purpose of this Landscape and Visual Impact Assessment (LVIA) is to assess the Palmerston Battery Energy Storage System (BESS) within relevant policy framework to determine if this proposal satisfies the requirements and should be approved. The hypothesis of this LVIA seeks to demonstrate how the BESS is visually compatible in terms of both the proposed siting and the proposed design.

This report is a synthesis of established international and national guidelines for LVIA methodologies customised to make it relevant and applicable to this proposal. It has been logically structured to address the empirical aspects of the four key elements:

1. Project

The proposed site is immediately adjacent to the existing Palmerston Terminal Substation. The "Palmerston Terminal Substation BESS Plan" outlines several key components, including Bess Area 1, Bess Area 2, Easements, Buffer Zones, Reticulation from Bess to Switchboard, and the New TasNetworks 220/33kv Sub, which also includes a 33V BESS Switchboard. The plan also identifies internal lanes and hard stands within the proposed site boundary.

2. Policy

The Policies that shape this LVIA response are from State and Local Policies.

3. People

Cressy has a population of 1149, whereas Poatina has a population of 118.

4. Place

The proposed site is situated in the Local Government Area (LGA) of Northern Midlands Council, within the town of Cressy. It is adjacent to the existing substation which sits on the border between Cressy to the east, and Poatina to the west of the proposal.

This LVIA addresses these six key questions in order to review, establish and analyse this proposal:

Q1) Why are there potential landscape and visual impacts?

A1) The proposed Project seeks to increase the infrastructure and related buildings on a site adjacent to the existing Terminal Station.

Q2) What Policies address the potential landscape and visual impacts?

A2) This LVIA address relevant provisions, use and development standards from the Tasmanian Planning Scheme (TPS) zones and code overlays. The Cressy Specific Area does not have any policies directly related to renewable energy and the Specific Area Plan does not apply to the area of the proposal.

Q3) Who are the People potentially affected by the landscape and visual impacts?

A3) The affected users in the area can be divided into several groups, that have varying degrees of sensitivity that are taken into account. The dwellings in the settlement area of Poatina Village are partially screened by vegetation along the streets that face the proposal approximately 2.3km west of the site. Affected road users include those utilizing Poatina Rd, Saundridge Rd, and the surrounding unnamed roads. The affected workers consist of those at the adjacent terminal station, agricultural workers in the surrounding pastures, and to a lesser extent, workers within Poatina Village. Affected recreational users are those visiting the Poatina Rd Lookout to the west of the site located approximately 9km away.

Q4) Where are the places that will be potentially impacted by landscape

and visual impacts?

A4) The proposal and existing terminal station, with their similar use and physical characteristics can visually integrate without significant impact. The surrounding flat Modified Pastures provide ample space for the proposal without significant resource depletion. Existing vegetation and planned screening measures effectively mitigate visual impacts upon views from nearby dwellings and roads. The relatively minor scale of the proposal maintains the continuity of open pastures and does not create a significant physical barrier between the neighboring towns of Cressy and Poatina.

Q5) When are the potential life cycle landscape and visual impacts?

A5) During the construction phase, Australian BESS manufacturers must comply with national and international codes and standards. Measures such as landscape screening, careful selection of materials, and well-designed artificial lighting will mitigate visual impacts and integrate the project with the landscape. Additionally, site remediation after decommissioning can easily restore the site to its original rural landscape.

Q6) How are the cumulatively impact effects of the potential landscape and visual impacts considered?

A6) The landscape and proposal are assessed using three Visual Character Units (VCUs): Landform/Water, Vegetation, and Structure to evaluate cumulative impacts in relation to land use, management, and capacity for change. The landform of the site features flat plains and open Grazing Modified Pastures with distant nature reserves located to the southwest. Intermittent row planting along roads and fence lines and denser vegetation effectively screen dwellings. Woodside Rivulet and Palmers Rivule are Waterway and Coastal protection areas forming a network of waterways surrounding the site and are also screened by vegetation. The Structure VCU includes the existing substation, transmission towers and lines, Poatina Village, and existing roads and fences. Due to the similar characteristics of the proposal and existing terminal station combined with the use of vegetation for screening, the proposal remains within the Visual Absorption Capacity of the area.

ESTABLISHMENT OF VISUAL SENSITIVITY CLASS REPRESENTATIVE OF THE POLICY, PLACE AND PEOPLE

The values and qualities of both the Landscape and the Receptors have been established in this LVIA. A categorical rating has been resolved for each of the identified values and a corresponding numerical rating allows these to be brought together through a simple equation aimed at establishing a rating system that can be applied consistently across all stages of the LVIA process.

For the Landscape Sensitivity, considered as a resource in this location, it has been rated 2.1 (Low).

For the Receptor Sensitivity, considered as an amenity in this location, it has been rated 2.1 (Low).

The potential visual impact of the proposed BESS is assessed considering both the established Landscape Sensitivity and Receptor Sensitivity. The result of these combined sensitivities is the Visual Resource Management (VRM) Class that is a baseline of the values associated with the Policy, Place and People in this area. This VRM Class is the acceptable Magnitude of Change expressed as the Visual Absorption Capacity that is the minimum requirement for this (or any similar) project of this type in this visual catchment area.

This professional report has combined both qualitative and quantitative data analysis to generate the establishment of the VRM Class for this area. The established Magnitude of Change (MOC) has a Class IV rating, meaning that the Visual Absorption Capacity (VAC) of this Place is Strong.

ANALYSIS OF THE MAGNITUDE OF CHANGE OF THE PROPOSED PROJECT

An analysis of visual impacts has been conducted to ensure a fair and objective assessment of the proposed Magnitude of Change during the project's operational duration, including built and established landscape elements. This analysis aimed to broadly determine the range of visual situations and assess the project's Degree of Contrast by using case studies from identified Key Observation Points (KOP).

Visual Situation have been categorically analysed and each rating has then been added and averaged to provide a rating that includes : Distance, Visual Magnitude, Slope, Influence of Adjacent Scenery, Frequency, Duration and Lighting/Seasons. The Visual Situation for this Project is 2.5 (Low)

Degree of Contrast Ratings are also considered for three primary Visual Character Units (VCU); Landform/ Water, Vegetation and Structure. The Critical Visual Influences (CVI) of the existing VCU have been categorically analysed. These six CVI: Colour, Texture, Scale, Line, Form/Shape and Spatial Character are analysed for each of the Key Observation Points (KOP).The Degree of Contrast (DOC) is analysed and the combined ratings determined for each KOP. The KOPs are indicative of similar situations, so form a confirmed baseline for the analysis. Brought together the overall DOC rating for this Project is 1.3 (Very Low)

The VS rating 2.5 (Low) and DOC ratings 1.3 (Very Low) are combined and then averaged to provide a Magnitude of Change rating of 1.9 (Low).

EVALUATION OF THE VISUAL COMPATIBILITY OF THE PROJECT

The Visual Absorption Capacity (VAC) rating of Low established that the acceptable Magnitude of Change is STRONG.

The objective of this class is to provide for activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. While these activities may capture the viewer's attention and dominate the view, efforts should be made to minimize their impact through strategic placement, minimal disruption, and repetition of basic elements.

The result of the LVIA evaluates the proposed BESS as being within the acceptable Magnitude of Change.

CONCLUSION

This Landscape and Visual Impact Assessment (LVIA) finds the Visual Compatibility rating of the Project to be: SATISFIED

1.1. ABOUT THIS LVIA REPORT

1.1.1. This report is a Landscape and Visual Impact Assessment ('LVIA').

1.1.2. Employees and Contractors of Orbit Solutions have assisted with the preparation of this LVIA.

1.1.3. This LVIA is approached from an empirical evidence basis; the focus is the information received by means of the senses, particularly by observation and documentation of patterns and behaviour through experimentation. Various studies have been undertaken through research programs by others and these have been relied upon in part for the practice of professional LVIA's to assist in aggregating subjective values of larger numbers of the wider public whose responses to surveys deal with a broad cross section of the community. Professional judgments are made based on objective research outcomes from this and other LVIA's that have been undertaken. Policy that is relevant to the proposal provide the framework against which this project is assessed. The purpose of this LVIA is to provide a merits based assessment of the proposal to determine if the proposal is considered as satisfying the pertinent regulations.

1.1.4. Orbit Solutions draws upon over two decades of experience in Architecture and providing Expertise in Visual Amenity Evidence the authoring of this report is founded upon the processes and learnings from matters delivered in Tasmania, Victoria and New South Wales. Relevant methodologies provided in the United Kingdom and the United States of America as well as Australian State Authorities and Institutions have been synthesized in the development and implementation of this LVIA.

1.1.5. Orbit Solutions Pty Ltd have been engaged to prepare this LVIA for Akaysha Energy Pty Ltd. Direction has been provided on the scope of this report by Cogency Australia Pty Ltd.

1.2. LIMITATIONS

1.2.1. This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

1.2.2. The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

1.2.3. Unless expressly set out in this report, Orbit Solutions has not verified that the client's information is accurate, exhaustive or current and the validity and accuracy of any aspect of the report including, or based upon, any part of the client's information is contingent upon the accuracy, exhaustiveness and currency of the client's information. Orbit Solutions accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by Orbit Solutions, and should not be relied upon by other parties, who should make their own enquires.

1.2.4. Certain aspects of the model aim to quantify variables that are subjective in nature. The modelling aims to derived from data and observations professionally reviewed to inform the expressed opinions.

1.2.5. Maps are generated from Geographic Information System (GIS) databases. While every reasonable effort is made to ensure the accuracy and completeness of the data, Orbit Solutions makes no warranties, expressed or implied, concerning the accuracy, completeness or suitability of its data, and it should not be construed or used as a legal description.

1.3. THE PROPOSAL

1.3.1. Akaysha Energy (the proponent) proposes to develop a utility scale Battery Energy Storage System (BESS) for connection to the electricity grid at Palmerston Terminal Substation. The Proposal includes the following elements:

- Battery Storage
- Inverters & Transformers
- Water tank
- Operations & Maintenance
- Native Vegetative Screening and fencing
- Parking
- Substation Access gate & Perimeter Security Fence Extension
- Access Roads

1.3.2. In preparing this LVIA all enquiries which are believed to be desirable and appropriate have been considered, and no matters of significance regarded as relevant have, to the authors knowledge, been withheld. The opinions expressed are professional opinions and are honestly held.

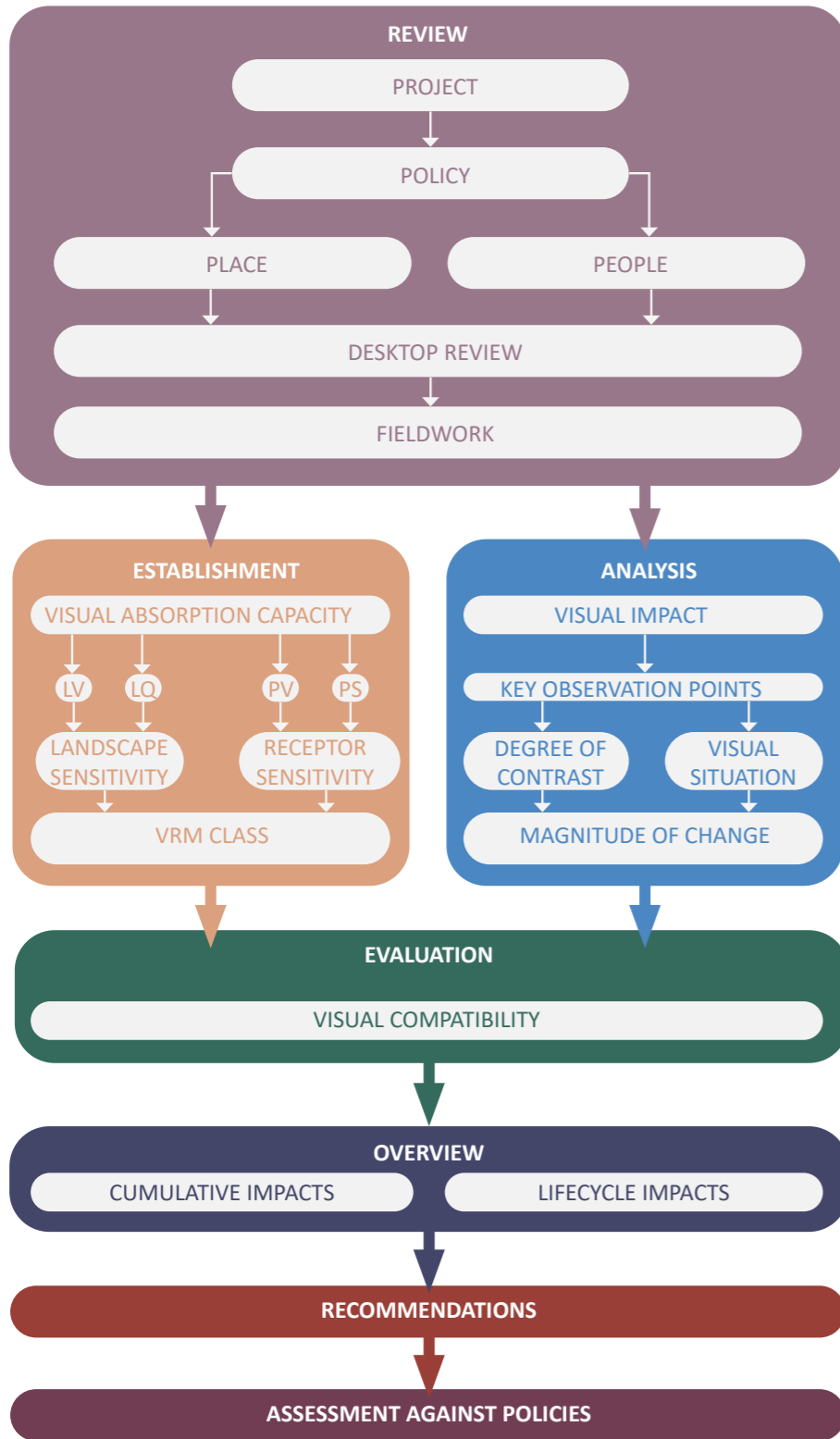


Figure 1 - Flowchart of LVIA Process

1.4. PROCESS

1.4.1. PROCESS: REVIEW

The application documents have been reviewed. The project overview is undertaken to outline the visual character and physical extent of the proposal. The relevant documents and background material that informs the provisions that are made relevant by the Application have been reviewed. These are taken into account when choosing potential viewpoint sites for the fieldwork phase.

1.4.2. PROCESS: ESTABLISHMENT

The Establishment stage assesses Visual Absorption Capacity (VAC) by considering both Receptor Sensitivity (RS) and Landscape Sensitivity (LS), which determine the potential for a place’s physical features to absorb a particular change without losing valued attributes.

$$VAC = (RS + LS)/2$$

The RS considers both People’s Values (PV) and People’s Situation (PS) which encompass aesthetic, economic, educational, historical, residential, health, recreational, social values, as well as type and amount of users, public interest, adjacent land uses, special areas, travel routes, and observation points.

$$RS = (PV + PS)/2$$

LS considers Landscape Values (LV) importance attached to different landscapes by society due to their characteristics such as Environmental, Intrinsic, Subsistence, Wilderness, Economic, Heritage, Home, Health & Recreation, Social; and Landscape Qualities (LQ) such as Land form, Vegetation, Water, Colour, Adjacent Scenery, Scarcity, Cultural Modification.

$$LS = (LV + LQ)/2$$

The LS becomes a Visual Resource Management (VRM) Class that specifies the permitted Magnitude of Change and a corresponding objective.

1.4.3. PROCESS: ANALYSIS

The purpose of the Analysis stage is to determine the Magnitude of Change (MOC). This is achieved by analysing the visual impacts of the project from Key Observation Points (KOP). The Degree of Contrast (DOC) is a comparison between the existing conditions and the proposed conditions. These conditions are categorised through a standardised list of Visual Character Units (VCU) and analysed with the Critical Visual Influencer (CVI) : Colour, texture, Scale, Line, Form/Shape, and Spatial Character. Additionally, the Visual Situation (VS) considers Distance, Visual Magnitude, Slope, Influence of Adjacent Scenery, Frequency, Duration, and Lighting conditions.

$$MOC = (SUM OF KOP DOC + SUM OF KOP VS) / 2$$

1.4.4. PROCESS: EVALUATION

The Evaluation stage seeks to synthesize the results for each nominated KOP to determine whether the existing landscape can absorb the proposed change by comparing the MOC against the Visual Resource Management (VRM) Class. This is achieved by calculating the individual Visual Compatibility (VC) of each KOP and then combining the rating to generate a final score that evaluates the project in its entirety. The changes to the landscape character and scenic character can only be deemed as absorbed when the MOC does not exceed the VRM Class.

$$\text{if: } MOC \geq VRM \text{ Class} \Rightarrow VC = \text{“Satisfied”}$$

$$\text{else: } VC = \text{“Not Satisfied”}$$

1.4.5. PROCESS: OVERVIEW

Further to the Evaluation stage provides a static rating of the proposal, whereas the Overview stage considers potential changes in visual impact during its life cycle (construction, operation, and remediation) and the cumulative impact.

1.4.6. PROCESS: RECOMMENDATION

The recommendation stage makes suggestions based on insights gathered from previous stages of the LVIA to reduce the proposal’s visual impact and improve Visual Compatibility.

1.4.7. PROCESS: ASSESSMENT COMPARING AGAINST POLICIES

The purpose of the Assessment stage is to draw the analysis back to the relevant policies and provisions.



LANDSCAPE & VISUAL IMPACT ASSESSMENT

2. REVIEW

2.1. PROJECT

2.1.1. The "Palmerston Terminal Substation BESS Plan" identifies BESS Area 1, BESS Area 2, Easements, Buffer Zones, Reticulation from Bess to Switchboard and the New TasNetworks 220/33kv Sub including 33V BESS Switchboard. There are internal lanes and hard stands identified within the proposal site boundary.

The Proposal includes the following elements:

- Battery Storage
- Inverters & Transformers
- Water tank
- Operations & Maintenance
- Native Vegetative Screening and fencing
- Parking
- Substation Access gate & Perimeter Security Fence Extension
- Access Roads

2.1.2. As well as having regard to the Application Documents the scale of the proposal in the landscape has been established to determine an initial understanding of the project's visual character and the physical extent of the surrounding area that will provide context of the study area.

2.1.3. The overall footprint of the project has a width of 135 meters from east to west, a length of 170 meters from north to south and a diagonal frontage to the north western aspect of 207 meters. Landscape buffering is proposed to provide screening around the perimeter.

2.1.4. The BESS has the site level indicated at +179.13 AHD.

2.1.5. The highest point of the BESS is the battery housing.

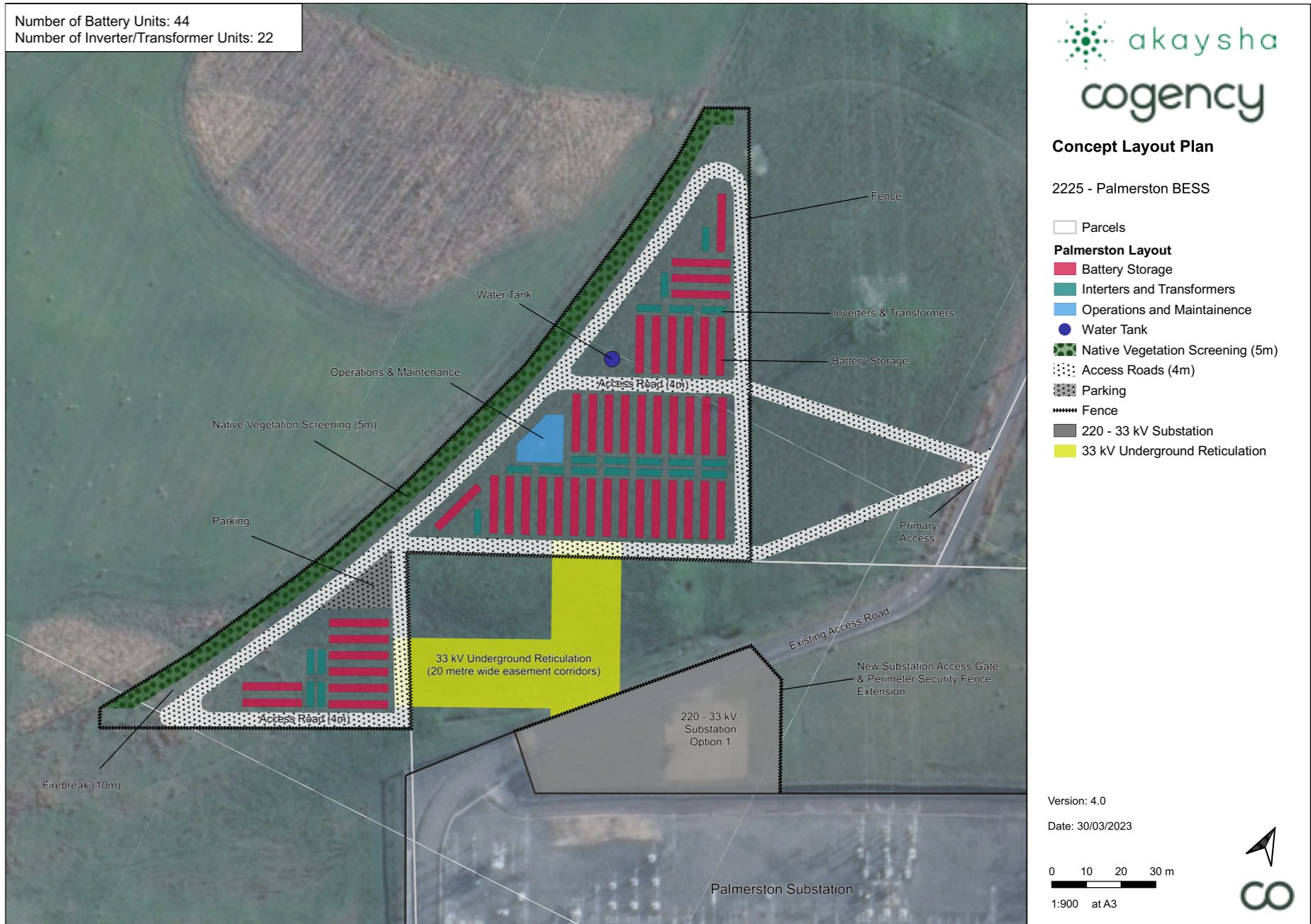


Figure 2 - Concept Layout Plan ; Source Akaysha Energy



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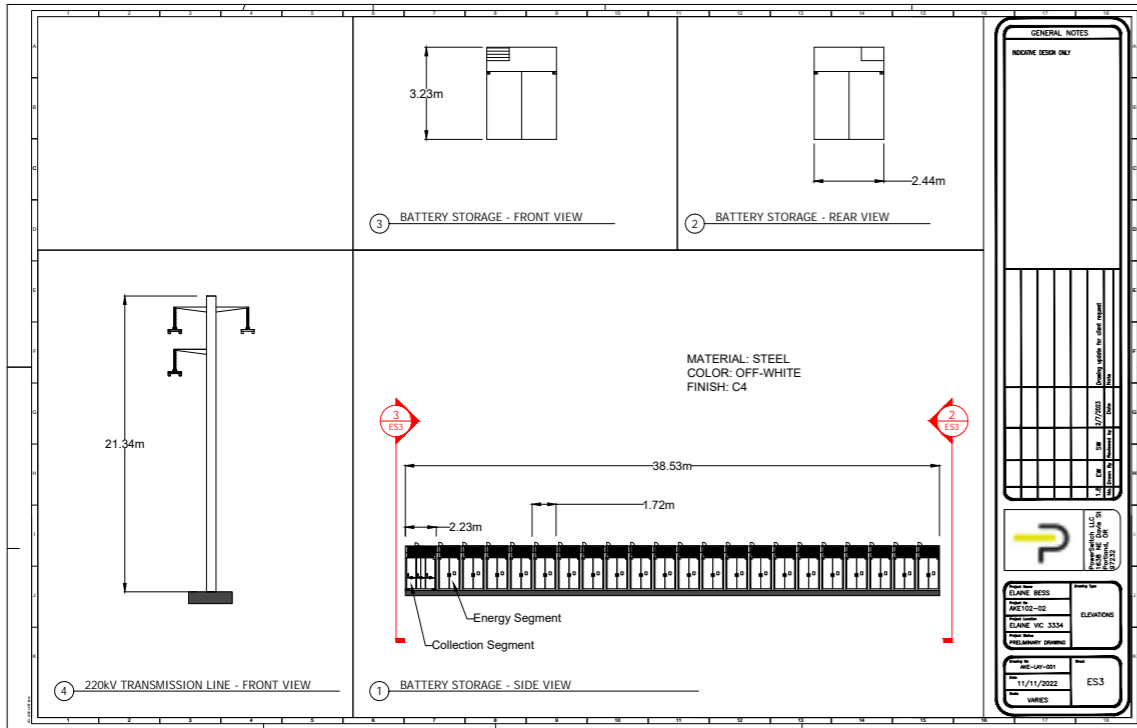


Figure 3 - Elevations of Typical Transmission line and battery storage (For Reference only); Source 225 Elaine-Blue Bridge Rd, Elaine BESS

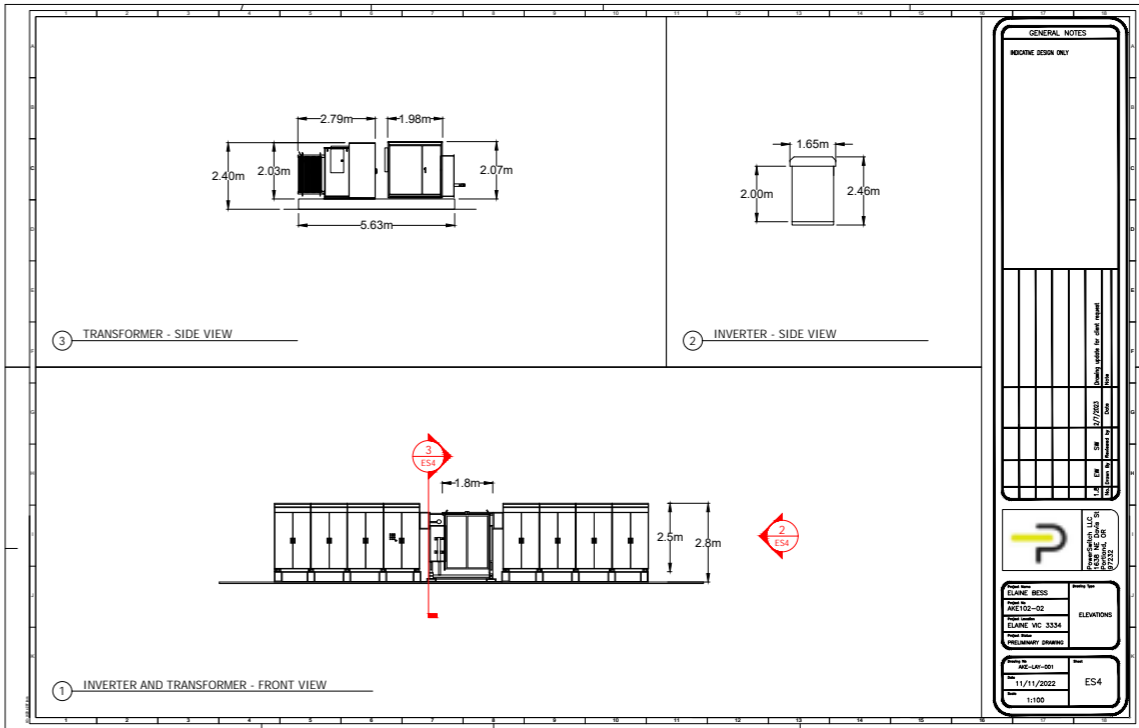


Figure 5 - Elevations of Inverter and Transformer (For Reference only); Source 225 Elaine-Blue Bridge Rd, Elaine BESS

