

Cumulative Environmental Effects Paper

Western Victoria Transmission Network Project



www.darleypowerfight.com.au



Through alignment selection and design the Project seeks to avoid areas of significance.

(AusNet Services)

CUMULATIVE ENVIRONMENTAL EFFECTS

The purpose of this document is to highlight the significant and destructive impact on Darley, Coimadai, Merrimu and surrounding regions along the proposed northern corridor of the Project's Area of Interest (Aoi).

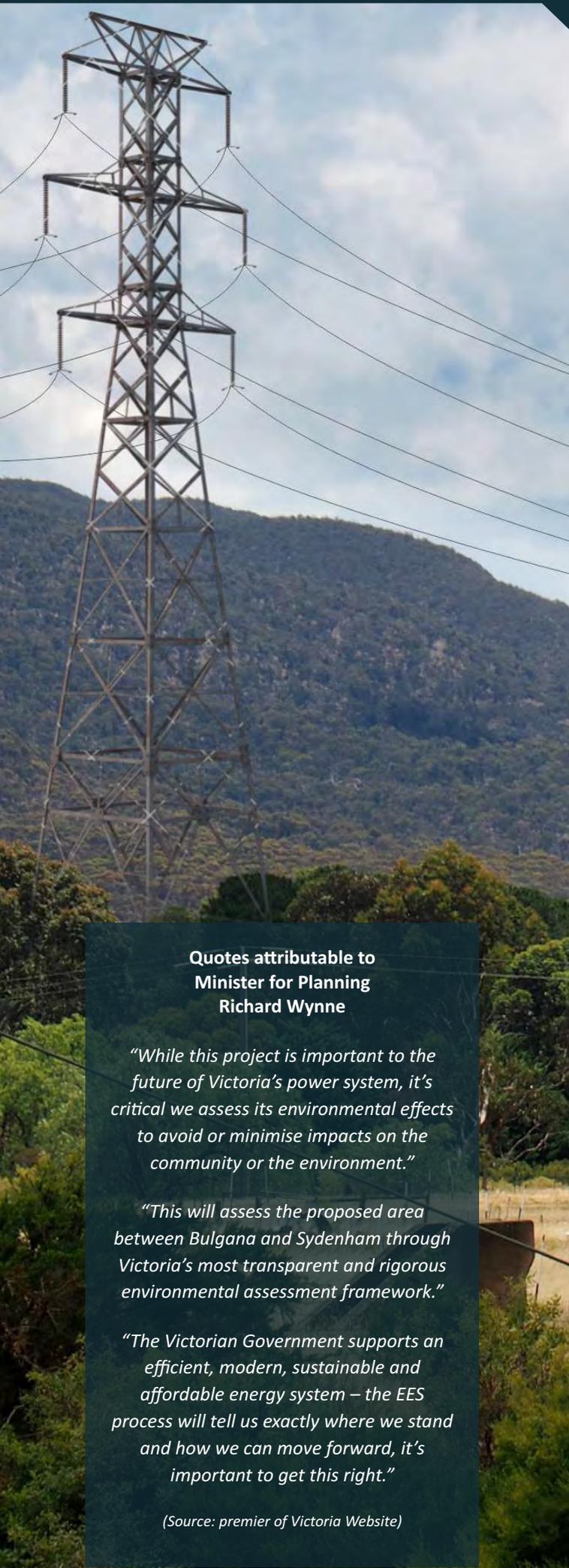
PROJECT BACKGROUND

AusNet Services has been awarded the contract to construct 190 km of new overhead high voltage transmission lines from Sydenham to Bulgana, a new terminal station to the north of Ballarat and several electricity infrastructure upgrades across western Victoria. Whilst the route of the transmission line has not yet been determined, AusNet Services has identified an Area of Interest (Aoi) and has further narrowed potential corridors.

It is proposed that Moorabool Shire will house close to 60 km of 85m high 500kV transmission lines and may also house the new terminal station.

In the north, a corridor through Darley, Coimadai and Merrimu, alongside the Lerderderg State Park is being investigated.

Darley Power Fight is uniting these communities in a fight against high voltage transmission towers through our backyard.



Renewable energy transmission should be 'Green and Unseen'.

Contents

**Quotes attributable to
Minister for Planning
Richard Wynne**

"While this project is important to the future of Victoria's power system, it's critical we assess its environmental effects to avoid or minimise impacts on the community or the environment."

"This will assess the proposed area between Bulgana and Sydenham through Victoria's most transparent and rigorous environmental assessment framework."

"The Victorian Government supports an efficient, modern, sustainable and affordable energy system – the EES process will tell us exactly where we stand and how we can move forward, it's important to get this right."

(Source: premier of Victoria Website)

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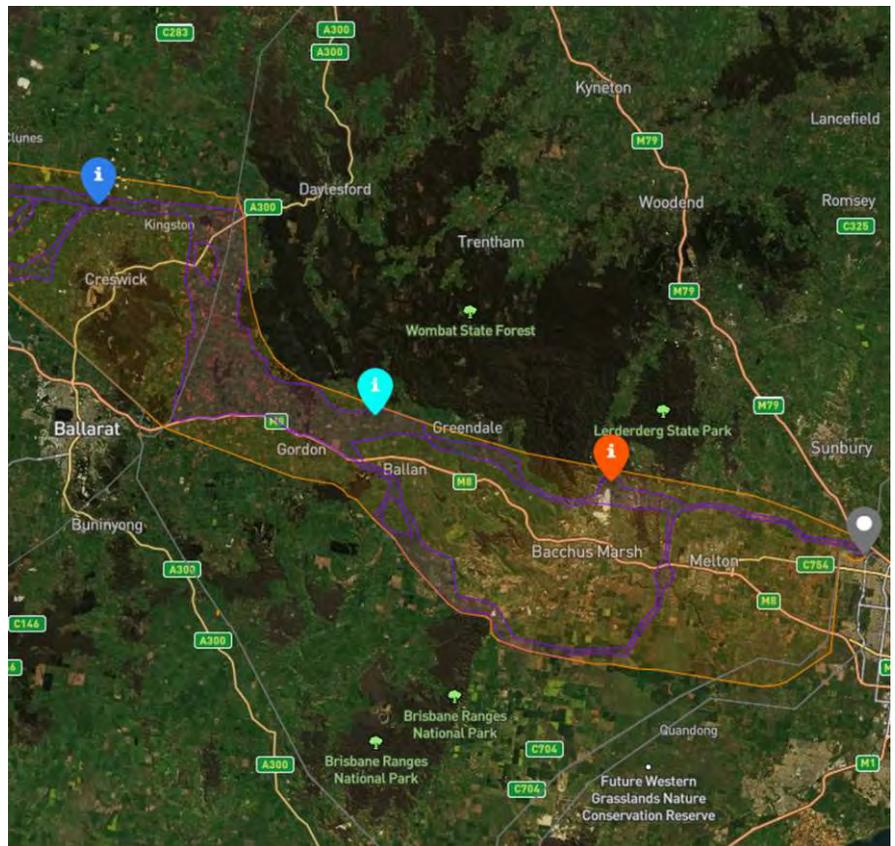
Corridor Overview

