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Syncline Community Cable

Landscape and Visual Impact - Preliminary Assessment Report – FINAL

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THIS REPORT HAS BEEN PREPARED FOR COGENCY ON BEHALF OF SCC



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1 INTRODUCTION

The Proponent, Syncline Energy, plan to submit applications for planning and environmental approvals for the development of the Syncline Community Cable (the Project) between Melbourne and Jeffcott, Victoria, a length of approximately 265 kilometres (km) (refer to **Figure 1**).

The Project proposes an underground, up to 525kV HVDC transmission line, buried in a trench approximately 1.6 metres (m) deep, and with a potential construction disturbance area approximately 20-30m wide. Converter stations are proposed at the ends of the project alignment at Melbourne and Jeffcott.

The preliminary assessment phase considers a 200m wide study corridor.

This report has been prepared by Peter Haack Consulting to provide a preliminary landscape and visual impact assessment (LVIA) for inclusion in the planning applications.

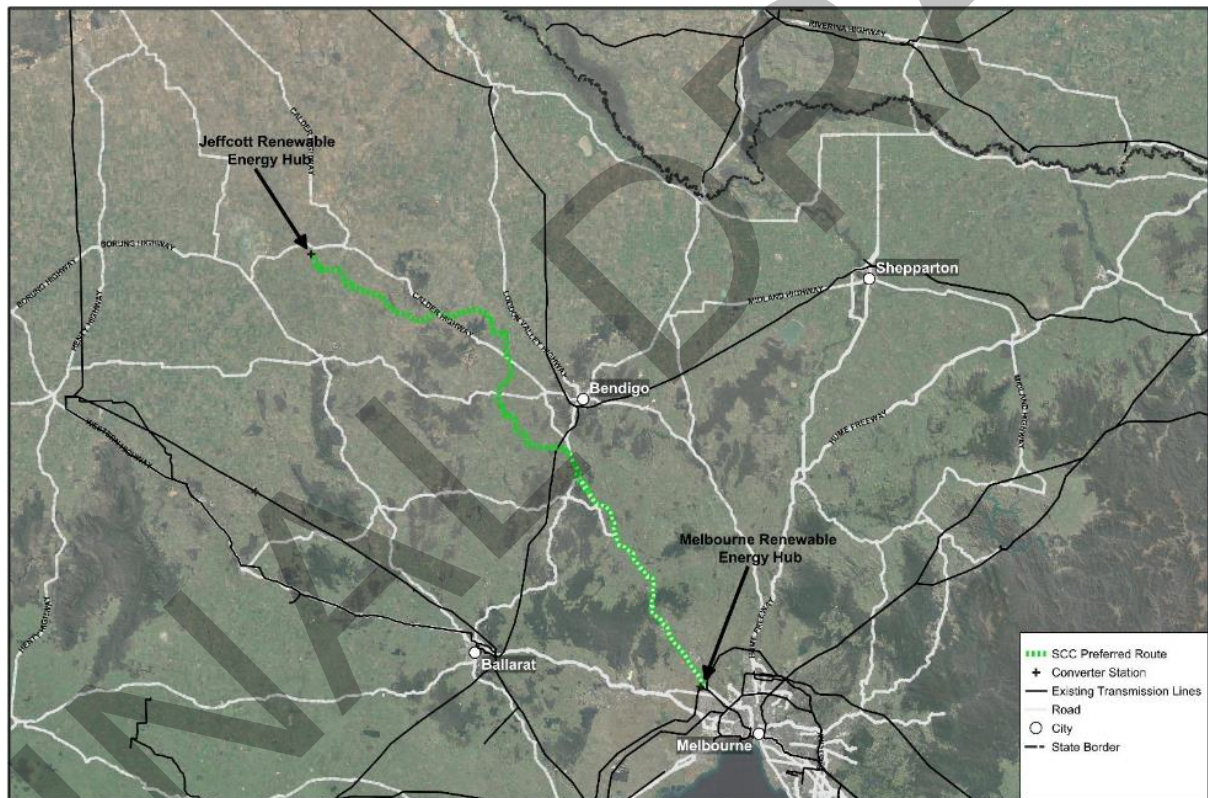


Figure 1 - Site location (Source: Cogency).

2 METHODOLOGY

This preliminary assessment report considers how the proposed components of the Project may impact on the landscape of the setting and surrounding visually sensitive receptors. Additionally, it provides guidance on the potential location of the of Project components, and the construction process, to reduce potential visual impacts.

The methodology as outlined below is undertaken at a higher level at the preliminary assessment phase than at a final assessment phase. However, the approach and principles are the same.

2.1 Approach

While there are no specific legislative requirements for the methodology of an assessment such as this in Victoria, the profession typically refers to the guidance offered by:

- Guidance for Landscape and Visual Impact Assessment (GLVIA), Third Edition, Landscape Institute and Institute of Environmental Management & Assessment (2013).
- Guidance Note for Landscape and Visual Assessment, Australian Institute of Landscape Architects (AILA) (2018).

The methodology used for this Project, described below, conforms generally to the direction offered by the above guidelines as well as other proven assessment methodologies.

This preliminary and final assessment reports assess the landscape and visual impact of the Project, that is the day-to-day visual effects on people's views.

The method to measure visual impacts is based on the combination of the sensitivity of viewers to the proposed change and the magnitude of the Project on that visual setting or view.

The following study components were included as part of this assessment:

- Review the Project with regard to potential visual impacts.
- Characterisation of the existing landscape and visual setting.
- Qualitatively assess:
 - Visual modification at key viewpoints – How would the Project contrast with the landscape character of the surrounding setting?
 - Visual sensitivity at key viewpoints – How sensitive would viewers be to the Project?
 - Potential night-lighting impacts.
 - Potential glare or glint impacts.
- Propose visual impact mitigation and management measures.

2.2 Assessment of landscape and visual impacts

The landscape and visual impact assessment is based on a detailed analysis of the landscape and visual setting and an assessment of the potential impacts of the Project on its viewshed.

The critical issues considered for this LVIA were:

- The number and location of sensitive viewing locations;

- The duration of the view – either static (generally long term - > 1 hour) and mobile (generally short term continually moving and static for no longer than 5 minutes);
- The degree to which the proposed works would be visible;
- The duration of the construction period for the underground cable and the length of time prior to re-establishment of a ground surface or removed vegetation;
- The quality of the landscape setting; and
- The degree to which the Project contrasts or is compatible with the visual character of the setting – the visual modification level.

The assessment method assumed that if the Project would not be seen, there is no impact (refer to **Table 1**).

Level of Visual Impact		Visual/Viewer Sensitivity			
N/A = Not Apparent, VL = Very Low, L = Low, M = Moderate, H = High		H	M	L	
Level of Visual Modification to the Setting	H	H	H	M	
	M	H	M	L	
	L	M	L	L	
	VL	L	VL	VL	
	N/A	N/A	N/A	N/A	

Table 1 - Visual impact determination matrix.

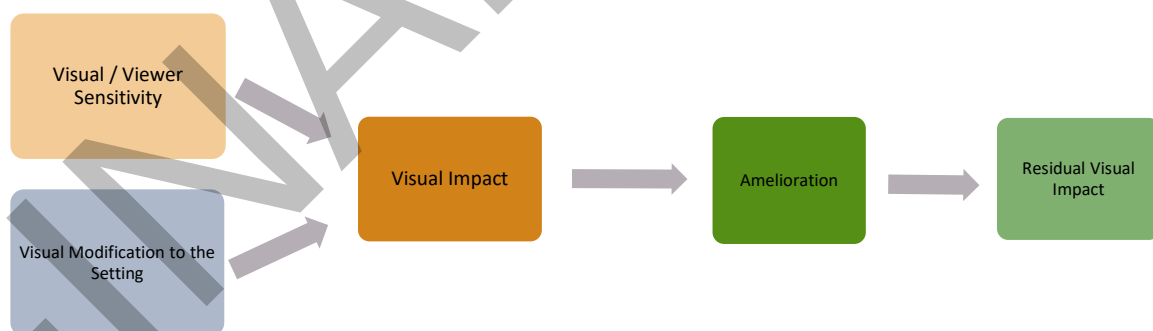


Diagram 1 – Visual impact assessment process.



2.2.1 Visual sensitivity

In this report, the approach to the visual sensitivity is consistent with the USDAFS visual management system¹.

The visual sensitivity of development depends on a range of viewer characteristics. The primary characteristics used in this report include:

- Land use;
- Distance of the development from viewers; and
- Visibility from sensitive land use areas.

Visual sensitivity is a measure of how critically a change to the existing environment would be viewed from various land uses (refer to **Table 2**). Different activities have different sensitivity levels. For example, tourists on holiday would generally view changes to a landscape more critically than industrial workers in the same area. Similarly, individuals would view changes to the visual setting of their homes more critically than changes to the broader area in which they travel or work.

The next critical component to rating the visual sensitivity is the distance of the development from the identified visual use area. There are three viewing situations to consider:

- foreground (0 - 1 km);
- middleground (1 km – 4 km); and
- background (> 4 km).

As the distance increases from a proposed development to a sensitive land use area, the level of viewer sensitivity decreases based on a perceptual dis-association based on a reduction in relative proximity. This is also influenced by the vertical visual prominence of the Project components, that is, the effect that height has on a component being visually conspicuous in the setting (refer to **Section 2.2.3 - Occupied field of view – Visual prominence**).

For the collector substations, the sensitivity threshold distances in **Table 2** are relevant.

In the case of the underground cable, with an overall very low height of soil stockpiles during construction, and no height following construction the sensitivity threshold distances will be significantly reduced with the extent of interest being confined to 500m from the construction corridor.

¹ Landscape Aesthetics – A Handbook for Scenery Management, Agricultural Handbook No. 701. United States Department of Agriculture Forest Service (1995).

Visual Use Area	Foreground		Middleground		Background
	Local Setting		Sub-Regional Setting		Regional Setting
	0 – 0.5 km	0.5 – 1 km	1 – 2 km	2 – 4 km	> 4 km
National/State Park*	H	H	H	H	M
Residences/Townships	H	H	H	M	L
Recreation/Tourism	H	H	H	M	L
Highways – “M” and “A” category/Tourist Routes	H	M	M	L	L
Cemeteries	H	M	M	L	L
Passenger Rail	M	M	L	L	L
Secondary Roads – “B” and “C” category	M	L	L	L	VL
Local Roads	L	L	L	VL	VL
Agricultural Areas	L	L	L	VL	VL
Industrial/Utility Areas	VL	VL	VL	VL	VL

Legend - H = High, M = Moderate, L = Low, VL = Very Low

*Sensitivity reduces to low in distances greater than 10kms

Table 2 - Typical Viewer (visual) Sensitivity.

2.2.2 Visual modification to the existing setting

The level of visual modification resulting to a setting from a proposed development, or the degree to which the setting is modified, can be best measured as an expression of the visual interaction, or the level of visual contrast between the project and the existing visual environment.

A high level of magnitude, or a high degree of visual modification, will result if the major components of the project contrast strongly with the existing landscape.

A low level of magnitude, or a low degree of visual modification, will occur if there is little or minimal visual contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the proposed development and the environment in which it sits. In this situation, the proposed development may be noticeable, but does not markedly contrast with the existing, already modified landscape (refer to **Table 3**).

The degree of magnitude or modification would generally decrease as the distance from the Project to various viewing locations increases.

Modification Level	Description
High	The proposal is highly visible and intrusive regarding the size, scale and geographical extent, and would disrupt views currently experienced from sensitive land use areas and/or strongly contrasts with the existing landscape setting which has limited capacity for change.
Moderate	The proposal partially intrudes regarding the size, scale and geographical extent or somewhat obstructs current views from sensitive land use areas and/or a noticeable compositional change to the existing landscape setting in which there is moderate capacity for change.
Low	The proposal is barely perceptible resulting in minor deterioration to the view currently experienced from sensitive land use areas; and/or results in a small change to the existing landscape setting in which change is possible without harm.
Very Low	There is minimal compositional contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the proposal and the environment in which it sits. In this situation, the proposal may be noticeable but does not markedly contrast with the existing landscape setting.
Not Visible	There are no views of the proposal components and as such, there is no impact.

Table 3 - Typical scenarios for determining the visual modification level.

2.2.3 Occupied field of view – Visual prominence

To assist with the assessment of visual prominence, this report defines several viewsheds which are based on distance from the project. The methodology is based on the reduction of impact with an increase in distance between a given viewpoint and the project. The potential visual impact of the project will also, to a large extent, depend on how much of the central field of vision it occupies (refer to **Table 4**, **Table 5** and **Figure 2**).

Throughout the visual catchment, the degree of visual prominence will generally decrease as the distance from the development site to various viewing locations increases.

The quantitative assessment of visual prominence, i.e., how much is potentially visible, is intertwined with the distribution, height and density of vegetation as well as topography throughout the visual catchment, elements which can screen views of a development from a particular viewpoint. Visual prominence helps inform the process of determining the visual modification level, as well as the visual sensitivity threshold distance, as previously outlined in the above sections.

In areas of flat topography, the vertical field of view of the tallest soil stockpile, the subsoil stockpile, with a height of approximately 2m, will be less than 0.5 degrees, or of low visual prominence in distances beyond approximately 230m, and less than 0.25 degrees, or of very low visual prominence in distances beyond 450m.

Degrees of Field of View Occupied	Potential Visual Prominence – Horizontal Field of View
Less than 5°	Insignificant – Low Visual Prominence The development may not be highly visible in the view unless it contrasts strongly with the background.
5° – 30°	Potentially Noticeable – Moderate Visual Prominence The development may be noticeable. The degree that it intrudes on the view will be dependent on how well it integrates with the landscape setting.
Greater than 30°	Potentially Dominant – High Visual Prominence The development will be highly noticeable.

Table 4 - Horizontal line of sight – Visual impact / visual prominence.

Degrees of Field of View Occupied	Potential Visual Prominence – Vertical Field of View
0° - 0.25°	Barely Discernible – Very Low Visual Prominence A very thin line in the landscape.
0.25° - 0.5°	Insignificant - Low Visual Prominence A thin line in the landscape.
0.5° – 2.5°	Potentially Noticeable – Moderate Visual Prominence The development may be noticeable. The degree that it intrudes on the view will be dependent on how well it integrates with the landscape setting.
Greater than 2.5°	Potentially Dominant – High Visual Prominence The development will be highly noticeable, although the degree of visual intrusion will depend on the landscape setting and the width/spread of the object.

Table 5 - Vertical line of sight – Visual impact / visual prominence.

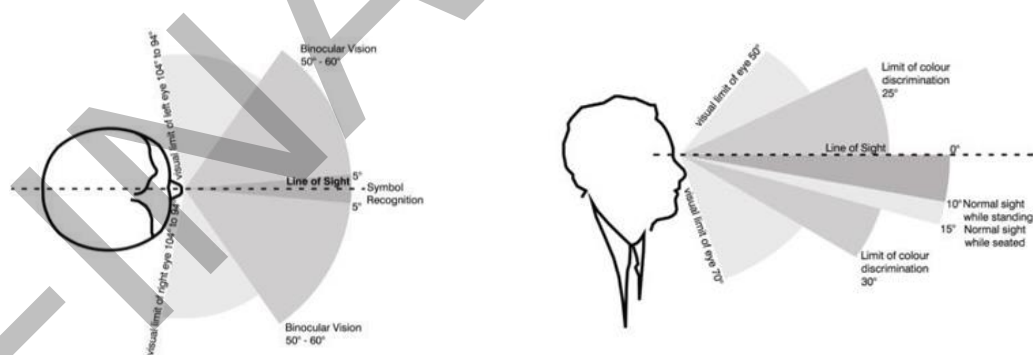


Figure 2 – Horizontal and vertical field of view.

2.2.4 Residual impacts

The effectiveness of the measures proposed in mitigating the landscape and visual impacts resulting from the Project is demonstrated by comparing the visual impact during initial operation with the residual impact when the proposed landscape measures have mostly matured, which is typically ten (10) years following initial establishment.

Generally, residual impacts would be reduced by at least one level where landscape measures have been proposed and matured due to filtering or inhibiting views to the Project.

2.3 Lighting impacts

AS-NZS-4282-2019 Control of the Obtrusive Effects of Outdoor Lighting provides standards for the assessment and limitation of lighting impacts. The standard identifies four environmental zones for exterior lighting which are categorised by the degree of artificial lighting within an area. For example, national parks would be categorised as an intrinsically dark landscape (Category A1), whereas a city centre with high levels of night-time activity would be categorised as a high district brightness area (Category A4).

The standard is aimed at the minimisation of light spill. Regardless of the existing brightness of a particular setting, it is a widely accepted principle that light spill, particularly upward light spill, be minimised wherever possible.

2.3.1 Lighting impact scenarios

Glow

Light glow is typically an upward projection of light that results in illumination of the night sky above a lighting source. It is intensified, or more visually apparent when foggy or cloudy as the light reflects or disperses of water droplets in the atmosphere. Glow is visible over significant distances.

Spill

Spill is light that falls on adjacent sensitive surfaces, both vertical and horizontal, and is most intrusive where it illuminates private open spaces or spills through windows.

Hot spots

Hot spots relate to concentrated areas of bright light in an otherwise less well illuminated setting. Hot spots will be most visible where are elevated.

Kinetic / movement

Lights that change colour or flash can draw the attention of a viewer. As the speed of the colour change or blink increases in speed, so too will its prominence of ability to draw attention.

2.4 Limitations of the assessment

There are these following limitations associated with this assessment:

- The LVIA process aims to be objective and, as such, seeks to describe any changes factually. Potential changes resulting from the project have been defined. However, the significance of these changes requires qualitative (subjective) judgements to be made. Therefore, the conclusions to this assessment combine both objective measurement and subjective professional interpretation. This assessment has attempted to be objective, however, it is recognised that visual assessment can be highly subjective, and individuals are likely to associate different visual experiences to the study area;



- The impact assessment is focused on the current land uses and zoning; and
- Methodology of the construction works are currently unknown and dependent upon planning approvals. However, we have assumed that the impacts during construction would result in a similar degree of visual impact to that of the operational phase assessment findings, pre-amelioration.

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3 COMPONENTS OF THE PROJECT

At this preliminary assessment phase, a resolved design is not assessed. Rather, this assessment considers how the proposed components of the Project, located over the Project area, may impact on surrounding visually sensitive receptors. Additionally, it provides guidance on the placement of Project components and the cable construction methodology in order to reduce potential visual impacts.

The Project proposes an underground electricity transmission line that will start at the Melbourne Renewable Energy Hub (MREH), run approximately 102km in the median strip of the Calder Freeway, including a section diverted through Harcourt, to Ravenswood, then run approximately 162km on private land to its terminus at the Jeffcott Renewable Energy Hub (JREH) (refer to **Figure 3**).

The section beyond the Calder Freeway median generally follows broad acre grazing and cropping farms, which are conducive to trenching. The Project also includes two converter stations - one at the Melbourne end and one at Jeffcott.

The transmission line will be an up to 525 kV HVDC underground line, which comprises three cables buried in a trench, approximately 1.6m deep. The impact area for the trenched sections will be approximately 20-30m wide, with a 200m wide study corridor to allow for micro siting of the cable. Where trenching is not suitable, such as at water crossings, the transmission line will be bored underneath using horizontal directional drilling (HDD).

The construction process will take approximately 4 years to complete.

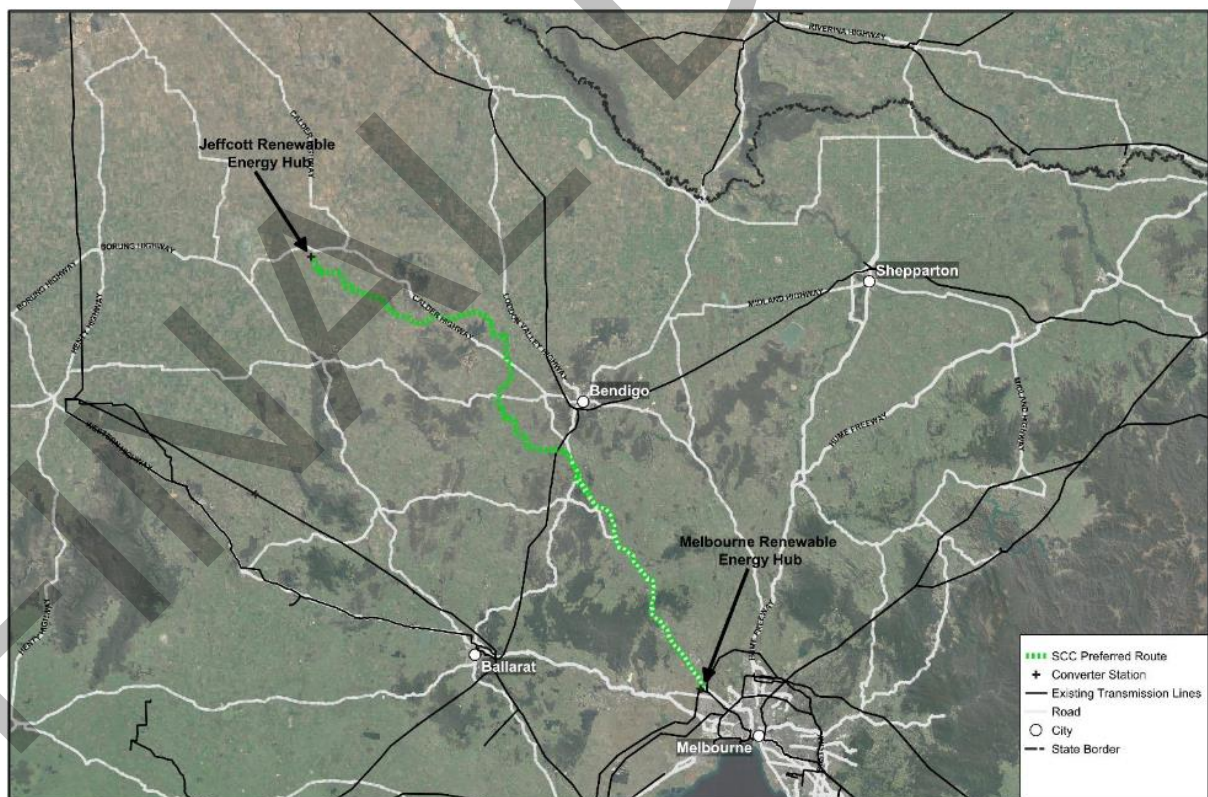


Figure 3 – Project route and convertor station locations.