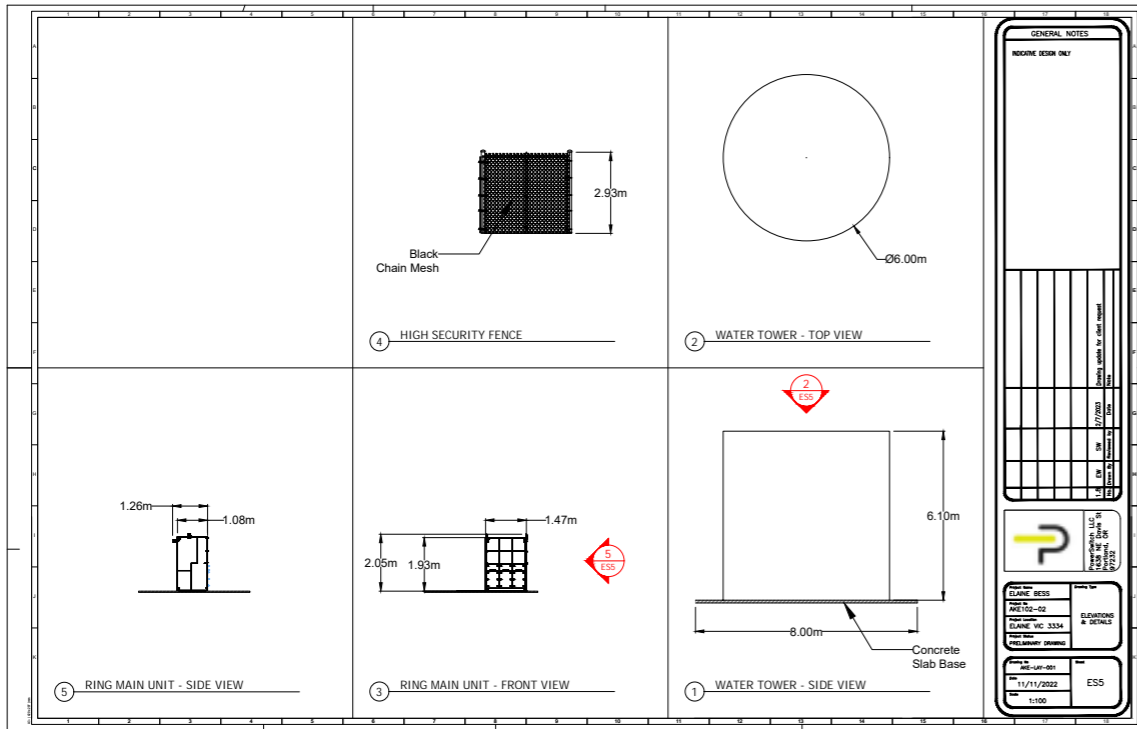


Figure 4 - Elevations of Typical O&M Building (For Reference only); Source 225 Elaine-Blue Bridge Rd, Elaine BESS

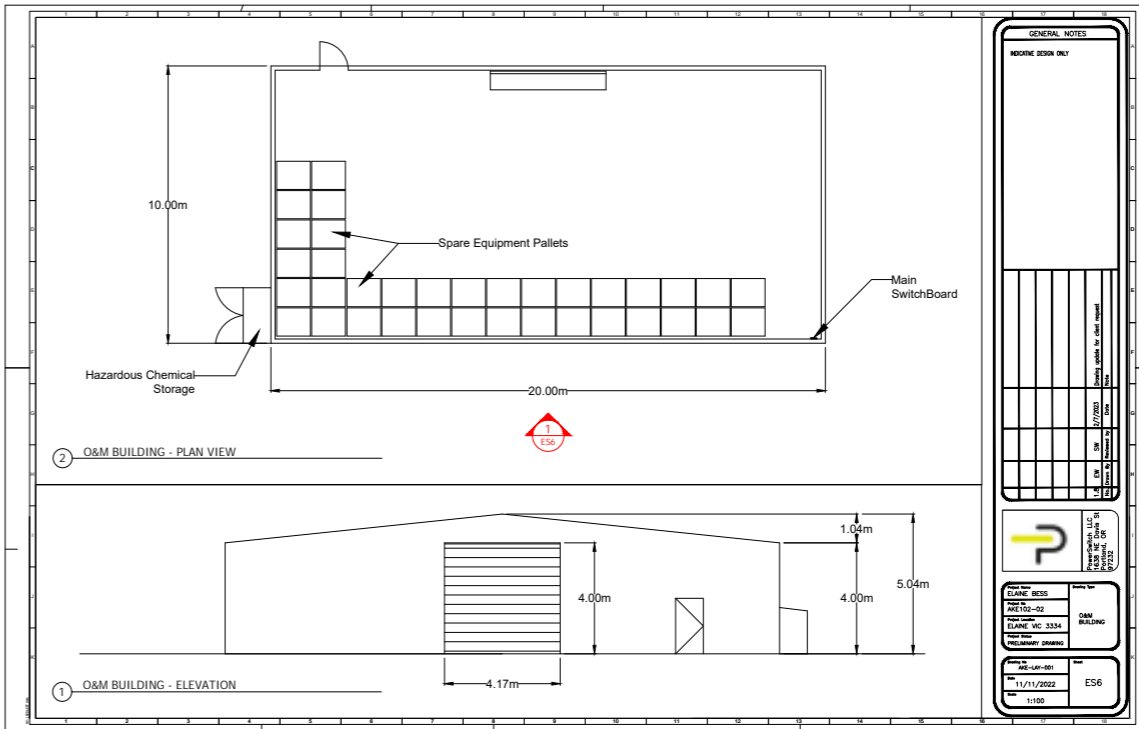


Figure 6 - Elevations of Typical Ring Main Unit (For Reference only); Source 225 Elaine-Blue Bridge Rd, Elaine BESS



LANDSCAPE & VISUAL IMPACT ASSESSMENT

2. REVIEW

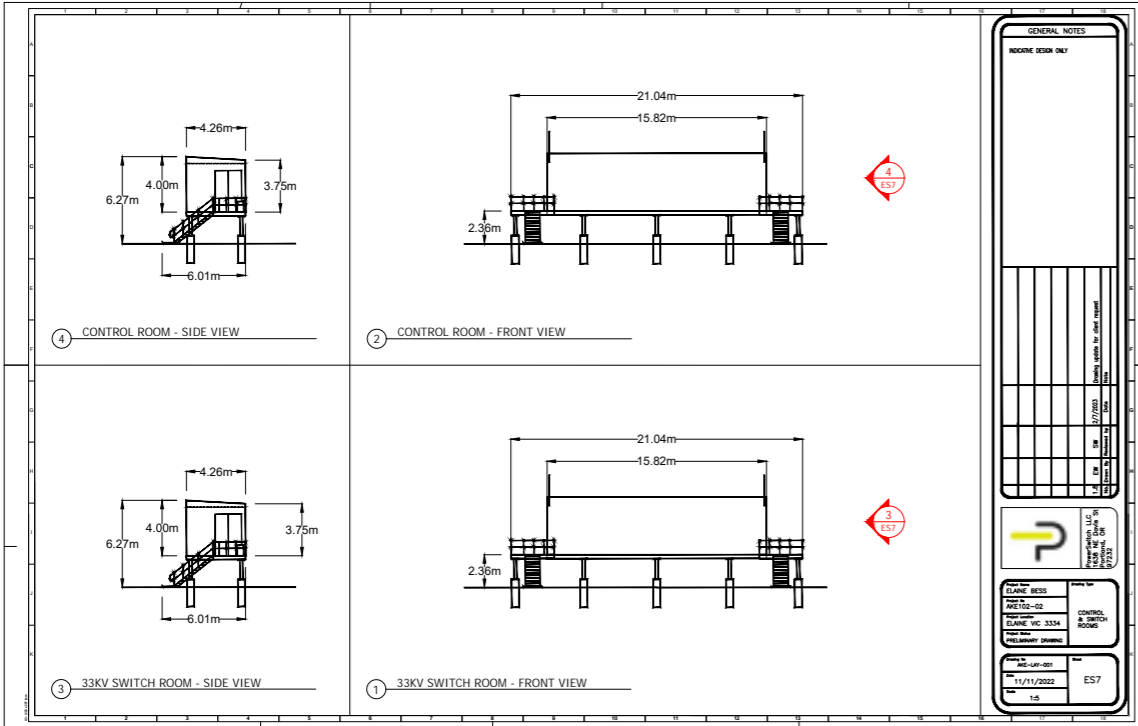


Figure 7 - Typical Switch Room (For Reference only); Source 225 Elaine-Blue Bridge Rd, Elaine BESS

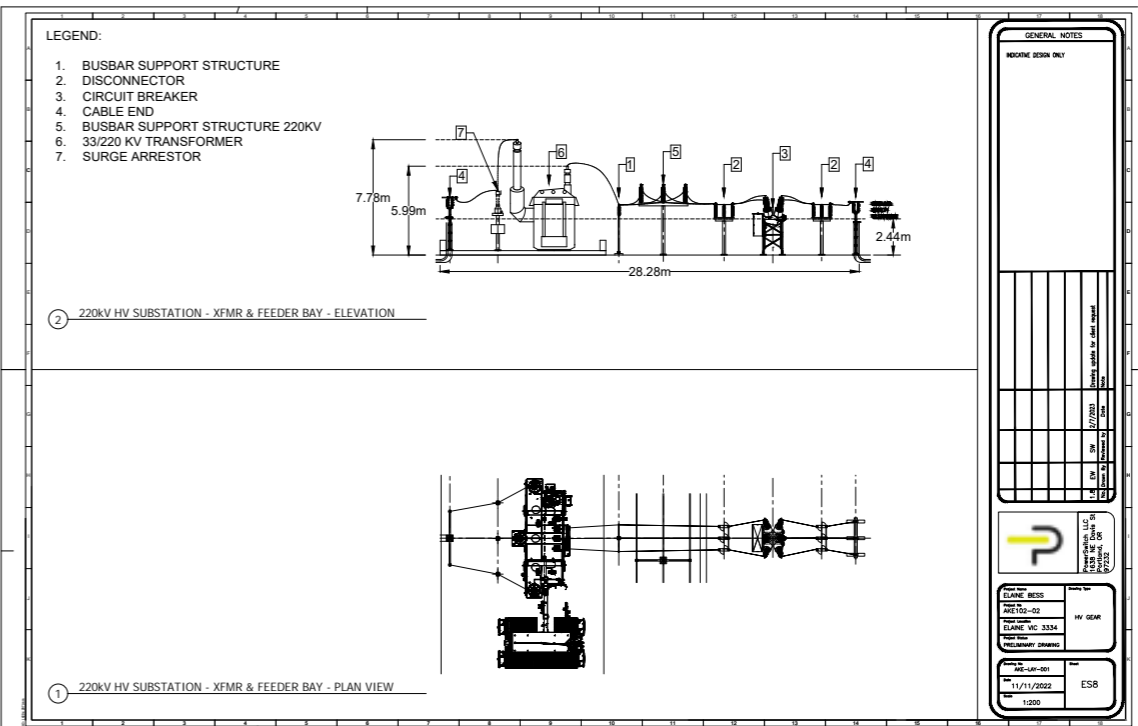


Figure 9 - Typical Feeder Bay (For Reference only); Source 225 Elaine-Blue Bridge Rd, Elaine BESS

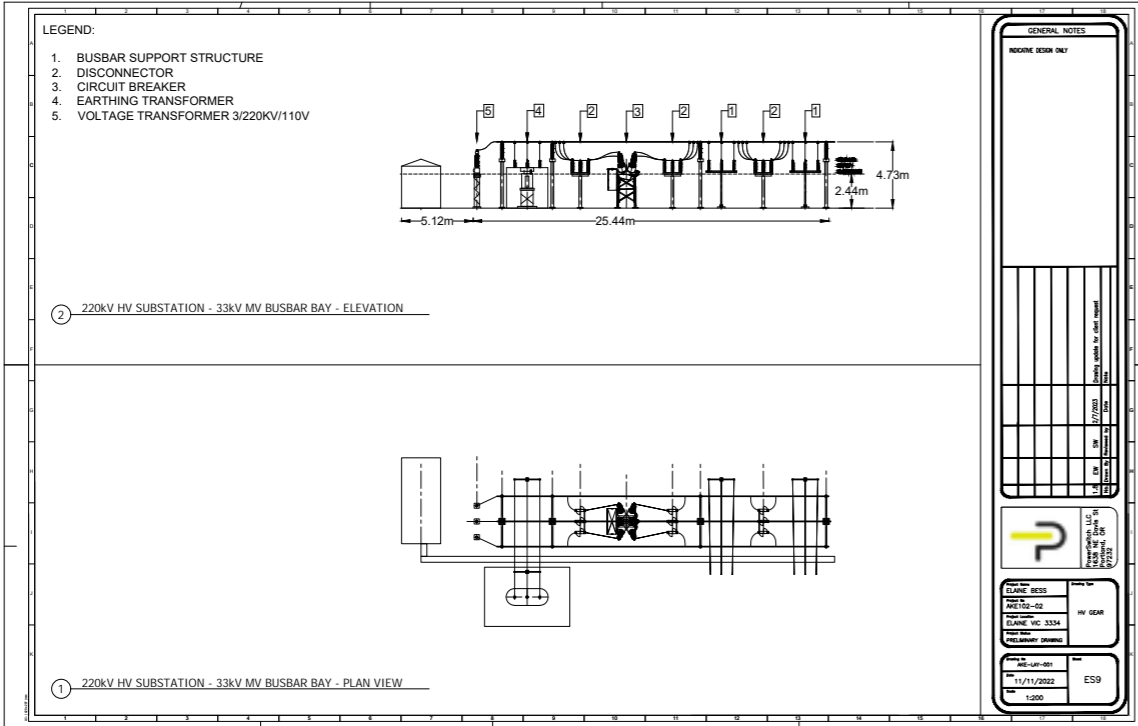


Figure 8 - Typical Busbar Bay (For Reference only); Source 225 Elaine-Blue Bridge Rd, Elaine BESS



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2. REVIEW

2.2. POLICY

2.2.1. The Tasmanian Planning Commission places Cressy in the LGA of Northern Midlands Council. The state-wide planning scheme known as the Tasmanian Planning Scheme (TPS) is already in effect for a Northern Midlands, replacing the previous planning schemes in Tasmania.

2.2.2. STATE PLANNING PROVISIONS (SPP)

The following SPP include administration clauses, general provisions, use and development standards for zones and codes that are relevant to the study area.

The relevant TPS zones are:

- Within this scheme the proposed BESS is within an Agriculture Zone (Clause 21.0). The purpose of the Zone in general is to protect agricultural land and avoid land use conflicts, however it allows a BESS with permit approval use under Clause 21.2. A BESS use in the Scheme falls into the use category of 'Utilities'.
- The proposed reticulation is located within a Utilities Zone (Clause 26.0), owing to the existing substation adjacent to the site. The Utilities Zone is more focused on controlling uses rather than development so no controls regarding visual impact apply.
- The Agriculture Zone is generally silent about visual impact. There are some development controls included at Clause 21.4.1-3 to limit 'adverse impacts', but these mainly regard height and setbacks.
- The Proposal is also affected by additional Codes under Clauses C4.0 and C7.0 however these are not relevant to the LVIA.

The relevant TPS code overlays are:

- **C13.0: Bushfire prone areas**
A large area defined as being Bushfire prone, entirely covers the site and surrounding area.
- **C8.0: Scenic Protection Code - Scenic Road Corridor**
The Scenic Road Corridor Overlay covers a segment of Saundridge Road

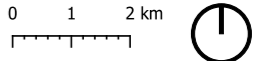
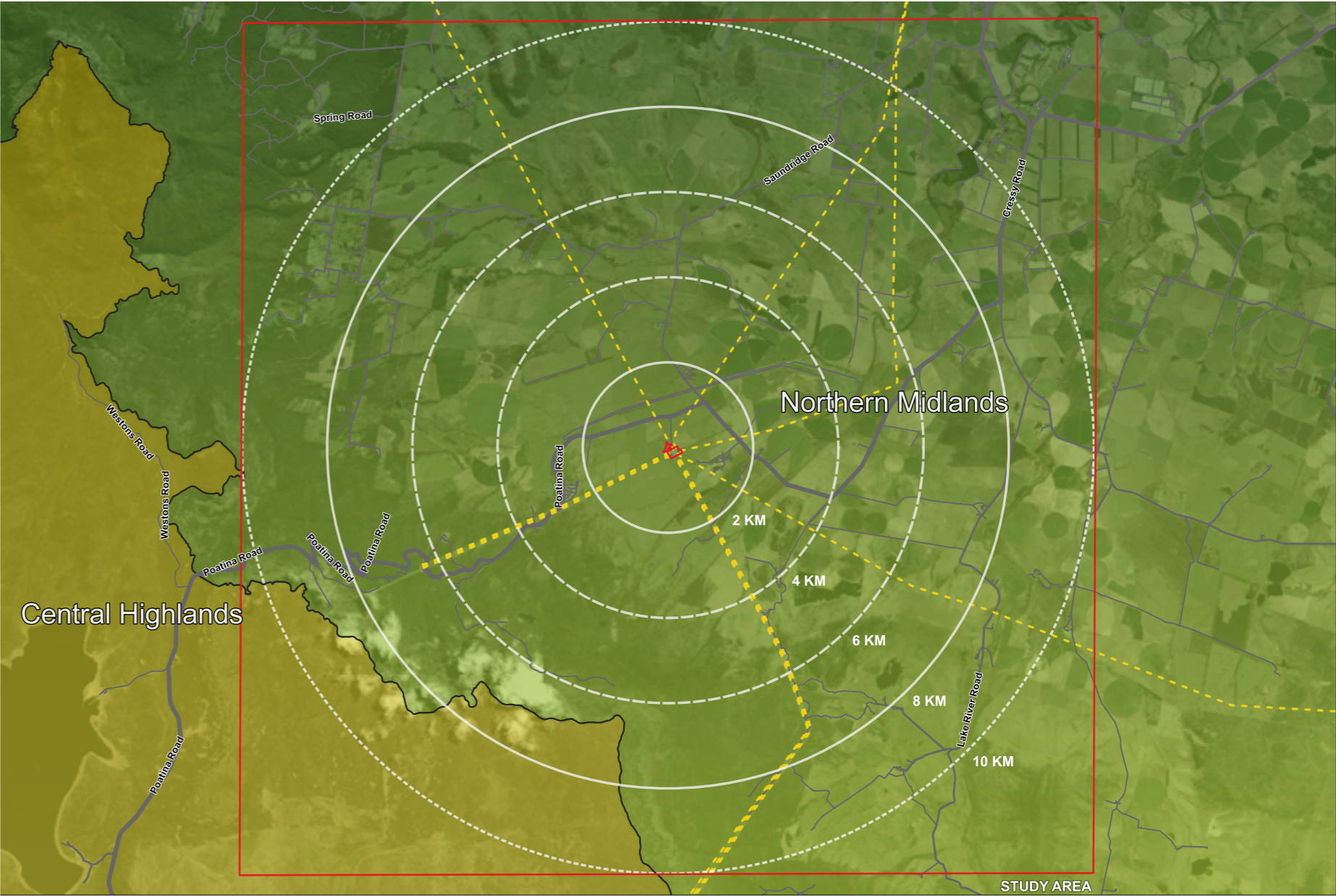


Figure 10 - Study area over LGA map ; Source Orbit Solutions derived from GIS data



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to the north of the proposal, beginning at the intersection with Poatina Road and continues to the Blackwood Creek road. The Scenic Protection Code Overlay covers parts of the study area but does not directly affect the proposal.

- C6.0 Local Historic Heritage Code - Local Heritage Place**
 Two areas within close proximity to the site are defined as Local Heritage Places. One area is located south of the proposal, extending along both sides of the Woodside Rivulet. Another area of Local Heritage Overlay to the North of the site has boundaries which are partially defined by Palmers Riverlet, Saundrige road, Brumsby Creek and Western Riverlet. The Local Historic Heritage Code covers parts of the study area but does not directly affect the proposal.
- C7.0 Natural Assets Code - Waterway and Coastal protection area**
 A complex waterway network made up of multiple Rivulets and Creeks surround the proposal.
- C7.0 Natural Assets Code - Priority Vegetation**
 A significant area of Priority Vegetation occupies the Great Western Tiers Conservation Area and partially extends along Poatina Road to the west of the proposal. The Natural Assets Code covers parts of the study area but does not directly affect the proposal.
- C15.0: Landslip**
 Landslip area closely overlaps with parts of the land covered by Priority Vegetation. Within study area but does not directly affect the proposal.
- C4.0: Electrical Transmission Infrastructure protection**
 The Substation is connected to six Electricity Transmission Corridors, which extend outward in all directions and connect with other corridors.

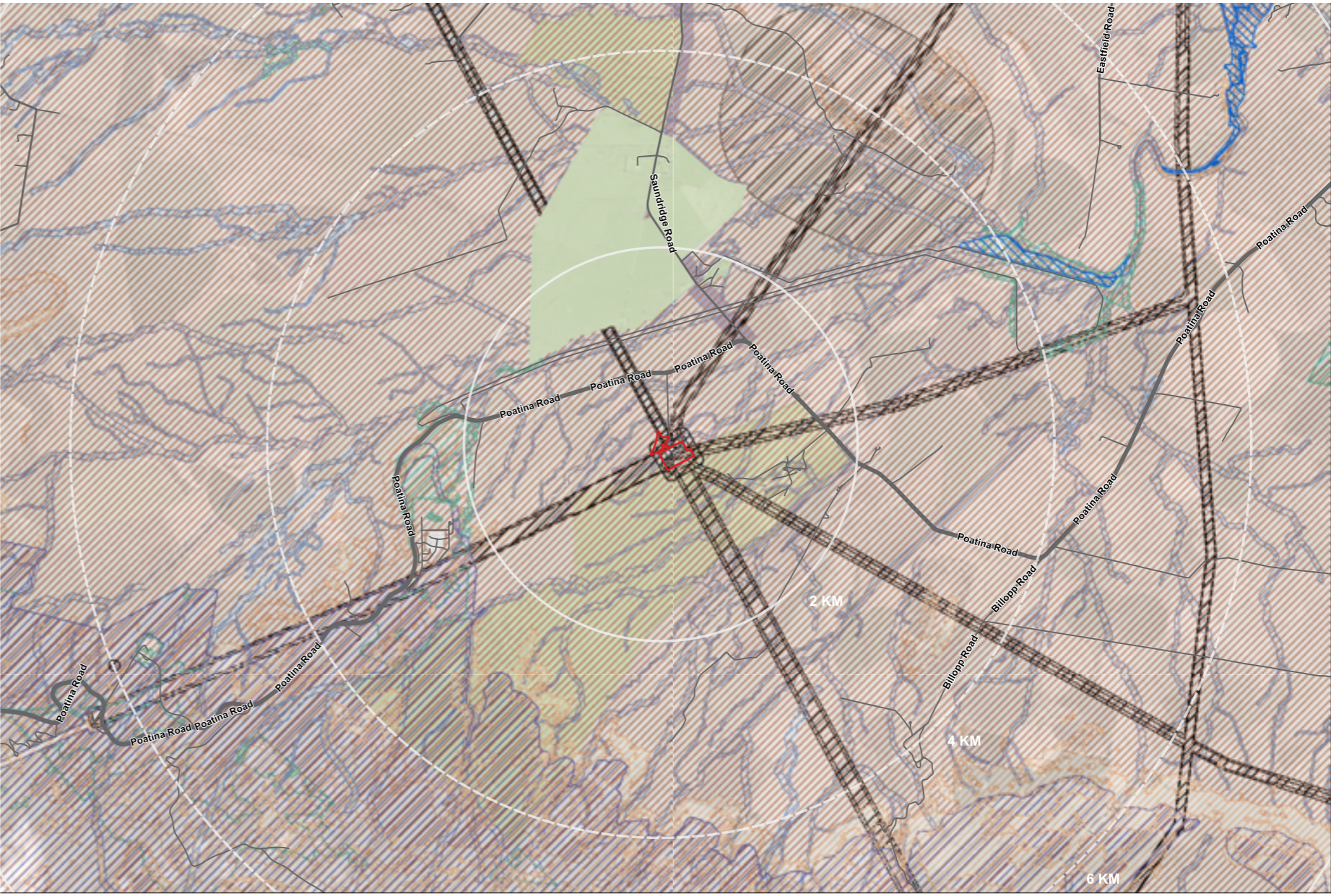


Figure 11 - Planning Scheme Overlay ; Source Orbit Solutions derived from GIS data

The Local Provisions Schedules (LPSs)

The following SPP include administration clauses, general provisions, use and development standards for zones and codes relevant to the study area.

- NOR-S3.1 The Cressy Specific Area do not have specific policies directly related to renewable energy
- NOR-S3.2.1 Specific Area Plan does not apply to the area of the proposal.

PLANNING SCHEME CODE OVERLAY			
	BUSHFIRE PRONE AREAS		NATURAL ASSETS CODE - PRIORITY VEGETATION
	SCENIC PROTECTION CODE - SCENIC ROAD CORRIDOR		LANDSLIP
	LOCAL HISTORIC HERITAGE CODE - LOCAL HERITAGE PLACE		ELECTRICAL TRANSMISSION INFRASTRUCTURE PROTECTION
	NATURAL ASSETS CODE - WATERWAY AND COASTAL PROTECTION AREA		



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2.2.3. LAND USE

The Land Use Map is generated from GIS data using the Catchment scale land use of Australia – 2020 database. This dataset is the national compilation of catchment scale land use data for Australia (CLUM), compiled at a resolution of 50 metres by 50 metres. It has been compiled from vector land use datasets collected as part of state and territory mapping programs through the Australian Collaborative Land Use and Management Program (ACLUMP).¹

The proposed site is classified as Grazing Modified Pastures, with the adjacent existing sub station being Urban Intensive Uses. The majority of the surrounding land is a mixture which is primarily used for Grazing Modified Pastures, Irrigated Pastures; embedded with smaller areas of Production Native Forests.

¹ "Catchment Scale Land Use of Australia – Update December 2020 - Department of Agriculture." n.d. [www.agriculture.gov.au. https://www.agriculture.gov.au/abares/aclump/catchment-scale-land-use-of-australia-update-december-2020.](https://www.agriculture.gov.au/abares/aclump/catchment-scale-land-use-of-australia-update-december-2020)

LAND USE	
	NATURE CONSERVATION
	MANAGED RESOURCE PROTECTION
	OTHER MINIMAL USE
	GRAZING NATIVE VEGETATION
	PRODUCTION NATIVE FORESTS
	GRAZING MODIFIED PASTURES
	PLANTATION FORESTS (COMMERCIAL AND OTHER)
	DRYLAND CROPPING
	DRYLAND HORTICULTURE
	LAND IN TRANSITION
	IRRIGATED PASTURES
	IRRIGATED CROPPING
	IRRIGATED HORTICULTURE
	URBAN INTENSIVE USES
	INTENSIVE HORTICULTURE AND ANIMAL PRODUCTION
	RURAL RESIDENTIAL AND FARM INFRASTRUCTURE
	MINING AND WASTE
	WATER

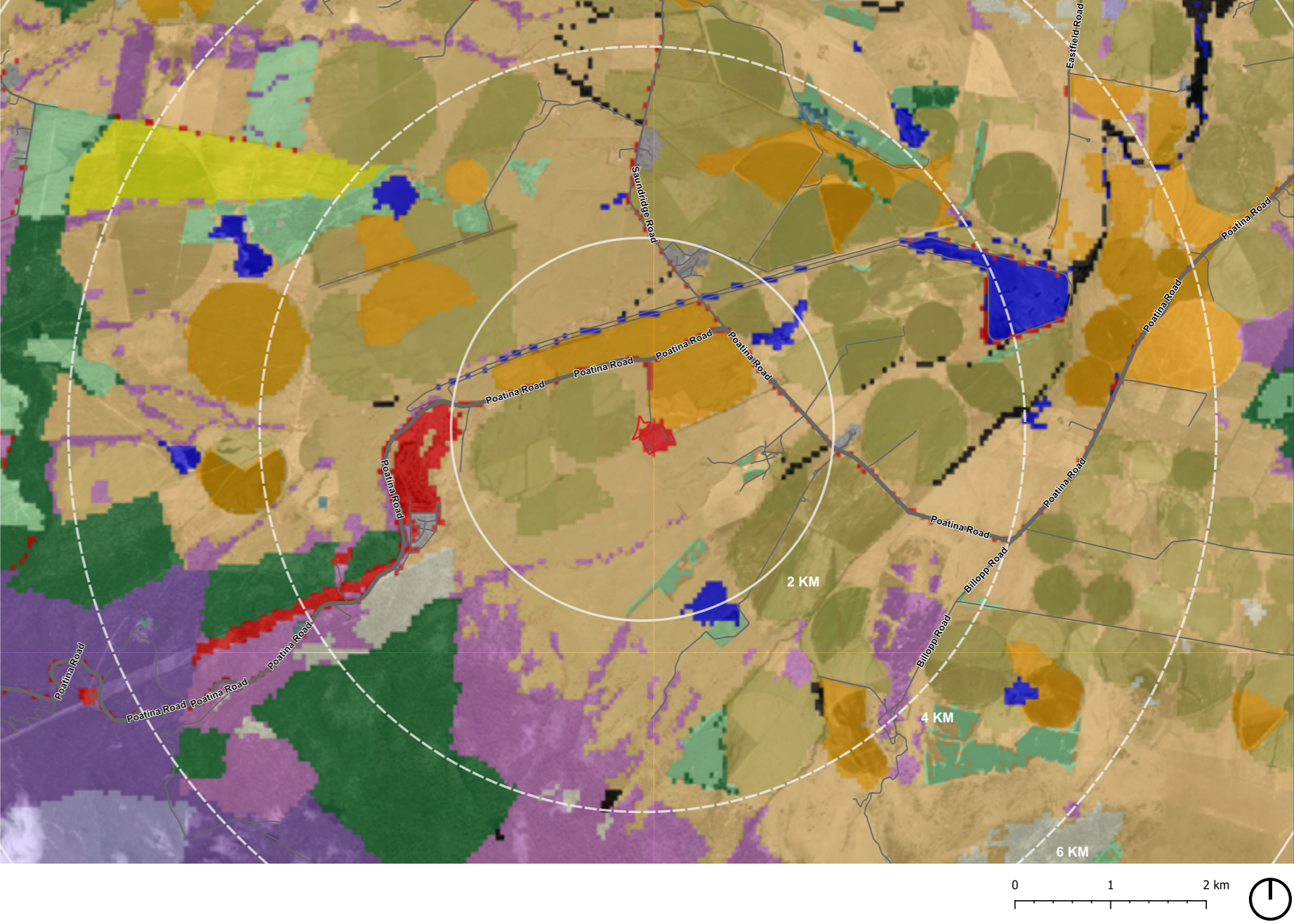


Figure 12 - Land Use Map ; Source Orbit Solutions derived from GIS data



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2.3. PLACE

2.3.1. GEOGRAPHY

The proposal is located within the State of Tasmania. The site is located approximately 35km south-west from the city of Launceston and 125km north-west from the capital city of Hobart. It is inside the town Cressy which borders Poatina to the west of the proposal site, which are under the Northern Midlands Council.