Corridors for further investigation within the Area of Interest

Determining the project route

An Area of Interest (Aoi) was identified by AusNet Services in early 2020 based on a range of technical investigations on the land between Bulgana and Sydenham.

Following consideration of community consultation and feedback, along with early investigations, AusNet Services has now narrowed down the Aoi to corridors. These corridors will be considered, along with the output of further community consultation, to identify to a single corridor and refine a final route.



Option 4.1 A corridor running from Railway Weir, north of Ballan, to east of Coimadai and north of Pykes Creek.

The proposed 500kV transmission line, between the new North Sydenham Terminal Station and the new terminal station to the north of Ballarat, includes two broad corridors to the north and south of Melbourne's Western Growth Area and the Bacchus Marsh/ Ballan areas.

In the northern area, a corridor between the Lerderderg State Park and north of Bacchus Marsh is being investigated.

In the south, a corridor south of Werribee Gorge State Park, Bacchus Marsh, Maddingley and Bacchus Marsh Airfield.



Highest Risk Bushfire Region



The eastern half of the Grampians region is where the greatest bushfire risk sits, particularly for settlements in and around the Wombat State Forest and Lerderderg State Park, such as Daylesford, Trentham and Gisborne. In 1983, on Ash Wednesday, a fire claimed seven people's lives in the Macedon, East Trentham area. The fire reached a final size of 29,500 hectares, destroying 157 homes and 628 other buildings. Whilst fires of this size have not occurred since, the potential consequence of large fires in this area remains high.

Strategic objectives (Code of Practice for Bushfire Management on Public Land) are to minimise the impact of major bushfires on human life, communities, essential and community infrastructure, industries, the economy and the environment. Human life will be afforded priority over all other considerations.

(Grampians Bushfire Management Strategy 2020)

Bushfire Risk

According to Forest Fire Management Victoria, Darley is in the Highest Risk category for the region. Coimadai, further to the north is in the High Risk category.

Overhead transmission infrastructure, proposed to the north of Darley, is highly inappropriate for this area and represents one of the worst locations in the state for them to be located. Overhead transmission infrastructure amplifies the risk of fire ignition and increases the bushfire risk to one of the highest risk towns in the region. This directly contravenes the Strategic objectives of the Code of Practice for Bushfire Management, which is that human life will be afforded priority over all other considerations.

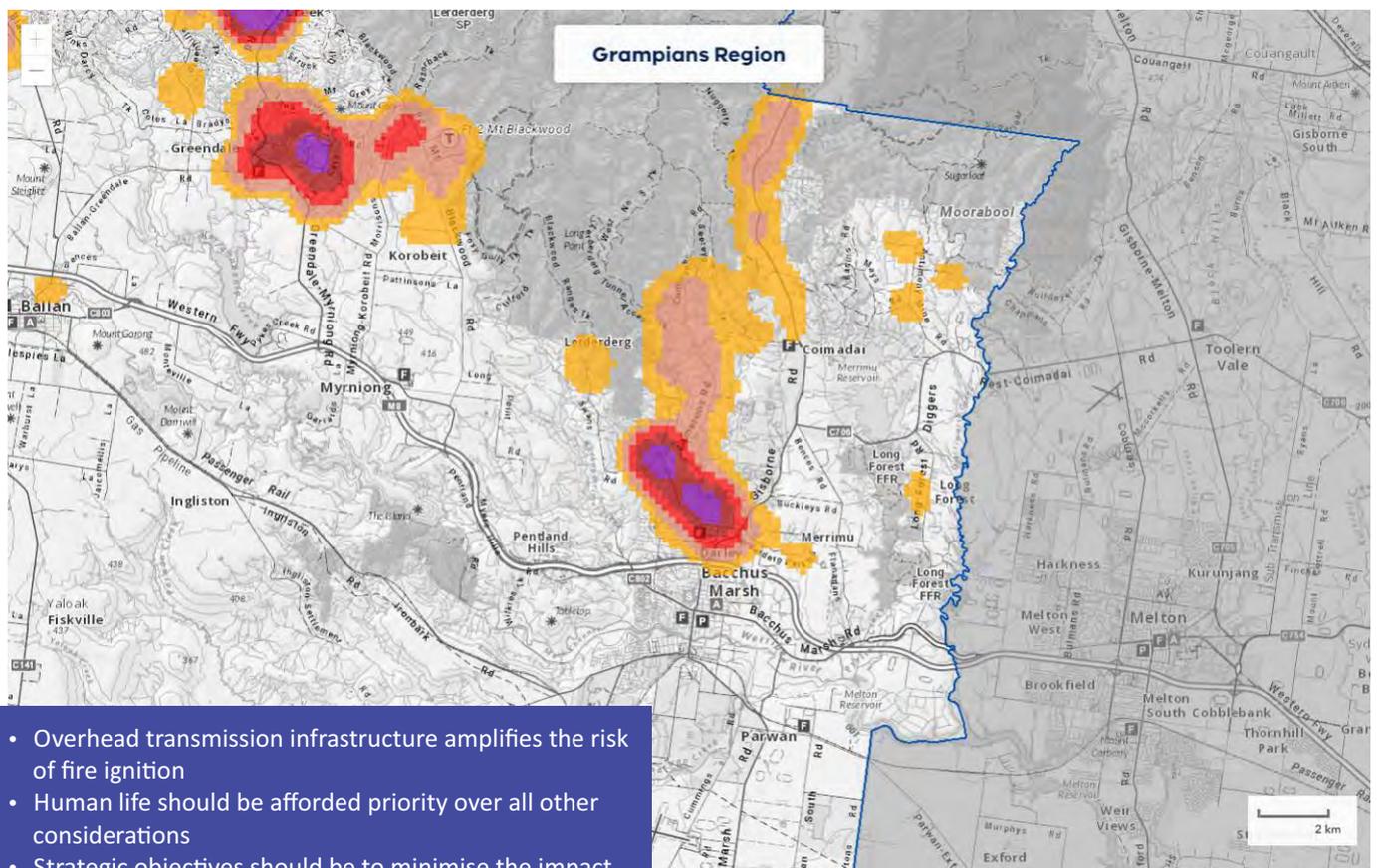
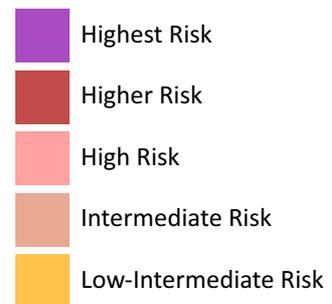
Bushfire Risk in Our Region