3.1 Key features

The works and components associated with the Project include:

- Converter stations at Calder Park (MREH) and Jeffcott (JREH) comprised of:
 - A large shed, housing DC convertors and operations and maintenance activities.
 - An AC yard comprising convertor coolers, transformers, filters and oil handling tanks.
 - Security fencing and monitoring systems.
 - Security and maintenance lighting.
 - Earthworks that will be required during construction.
 - Noise attenuation walls.
 - Landscaping / screening.
- The 525 kV HVDC underground line, including a cable to cable transmission station, underground joint bays and communication cabinets, with progressive reinstatement of grassing and removed trees and shrubs.

The most visible components of the Project that may result in visual impacts to surrounding sensitive receptors are outlined below.

3.1.1 Converter Stations

A converter station will be constructed at Calder Park adjacent to the existing, under construction MREH (refer to **Figure 4**, and at Jeffcott, where the JREH will be located in a rural setting (refer to **Figure 5**).

The converter stations will have footprints of approximately 290m x 220m and a maximum height of approximately 18m (refer to **Figure 6**). They will comprise a large shed-like structure containing the DC hall, and an open AC yard (refer to **Figure 7**).



Figure 4 - SCC converter station location adjacent to under construction MREH at Calder Park.



Figure 5 - SCC convertor station (JREH) located in rural setting near Wooroonook (Source: Google Earth).

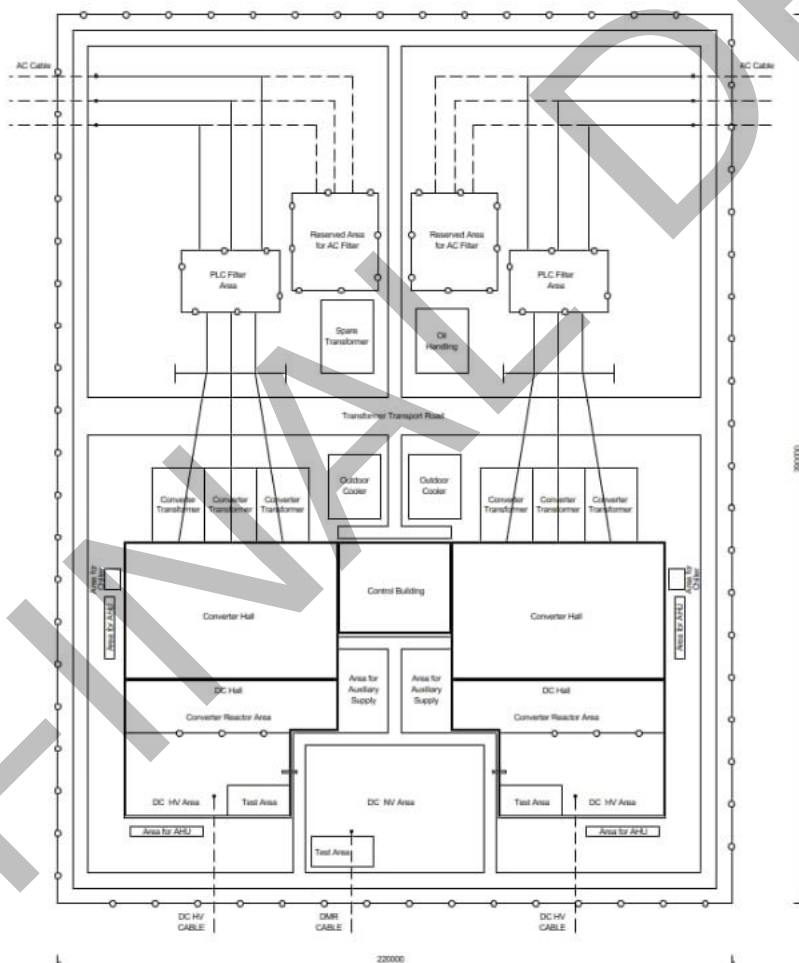


Figure 6 - Proposed layout of convertor station.

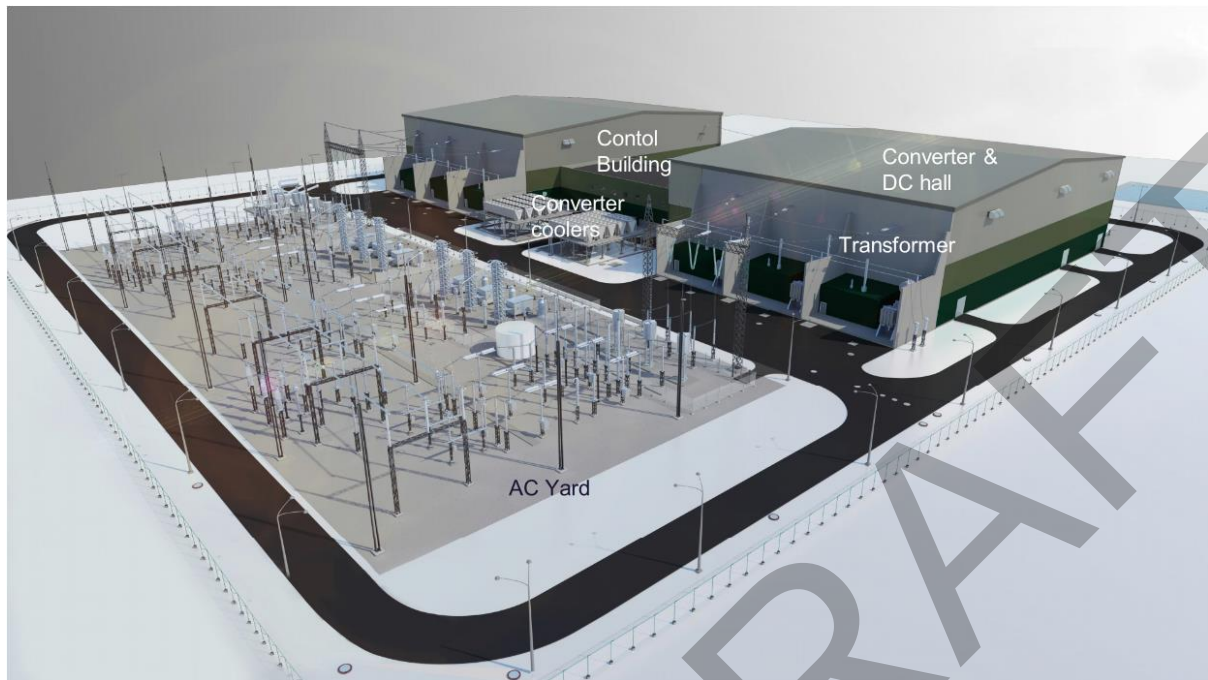


Figure 7 - Typical convertor station arrangement (Source: Siemens).

3.1.2 525 kV HVDC underground line

The following section describes the main physical components of the underground line, with the proposed route shown in **Figure 8**. The construction methodology varies depending on the environmental conditions and spatial parameters of the setting. These are described in **Section 3.2**.

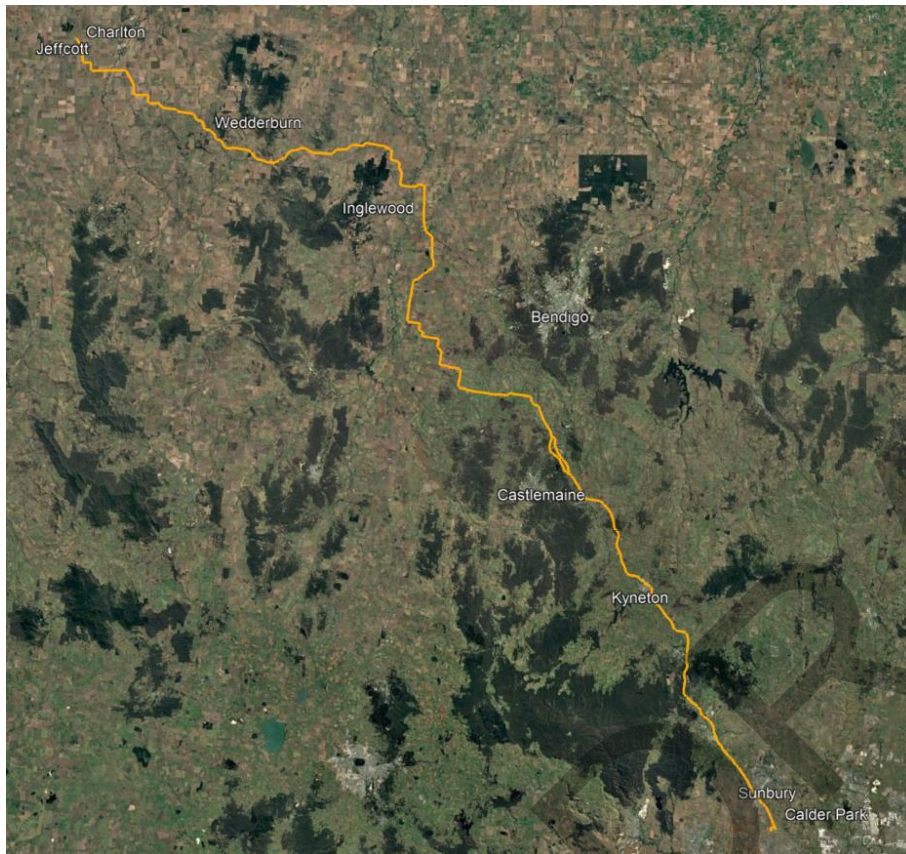


Figure 8 - Proposed underground line route (Source: Google Earth).

3.1.2.1 Trenched areas

The underground cables will be laid in a 1.6m (width) x 1.6m (depth) trench. Three conduits containing cables will be laid in the base of the trench and it will be backfilled to ensure a level ground surface that can be reinstated to the original condition (refer to **Figure 9**).

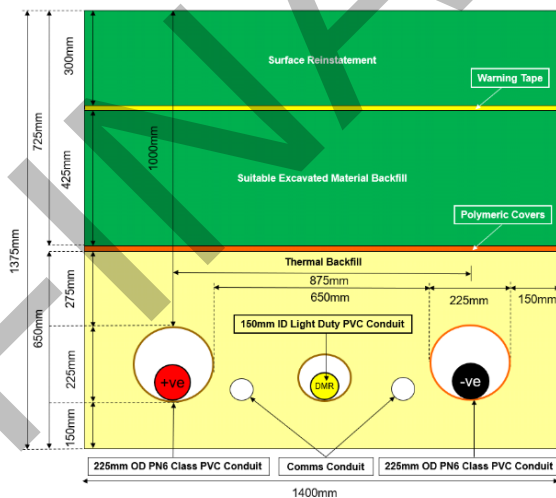


Figure 9 – Typical trenching arrangement (Source: Syncline Energy).

3.1.2.2 *Waterways and dense vegetation*

Where the alignment traverse's areas of dense vegetation, or is required to cross significant waterways, Horizontal Directionally Drilling (HDD) will be utilised. This construction technique allows for cable installation without trenching.

3.1.2.3 *Freeway bridges*

Throughout the Calder Freeway median section there are several locations where the alignment crosses minor drainage lines, roads and rail lines. In these instances, conduits will be attached to the underside of the bridge decks.

3.1.2.4 *Cable-cable intermediate transition station*

A cable-cable intermediate transition station would be located in the median strip of the Calder Freeway at Ravenswood where the cable heads west on its overland route.

It would be located on benching approximately 30m x 50m and would consist of 2 x 40 foot shipping containers placed side by side, as well as one x 20 foot shipping container for the storage of spare parts (refer to **Figure 10**).



Figure 10 – Typical Cable-cable intermediate transition station.

3.1.2.5 *Communications cabinets*

Small steel-clad cabinets will be located at approximately 10km intervals along the alignment. These will be approximately 1m (width) x 1.5m (length) x 1.7m (height). They will be coloured pale grey green and surrounded by a black, chainmesh security fence to 2m in height. A tilted solar panel with frame will be attached to the roof (refer to **Figure 11**).



Figure 11 – Typical form of proposed communications cabinet.

3.2 Underground cable construction process

The construction methodology is of direct relevance to the potential impacts of the underground cable.

3.2.1 Construction corridor

The corridors required for construction to accommodate trenching, stockpiles, construction activities and corridor access are defined as two widths:

- 20m wide corridor – areas of constrained width and existing vegetation, primarily the Calder Freeway median.
- 30m wide corridor – unconstrained parts of the Calder Highway median and overland areas.

3.2.2 Open trench size

The finished trench is 1.6m x 1.6m with the top 0.4m replaced as topsoil.

3.2.3 Topsoil and subsoil stockpiles

Topsoil stockpiles will be up to 1.2m in height.

Typical subsoil stockpiles will be less than 1.5m in height.

Stockpiles will be approximately 100m in length at any one time as progressive backfilling occurs.

3.2.4 Rate of advance

The typical rate of advance of the construction works will be 500m per day. Assuming that trenching is a six day per week operation, the rate of advance would be 3km per week.

The maximum rate of advance where the alignment is unconstrained would be 700m per day.

3.2.5 Extent of construction activities at any one time.

The typical length of preconstruction clearing, trenching and installation and backfilling and regrading at any one time is:

- Rural areas - 5km sections in operation at any one time.



- Calder Freeway median strip - 10km sections (including traffic management and access slip lanes).

For some specific sections we can drop to a 12m wide works area for, say, a 100m length of trenching.

3.2.6 Avoidance of vegetation.

For locations where vegetation exists, including along the freeway median, the approach to the retention is:

- 'thread the needle' between significant trees in the Calder Freeway median strip;
- to Horizontal Directionally Drill (HDD) where that's not possible; and
- to remove and replant minor trees and scattered shrubs plants.

4 PROJECT CONTEXT AND SETTING APPRAISAL

4.1 Project context – underground cable

The Project is comprised of three very different contexts, which are outlined following.

4.1.1 Calder Freeway median

The southern Calder Freeway median section extends from Holden Road at Calder Park to Harmony Way at Faraday, a distance of approximately 88km.

Over this extent, the median varies in width, as well as vegetation cover.

Rejoining the freeway after the Harcourt diversion, outlined below, the northern section of the alignment traverses a very wide median for approximately 4km until Ravenswood South, where it diverges from the freeway to head overland (refer to **Figure 12**).

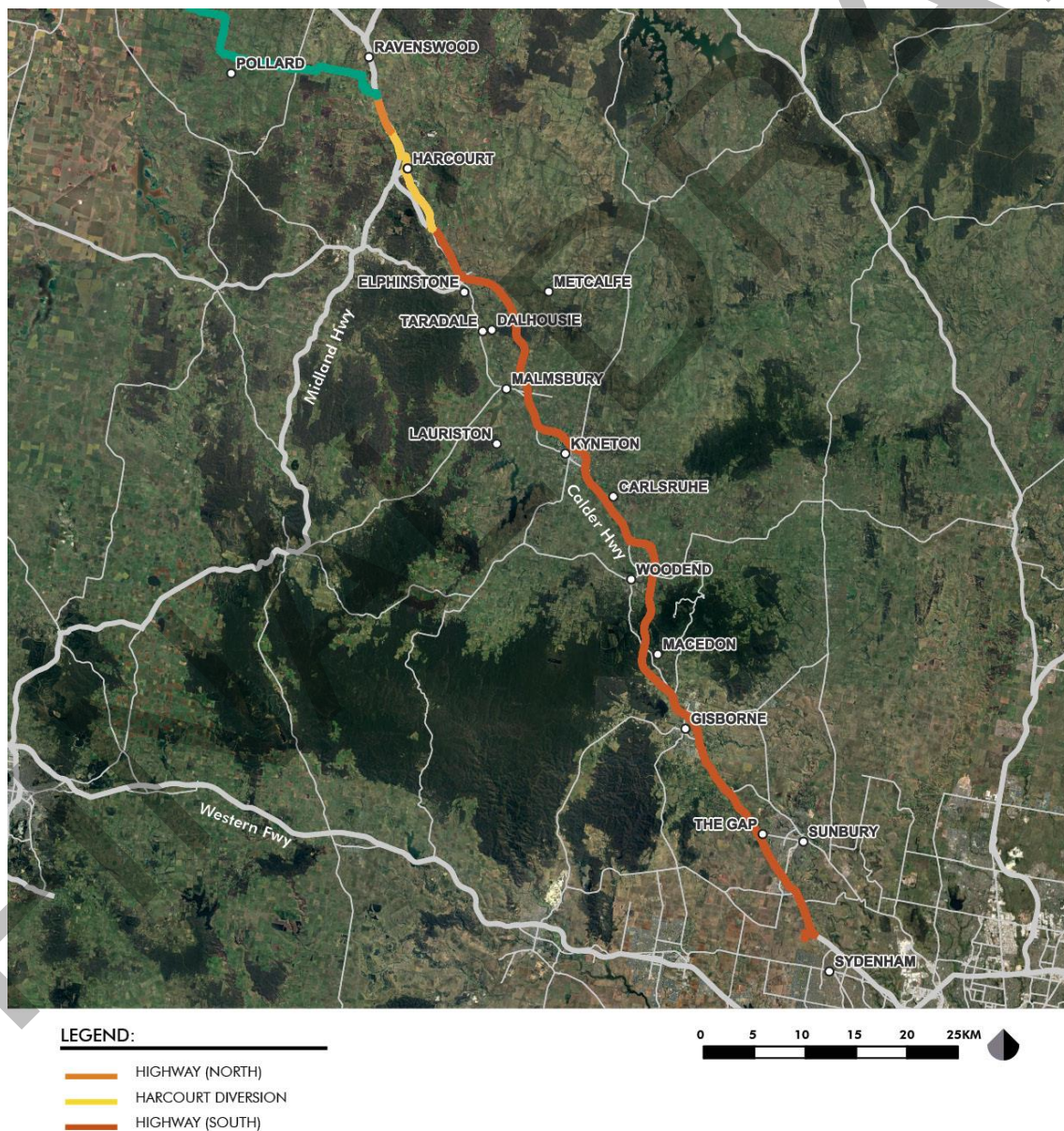


Figure 12 - Extent of Calder Freeway section – Calder Park to Ravenswood South (Source: Google Earth).

4.1.2 Harcourt diversion

The Harcourt diversion section extends approximately 11km from Harmony Way at Faraday to a location approximately 1km south Fogarty's Gap Road, where it once again joins the Freeway and is located within the median.

The alignment follows Harmony Way, through the centre of Harcourt, to Gaasch's Road, where it traverses a strip of land located between the Bendigo Rail line and the Calder Freeway (refer to **Figure 13**).



Figure 13 - Extent of Harcourt diversion (Source: Google Earth).

4.1.3 Overland corridor

The overland corridor section extends in a roughly southeast to northwest direction from the Calder Freeway at Ravenswood South to Wooroonook, a distance of approximately 137km.

Over this distance, the alignment traverses primarily rural land, skirting a number of small townships (refer to **Figure 14**).

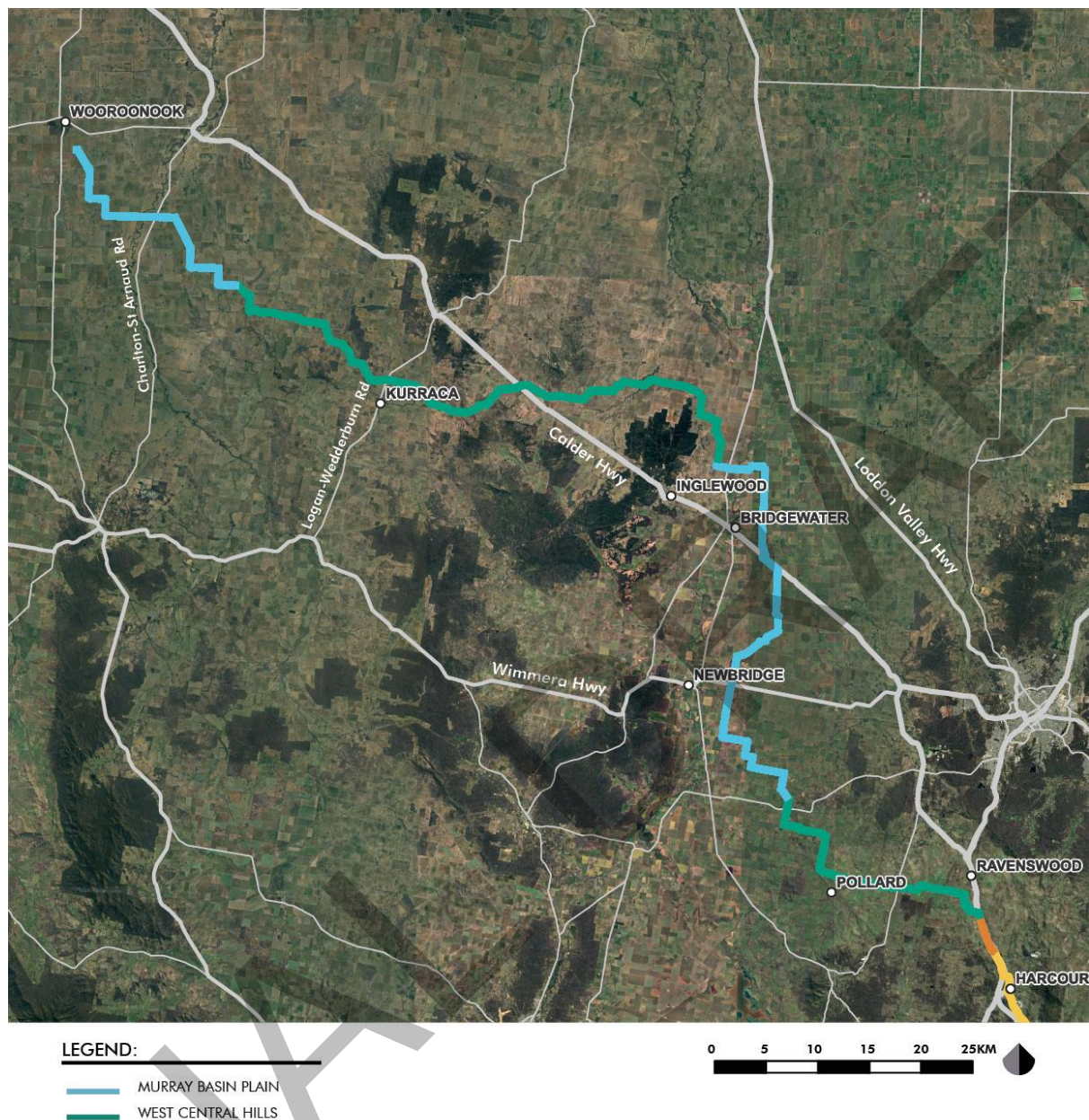


Figure 14 – Extent of Overland corridor and traversed landscape units (refer to Section 4.7) – Ravenswood South to Wooroonook (Source: Google Earth).