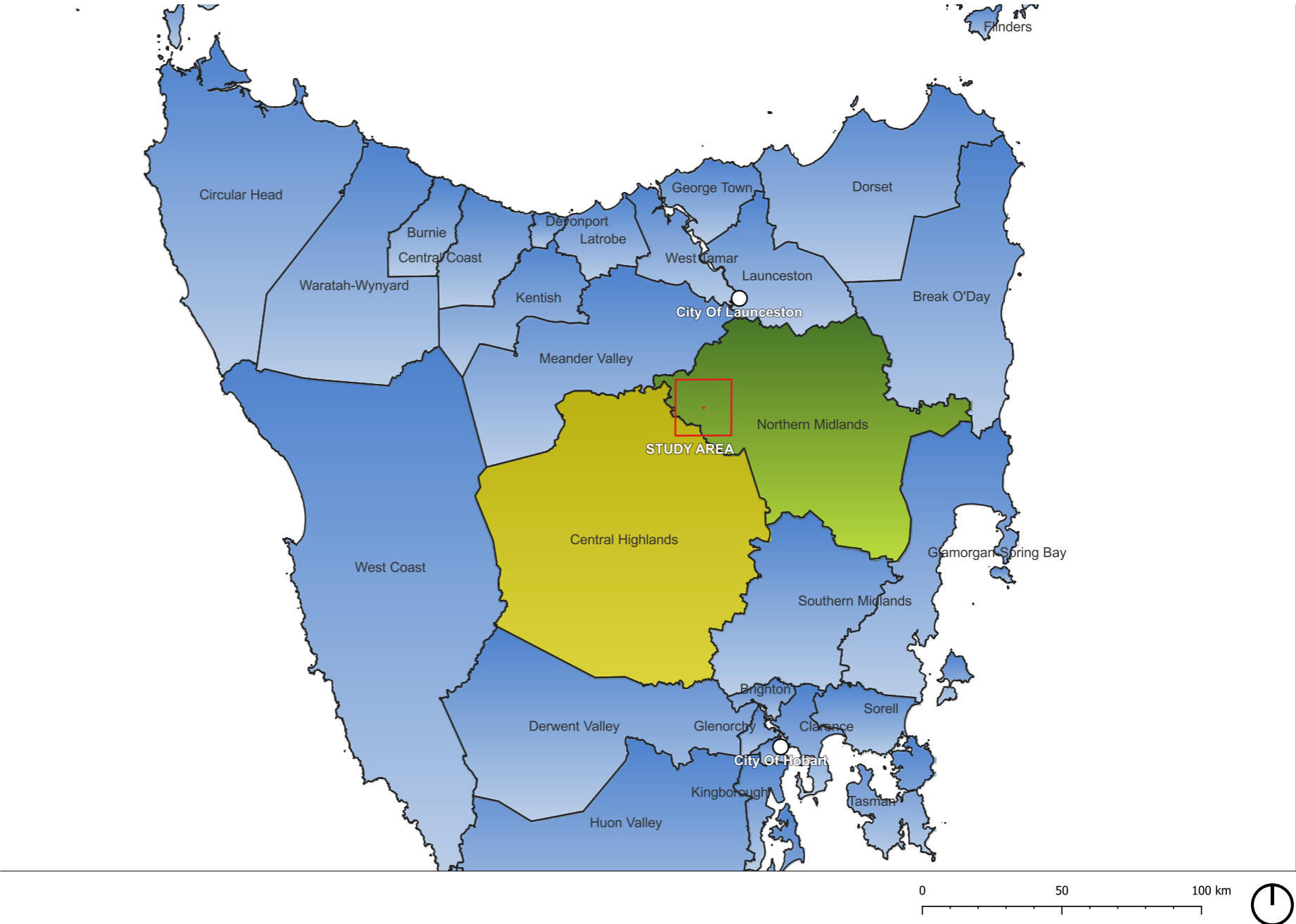


Figure 13 - LGA map showing position of study area in relation to major cities ; Source Orbit Solutions derived from GIS data

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2.3.2. STUDY AREA

The boundaries of the Study Area are represented as red lines on the Aerial photograph, forming a square region of 10x10km. The study area is positioned at the center of the proposed site and extends to a distance of 10km to match the maximum projected range of the Zone of Theoretical View (ZTV). The purpose of the Study Area is to identify a region which encompasses the potential impact of the proposal on the landscape and visual receptors. Recognizing that this impact is expected to vary based on proximity to the proposal, the study area is divided into five concentric circles. The first zone spans from 0 to 0.5km radius, followed by the next zone covering 0.5km to 2km. Subsequent zones increment by 2km until reaching the 10km boundary of the Study Area.

RATING	DISTANCE
5	IMMEDIATE FOREGROUND: 0 – 0.5km
4	FOREGROUND: 0.5km – 2km
3	MID GROUND: 2km – 4km
2	BACKGROUND: 4km – 8km
1	DISTANT BACKGROUND: 8km – 10km
0	N/A > 10km

Table 1 Distance Rating

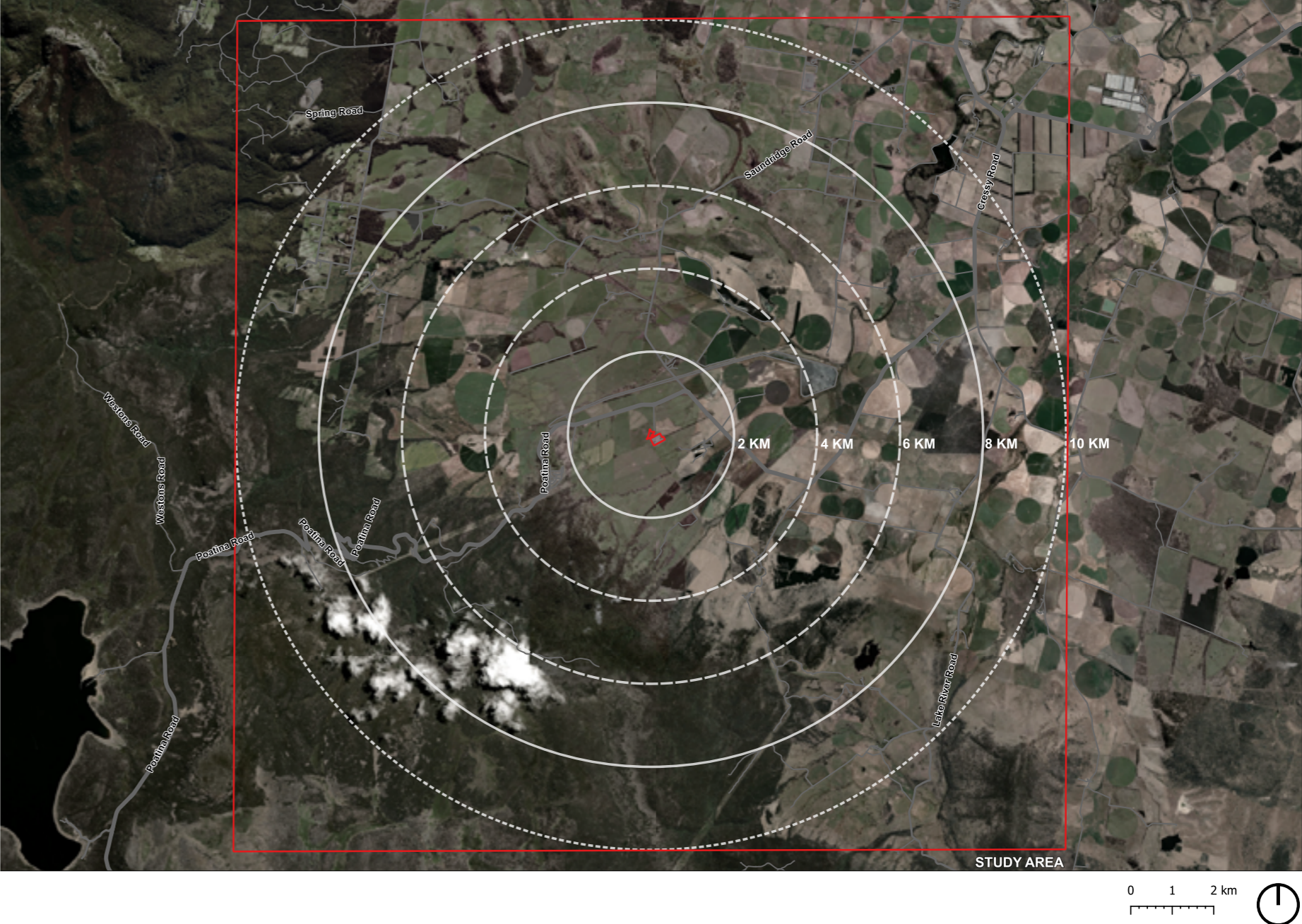


Figure 14 - Aerial Photograph indicating Study Area; Source Orbit Solutions derived from GIS data

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2. REVIEW 17

2.3.3. VIEW SHED

View Shed Mapping is based on GIS data to identify where theoretical lines of sight may be available. It is generated from a Digital Elevation Model (DEM) of the site which is 'bare earth' representation which does not take into regard the vegetation and human-made features on the earth's surface.

In undertaking the field works and investigating the range of views the opportunity was taken to investigate the study area from the surrounding cardinal points, distances and elevations.

The View Shed Mapping is used to analyse a theoretical area of visual effect. This, in concert with the consideration of patterns of use by people within designated areas of land use, provides the relevant information to synthesise the potential visual effects.

The View Shed map shows a Zone of Theoretical View (ZTV) that extends in all directions from the site, with a maximum projected range of a 10km radius. The ZTV is most prominent in the west, with some extension towards the east and north, albeit to a lesser extent. The shape of the ZTV is elongated along the east-west axis, with a wider span on the western side. The edges of the ZTV appear fragmented, particularly towards the east and west.

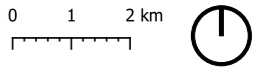
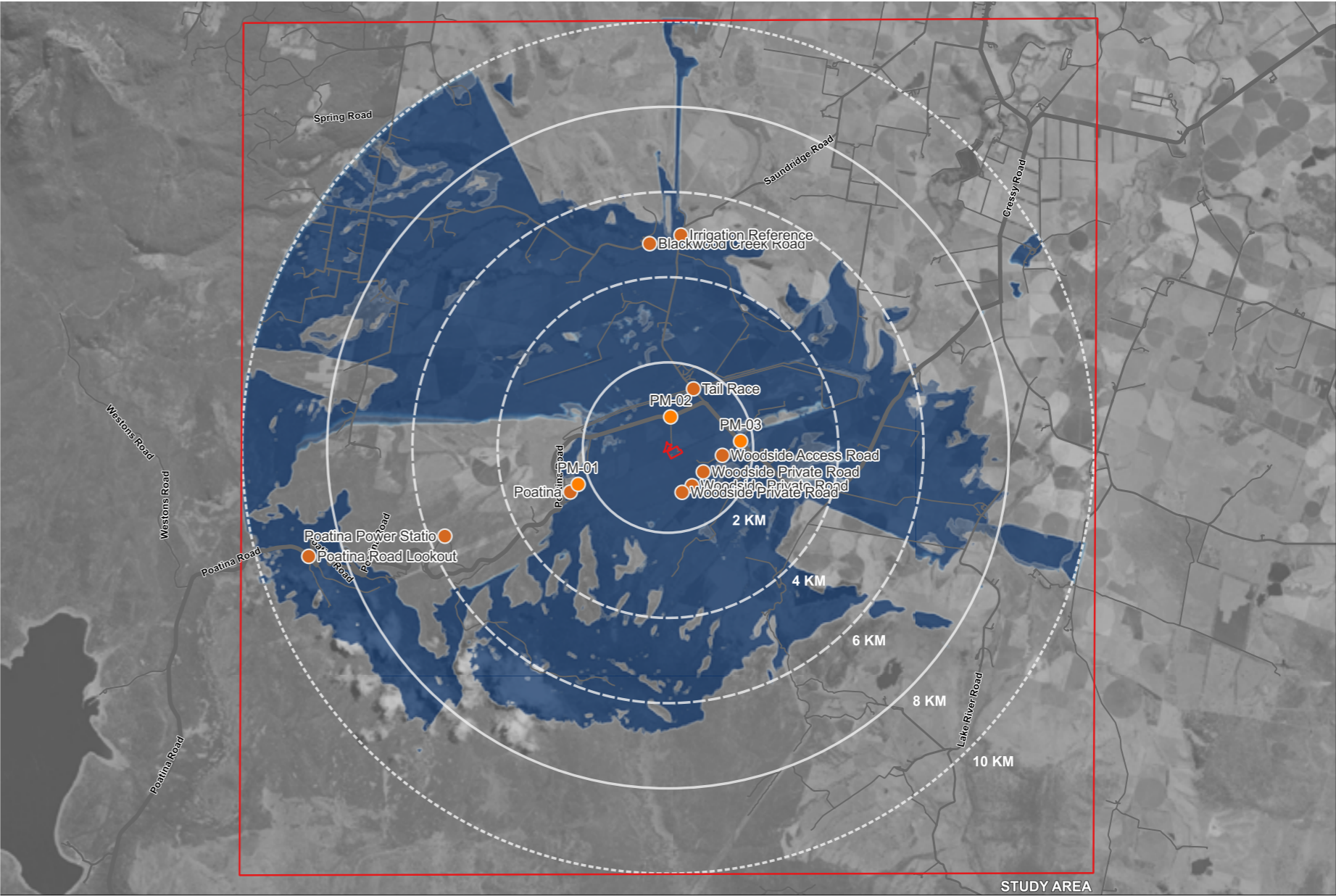


Figure 15 - View Shed Map ; Source Orbit Solutions derived from GIS data

ZONE OF THEORETICAL VIEW (ZTV)	
	VISIBILITY OF PROPOSAL
●	VIEWPOINTS



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2. REVIEW

2.4. PEOPLE

2.4.1. WHO ARE THE AFFECTED PEOPLE?

The Traditional owners of the Northern Midlands include the clans of Leterremairrener (Port Dalrymple people), the Panninher, and the Tyerrernotepanner.¹

Cressy is a town 35 kilometres (22 mi) south-west of Launceston, Tasmania. It has an estimated population of 1149 according to 2021 Census data published by the Australian Bureau of Statistics.² The Council for this LGA is Cressy Northern Midlands.³

Poatina is a neighboring town to Cressy which has views overlooking the area. It has an estimated population of 118 according to 2021 Census data published by the Australian Bureau of Statistics.⁴

Cressy (Tas.)

2021 Census All persons QuickStats

Geography type [Suburbs and Localities](#)
Area code SAL60139



	People	1,149
	Male	52.9%
	Female	47.1%
	Median age	38
	Families	304
	Average number of children per family	
	for families with children	1.9
	for all households (a)	0.7
	All private dwellings	501
	Average number of people per household	2.5
	Median weekly household income	\$1,300
	Median monthly mortgage repayments	\$1,200
	Median weekly rent (b)	\$230
	Average number of motor vehicles per dwelling	2.3

Figure 16 - 2021 Cressy (Tas.), Census All Persons QuickStats | Australian Bureau of Statistics." n.d. Abs.gov.au. Accessed May 11, 2023. <https://abs.gov.au/census/find-census-data/quickstats/2021/SAL60139>.

Poatina

2021 Census All persons QuickStats

Geography type [Suburbs and Localities](#)
Area code SAL60509



	People	118
	Male	48.3%
	Female	51.7%
	Median age	47
	Families	29
	Average number of children per family	
	for families with children	2.6
	for all households (a)	0.6
	All private dwellings	72
	Average number of people per household	2.1
	Median weekly household income	\$784
	Median monthly mortgage repayments	\$188
	Median weekly rent (b)	\$178
	Average number of motor vehicles per dwelling	1.4

Figure 17 - "2021 Poatina, Census All Persons QuickStats | Australian Bureau of Statistics." n.d. Abs.gov.au. Accessed May 11, 2023. <https://abs.gov.au/census/find-census-data/quickstats/2021/SAL60509>.

1 Huys, Stuart . 2016. Aboriginal Heritage Assessment. Cultural Heritage Managment Australia. 35.
2 "2021 Cressy (Tas.), Census All Persons QuickStats | Australian Bureau of Statistics." n.d. Abs.gov.au. <https://abs.gov.au/census/find-census-data/quickstats/2021/SAL60139>.
3 "Cressy." n.d. Northern Midlands Council. Accessed May 11, 2023. <https://northernmidlands.tas.gov.au/council/council-committees/cressy>.
4 "2021 Poatina, Census All Persons QuickStats | Australian Bureau of Statistics." n.d. Abs.gov.au. Accessed May 11, 2023. <https://abs.gov.au/census/find-census-data/quickstats/2021/SAL60509>.

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2.5. DESKTOP REVIEW

2.5.1. IDENTIFYING POTENTIAL VIEWPOINTS

Selection of potential view points is undertaken having regard to providing a range of locations and situations that are representative of the major user types affected by the proposal including tourists, residents, commuters, and workers.

When evaluating the View Shed, the BESS locations and the proposal's height and footprint were considered to assess visibility from these locations when looking toward the proposal. The viewing relationship is reciprocal, with a view from position A towards position B having a reciprocal view from position B towards position A. The darker shades of blue on the map indicate the viewsheds from each viewpoint.

The locations of the chosen viewpoints consider the key areas surrounding the proposal such as the Tail Race, Woodside Access Road, Poatina Road, Poatina Power Station, Poatina Road Lookout and Blackwood Creek Road.

All Key Observation Points (KOPs) are located within a 4km radius of the site along Poatina Road, which is the nearest major road to the proposal. The KOPs provide views of the proposal from various sides where photomontages will be created as part of the visual impact analysis. The position of the KOPs are:

- PM-01 is just beyond the 2km radius, west of the proposal.
- PM-02 is within the 2km radius, north of the proposal.
- PM-03 is within the 2km radius, located to the east of the proposal.

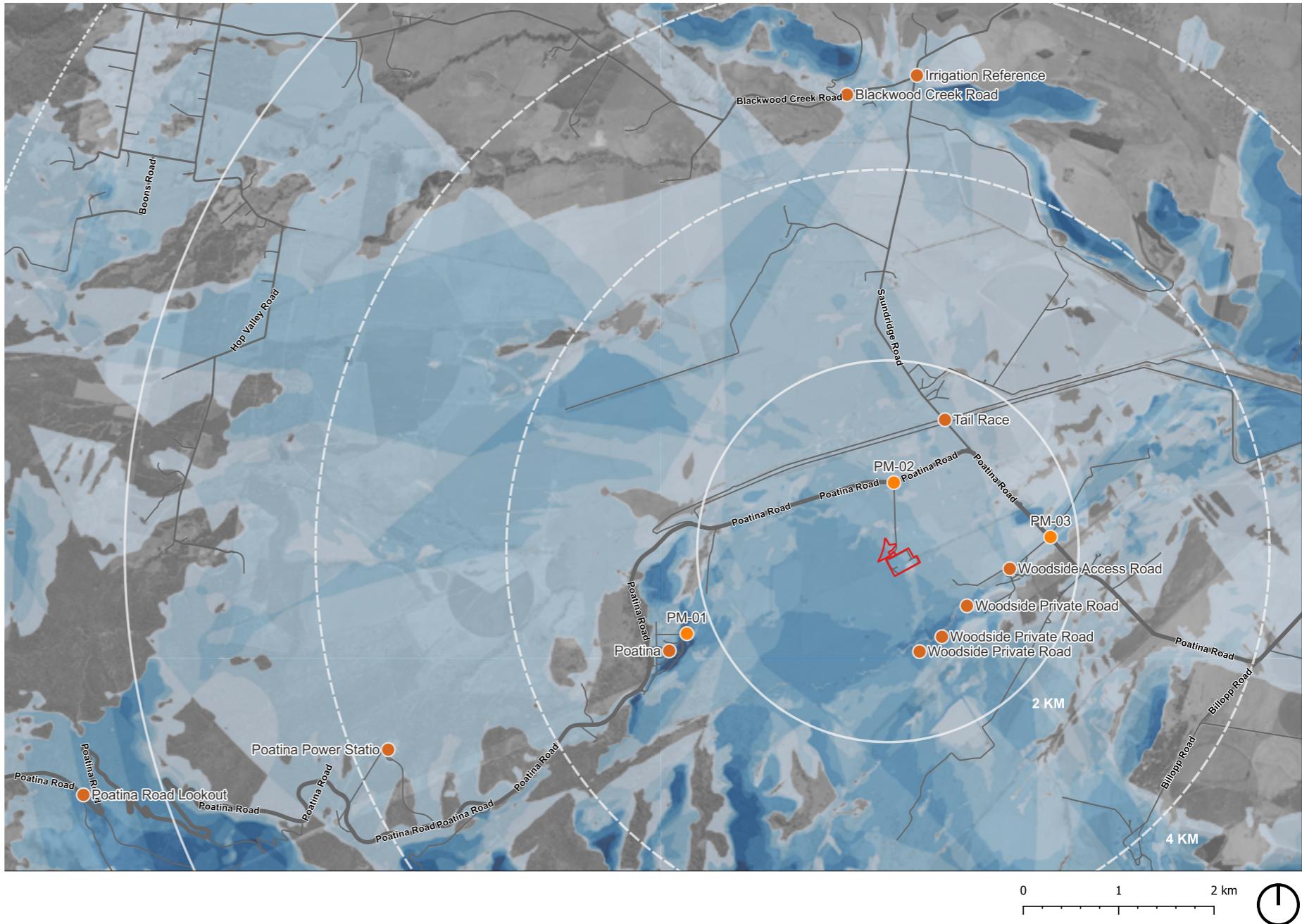


Figure 18 - Field work Map ; Source Orbit Solutions derived from GIS data

ZONE OF THEORETICAL VIEW (ZTV)	
●	VISIBILITY FROM EACH VIEWPOINT
●	VIEWPOINTS



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2. REVIEW

2.5.2. AFFECTED RECEPTORS

The Affected Receptors are identified and categorized into the following types:

2.5.3. AFFECTED DWELLINGS

There is a small number of dwellings in the Immediate Foreground (0-0.5km), mostly scattered towards the south of the site along Woodside Private Road, and another cluster along Saundridge Road extending into the Foreground (0.5-2km). Additionally, a denser group of residences are situated in the Foreground on the western side of the site along Poatina Road.

2.5.4. COMMUTERS

Poatina Road is a major road running along the east-west axis closest to the site, then turns onto the north-south axis where it intersects with Saundridge Road. It provides access to the existing substation and connects to other nearby unnamed streets.

2.5.5. WORKERS

The site and adjacent land are used by both Agricultural farm workers and Energy Utility workers.

2.5.6. SCENIC LOOKOUTS

Poatina Road Lookout is an informal lookout without a designated platform or pull-over area but still offers expansive views of the valley below. It is located approximately 9km west of the site.

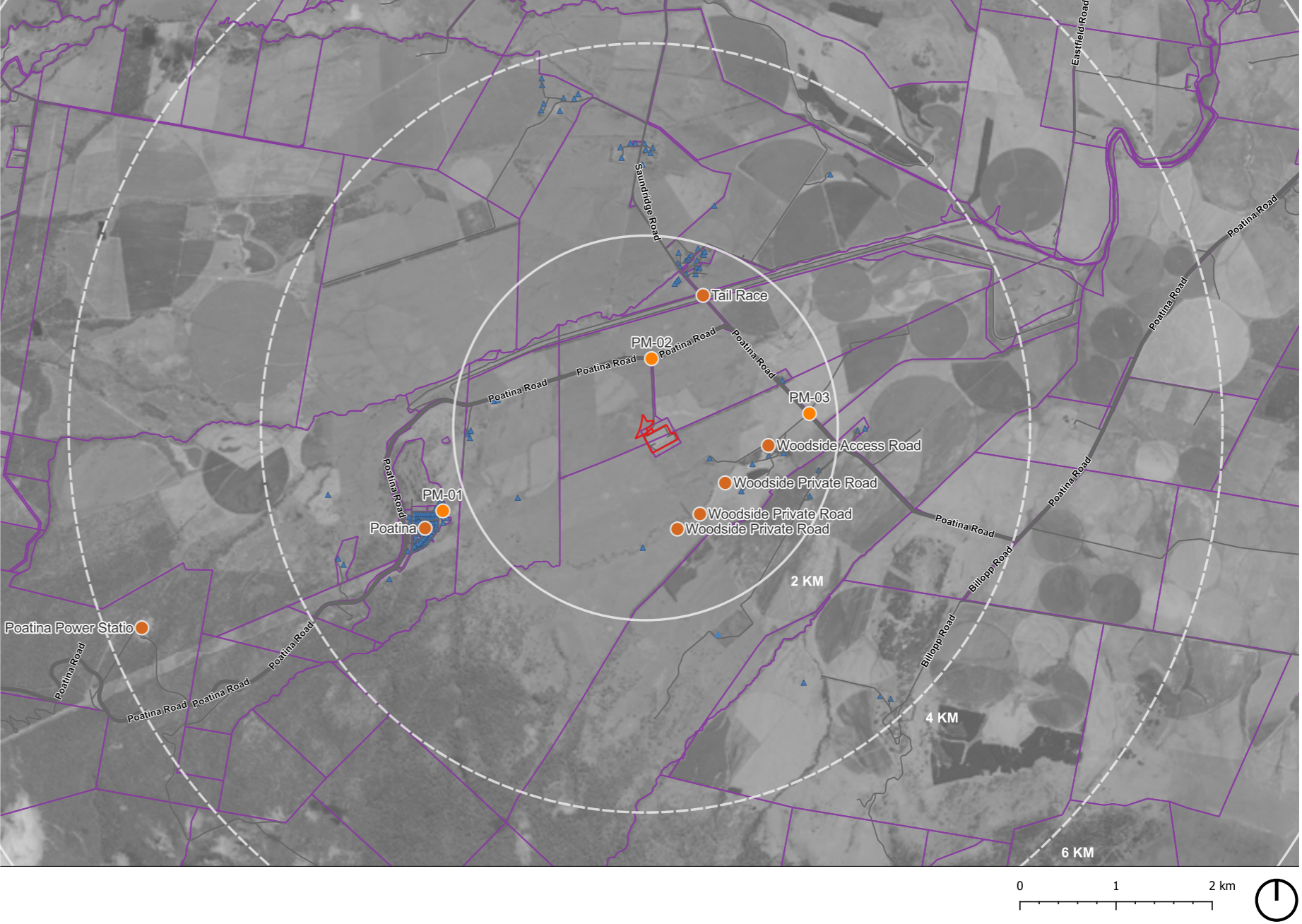


Figure 19 - Affected Dwellings Map ; Source Orbit Solutions derived from GIS data



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2.6. FIELD WORK

2.6.1. Initial Field Work Investigations conducted on the 28th November 2022 examined the site and surroundings with the application in mind. While on site, seasonal and temporal effects were considered to inform the opinions and assessments in this LVIA.

Weather conditions on the day of photography were partly cloudy with occasional brief light rain showers. At times the sunlight was direct and bright creating high contrast shadows. Professional Photography for the nominated KOPS has been undertaken by David Rosendale Photography.

Certified Land Survey data was collected by a Licensed Surveyor Eden Fellows of Survey 4d.

See appendix for photography and survey methodology.



Figure 21 - Photograph showing Blackwood Creek Road. Taken at 10:55am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.



Figure 23 - Photograph showing Irrigation. Taken at 11:04am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.