Fire-fighting operation

This map shows the risk of house loss in the Grampians region. It compares where houses could be destroyed by bushfire across the region.

Different shades represent different levels of risk. As the shades progress from yellow through red to purple, more and more houses are potentially destroyed.

The purple areas have the highest risk of house loss. More houses could potentially be destroyed by bushfire in these areas than in any other areas in this region.



- Overhead transmission infrastructure amplifies the risk of fire ignition
- Human life should be afforded priority over all other considerations
- Strategic objectives should be to minimise the impact of major bushfires on human life and communities

(Forest Fire Management Victoria - East Grampians Region)

Bushfire Risk



Ash Wednesday - 65 DEAD!

The fires that tore through this region left a lasting impact. It is devastating to think government can endorse a Project that further heightens risk. This project will likely lead to further deaths given the proximity to one of Victoria's most high-risk bushfire prone regions.

Bushfire Prone Area

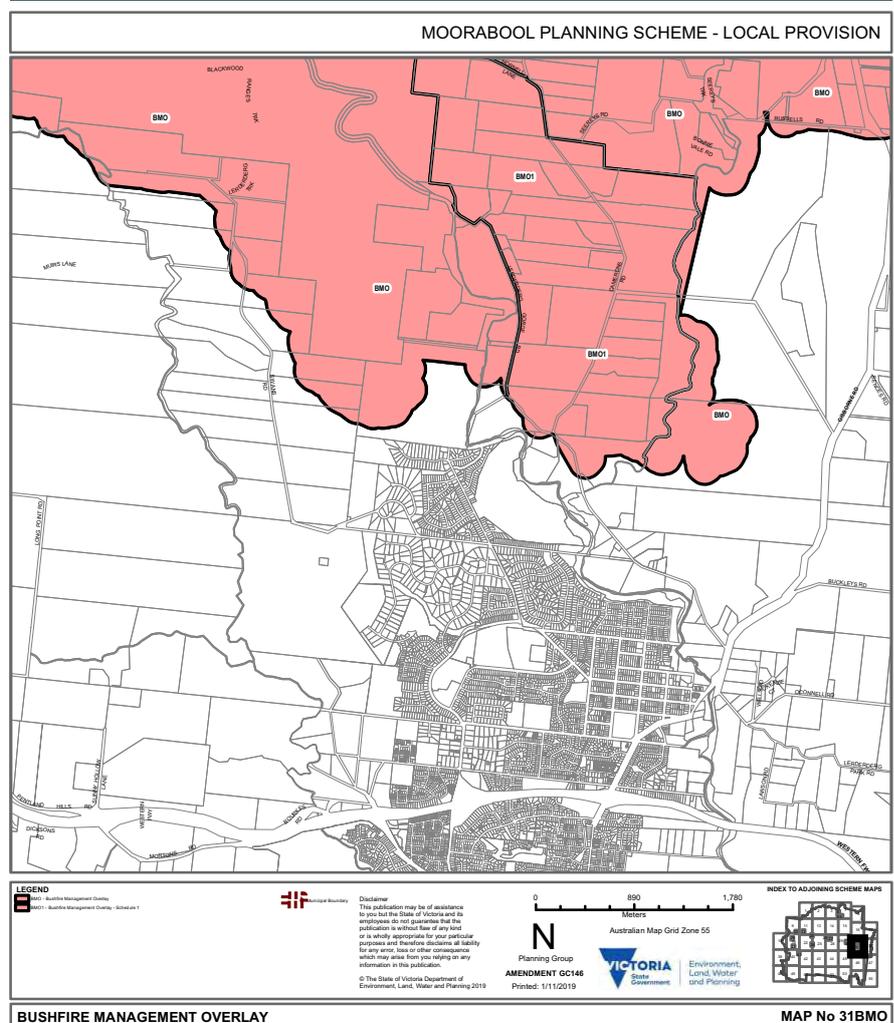
The Northern Darley Alignment Aol is within a designated Bushfire Prone Area (BPA) (refer Map).

Under severe weather conditions the bushfire risk to the northern and westernmost parts of the Aol, which abut the Lerderderg State Park, could be extreme. The landscape beyond the study area in these directions provides the potential for very long fire runs from the north and west, over some areas of steep or very steep terrain. Outside the Aol this landscape has the potential to generate extreme fire behaviour, which may be beyond the BMO parameters.