4.2 Project context – JREH and MREH convertor stations

The convertors are relatively discrete components of the project with small footprints.

4.2.1 MREH convertor station

The MREH convertor station is located immediately adjacent to the northeast of the currently under construction MREH at Calder Park. It is located approximately 370m south of Holden Road, a currently unsealed road and approximately 680m west of the Melbourne-Bendigo railway line.

4.2.2 JREH converter station

The JREH convertor station is located on rural cropping and grazing land at Wooroonook, approximately 1.8km south of Borung Highway and 1.1km east of Wycheproof-St Arnaud Road.

4.3 Zoning and land use – underground cable

The common zones that the entire Project corridor traverses are:

- Transport Zones – TRZ 1 and 2.
- Farming Zones – FZ.

Overlays are of particular relevance to landscape and visual matters, and these are:

- ESO – Environmental Significance Overlays.
- SLO – Significant Landscape Overlays.
- VPO – Vegetation Protection Overlays.

4.3.1 Zoning

4.3.1.1 Calder Freeway median

The Calder Freeway traverses the following municipalities:

- City of Hume – where the freeway forms the western boundary;
- Shire of Macedon Ranges; and
- Mount Alexander Shire Council.

4.3.1.1.1 Transport Zone 2 (TRZ2)

Within all municipalities, the Calder Freeway is located within Transport Zone 2 (TRZ2) - Principal Road Network

The purpose of the zone relates primarily to the provision of transport and does not mention any requirements relating to landscape or visual values to be maintained. The purpose is:

- To provide for an integrated and sustainable transport system.
- To identify transport land use and land required for transport services and facilities.
- To provide for the use and development of land that complements, or is consistent with, the transport system or public land reservation.
- To ensure the efficient and safe use of transport infrastructure and land comprising the transport system.

4.3.1.1.2 Macedon Ranges Shire Council

Environmental Significance Overlay - Schedule 5 (ESO5)

The freeway is subject to an extensive overlay relating to the protection of the water supply catchment.

Vegetation Protection Overlay - Schedule 1 (VPO1) - Black Gum Areas



The Shire has a significant stand of remnant Black Gums (*Eucalyptus aggregata*) that exist in close proximity to the Woodend Township. Some of these remnant Black Gum areas are located along roadsides, and the overlay aims to protect, maintain and enhance these habitat and corridor requirements for indigenous fauna.

As the remnant trees are located in roadsides, the Project will not have any impact on them.

Summary

The only control of relevance to landscape and visual values is VPO1. However, as the protected Black Gum areas are along the roadsides, the Project's location within the central median will result in them not being disturbed.

4.3.1.2 Harcourt diversion

4.3.1.2.1 Mount Alexander Shire Council

Transport Zone 2 - Principal Road Network (TRZ2).

Harmony Way, which the corridor follows for much of the length of the diversion, is zoned TRZ2.

Farming Zone (FZ)

The relatively short section of the diversion that runs along the verge of Gaasch's Road is within FZ land.

Transport Zone 1 - State Transport Infrastructure (TRZ1)

North of Gaasch's Road, the corridor runs through a lineal parcel of land located between the TRZ2 land of the freeway and TRZ1 land of the railway line.

The purpose of this zone relates to the provision of transport services.

Environmental Significance Overlay - Schedule 5 (ESO5)

A very narrow strip of ESO5 land crosses the corridor a number of times. The purpose of this overlay is the protection of watercourses, including Bullock Creek.

Summary

There are no zones or overlays that specifically relate to the protection of landscape and visual values.

4.3.1.3 Overland corridor

The overland corridor section of the Project traverses local planning authority areas in the following order, from southeast to northwest:

- Shire of Mt Alexander.
- City of Greater Bendigo.
- Shire of Mt Alexander.
- City of Greater Bendigo.
- Loddon Shire Council.
- Buloke Shire Council.



4.3.1.3.1 Shire of Mt Alexander

Farming Zone – Schedule 1 (FZ1)

The Project corridor is primarily FZ1 land.

Rural Living Zone – Schedule 3 (RLZ3)

An area of RLZ3 is located within the 200m study corridor, to the northwest of Bendigo-Maldon Road and Hokins Road.

4.3.1.3.2 City of Greater Bendigo

Farming Zone (FZ)

The Project mostly traverses FZ land.

Environmental Significance Overlay (ESO) and Vegetation Protection Overlay (VPO)

ESO's or VPO's apply to numerous waterways/drainage lines, including Comins Channel (ESO) and Murphy Creek (VPO), which the corridor crosses a number of times.

4.3.1.3.3 Loddon Shire Council

Farming Zone (FZ)

The Project mostly traverses FZ land.

Transport Zone 2 - Principal Road Network (TRZ2)

The Calder Highway and B and C class roads that the Project crosses are zoned TRZ2.

Public Conservation and Resource Zone (PCRZ)

The Loddon River and its banks are zoned PCRZ.

Hope Creek is zoned PCRZ.

Both designations define these waterways as having attributes that contribute to landscape values.

Vegetation Protection Overlay (VPO)

A VPO applies to the vegetation lining the Calder Highway at Glenalbyn.

A VPO applies to the vegetation lining the Calder Highway between Bridgewater on Loddon and Derby.

4.3.1.3.4 Buloke Shire Council

Farming Zone (FZ)

The corridor is almost entirely FZ.

Transport Zone 2 - Principal Road Network (TRZ2)

C class roads that the Project crosses are zoned TRZ2.

Environmental Significance Overlay (ESO1)

The Avoca River and its banks are zoned ESO1, defining this waterway as having attributes that contribute to landscape values.

4.3.2 Land use

The land use of the overland corridor is predominately cropping and grazing,

4.3.2.1 *Calder Freeway*

The freeway is an “M” category road, the highest possible designation relating to the level of usage and significance to the State.

Although the freeway traverses a range of land uses, its land use is solely focused on the provision of transport. The Project is located centrally within this land use.

4.3.2.2 *Harcourt diversion*

The diversion follows Harmony way, a “C” category road that also supports tourist access to the vineyards and other attractions in the area.

Harmony Way traverses highly productive land uses, including orchards, as well as the central part of the Harcourt township.

The northern section of the diversion is located midway between the Calder Freeway reservation and the Melbourne to Bendigo rail line, a commuter, freight and tourism line.

4.3.2.3 *Overland corridor*

The overland corridor primarily traverses farmland, primarily cropping and grazing, with the intensity of operation reducing from the south to the north.

The corridor skirts a number of conservation reserves, such as:

- Inglewood State Forest Nature Conservation Reserve - 870m west of the alignment centreline.
- Powlett Plains Recreation Reserve – 1.4km north of the alignment centreline.
- Mt Korong Nature Conservation Reserve - 700m north from the alignment centreline.
- Sunday Morning Hills State Forest - 1.1km southeast of the alignment centreline.
- Kurraca I110 Bushland Reserve - 20m north from the alignment centreline.
- Wychitella Nature Conservation Reserve - 75m north from the alignment centreline.
- Nine Mile H.a - 80m south from the alignment centreline.
- Coonoor East I159 Bushland Reserve - 610m north from the alignment centreline.

4.4 Zoning and Land use – JREH and MREH convertor stations

The convertors are relatively discrete components of the Project with small footprints.

4.4.1 MREH converter station

4.4.1.1 *Zoning*

The land is located in the Melton Council area and is zoned Green Wedge Zone – Schedule 3 (GWZ3).

There are no overlays in place that might be of relevance to landscape and visual matters.

4.4.1.2 *Land use*

The land use of the Project area and surrounds is open grassland.



Calder Park raceway is located approximately 1km to the east southeast, between the railway line and the Calder Freeway and a freeway service centre is located 780m to the east (refer to **Figure 15**).

A rail stabling facility is located to the west of the rail line, approximately 600m from the Project area.

The residential edge of Hillside is located 960m to the south. The MREH, when completed, will be directly located between the Project area and the residences.

4.4.2 JREH converter station

4.4.2.1 Zoning

The land is located in the Buloke Shire area and is zoned Farming Zone (FZ).

There are no overlays in place on the Project area or immediate surrounds that might be of relevance to landscape and visual matters.

4.4.2.2 Land use

The land use of the Project area and wider surrounding area is predominantly cropping and grazing (refer to **Figure 16**).

Wooroonook Lakes Wildlife Reserve, with a small camping area, is located approximately 1.3km to the northeast.

Borong Highway to the north is a "C" category road and Wycheproof-St Arnaud Road to the west a "C" category road.



Figure 15 – MREH convertor station setting (Source: Google Earth).



Figure 16 -JREH convertor station setting (Source: Google Earth).



4.5 Landscape form and vegetation – underground cable

The topography of the freeway corridor is highly modified because of its intended function as a high standard transport corridor. The elevation steadily increases to the freeway's high point in the Great Dividing Range, before gradually reducing in elevation to the north (refer to **Figure 17**, **Figure 18** and **Figure 19**).

Outside of the freeway, the underground cable corridor also continues to decrease in elevation as it progresses northwards. However, there is a slight increase in elevation in the vicinity of Mount Korong.

The overland section of the underground cable is located within a mostly flat to slightly undulating landscape comprised primarily of open pasture or crop land. Dense areas of trees and tall shrubs are confined to narrow strips lining sections of the surrounding road network and some paddock boundaries.

Occasional rises and undulating topography are found in areas near significantly elevated forms, such as Mount Korong.

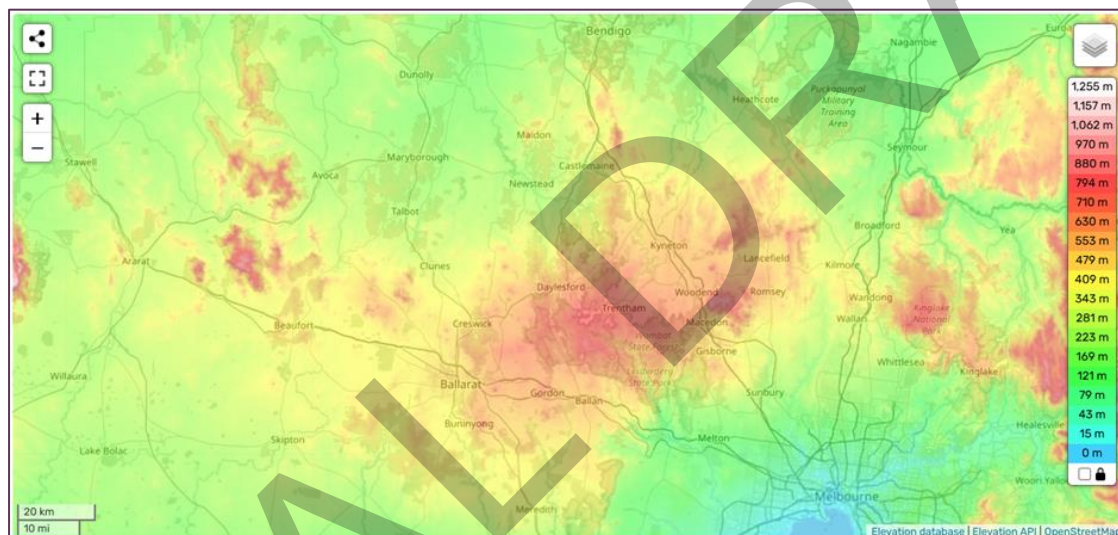


Figure 17 – Elevation of the southern part of Project area (Source: Open Street Map).

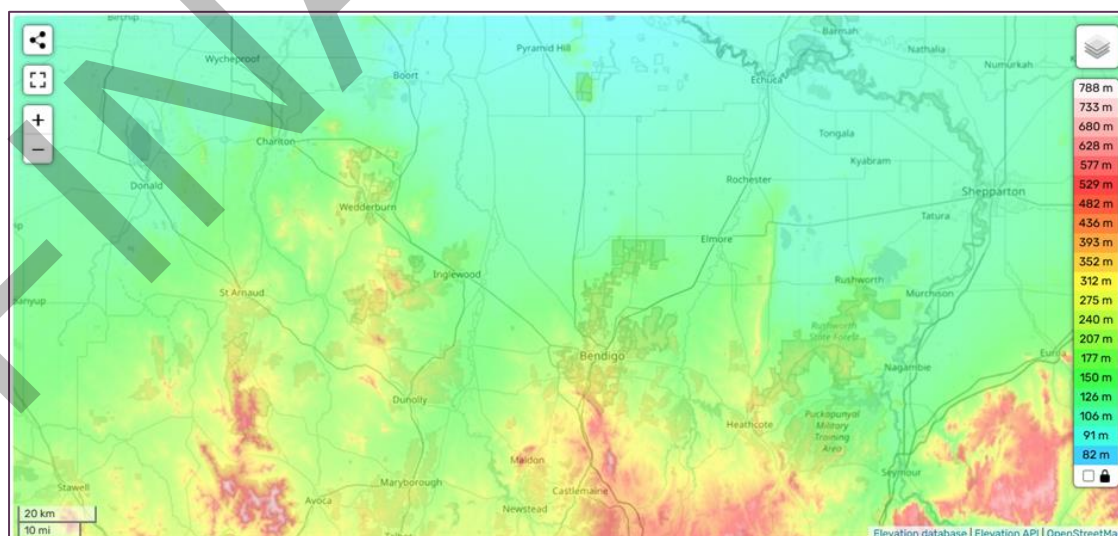


Figure 18 – Elevation of the northern part of Project area (Source: Open Street Map).



Figure 19 - Elevation profile of the project corridor (Source: Google Earth).

4.6 Landscape form and vegetation – MREH and JREH convertor stations

4.6.1 MREH

The topography of the Project area and surrounds are flat, with vegetation confined to open pasture with few trees to the west, but bands of vegetation along paddock boundaries to the east.

4.6.2 JREH

The topography of the Project area and surrounds are flat, with vegetation confined to seasonal crops. Trees are sparse and limited to roadsides.

The Wooroonook Lakes Wildlife Reserve to the northwest is heavily treed.

4.7 Landscape character - underground cable

Although the freeway traverses landscapes with significant natural attributes, this assessment does not consider these relevant for a number of reasons:

- The applicable zoning - the freeway reservation is located in a Transport Zone (TRZ), with the purpose of this to facilitate transport movement.
- Overlays relevant to landscape and visual matters are located typically outside of the reservation.
- The modified character of the road corridor, particular the internalised median strip, and its ability to absorb change, particularly short-term change as evidenced in the more recent installation of wire rope safety barriers (WRSBs).
- The role of the road corridors in infrastructure collocation, including gas mains, water mains and HV overhead powerlines.

Where the Project alignment leaves the freeway reservation, at both the Harcourt Route option and Ravenswood, matters relating to landscape and scenic quality are relevant and are considered in the assessment.

4.7.1 Landscape Character Units

The Calder Freeway road reservation section of the Project alignment traverses the following landscape units:

- Western Plains



- Foothills
- West Central Hills

Where the Project alignment leaves the freeway reservation at Ravenswood South, it alternately traverses the following landscape units (refer to **Figure 20** and **Figure 21**):

- West Central Hills
- Murray Basin Plains (type a) – Northern District Plains Subtype
- West Central Hills; and
- Murray Basin Plains (type a)- – Northern District Plains Subtype

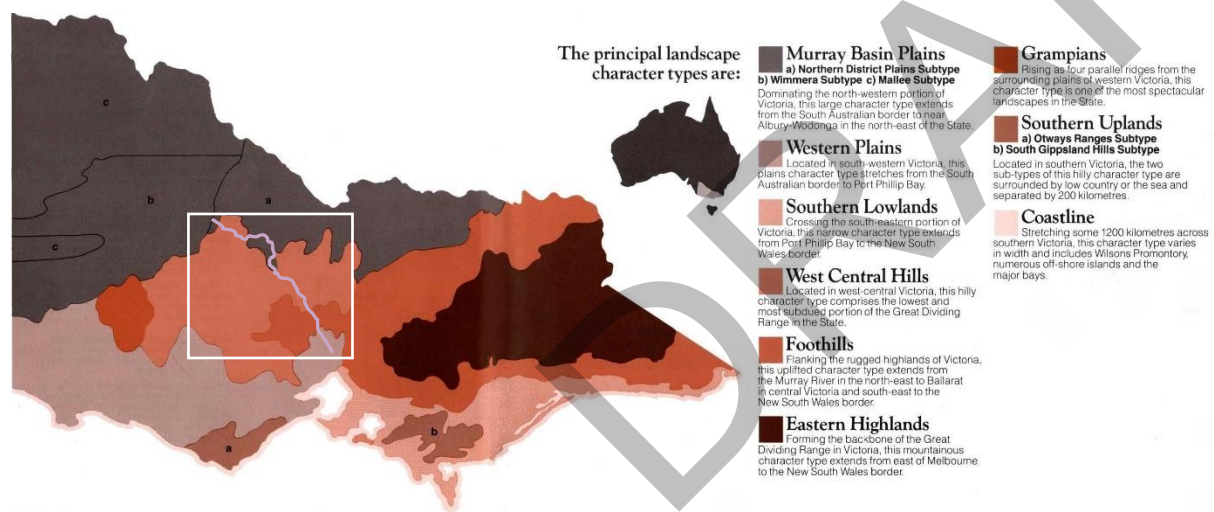


Figure 20 — Landscape Character Types of Victoria Map (Leonard and Hammond, 1984, pgs. 6 and 7).

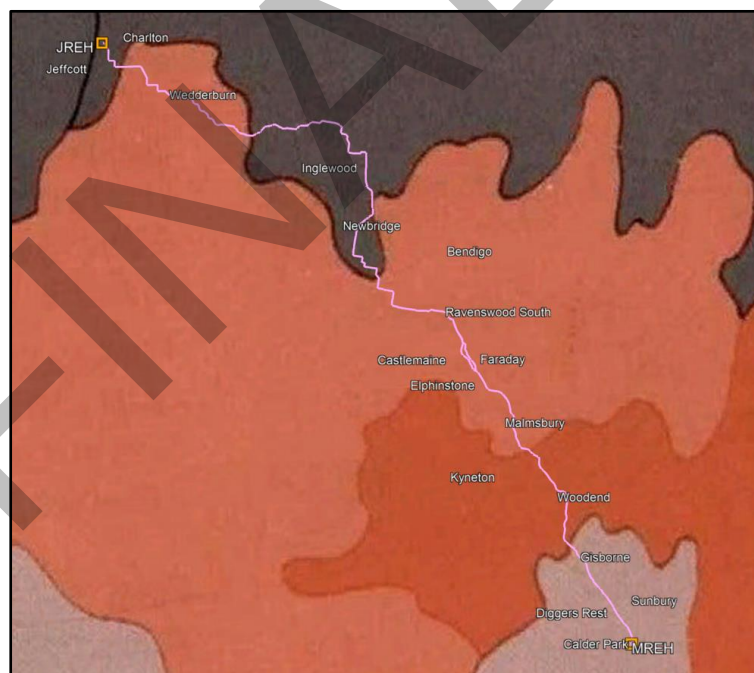


Figure 21 – Extract of Figure 35 - Landscape Character Types of Victoria Map.

4.7.1.1 West Central Hills

The landscape type sits between the Seymour- Murchison area and the eastern edge of The Grampians, running east-west for 210 kilometres, including the districts of Bendigo, Maryborough, St Arnaud and Avoca and to the country to the south of Ballarat.

The landscape type to the north is the “Murray Basin Plains” (Northern District Plains and Wimmera), to the south “Western Plains”, to the west “Grampians” and to east/south-east it wraps around the “Foothills” landscape type.

This area contains a portion of the Great Dividing Range and features a range of elevations with occasional peaks and gentle to moderate slopes. There are wide belts of low country tending north-south bounded by hills. Climate variation and elevation differences result in considerable variation in vegetation types. Steeper slopes on hills retain native vegetation while areas that were subject to goldmining during early settlement have experienced significant loss of forests.

Agriculture (crops and pastoral) remain the most significant land use with some areas of forestry and pine plantations. There are many population centres within this landscape type with hobby farms a feature around the fringes of the larger population centres.

4.7.1.1.1 West Central Hills – southeastern part of Project corridor

The southeastern part of this landscape unit This unit extends from Ravenswood South on the Calder Highway in the southeast, to the locale of Shelbourne in the northwest.