Figure 20 - KOP 01: Valley View Crescent, Poatina village, road shoulder djacent to building / residence #8, facing approx 60 Degrees North East to target. Taken at 12:55pm EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.



Figure 22 - KOP 2: Approx 4554 Poatina Rd, corner of unnamed road, entrance to substation, facing approx 170 Degrees South to target. Taken at 11:17am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 24 - KOP 3: Approx 4740 Poatina Rd, Northern Road shoulder, opposite gated entrance to Woodside Private Road, facing approx 245 Degrees South West to target. Taken at 10:18am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.

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Figure 25 - Photograph showing Irrigation. Taken at 11:06am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 39mm Focal length.



Figure 27 - Photograph of Tail Race. Taken at 11:11am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 65mm Focal length.



Figure 29 - Photograph of Tail Race. Taken at 11:12am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 26mm Focal length.



Figure 26 - Photograph at Poatina Lookout. Taken at 12:31pm EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.



Figure 28 - Photograph of Poatina Road. Taken at 1:27pm EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.



Figure 30 - Photograph of Poatina Road. Taken at 1:30pm EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.



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Figure 31 - Photograph showing Tail Race. Taken at 11:12am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 24mm Focal length.



Figure 33 - Photograph of Woodside Access Road. Taken at 8:43am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 24mm Focal length.



Figure 35 - Photograph of Woodside Access Road. Taken at 8:45am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 25mm Focal length.



Figure 32 - Photograph of Tail Race. Taken at 11:13am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 70mm Focal length.



Figure 34 - Photograph of Tail Race. Taken at 11:13am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 36 - Photograph of Woodside Access Road. Taken at 8:41am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 24mm Focal length.



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Figure 37 - Photograph of Woodside Access Rd. Taken at 8:45am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 24mm Focal length.



Figure 38 - Photograph of Woodside Access Rd. Taken at 8:48am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 24mm Focal length.

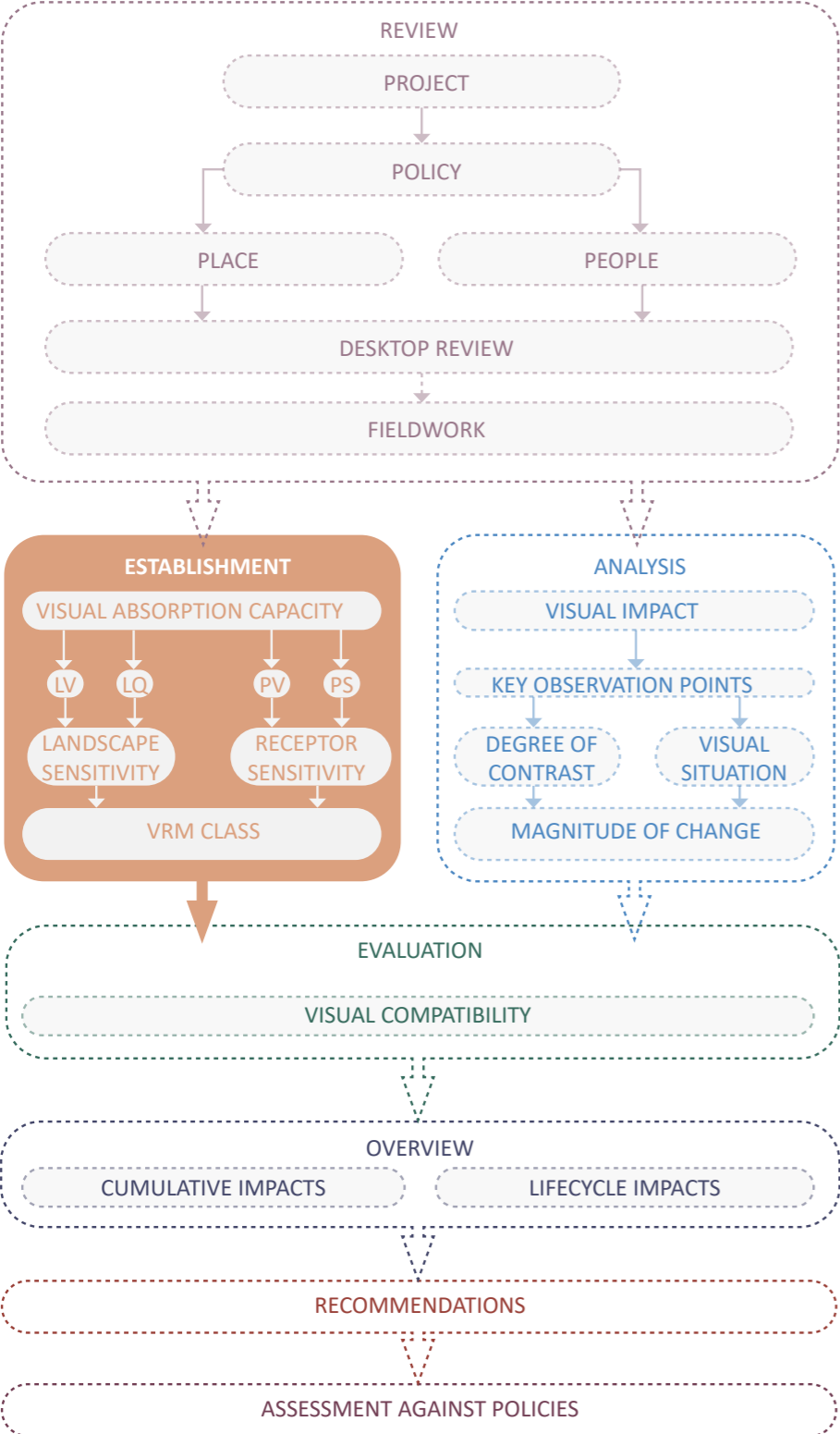


Figure 39 - Flowchart indicating the position of the Establishment Stage within the overall LVIA Process.

3.1. VISUAL ABSORPTION CAPACITY

3.1.1. Following after the Review stage, the establishment stage determine the Visual Absorption Capacity (VAC) by first individually rating various factors related to Receptor Sensitivity (RS) and Landscape Sensitivity (LS) of the proposal, and then averaging across these ratings to provide the overall potential for a place’s physical features to absorb a particular change without losing valued attributes. The VAC is then converted into a Visual Resource Management (VRM) Class that determines the acceptable Magnitude of Change (MOC) and a corresponding objective. The MOC and VRM class established at this stage will be revisited in the later stages of the LVIA process. During the evaluation stage, these parameters will be compared with the MOC of the proposal to determine the extent of Visual Compatibility and assess whether it is satisfied.

3.1.2. LANDSCAPE SENSITIVITY

Landscape Sensitivity (LS) is determined by averaging across 14 individual ratings related to the specific Landscape Values (LV) of Environmental, Intrinsic, Subsistence, Wilderness, Economic, Heritage, Home, Health & Recreation, Social; and also Landscape Qualities (LQ) of Land form, Vegetation, Water, Colour, Adjacent Scenery, Scarcity, Cultural modification.

3.1.3. RECEPTOR SENSITIVITY

The Receptor Sensitivity (RS) is determined by averaging across 14 individual ratings related to the specific People’s Values (PV) of Aesthetic, Economic, Education, Heritage, Home, Health & Recreation, Social.; and also People’s Situation (PS) of Types of Users, Amount of use, Public Interest, Adjacent Land Uses, Special Areas, Travel Routes, Observation Points.

3.1.4. VRM ESTABLISHMENT CLASS

The LS and RS ratings are averaged to provide the VAC rating, which is finally converted into a VRM class which prescribes the amount of change deemed acceptable by the proposal, a corresponding objective, and an acceptable MOC rated from I for (VERY WEAK Acceptable MOC) - to V (VERY STRONG Acceptable MOC). Visual Compatibility is deemed to be satisfied if the Magnitude of Change (MOC) of the proposal does not exceed the Acceptable MOC determined by the VRM Class. This indicates that the visual changes introduced to the place by the proposal are within the acceptable limits, and is therefore considered visually compatible.



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3. ESTABLISHMENT 26

3.1.5. WATER BODIES

Rivulets and creeks are found in all distance zones within the study area surrounding the proposed project. Brumbys Creek, which flows through open farmland to the northeast of the site, is home to various fish species, including trout, and is known for its abundant weed growth and insect life.



Figure 40 - Water Bodies Map ; Source Orbit Solutions derived from GIS data



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3. ESTABLISHMENT 27

3.1.6. SLOPE

The slope within the Immediate Foreground (0 — 0.5km) of the site is generally flat. Beyond this distance, the slope gradually increases towards the south and meets a ridge line that runs along the southwest axis, extending beyond the 10km study area. Additionally, there is a secondary rise in slope on the northeast side of the study area, which begins around the 2km distance band and extends up to the edge of the study area.

3.1.7. LANDSCAPE CONSTRAINT

The proposed Palmerston BESS site is adjacent to the existing Palmerston substation. The access road to the Substation approaches the site from the north where it intersects Poatina Road. To the north of the site the topography is flat until it crosses Brumbys Creek Canal, from there the topography rises gently. The road network services the rural landholdings and respective dwellings; some of which have views back to the Western Tiers.

The Western Tiers range has a steep incline rising south of the proposal site up to the Central Highlands. The Western Tiers form the background of the site when looking upward from the Rural Landscape to the Natural Areas above. The slopes are heavily forested with intermittent features of craggy rock faces. Three elevated features include Mount Blackwood 1326m, Bradys Lookout 1362m, and Billop Bluff 1238m. Manmade elements visible in the landscape include infrastructure related to the electricity network, roads, tracks and fence lines visible from the inferior positions around the proposal site when looking toward the Western Tiers.

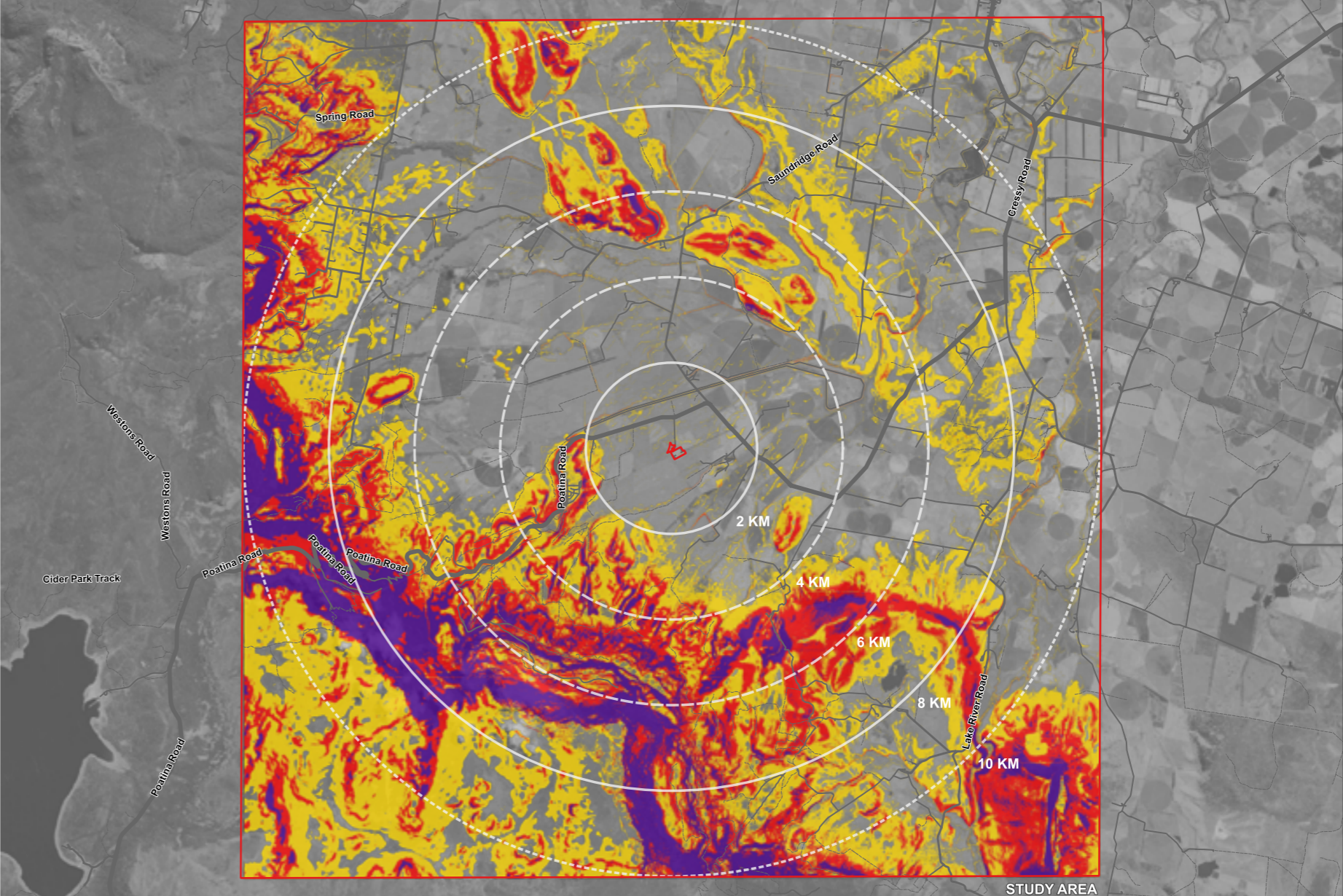


Figure 41 - Slope Map ; Source Orbit Solutions derived from GIS data

SLOPE	
	LOW: < 3 Degrees
	LOW: MODERATE 3-9 DEGREES
	MODERATE: 9-11 DEGREES
	MODERATE - HIGH: 11 - 19 DEGREES
	HIGH: > 19 DEGREES



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3.1.8. SITE ELEVATION

The Elevation Map of the site is generated from the LIST Contours 10m Database. This layer depicts contour lines at 10 metre intervals which were created for the 1:25,000 map series and coverage includes all Tasmania and offshore islands excluding Macquarie Island.¹

The study area exhibits a lower elevation at the north-eastern corner, gradually increasing in elevation towards the south-western corner where it meets with the Great Western Tiers Conservation Area. This area is part of a network of nature reserves surrounding the study area, including the Liffey Forest Reserve.

¹ "Layer: LIST Contours 10m (ID: 16)." n.d. Services.thelist.tas.gov.au. Accessed May 26, 2023. <https://services.thelist.tas.gov.au/arcgis/rest/services/Public/OpenDataWFS/MapServer//16>.

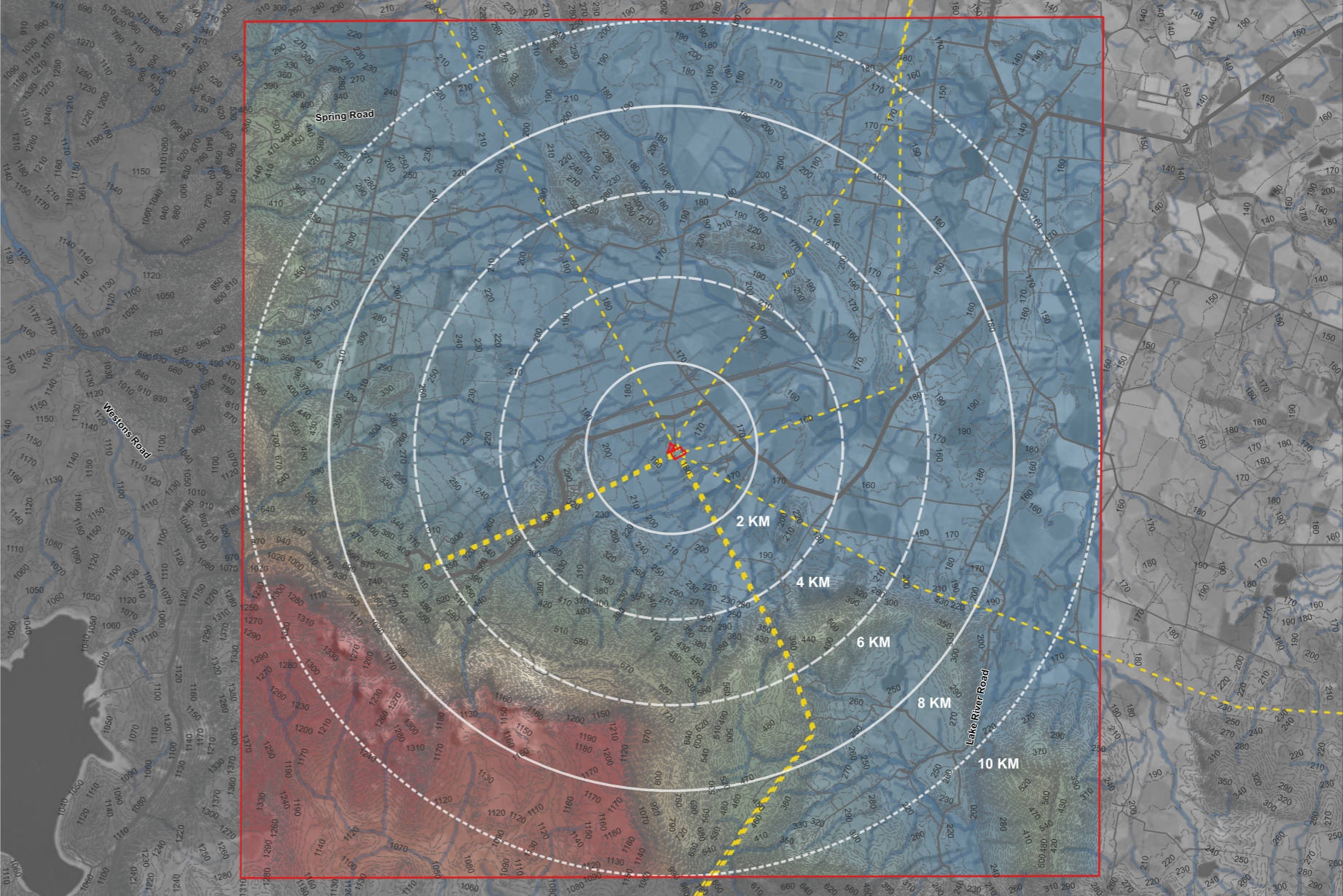


Figure 42 - Elevation Map ; Source Orbit Solutions derived from GIS data



3.1.9. FOREST GROUP

The map of Forest group is generated from the Forest Types database from ABARES, which classifies native forests into eight types according to their dominant species and structure (Acacia, Callitris, Casuarina, Eucalypt, Mangrove, Melaleuca, Rainforest, and Other native forest). Commercial plantations are sorted into three categories (Hardwood, Softwood, and Unknown or mixed species). The classification "Other forests" encompasses forests that are neither native nor commercial plantations, including environmental plantations, different types of planted forests, and unplanted forests dominated by introduced species.¹

There are fragmented areas of Plantation Hardwood within the Immediate Foreground (0-0.5km) and no other significant forest group types are observed. The predominant forest type is Eucalypt Low Forest, which begins from the Mid Ground distance band (2km — 4km) and extends over the Great Western Tiers Conservation Area and other nature reserves surrounding the study area.

¹ Geoscience Australia Portal." n.d. Portal.ga.gov.au. Accessed May 12, 2023. <https://portal.ga.gov.au/metadata/agriculture/forests/forest-types-abares/c1dc936d-a2ad-4582-8911-e26f594def0e>.

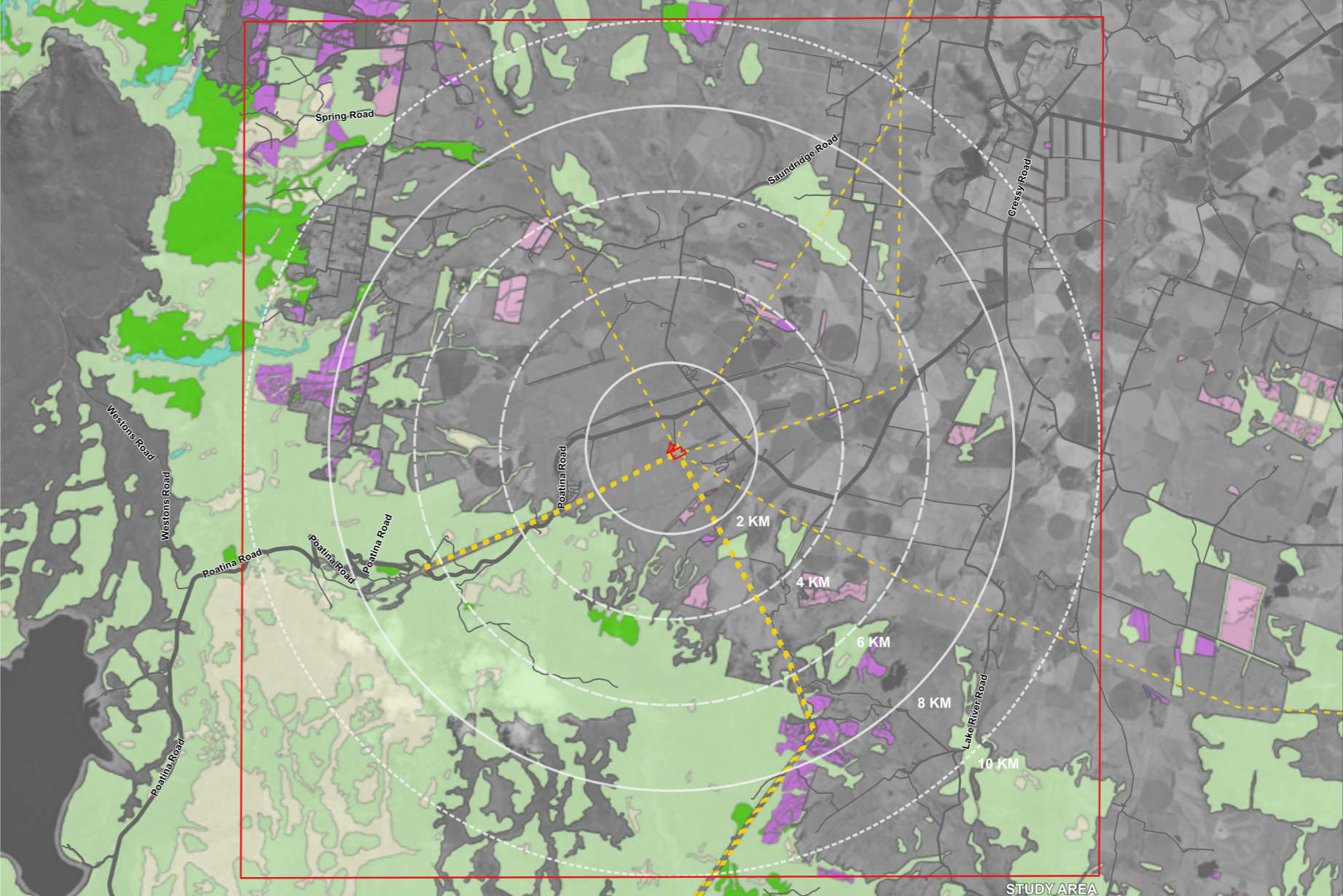


Figure 43 - Forest Group Map ; Source Orbit Solutions derived from GIS data

FOREST GROUPS			
	EUCALYPT LOW FOREST		OTHER NATIVE FOREST
	EUCALYPT TALL FOREST		PLANTATION HARDWOOD
	RAINFOREST		NON-FOREST
	OTHER NATIVE FOREST		OTHER/UNKOWN



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LV1-LV7: LANDSCAPE VALUES

Landscape values are the relative value or importance attached to different landscapes by society on account of their landscape characteristics. These may be reflected in local, state or federal planning regulations, other published documents or be established through community consultation and engagement, or as professionally assessed. Landscape values comprise of:

- **Environmental:** This Place is valued because it helps produce, preserve, and renew air, soil and water or it contributes to healthy habitats for plants and animals
- **Intrinsic:** This Place is valued as it is essential or inherent and not merely apparent, referring to substance as distinguished from attributes; originating, or due to causes or factors within a body; and being good in itself or desired for its own sake without regard to anything else.
- **Subsistence:** This Place is valued because it provides food and other products to sustain people.
- **Wilderness:** This Place is valued because it is wild.
- **Economic:** This Place is valued because it provides resources for industries such as forest products, mining, tourism, agriculture, shellfish, or other commercial activity.
- **Conservation:** This Place is to be conserved not only for their intrinsic environmental and landscape values but also as a recreational resource to the Shire
- **Physiological:** This Place is valued for the varied topographical forms and features.

RATING	DESCRIPTION
5	VERY HIGH National or International significance. Exemplary, Iconic and/or Scarce
4	HIGH State Significance
3	MODERATE Regional Significance
2	LOW Local Significance (immediate context only)
1	VERY LOW Frequent or commonly found elsewhere
0	NA Not Applicable

Table 2 LV1-LV7: Landscape Values



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3. ESTABLISHMENT

RATING	LQ1: LAND FORM
	One of the attributes or features that make up the Earth's surface such as a plain, mountain, or valley, as defined by its particular combination of bedrock and soils, erosion processes, and climatic influences.
5	VERY HIGH Very high number of Interesting landscape features such as high relief, prominent cliffs, spires, rock outcrops, severe surface variation, eroded formations, deserts, dune systems, or striking and intriguing features such as glaciers.
4	HIGH High number of interesting landscape features such as Steep canyons, mesas, buttes, cinder cones, and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or interesting features that are not dominant or exceptional.
3	MODERATE Moderate number of interesting landscape features such as low rolling hills, foothills, or flat valley bottoms
2	LOW Low number of interesting landscape features.
1	VERY LOW Very low number of interesting landscape features.
0	NA Not Applicable

Table 3 LQ1: Land Form

RATING	LQ3: WATER
	Water bodies are natural or artificial bodies of water, such as oceans, lakes, rivers, streams, ponds, and wetlands that impact the visual quality of a scene by adding movement, serenity, or reflective qualities. They can also be a vital resource for human activities and the ecosystem. The size, shape, depth, flow, and quality of water bodies can vary.
5	VERY HIGH Very high number of clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape.
4	HIGH High number lowing, or still, but not dominant in the landscape.
3	MODERATE Moderate number of water bodies
2	LOW Low number of water bodies
1	VERY LOW Very low number water bodies and/or water bodies are insignificant.
0	NA Not Applicable

Table 5 LQ3: Water

RATING	LQ2: VEGETATION
	Vegetation encompasses trees, shrubs, grasses, and other plants in a specific area. The patterns, forms, and textures of plant life should be considered; whether short-lived displays are recurring; and also if smaller features like gnarled or wind-beaten trees add interesting details to the landscape.
5	VERY HIGH Very high pattern and diversity of vegetation.
4	HIGH High pattern and diversity of vegetation
3	MODERATE Moderate pattern and diversity of vegetation
2	LOW Low pattern and diversity of vegetation
1	VERY LOW Very low pattern and diversity of vegetation
0	NA Not Applicable

Table 4 LQ2: Vegetation

RATING	LQ4: COLOUR
	Colour of the landscape refers to the overall hue and tonality of the natural elements present, such as soil, rock, vegetation, and other features. Variety, contrast, and harmony are key factors in evaluating the quality of colour in a landscape, and it can vary depending on the season or period of high use.
5	VERY HIGH Very high intensity or variety in colors and contrast of the soil, rock and vegetation, but not a dominant scenic element.
4	HIGH High intensity or variety in colors and contrast of the soil, rock and vegetation, but not a dominant scenic element.
3	MODERATE Moderate Intensity or variety in colors and contrast of the soil, rock and vegetation.
2	LOW Low color intensity or variety in colors and contrast of the soil, rock and vegetation.
1	VERY LOW Very low color intensity or variety in colors and contrast of the soil, rock and vegetation.
0	NA Not Applicable

Table 6 LQ4: Colour



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RATING	LQ5: ADJACENT SCENERY
	Adjacent scenery includes the surrounding landscape visible from the area being rated that affects the overall visual impression. It may consist of natural or man-made elements such as hills, mountains, or bodies of water.
5	VERY HIGH Adjacent scenery enhances visual quality to a very high degree.
4	HIGH Adjacent scenery enhances overall visual quality to a high degree.
3	MODERATE Adjacent scenery enhances overall visual quality to a moderate degree.
2	LOW Adjacent scenery enhances overall visual quality to a low degree.
1	VERY LOW Adjacent scenery enhances overall visual quality to a very low degree.
0	NA Not Applicable

Table 7 LQ5: Adjacent Scenery

RATING	LQ7: CULTURAL MODIFICATIONS
	Cultural modification refers to changes made to the landscape or water bodies by human activities. When rating the area, it should be considered whether these changes enhance or detract from the natural scenery of an area.
5	VERY HIGH Modifications have the potential to create a very high level of disharmony without adding significant visual variety or enhancement to the site.
4	HIGH Modifications have the potential to create a high level of disharmony without adding significant visual variety or enhancement to the site.
3	MODERATE Modifications have the potential to create a moderate level of disharmony while adding significant visual variety or enhancement to the site.
2	LOW Modifications have the potential to create a low level of disharmony while adding significant visual variety or enhancement to the site.
1	VERY LOW Modifications have the potential to create a very low level of disharmony while adding significant visual variety or enhancement to the site.
0	NA Not Applicable