BPAs are those areas subject to or likely to be subject to bushfires, as determined by the Minister for Planning. Those areas of highest bushfire risk within the BPA are designated as Bushfire Management Overlay (BMO) areas.

The region has both Extreme and High to Very-High Risk areas identified in the Victorian Fire Risk Register. Many are listed in the High to Very-High Fire Risk category. Under the State Government Climate Change Projections, the region is expected to experience increased summer temperatures, decreased rainfall days, especially in Spring, but with increased rain intensity (storm) events. These factors are likely to further increase the fire risk classification for this region.

HIGHEST RISK BUSHFIRE ZONE



- Overhead transmission infrastructure amplifies the risk of fire ignition
- Overhead transmission infrastructure amplifies the risk to fire-fighting
- Fires burning near or beneath transmission lines are hard to control and will endanger habitat, fauna, community, and homes.
- Overhead transmission infrastructure impacts access to Merrimu Reservoir, a significant water resource used for aerial fire-fighting.



Fire-fighting Risks

Fire and high voltage transmission line safety

Fire-fighting operation

Major powerlines are critical infrastructure. They support essential community services and their de-energisation may have significant impact on public safety. Some smaller lines directly service critical sites such as sewerage, water and communication facilities.

It is therefore preferable not to attempt fire control activities near energised lines where possible.

*A growing list of Moorabool CFA fire-fighting groups say they **will not tackle blazes near a proposed electrical transmission line** across the Shire.*

Leaders at brigades in Coimadai, Myrning, Ballan, Blackwood, Mt Wallace, Wallace, Millbrook and Bungaree and Leonards Hill have written to Premier Daniel Andrews and CFA Chief Officer Garry Cook saying any blazes near the overhead powerlines would place their lives at excessive risk.

“(We) will not respond to fires on, above or around the proposed 500kV high voltage lines,” they said in their letters.

“(This is) due to the high risk as well as the unknown hazards working around this type of infrastructure.”

- Overhead transmission infrastructure amplifies the risk to fire-fighting
- Fires burning near or beneath transmission lines are hard to control and will endanger habitat, fauna, community, and homes.



*The Black Saturday wildfires, in 2009, were one of Australia's worst recent natural disasters, claiming 173 lives and destroying thousands of homes across Victoria state. SP AusNet Ltd., an Australian power-transmission company, agreed with a handful of other parties to pay people affected by the bushfire in Kilmore East—north of Melbourne—a combined 494.7 million Australian dollars in compensation. While agreeing to the settlement, SP AusNet continues to deny liability for the bushfire, claiming the power line was **damaged previously by lightning in a way that made it more susceptible to falling.***

Safety risks

Large fires burning adjacent to or under high voltage transmission lines have the potential to:

- Create electrical arcs (known as 'flashovers') that can endanger people, animals and objects.
- Damage or destroy the wires, insulators and supports of the transmission line.
- Interrupt electricity supply to households and industry

The extreme bushfire risk along with difficult to access terrain within the Aol amplifies the risks with fighting fires in this corridor. Amplified risk to fire-fighting = amplified risk to lives and properties.

Water Bombing Risks

Pilots are already putting their lives at risk flying at low level in reduced visibility

Project impact on fire-fighting water-bomber assets

There are concerns the lives of water-bomber pilots and community could be put at risk if the Project goes ahead through the proposed northern corridor.

The proposed corridor passes through the middle of the Merrimu Reservoir, the region's primary water source, and is raising great concern in the community and with CFA volunteers.

When operating aeroplanes and helicopters in a fire season, pilots are already putting their lives at risk flying at low level in reduced visibility conditions. Add 85m high transmission lines to the equation and the risk renders the water source useless for fire-fighting efforts.

The objective of the Project should be to mitigate risks to the community, the environment and crucial water assets that are relied on for bushfire management.



Image of Merrimu reservoir with 85m high transmission lines superimposed



In the news

Water-bombing bucket cuts power to Summerland Point and Gwandalan.

POWER was cut to Summerland Point and Gwandalan after a water-bombing bucket became tangled in high-voltage power lines.

The water-bombing helicopter was helping control back-burning operations at Chain Valley Bay in the Lake Munmorah State Conservation Area when its bucket became tangled in live high-voltage wires.

The entanglement brought down the wires and cut power to thousands of residents at Summerland Point and Gwandalan.

*Crews worked to restore power to affected homes for the **second time** after it was cut due to fire burning nearby. (The Daily Telegraph)*

- Overhead transmission infrastructure hinders access to Merrimu Reservoir, a significant water resource used for aerial fire-fighting.
- Removing this vital fire-fighting asset will endanger habitat, fauna, community, and homes.



Safety Concerns

Impact to Rescue Efforts

The Lerderderg State Park is used extensively by tens of thousands of recreational nature lovers and bush walkers every year.

People regularly become lost or injured in the area necessitating the use of the State Emergency Service and rescue helicopters. Overhead transmission infrastructure close to this park would severely impact the ability and timeliness of future search and rescue efforts.

Rescue helicopters often land on the river flats, directly within the northern corridor, to conserve fuel while patients are prepped for extraction from the Lerderderg State Park by members of the local SES and Police Search and Rescue.



Lerderderg Snake victim airlifted to hospital (BM Directory)



Rescue chopper winches man to safety (The Courier)

Air crashes into overhead power lines can result in loss of human life, injury, damage to property and infrastructure, loss of power supply within the grid and the starting of fires. More than 250 air crashes involving powerlines have been reported across the world between 2000 and 2015 and at least 13 (reported) air crashes to powerlines in Australia between 1998 – 2015.

Some examples include powerline strike crashes in Ayr, QLD. (Apr 2010) and in Stanthorpe, QLD. (Oct 2014) which resulted in significant fires. In Wyong, NSW. (Oct 2013), a fire-fighting helicopter brought down power lines resulting in significant power outages.



- Overhead transmission infrastructure hinders access to a crucial helicopter holding area, close to the Lerderderg, used for injured patient extraction.
- Overhead transmission infrastructure amplifies the risk to aerial search and rescue operations in and around the Lerderderg State Park.