- The topography is slightly undulating, with some exposed granite outcrops on upper slopes.
- There is dense rectilinear banding of vegetation along roads and property boundaries, with areas of scattered vegetation and regular blocks of dense vegetation.
- The regularly occurring, meandering watercourses, are lined with vegetation.



Figure 22 - Western Central Hills (southeast) – Typical landscape character between Bendigo and Maldon.

4.7.1.1.2 West Central Hills – northwestern part of Project corridor

This unit extends from the locality of Salisbury West in the southeast, to the locality of Yeungroon in the northwest.

- The topography is flat to slightly undulating, with the greatest topographic variation occurring between the elevated hills at Mount Korong and Kooyoorra State Park.
- Dense rectilinear banding of vegetation lines roads and property boundaries, with areas of scattered vegetation, as well as large blocks of dense vegetation within the State Parks.
- Exposed granite outcrops occur on upper slopes of rising topography.
- The regularly occurring meandering watercourses are typically lined with vegetation.



Figure 23 - West Central Hills (northwest) - Landscape character in central part of unit, south of Mt Korong.

4.7.1.2 Murray Basin Plains (type a) – Northern District Plains Subtype

The landscape type extends about 320 kilometres from Wodonga to the Avoca River. It sits to the north of “West Central Hills” and “Foothills” landscape types and to the west of “Wimmera” landscape type. The Murray River border with New South Wales creates the northern edge of this landscape type.

To the east of this sub type the land surface is virtually flat with the flood plains of a complex stream network that experience seasonal volume variations flowing into the Murray River. To the west the topography remains flat, and the streams are less complex.

The mostly agricultural landscape contains very small pockets of remnant native grassland and woodland in roadside reserves and on steeper slopes. The agricultural areas of fruit and vegetable growing are under irrigation and there are few retained trees (red gum and grey box eucalypts).

4.7.1.2.1 Murray Basin Plains - southeastern part of Project corridor

This part of the landscape unit extends from the locale of Woodstock West in the southeast to the locale of Bridgewater North in the northwest.

- The topography is mostly flat to slightly undulating.
- It is very sparsely treed, with any taller vegetation mostly confined to roadsides. However, there are occasional blocks of dense vegetation.



Figure 24 - Murray Basin Plains (southeast) - Landscape character of the unit, east of Newbridge.

4.7.1.2.2 Murray Basin Plains – northwestern part of Project corridor

This relatively short section of the landscape unit extends from the locality of Yeungroon in the southeast, to the locality of Wooroonook in the northwest.

- It is mostly flat and treeless with limited vegetation lining roads and paddock boundaries.
- Dense vegetation surrounds the lakes at Wooroonook Lakes Reserve.
- There are few waterways, but most are lined with a thin band of vegetation. However, the Avoca River is lined with a dense band of vegetation.



Figure 25 - Murray Basin Plains (northwest) - Landscape character in central part of unit, near the north westerly extent of the Project.

4.7.2 MREH and JREH Converter Station

4.7.2.1 MREH

The MREH converter station is located within the Western Plains landscape unit and the landscape character is typical of the that commonly occurring in the unit.

4.7.2.2 JREH

The JREH converter station is located with the Murray Basin Plains (type a) – Northern District Plains Subtype and the landscape character is typical of the unit.

4.8 Scenic Quality

Scenic quality is somewhat subjective, but typically is a combination of a range of factors that have been found to contribute to the human appreciation of landscape. These factors are:

- Topographic variation and ruggedness;
- Strong patterning of vegetation; and
- The presence of water.

Agricultural landscapes are particularly subject to divergent opinions as to what constitutes scenic values. However, basic principles relating to diversity of topography, patterning of vegetation and the presence of water remain contributing factors to a higher level of scenic quality.



4.8.1.1 West Central Hills

Leonard and Hammond describe the scenic quality of the West Central Hills landscape character type as occurring within the Project area, as outlined below in **Table 6**.

Description	Moderate Scenic Quality	Low Scenic Quality
Landforms	Rounded hills, ridges and peaks that are not visually dominant. Broad shallow valleys.	Large expanses of indistinctly dissected landform that provide few landmarks with which to orient.
Vegetation	Predominately open forest of woodland combined with some natural openings that offer some visual relief, Vegetative stands that exhibit and range of size, form, colour, texture and spacing.	Extensive areas of similar vegetation and limited variation in colour and texture.
Waterforms	Prominent waterforms absent	Prominent waterforms absent

Table 6 – Scenic quality of the West Central Hills (Source: Leonard and Hammond).

4.8.1.2 Murray Basin Plains (type a) – Northern District Plains Subtype

Leonard and Hammond describe the scenic quality of the Murray Basin Plains (type a) – Northern District Plains Subtype landscape character type, as found within the Project area and its immediate surrounds, as outlined below in **Table 7**.

However, it should be noted that major permanent, treelined watercourses, such as the Loddon and Avoca rivers have attributes of high scenic quality.

Description	Low Scenic Quality
Landforms	Vast expanses of indistinctly dissected landforms that provide little illusion of spatial definition or landmarks with which to orient.
Vegetation	Extensive areas of similar vegetation. Few, if any trees. Very limited variation in colour and texture.
Waterforms	Waterforms mostly absent

Table 7 – Scenic quality of the Murray Basin Plains (type a) – Northern District Plains (Source: Leonard and Hammond).

4.9 Freeway reservation landscape / vegetation typologies

While varying typologies exist for construction within the central median of the freeway based on available width and the presence of vegetation, the LVIA methodology primarily considers the characteristics of the existing vegetation and the effect of its removal or retention on landscape and visual impacts.

4.9.1 Wide median – 30 – 40m

4.9.1.1 *Scattered groups - large shrubs/small trees*

In this scenario, the spacing of the plants in groups allows trenching to “thread the needle” between the groups of plants. Vegetation losses will be minimal and confined to a limited number of plants.



Figure 26 – Aerial view of example of scattered groups of large shrubs and small trees (Source: Google Earth).



Figure 27 - Road view of example of scattered groups of large shrubs and small trees.

4.9.1.2 *Immature alternating low density large shrubs/small trees*

In this scenario, the spacing of the plants in alternating groups allows trenching to “thread the needle”. Vegetation losses will be minimal and confined to a limited number of plants. However,

given the relative immaturity of the existing plants, replacement plants will be able to achieve a similar size to the removed plants in a relatively short period of time.



Figure 28 - Aerial view of example of alternating groups of immature large shrubs and small trees (Source: Google Earth).



Figure 29 - Road view of example of alternating groups of immature large shrubs and small trees.

4.9.1.3 Dense offset large shrubs/trees

The spacing of the plants in alternating of offset groups allows trenching to “thread the needle” between the groups of plants. Vegetation losses will be minimal and confined to a limited number of plants.



Figure 30 - Aerial view of example of offset groups of dense large shrubs and trees (Source: Google Earth).



Figure 31 - Road view of example of offset groups of dense large shrubs and trees.

4.9.1.4 Deciduous trees – formal rows

The offset of the row of trees to one side of the median will allow for trenching to occur on the unvegetated side. Tree removal should be very limited.



Figure 32 - Aerial view of example of formal rows of deciduous trees (Source: Google Earth).



Figure 33 - Road view of example of formal rows of deciduous trees.

4.9.1.5 Dense large shrubs and trees – full median width

In this scenario, where the plants cover the full width of the median, an assessment will be undertaken to determine their landscape value. Where determined to be of value, the construction methodology will involve directional drilling under the vegetation, where there is inadequate trending width.



Figure 34 - Aerial view of example of dense informal large shrubs and small trees across full median width (Source: Google Earth).



Figure 35 - Road view of example of dense informal large shrubs and small trees.

4.9.1.6 *Grassed only*

Trenching will be employed in grassed sections, which constitute the majority of median conditions. The backfilled area will be seeded and a grass cover re-established.



Figure 36 – Road view example of the most commonly occurring landscape typologies along the freeway corridor – grass only.

4.9.2 Narrow median – 10 – 30m

4.9.2.1 *Grass only*

Refer to **Section 4.6.1.6** above.

4.9.2.2 *Asymmetrical dense linear banding – small trees and large shrubs.*

The offset of the row of shrubs to one side of the median will allow for trenching to occur on the unvegetated side. Plant removal should be very limited.



Figure 37 - Aerial view of example of asymmetrical linear banding of large shrubs and small trees (Source: Google Earth).



Figure 38 – Road view of example of asymmetrical linear banding of large shrubs and small trees.

4.9.3 Very Narrow median - <10m

4.9.3.1 Grassed only

The section of very narrow median between Faraday and Harcourt North is the reason for the Harcourt diversion, as the width is insufficient to allow for construction activities, without significant disruption to road traffic.



Figure 39 – Road view of example of narrow, grassed median.



4.9.4 Waterway Crossings

4.9.4.1 Major river valleys

Major waterways, such as Deep Creek near Gisborne, will be directionally drilled to reduce impacts on riparian vegetation, as well as landscape impacts (refer to **Figure 40**).



Figure 40 – Deep Creek near Gisborne (Source: Google Earth).

4.9.4.2 Minor waterways

Minor waterways, such as Slaty Creek near Woodend that are not overly wide, will most likely be crossed via a conduit attached to the underside of the existing road bridge (refer to **Figure 41**).



Figure 41 – Road view of Slaty Creek near Woodend.

Where vegetation is lacking, trenching may be appropriate (refer to **Figure 42**).



Figure 42 – Example of an unvegetated waterway crossing that may be suitable for trenching.

4.9.5 Road/rail Overpass

4.9.5.1 Heavy vegetation

Overpasses with longer spans may require directional drilling to minimise impacts on existing vegetation. Where spans are shorter, a conduit attached to the underside of the existing road bridge may be possible (refer to **Figure 43**).



Figure 43 - Example of a crossing of a well vegetation road/rail overpass (Source: Google Earth).



4.9.6 Harcourt Option

4.9.6.1 Treed roadsides

This typology occurs along Harmony Way, either side of the township. Directional drilling will be required to minimise landscape and visual impacts (refer to **Figure 44**).



Figure 44 – Aerial view of the treed roadside of Harmony Way (Source: Google Earth).



Figure 45 – Road view along Harmony Way of the well treed roadside setting.

4.9.6.2 Harcourt township

Through the township of Harcourt, the roadside vegetation is less dense and established than that along Harmony Way. Construction techniques may include a combination of trenching and directional drilling (refer to **Figure 46**).



Figure 46 – Aerial view of the Harcourt township landscape typology (Source: Google Earth).



Figure 47 – Road view of Harmony Way in the centre of the township.

4.9.6.3 Scattered trees in grassland

North of Gaasch's Road, the corridor traverses a narrow land parcel between the Calder Freeway and the Melbourne-Bendigo railway line. The land is covered in often dense small to medium sized trees, primarily eucalypts (refer to **Figure 48**).

The random spacing of the plants will allow for the trenching to “thread the needle” between the groups of plants. Vegetation losses will be minimal and confined to a limited number of plants.



Figure 48 - Aerial view of the scattered vegetation cover of the narrow parcel of land between the Calder Freeway and the Melbourne-Bendigo railway line (Source: Google Earth).

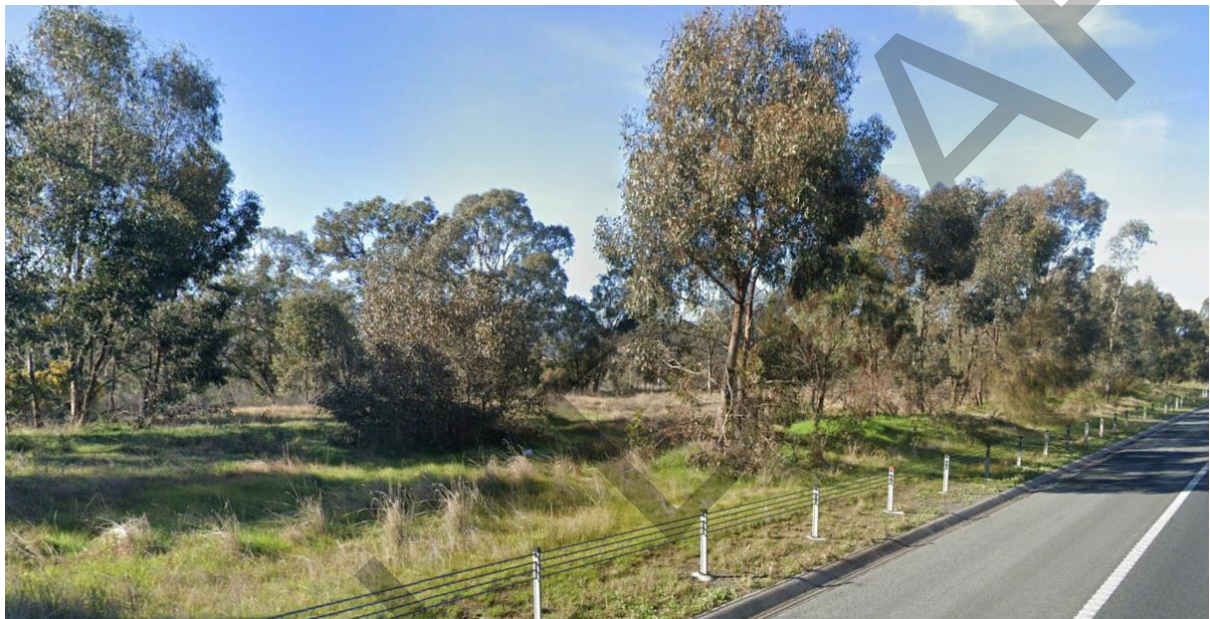


Figure 49 – Road view of the scattered vegetation cover of the narrow parcel of land between the Calder Freeway and the Melbourne-Bendigo railway line.

5 PRELIMINARY VISUAL IMPACT ASSESSMENT

5.1 Visibility of the proposal

The visual catchment or viewshed is the area from which a proposed development may be visible.

Figure 50 and **Figure 51** indicate the theoretical visual catchment of the Project, or theoretical zone of visual influence (TZVI).

Given the early stage of the Project's design development, the TZVI has been generated based on a typical component height of 10m for the tallest convertor station components.

The extent of the TZVI is 5km radius from each location. This is due to the overall vertical field of view occupied by a 10m high component being less than 0.25 degrees, or of very low visual prominence, in distances beyond 2.5km. The approach taken is conservative.

It should be noted that the TZVI is based on topography only and does not consider the screening effects of vegetation or built form throughout the landscape. As a result, it is essentially demonstrating a theoretical or worst-case scenario.



Figure 50 – Preliminary TZVI of the MREH.

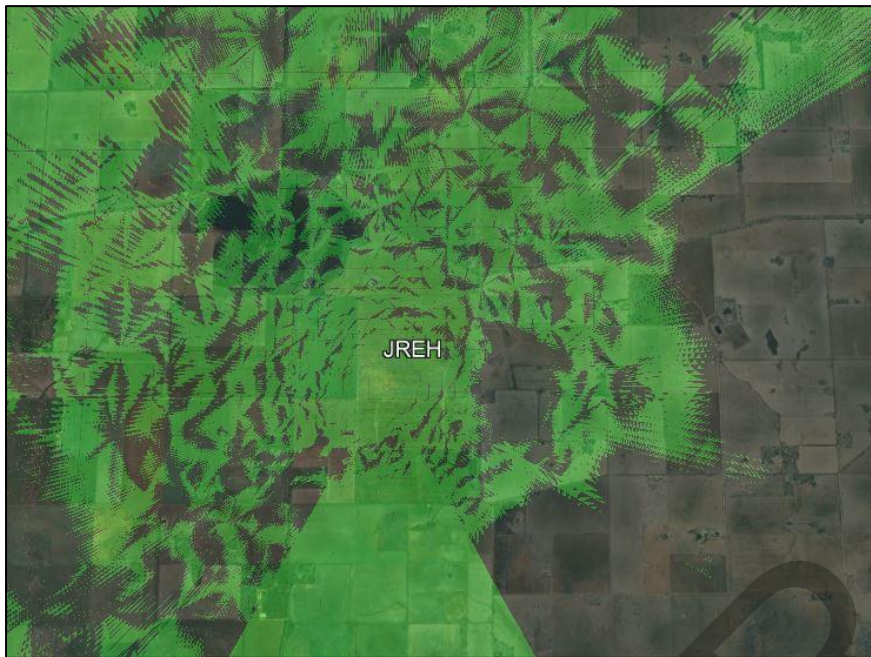


Figure 51 - Preliminary TZVI of the JREH.

5.2 Sensitive land uses

Due to the typically very low vertical profile of the Project components, the assessment is confined to sensitive locations within 2 km of the MREH and JREH and 500m of the underground cable component of the Project, the areas within which they will be most visible.

The land uses of relevance to this assessment are those considered to be of higher visual sensitivity, such as:

- Residences.
- Accommodation.
- Tourist roads and major routes.
- Recreation areas.
- National and State parks.

Table 2 shows the visual sensitivity levels of uses within the visual catchment of the project.

5.3 Preliminary visual assessment – underground cable

This section comprises a preliminary visual assessment of the Project from higher sensitivity viewpoints.

For assessment purposes, the Project alignment, or corridor, is broken into the following sections

- Calder Freeway;
- Harcourt diversion; and
- Overland corridor. The overland corridor is then further broken into sections that relate to the landscape units (refer to **Figure 52**):
 - West Central Hills – southeast;



- Murray Basin Plains (type a) – southeast;
- West Central Hills - northwest; and
- Murray Basin Plains (type a) – northwest.

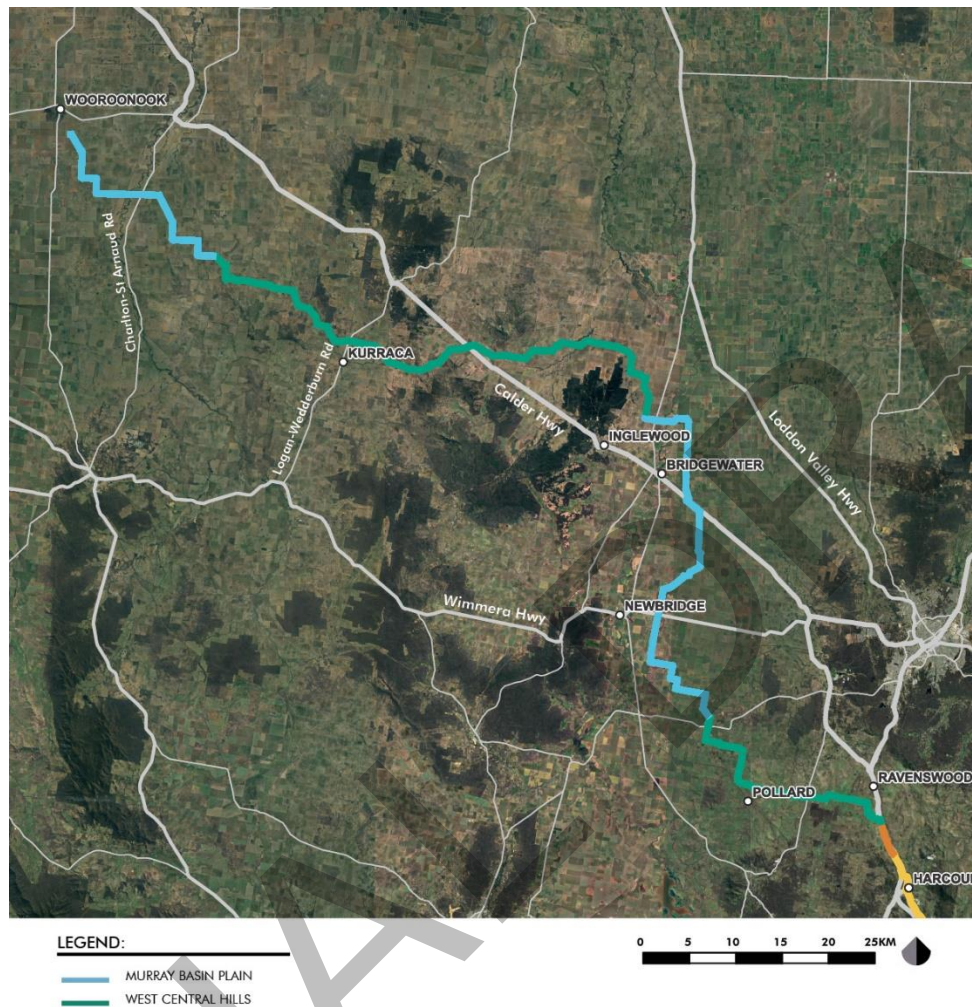


Figure 52 – Overland corridor landscape units.

5.3.1 Calder Freeway

The Calder Freeway median section extends from Holden Road at Calder Park to Harmony Way at Faraday, where it then diverts through Harcourt due to the constraints of constructing within a narrow freeway median, before commencing again near Harcourt North.

5.3.1.1 The landscape setting

The landscape setting of the Freeway reservation traverses a variety of landscapes, from the mostly flat and featureless Western Plains landscape type, to the moderate to high scenic quality Foothills landscape type, which includes the Macedon Ranges.



However, while the adjacent landscape types can be viewed from the freeway, its form and function results in it creating its own transport corridor landscape type, which includes all the typical infrastructure components that one would expect for a major road corridor.

The freeway median in particular is utilitarian and functional in nature, with landscaping limited and the safety of road user's paramount, as evidenced by the more recent introduction of wire rope safety barriers (WRSB) along its length.

5.3.1.2 Potential visual impact

Visual sensitivity levels

Within this setting, the highest visually sensitive uses are the road users of the "M" category freeway, which is a major commuter, transport and tourist route, as well as adjacent townships and residential uses. Within 2km of the Project, these uses would of high visual sensitivity.

The freeway passes through the following towns and settlements:

- Gisborne South.
- Gisborne.
- Woodend.
- Kyneton.
- Ravenswood South.