Table 9 LQ7: Cultural Modifications

RATING	LQ6: SCARCITY
	Scarcity refers to the rarity or uniqueness of a specific scenic feature or combination of features within a region, which can add importance to its rating. In some cases, the combination of several less striking features can produce a more pleasing overall effect than a single spectacular element
5	VERY HIGH One of a kind; or unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc.
4	HIGH Distinctive, though somewhat similar to others within the region.
3	MODERATE Interesting within its setting, but moderately common within the region.
2	LOW Few Interesting features
1	VERY LOW Very few Interesting features
0	NA Not Applicable

Table 8 LQ6: Scarcity



LANDSCAPE & VISUAL IMPACT ASSESSMENT

3. ESTABLISHMENT

LANDSCAPE VALUE		DESCRIPTION	RATING
LV1	Environmental	Brumbys Creek and Great Western Tiers Conservation Area are subject to planning scheme code overlays for Waterway and Coastal Protection Area and Priority Vegetation, respectively. However, their impact on the site is limited due to their distance. no significant forest group types are present within the Immediate Foreground (0-0.5km) except small fragmented areas of Plantation Hardwood.	2
LV2	Intrinsic	The Place is situated about 35km south-west of Launceston and 125km north-west of Hobart, indicating that it is not closely connected to major cities, and it is not particularly distinct from surrounding towns.	2
LV3	Subsistence	The Place is primarily used for Grazing Modified Pastures, Irrigated Pastures; embedded with smaller areas of Production Native Forests.	4
LV4	Wilderness	There are no water bodies on or adjacent to the site that carry wildlife. Wildlife habitat is provided in the screening vegetation along fence lines and roads.	2
LV5	Economic	This Place provides income and employment opportunities primarily through the industries Cressy which focus primarily on various kinds of farming and due to it being ideal for Grazing Modified Pastures.	3
LV6	Conservation	This Place identifies two nearby Local Heritage Places: one to the south along the Woodside Rivulet and the other partially bounded by several waterways and roads to the north. It is also a popular recreational resource, known for its excellent fly-fishing opportunities.	2
LV7	Physiological	The site's flat terrain and narrow range of land use, which mainly consists of Grazing Modified Pastures and Irrigated Pastures, results in limited diversity in physiological characteristics.	1
LV RATING			2.3

Table 10 LV Rating

LANDSCAPE QUALITIES		DESCRIPTION	RATING
LQ1	Land form	The site's flat terrain does not have any significant landscape features such as plains, mountains, valleys, and it is not substantially impacted by soil erosion or bedrock conditions.	1
LQ2	Vegetation	Plantation Hardwood fragments are within the Immediate Foreground (0-0.5km) and no significant forest group types are observed. Eucalypt Low Forest is the predominant forest type, starting from the Mid Ground (2km - 4km) and extending over the Great Western Tiers Conservation Area.	2
LQ3	Water	There are no waterways on the site so the project does not impact the surrounding waterways directly. However, there may be minor and limited indirect impacts from surrounding locations.	2
LQ4	Colour	The site is mainly characterized by natural features with few man-made structures like buildings and infrastructure, resulting in a landscape dominated by grassy pastures with only subtle variations in hue and tonality.	1
LQ5	Adjacent Scenery	The proposed site's relatively flat and lower terrain provides a view of distant nature reserves with heavily forested ridge lines that are at a higher elevation.	3
LQ6	Scarcity	The area is Grazing Modified Pastures that are adjacent to an existing Terminal Station. There is no scarcity of the landscape qualities that are exhibited on this site as the same and higher qualities are found in the broader area.	2
LQ7	Cultural Modifications	Cultural modifications in this area are strongly aligned with Energy projects and infrastructure that has been built and operated in conjunction with agricultural uses	2
LQ RATING			1.9

Table 11 LQ Rating

LANDSCAPE SENSITIVITY RATING = (LV + LQ)/2 =

2.1 (LOW)

Table 12 LS Rating



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3.2. RECEPTOR SENSITIVITY

3.2.1. Receptor Sensitivity plays a crucial role in assessing the Visual Absorption Capacity, particularly for viewers or interest groups that may be impacted and require evaluation. The Zone of Theoretical View (ZTV) encompasses areas that could potentially be influenced by alterations to the site, taking into account the diverse uses, contexts, location, nature of receptors and quantity of receptors that can influence Receptor Sensitivity.

In the Review section, the affected receptors have been broadly identified. However, this section delves deeper into understanding the nature and quantity of receptors, and subsequently evaluates them based on various factors related to People's values and People's Situation. By considering these factors, a more comprehensive assessment of the receptors can be made, taking into account their significance and potential impacts on individuals and communities.

3.1.11. NATURE OF RECEPTORS

The nature of receptors aims to capture the diversity of receptors characteristics and concerns. This understanding is crucial in assessing the potential impacts and considerations for different receptor groups.

In this establishment section, the values and situations of people are further evaluated and rated based on specific factors. This allows for a more comprehensive assessment of the potential effects and implications for various receptor groups.

One of the key factors in grouping the nature of receptors is their use and proximity to the site. By assessing these together rather than individually, it considering how these aspects relate to different receptor groups to better understand the specific characteristics and concerns.

The majority of the affected dwellings are located in the settlement area along Poatina Road within the Midground (2km — 4km) to the west of the site.

The affected road users include those utilizing the major roads of Poatina Rd and Saundridge Rd. These roads serve as crucial access routes to the existing substation and are connected to other nearby unnamed streets. The surrounding areas along these roads primarily consist of Grazing Modified Pastures.

The affected workers in the area can be classified into different groups. The Urban Intensive Uses category includes workers at the adjacent existing substation. The majority of the surrounding land comprises Grazing Modified Pastures and Irrigated Pastures, indicating the presence of agricultural workers. Additionally, there are workers along Poatina Road, including accommodation workers. Understanding the diverse range of workers and their specific roles is important in assessing the potential impact of the proposed development on their daily activities and livelihoods.

Recreational users are visitors of Poatina Rd Lookout located 9km from the site surrounded by a nature conservation.

3.1.10. QUANTITY OF RECEPTORS

By understanding the different receptor groups based on their use and proximity to the site, we can assess the sensitivity of each group and estimate the expected number of users. This assessment incorporates both census data, which provides insights into population demographics, and GIS data, which offers information on land use that helps identify potential user groups associated with specific activities or locations. Considering the volume of users allows us to better understand the potential impact of a development on different groups and make informed decisions that may prioritize receptor groups comprising a larger proportion of users.

The proposal is located on the border of Cressy which has an overall population of 1149 and Poatina which has an overall population of 118. Within the study area, the number of dwellings is low, with only a few located within the Immediate Foreground, primarily along Woodside Private Road to the south of the site. The densest concentration of dwellings within the study area is found in the settlement of Poatina Rd to the west of the proposal, within the Midground distance (2km to 4km).

The number of affected road users is limited due to the presence of only two main roads in close proximity to the site, namely Poatina Road and Saundridge Road. The remaining roads in the area are unnamed and primarily used for access to private dwellings, with some of them being unsealed roads as well as farm and forestry management.

The main industries of employment in Poatina are Accommodation, Other Social Assistance Services, and Cafes and Restaurants. These services are provided in the settlement of Poatina to the west of the site. Along with cafes and accommodation, other amenities such as a service station, fire station, art gallery, post office, and community hall are present but have a limited capacity to accommodate large numbers of people due to their small scale.

Due to the absence of tourist attractions in the area, the number of recreational users is limited. Poatina Rd Lookout has only oblique views in the direction of the review site and though elevated above the proposed BESS the scale of the works make it insignificant in the context of this scenic view.

PV1-PV7: PEOPLE'S VALUES

The attitude toward how a proposal is viewed is shaped by people's values which are a collection of ideas or beliefs held by those who would be impacted by the proposal which comprise of:

- **Aesthetic:** This Place is valued for the scenery, sights, smells or sounds.
- **Economic:** This Place is valued because it provides income and employment opportunities through industries such as forest products, mining, tourism, agriculture, shellfish, or other commercial activity.
- **Education:** This Place is valued because it allows future generations to know and experience as it is now and/or provides a place to learn, teach, or explore the natural environment.
- **Heritage:** This Place is valued because it has natural and human history that matters to people and it allows them to pass down the wisdom, knowledge, traditions, or way of life of their ancestors.
- **Home:** This Place is valued because it is where people live.
- **Health & Recreation:** This Place is valued for its provision of outdoor recreation opportunities, serving as a hub for individuals' preferred leisure activities and/or as a space where people can experience physical and/or mental rejuvenation.
- **Social:** This Place is valued due to its significance as a site for traditional activities and its sacred, religious, or spiritual importance to people who are connected to it.

RATING	DESCRIPTION
5	VERY HIGH National or International significance. Exemplary, Iconic and/or Scarce
4	HIGH State Significance
3	MODERATE Regional Significance
2	LOW Local Significance (immediate context only)
1	VERY LOW Frequent or commonly found elsewhere
0	NA Not Applicable



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RATING	PS1: TYPES OF USERS
	Types of Users is a classification system used to group individuals based on their needs, characteristics, behaviors, or other relevant factors related to their use of a particular place.
5	VERY HIGH The majority of people within the area belong to a user type that have a very high sensitivity to change
4	HIGH The majority of people within the area belong to a user type that have a high sensitivity to change
3	MODERATE The majority of people within the area belong to a user type that have a moderate sensitivity to change
2	LOW The majority of people within the area belong to a user type that have a low sensitivity to change
1	VERY LOW The majority of people within the area belong to a user type that have a very low sensitivity to change
0	NA Not Applicable

Table 13 PS1: Types of Users

RATING	PS3: PUBLIC INTEREST
	Public interest refers to the concerns of the general public, community, or society as a whole, rather than the interests of a specific individual or group. This can encompass concerns at the local, state, or national level.
5	VERY HIGH National, International, Significance. Exemplary, Iconic, Scarce
4	HIGH State Significance
3	MODERATE Regional Significance
2	LOW Local Significance (immediate context only)
1	VERY LOW Frequent or commonly found elsewhere
0	NA Not Applicable

Table 15 PS3: Public Interest

RATING	PS2: AMOUNT OF USERS
	The Amount of Users refers to the demand and/or frequency at which individuals use or visit a particular environment
5	VERY HIGH Very high demand and/or frequency of visitation for scene of interest
4	HIGH High demand and/or frequency of visitation for scene of interest
3	MODERATE Moderate demand and/or frequency of visitation for scene of interest
2	LOW Low demand and/or frequency of visitation for scene of interest
1	VERY LOW Very low demand and/or frequency of visitation for scene of interest
0	NA Not Applicable

Table 14 PS2: Amount of Users

RATING	PS4: ADJACENT LAND USES
	Adjacent Land Uses considers the interrelation and the degree to which various activities or developments that are in close proximity to a particular site affect or influence each other.
5	VERY HIGH Very highly sensitive interrelationship with land uses in adjacent areas.
4	HIGH Highly sensitive interrelationship with land uses in adjacent areas.
3	MODERATE Moderately sensitive interrelationship with land uses in adjacent areas.
2	LOW Low sensitive interrelationship with land uses in adjacent areas.
1	VERY LOW Very Low sensitive interrelationship with land uses in adjacent areas.
0	NA Not Applicable

Table 16 PS4: Adjacent Land Uses



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RATING	PSS: SPECIAL AREAS
	Special Areas are geographic locations designated for specific management objectives, which may include the protection of natural resources, preservation of wilderness, or conservation of critical environmental concerns.
5	VERY HIGH Very highly sensitivity of Management objectives for areas that require special consideration for the protection of the visual values.
4	HIGH High sensitivity of Management objectives for areas that require special consideration for the protection of the visual values.
3	MODERATE Moderate sensitivity of Management objectives for areas that require special consideration for the protection of the visual values.
2	LOW Low sensitivity of Management objectives for areas that require special consideration for the protection of the visual values.
1	VERY LOW Very low sensitivity of Management objectives for areas that require special consideration for the protection of the visual values.
0	NA Not Applicable

Table 17 PSS: Special Areas

RATING	PS7: OBSERVATION POINTS
	Observation Points are locations where an observer can view and assess the surrounding landscape, including natural vantage points, elevated platforms, or designated viewing areas.
5	VERY HIGH Observation points of users in the area are very highly sensitive to change.
4	HIGH Observation points of users in the area have a highly sensitive to change.
3	MODERATE Observation points of users in the area have a moderate sensitivity to change.
2	LOW Observation points of users in the area have a low sensitivity to change.
1	VERY LOW Observation points of users in the area have a very low sensitivity to change.
0	NA Not Applicable

Table 19 PS7: Observation Points

RATING	PS6: TRAVEL ROUTES
	Travel Routes are paths taken by individuals to move between locations, which may include various forms of transportation infrastructure such as roads, highways, railways, airways, and waterways. These routes can impact the mobility, accessibility, and overall user experience of travel.
5	VERY HIGH Travel routes for users in the area have a very high sensitive to change.
4	HIGH Travel routes for users in the area have a high sensitive to change.
3	MODERATE Travel routes for users in the area have a moderate sensitivity to change.
2	LOW Travel routes for users in the area have a low sensitivity to change.
1	VERY LOW Travel routes for users in the area have a very low sensitivity to change.
0	NA Not Applicable

Table 18 PS6: Travel Routes



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PEOPLE'S VALUE			RATING
PV1	Aesthetic	The Scenic Road Corridor Overlay covers a portion of Saundrige Road north of the proposal, starting at the intersection with Poatina Road and extending to Blackwood Creek Road.	3
PV2	Economic	The proposed site is located on the border of Cressy and Poatina, which have different main industries of employment according to the 2021 Census data. Poatina's main industries are Accommodation (11.1%), Other Social Assistance Services (11.1%), and Cafes and Restaurants (8.3%). Cressy's main industries are Sheep Farming (7.2%), Meat Processing (4.4%), Sheep-Beef Cattle Farming (3.3%)	2
PV3	Education	The site does not have any educational value.	1
PV4	Heritage	Two nearby areas, one along the Woodside Rivulet to the south and another partially bounded by waterways and roads to the north, are designated as Local Heritage Places. Cressy town sits below the Great Western Tiers' mountain bluffs, which are part of the Tasmanian Wilderness World Heritage Site, and is in a rich rural area that was once Tasmania's most productive wheat-growing region.	2
PV5	Home	The current land use of the site is primarily agricultural, and there are no dwellings present on the site itself. However, there are dwellings in the surrounding area that have views of the site. The area is inhabited by residents who live in rural living and settlement situations.	3
PV6	Health & Recreation	The proposed site is adjacent to the existing substation. The land is used for agricultural purposes and there are no immediate health and recreation values associated with it. The surrounding area is hosts the annual Tasmanian Trout Expo.	2
PV7	Social	Poatina Community Hall is located 2.75km west of the proposal, while Saundrige Road Church is located 3.12km north of the proposal.	2
PV RATING			2.1

Table 20 PV Rating

PEOPLE'S SITUATION			RATING
PS1	Type of Users	There is a limited number of residents within Immediate Foreground (0-0.5km) of the proposal. Other user types belong to commuters primarily along Poatina Rd and Saundrige Road (which is a designated scenic route), Agricultural farm workers and Energy Utility workers.	2
PS2	Amount of Use	Poatina and Cressy are nearby settlements with populations of 118 and 1149, respectively. Few dwellings exist in the Immediate Foreground mainly along Woodside Private Road to the south of the site. Another cluster along Saundrige Road extends into the Foreground (0.5-2km) and a denser group of residences are found on the western side in the settlement of Poatina.	2
PS3	Public Interest	Cressy's public interest extends beyond the local community, as it is considered an iconic fishing location and hosts the annual Tasmanian Trout Expo. The town's identity is further celebrated by the 'Big Trout' sculpture, designed by Bruno Barcodi.	3
PS4	Adjacent Land Uses	The proposal is not expected to cause significant disruption between the two LGAs, as the proposed site is located on the border of Cressy and Poatina, which are not separated by a physical boundary; and both are primarily Grazing Modified Pastures.	1
PS5	Special Areas	The Local Historic Heritage Code overlay extends along Woodside Rivulet which is in close proximity to the site; Electrical Transmission Infrastructure protection overlay covers the existing substation and electricity transmission corridors; and Bushfire Prone Areas overlay covers the site and its surrounding area.	3
PS6	Travel Routes	Poatina Rd runs mainly east-west and intersects with Saundrige Rd, providing access to the substation and other unnamed streets. These two major roads are crucial connections to distant areas with limited alternative routes.	3
PS7	Observation Points	Given its distance of approximately 9km from the proposed site, Poatina Rd Lookout is unlikely to be significantly impacted by any changes made to the site.	1
PS RATING			2.1

Table 21 PS Rating

RECEPTOR SENSITIVITY RATING = (PV+PS)/2 =

2.1 (LOW)

Table 22 RS Rating



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3.3. VISUAL RESOURCE MANAGEMENT CLASS

3.3.1. VISUAL ABSORPTION CAPACITY

Visual Absorption Capacity individual rates and considers People’s values, Peoples Situations, Landscape Values, and Landscape Qualities, all of which score within a similar range of 1.9 - 2.3 (LOW.) Consequently, these are averaged to provide a VAC rating of 2.1 (LOW).

3.3.2. VRM CLASS RATING SYSTEM

The Visual Resource Management (VRM) Class rating system defines the acceptable Magnitude of Change within a characteristic landscape. Each class has an objective that prescribes the amount of change allowed by the proposal by defining five Classes rated from I for (VERY WEAK Acceptable MOC) - to V (VERY STRONG Acceptable MOC). The determination of a place’s VRM Class considers its significance with respect to People’s Values, People’s Situations, Landscape Values, and Landscape Qualities. A low score implies low sensitivity, while a high score suggests higher sensitivity. However, when assessing the VRM class, the scale is inverted, as a higher class denotes a greater capacity to absorb a higher magnitude of change.

3.3.3. ESTABLISHMENT OF VRM CLASS

The VAC rating of 2.1 (LOW) converts to a VRM Class of IV, which has the ability to tolerate a Magnitude of Change up to 4 (STRONG) and also specifies objectives for further guidance in the subsequent stages of this LVIA.

VISUAL ABSORPTION CAPACITY		RATING
PV	People’s Values	2.1
PS	People’s Situation	2.1
LV	Landscape Values	2.3
LQ	Landscape Qualities	1.9
VAC RATING = (LP+PS+LV+LQ)/4 =		2.1 (LOW)

Table 23 VAC Rating

VRM CLASS	OBJECTIVES	ACCEPTABLE MAGNITUDE OF CHANGE
V	The objective of this class is to provide for activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be very high. These activities may dominate the view and be the major focus of viewer attention. No attempts are required to minimize the impact of these activities through location, disturbance is an expectation, and integrating the basic elements (CVI) is not a requirement.	VERY STRONG
IV	The objective of this class is to provide for activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.	STRONG
III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.	MODERATE
II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the CVI’s found in the predominant natural features of the characteristic landscape.	WEAK
I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited activity. The level of change to the characteristic landscape should be very low and must not attract attention.	VERY WEAK

Table 24 VRM Class

(5+1) - (VAC) =	VRM CLASS = IV	ACCEPTABLE MOC = STRONG
------------------------	-----------------------	--------------------------------

Table 25 Establishment of Class and Acceptable MOC



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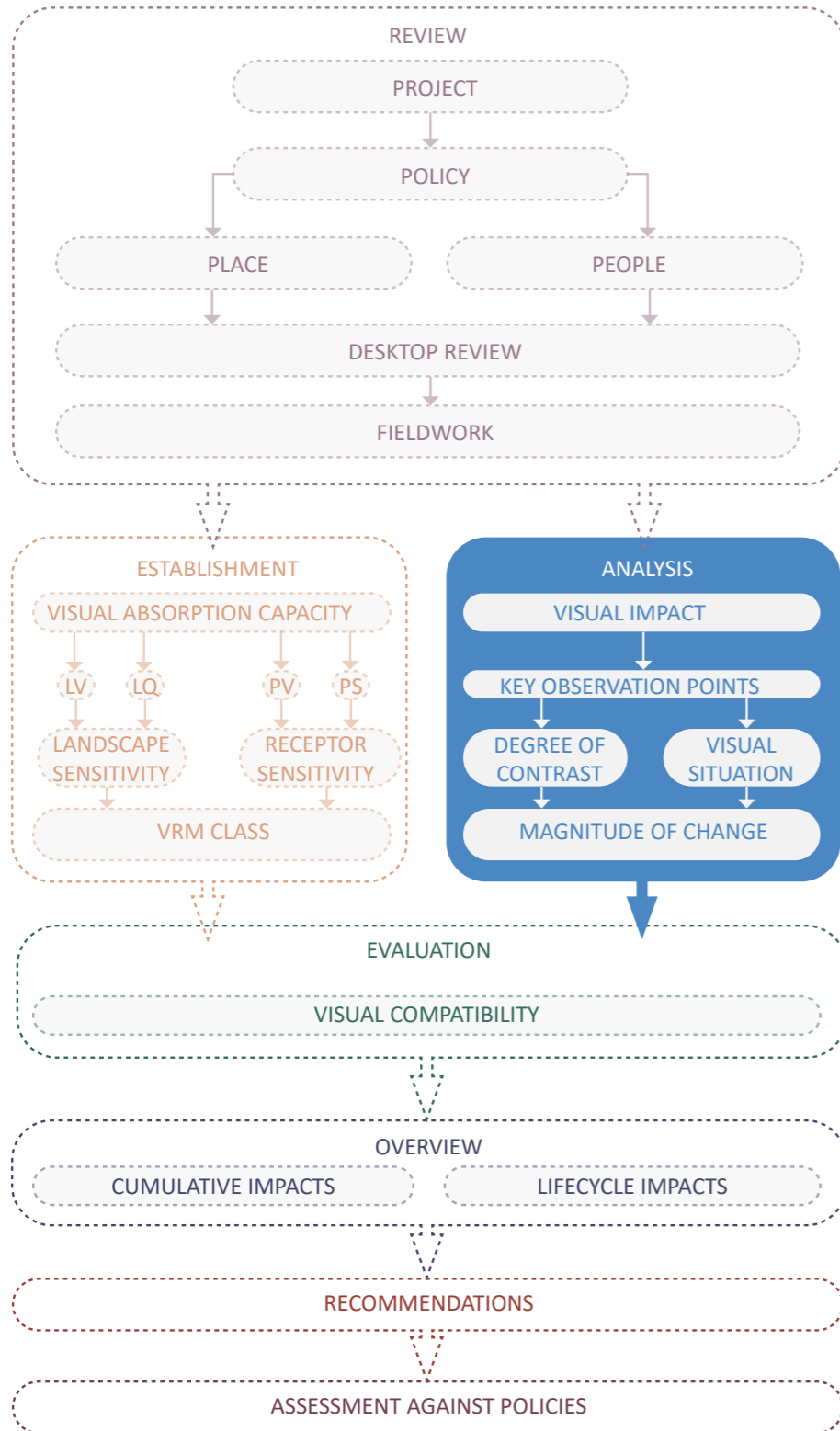


Figure 44 - Flowchart indicating the position of the Analysis Stage within the overall LVIA Process.

4.1. VISUAL IMPACT

4.1.1. After the Establishment stage, the Analysis stage in the LVIA process evaluates the Visual Impact (VI) of the project. This is achieved by individually assessing factors such as Visual Situation (VS) and Degree of Contrast (DOC) at specific Key Observation Points (KOPs), and averaging these ratings to determine the overall Magnitude of Change (MOC) of the project.

4.1.2. VISUAL CHARACTER UNITS

A panorama shows the position and coverage of the view in relation to the surroundings, as well as the extent captured by the photograph that will be used for identifying Visual Character Units (VCU) and also Photomontages. An existing photograph and also an image including the proposal are overlaid with different colors representing Landform/Water, Vegetation, and Structure. This identifies specific areas where changes occur within the view in relation to these VCU.

4.1.3. PHOTOMONTAGES

Photomontages are created for each KOP to visually depict the potential impact of the proposal on the surrounding environment. This process involves generating a series of images starting from an original photograph. The series typically includes an image of the proposed building with and without a colored stroke to emphasize the silhouette, an image including landscaping, and finally, an image that incorporates both the proposed landscaping and buildings with outlined features.

4.1.4. VISUAL SITUATION

At each of the KOPs, the Visual Situation (VS) is determined by averaging across 7 individual ratings for Distance, Visual Magnitude, Slope, Influence of Adjacent Scenery, Frequency, Duration, and Lighting/Seasons. Then the VS for each of the KOPs are averaged to provide the VS for the project as a whole.

4.1.5. DEGREE OF CONTRAST

At each of the KOPs, the Degree of Contrast (DOC) individually rates each of the Critical Visual Influences (CVI) of Colour, Texture, Scale, Line, Form/Shape, Spatial Character, and further categorizes them into Visual Character Units (VCU) which are Landform/ Water, Vegetation, Structure. Then the DOC for each of the KOPs are averaged to provide the VS for the project as a whole.

MAGNITUDE OF CHANGE

The VS rating and DOC ratings are combined then averaged to provide a Magnitude of Change (MOC) for the proposal. In the subsequent Evaluation stage, the MOC of the proposal is compared to the acceptable MOC to determine whether Visual Compatibility is satisfied.

CRITICAL VISUAL INFLUENCES (CVI)

Critical Visual Influences (CVI) are a set of design principles for assessing a proposal's visual impact on a landscape. The following descriptions are adapted from the *BLM Manual 8431 - Visual Resource Contrast Rating*.


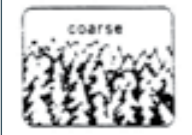


	<p>COLOUR: The property of reflecting light of a particular intensity and wavelength (or mixture of wavelengths) to which the eye is sensitive. It is the major visual property of surfaces. Other relevant terms are:</p> <ul style="list-style-type: none"> • Hue: the aspect of color which we know by particular names, e.g., red, blue, orange, and which forms the visible spectrum. A given hue or color tint is caused by a particular wavelength. • Value: the degree of lightness or darkness, caused by the intensity of light being reflected, ranging from black to white. • Chroma: the degree of color saturation or brilliance, determined by the mixture of light rays. It is the degree of grayness in a color, ranging from pure (high chroma) to dull (low chroma).
	<p>TEXTURE: The aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene. Other relevant terms are:</p> <ul style="list-style-type: none"> • Color Mixture (motting): intrinsic surface color contrasts of very small scale in relation to the perceived may be due to hue, chroma, or value, alone or in combination. • Light and Shade: the color contrast particularly in value, created by differences in lighting on a varied surface or repeated forms. It consists of the repetition of a lit side, shaded side, and the shadow cast. • Grain: the relative dimensions of the surface variations, ranging from large (coarse texture, e.g., coniferous forest) to small (fine texture, e.g., grassland). • Density: the spacing of surface variations creating the texture • Regularity: the degree of uniform recurrence and symmetrical arrangement of the surface variation. Based on density distribution (uniform vs. variable) and spatial arrangement (ordered vs. random). • Internal Contrast: the degree of contrast in colors or values creating the texture.
	<p>SCALE: The proportionate size relationship between an object and the surroundings in which it is placed. Other relevant terms are:</p> <ul style="list-style-type: none"> • Absolute Scale: the absolute size of an object obtained by relating the size of the object to a definitely designated standard, (i.e., measurements). • Relative Scale: the relative size of objects, the apparent size relationship between landscape components and their surroundings. • Proportion of landscape setting (scale dominance) - the scale of an object relative to the visible expanse of the landscape which forms its setting. • Scale contrast: the scale of an object relative to other distance objects or areas in the landscape • Proportion of field-of-view: the scale of an object relative to the total field-of-view accepted by the human eye or camera.
	<p>LINE: The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture or when objects are aligned in a one-dimensional sequence. Usually evident as the edge of shapes or masses in the landscape. Other relevant terms are:</p> <ul style="list-style-type: none"> • Butt Edge: the simple sharp edge between two contrasting areas • Digitate Edge: the complex indented edge between two interlocking and contrasting areas. • Transitional Edge: the presence of one or more band(s) connecting two contrasting areas, forming a transitional stage between the two. • Diffuse Edge: soft edge formed by a gradation between two contrasting areas. • Band: contrasting linear form with two roughly parallel edges dividing an area in two. • Silhouette-line: the outline of a mass seen against a backdrop. The skyline is the silhouette-line of the land against the sky. • Boldness: the visual strength of a line. Smooth, long and sweeping lines are stronger than lines formed by the overlapping of numerous forms, e.g., treetops; edges between strongly contrasting colors, e.g., skylines are bolder than those between similar colors. • Complexity: the degree of simplicity or intricacy of a line, determined by the variety of directions it follows: skylines in ruffed terrain are more complex than on flat plains. • Orientation: the overall relationship of the line to the (horizontal) axis of the landscape or to compass bearings.
	<p>FORM / SHAPE: The mass or shape of an object or of objects which appear unified. Other relevant terms are:</p> <ul style="list-style-type: none"> • 2-Dimensional Shape: the presence of an area or areas which contrast in color and/or texture from adjacent areas creating a two-dimensional shape in the landscape. • 3-Dimensional Mass: the volume of a landform, natural object, or manmade structure in the landscape. • Geometry: the extent to which a form approaches a standard geometrical figure of two or three dimensions e.g., square, circle, triangle, cube, sphere, cone, etc. • Complexity: the degree of simplicity or intricacy of a form, Simpler forms tend to be regular, and complex forms to be irregular. • Orientation: the relationship of the form to the horizontal axis of the landscape (e.g., vertical, horizontal, diagonal, non-directional), or to the points of the compass (e.g., north-south, ENE WSW).
	<p>SPATIAL CHARACTER: The spatial qualities of a landscape are determined by the three-dimensional arrangement of objects and voids. Other relevant terms are:</p> <ul style="list-style-type: none"> • Landscape Composition: the arrangement of objects and voids in the landscape can be categorized by their spatial composition: • Panoramic: a broad horizontal composition, with no apparent limits to the view. Includes plains, expanses of water, and distant mountain ranges. Sky and foreground elements may occupy much of the scene. • Feature: a composition dominated by a distance object or cluster of objects such as a waterfall, prominent landform, or tree. • Focal: converging lines in the landscape or progressions of aligned objects lead the eye to a focal area in the scene. • Canopied: the scene within or at the edge of a forest, where branches and foliage above eyelevel create a canopy or "ceiling." • Spatial Position: the elevation and location of objects in the landscape relative to topography affect their prominence: high and exposed positions are more prominent than low obscured positions.