Significant Habitat

Geological and Landform

Lerderderg State Park

The Lerderderg State Park encompasses scenic and geological gorge formations surrounding the Lerderderg River as well as the volcanic cone of Mount Blackwood. The park is known for its remote setting and the 300m deep Lerderderg River gorge is a dominant feature. Private land abuts the park to the south. **The narrow corridor between private land and the park represents the Aol.**

The Park contains a range of significant geological and geomorphological features. About one million years ago, uplifting along the Rowsley fault caused down-cutting of the Lerderderg River. The resulting Lerderderg Gorge is an outstanding illustration of stream rejuvenation resulting from faulting (Rosengren 1988). Extensive sections of Lower Ordovician sediments are displayed throughout the gorge, and the more resistant sandstones form massive cliffs and rock bars.

The southern end of the gorge in particular is of international significance for the exposed rocks which show evidence of being covered by glaciers during the Permian, about 280 million years ago (Rosengren 1988). Rosengren (1988) recommended that outcrops and the southern end of the gorge in particular be protected.

The Park also contains examples of volcanic geological processes of the early Pleistocene period when Mount Blackwood and Mount Bullengarook spread olivine basalt over the plains and some valleys.

The steep slopes of the Park have shallow skeletal soils with fractured rock at the surface (O'Shea 1986). **These soils have a high erosion potential, particularly if exposed through vegetation clearing.**

(Lerderderg State Park Management Plan 2018)

Soil conservation

The Ordovician duplex soils of Lerderderg State Park are highly dispensible, making them extremely susceptible to erosion (Soil Conservation Authority & Land Conservation Council 1975).

The removal of vegetation and development of tracks and roads encourages sheet, gully and tunnel erosion (DCE 1991).

Increase in sediment input into Victorian rivers and streams due to human activities is listed as a potentially threatening process under Schedule 3 of the Flora and Fauna Guarantee Act.

Vegetation clearing
causes high erosion

Park Conservation

Conservation of the Lerderderg State Park aims to:

- Protect and maintain the natural, aesthetic and scientific values of significant geological and geomorphological features.
- Prevent and control soil erosion and to minimise soil disturbance during all activities.

- Overhead transmission infrastructure will permanently alter the character of this 2-million-year-old, State Significant Landscape.
- The removal of vegetation and development of easements, tracks and roads encourages high erosion potential. (DCE 1991).





Significant Habitat

Rivers and Streams

Lake Merrimu

Within the Park, Southern Rural Water maintains a weir on the Lerderderg River that diverts water to Lake Merrimu, providing the domestic water supply for Melton and Bacchus Marsh.

The Lake Merrimu catchment (including the Lerderderg River and Goodman Creek) is declared a Special Water Supply Catchment under section 27 of the Catchment and Land Protection Act 1994 (Vic.). Management of Special Water Supply Catchments is subject to Special Area Plans which include Land Use Conditions.

Water catchment values and water quality would also be enhanced through the restriction of vehicle access and certain recreation activities within the Heritage River corridor and along Goodmans Creek (NRE 1997).

Our priority must be to
protect and maintain
habitat values of
rivers and streams

- Project works, including access tracks and easements will increase erosion and expose a Heritage River to contaminated or hazardous soils.
- Overhead transmission infrastructure hinders access to Merrimu Reservoir, a significant water resource used for aerial fire-fighting.

Lerderderg Heritage River

The 63 km long Lerderderg Heritage River corridor begins in the Wombat State Forest north-west of Blackwood, and continues through the Lerderderg Gorge to the Werribee Valley above Bacchus Marsh. The majority of the corridor (45 km) passes through the Park. Its boundaries follow the rim of the gorge, with spurs and ridge lines linking gorge sections. There is a Draft Management Plan for the Lerderderg Heritage River (NRE 1997).

Significant values of the Lerderderg Heritage River corridor include:

- Geological and geomorphological area of State significance (the Lerderderg Gorge);
- Geological features of international significance (Permian glacial exposures near the gorge mouth);
- Scenic landscapes along the Lerderderg River from Crowley Creek to the gorge mouth
- Blue Gum and Manna Gum open forests, and the riparian forest transition along the entire corridor.

Part of the Lerderderg River in the Park is also a Representative River (LCC 1991), one of 16 in the State. These rivers are representative of a combination of geomorphic types and hydrologic regions, broadly based on runoff. The Lerderderg River is representative of the West Victorian dissected uplands volcanic plain geomorphic unit, within a comparatively dry hydrologic region. Management as a Representative River is consistent with its protection and management as a Heritage River.

(Lerderderg State Park Management Plan 2018)

Significant Habitat

Significant Flora



Lerderderg State Park

The Park supports a range of vegetation types, including a riparian Blue Gum and Manna Gum community of State significance and 23 significant plant species including over 200-year-old Grey Box Gums. These are to be found within the State Park as well on adjacent private land.

There is a striking transition of vegetation following a rainfall gradient from south to north. Dry Stringybark–Box forests near the gorge mouth, and Box–Ironbark woodlands along the high ridges of the south, grade into taller, damper Messmate–Peppermint–Gum forests along the northern boundary of the Park.

Vegetation associations in the Lerderderg Gorge supporting Blue Gum and Manna Gum have been assessed as being of State significance for their development and intact condition (LCC 1991). More than 320 native plant species have been recorded in the Park including seventeen exotic plant species. Eleven species regarded as either rare or threatened in Victoria have been located in the Park. Buloke is listed under Schedule 2 of the Flora and Fauna Guarantee Act. The distribution and status of threatened plants within the Park are uncertain.

Many plant species in the Park are considered to be significant in the western part of the State. These include species such as Slender Saw-sedge, Tortuous Rapier-sedge and Dwarf Geebung that are localised, depleted, have disjunct occurrence or are at the edge of their range.

- Overhead transmission infrastructure will amplify the risk of fire ignition and fire-fighting.
- Easements will result in direct loss of native vegetation and habitat values.
- Easements will increase weed infestation.
- Project works will encourage the spread of declared pathogens (Cinnamon fungus).