The freeway passes adjacent to the following towns and settlements:

- Calder Park.
- Sunbury.
- Diggers Rest.
- Macedon.
- Karlsruhe.
- Malmsbury.
- Elphinstone.
- Ravenswood South.

Visual fit and visual prominence

The freeway has been designed to ensure that visual and acoustic impacts are minimised for adjacent residential uses. As a result, the carriageways are well screened by acoustic mounds and fences as well as ameliorative screen planting.

As a result, the project is unlikely to be visible from impacts on adjacent residences are expected to be negligible.

The project construction process will be highly visible to road users resulting in a short term, high visual modification level. However, the works will be no more visually disruptive than the construction of the WRSB, with a limited extent of works visible at any one time.



The Project construction methodology will minimise the loss of median vegetation and the reinstatement of the ground surface and reseedling with grasses will result in a very short period of initial impact and a reduction in residual impact over a period of a few weeks.

Areas with a grass surface cover occupy 80% of the length of the Calder Highway corridor, with varying types of trees and shrubs occupying 20% (refer to **Table 8**).

As a result, when considering the proposed construction methodology that seeks to minimise tree loss, any vegetation impacts will be confined to a very small number of plants.

FINAL DRAFT



Vegetation Type (Highway)	Length (m)
Rows of deciduous trees	1,914
Offset loose rows trees + shrubs	6,785
Informal dense deciduous	90
Dense offset trees + shrubs	6,283
Dense full median trees + shrubs	1,866
Alternating rows, immature	1,654
Grass	72,658
TOTAL	91,250

Table 8 – Lengths of vegetation typologies.

The relatively small communications cabinets will be located every 10km and will be no different to other service cabinets in the median or verges, but can potentially be screened with vegetation, in coordination with the DTP.

The cable to cable connection will be visible within the wide median, but can be screened with vegetation given the available space.

Potential visual impact

Due to the lack of visibility, the impacts on adjacent residences are expected to be negligible.

While being visible to road users, the type of construction activities will not be visually inconsistent with regularly occurring works and maintenance in the freeway reservation.

The most visible changes would have been the removal of extensive areas of vegetation. However, the construction methodology is flexible enough to avoid existing vegetation.

The visual impacts will be restricted to the disturbance of the grass cover, which comprises most of the median. Its rapid reinstatement will result in a return to a condition very much like the existing in a very short period.

The construction visual impact is expected to be moderate to high, but of a very short duration, as the Project progresses from north to south, and with a very low impact expected following the reinstatement of the grassing.

5.3.1.3 Project design amelioration considerations

Directional drilling or boring under dense areas of existing vegetation and vegetation lined waterways and roads that traverse the corridor.

5.3.2 Harcourt diversion

This section of the corridor extends approximately 11km from Harmony Way at Faraday to Gaasch's Road, where it traverses a strip of land located between the Bendigo Rail line and the Calder Freeway.

5.3.2.1 The landscape setting

The surrounding landscape setting is comprised of undulating topography with exposed granite outcrops on the upper slopes.

Dense rectilinear banding of canopy vegetation occurs along property boundaries roads, particularly Harmony Way, which is the main entry to the township (refer to **Figure 53**).

Irregular but extensive areas of vegetation line waterways and cover many hilltops and orchards, vineyards and pasture infill the areas between the tree cover.

The residential area of Harcourt varies in its vegetation cover with trees typically more sparse and lower in height than the surrounding areas (refer to **Figure 54**).



Figure 53 – Harmony Way to the south of Harcourt.



Figure 54 – Harmony Way in the Harcourt township.

5.3.2.1 Potential visual impact

5.3.2.1.1 Visual sensitivity levels

Within this setting, the highest visual sensitivity uses are the rural residences and residences in the township. Additionally, Harcourt has a tourism market relating to the orchards, vineyards and the nearby mountain bike track at La Larr Ba Gauwa Park, for which Harcourt is a hub. Therefore, the commercial and retail centre will also have a degree of sensitivity to change.

Within this section, high visual sensitivity uses include:

Townships/Settlements

- Harcourt township.
- Rural residences.

Within this section, moderate visual sensitivity uses include:

“C” Category Roads

- Harmony Way

5.3.2.1.2 Visual fit and visual prominence

The Project will be highly visible to road users and residents abutting Harmony Way, resulting in a high visual modification level of a short duration. However, the works will be visually similar to other infrastructure works, such a roadworks and underground service installation in that they are short term, progress at a rapid rate, and result in minimal apparent change at the end of construction.

The Project construction methodology will minimise the loss of vegetation, including roadside trees along Harmony Way, and the reinstatement of pavement and ground surface, followed by reseeding with grasses where appropriate, will result in a very short period of initial impact and a reduction in residual impact over a period of a few weeks.

5.3.2.1.3 Potential visual impact

The key considerations influencing the level of visual impact in this section will be the ability to avoid trees through the use of directional drilling.

The Project will be highly visible to road users and residents abutting Harmony Way. However, the works will be visually similar to other infrastructure works, such a roadworks and underground service installation in that they are short term, progress at a rapid rate, and result in minimal apparent change at the end of construction.

The Project construction methodology will minimise the loss of vegetation, including roadside trees along Harmony Way, and the reinstatement of pavement and ground surface, followed by reseeding with grasses where appropriate, will result in a very short period of high initial impact and a reduction in residual impact to low over a period of a few weeks.

For the section located between the Calder Freeway and the Melbourne-Bendigo railway line, the visual impact during construction will be low due to the screening provide by the scattered vegetation and the limited views. The residual impact will quickly reduce to very low after the establishment of grassing.

5.3.2.2 *Project design considerations*

For the Harmony Way and Gaasch's Road sections, directional drilling or boring under existing roadside vegetation, as well as vegetation lined waterways will significantly reduce visual and landscape impacts.

For the section located between the Calder Freeway and the Melbourne-Bendigo railway line, the scattered arrangement of the existing vegetation will allow for the alignment to be fine-tuned to minimise tree removal.

5.3.3 Overland corridor - West Central Hills - southeast

This section extends from Ravenswood South on the Calder Highway in the southeast, to the locale of Shelbourne in the northwest.

5.3.3.1 *The landscape setting*

The landscape setting is comprised of slightly undulating topography with exposed granite outcrops on upper slopes.

Dense rectilinear banding of tall, often remnant vegetation occurs along roads and property boundaries. Lightly scattered vegetation occurs on pasture areas and there are only occasional areas of more extensive dense vegetation.

Within the landscape setting, waterways provide the most visual relief and attributes of landscape character. Waterways include:

- Comins Channel.
- Bradford Creek.
- Murphy Creek.

5.3.3.1 *Potential visual impact*

5.3.3.1.1 Visual sensitivity levels

Within this section, high visual sensitivity uses include:

Townships/Settlements

- Ravenswood South – mostly located to the east of the Calder Highway.
- A rural living zone (RLZ3) to the northwest of Maldon-Bendigo Road and Hokins Road - 60m to the north of the alignment centreline (refer to **Figure 56**).

Individual rural residences within 500m

This section of the overland corridor contains the greatest number of residences - 36 residences in total, of which 5 are located to the east of the Calder Highway at Ravenswood South and 15 are located in the rural living zone to the south of Lockwood South. Of the total number, 16 residences are located within 500m in the rural FZ land in this unit (refer to **Figure 55**).



Figure 55 – Location of residences - West Central Hills – southeast.

Within this section, moderate visual sensitivity uses include:

Adjacent Reserves – PCRZ

- Eastville Bushland Reserve (850m to the southwest of the alignment centreline).

“C” Category Roads:

- Bendigo-Maldon Road (C283) (refer to **Figure 57**).
- Bendigo-Maryborough Road (C277) (refer to **Figure 58**).



Figure 56 - Landscape setting of the proposed alignment 135m south of the RLZ3 land.



Figure 57 - Landscape setting of proposed road crossing at Bendigo-Maldon Road (C283).



Figure 58 - Landscape setting of proposed road crossing at Bendigo-Maryborough Road (C277).

5.3.3.1.2 Visual fit and visual prominence

Many of the landholdings that the Project will traverse are subject to seasonal variations in the condition of the ground plane, ranging from lush green pasture or crops during the cool season, to browned off pasture and tilled soils in the warmer seasons.

The Project will directionally drill under roads, waterways and areas of significant vegetation. The trenching construction process will be confined to a relatively small area and length of corridor at any one time, with the disturbed ground plane appearing like a tilled section of a paddock until reseeded grasses establish in a matter of weeks.

5.3.3.1.3 Potential visual impact

Potential visual impacts will be confined to the residences within 500m and the immediate area of major road crossings.

Residences

Apart from the residences in the RLZ area south of Lockwood South, most of the rural residences within the FZ areas are set within often dense surrounding vegetation, as well as a numerous outbuildings. As a result, views out from the external living space of the residence are often either blocked or heavily screened. As a result, views of the Project will be limited.

The residences in the RLZ area are typically surrounded by more open vegetation, allowing views out. However, scattered trees between the overland corridor and the residences results in filtered views of the construction process and completed works.



Given the construction process is short term, with the works progressing at a rapid rate, the visual impact during construction will be low to moderate, resulting in a low to very low impact after the establishment of surface grassing.

Road crossings

For the two major roads that the project crosses, road users will experience the Project at speed, typically 100kmh, and for a very short period of time.

The corridor avoids trees, or directionally drills under them when required. As a result, impacts will be limited to the construction process and the short period of time that the ground surface remains unvegetated

The impact during the construction process will be low to moderate, reducing to very low following establishment of surface grassing.

Reserves

Given its primary use as a conservation resource, rather than recreation, the impacts on Eastville Bushland Reserve will be very low.

5.3.3.2 Project design considerations

Key considerations to mitigate impacts on views include:

- Micro siting of the corridor to avoid trees.
- Direction drilling where micro siting is not possible.

5.3.4 Overland corridor - Murray Basin Plains (type a) - southeast

This section extends from the locale of Woodstock West in the southeast to the locale of Bridgewater North in the northwest.

5.3.4.1 The landscape setting

The landscape setting is sparsely treed, with those present mainly confined to roadsides and waterways. Dense vegetation lines the Loddon River and dense areas of vegetation can be found in bushland or conservation reserves.

The topography is mostly flat to slightly undulating.

Within the landscape setting there are occasional lightly incised or defined waterway waterways that provide some visual relief and contribute to landscape character. These include:

- Little Creek - mostly treeless at the crossing point.
- Loddon River - densely treed (refer to **Figure 59** and **Figure 60**).



Figure 59 – Aerial view of proposed crossing of the Loddon River that will be directionally drilled (Source: Google Earth – 2023).



Figure 60 - The setting of the proposed Loddon River crossing as viewed from Bridgwater Serpentine Road.



5.3.4.1 Potential visual impact

5.3.4.1.1 Visual sensitivity levels

Within this area, high visual sensitivity uses include:

Townships/Settlements

- Newbridge – 3.1km west of the alignment centreline.
- Bridgewater on Loddon – 2.3km west of the alignment centreline.

Individual rural residences within 500m

11 residences, of which 2 are potentially abandoned (refer to **Figure 61**).



Figure 61 - Location of residences - Murray Basin Plains (type a) – southeast.

“A” Category Roads

- Calder Highway (A79) (refer to **Figure 62**).

Within this section, moderate visual sensitivity uses include:

Reserves

- Newbridge Cemetery – 575m west of the alignment centreline.
- Derby I124 Bushland Reserve – 690m west of the alignment centreline.
- Derby Recreation Reserve – 630m west of the alignment centreline.

“B” category Roads

- Wimmera Highway (B240) (refer to **Figure 63**).

“C” Category Roads

- Bridgwater Serpentine Road (C274) (refer to **Figure 64**).



Figure 62 - Landscape setting of proposed road crossing at Calder Highway (A79).



Figure 63 - Landscape setting of proposed road crossing at Wimmera Highway (B240).



Figure 64 - Landscape setting of proposed road crossing at Bridgwater Serpentine Road (C274).

5.3.4.1.2 Visual fit and visual prominence

Many of the landholdings that the Project will traverse are subject to seasonal variations in the condition of the ground plane, ranging from lush green pasture or crops during the cool season, to browned off pasture and tilled soils in the warmer seasons.

The Project will directionally drill under roads, waterways and areas of significant vegetation. The trenching construction process will be confined to a relatively small area and length of corridor at any one time, with the disturbed ground plane appearing like a tilled section of a paddock until reseeded grasses establish in a matter of weeks.

5.3.4.1.3 Potential visual impact

Potential visual impacts will be confined to the residences within 500m and the immediate area of major road crossings.

Residences

The rural residences within the FZ areas are set within often dense surrounding vegetation, as well as a numerous outbuildings. As a result, views out from the external living space of the residence are often either blocked or heavily screened. As a result, views of the Project will be limited.

Given the construction process is short term, with the works progressing at a rapid rate, the visual impact during construction will be low to moderate, resulting in a low to very low impact after the establishment of surface grassing.

Road crossings

Major road users will experience the Project at speed, typically 100kmh, and for a very short period of time.

The area of vegetation lining the Calder Highway is subject to a VPO and the corridor will avoid these trees by directionally drilling under them.

For other major road crossings, micro siting or directional drilling will minimise tree removal.

As a result, impacts for all major roads will be limited to the construction process and the short period of time that the ground surface remains unvegetated

The impact during the construction process will be low to moderate, reducing to very low following establishment of surface grassing.

Reserves

Newbridge Cemetery and Derby Recreation Reserve are offset from the Project corridor and will experience a short-term moderate impact during construction, reducing to very low following ground surface restoration.

Given its primary use as a conservation resource, rather than recreation, the impacts on Derby I124 Bushland Reserve be very low.

Loddon River

The Loddon River is subject to a PCRZ.

The crossing location is not readily visible from adjacent sensitive land uses, therefore visual impacts will be very low. Given the Project will directionally drill under the Loddon River, there will be no long-term impacts to landscape character.

5.3.4.2 *Project design considerations*

Key considerations to mitigate impacts on views include:

- Micro siting of the corridor to avoid trees.
- Direction drilling where micro siting is not possible.

5.3.5 Overland corridor - West Central Hills - northwest

This section extends from the locality of Salisbury West in the southeast, to the locality of Yeungroon in the northwest.

5.3.5.1 *The landscape setting*

The landscape setting is comprised of flat to slightly undulating topography with the greatest topographic variation occurring between the elevated hills at Mount Korong and Kooyoora State Park. Exposed granite outcrops occur on upper slopes of rising topography.

Dense rectilinear banding of vegetation lines roads and property boundaries, with areas of scattered vegetation, as well as large blocks of dense vegetation within the expansive State Parks.

Within the landscape setting, the often well treed waterways provide the most visual relief and attributes of landscape character. Waterways include:

- Hope Creek.
- Ryan Creek (refer to **Figure 65**).



Figure 65 - Typical landscape of a braided section of Ryan Creek near the project alignment.



5.3.5.2 Potential visual impact

5.3.5.2.1 Visual sensitivity levels

Within this area, high visual sensitivity uses include:

Townships/Settlements

There are no settlements within 2km of the alignment centreline. However, towns or settlements in the broader region include:

- Wedderburn – 7km to the north northeast.
- Inglewood – 5.2km to the southwest.

Individual rural residences within 500m

- 6 residences, of which 1 is potentially abandoned (refer to **Figure 66**).

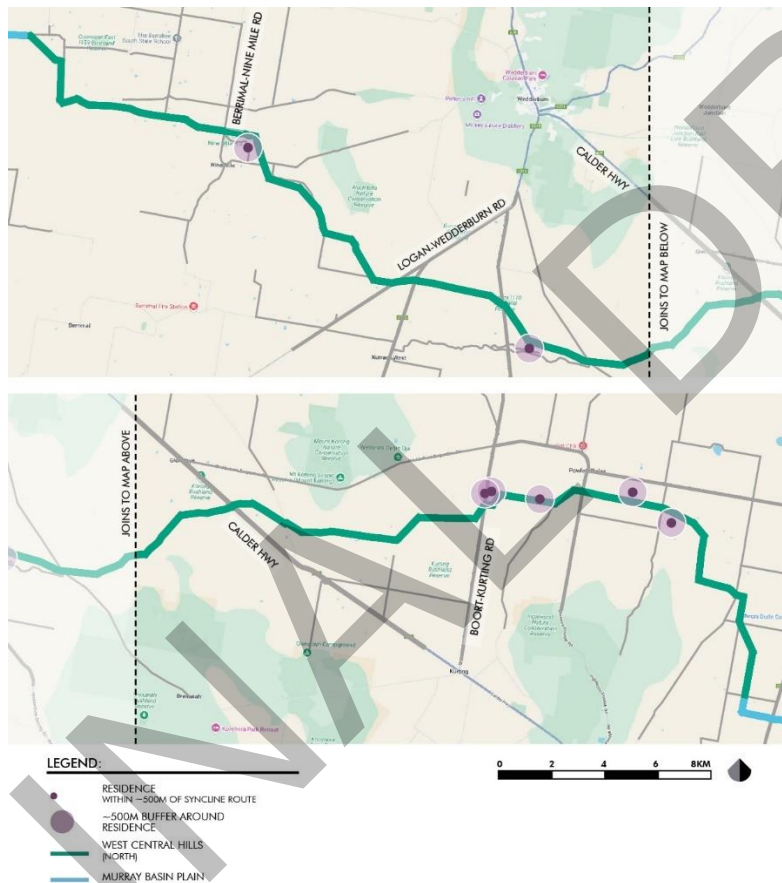


Figure 66 - Location of residences - West Central Hills – northwest.

“A” Category Roads

- Calder Highway (A79) (refer to **Figure 67**).



Figure 67 - Landscape setting of proposed road crossing at the Calder Highway (A79)

Within this section, moderate visual sensitivity uses include:

Reserves - PCRZ

- Inglewood State Forest Nature Conservation Reserve - 870m west of the alignment centreline.
- Powlett Plains Recreation Reserve – 1.4km north of the alignment centreline.
- Mt Korong Nature Conservation Reserve - 700m north from the alignment centreline (refer to **Figure 68**).
- Sunday Morning Hills State Forest - 1.1km southeast of the alignment centreline.
- Kurraca I110 Bushland Reserve - 20m north from the alignment centreline (refer to **Figure 69**).
- Wychitella Nature Conservation Reserve - 75m north from the alignment centreline.
- Nine Mile H.a - 80m south from the alignment centreline.
- Coonooer East I159 Bushland Reserve - 610m north from the alignment centreline.

Lookouts within Reserves

Formal or informal lookout points exist at the following elevated locations in public reserves:

- Mt Korong Summit Track (2.5km to the north).
- Melville Caves Campground and lookout – Kooyoor State Park – 12km south southwest.



Figure 68 - Mt Korong is a prominent feature with the landscape setting. The proposed alignment is located approximately 1.8km from its base.



Figure 69 - Proposed corridor crossing adjacent to Kurraca I110 Bushland Reserve.

“C” Category Roads

- Logan Wedderburn Road (C273).

Within this section, low sensitivity uses include:

Townships/Settlements

Towns or settlements in the broader region beyond 5km distance include:

- Wedderburn – 7km to the north northeast.
- Inglewood – 5.2km to the southwest.

5.3.5.2.2 Visual fit and visual prominence

Many of the landholdings that the Project will traverse are subject to seasonal variations in the condition of the ground plane, ranging from lush green pasture or crops during the cool season, to browned off pasture and tilled soils in the warmer seasons.

The Project will directionally drill under roads, waterways and areas of significant vegetation. The trenching construction process will be confined to a relatively small area and length of corridor at any one time, with the disturbed ground plane appearing like a tilled section of a paddock until reseeded grasses establish in a matter of weeks.

5.3.5.2.3 Potential visual impact

Potential visual impacts will be confined to the residences within 500m and the immediate area of major road crossings.

Residences

The rural residences within the FZ areas are set within often dense surrounding vegetation, as well as a numerous outbuildings. As a result, views out from the external living space of the residence are often either blocked or heavily screened. As a result, views of the Project will be limited.

Given the construction process is short term, with the works progressing at a rapid rate, the visual impact during construction will be low to moderate, resulting in a low to very low impact after the establishment of surface grassing.

Road crossings

Major road users will experience the Project at speed, typically 100kmh, and for a very short period of time.

Micro siting or directional drilling will minimise tree removal.

As a result, impacts for both major roads will be limited to the construction process and the short period of time that the ground surface remains unvegetated

The impact during the construction process will be low to moderate, reducing to very low following establishment of surface grassing.

Reserves

Most reserves are offset from the Project corridor and will experience a short-term low moderate impact during construction, reducing to very low following ground surface restoration.

Although its primary use is as a conservation resource Mt Korong Nature Conservation Reserve has a Summit Track that allows for expansive views over the landscape, including project corridor. Given



the extent of views, impacts for this viewpoint during construction will range from low to moderate during construction, to very low following establishment of surface grassing.

5.3.5.3 *Project design considerations*

Key considerations to mitigate impacts on views include:

- Micro siting of the corridor to avoid trees.
- Direction drilling where micro siting is not possible.

5.3.6 Overland corridor - Murray Basin Plains (type a) - northwest

This short section extends from the locality of Yeungroon in the southeast, to the locality of Wooroonook in the northwest.

5.3.6.1 *The landscape setting*

The landscape of the setting is mostly flat with occasional broad undulations. It is mostly treeless apart from some scattered vegetation lining roads and paddock boundaries

However, dense vegetation surrounds the lakes at Wooroonook Lakes Wildlife Reserve.

There are few waterways but those present are mostly lined with a thin band of vegetation. However, the Avoca River is lined with a dense band of vegetation.

Within the landscape setting there are occasional lightly incised or defined waterway waterways that provide some visual relief and contribute to landscape character. These include:

- Avoca River (refer to **Figure 70** and **Figure 71**).