Table 26 Critical Visual Influences (CVI) TABLE Adapted from BLM Manual 8431 - Visual Resource Contrast Rating.



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VS1: DISTANCE	
RATING	Landscapes are subdivided into 5 distance zones based on relative visibility from travel routes and/or observation points.
5	VERY HIGH IMMEDIATE FOREGROUND: 0 — 0.5km
4	HIGH FOREGROUND: 0.5km — 2km
3	MODERATE MID GROUND: 2km — 4km
2	LOW BACKGROUND: 4km — 8km
1	VERY LOW DISTANT BACKGROUND: 8km — 10km
0	NA Not Applicable: > 10km

Table 27 VS1: Distance

VS3: SLOPE	
RATING	Slope relative to KOP is the degree of inclination of a landform or terrain as viewed from a particular observer's position. The observer's viewpoint and location in relation to the slope can significantly influence their perception of the slope's steepness and visual impact.
5	VERY HIGH > 19 Degrees
4	HIGH 11 - 19 Degrees
3	MODERATE 9 - 11 Degrees
2	LOW 3-9 Degrees
1	VERY LOW <3 Degrees
0	NA Imperceptible

Table 29 VS3: Slope

VS2: VISUAL MAGNITUDE	
RATING	Visual Magnitude refers to the size and extents of visual elements of the proposal which occupies the Cone of Visual Attention (CVA).
5	VERY HIGH VCU occupies more than 25% of CVA
4	HIGH VCU occupies less than 20% of CVA
3	MODERATE VCU occupies less than 10% of CVA
2	LOW VCU occupies less than 5% of CVA
1	VERY LOW VCU occupies less than 1% of CVA
0	NA Not Applicable

Table 28 VS2: Visual Magnitude

VS4: ADJACENT SCENERY	
RATING	Adjacent scenery includes the surrounding landscape visible from the area being rated that affects the overall visual impression. It may consist of natural or man-made elements such as hills, mountains, or bodies of water.
5	VERY HIGH Adjacent scenery enhances visual quality to a very high degree.
4	HIGH Adjacent scenery enhances overall visual quality to a high degree.
3	MODERATE Adjacent scenery has moderate influence on overall visual quality.
2	LOW Adjacent scenery has low influence on overall visual quality.
1	VERY LOW Adjacent scenery has very low influence on overall visual quality.
0	NA Not Applicable

Table 30 VS4: Adjacent Scenery



VS5: FREQUENCY	
RATING	Frequency refers to the number of individuals that use or visit a particular place.
5	VERY HIGH IMMEDIATE FOREGROUND: 0 — 0.5km
4	HIGH FOREGROUND: 0.5km — 2km
3	MODERATE MID GROUND: 2km — 4km
2	LOW BACKGROUND: 4km — 8km
1	VERY LOW DISTANT BACKGROUND > 8km
0	NA Not Applicable

Table 31 VS5: Frequency

VS7: LIGHTING / SEASONS	
RATING	Lighting/Seasons. Lighting refers to the amount and quality of light present in a particular area, which can differ based on factors such as weather conditions, time of day, seasons, and the position of the sun. For instance, lighting conditions may reveal certain features that would otherwise be hidden or less visible due to factors like the duration of daylight hours.
5	VERY HIGH Very bright lighting / season conditions
4	HIGH Bright lighting / season conditions
3	MODERATE Moderately bright lighting / season conditions
2	LOW Dim lighting / season conditions
1	VERY LOW Dark lighting / Season conditions
0	NA Imperceptible

Table 33 VS7: Lighting / Seasons

VS6: DURATION	
RATING	Duration of use refers to the amount of time a user engages in a particular activity when visiting a specific site or location.
5	VERY HIGH VCU occupies more than 25% of CVA
4	HIGH VCU occupies less than 20% of CVA
3	MODERATE VCU occupies less than 10% of CVA
2	LOW VCU occupies less than 5% of CVA
1	VERY LOW VCU occupies less than 1% of CVA
0	NA Not Applicable

Table 32 VS6: Duration

DOC: DEGREE OF CONTRAST	
RATING	The Degree of Contrast (DOC) measures the difference in visual impact between elements in a landscape from a Key Observation Point (KOP). It evaluates the significance and potential effect of a proposal on both the Visual Character Units (VCU) and Critical Visual Influences (CVI) by examining the contrast between them within their respective categories. The DOC for the overall project is then determined by averaging the DOC rating of all categories for each KOP.
5	VERY HIGH The visual contrast is considered to be very high.
4	HIGH The visual contrast is considered to be high.
3	MODERATE The visual contrast is considered to be moderate.
2	LOW The visual contrast is considered to be low.
1	VERY LOW The visual contrast is considered to be very low.
0	NA Not Applicable

Table 34 DOC: Degree Of Contrast



LANDSCAPE & VISUAL IMPACT ASSESSMENT

4. ANALYSIS 44

4.2. KEY OBSERVATION POINT 1

Valley View Crescent, Poatina village, road shoulder adjacent to building / residence #8, facing approx 60 Degrees North East to target

DOMINANT VCU: LANDFORM

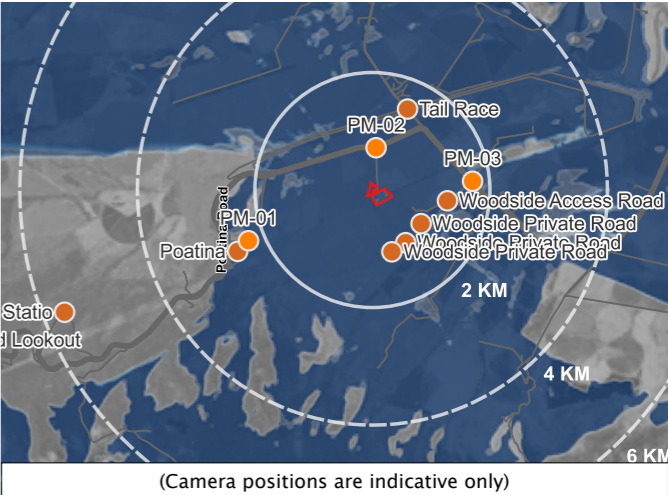


Figure 45 - KOP 1 - Panorama showing Photo montage Location



Figure 46 - KOP 1 - Visual character units (VCU) Existing



Figure 47 - KOP 1 - Visual character units (VCU) Proposed

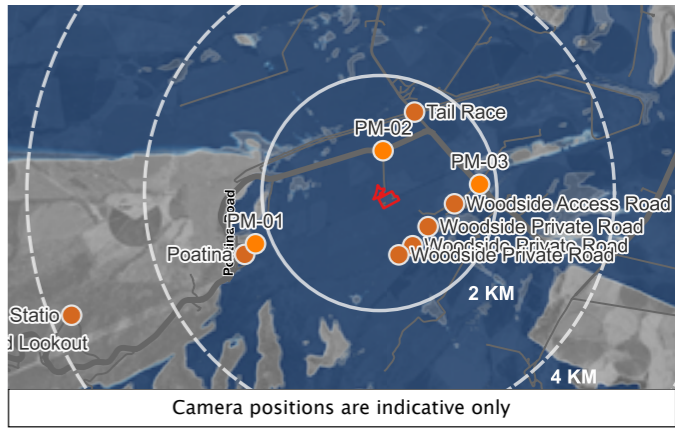
VISUAL CHARACTER UNIT (VCU)	
1. LANDFORM/WATER FEATURES	
	Roads
	Grass / Dirt
	Rocks / Sand / Mud
	Ocean / Lakes / Rivers
2. VEGETATION FEATURES	
	Trees / Shrubs
	Forests
	Crops
3. STRUCTURAL FEATURES	
	Buildings
	Bridges / Infrastructure
	Cables / Wires / Towers
	Fences / Signs / Furniture / Retaining Walls
	Mines / Quarries / Landfill
	Cars / Vehicles / Plant



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KOP 1: ORIGINAL PHOTOGRAPH



Tripod Location

PHOTOGRAPH DETAILS

Location description:	Valley View Crescent, Poatina village, road shoulder djacent to building / residence #8, facing approx 60 Degrees North East to target
Date & time taken:	12:55pm EST on 28/11/2022
Height from ground:	1.65m
Distance to site:	2130m

EQUIPMENT SPECIFICATIONS

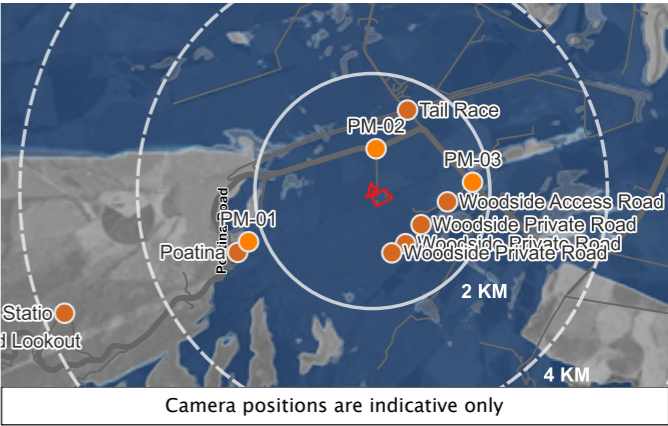
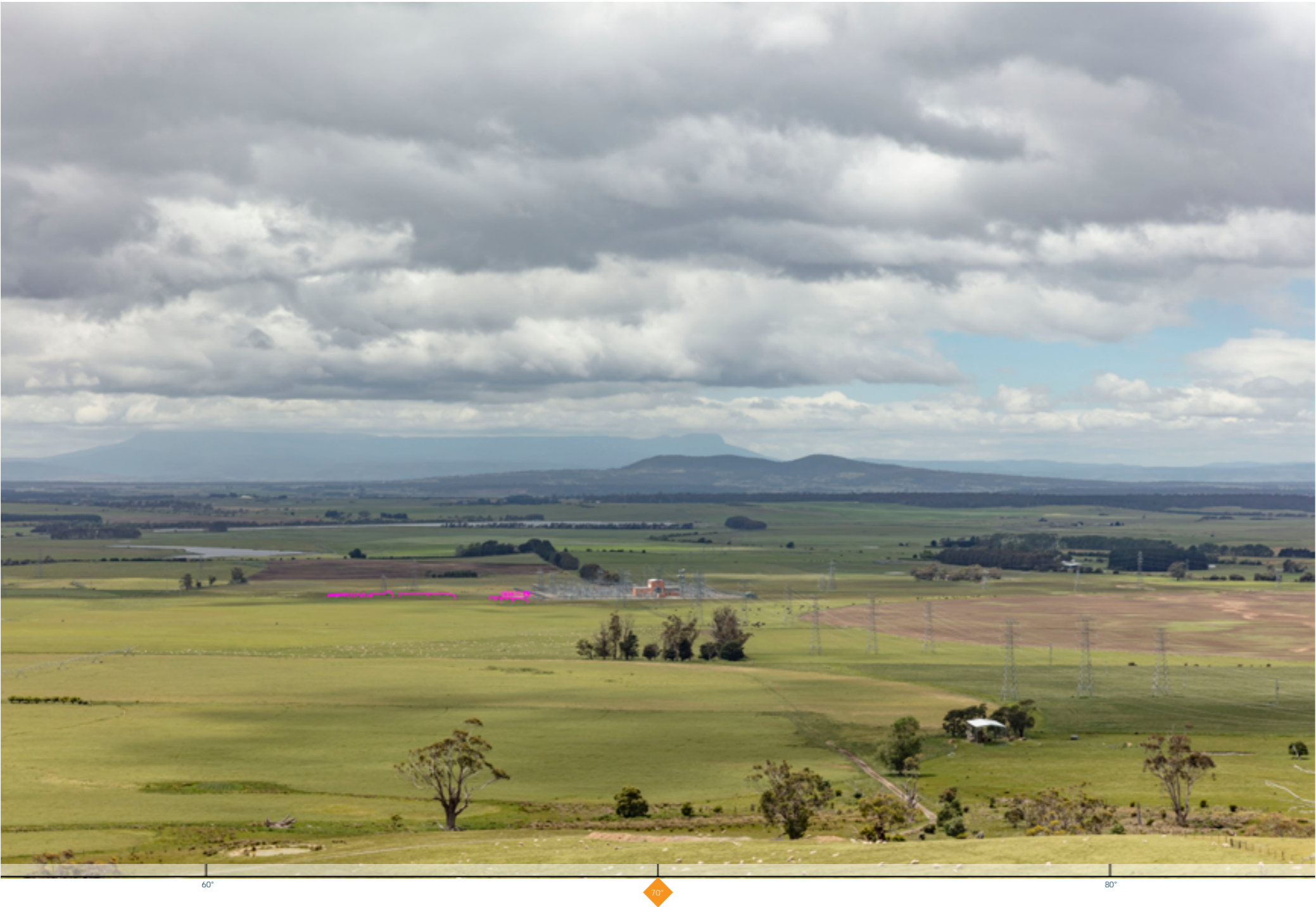
Camera:	Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera.
Lens:	Canon 24-70mm F2.8L MK2 Lens @70mm
Focal length:	70mm
Field of view (FOV):	28.8 (horizontal)

Figure 48 - KOP 1 - Original Photograph @20mm



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KOP 1: PROPOSED BUILDING OUTLINES



Tripod Location

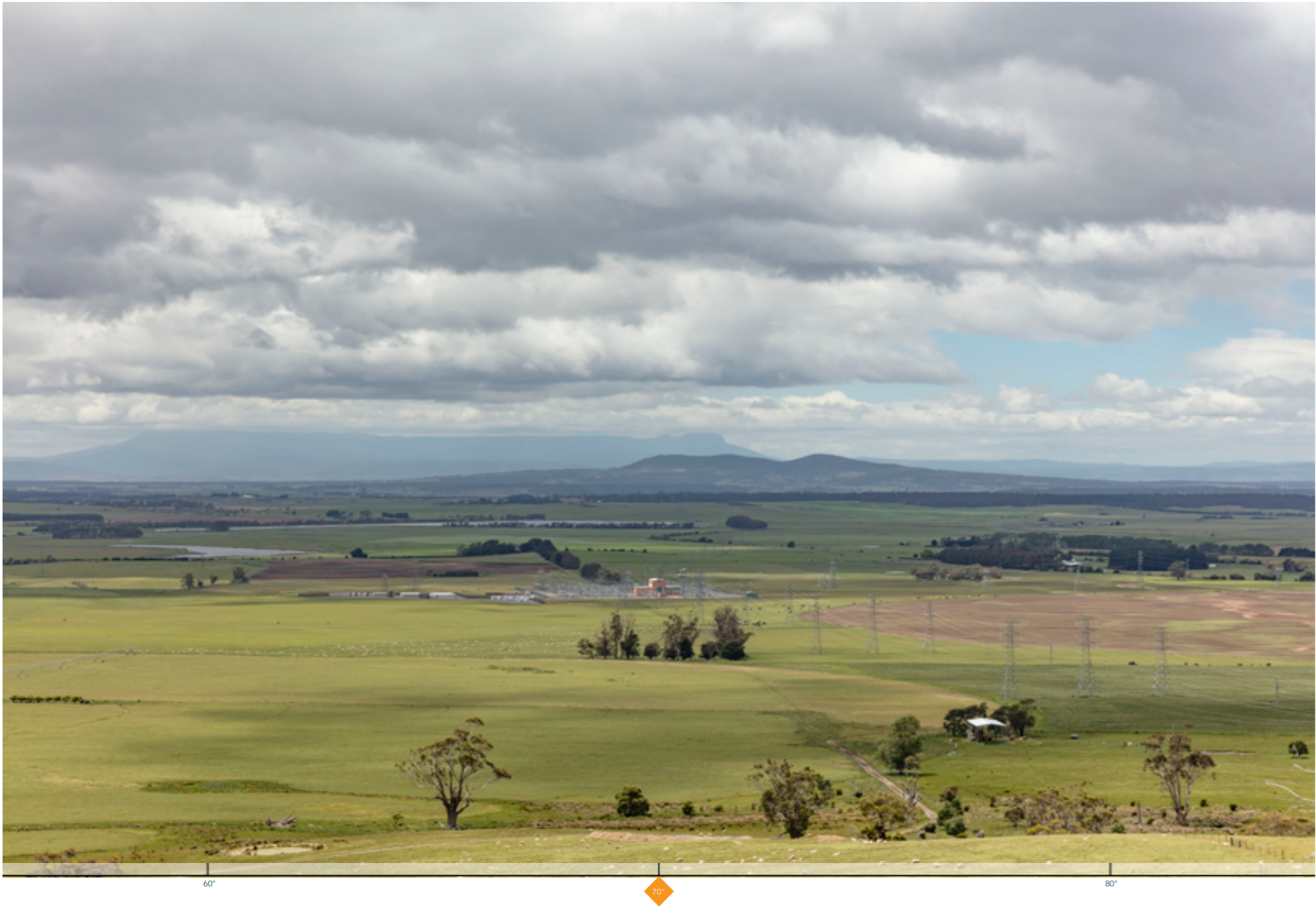
FIELD WORK DETAILS	
Easting:	496937.09
Northing:	5373069.59
Date taken:	28/11/2022
Ground (RL):	291.10m
Height from ground:	1.65m

EQUIPMENT SPECIFICATIONS	
LIDAR Scanner:	Leica Cyclone Register 360
Software:	Autodesk ReCap, CloudCompare

- Unoccluded silhouette of proposed built form (excludes vegetation)
- Silhouette of proposed built form that is occluded by existing built form (excludes vegetation)

Figure 49 - KOP 1 Proposed Building Outlines

KOP 1: PROPOSED BUILT FORM



VISUAL SITUATION		RATING
VS1	Distance	3
VS2	Visual Magnitude	3
VS3	Slope	1
VS4	Influence of Adjacent Scenery	2
VS5	Frequency	2
VS6	Duration	5
VS7	Lighting Seasons	4
VISUAL SITUATION RATING		2.9

Figure 50 - KOP 1 Proposed Built Form

KOP 1: PROPOSED BUILT FORM WITH LANDSCAPING

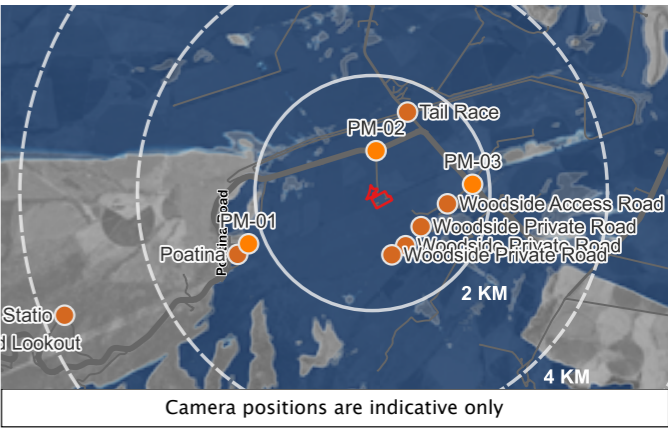
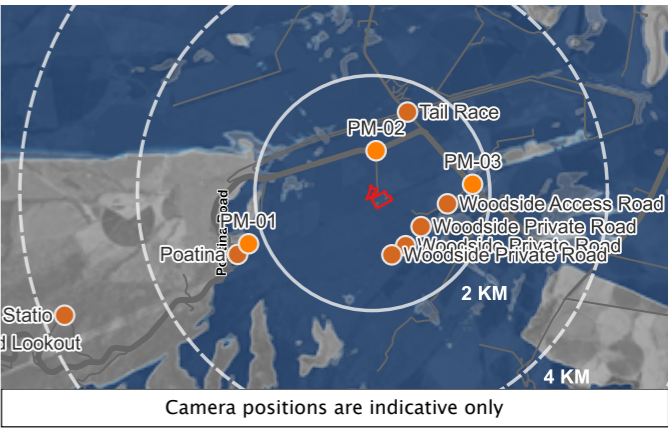


Figure 51 - KOP 1 Proposed Built Form With Landscaping

KOP 1: PROPOSED BUILT FORM WITH LANDSCAPING & BUILT OUTLINES



- Unoccluded silhouette of proposed built form (excludes vegetation)
- Silhouette of proposed built form that is occluded by existing built form (excludes vegetation)

Figure 52 - KOP 1 Proposed Built Form With Landscaping & Built Outlines

KOP 1	VISUAL CHARACTER UNITS (VCU)									CVI RATING	
	Land Form / Water			Vegetation			Structure				
	Existing	Proposed	DOC	Existing	Proposed	DOC	Existing	Proposed	DOC		
CRITICAL VISUAL INFLUENCER (CVI)	Colour	Natural green hues are predominant.	The proposal's palette of materials adopts the hues and values of the dominant geological context colouration.	1	Hues of greens and browns.	The proposed vegetation is consistent with the colour of the planting along fence lines and roads.	1	The overall colour palette of the area is characterized by lightly colored plain wire fencing, barns, and sheds. The power lines and transmission poles are of steel grey tones	The illuminated surfaces will not vary significantly in colour and contrast at different seasons and times due to lighting and weather.	3	1.7
	Texture	Apart from the distant ridgeline, the open paddocks provide unobstructed views without prominent landscape features. However, when observed from a distance, the individual trees along the ridgeline are not distinguishable, resulting in an overall smooth texture.	The proposed land form does not significantly affect the overall texture of the site, as the expansive views towards the ridge lines are unaffected.	2	The area is adorned with scattered trees that form clusters or stand individually in open paddocks. These trees catch the eye with their darker green hues contrasting against the lighter paddocks, making their silhouettes clearly distinguishable.	Seen amongst the fine-grained texture of vegetation the geometric forms of the proposal are mitigated.	1	In contrast to the overall landscape, the existing structures within the site are sparse and distributed, as they are surrounded by open fields. However, the features of these structures, particularly the existing substation, are composed of fine steel elements that give them a densely packed and intricate texture.	Smooth and angular in front of the fine grained texture of the rural landscape but consistent with the existing sub station.	3	2.0
	Scale	The land forms is a dominant element.	The extent of the proposed land form is minimal.	1	The tall vegetation creates a striking contrast with the low open paddocks, making it visually prominent in the landscape. These vertical elements break the monotony of the flat open areas, adding visual interest and variation to the scenery.	The proposed vegetation is consistent with the scale of the planting along fence lines and roads.	1	The existing substation stands out as a dominant feature due to its larger scale, including both height and footprint, surpassing the surrounding man-made structures such as barns, sheds, and also natural elements like trees.	Due to its proximity and comparable scale of the proposed BESS, it is partially obstructed by the existing sub station.	3	1.7
	Line	From this position, the KOP is perpendicular to a large water body that creates the appearance of a thin horizontal strip which has a strong linear effect against the open paddocks.	The proposal does not introduce linear land form or water features.	1	Soft edge effect along the ridge line. Row planting.	The proposed vegetation creates a screen to the geometric lines of the existing Transmission Station and proposed BESS.	1	The existing transmission towers and power lines create a visual effect of thin vertical lines rising above the landscape. The perpendicular position of the KOP to the street further enhances the impression of horizontal lines stretching across the landscape.	As the proposal is partially obstructed by the existing sub station the line affects that it produces are minimal.	2	1.3
	Form / Shape	Strong 2D shape with the contrasting colours of the water and landforms. Geometric shapes that are irregular and complex.	The proposal has minimal impact on the form / shape of the land form and water bodies.	1	Strong 2D shape with the contrasting colours of the water and landforms. Geometric shapes that are irregular and complex.	The proposed vegetation is consistent with the form of the planting along fence lines and roads.	1	Unlike the natural and simple shapes of the surrounding landscape, the existing substation stands out from its surroundings due to its geometric and complex form.	The form / shape of the proposed BESS is rectilinear and of similar to the geometry of the existing sub station.	3	1.7
	Spatial Character	The existing substation is situated within a spacious area that shares a similar elevation and slope with the surrounding landscape, providing panoramic view both around and above the proposal.	The proposal has no significant impact on the land form and water bodies of the site. There are no major earthworks or elevation changes involved that would cause the proposal to be elevated above the surrounding landscape.	1	Panoramic expanses of fields and rolling hills seen from the same plane. Tree rows and fields dominates the view.	The proposed vegetation is consistent with the scale of the planting along fence lines and roads.	1	The expansive presence of the existing substation serves as the dominant structural element within its open surroundings. Its contrast against the surrounding landscape further emphasizes its prominence in the area.	The siting of the proposal is consistent with the existing spatial character.	2	1.3
	VCU RATING			1.2			1.0			2.2	1.6

Table 35 DOC Rating for KOP 1

LANDSCAPE & VISUAL IMPACT ASSESSMENT

4. ANALYSIS 51

4.3. KEY OBSERVATION POINT 2

Approx 4554 Poatina Rd, corner of undmaend Rd, entrance to substation, facing approx 170 Degrees South to target

DOMINANT VCU: LANDFORM

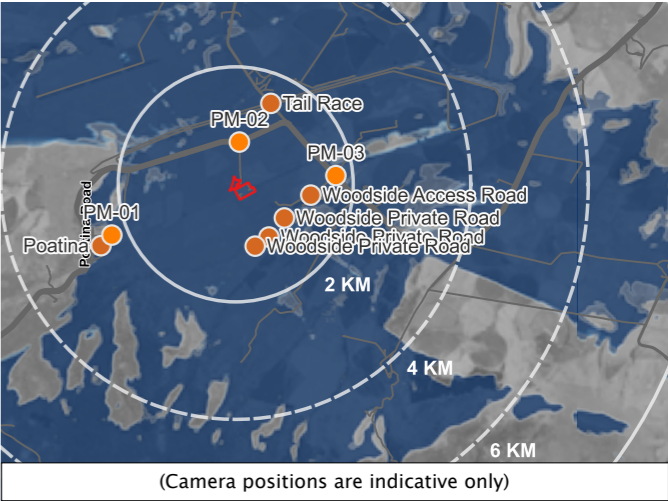


Figure 53 - KOP 2 - Panorama showing Photo montage Location



Figure 54 - KOP 2 - Visual character units (VCU) Existing



Figure 55 - KOP 2 - Visual character units (VCU) Proposed

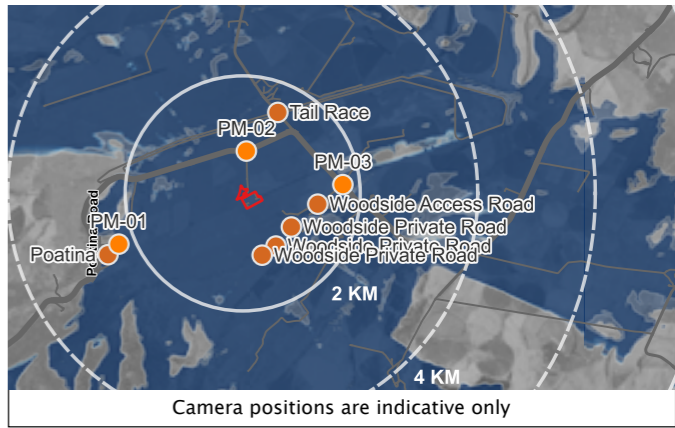
VISUAL CHARACTER UNIT (VCU)	
1. LANDFORM/WATER FEATURES	
	Roads
	Grass / Dirt
	Rocks / Sand / Mud
	Ocean / Lakes / Rivers
2. VEGETATION FEATURES	
	Trees / Shrubs
	Forests
	Crops
3. STRUCTURAL FEATURES	
	Buildings
	Bridges / Infrastructure
	Cables / Wires / Towers
	Fences / Signs / Furniture / Retaining Walls
	Mines / Quarries / Landfill
	Cars / Vehicles / Plant