Significant Habitat

Significant Fauna



Wildlife Habitats

The Lerderderg State Park protects a diverse range of wildlife habitats from the riparian environment of the Lerderderg River, damp forest pockets and drier open woodlands to dry rocky outcrops along high ridges. The Atlas of Victorian Wildlife holds records in the Park for 125 native bird species, 28 native mammals, 21 reptiles and 16 amphibians. Several native fish species are also known to inhabit the Lerderderg River.

Common Native Fauna

Common native mammals in the Park include the Wombat, Echidna, Common Ringtail Possum, Koala, Black Wallaby and Eastern Grey Kangaroo.

Sulphur-crested cockatoos nest in the gorge and fly out to feed in the open grasslands. Black Cockatoos, White Knapped Honeyeaters, White Throat Tree Creepers, Crimson Rosellas, Gang – Gang Cockatoos, the Superb Lyrebird and Large Forest Owls are also to be found throughout the area.

Peregrine Falcons and Wedge-tailed Eagles are among the many raptors that inhabit the rocky hills and deep valleys of the Park and surrounding area.

(Lerderderg State Park Management Plan 2018)

- Project works will result in severance of wildlife corridors and direct loss of native vegetation.
- Overhead transmission infrastructure is known to kill bats and wedge-tailed eagles.
- Project works will encourage weed infestation and the spread of declared pathogens.



Australian Powerful Owl

Threatened Species

Nine fauna species found in the Park are regarded as threatened in Victoria. Three of these, Powerful Owl, Common Bentwing Bat and Brush-tailed Phascogale, are listed under Schedule 2 of the Flora and Fauna Guarantee Act. The population status of the Mountain Dragon, Freshwater Blackfish and Mountain Galaxias is insufficiently known.

Threatened species include:

Common Bent-wing Bat, Brush-tailed Phascogale, Black Falcon, Square-tailed Kite, Barking Owl, Powerful Owl, Mountain Dragon, Freshwater Blackfish and the Mountain Galaxias.



High voltage transmission lines are known killers of wedge-tailed eagles and other raptors. 29 Tasmanian wedged-tail eagles, were killed through strikes to electricity infrastructure in 2017-2018.

Significant Habitat

Weeds and Disease

Weeds

Weeds of most concern within the Lerderderg State Park include Gorse, Bridal Creeper and Blackberry. Serrated Tussock, which infests surrounding cleared land, poses the greatest potential threat to the ecology of the Park.

Comparison: Bunyip State Park A Park with Powerline Easements

Bunyip State Park has four major problem pest plants: Blackberry, Spanish Heath, Sweet Pittosporum and Ragwort.

The main Blackberry infestations are along the western section of the power line easement, south-east of Gentle Annie, and on the southern boundary of the Park between Bunyip River and Diamond Creek.

Spanish Heath occurs on the power line easement near the Bunyip River. Sweet Pittosporum occurs along Hamilton Creek and Ragwort is found along open areas of the Black Snake Creek.

At least 11 locations show symptoms of infection by Cinnamon Fungus and its presence has been confirmed at Weatherhead Range (CNR 1994). These include the north face of the Black Snake Range (between Four Brothers Rocks and Windy Point) and the north face of the Weatherhead Range below Luptons Road. Within the Park, the fungus has the capacity to permanently alter heathland and dry sclerophyll floristics. The potential for it to spread throughout the Park is great because of the high density of rights-of-way and use.

(Lerderderg State Park Management Plan 2018)

Cinnamon Fungus

Phytophthora cinnamomi (Cinnamon Fungus) is a microscopic, soil-borne disease-causing organism that attacks and destroys plant root systems causing plants to die through lack of water and nutrients. Patches of dead or dying vegetation can indicate the presence of this silent killer and grass trees are particularly susceptible.

The invasive Cinnamon Fungus has been recorded at a number of sites within the Lerderderg State Park. The fungus seriously affects native vegetation and causes the death of susceptible species. There is no known cure.

The disease spreads naturally but is accelerated through the transport of infected soil and gravel by road-making machinery and other vehicles. Quarantine and vehicle hygiene to limit the spread of the disease can only be achieved through an up-to-date knowledge of its distribution and by restricting access to uninfected sites.

Cinnamon Fungus is listed in the top 100 of the world's most invasive species and is Victoria's most significant plant pathogen affecting both native ecosystems and the horticultural industry.

The presence of Cinnamon Fungus threatens not only vegetation communities – it can alter the ecology of entire ecosystems.

Birds, insects, reptiles and mammals that depend on the original plant species for their survival also decline in numbers as shelter and food sources disappear.

- Project works will encourage the spread of declared pathogens (Cinnamon Fungus). Infestation is accelerated through the transport of infected soil and gravel by road-making machinery and other vehicles.
- Project works will encourage weed infestation which will destroy native vegetation and habitat.



Significance Area

Environmental Significance Overlay

The natural landscapes of Bacchus Marsh District are diverse and complex, defined by their valleys, ridge lines, plateaus and escarpments.