Figure 70 - View to the crossing location on the Avoca River from Charlton – St Arnaud Road, 1.2km to the east.

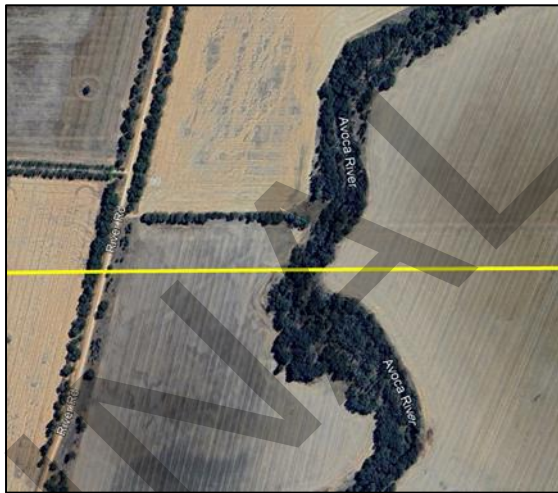


Figure 71 - Aerial view of the proposed crossing point on the Avoca River that will be directionally drilled (Source: Google Earth - 2023).

5.3.6.2 Potential visual impact

5.3.6.2.1 Visual sensitivity levels

Within this area, high visual sensitivity uses include:

Individual rural residences within 500m

One residence within 500m of the corridor (refer to **Figure 72**).

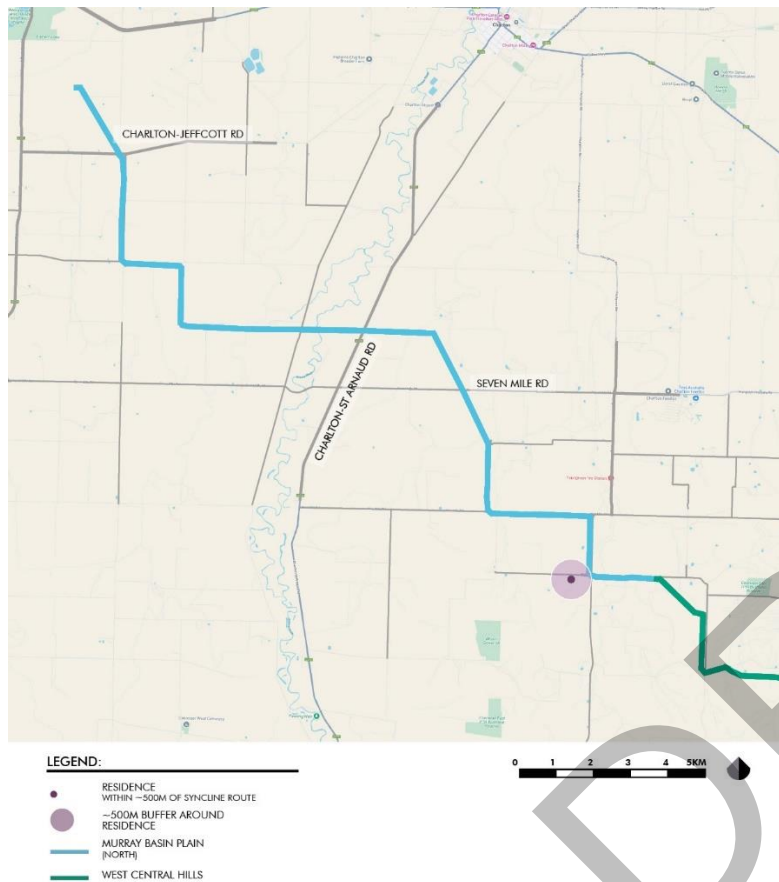


Figure 72 - Location of residences - Murray Basin Plains (type a) – northwest.

Within this section, moderate visual sensitivity uses include:

Reserves

Western Wooroonook Lake Reserve/Wooroonook Lakes (Middle and East) Wildlife Reserve – 1.5km west of the alignment centreline and Northern Converter Station (refer to **Figure 73**).



Figure 73 View northwest from St Arnaud-Whycheproof Road, opposite the proposed Northern Converter Station site, of the dense vegetation surrounding the Wooroonook Lakes Wildlife Reserve.

“C” Category Roads

- Charlton - St Arnaud Road (C272) (refer Figure 74).



Figure 74 - Landscape setting of proposed road crossing at Charlton - St Arnaud Road (C272).

Within this section, low sensitivity uses include:

Townships/Settlements

Towns or settlements in the broader region beyond 5km distance include:

- Charlton – 7.3km to the northeast.

5.3.6.2.2 Visual fit and visual prominence

Many of the landholdings that the Project will traverse are subject to seasonal variations in the condition of the ground plane, ranging from lush green pasture or crops during the cool season, to browned off pasture and tilled soils in the warmer seasons.

The Project will directionally drill under roads, waterways and areas of significant vegetation. The trenching construction process will be confined to a relatively small area and length of corridor at any one time, with the disturbed ground plane appearing like a tilled section of a paddock until reseeded grasses establish in a matter of weeks.

Potential visual impacts will be confined to the residences within 500m and the immediate area of major road crossings.

Residences

The single rural residence within 500m is set within dense surrounding vegetation. As a result, views of the Project will be limited.



Given the construction process is short term, with the works progressing at a rapid rate, the visual impact during construction will be low to moderate, resulting in a low to very low impact after the establishment of surface grassing.

Road crossings

Users of Charlton - St Arnaud Road will experience the Project at speed, typically 100kmh, and for a very short period of time.

The area of vegetation lining the road will be avoided by either micro siting or by directionally drilling under them. As a result, impacts will be limited to the construction process and the short period of time that the ground surface remains unvegetated

The impact during the construction process will be low to moderate, reducing to very low following establishment of surface grassing.

Reserves

Western Wooroonook Lake Reserve/Wooroonook Lakes (Middle and East) Wildlife Reserve is well offset to the north of the Project corridor. The campground to the north of the reserve will be screened from the project by dense vegetation covering the reserve. As a result, the Project will not be visible and there will be no impact on users of the camping area.

Avoca River

The Avoca River is subject to ESO1.

The crossing is not readily visible from adjacent sensitive land uses, therefore visual impacts will be very low. Given the Project will directionally drill under the river, there will be no long-term impacts to landscape character.

5.3.6.3 Project design considerations

Key considerations to mitigate impacts on views include:

- Micro siting of the corridor to avoid trees.
- Direction drilling where micro siting is not possible.

5.4 Preliminary visual assessment – MREH and JREH convertor stations

5.4.1 MREH convertor station

5.4.1.1 The landscape setting

The setting is highly modified, and the topography of the Project area and surrounds are flat, with vegetation confined to open pasture with few trees to the west, but bands of vegetation along paddock boundaries to the east.

5.4.1.2 Potential visual impact

5.4.1.2.1 Visual fit and visual prominence

The Project will be viewed in the context of existing infrastructure, with the proposed MREH to the south and west, the stabling yard and service centre to the west and the elevated form of Calder Park Raceway to the south. Although visible, the Project is visually consistent with the existing form and uses of the setting and will have a low visual modification level (refer to **Figure 75**).



5.4.1.2.2 Visual sensitivity levels

Highest sensitivity uses are confined to the normal density residential area at Hillside to the south, and the rural residence to the north and west of the Project site. These residential uses within 2.5km of the Project are of high sensitivity (refer to **Figure 76**).

Residences to the east of the Calder Freeway will have views to the Project screened by the acoustic fence lining the freeway's eastern edge. Therefore, these have not been considered.

5.4.1.2.3 Potential visual impact

Most of the rural residences are set within often dense surrounding vegetation, as well as a numerous outbuildings (refer to **Figure 77**). This results in views out from the external living space of the residence being either blocked or heavily screened. As a result, views of the Project will be limited.

Where the Project is visible, it will be viewed in the context of the extensive existing and proposed infrastructure (refer to **Figure 78** and **Appendix A**).

Given the lack of visibility from residences, the presence of the existing infrastructure in a heavily modified and a low scenic quality setting, landscape and visual impacts are expected to be low.

5.4.1.3 Project design considerations

The Project is effectively collocated with existing and approved infrastructure of a larger scale, but similar character, reflecting best practice.

Despite this, infrastructure at the urban rural interface should still aim for integration within the setting. Therefore, landscape amelioration to the Project's north and west boundaries is recommended to ameliorate views that may be possible from future sensitive uses (refer to **Figure 79**).



Figure 75 - View from Holden Road to the Project site showing works for the adjacent MREH underway.



Figure 76 - Location of photo location and sensitive residential viewpoints, to west of the Calder Freeway, within 2.5km.



Figure 77 - Example of a residence to the north of the Project site set within dense vegetation that screens view outward.



Figure 78 - Photo simulation view from Holden Road to the Project at the completion of construction.



Figure 79 - Photo simulation view from Holden Road to the Project with establishing vegetation at 5-7 years post construction.

5.4.2 JREH convertor station

5.4.2.1 The landscape setting

The topography of the Project area and surrounds are flat with occasional gentle undulations. The agricultural landscape comprises seasonal crops and trees are sparse and limited to roadsides.

By contrast, the Wooroonook Lakes Wildlife Reserve to the northwest is heavily treed.

5.4.2.2 Potential visual impact

5.4.2.2.1 Visual fit and visual prominence

The Project will be highly visible within its setting and will result in a high visual modification level (refer to **Figure 83** and **Appendix A**).

However, the DC convertor hall building will appear similar to a large rural shed.

5.4.2.2.2 Visual sensitivity levels

Highest sensitivity uses are confined to the three rural residences to the north of the Project site and the camping area to the north of Wooroonook Lakes Wildlife Reserve.

The residential uses within 2.5km of the Project are of high sensitivity (refer to **Figure 80**).

As “C” category roads located more than 1km from the Project site, Borung Highway and St Arnauad-Wycheproof Road are of low visual sensitivity.

5.4.2.2.3 Potential visual impact

Most of the rural residences are set within often dense surrounding vegetation, as well as a numerous outbuildings (refer to **Figure 81**). This results in views out from the external living space of the residence being either blocked or heavily screened. As a result, views of the Project will be reduced.

Scattered vegetation lining the Borung Highway will further screen views from the residences (refer to **Figure 82**).

Given the lack of visibility from residences, the visual impact is expected to be low to moderate.

5.4.2.3 Project design considerations

Despite the relative lack of visibility from the residences to the north, infrastructure in rural interface should still aim for integration within the setting. Therefore, landscape amelioration to the Project's north and west boundaries is recommended to ameliorate views from residences and adjacent roads (refer to **Figure 84**).



Figure 80 - Location of residences and photo location.



Figure 81 - Example of a residence to the north of the Project site set within dense vegetation that filters views outward.



Figure 82 - View of scattered vegetation along the Borung Highway adjacent to the Project site.



Figure 83 - Photo simulation view from Borung Highway to the Project at the completion of construction.



Figure 84 - Photo simulation view from Borung Highway to the Project with establishing vegetation at 5-7 years post construction.

5.5 Lighting impacts

5.5.1 Underground cable

It is not expected that any operations associated with the underground cable component of the Project will require lighting, apart from emergency repairs to the cable to cable station and the communication cabinets.

5.5.2 MREH Converter Station

The applicable environmental lighting zone for the MREH Project site, based on AS-NZS-4282-2019 is Category A3 – Medium District Brightness lighting area, which applies to inhabited urban interface, freeway and industrial areas.

Within the Category A3 area the Project does not result in a significant increase in the amount of visible light due to lighting being limited to areas of higher security and through the use of directional luminaires.

5.5.3 JREH Converter Station

The applicable environmental lighting zone for the Project area based on AS-NZS-4282-2019 is Category A2 – Low District Brightness lighting area, which applies to inhabited rural areas.

Within the Category A2 area the Project does not result in an increased lighting impact due to there being no requirement for extensive operational lighting. However, some lighting will be required in secure areas.

Some components may have external lights which are only likely to be used for urgent maintenance works during hours of darkness and would not be permanently illuminated.

Lighting would be directional, and movement activated wherever possible.

Hot spots will be limited and would be ameliorated through screen planting. Upward glow would be reduced through limiting the number of lights, as well as through the use of directional luminaires.

5.6 Assessment against EES referral criteria

5.6.1 Individual referral criteria.

There are no criteria of relevance.

5.6.2 Combined referral criteria

5.6.2.1 *Effects on landscape values of regional importance*

Potential for extensive or major effects on landscape values of regional importance, especially:

- Where recognised by a planning scheme overlay.
 - The above ground components of the Project are not located on land subject to any overlay of relevance to landscape or visual matters.
 - The underground cable component of the Project will be bored (HDD) under vegetated areas subject to relevant overlays, thereby avoiding any vegetation removal.
- Declared as a distinctive area and landscape (DAL) under the Planning and Environment Act 1987



- A section of the underground cable along the Calder Freeway median is located within the Macedon Ranges DAL. However, it is located within land zoned TZ2, which allows for, and has previously been subject to, significant modification for infrastructure purposes.
- Within or adjoining land reserved under the National Parks Act 1975.
 - No Project components are within such land.
 - The Project does not adjoin such land.

5.6.2.2 *Amenity impacts*

Potential for significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions.

- The above ground components of the project will result in a very low to low landscape and visual impact on a limited number of adjacent residences.
- The underground component of the Project will have a very short-term impact prior to reinstatement of the ground surface. Following reinstatement, there will be no landscape and visual impact in areas of existing pasture/cropping, to a very low level of impact for the limited locations where small numbers of trees may be removed.

6 PRELIMINARY AMELIORATION STRATEGIES

Actions exist to potentially ameliorate the landscape and visual impacts of the Project. These are outlined in the following sections.

6.1 On-Site Actions

On-site actions relate to initiatives which can be undertaken within the boundaries of the Project area.

6.1.1 Perimeter screen planting

The most effective way to ameliorate views from high sensitivity viewpoints is to establish screen planting around the perimeter of the Project where existing vegetation is lacking. The proposed screen planting will comprise perimeters of varying densities, utilising a mixture of:

- shrubs to 2m in height;
- tall shrubs to 4m in height; and
- trees ranging in height from 6m-20m in height.

Both the MREH and JREH convertor stations have exposed boundaries which should be planted to ensure that the Project is well integrated with the landscape of the setting.

6.1.2 Material selection

For the DC Converter Halls, non-reflective cladding materials, finished in natural or neutral colours, as found in the landscape of the setting, should be used. A gradation from darker shades at ground level to lighter shades on upper facades is recommended.

The more slender and articulated form of the components of the switching substation do not require amelioration through the use of non-standard colours, as the standard “grey” finish is visually recessive against sky backdrops and is readily integrated through the use of tall, sparse planting.

6.2 Off-Site Actions

These actions relate to initiatives which can be undertaken outside of the project area and would require the consent of relevant landowners, utilities or authorities. However, given the extensive size of the Project area, it is apparent that all required amelioration can be achieved on-site, and that no off-site actions will be required.

APPENDIX A – PHOTO SIMULATIONS

FINAL DRAFT



Photo simulation view from Holden Road to the Project at the completion of construction.



Photo simulation view from Holden Road to the Project with establishing vegetation at 5-7 years post construction.



Photo simulation view from Borung Highway to the Project at the completion of construction.



Photo simulation view from Borung Highway to the Project with establishing vegetation at 5-7 years post construction.

APPENDIX B – DETAILED CORRIDOR ASSESSMENT TABLES

FINAL DRAFT

Chainage		Chainage	Length	Project	20m	30m	Landscape		Vegetation Type	Road	RMA Class	SRNS Class	Average		Main	ESO	VPO	Waterway
Start	End	Chainage	End (m)	Zone	Trenching	Trenching	Boring	Character					daily	vehicles	planning			
0	1200	1200	1	Yes	Highway (South)	Grass									GWZ			
1200	1250	50	1	Yes	Highway (South)	Grass									GWZ			ESO1
1250	1350	100	1	Yes	Highway (South)	Grass									GWZ			
1350	1400	50	1	Yes	Highway (South)	Grass												
1400	2450	1050	1	Yes	Highway (South)	Offset loose rows trees + shrubs				CALDER FREEWAY					21000	TRZ2		
2450	4100	1650	1	Yes	Highway (South)	Alternating rows, immature				CALDER FREEWAY					21000	TRZ2		
4100	4450	350	1	Yes	Highway (South)	Grass				CALDER FREEWAY					21000	TRZ2		
4450	8750	4300	1	Yes	Highway (South)	Grass				CALDER FREEWAY					18000	TRZ2		
8750	12450	3700	1	Yes	Highway (South)	Grass				CALDER FREEWAY					16000	TRZ2		
12450	13500	1050	1	Yes	Highway (South)	Grass				CALDER FREEWAY					15000	TRZ2		
13500	14000	500	1	Yes	Highway (South)	Dense full median trees + shrubs				CALDER FREEWAY					15000	TRZ2		
14000	14450	450	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					15000	TRZ2		
14450	14550	100	1	Yes	Highway (South)	Informal dense deciduous				CALDER FREEWAY					15000	TRZ2		
14550	18050	3500	1	Yes	Highway (South)	Grass				CALDER FREEWAY					15000	TRZ2		
18050	18550	500	1	Yes	Highway (South)	Rows of deciduous trees				CALDER FREEWAY					15000	TRZ2		
18550	18700	150	1	Yes	Highway (South)	Rows of deciduous trees				CALDER FREEWAY					16000	TRZ2		
18700	18900	200	1	Yes	Highway (South)	Grass				CALDER FREEWAY					16000	TRZ2		
18900	19500	600	1	Yes	Highway (South)	Dense full median trees + shrubs				CALDER FREEWAY					16000	TRZ2		
19500	19650	150	1	Yes	Highway (South)	Grass				CALDER FREEWAY					16000	TRZ2		
19650	20600	950	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					16000	TRZ2		
20600	21050	450	1	Yes	Highway (South)	Offset loose rows trees + shrubs				CALDER FREEWAY					16000	TRZ2		
21050	21250	200	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					16000	TRZ2		
21250	21850	600	1	Yes	Highway (South)	Dense full median trees + shrubs				CALDER FREEWAY					16000	TRZ2		
21850	21900	50	1	Yes	Highway (South)	Grass				CALDER FREEWAY					16000	TRZ2		
21900	23000	1100	1	Yes	Highway (South)	Rows of deciduous trees				CALDER FREEWAY					16000	TRZ2		
23000	23200	200	1	Yes	Highway (South)	Grass				CALDER FREEWAY					16000	TRZ2		
23200	23550	350	1	Yes	Highway (South)	Offset loose rows trees + shrubs				CALDER FREEWAY					16000	TRZ2		
23550	23950	400	1	Yes	Highway (South)	Offset loose rows trees + shrubs				CALDER FREEWAY					14000	TRZ2		
23950	24000	50	1	Yes	Highway (South)	Grass				CALDER FREEWAY					14000	TRZ2		
24000	24500	500	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2		
24500	25200	700	1	Yes	Highway (South)	Grass				CALDER FREEWAY					9300	TRZ2		
25200	25300	100	1	Yes	Highway (South)	Offset loose rows trees + shrubs				CALDER FREEWAY					9300	TRZ2		
25300	25650	350	1	Yes	Highway (South)	Grass				CALDER FREEWAY					9300	TRZ2		
25650	25750	100	1	Yes	Highway (South)	Offset loose rows trees + shrubs				CALDER FREEWAY					9300	TRZ2		
25750	26450	700	1	Yes	Highway (South)	Grass				CALDER FREEWAY					9300	TRZ2		
26450	27350	900	1	Yes	Highway (South)	Grass				CALDER FREEWAY					12000	TRZ2		
27350	28550	1200	1	Yes	Highway (South)	Grass				CALDER FREEWAY					14000	TRZ2		
28550	28900	350	1	Yes	Highway (South)	Rows of deciduous trees				CALDER FREEWAY					14000	TRZ2		
28900	29300	400	1	Yes	Highway (South)	Grass				CALDER FREEWAY					14000	TRZ2		
29300	30150	850	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2		
30150	30200	50	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2		ESO5
30200	30350	150	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2		ESO5
30350	30400	50	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2		ESO5
30400	30500	100	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2	VPO2	ESO5
30500	30950	450	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2		ESO5
30950	31550	600	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2		ESO5
31550	31800	250	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2		ESO5
31800	32450	650	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2		ESO5
32450	32500	50	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2	VPO2	ESO5
32500	32550	50	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2	VPO2	ESO5
32550	32700	150	1	Yes	Highway (South)	Dense offset trees + shrubs				CALDER FREEWAY					13000	TRZ2		ESO5
32700	32750	50	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2		ESO5
32750	32850	100	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2	VPO2	ESO5
32850	32900	50	1	Yes	Highway (South)	Grass				CALDER FREEWAY					13000	TRZ2		ESO5

Chainage		Length	Project	30m	Landscape		Vegetation Type	Road	RMA Class	SRNS Class	Average		Main
Start	End	(m)	Zone	20m	Trenching	Boring					daily	vehicles	planning
							Character						zone
32900	33550	650	1		Yes		Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	13000	TR22
33550	34100	550	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	13000	TR22
34100	34400	300	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	13000	TR22
34400	34800	400	1		Yes		Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	13000	TR22
34800	34850	50	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	13000	TR22
34850	35000	150	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	12000	TR22
35000	35100	100	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	12000	TR22
35100	35250	150	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	12000	TR22
35250	35300	50	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	12000	TR22
35300	35750	450	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	12000	TR22
35750	36500	750	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
36500	36900	400	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
36900	37650	750	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
37650	37850	200	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
37850	37950	100	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
37950	38000	50	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
38000	38150	150	1		Yes		Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
38150	38850	700	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
38850	38900	50	1		Yes		Highway (South)	Dense full median trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
38900	38950	50	1		Yes		Highway (South)	Dense full median trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR21
38950	39000	50	1		Yes		Highway (South)	Dense full median trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR21
39000	39100	100	1		Yes		Highway (South)	Dense full median trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR21
39100	39300	200	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
39300	39350	50	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
39350	39400	50	1		Yes		Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
39400	39600	200	1		Yes		Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
39600	39700	100	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
39700	39800	100	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
39800	40200	400	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
40200	40300	100	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
40300	40400	100	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
40400	40900	500	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
40900	41000	100	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
41000	41100	100	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
41100	41300	200	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
41300	41350	50	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
41350	41950	600	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
41950	43150	1200	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
43150	43250	100	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
43250	47550	4300	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
47550	51100	3550	1		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	11000	TR22
51100	54500	3400	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	11000	TR22
54500	54550	50	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	11000	FZ
54550	55100	550	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	11000	TR22
55100	55500	400	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	11000	TR22
55500	55700	200	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	11000	TR22
55700	56200	500	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	9200	TR22
56200	57900	1700	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7800	TR22
57900	58550	650	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	9100	TR22
58550	59350	800	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
59350	60800	1450	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
60800	63250	2450	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	10000	TR22
63250	63950	700	2		Yes		Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7900	TR22
63950	64300	350	2		Yes		Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7900	TR22