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KOP 2: ORIGINAL PHOTOGRAPH



Tripod Location

PHOTOGRAPH DETAILS

Location description:	Approx 4554 Poatina Rd, corner of unnamed Rd, entrance to substation, facing approx 170 Degrees South to target
Date & time taken:	11:17am EST on 28/11/2022
Height from ground:	1.65m
Distance to site:	592m

EQUIPMENT SPECIFICATIONS

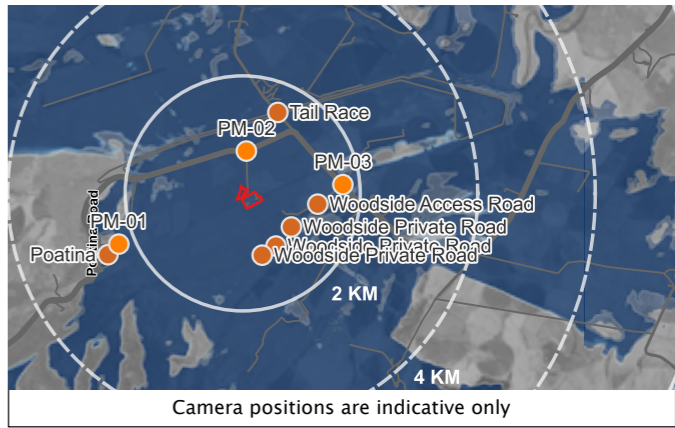
Camera:	Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera.
Lens:	Canon 24-70mm F2.8L MK2 Lens @70mm
Focal length:	50mm
Field of view (FOV):	39.6 (horizontal)

Figure 56 - KOP 2 - Original Photograph @20mm



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KOP 2: PROPOSED BUILDING OUTLINES



Tripod Location

FIELD WORK DETAILS	
Easting:	499107.38
Northing:	5374653.44
Date taken:	28/11/2022
Ground (RL):	175.80m
Height from ground:	1.65m

EQUIPMENT SPECIFICATIONS

LIDAR Scanner:	Leica Cyclone Register 360
Software:	Autodesk ReCap, CloudCompare

- Unoccluded silhouette of proposed built form (excludes vegetation)
- Silhouette of proposed built form that is occluded by existing built form (excludes vegetation)

Figure 57 - KOP 2 Proposed Building Outlines

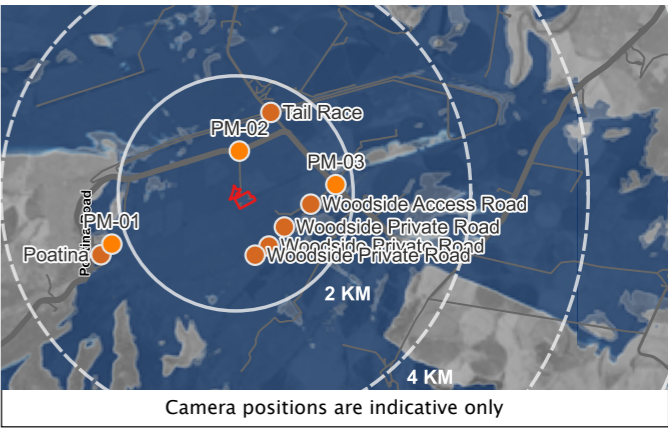
KOP 2: PROPOSED BUILT FORM



VISUAL SITUATION		RATING
VS1	Distance	4
VS2	Visual Magnitude	3
VS3	Slope	1
VS4	Influence of Adjacent Scenery	4
VS5	Frequency	3
VS6	Duration	1
VS7	Lighting Seasons	4
VISUAL SITUATION RATING		2.9

Figure 58 - KOP 2 Proposed Built Form

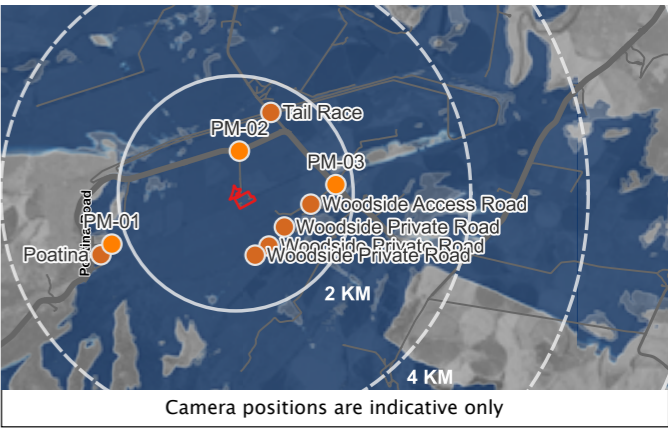
KOP 2: PROPOSED BUILT FORM WITH LANDSCAPING



Camera positions are indicative only

Figure 59 - KOP 2 Proposed Built Form With Landscaping

KOP 2: PROPOSED BUILT FORM WITH LANDSCAPING & BUILT OUTLINES



- Unoccluded silhouette of proposed built form (excludes vegetation)
- - - - - Silhouette of proposed built form that is occluded by existing built form (excludes vegetation)

Figure 60 - KOP 2 Proposed Built Form With Landscaping & Built Outlines

KOP 2	VISUAL CHARACTER UNITS (VCU)										
	Land Form / Water			Vegetation			Structure			CVI RATING	
	Existing	Proposed	DOC	Existing	Proposed	DOC	Existing	Proposed	DOC		
CRITICAL VISUAL INFLUENCER (CVI)	Colour	Natural green hues are predominant. Grey and brown hues are seen in the geology.	The proposal's palette of materials adopts the hues and values of the dominant geological context colouration.	1	Hues of greens and browns.	The proposed vegetation is consistent with the colour of the planting along fence lines and roads.	1	Colour palette of the area is characterized by lightly colored plain wire fencing, barns, sheds and gravel road. The power lines and transmission poles are of steel grey tones.	The illuminated surfaces will not vary in colour and contrast at different seasons and times due to lighting and weather.	1	1.0
	Texture	Apart from the distant ridgeline, the open paddocks provide unobstructed views without prominent landscape features. However, when observed from a distance, the individual trees along the ridgeline are not distinguishable, resulting in an overall smooth texture.	The proposed land form does not significantly affect the overall texture of the site, as the expansive views towards the ridge lines are unaffected.	2	The area is adorned with scattered trees that form clusters or stand individually in open paddocks. These trees catch the eye with their darker green hues contrasting against the lighter paddocks, making their silhouettes clearly distinguishable.	Seen amongst the fine-grained texture of vegetation the geometric forms of the proposal are mitigated.	1	The existing structures on the site are sparse and surrounded by open fields. The substation consists of intricate fine steel elements, creating a densely packed texture. The gravel road adds a contrasting texture against the grassy paddocks.	Smooth and angular in front of the fine grained texture of the rural landscape but consistent with the existing sub station.	2	1.7
	Scale	The land forms is a dominant element.	The extent of the proposed land form is minimal.	1	The tall vegetation creates a striking contrast with the low open paddocks, making it visually prominent in the landscape. These vertical elements break the monotony of the flat open areas, adding visual interest and variation to the scenery.	The proposed vegetation is consistent with the scale of the planting along fence lines and roads.	1	The existing substation stands out as a dominant feature due to its larger scale, including both height and footprint, surpassing the surrounding man-made structures such as barns, sheds, and also natural elements like trees.	Due to its proximity and comparable scale of the proposed BESS, however the majority of the proposal is visually obstructed by the existing sub station.	1	1.0
	Line	The road, fences, and transmission lines create a linear effect extending towards the horizon. A similar effect is seen with perpendicular transmission lines and at the edge where green paddocks meet the distant forest reserves.	The proposal does not introduce linear land form or water features.	1	Soft edge effect along the ridge line. Row planting.	The proposed vegetation creates a screen to the geometric lines of the existing Transmission Station and proposed BESS.	1	The existing transmission towers and power lines create a visual effect of thin vertical lines rising above the landscape. The perpendicular position of the KOP to the street further enhances the impression of horizontal lines stretching across the landscape.	As the majority of the proposal is obstructed by the existing sub station the line affects that it produces are minimal.	2	1.3
	Form / Shape	Strong 2D shape with the contrasting colours of the water and landforms. Geometric shapes that are irregular and complex.	The proposal has minimal impact on the form / shape of the land form and water bodies.	1	Strong 2D shape with the contrasting colours of the water and landforms. Geometric shapes that are irregular and complex.	The proposed vegetation is consistent with the form of the planting along fence lines and roads.	1	Unlike the natural and simple shapes of the surrounding landscape, the existing substation stands out from its surroundings due to its geometric and complex form.	The form / shape of the proposed BESS is rectilinear and of similar to the geometry of the existing sub station.	2	1.3
	Spatial Character	The existing substation is situated within a spacious area that shares a similar elevation and slope with the surrounding landscape, providing panoramic view both around and above the proposal.	The proposal has no significant impact on the land form and water bodies of the site. There are no major earthworks or elevation changes involved that would cause the proposal to be elevated above the surrounding landscape.	1	Panoramic expanses of fields and rolling hills seen from the same plane. Sky and fields dominates the view.	The proposed vegetation is consistent with the scale of the planting along fence lines and roads.	1	The expansive presence of the existing substation serves as the dominant structural element within its open surroundings. Its contrast against the surrounding landscape further emphasizes its prominence in the area.	The siting of the proposal is consistent with the existing spatial character.	2	1.3
	VCU RATING			1.2			1.0			1.7	1.3

Table 36 DOC Rating for KOP 2



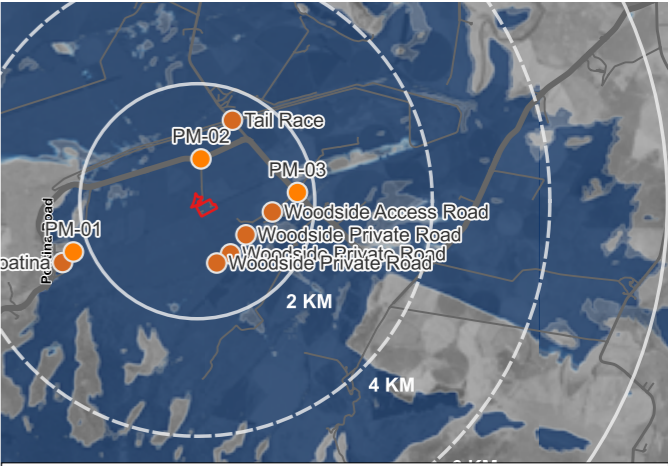
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4.4. KEY OBSERVATION POINT 3

Approx 4740 Poatina Rd, Northern Road shoulder, opposite gated entrance to Woodside Private Rd, facing approx 245 Degrees South West to target

DOMINANT VCU: LANDFORM



(Camera positions are indicative only)

Figure 61 - KOP 3 - Panorama showing Photo montage Location



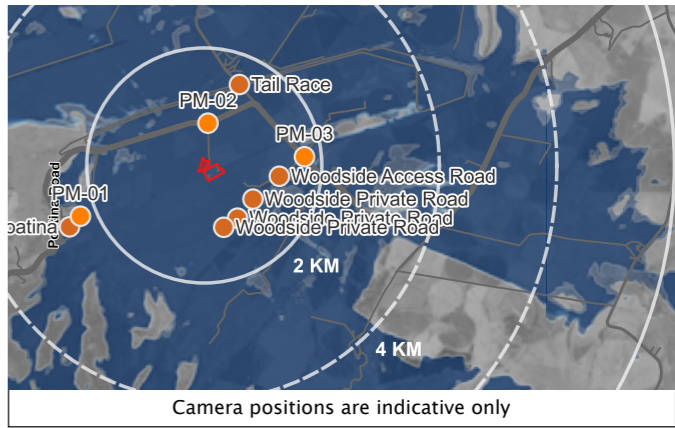
Figure 62 - KOP 3 - Visual character units (VCU) Existing



Figure 63 - KOP 3 - Visual character units (VCU) Proposed

VISUAL CHARACTER UNIT (VCU)	
1. LANDFORM/WATER FEATURES	
	Roads
	Grass / Dirt
	Rocks / Sand / Mud
	Ocean / Lakes / Rivers
2. VEGETATION FEATURES	
	Trees / Shrubs
	Forests
	Crops
3. STRUCTURAL FEATURES	
	Buildings
	Bridges / Infrastructure
	Cables / Wires / Towers
	Fences / Signs / Furniture / Retaining Walls
	Mines / Quarries / Landfill
	Cars / Vehicles / Plant

KOP 3: ORIGINAL PHOTOGRAPH



Tripod Location

PHOTOGRAPH DETAILS	
Location description:	Approx 4740 Poatina Rd, Northern Road shoulder, opposite gated entrance to Woodside Private Rd, facing approx 245 Degrees South West to target
Date & time taken:	10:18am EST on 28/11/2022
Height from ground:	1.65m
Distance to site:	1414m

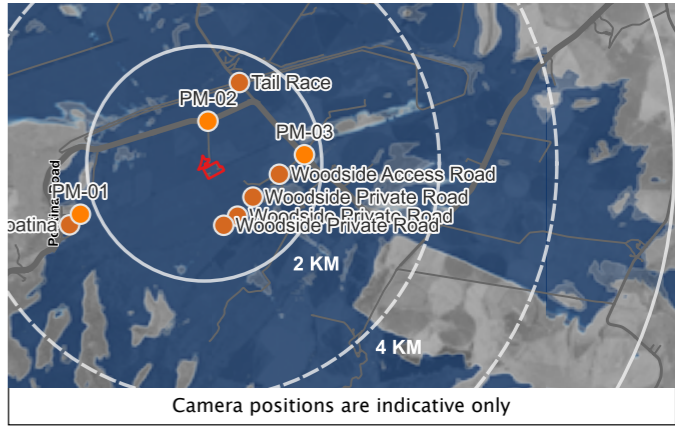
EQUIPMENT SPECIFICATIONS	
Camera:	Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera.
Lens:	Canon 24-70mm F2.8L MK2 Lens @70mm
Focal length:	70mm
Field of view (FOV):	28.8 (horizontal)

Figure 64 - KOP 3 - Original Photograph @20mm

LANDSCAPE & VISUAL IMPACT ASSESSMENT

4. ANALYSIS 60

KOP 3: PROPOSED BUILDING OUTLINES



Tripod Location

FIELD WORK DETAILS	
Easting:	500749.84
Northing:	5374082.12
Date taken:	28/11/2022
Ground (RL):	166.68m
Height from ground:	1.65m

EQUIPMENT SPECIFICATIONS

LiDAR Scanner:	Leica Cyclone Register 360
Software:	Autodesk ReCap, CloudCompare

- Unoccluded silhouette of proposed built form (excludes vegetation)
- Silhouette of proposed built form that is occluded by existing built form (excludes vegetation)

Figure 65 - KOP 3 Proposed Building Outlines



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KOP 3: PROPOSED BUILT FORM



VISUAL SITUATION		RATING
VS1	Distance	4
VS2	Visual Magnitude	1
VS3	Slope	1
VS4	Influence of Adjacent Scenery	4
VS5	Frequency	1
VS6	Duration	1
VS7	Lighting Seasons	4
VISUAL SITUATION RATING		2.3

Figure 66 - KOP 3 Proposed Built Form

KOP 3: PROPOSED BUILT FORM WITH LANDSCAPING

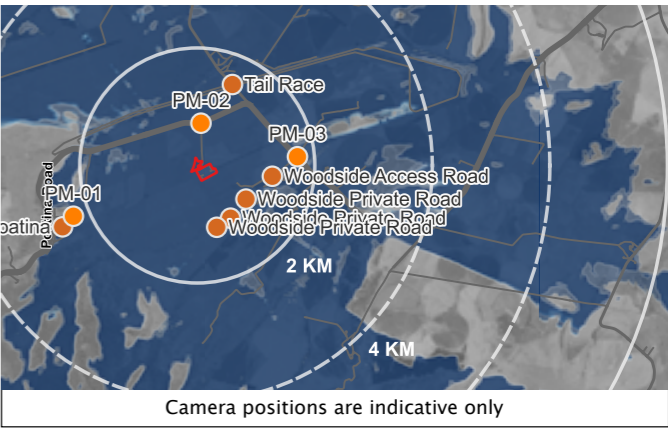
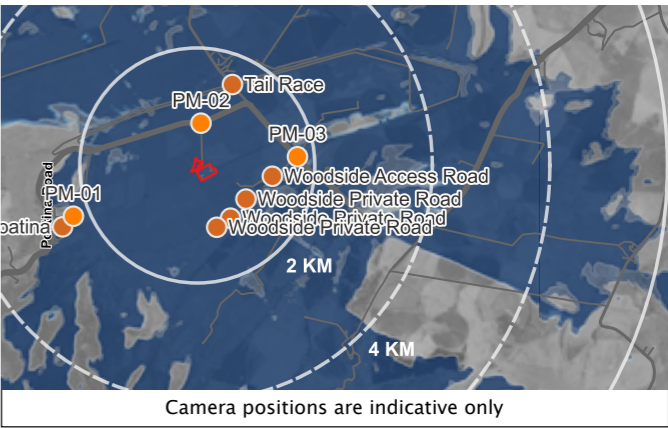


Figure 67 - KOP 3 Proposed Built Form With Landscaping

KOP 3: PROPOSED BUILT FORM WITH LANDSCAPING & BUILT OUTLINES



- Unoccluded silhouette of proposed built form (excludes vegetation)
- Silhouette of proposed built form that is occluded by existing built form (excludes vegetation)

Figure 68 - KOP 3 Proposed Built Form With Landscaping & Built Outlines

KOP 3	VISUAL CHARACTER UNITS (VCU)										
	Land Form / Water			Vegetation			Structure			CVI RATING	
	Existing	Proposed	DOC	Existing	Proposed	DOC	Existing	Proposed	DOC		
CRITICAL VISUAL INFLUENCER (CVI)	Colour	Natural green hues are predominant.	The proposal's palette of materials adopts the hues and values of the dominant geological context colouration.	1	Hues of greens and browns.	The proposed vegetation is consistent with the colour of the planting along fence lines and roads.	1	Colour palette of the area is characterized by lightly colored plain wire fencing, barns, sheds and gravel road. The power lines and transmission poles are of steel grey tones.	The illuminated surfaces will not vary in colour and contrast at different seasons and times due to lighting and weather.	1	1.0
	Texture	Apart from the distant ridgeline, the open paddocks provide unobstructed views without prominent landscape features. From this distance, differences in the undulating terrain are more noticeable creating a jagged appearance.	The proposed land form does not significantly affect the overall texture of the site, as the expansive views towards the ridge lines are unaffected.	2	The area is adorned with scattered trees that form clusters or stand individually in open paddocks. These trees catch the eye with their darker green hues contrasting against the lighter paddocks, making their silhouettes clearly distinguishable.	Seen amongst the fine-grained texture of vegetation the geometric forms of the proposal are mitigated.	1	The existing structures on the site are sparse and surrounded by open fields. The substation consists of intricate fine steel elements, creating a densely packed texture. The gravel road adds a contrasting texture against the grassy paddocks.	Smooth and angular in front of the fine grained texture of the rural landscape but consistent with the existing sub station.	2	1.7
	Scale	The land forms is a dominant element.	The extent of the proposed land form is minimal.	1	The tall vegetation creates a striking contrast with the low open paddocks, making it visually prominent in the landscape. These vertical elements break the monotony of the flat open areas, adding visual interest and variation to the scenery.	The proposed vegetation is consistent with the scale of the planting along fence lines and roads.	1	The existing substation stands out as a dominant feature due to its larger scale, including both height and footprint, surpassing the surrounding man-made structures such as barns, sheds, and also natural elements like trees.	Due to its proximity and comparable scale of the proposed BESS, however the majority of the proposal is visually obstructed by the existing sub station.	1	1.0
	Line	The road, fences, and transmission lines create a linear effect extending towards the horizon. A similar effect is seen with perpendicular transmission lines and at the edge where green paddocks meet the distant forest reserves.	The proposal does not introduce linear land form or water features.	1	Soft edge effect along the ridge line. Row planting.	The proposed vegetation creates a screen to the geometric lines of the existing Transmission Station and proposed BESS.	1	The existing transmission towers and power lines create a visual effect of thin vertical lines rising above the landscape. The perpendicular position of the KOP to the street further enhances the impression of horizontal lines stretching across the landscape.	As the majority of the proposal is obstructed by the existing sub station the line affects that it produces are minimal.	2	1.3
	Form / Shape	Strong 2D shape with the contrasting colours of the water and landforms. Geometric shapes that are irregular and complex.	The proposal has minimal impact on the form / shape of the land form and water bodies.	1	Strong 2D shape with the contrasting colours of the water and landforms. Geometric shapes that are irregular and complex.	The proposed vegetation is consistent with the form of the planting along fence lines and roads.	1	Unlike the natural and simple shapes of the surrounding landscape, the existing substation stands out from its surroundings due to its geometric and complex form.	The form / shape of the proposed BESS is rectilinear and of similar to the geometry of the existing sub station.	2	1.3
	Spatial Character	The existing substation is situated within a spacious area that shares a similar elevation and slope with the surrounding landscape, providing panoramic view both around and above the proposal.	The proposal has no significant impact on the land form and water bodies of the site. There are no major earthworks or elevation changes involved that would cause the proposal to be elevated above the surrounding landscape.	1	Panoramic expanses of fields and rolling hills seen from the same plane. Sky and fields dominates the view.	The proposed vegetation is consistent with the scale of the planting along fence lines and roads.	1	The expansive presence of the existing substation serves as the dominant structural element within its open surroundings. Its contrast against the surrounding landscape further emphasizes its prominence in the area.	The siting of the proposal is consistent with the existing spatial character.	2	1.3
	VCU RATING			1.2			1.0			1.7	1.3

Table 37 DOC Rating for KOP 3



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4.5. MAGNITUDE OF CHANGE

4.5.1. An analysis of the visual impacts has been undertaken to broadly determine both the variety of Visual Situations and examine the projects Degree of Contrast utilising case studies from identified Key Observation Points. This determines the proposed Magnitude of Change fairly and unbiased for the project's operational duration (this includes proposed built and established landscape elements).

4.5.2. Visual Situation have been categorically analysed according to Distance, Visual Magnitude, Slope, Influence of Adjacent Scenery, Frequency, Duration and Lighting/Seasons and averaged to provide a rating for this Project of 2.7 (Moderate)

4.5.3. Degree of Contrast Ratings are also considered for three primary Visual Character Units (VCU); Landform/ Water, Vegetation and Structure. The Critical Visual Influences (CVI) of the existing VCU have been categorically analysed as have the proposed changes. These include six CVI: Colour, Texture, Scale, Line, Form/Shape and Spatial Character. The DOC rating for this Project is 1.4 (Very low)

4.5.4. The VS rating and DOC ratings have then been combined then averaged to provide a Magnitude of Change rating of 2.0 (Low)

MAGNITUDE OF CHANGE			
KEY OBSERVATION POINT	VISUAL SITUATION	DOC	RATING
KOP 1	2.9	1.6	2.2
KOP 2	2.9	1.3	2.1
KOP 3	2.3	1.3	1.8
MOC RATING	2.7	1.4	2.0

Table 38 MOC Rating

5.1. VISUAL COMPATIBILITY

5.1.1. The objective of this class is to provide for activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These activities may dominate the view and be the major focus of viewer attention. The BESS has been sited and designed to minimize the impact of the proposed activities through careful location, minimal disturbance, and repeating the Critical Visual Influences.

5.1.2. The acceptable Magnitude of Change for a CLASS IV Rating is STRONG.

5.1.3. Having established the Class the analysis of the Project’s Visual Impact has been undertaken. The Magnitude of Change is rated as 2.0, which is a rating of LOW.

5.1.4. The LOW MOC is well within the acceptable level for this area that has been rated as CLASS IV.

5.1.5. The result of the LVIA evaluates the proposed BESS as being within the acceptable Magnitude of Change.

5.1.6. The Visual Compatibility rating of the Project is: **SATISFIED**

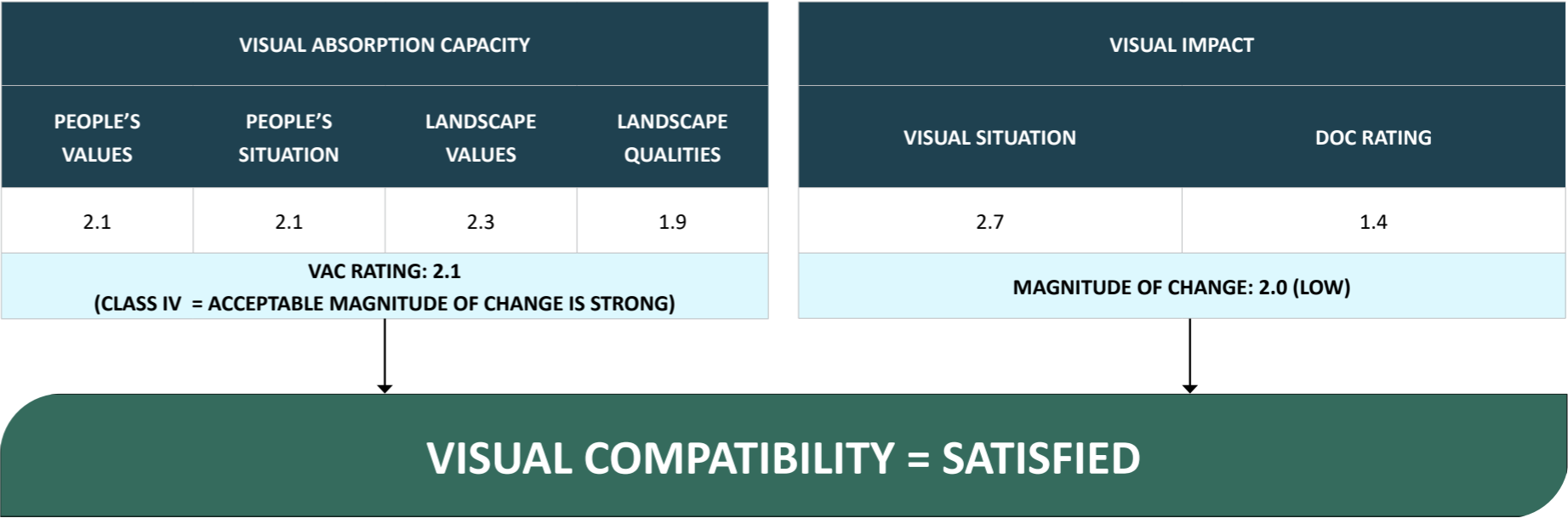


Table 39 Visual Compatibility

6.1. CUMULATIVE IMPACT

6.1.1. The landscape and proposal can be divided into three primary Visual Character Units (VCUs): Landform/Water, Vegetation, and Structure. These VCUs are utilized to visually evaluate the cumulative impacts, taking into account land use and associated activities obtained from GIS data. By considering the clustering of specific land uses, their management, and the capacity of the local area to accommodate those activities, it becomes possible to assess the potential cumulative impact on the visual environment. While individual effects may not be significant when considered in isolation, their combination can result in a different overall effect.

6.1.2. The site has a flat elevation with Grazing Modified Pastures in its immediate surroundings. The landscape is open and lacks significant landform features, except for distant nature reserves primarily located to the southwest of the site.

6.1.3. In less sensitive areas like roads, sparse vegetation consisting of widely spaced individual trees, clusters of trees, and wind row planting can be observed along Poatina Road and Saundridge Road. However, more sensitive areas such as nearby dwellings are characterized by denser vegetation. The Woodside Rivulet to the north and Palmers Rivulet to the south of the proposal exhibit dense vegetation, which effectively screens the area. These rivulets also serve as boundaries for Priority Vegetation areas and are designated as 'Waterway and Coastal Protection Areas', forming an intricate network of waterways surrounding the proposal. Views of the proposal from Poatina Village are partially obstructed by scattered trees along Wilmot Street and Valley View Crescent

6.1.4. The Visual Character Units (VCUs) within the Structure category include the primary feature of the existing substation, the secondary feature of the existing transmission towers and lines. These are both covered by Electrical Transmission Infrastructure protection. The tertiary feature of the distant cluster of buildings located in Poatina are designated as a Future Urban zone. Existing Infrastructure roads and fences are considered non-significant.

6.1.5. The proposal is located near an existing substation that has similar scale, Visual Character Unit (VCU) type, and use. Due to their close proximity and similarity, these two facilities have a limited impact and do not create any disharmony.