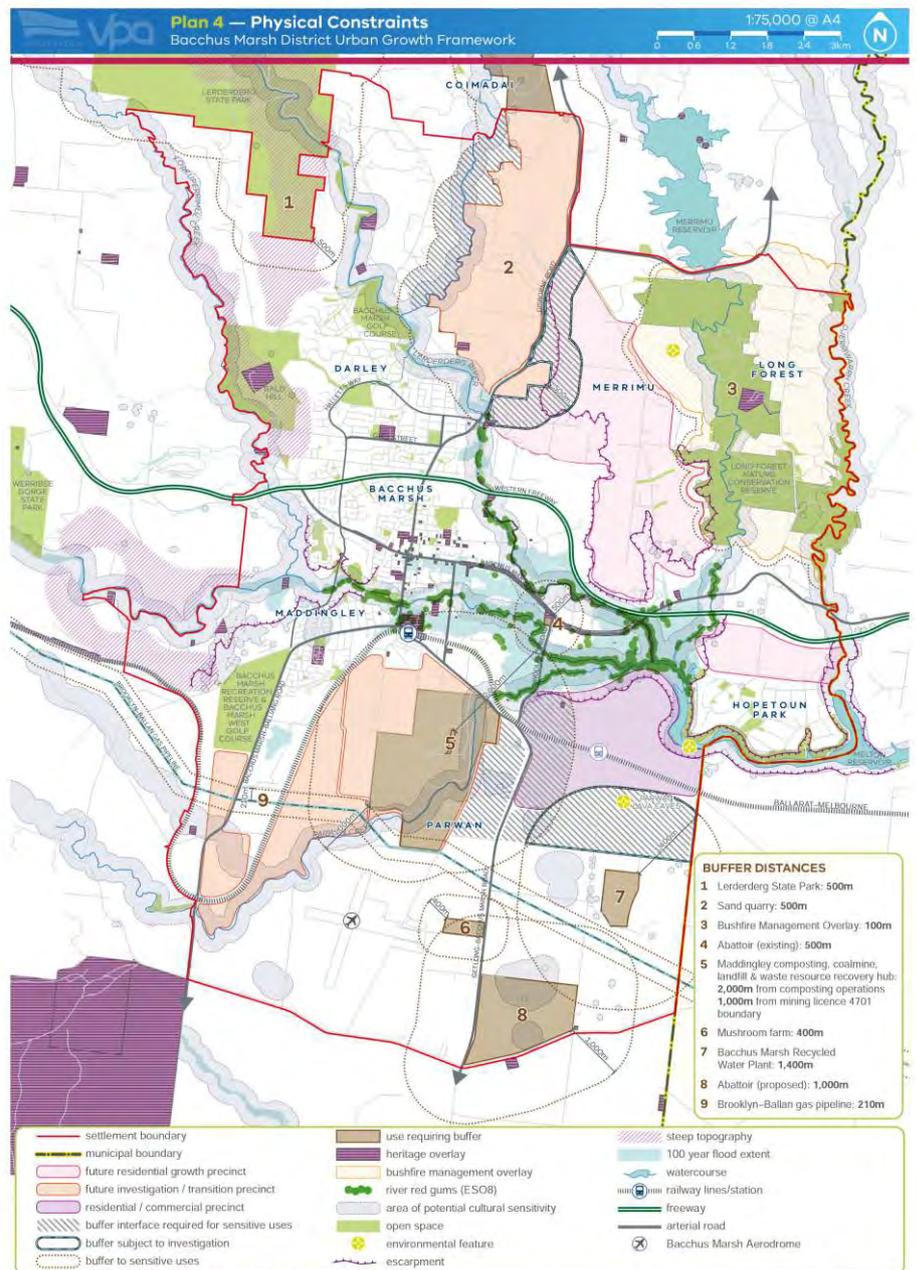
The Environmental Significance Overlay (ESO2) is applied to the Lerderderg River and land 100m either side of the River to protect waterways that supply catchments for urban and rural development.

Moorabool Council's Municipal Strategic Statement (MSS) objectives are to protect significant landscapes and vistas, and the natural features of the area including biodiversity.

The natural landscape and environmental assets of Bacchus Marsh and surrounds are to be respected.

(Moorabool Planning Scheme)

Bacchus Marsh Urban Growth Framework, produced by the Victorian Planning Authority, indicates a **500m buffer to sensitive uses** in the corridor between Darley residential and the Lerderderg State Park. **This buffer may mean positioning infrastructure in this location is not possible.**

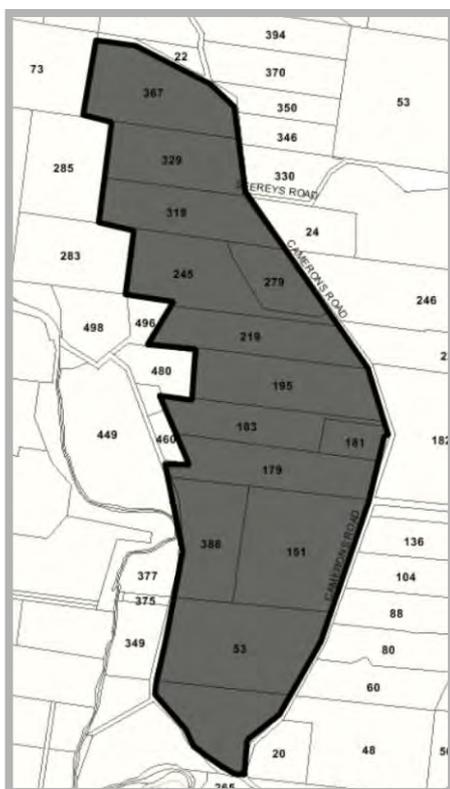


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Rural Conservation Zone

Protect and Enhance Biodiversity

A group of residents in Camerons Road, Darley and Coimadai occupy part Rural Living Zone (to the east of Cameron’s Road) and part Rural Conservation Zone Schedule 2.



Map 1 to Schedule 2 to the Rural Conservation Zone (Moorabool Planning Scheme)

The Purpose of Rural Conservation Zones

- To protect and enhance the natural environment and natural processes for their historic, archaeological and scientific interest, landscape, faunal habitat and cultural values.
- To conserve and enhance the cultural significance and character of open rural and scenic non urban landscapes.
- To protect the treed landscape values of the land.
- To retain and protect remnant native vegetation and wildlife habitat of the land.
- To protect the water quality of Goodmans Creek and the Lerderderg River.



Bushfire Risk

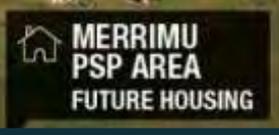
A large and well-established bushfire could approach the site from the north or northwest and under severe weather conditions could pose a significant threat to existing and future dwellings from embers, radiant heat and possible flame contact. A fire could also pose a risk to the area from the southwest, approaching through the forest/woodland and pastures in this direction.