Chainage		Start	End	Length (m)	Project Zone	20m Trenching	30m Trenching	Boring	Landscape Character	Vegetation Type	Road	RMA Class	SRNS Class	Average daily vehicles	Main planning zone	VPO	ESO	Waterway
64300	65150	850	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7900	TR22		ES04	
65150	65600	450	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7900	TR22		ES04	
65600	65650	50	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7900	TR22		ES04	
65650	65950	300	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7400	TR22		ES04	
65950	66550	600	2			Yes			Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7400	TR22		ES04	
66550	66650	100	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7400	TR22		ES04	
66650	67050	400	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	7400	TR22		ES04	
67050	67300	250	2			Yes			Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	FZ		ES04	
67300	68400	1100	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	FZ		ES04	
68400	69250	850	2			Yes			Highway (South)	Dense offset trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	FZ		ES04	
69250	70200	950	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	FZ		ES04	
70200	70250	50	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01, ES04	
70250	73250	3000	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
73250	73550	300	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
73550	74550	1000	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
74550	75350	800	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
75350	76700	1350	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
76700	76750	50	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01, ES05	
76750	77650	900	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
77650	78050	400	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
78050	78550	500	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
78550	78950	400	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
78950	80550	1600	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6800	TR22		ES01	
80550	80800	250	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6300	TR22		ES01	
80800	81150	350	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6300	TR22		ES01	
81150	81250	100	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6300	TR22		ES01	
81250	81550	300	2			Yes			Highway (South)	Offset loose rows trees + shrubs	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6300	TR22		ES01	
81550	81700	150	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	6300	TR22		ES01	
81700	84350	2650	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	5700	TR22		ES01	
84350	84450	100	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	5700	TR22		ES01, ES05	
84450	86400	1950	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	5700	TR22		ES01	
86400	86800	400	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	5700	TR22			
86800	86850	50	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	5700	TR22		ES05	
86850	87200	350	2			Yes			Highway (South)	Grass	CALDER FREEWAY	FREEWAY	M CLASS ROADS	5700	TR22			
87200	87350	150	2			Yes			Harcourt Diversion	Roadside trees	CALDER FREEWAY	FREEWAY	M CLASS ROADS	5700	TR22			
87350	88250	900	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	148	TR22			
88250	88350	100	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	148	TR22		ES05	
88350	89100	750	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	148	TR22			
89100	89500	400	2			Yes			Harcourt Diversion	Grass	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	148	TR22			
89500	90300	800	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	148	TR22			
90300	90350	50	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	148	TR22		ES05	
90350	92750	2400	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	148	TR22			
92750	93350	600	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	356	TR22			
93350	93550	200	2			Yes			Harcourt Diversion	Township Zone	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	356	TR22			
93550	93950	400	2			Yes			Harcourt Diversion	Township Zone	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	957	TR22			
93950	94050	100	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	957	TR22			
94050	94650	600	2			Yes			Harcourt Diversion	Roadside trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	536	TR22			
94650	94850	200	2			Yes			Harcourt Diversion	Minimal trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	536	TR22			
94850	94900	50	2			Yes			Harcourt Diversion	Grass	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	536	TR22			
94900	95100	200	2			Yes			Harcourt Diversion	Minimal trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	536	TR22			
95100	95200	100	2			Yes			Harcourt Diversion	Minimal trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	536	TR22			
95200	95400	200	2			Yes			Harcourt Diversion	Minimal trees	ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	536	FZ			
95400	95450	50	2			Yes			Harcourt Diversion	Minimal trees					FZ			
95450	95500	50	2			Yes			Harcourt Diversion	Scattered trees	CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TR21			

Chainage		Chainage	Length	Project	20m	30m	Landscape		Vegetation Type		Road	RMA Class	SRNS Class	Average daily vehicles	Main planning zone	VPO	ESO	Waterway
Start	End	Chainage	Length (m)	Zone	Trenching	Trenching	Boring	Character	Vegetation Type									
95500	95550	95550	50	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	FZ			
95550	95650	95650	100	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
95650	95650	95650	200	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ1			
95850	97850	97850	2000	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
97850	97900	97900	50	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			ESO5
97900	98000	98000	100	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
98000	98050	98050	50	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ1			
98050	98100	98100	50	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ1			ESO5
98100	98250	98250	150	2	Yes		Yes	Harcourt Diversion	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
98250	98300	98300	50	2	Yes		Yes	Highway (North)	Scattered trees		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
98300	98450	98450	150	2	Yes		Yes	Highway (North)	Grass		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
98450	98500	98500	50	2	Yes		Yes	Highway (North)	Grass		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			ESO5
98500	99400	99400	900	2	Yes		Yes	Highway (North)	Grass		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
99400	99450	99450	50	2	Yes		Yes	Highway (North)	Grass		CALDER FREEWAY	FREEWAY	M CLASS ROADS	9000	TRZ2			
99450	101150	1700	2	Yes				Highway (North)	Grass		ELPHINSTONE-HARCOURT NORTH ROAD	ARTERIAL OTHER	Not Applicable	536	TRZ2			
101150	101300	150	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101300	101350	50	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101350	101400	50	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101400	101500	100	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101500	101550	50	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101550	101700	150	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101700	101750	50	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101750	101800	50	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101800	101850	50	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101850	101900	50	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
101900	102200	300	2	Yes				Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
102200	102250	50	2	Yes			Yes	Highway (North)	Grass		CALDER HIGHWAY	FREEWAY	M CLASS ROADS	9400	TRZ2			
102250	102300	50	3	Yes			Yes	Highway (North)	Grass						TRZ2			
102300	102350	50	3	Yes			Yes	West Central Hills	Grass						TRZ2			
102350	102400	50	3	Yes			Yes	West Central Hills	Treed						FZ			
102400	102500	100	3	Yes			Yes	West Central Hills	Treed						FZ			
102500	102550	50	3	Yes			Yes	West Central Hills	Treed						FZ			
102550	102600	50	3	Yes			Yes	West Central Hills	Grass						0			
102600	102650	50	3	Yes				West Central Hills	Grass						FZ			
102650	102700	50	3	Yes				West Central Hills	Grass						FZ			
102700	102800	100	3	Yes				West Central Hills	Grass						FZ			
102800	103250	450	3	Yes				West Central Hills	Grass						FZ			
103250	103300	50	3	Yes			Yes	West Central Hills	Grass						FZ			
103300	103750	450	3	Yes			Yes	West Central Hills	Grass						FZ			
103750	103800	50	3	Yes			Yes	West Central Hills	Grass						FZ			
103800	104050	250	3	Yes				West Central Hills	Grass						FZ			
104050	104100	50	3	Yes				West Central Hills	Grass						FZ			
104100	104250	150	3	Yes				West Central Hills	Grass						FZ			
104250	104450	200	3	Yes				West Central Hills	Grass						FZ			
104450	104500	50	3	Yes			Yes	West Central Hills	Grass						FZ			
104500	104550	50	3	Yes			Yes	West Central Hills	Grass						FZ1			
104550	104750	200	3	Yes			Yes	West Central Hills	Grass						FZ1			
104750	105000	250	3	Yes			Yes	West Central Hills	Grass						FZ1			
105000	105050	50	3	Yes			Yes	West Central Hills	Grass						FZ1			ESO1
105050	105100	50	3	Yes			Yes	West Central Hills	Treed						FZ1			ESO1
105100	105150	50	3	Yes			Yes	West Central Hills	Grass						FZ1			ESO1
105150	105450	300	3	Yes				West Central Hills	Grass						FZ1			
105450	105700	250	3	Yes				West Central Hills	Grass						FZ1			
105700	105750	50	3	Yes			Yes	West Central Hills	Grass						FZ1			

Chainage		Start	End	Length (m)	Project Zone	20m Trenching	30m Trenching	Boring	Landscape Character	Vegetation Type	Road	RMA Class	SRNS Class	Average daily vehicles	Main planning zone	VPO	ESO	Waterway
		105750	106000	250	3		Yes		West Central Hills	Grass						FZ1		
		106000	106450	450	3	Yes			West Central Hills	Grass						FZ1		
		106450	106700	250	3	Yes			West Central Hills	Grass						FZ1		
		106700	106750	50	3	Yes			West Central Hills	Grass						FZ1	VPO2	
		106750	106800	50	3	Yes		Yes	West Central Hills	Grass						FZ1	VPO2	
		106800	106850	50	3	Yes		Yes	West Central Hills	Treed						FZ1	VPO2	
		106850	106900	50	3	Yes		Yes	West Central Hills	Treed						FZ1	VPO2	
		106900	106950	50	3	Yes			West Central Hills	Grass						FZ1	VPO2	
		106950	107950	1000	3	Yes			West Central Hills	Grass						FZ1		
		107950	108550	600	3	Yes			West Central Hills	Grass						FZ1		
		108550	109350	800	3	Yes			West Central Hills	Grass						FZ1		
		109350	110050	700	3	Yes			West Central Hills	Grass						FZ1		
		110050	110650	600	3	Yes			West Central Hills	Grass						FZ1		
		110650	111600	950	3	Yes			West Central Hills	Grass						FZ1		
		111600	111650	50	3	Yes		Yes	West Central Hills	Grass						FZ1		
		111650	111700	50	3			Yes	West Central Hills	Treed						FZ1		
		111700	111750	50	3	Yes		Yes	West Central Hills	Treed	BENDIGO-MALDON ROAD	ARTERIAL OTHER	C CLASS ROADS	1600	TRZ2			
		111750	111800	50	3	Yes		Yes	West Central Hills	Treed	BENDIGO-MALDON ROAD	ARTERIAL OTHER	C CLASS ROADS	1600	FZ			
		111800	111950	150	3	Yes		Yes	West Central Hills	Treed					FZ			
		111950	112150	200	3	Yes		Yes	West Central Hills	Treed					FZ			
		112150	112200	50	3	Yes		Yes	West Central Hills	Grass					FZ			
		112200	112300	100	3	Yes			West Central Hills	Grass					FZ			
		112300	112350	50	3	Yes			West Central Hills	Grass					FZ			
		112350	112400	50	3	Yes			West Central Hills	Grass					FZ			
		112400	112550	150	3	Yes			West Central Hills	Grass					FZ			
		112550	112600	50	3	Yes			West Central Hills	Grass					FZ			
		112600	112650	50	3	Yes			West Central Hills	Grass					FZ			
		112650	112700	50	3	Yes			West Central Hills	Grass					FZ			
		112700	112750	50	3	Yes		Yes	West Central Hills	Grass					FZ			
		112750	112800	50	3	Yes		Yes	West Central Hills	Treed					FZ			
		112800	112950	150	3	Yes		Yes	West Central Hills	Treed					FZ			
		112950	113000	50	3	Yes		Yes	West Central Hills	Grass					FZ			
		113000	113050	50	3	Yes			West Central Hills	Grass					FZ			
		113050	113150	100	3	Yes			West Central Hills	Grass					FZ			
		113150	113200	50	3	Yes			West Central Hills	Grass					FZ			
		113200	113250	50	3	Yes			West Central Hills	Grass					FZ			
		113250	113300	50	3	Yes			West Central Hills	Grass					FZ			
		113300	113450	150	3	Yes			West Central Hills	Grass					FZ			
		113450	113500	50	3	Yes			West Central Hills	Grass					FZ			
		113500	113650	150	3	Yes			West Central Hills	Grass					FZ			
		113650	113700	50	3	Yes			West Central Hills	Grass					FZ			
		113700	113750	50	3	Yes			West Central Hills	Grass					FZ			
		113750	113800	50	3	Yes		Yes	West Central Hills	Grass					FZ			
		113800	113850	50	3	Yes			West Central Hills	Grass					FZ			
		113850	113900	50	3	Yes			West Central Hills	Grass					FZ			
		113900	114050	150	3	Yes			West Central Hills	Grass					FZ			
		114050	114200	150	3	Yes			West Central Hills	Grass					FZ			
		114200	114650	450	3	Yes			West Central Hills	Grass					FZ			
		114650	114700	50	3	Yes		Yes	West Central Hills	Treed					FZ			
		114700	114750	50	3	Yes		Yes	West Central Hills	Treed					FZ			
		114750	116300	1550	3	Yes			West Central Hills	Grass					FZ			
		116300	116350	50	3	Yes		Yes	West Central Hills	Treed					FZ			
		116350	116400	50	3	Yes		Yes	West Central Hills	Treed					FZ			
		116400	117200	800	3	Yes		Yes	West Central Hills	Grass					FZ			

Chainage		Length		Project		30m		Landscape		Vegetation Type	Road	RMA Class	SRNS Class	Average daily vehicles		Main planning zone	VPO	ESO	Waterway
Start	End	Chainage (m)	Zone	20m Trenching	30m Trenching	Boring	Character	Character											
117200	117250	50	3	Yes	Yes		West Central Hills	Grass								FZ			
117250	117850	600	3	Yes			West Central Hills	Grass								FZ			
117850	117900	50	3	Yes		Yes	West Central Hills	Grass								FZ			
117900	118000	100	3			Yes	West Central Hills	Treed								FZ			
118000	118050	50	3			Yes	West Central Hills	Treed								FZ1			
118050	118100	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
118100	119500	1400	3	Yes			West Central Hills	Grass								FZ1			
119500	119550	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
119550	119600	50	3			Yes	West Central Hills	Treed								FZ1			
119600	119650	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
119650	121500	1850	3	Yes			West Central Hills	Grass								FZ1			
121500	121550	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
121550	121700	150	3			Yes	West Central Hills	Treed								FZ1	VPO2	ESO1	
121700	121750	50	3			Yes	West Central Hills	Treed								FZ1	VPO2	ESO1	
121750	121800	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
121800	122200	400	3	Yes			West Central Hills	Grass								FZ1			
122200	122250	50	3	Yes		Yes	West Central Hills	Treed								FZ1	VPO2	ESO1	
122250	122350	100	3	Yes		Yes	West Central Hills	Treed								FZ1	VPO2	ESO1	
122350	122400	50	3	Yes		Yes	West Central Hills	Treed								FZ1	VPO2	ESO1	
122400	122700	300	3	Yes			West Central Hills	Grass								FZ1			
122700	122950	250	3	Yes			West Central Hills	Grass								FZ1			
122950	123000	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
123000	123050	50	3	Yes		Yes	West Central Hills	Treed								FZ1			
123050	123100	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
123100	123800	700	3	Yes			West Central Hills	Grass								FZ1			
123800	123850	50	3	Yes		Yes	West Central Hills	Grass								FZ1			
123850	124000	150	3	Yes			West Central Hills	Grass								FZ1			
124000	124600	600	3	Yes			West Central Hills	Grass								FZ1			
124600	124650	50	3	Yes		Yes	West Central Hills	Treed								FZ1			
124650	124700	50	3	Yes		Yes	West Central Hills	Treed								FZ			
124700	124750	50	3	Yes			West Central Hills	Grass								FZ			
124750	125450	700	3	Yes		Yes	West Central Hills	Grass								FZ			
125450	125500	50	3	Yes		Yes	West Central Hills	Grass								FZ			
125500	125550	50	3	Yes		Yes	West Central Hills	Treed								FZ			
125550	126450	900	3	Yes			West Central Hills	Grass								FZ			
126450	126600	150	3	Yes		Yes	West Central Hills	Grass								FZ			
126600	126650	50	3	Yes			West Central Hills	Grass								FZ			
126650	126700	50	3	Yes		Yes	West Central Hills	Grass								FZ			
126700	126750	50	3			Yes	West Central Hills	Treed								FZ			
126750	126800	50	3	Yes		Yes	West Central Hills	Treed								FZ			
126800	126850	50	3	Yes			West Central Hills	Grass								FZ			
126850	126950	100	3	Yes			West Central Hills	Grass								FZ			
126950	127300	350	3	Yes			West Central Hills	Grass								FZ			
127300	127450	150	3	Yes			West Central Hills	Grass								FZ			
127450	127550	100	3	Yes		Yes	West Central Hills	Treed								FZ			
127550	127800	250	3	Yes		Yes	West Central Hills	Grass								FZ			
127800	127850	50	3	Yes			West Central Hills	Grass								FZ			
127850	127900	50	3	Yes		Yes	West Central Hills	Grass								FZ			
127900	127950	50	3	Yes		Yes	West Central Hills	Treed								FZ			
127950	128050	100	3	Yes			West Central Hills	Grass								FZ			
128050	128600	550	3	Yes			West Central Hills	Grass								FZ			
128600	128650	50	3	Yes		Yes	West Central Hills	Grass			BENDIGO-MARYBOROUGH ROAD	ARTERIAL OTHER	C CLASS ROADS	1400		FZ			
128650	128700	50	3			Yes	West Central Hills	Grass			BENDIGO-MARYBOROUGH ROAD	ARTERIAL OTHER	C CLASS ROADS	1400		TR22			
128700	128750	50	3	Yes			West Central Hills	Grass								FZ			

Chainage		Length	Project	20m	30m	Landscape		Vegetation Type	Road	RMA Class	SRNS Class	Average daily vehicles	Main planning zone	VPO	ESO	Waterway
Start	End	(m)	Zone	Trenching	Trenching	Boring	Character									
128750	128800	50	3	Yes		Yes	West Central Hills	Grass					FZ			
128800	128850	50	3			Yes	West Central Hills	Treed					FZ			Murphy Creek
128850	128900	50	3	Yes		Yes	West Central Hills	Grass					FZ			
128900	129050	150	3	Yes		Yes	West Central Hills	Grass					FZ			
129050	129100	50	3	Yes		Yes	West Central Hills	Grass					FZ			
129100	129150	50	3	Yes		Yes	West Central Hills	Treed					FZ			
129150	129350	200	3	Yes		Yes	West Central Hills	Grass					FZ			
129350	129950	600	3	Yes		Yes	West Central Hills	Grass					FZ			
129950	130100	150	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
130100	130150	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
130150	130200	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
130200	130250	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
130250	130750	500	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
130750	130800	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
130800	130850	50	3			Yes	Murray Basin Plain	Treed					FZ			
130850	130900	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
130900	131050	150	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
131050	131300	250	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
131300	132350	1050	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
132350	133950	1600	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
133950	134000	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
134000	134050	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
134050	134100	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
134100	134150	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
134150	134200	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
134200	134250	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
134250	134300	50	3			Yes	Murray Basin Plain	Grass					FZ			
134300	134400	100	3			Yes	Murray Basin Plain	Treed					FZ			
134400	134450	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
134450	135050	600	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
135050	137850	2800	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
137850	137900	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
137900	137950	50	3			Yes	Murray Basin Plain	Treed					FZ			
137950	138000	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			McGee Creek
138000	138900	900	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
138900	138950	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
138950	139000	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
139000	13950	550	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
139550	139650	100	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
139650	141050	1400	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
141050	141900	850	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
141900	142000	100	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
142000	142250	250	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
142250	144750	2500	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
144750	144800	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
144800	144900	100	3			Yes	Murray Basin Plain	Treed					FZ			
144900	144950	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
144950	146400	1450	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
146400	146450	50	3	Yes		Yes	Murray Basin Plain	Treed					TRZ2			
146450	146500	50	3	Yes		Yes	Murray Basin Plain	Treed					FZ			
146500	147200	700	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
147200	147250	50	3	Yes		Yes	Murray Basin Plain	Grass					FZ			
147250	147650	400	3	Yes			Murray Basin Plain	Grass					FZ			
147650	147850	200	3	Yes			Murray Basin Plain	Grass					FZ	VPO1		