6.1.6. The abundance of Grazing Modified Pastures surrounding the proposal allows for ample space to accommodate the proposal without depleting any scarce resources.

6.1.7. There is a limited number of dwellings within close proximity to the site have existing vegetation which provides substantial screening of views toward the proposal. The surrounding roads provide partial screening, and the proposed vegetation will further enhance the screening within the immediate foreground.

6.1.8. The surrounding flat Grazing Modified Pastures provide abundant space for the proposal without depleting scarce resources. Existing vegetation and proposed screening measures effectively screen views from nearby dwellings and roads. Overall, these factors allow the proposal to be accommodated within the surrounding land use and space, while remaining within the visual absorption capacity of the area.

6.2. LIFE CYCLE

6.2.1. CONSTRUCTION

Through the construction phase the anticipated utilisation of the existing road network means that there will be a low probability of a requirement for major works related to access.

- The site is already highly modified land that has been cleared of vegetation. The existing pasture will be scraped and leveled as part of the building works.
- Screen planting established at an early stage will assist in mitigation of visual impacts as well as dust mitigation and soil erosion.
- The BESS project is required to satisfy AS/NZS 5139:2019—a joint standard that sets general installation and safety requirements for battery energy storage systems.
- In addition, Australian BESS manufacturers must comply with a number of other national and international codes and standards.

6.2.2. OPERATION

Through the operation period of the facility the landscape screening will continue to grow and canopy trees once established will provide the maximum mitigation through integration with the prevailing row planting along roads and fences in this visual catchment area. The materials and finishes of the built works are recommended to be muted natural colours/hue and low reflectivity. Artificial lighting could be limited to task specific purposes and hooded to avoid light spill, night skyglow and glare.

6.2.3. REMEDIATION

Remediation of the site once the facility is decommissioned may readily return the site to a modified rural landscape.

	MITIGATION PLANNING	PROVIDED	NOT REQUIRED	FOR FURTHER CONSIDERATION	REQUIRED
MP 1	Ensure that Qualified Individuals Conduct and Review Impact Analyses and Mitigation				✓
MP 2	Use Appropriate Methods and Data for Visual Impact Assessment and Mitigation Planning and Design	✓			
MP 3	Incorporate Stakeholder Input into the Siting and Design and Mitigation Planning Processes	✓			
MP 4	Consult the Applicable Visual Resource Inventory (VRI) and Visual Resource Management (VRM) Class Designations	✓			
MP 5	Conduct a Thorough Assessment of Existing and Potentially Affected Visual Resources	✓			
MP 6	Develop Spatially Accurate and Realistic Photo Simulations of Project Facilities	✓			
MP 7	Develop a Visual Resource Impact Monitoring and Mitigation Compliance Plan			✓	
MP 8	Develop a Decommissioning and Site Reclamation Plan				✓
MP 9	Hold a Preconstruction Meeting to Coordinate the Mitigation Strategy			✓	
MP 10	Discuss Visual Mitigation Objectives with Equipment Operators			✓	
MP 11	Use Offsite Mitigation			✓	

Table 40 Mitigation Planning

7.2.1. MITIGATION PLANNING

- Incorporate Stakeholder Input into the Siting and Design and Mitigation Planning Processes
- Develop a Visual Resource Impact Monitoring and Mitigation Compliance Plan
- Develop a Decommissioning and Site Reclamation Plan
- Hold a Preconstruction Meeting to Coordinate the Mitigation Strategy
- Discuss Visual Mitigation Objectives with Equipment Operators
- Use Offsite Mitigation

	SITING AND DESIGN	PROVIDED	NOT REQUIRED	FOR FURTHER CONSIDERATION	REQUIRED
SD 1	Site Facilities and Right-of-ways (ROWs) outside Sensitive Viewsheds, or as Far as Possible from Sensitive Viewing Locations	✓			
SD 2	Site ROW Crossings to Minimize Impacts on Linear KOPs	✓			
SD 3	Site Projects Away from Visually Prominent Landscape Features	✓			
SD 4	Site Facilities to Avoid Night-Sky Impacts on Sensitive Locations			✓	
SD 5	Site Facilities in Previously Developed or Disturbed Landscapes	✓			
SD 6	Site Facilities and Components in Existing Clearings	✓			
SD 7	Site and Design Facilities to Repeat the Form, Line, Colour, and Texture of the Existing Landscape	✓			
SD 8	Site Facilities in Areas Suitable for Reclamation	✓			
SD 9	Minimize the Number of Facility Structures	✓			
SD 10	Co-locate Linear Features in Existing ROWs or Corridors	✓			
SD 11	Avoid Siting Linear Features in the Center of Valley Bottoms and on Ridgetops	✓			
SD 12	Avoid Sky-lining	✓			
SD 13	Site Linear Facilities along Natural Lines within the Landscape	✓			
SD 14	Avoid Siting Roads on Side Slopes		✓		
SD 15	Site Facility Components to Minimize Cut and Fill		✓		
SD 16	Avoid Siting Staging and Laydown Areas in Visually Sensitive Areas	✓			
SD 17	Bury Underground Utilities along Roads		✓		

7.2.2. SITING AND DESIGN

- Prepare a Lighting Plan
- Use Audio-visual Warning System (AVWS) Technology for Hazard Lighting on Structures Taller than 200 ft
- Use Full Cut-off Luminaires
- Direct Lights Properly to Eliminate Light Spill and Trespass
- Use Amber instead of Bluish-White Lighting
- Minimize Lighting Usage during Construction and Operations
- Use Vehicle-Mounted Lights or Portable Light Towers for Night-time Maintenance Activities

Table 41 Siting and Design



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	MATERIALS SURFACE TREATMENTS	PROVIDED	NOT REQUIRED	FOR FURTHER CONSIDERATION	REQUIRED
MST 1	Require a Site Study for Colour and Texture Selection	✓			
MST 2	Select Materials and Surface Treatments to Repeat the Form, Line, Colour, and Texture of Surrounding Landscape	✓			
MST 3	Consider Seasonal Changes and Seasons of Heaviest Use in Choosing Material Colours and Textures	✓			
MST 4	Colour Treat Structures to Reduce Contrasts with Existing Landscape			✓	
MST 5	Use Non-reflective Materials, Coatings, and/or Paint				✓
MST 6	Test Colour Selections			✓	
MST 7	Colour Treat Grouped Structures Using the Same Colour		✓		
MST 8	Colour Treat Exposed Rock Faces		✓		
MST 9	Colour Treat Transmission Towers to Reduce Contrasts with Existing Landscape	✓			
MST 10	Use Camouflage and/or Disguise Strategies for Close KOPs in Highly Sensitive Viewsheds		✓		

7.2.3. MATERIALS SURFACE TREATMENTS

- Select Materials and Surface Treatments to Repeat the Form, Line, Colour, and Texture of Surrounding Landscape
- Consider Seasonal Changes and Seasons of Heaviest Use in Choosing Material Colours and Textures
- Maintain Painted, Stained, or Coated Surfaces Properly
- Colour Treat Structures to Reduce Contrasts with Existing Landscape
- Use Non-reflective Materials, Coatings, and/or Paint
- Test Colour Selections
- Colour Treat Grouped Structures Using the Same Colour
- Colour Treat Transmission Towers to Reduce Contrasts with Existing Landscape
- Use Camouflage and/or Disguise Strategies for Close KOPs in Highly Sensitive Viewsheds

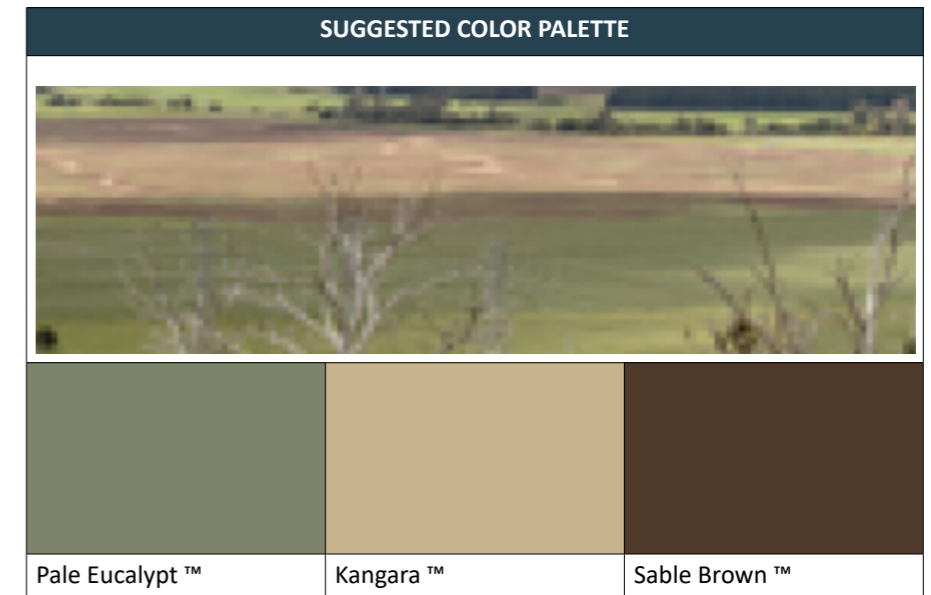


Table 42 Materials Surface Treatments

Table 43 Suggested Color Palette

	SOIL MANAGEMENT	PROVIDED	NOT REQUIRED	FOR FURTHER CONSIDERATION	REQUIRED
SM 1	Implement Dust and Wind Erosion Control Measures				✓
SM 2	Implement Erosion and Sediment Control Measures				✓
SM 3	Implement Temporary and/or Permanent Soil Stabilization Measures			✓	
SM 4	Strip, Stockpile, and Stabilize Topsoil for Re-spreading				✓
SM 5	Segregate Topsoil and Reapply to Disturbed Areas				✓

7.2.4. SOIL MANAGEMENT

- Implement Dust and Wind Erosion Control Measures
- Implement Erosion and Sediment Control Measures
- Implement Temporary and/or Permanent Soil Stabilization Measures
- Strip, Stockpile, and Stabilize Topsoil for Re-spreading
- Segregate Topsoil and Reapply to Disturbed Areas

Table 44 Soil Management

	VEGETATION MANAGEMENT	PROVIDED	NOT REQUIRED	FOR FURTHER CONSIDERATION	REQUIRED
VG 1	Prepare a Reclamation Plan		✓		
VG 2	Design Vegetative Openings to Mimic Natural Openings		✓		
VG 3	Use Partial ROW Clearing and Feather Edges of Transmission ROWs		✓		
VG 4	Preserve Existing Vegetation		✓		
VG 5	Use Retaining Walls, Berms, Fences, and Markings to Protect Trees and Other Scenic Features		✓		
VG 6	Avoid Slash Piles in Sensitive Viewing Areas; Chip Slash for Mulch to Hide Fresh Soil		✓		
VG 7	Mulch Cleared Areas, Furrow Slopes, and Use Planting Holes		✓		
VG 8	Use Pitting and Vertical Mulching to Facilitate Revegetation and Discourage Vehicle Traffic		✓		
VG 9	Revegetate Using Salvaged Native Plants and Approved, Weed-free Seed Mixes		✓		
VG 10	Transplant Vegetation from Cleared Areas		✓		
VG 11	Monitor and Maintain Revegetated Areas until Vegetation Is Self-Sustaining				✓

7.2.5. VEGETATION MANAGEMENT

- Prepare a Reclamation Plan
- Design Vegetative Openings to Mimic Natural Openings
- Use Partial ROW Clearing and Feather Edges of Transmission ROWs
- Preserve Existing Vegetation
- Use Retaining Walls, Berms, Fences, and Markings to Protect Trees and Other Scenic Features
- Avoid Slash Piles in Sensitive Viewing Areas; Chip Slash for Mulch to Hide Fresh Soil
- Mulch Cleared Areas, Furrow Slopes, and Use Planting Holes
- Use Pitting and Vertical Mulching to Facilitate Revegetation and Discourage Vehicle Traffic
- Revegetate Using Salvaged Native Plants and Approved, Weed-free Seed Mixes
- Transplant Vegetation from Cleared Areas
- Monitor and Maintain Revegetated Areas until Vegetation Is Self-Sustaining

Table 45 Vegetation Management



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	RECLAMATION	PROVIDED	NOT REQUIRED	FOR FURTHER CONSIDERATION	REQUIRED
R1	Review Predevelopment Visual Conditions after Construction				✓
R2	Begin Site Reclamation during Construction and Operations, Immediately after Disturbances				✓
R3	Recontour Disturbed Areas to Approximate Natural Slopes		✓		
R4	Scarify/Roughen Cut Slopes and Recontoured Areas		✓		
R5	Salvage and Replace Rocks, Brush, and Woody Debris		✓		
R6	Sculpt and Shape Bedrock Landforms		✓		
R7	Remove Two-Track Roads		✓		
R8	Close and Remediate Unused Access Roads				✓
R9	Remove Above-Ground and Near-Ground Structures				✓
R10	Remove or Bury Gravel and Other Surface Treatments				✓

7.2.6. RECLAMATION

- Review Predevelopment Visual Conditions after Construction
- Begin Site Reclamation during Construction and Operations, Immediately after Disturbances
- Recontour Disturbed Areas to Approximate Natural Slopes
- Scarify/Roughen Cut Slopes and Recontoured Areas
- Salvage and Replace Rocks, Brush, and Woody Debris
- Sculpt and Shape Bedrock Landforms
- Remove Two-Track Roads
- Close and Remediate Unused Access Roads
- Remove Above-Ground and Near-Ground Structures
- Remove or Bury Gravel and Other Surface Treatments

Table 46 Reclamation



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7.1. LANDSCAPING RECOMMENDATIONS

7.1.1. This list identifies plant species that are suitable for cultivation in Northern Midland and procurement from a native plant nursery based on the recommendations from the "Plant Species List Northern Midlands" by the Natural Resource Management in Northern Tasmania.

To provide a visual reference and cater to the specific needs of the proposal, photographs were taken of the diverse range of plants found in the surrounding area. Furthermore, to assist in selecting the most appropriate plants for the proposal, the list categorizes plant species into Trees, Shrubs, Herbs and ground cover, and Grasses, Lilies, and Sedges. Additionally, the list provides information on the vegetative community, details on suitable soil types and specific uses of each plant species are also included, allowing for informed decision-making. Considering potential effects of overhead utility infrastructure, the list also specifies criteria for the suitability of each plant species below power lines.

For a more comprehensive inventory of suitable species, referring to the North and Understorey Network (NRM) websites.¹



Figure 69 - Photograph showing Roadside Planting Reference. Taken at 10:37am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 71 - Photograph showing Roadside Planting Reference. Taken at 10:38am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 70 - Photograph showing Roadside Planting Reference. Taken at 10:38am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 72 - Photograph showing Roadside Planting Reference. Taken at 10:39am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.

¹ Understorey Network. n.d. Northern Midlands Plant Species List. Tasmania: Natural Resource Management in Northern Tasmania. www.understorey-network.org.au/municipalities/

LANDSCAPE & VISUAL IMPACT ASSESSMENT

7. RECOMMENDATIONS



Figure 73 - Photograph showing Roadside Planting Reference. Taken at 10:41am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 75 - Photograph showing Roadside Planting Reference. Taken at 10:41am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 77 - Photograph showing Roadside Planting Reference. Taken at 10:42am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 74 - Photograph showing Roadside Planting Reference. Taken at 10:41am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 76 - Photograph showing Roadside Planting Reference. Taken at 10:42am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 78 - Photograph showing Roadside Planting Reference. Taken at 10:43am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



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Figure 79 - Photograph showing Roadside Planting Reference. Taken at 10:43am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 81 - Photograph showing Roadside Planting Reference. Taken at 10:47am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.



Figure 80 - Photograph showing Roadside Planting Reference. Taken at 10:45am EST on 28/11/2022. Canon EOS 5DSR, 50.6 MGPXL Full Frame Digital Camera at 50mm Focal length.

	STANDARD NAME	COMMON NAME	VEGETATION COMMUNITY														SOIL TYPE					USES				
			Coastal Vegetation	Rainforest	Wet Eucalypt Forest	Dry Eucalypt Forest and Woodland	Grassy Vegetation	Heath	Sedgeland and Wetland	Riparian	Montane Vegetation	Well drained soil	Poorly drained soil	Sandy soil	Loamy soil	Clay soil	Poor soil	Fertile soil	Low flammability	Erosion control	Shelter belts	Bush tucker	Salinity control	Suitable below power lines		
SHRUBS	Hakea megadenia	Autumn needlebush	•			•									•		•	•					•			
	Leptospermum lanigerum	Woolly teatree	•		•					•	•	•	•	•	•	•	•						•		•	
	Leptospermum scoparium	Common teatree	•			•		•							•	•	•	•	•				•			
	Melaleuca gibbosa	Slender honeymyrtle	•					•							•	•	•						•		•	
	Olearia pinifolia	Prickly daisybush									•	•													•	
	Olearia ramulosa	Twiggy daisybush	•					•					•	•				•							•	
	Ozothamnus obcordatus	Yellow everlastingbush				•									•										•	
	Pomaderris racemosa	Slender dogwood								•						•									•	
	Pultenaea daphnoides	Heartleaf bushpea	•			•										•							•		•	
Solanum laciniatum	Kangaroo apple		•	•					•	•					•							•		•		
HERBS & GROUNDCOVERS	Acaena novae-zelandiae	Common buzzy					•	•	•		•	•			•		•	•				•		•		
	Chrysocephalum apiculatum	Common everlasting				•									•	•	•					•		•		
	Dichondra repens	Kidneyweed				•	•								•	•	•	•	•					•		
	Einadia nutans	Climbing saltbush	•			•			•						•	•	•	•	•					•	•	
	Gompholobium huegelii	Common wedgepea				•		•							•		•								•	
	Hibbertia procumbens	Spreading guineaflower				•		•							•								•		•	
	Pelargonium australe	Southern storksbill				•									•										•	
GRASSES, LILLIES, SEDGES	Austrodanthonia caespitosa	Common wallaby-grass				•	•								•		•	•				•		•		
	Carex gaudichaudiana	Fen sedge								•	•				•									•		
	Dianella revoluta	Spreading flax-lily	•		•	•		•							•	•	•	•	•	•				•		
	Diplarrena moraea	White flag-iris	•			•		•							•		•	•	•	•				•		
	Juncus pallidus	Pale rush								•	•				•	•	•	•	•				•	•		
	Lomandra longifolia	Sagg	•			•	•	•							•		•		•					•		
	Poa labillardierei	Silver tussockgrass	•			•	•	•							•	•	•	•	•	•				•		
Themeda triandra	Kangaroo grass					•				•	•				•	•	•						•			

Table 47 Suggested Planting Palette (continued) adapted from Understorey Network. n.d. Northern Midlands Plant Species List. Tasmania: Natural Resource Management in Northern Tasmania. www.understorey-network.org.au/municipalities/



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LANDSCAPE & VISUAL IMPACT ASSESSMENT

8. ASSESSMENT

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POLICIES & PROVISIONS	CLAUSE	REFERENCE	COMMENT	SATISFIES	FAILS TO SATISFY
STATE	Zone 21.0: Agriculture Zone The purpose of the Agriculture Zone is: 21.1.1 To provide for the use or development of land for agricultural use. 21.1.2 To protect land for the use or development of agricultural use by minimising: (a) conflict with or interference from non-agricultural uses; (b) non-agricultural use or development that precludes the return of the land to agricultural use; and (c) use of land for non-agricultural use in irrigation districts. 21.1.3 To provide for use or development that supports the use of the land for agricultural use.	Discretionary uses A use listed as Discretionary, excluding Residential or Resource Development, must be required to locate on the site, for operational or security reasons or the need to contain or minimise impacts arising from the operation such as noise, dust, hours of operation or traffic movements, having regard to: (a) access to a specific naturally occurring resource on the site or on land in the vicinity of the site; (b) access to infrastructure only available on the site or on land in the vicinity of the site; (c) access to a product or material related to an agricultural use; (d) service or support for an agricultural use on the site or on land in the vicinity of the site; (e) the diversification or value adding of an agricultural use on the site or in the vicinity of the site; and (f) provision of essential Emergency Services or Utilities.	No Acceptable Solutions recommended by the Tasmanian Planning Scheme – State Planning Provisions.	✓	
		Discretionary uses 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.	No Acceptable Solutions recommended by the Tasmanian Planning Scheme – State Planning Provisions.	✓	
		Discretionary uses A use listed as Discretionary, excluding Residential, located on prime agricultural land must: (a) be for Extractive Industry, Resource Development or Utilities, provided that: (i) the area of land converted to the use is minimised; (ii) adverse impacts on the surrounding agricultural use are minimised; and (iii) the site is reasonably required for operational efficiency; or (b) be for a use that demonstrates a significant benefit to the region, having regard to the social, environmental and economic costs and benefits of the proposed use.	No Acceptable Solutions recommended by the Tasmanian Planning Scheme – State Planning Provisions.	✓	

STATE	Zone 21.0: Agriculture Zone (Continued)	<p>Discretionary uses</p> <p>A Residential use listed as Discretionary must:</p> <p>(a) be required as part of an agricultural use, having regard to:</p> <p>(i) the scale of the agricultural use;</p> <p>(ii) the complexity of the agricultural use;</p> <p>(iii) the operational requirements of the agricultural use;</p> <p>(iv) the requirement for the occupier of the dwelling to attend to the agricultural use; and</p> <p>(v) proximity of the dwelling to the agricultural use; or</p> <p>(b) be located on a site that:</p> <p>(i) is not capable of supporting an agricultural use;</p> <p>(ii) is not capable of being included with other agricultural land (regardless of ownership) for agricultural use; and</p> <p>(iii) does not confine or restrain agricultural use on adjoining properties.</p>	No Acceptable Solutions recommended by the Tasmanian Planning Scheme – State Planning Provisions.	✓	
		<p>Building height</p> <p>Building height must be necessary for the operation of the use and not cause an unreasonable impact on adjoining properties, having regard to:</p> <p>(a) the proposed height of the building;</p> <p>(b) the topography of the site;</p> <p>(c) the bulk and form of the building;</p> <p>(d) separation from existing use on adjoining properties;</p> <p>(e) the nature of the existing uses on adjoining properties; and</p> <p>(f) any buffers created by natural or other features.</p>	<p>Acceptable Solutions:</p> <p>Building height must be not more than 12m.</p>	✓	
		<p>Setbacks</p> <p>Buildings must be sited to provide adequate vehicle access and not cause an unreasonable impact on existing use on adjoining properties, having regard to:</p> <p>(a) the bulk and form of the building;</p> <p>(b) the nature of existing use on the adjoining properties;</p> <p>(c) separation from existing use on the adjoining properties; and</p> <p>(d) any buffers created by natural or other features.</p>	<p>Acceptable Solutions:</p> <p>Buildings must have a setback from all boundaries of:</p> <p>(a) not less than 5m; or</p> <p>(b) if the setback of an existing building is within 5m, not less than the existing building.</p>	✓	

Table 48 Assessment table (continued) based on: Tasmanian Planning Scheme - State Planning Provisions. n.d. 5th ed. Tasmanian Government. Accessed May 18, 2023. www.planningreform.tas.gov.au.

STATE	Zone 21.0: Agriculture Zone (Continued)	<p>Setbacks Buildings for a sensitive use must be sited so as not to conflict or interfere with an agricultural use, having regard to:</p> <ul style="list-style-type: none"> (a) the size, shape and topography of the site; (b) the prevailing setbacks of any existing buildings for sensitive uses on adjoining properties; (c) the location of existing buildings on the site; (d) the existing and potential use of adjoining properties; (e) any proposed attenuation measures; and (f) any buffers created by natural or other features. 	The site does not contain Sensitive use.	✓	
		<p>Clearance within a priority vegetation area</p> <p>Clearance of native vegetation within a priority vegetation area must minimise adverse impacts on priority vegetation, having regard to:</p> <ul style="list-style-type: none"> (a) the design and location of buildings and works and any constraints such as topography or land hazards; (b) any particular requirements for the buildings and works; (c) minimising impacts resulting from bushfire hazard management measures through siting and fire-resistant design of habitable buildings; (d) any mitigation measures implemented to minimise the residual impacts on priority vegetation; (e) any on-site biodiversity offsets; and (f) any existing cleared areas on the site. 	<p>Acceptable Solutions:</p> <p>Clearance of native vegetation within a priority vegetation area must be within a building area on a sealed plan approved under this planning scheme.</p>	✓	
LOCAL	NOR-S3.0 Cressy Specific Area Plan	NOR-S3.1 Plan Purpose	NOR-S3.1 The Cressy Specific Area do not have specific policies directly related to renewable energy, and the proposed site does not NOR-S3.2.1 specific area plan does not cover and apply to the proposal.	✓	

Table 48 Assessment table (continued) based on: Tasmanian Planning Scheme - State Planning Provisions. n.d. 5th ed. Tasmanian Government. Accessed May 18, 2023. www.planningreform.tas.gov.au.

8.1. PHOTOMONTAGE METHODOLOGY

8.1.1. SURVEY AND POINT CLOUD CAPTURE PROCESS:

A LiDAR laser scanner is used to make a 3D scan of the area around the location of each camera position. The scanner captures a 3-dimensional snapshot of the immediate context and colour information within a 15.0m radius. For large sites, the scan stations are placed at 7.5m spacings to allow for overlaps.

Where required, additional 3D scans are captured of areas of significance on or around the Subject Site. These additional scans are often used to confirm critical dimensions and for tree identification.

Land Surveying equipment/techniques, such as a Topcon Total Station, is then used to record the camera locations as well as GCP (Ground Control Points) to assist in stitching the LiDAR datasets together using a common co-ordinate system. The co-ordinate system used is MGA 2020 zone 55 / A.H.D vide MELBOURNE SOUTH PM362.

The various Point Cloud datasets are then merged together and geolocated using the recorded Ground Control points connected to localised MGA / AHD co-ordinates with GPS observations. Some cleanup is done on the RAW datasets to remove unwanted objects (clouds) and points with very weak intensity.

8.1.2. PHOTOGRAPHY PROCESS

The camera was mounted on a tripod at a standard eye height of 1.65m.

Spirit levels were used to eliminate camera tilt and roll.

Photographs are generally taken from a publicly accessible pedestrian vantage point, e.g. footpath, crossover, pedestrian crossing, walking track, etc to illustrate the visual impact of the proposed development from street level.

8.1.3. ALIGN-VIEW PROCESS

Standard post-production techniques are used on the original photograph RAW files, such as adjustments to colour temperature, dehazing and sharpness. Highlight and shadow recovery tools are used to better approximate the range of luminance humans can perceive. Unless otherwise noted, no transformation of the image is undertaken that would change or alter the content or composition of the context.

The correction of lens distortion is undertaken to achieve more precise alignment when compositing 3D rendered images into photographs. Using an image that is corrected for lens distortion enables all the survey points in the image to be used for camera alignment and not just those confined to the central 'safe area' when distortion is minimal.

Optical distortion is a lens aberration that deforms straight lines into curves, which is most noticeable at the edges of the photographic frame. The figure below shows the comparison of the distortion correction on a typical lens used for Align-View photomontages. HSM A015 corrected in Adobe Photoshop Camera RAW (Uncorrected in red, corrected in blue)

Distortion removal is not performed on the 17mm tilt shift lens due to its low levels of distortion, as well as asymmetry when used in the shifted position.

8.1.4. CAMERA MATCH

The Align-View camera match process utilizes surveyed data points and millions of Point Cloud scans of the existing site conditions to verify that the real-world camera and the virtual camera are accurately aligned. This alignment process is repeatable and verifiable by an independent party using the same datasets.

The traditional camera matching methodology utilizes a feature survey as the basis for alignment and only requires 6-8 known points or features. Orbit Solutions uses both the feature survey and Point Cloud data to increase the level of precision. This methodology of using millions of scanned data points enables the alignment of planar surfaces in 3 dimensional space and provides visual confirmation of a precise camera alignment across the entire frame of the photo.

The data supplied by the surveyor is geolocated on MGA 2020 zone 55 and at the correct AHD so no transformation is required to align all the datasets to a common co-ordinate system. Critically, this ensures the base surveyed data is accurately positioned so can be relied upon for the alignment of all other inputs, including the placement of the virtual cameras.

Precise alignment of the Virtual Camera in software to the Real World Camera is achieved by matching 3 key data points. The Virtual Camera must be configured to match:

- i. the location,
- ii. orientation in the xyz axis,
- iii. and lens settings.

Traditional camera matching techniques rely on approximate camera location, and use of survey data to provide camera orientation and alignment. Orbit's process builds on this approach by capturing additional survey data of both. The site context and immediate camera surrounding. Having high quality survey data for both the camera position as well as site context means there is redundancy, as well as foreground survey coverage across the whole frame, to enable accurate correction of minor variability in the photographic process.