Chainage		Length	Project	20m	30m	Landscape		Vegetation Type		Road	RMA Class	SRNS Class	Average daily vehicles	Main planning zone	VPO	ESO	Waterway
Start	End	(m)	Zone	Trenching	Trenching	Boring	Character	Character		Type		Type		Zone		VPO	
147850	147900	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ	VPO1		
147900	147950	50	3				Yes	Murray Basin Plain	Treed					FZ	VPO1		Little Creek
147950	148000	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ	VPO1		
148000	148400	400	3	Yes				Murray Basin Plain	Grass					FZ			
148400	148450	50	3	Yes		Yes		Murray Basin Plain	Grass					FZ			
148450	148950	500	3			Yes		Murray Basin Plain	Grass					FZ			
148950	149000	50	3	Yes		Yes	Yes	Murray Basin Plain	Treed					FZ			
149000	149100	100	3			Yes	Yes	Murray Basin Plain	Treed					FZ			
149100	149150	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ			
149150	150100	950	3	Yes				Murray Basin Plain	Grass					FZ			
150100	150150	50	3	Yes		Yes		Murray Basin Plain	Grass					FZ			
150150	150650	500	3			Yes		Murray Basin Plain	Grass					FZ			
150650	150700	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ			
150700	150750	50	3				Yes	Murray Basin Plain	Treed					FZ			
150750	150800	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ			
150800	151900	1100	3	Yes				Murray Basin Plain	Grass					FZ			
151900	151950	50	3	Yes		Yes		Murray Basin Plain	Grass					FZ			
151950	152400	450	3	Yes			Yes	Murray Basin Plain	Grass					FZ			
152400	152450	50	3	Yes				Murray Basin Plain	Grass					FZ			
152450	152850	400	3	Yes				Murray Basin Plain	Grass					FZ			
152850	152900	50	3	Yes				Murray Basin Plain	Grass					FZ			
152900	152950	50	3	Yes		Yes		Murray Basin Plain	Grass					FZ			
152950	153400	450	3			Yes		Murray Basin Plain	Grass					FZ			
153400	153850	450	3	Yes			Yes	Murray Basin Plain	Grass					FZ			
153850	153900	50	3	Yes		Yes	Yes	Murray Basin Plain	Treed					FZ			
153900	153950	50	3			Yes	Yes	Murray Basin Plain	Treed					FZ			
153950	154000	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ			
154000	154900	900	3			Yes		Murray Basin Plain	Grass					FZ			
154900	155550	650	3	Yes				Murray Basin Plain	Grass					FZ			
155550	155600	50	3	Yes		Yes	Yes	Murray Basin Plain	Treed					FZ			
155600	155650	50	3			Yes	Yes	Murray Basin Plain	Treed					FZ			
155650	155700	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ			
155700	155800	100	3	Yes			Yes	Murray Basin Plain	Grass					FZ			
155800	156300	500	3	Yes				Murray Basin Plain	Grass					FZ			
156300	156350	50	3	Yes		Yes	Yes	Murray Basin Plain	Treed					FZ			
156350	156500	150	3			Yes	Yes	Murray Basin Plain	Treed					FZ			
156500	156550	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ			
156550	156750	200	3	Yes				Murray Basin Plain	Grass					FZ			
156750	156900	150	3	Yes				Murray Basin Plain	Grass					FZ			
156900	157050	150	3	Yes		Yes		Murray Basin Plain	Grass					FZ			
157050	157700	650	3	Yes			Yes	Murray Basin Plain	Grass					FZ			
157700	157900	200	3	Yes			Yes	Murray Basin Plain	Grass					FZ			
157900	158350	450	3	Yes		Yes		Murray Basin Plain	Grass					FZ			
158350	158400	50	3	Yes		Yes	Yes	Murray Basin Plain	Treed					FZ			
158400	158500	100	3			Yes	Yes	Murray Basin Plain	Treed					FZ			
158500	158550	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ			
158550	158900	350	3	Yes		Yes		Murray Basin Plain	Grass					FZ			
158900	159000	100	3	Yes			Yes	Murray Basin Plain	Grass					FZ			
159000	159950	950	3	Yes			Yes	Murray Basin Plain	Grass					FZ			
159950	161950	2000	3	Yes				Murray Basin Plain	Grass					FZ			
161950	162000	50	3	Yes		Yes	Yes	Murray Basin Plain	Treed					FZ	VPO2		
162000	162100	100	3			Yes	Yes	Murray Basin Plain	Treed					TR22	VPO2		
162100	162150	50	3	Yes			Yes	Murray Basin Plain	Treed					FZ	VPO2		
162150	162900	750	3	Yes				Murray Basin Plain	Grass					FZ			

Chainage		Start	End	Length (m)	Project Zone	20m Trenching	30m Trenching	Boring	Landscape Character	Vegetation Type	Road	RMA Class	SRNS Class	Average daily vehicles	Main planning zone	VPO	ESO	Waterway
162900	162950	50	3			Yes	Yes	Yes	Murray Basin Plain	Treed					FZ			
162950	163050	100	3					Yes	Murray Basin Plain	Treed					TRZ1			
163050	163100	50	3					Yes	Murray Basin Plain	Treed					FZ			
163100	163150	50	3		Yes			Yes	Murray Basin Plain	Treed					FZ			
163150	163700	550	3		Yes				Murray Basin Plain	Grass					FZ			
163700	163800	100	3		Yes			Yes	Murray Basin Plain	Treed					FZ			
163800	163850	50	3		Yes				Murray Basin Plain	Grass					FZ			
163850	163900	50	3		Yes			Yes	Murray Basin Plain	Grass					FZ			
163900	164550	650	3		Yes			Yes	Murray Basin Plain	Grass					FZ			
164550	164650	100	3					Yes	Murray Basin Plain	Treed					FZ			
164650	166150	1500	3		Yes				Murray Basin Plain	Grass					FZ			
166150	166200	50	3		Yes			Yes	Murray Basin Plain	Grass					FZ			
166200	166750	550	3		Yes				Murray Basin Plain	Grass					FZ			
166750	166800	50	3		Yes			Yes	Murray Basin Plain	Grass					FZ			
166800	167750	950	3		Yes				Murray Basin Plain	Grass					FZ			
167750	167850	100	3		Yes			Yes	Murray Basin Plain	Grass					FZ			
167850	169400	1550	3		Yes				Murray Basin Plain	Grass					FZ			
169400	169450	50	3		Yes			Yes	Murray Basin Plain	Grass					FZ			
169450	172400	2950	3		Yes				Murray Basin Plain	Grass					FZ			
172400	172500	100	3		Yes			Yes	Murray Basin Plain	Treed					FZ			
172500	172650	150	3		Yes			Yes	Murray Basin Plain	Grass					FZ			
172650	173100	450	3		Yes				Murray Basin Plain	Grass					FZ			
173100	173150	50	3		Yes			Yes	Murray Basin Plain	Treed					FZ			
173150	173200	50	4					Yes	Murray Basin Plain	Treed					FZ			
173200	173250	50	4					Yes	Murray Basin Plain	Treed					FZ			Loddon River
173250	173400	150	4					Yes	Murray Basin Plain	Treed					PCRZ			Loddon River
173400	173500	100	4					Yes	Murray Basin Plain	Treed					FZ			
173500	173550	50	4		Yes			Yes	Murray Basin Plain	Treed					FZ			
173550	174300	750	4		Yes				Murray Basin Plain	Grass					FZ			
174300	174350	50	4		Yes			Yes	Murray Basin Plain	Treed					TRZ2			
174350	174400	50	4					Yes	Murray Basin Plain	Treed					TRZ2			
174400	174450	50	4		Yes			Yes	Murray Basin Plain	Treed					TRZ2			
174450	174550	100	4		Yes				Murray Basin Plain	Grass					FZ			
174550	174650	100	4		Yes			Yes	Murray Basin Plain	Grass					FZ			
174650	174900	250	4		Yes				Murray Basin Plain	Grass					FZ			
174900	174950	50	4		Yes			Yes	Murray Basin Plain	Grass					FZ			
174950	175050	100	4		Yes				Murray Basin Plain	Grass					FZ			
175050	175100	50	4		Yes			Yes	Murray Basin Plain	Grass					FZ			
175100	175950	850	4		Yes				Murray Basin Plain	Grass					FZ			
175950	176000	50	4		Yes			Yes	Murray Basin Plain	Treed					FZ			
176000	176050	50	4					Yes	Murray Basin Plain	Treed					FZ			
176050	176200	150	4		Yes			Yes	Murray Basin Plain	Treed					FZ			
176200	177750	1550	4		Yes				West Central Hills	Grass					FZ			
177750	177800	50	4		Yes			Yes	West Central Hills	Grass					FZ			
177800	179000	1200	4		Yes				West Central Hills	Grass					FZ			
179000	179050	50	4		Yes			Yes	West Central Hills	Grass					FZ			
179050	180300	1250	4		Yes				West Central Hills	Grass					FZ			
180300	180350	50	4		Yes			Yes	West Central Hills	Treed					FZ			
180350	180400	50	4		Yes			Yes	West Central Hills	Treed					FZ			
180400	180600	200	4		Yes				West Central Hills	Grass					FZ			
180600	180650	50	4		Yes			Yes	West Central Hills	Treed					FZ			
180650	180700	50	4					Yes	West Central Hills	Treed					FZ			
180700	180750	50	4		Yes			Yes	West Central Hills	Treed					FZ			
180750	180850	100	4		Yes				West Central Hills	Grass					FZ			

Chainage		Length (m)	Project		30m		Landscape		Vegetation Type	Road	RMA Class	SRNS Class	Average daily vehicles		Main planning zone	VPO	ESO	Waterway
Start	End		Zone	20m	Trenching	Trenching	Boring	Character										
180850	180950	100	4	Yes	Yes		Yes	West Central Hills	Treed						FZ			
180950	182350	1400	4	Yes				West Central Hills	Grass						FZ			
182350	182450	100	4	Yes			Yes	West Central Hills	Treed						FZ			
182450	183450	1000	4	Yes				West Central Hills	Grass						FZ			
183450	183500	50	4	Yes			Yes	West Central Hills	Treed						FZ			
183500	183550	50	4		Yes		Yes	West Central Hills	Treed						FZ			
183550	184350	800	4	Yes	Yes		Yes	West Central Hills	Grass						FZ			
184350	184450	100	4	Yes	Yes		Yes	West Central Hills	Grass						FZ			
184450	184500	50	4	Yes			Yes	West Central Hills	Grass						FZ			
184500	184750	250	4	Yes			Yes	West Central Hills	Grass						FZ			
184750	184800	50	4	Yes	Yes			West Central Hills	Grass						FZ			
184800	184850	50	4	Yes				West Central Hills	Grass						FZ			
184850	184900	50	4	Yes	Yes			West Central Hills	Grass						FZ			
184900	185350	450	4	Yes				West Central Hills	Grass						FZ			
185350	185450	100	4	Yes				West Central Hills	Grass						FZ			
185450	185500	50	4	Yes	Yes			West Central Hills	Grass						FZ			
185500	186250	750	4	Yes				West Central Hills	Grass						FZ			
186250	187100	850	4	Yes				West Central Hills	Grass						FZ			
187100	188450	1350	4	Yes				West Central Hills	Grass						FZ			
188450	188500	50	4	Yes			Yes	West Central Hills	Treed						FZ			
188500	188550	50	4		Yes		Yes	West Central Hills	Treed						FZ			
188550	188600	50	4	Yes	Yes			West Central Hills	Treed						FZ			
188600	188850	250	4	Yes			Yes	West Central Hills	Grass						FZ			
188850	188900	50	4	Yes	Yes			West Central Hills	Grass						FZ			
188900	189750	850	4	Yes				West Central Hills	Grass						FZ			
189750	190000	250	4	Yes				West Central Hills	Grass						FZ			
190000	190050	50	4	Yes			Yes	West Central Hills	Treed						FZ			
190050	190100	50	4				Yes	West Central Hills	Treed						FZ			
190100	190150	50	4				Yes	West Central Hills	Treed						FZ			
190150	190250	100	4				Yes	West Central Hills	Treed						PCRZ			Hope Creek
190250	190300	50	4	Yes	Yes			West Central Hills	Treed						FZ			Hope Creek
190300	190650	350	4	Yes			Yes	West Central Hills	Grass						FZ			
190650	190750	100	4	Yes			Yes	West Central Hills	Treed						FZ			
190750	190900	150	4	Yes				West Central Hills	Grass						FZ			
190900	191600	700	4	Yes				West Central Hills	Grass						FZ			
191600	191800	200	4	Yes	Yes			West Central Hills	Grass						FZ			
191800	191850	50	4	Yes			Yes	West Central Hills	Treed						FZ			
191850	191900	50	4	Yes			Yes	West Central Hills	Treed						FZ			
191900	192550	650	4	Yes			Yes	West Central Hills	Grass						FZ			
192550	192600	50	4	Yes	Yes		Yes	West Central Hills	Treed						FZ			
192600	192750	150	4	Yes				West Central Hills	Grass						FZ			
192750	194450	1700	4	Yes				West Central Hills	Grass						FZ			
194450	194500	50	4	Yes	Yes			West Central Hills	Grass						FZ			
194500	195250	750	4	Yes			Yes	West Central Hills	Grass						FZ			
195250	195300	50	4	Yes	Yes			West Central Hills	Grass						FZ			
195300	196450	1150	4	Yes				West Central Hills	Grass						FZ			
196450	196500	50	4	Yes			Yes	West Central Hills	Treed						FZ			
196500	196550	50	4		Yes		Yes	West Central Hills	Treed						FZ			
196550	196700	150	4	Yes				West Central Hills	Grass						FZ			
196700	196800	100	4	Yes			Yes	West Central Hills	Treed						FZ			
196800	196850	50	4		Yes			West Central Hills	Grass						FZ			
196850	196900	50	4	Yes	Yes			West Central Hills	Grass						FZ			
196900	196950	50	4	Yes				West Central Hills	Grass						FZ			
196950	197000	50	4	Yes	Yes			West Central Hills	Grass						FZ			

Chainage		Chainage	Length	Project	20m	30m	Landscape		Vegetation Type		Road	RMA Class	SRNS Class	Average daily vehicles	Main planning zone	VPO	ESO	Waterway
Start	End	Chainage	Length (m)	Zone	Trenching	Trenching	Boring	Character										
197000	197050	50	4		Yes			West Central Hills	Grass						FZ			
197050	197150	100	4	Yes				West Central Hills	Grass						FZ			
197150	197250	100	4	Yes				West Central Hills	Grass						FZ			
197250	197300	50	4	Yes				West Central Hills	Grass						FZ			
197300	199400	2100	4	Yes				West Central Hills	Grass						FZ			
199400	199450	50	4	Yes			Yes	West Central Hills	Treed						FZ			
199450	199500	50	4	Yes			Yes	West Central Hills	Treed						FZ			
199500	199700	200	4	Yes				West Central Hills	Grass						FZ			
199700	199800	100	4	Yes			Yes	West Central Hills	Treed						FZ			
199800	200000	200	4	Yes				West Central Hills	Grass						FZ			
200000	200050	50	4	Yes			Yes	West Central Hills	Treed						FZ			
200050	200100	50	4	Yes			Yes	West Central Hills	Treed						FZ			
200100	200150	50	4	Yes			Yes	West Central Hills	Treed						FZ			
200150	200750	600	4	Yes				West Central Hills	Grass						FZ			
200750	200850	100	4	Yes			Yes	West Central Hills	Treed						TRZ1			Ryan Creek
200850	201650	800	4	Yes				West Central Hills	Grass						FZ			
201650	201700	50	4	Yes			Yes	West Central Hills	Treed						FZ			
201700	201750	50	4	Yes			Yes	West Central Hills	Treed						FZ			
201750	202750	1000	4	Yes				West Central Hills	Grass						FZ			
202750	202800	50	4	Yes				West Central Hills	Grass						FZ			
202800	202950	150	4	Yes			Yes	West Central Hills	Grass						FZ			
202950	203000	50	4	Yes			Yes	West Central Hills	Grass						FZ			VPO2
203000	203050	50	4	Yes			Yes	West Central Hills	Treed						TRZ2			VPO2
203050	203100	50	4	Yes			Yes	West Central Hills	Treed						FZ			VPO2
203100	203450	350	4	Yes				West Central Hills	Grass						FZ			
203450	203500	50	4	Yes			Yes	West Central Hills	Treed						FZ			
203500	203550	50	4				Yes	West Central Hills	Treed						FZ			
203550	203600	50	4	Yes			Yes	West Central Hills	Treed						FZ			
203600	203650	50	4	Yes			Yes	West Central Hills	Grass						FZ			
203650	204050	400	4	Yes				West Central Hills	Grass						FZ			
204050	204100	50	4	Yes			Yes	West Central Hills	Grass						FZ			
204100	204500	400	4	Yes				West Central Hills	Grass						FZ			
204500	204550	50	4	Yes			Yes	West Central Hills	Grass						FZ			
204550	205800	1250	4	Yes			Yes	West Central Hills	Grass						FZ			
205800	205850	50	4	Yes			Yes	West Central Hills	Treed						FZ			
205850	205950	100	4	Yes			Yes	West Central Hills	Treed						FZ			
205950	206000	50	4	Yes			Yes	West Central Hills	Treed						FZ			
206000	206050	50	4	Yes				West Central Hills	Grass						FZ			
206050	206100	50	4	Yes			Yes	West Central Hills	Grass						FZ			
206100	206450	350	4	Yes			Yes	West Central Hills	Grass						FZ			
206450	206500	50	4	Yes			Yes	West Central Hills	Grass						FZ			
206500	208750	2250	4	Yes			Yes	West Central Hills	Grass						FZ			
208750	208800	50	4	Yes			Yes	West Central Hills	Grass						FZ			
208800	208850	50	4	Yes				West Central Hills	Grass						FZ			
208850	208900	50	4	Yes			Yes	West Central Hills	Grass						FZ			
208900	210300	1400	4	Yes			Yes	West Central Hills	Grass						FZ			
210300	210350	50	4	Yes			Yes	West Central Hills	Treed						FZ			
210350	210400	50	4	Yes			Yes	West Central Hills	Treed						FZ			
210400	210450	50	4	Yes			Yes	West Central Hills	Treed						FZ			
210450	210600	150	4	Yes				West Central Hills	Grass						FZ			
210600	210650	50	4	Yes			Yes	West Central Hills	Grass						FZ			
210650	210700	50	4	Yes				West Central Hills	Grass						FZ			
210700	210750	50	4	Yes			Yes	West Central Hills	Grass						FZ			
210750	211200	450	4	Yes				West Central Hills	Grass						FZ			

Chainage		Length		Project		30m		Landscape		Vegetation Type	Road	RMA Class	SRNS Class	Average		Main
Start	End	Chainage	Length (m)	Zone	20m	Trenching	Boring	Character	Zone					daily	vehicles	planning
																zone
211200	211250	50	4			Yes		Yes	West Central Hills	Treed						FZ
211250	211300	50	4					Yes	West Central Hills	Treed						FZ
211300	211350	50	4			Yes		Yes	West Central Hills	Treed						FZ
211350	212100	750	4			Yes		Yes	West Central Hills	Grass						FZ
212100	212150	50	4		Yes			Yes	West Central Hills	Grass						FZ
212150	212200	50	4		Yes			Yes	West Central Hills	Grass						FZ
212200	212350	150	4		Yes			Yes	West Central Hills	Grass						FZ
212350	212450	100	4		Yes			Yes	West Central Hills	Grass						FZ
212450	212650	200	4		Yes			Yes	West Central Hills	Grass						FZ
212650	212700	50	4		Yes			Yes	West Central Hills	Treed						FZ
212700	212750	50	4					Yes	West Central Hills	Treed						FZ
212750	212800	50	4		Yes			Yes	West Central Hills	Treed						FZ
212800	212900	100	4		Yes			Yes	West Central Hills	Grass						FZ
212900	212950	50	4		Yes			Yes	West Central Hills	Grass						FZ
212950	213050	100	4		Yes			Yes	West Central Hills	Grass						FZ
213050	213300	250	4		Yes			Yes	West Central Hills	Grass						FZ
213300	213350	50	4		Yes			Yes	West Central Hills	Treed						FZ
213350	213400	50	4		Yes			Yes	West Central Hills	Treed						FZ
213400	214350	950	4		Yes			Yes	West Central Hills	Grass						FZ
214350	214400	50	4		Yes			Yes	West Central Hills	Treed						FZ
214400	214450	50	4					Yes	West Central Hills	Treed						FZ
214450	214500	50	4		Yes			Yes	West Central Hills	Treed						FZ
214500	216150	1650	4		Yes			Yes	West Central Hills	Grass						FZ
216150	216200	50	4		Yes			Yes	West Central Hills	Treed						FZ
216200	216300	100	4		Yes			Yes	West Central Hills	Treed						FZ
216300	216350	50	4		Yes			Yes	West Central Hills	Treed						FZ
216350	217800	1450	4		Yes			Yes	West Central Hills	Grass						FZ
217800	217850	50	4		Yes			Yes	West Central Hills	Treed						FZ
217850	217900	50	4					Yes	West Central Hills	Treed						TR22
217900	217950	50	4		Yes			Yes	West Central Hills	Treed						TR22
217950	218500	550	4		Yes			Yes	West Central Hills	Grass						FZ
218500	218550	50	4		Yes			Yes	West Central Hills	Treed						FZ
218550	218700	150	4					Yes	West Central Hills	Treed						FZ
218700	218750	50	4		Yes			Yes	West Central Hills	Treed						FZ
218750	219300	550	4		Yes			Yes	West Central Hills	Grass						FZ
219300	219350	50	4		Yes			Yes	West Central Hills	Grass						FZ
219350	219500	150	4		Yes			Yes	West Central Hills	Grass						FZ
219500	219550	50	4		Yes			Yes	West Central Hills	Treed						FZ
219550	219600	50	4					Yes	West Central Hills	Treed						FZ
219600	219650	50	4		Yes			Yes	West Central Hills	Treed						FZ
219650	220150	500	4		Yes			Yes	West Central Hills	Grass						FZ
220150	220200	50	4		Yes			Yes	West Central Hills	Grass						FZ
220200	220250	50	4		Yes			Yes	West Central Hills	Grass						FZ
220250	220300	50	4		Yes			Yes	West Central Hills	Grass						FZ
220300	220400	100	4		Yes			Yes	West Central Hills	Grass						FZ
220400	220450	50	4		Yes			Yes	West Central Hills	Grass						FZ
220450	221350	900	4		Yes			Yes	West Central Hills	Grass						FZ
221350	221400	50	4		Yes			Yes	West Central Hills	Grass						FZ
221400	221850	450	4		Yes			Yes	West Central Hills	Grass						FZ
221850	221900	50	4		Yes			Yes	West Central Hills	Grass						FZ
221900	222000	100	4		Yes			Yes	West Central Hills	Grass						FZ
222000	222050	50	4		Yes			Yes	West Central Hills	Grass						FZ
222050	222200	150	4		Yes			Yes	West Central Hills	Grass						FZ
222200	222250	50	4		Yes			Yes	West Central Hills	Treed						FZ

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