The Moorabool Municipal Fire Management Plan (MFMP) 2011-2014 (MSC, 2012) and the Victorian Fire Risk Register (VFRR) identifies Coimadai as a human settlement area of 'Extreme' Fire Risk. There is no doubt that the bushfire risk to the site under severe bushfire conditions could be extreme.

- Project works will cut a swath right through the southern end of this Rural Conservation Zone, removing protected native habitat .
- Easements will sever wildlife corridors, encourage weed infestation and amplify the risk of fire to flora, fauna and residents.
- Overhead transmission infrastructure will permanently alter the character of this non urban landscape.



Urban Growth



Urban Growth Framework

The population of Bacchus Marsh is estimated to double over the next two decades to around 40,000 residents.

Moorabool Shire Council and the Victorian Planning Authority (VPA) have jointly prepared the draft Bacchus Marsh Urban Growth Framework (UGF).

Bacchus Marsh is a vibrant community, rich in resources and set in a very unique landscape. The unique combination of green landscapes and urban amenities distinguishes Bacchus Marsh from other regional areas and is why new members are choosing to live in the community.

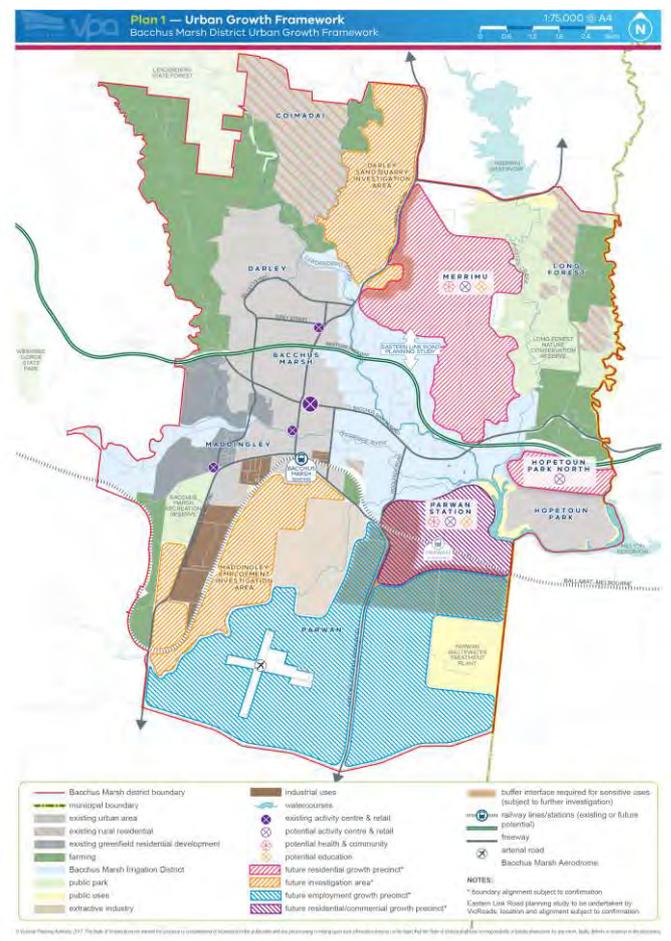
The current population of some 20,000 people is predicted to double by 2041.

Merrimu Residential Growth Precinct

Merrimu is a large land ensemble with relatively few constraints. It has potential for self-sufficient residential development, accommodating growth to 2041 and beyond whilst integrating landscape values. Merrimu will provide local job opportunities and will be pivotal in delivering the Eastern Link Road.

The projected population of 13,000 to 20,000 people could support a number of town centres, supporting both future residents of Merrimu and surrounding neighbourhoods.

(Merrimu Precinct Structure Plan)



Population Growth

2016 Census	2021 Forecast	2041 Forecast
Darley: 8,372	Darley: 9,234	Darley: 9,682
Coimadai: 416	Coimadai: 435	Coimadai: 443
Merrimu: 372	Merrimu: 389	Merrimu: 13,400

(Bacchus Marsh Urban Growth Framework)



- Overhead transmission infrastructure, alongside the Merrimu Residential Growth Precinct will have major visual and economic impacts on the site by permanently altering the character of this landscape.

Culture and Heritage

Significant Landscape

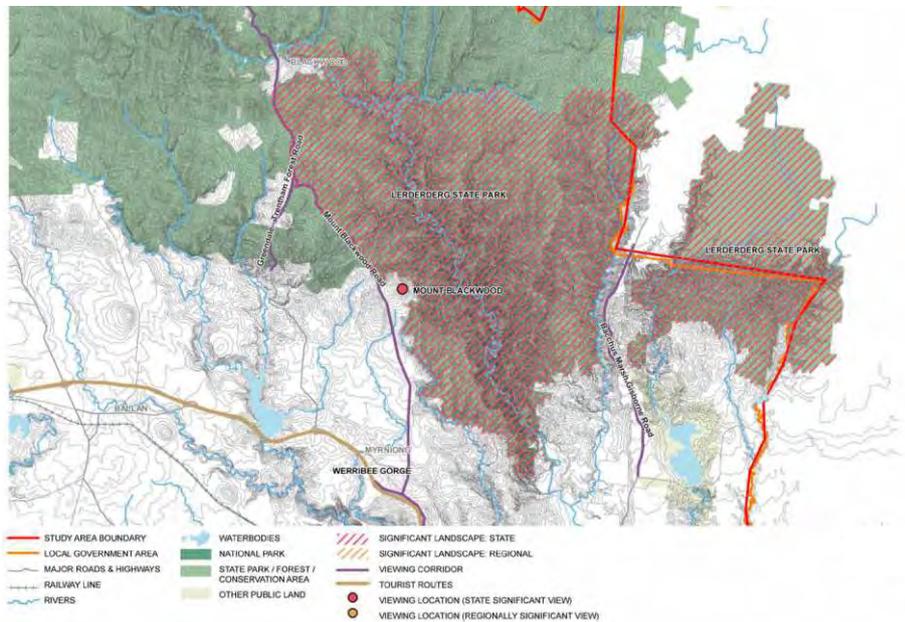
Heritage River

The Lerderderg River is one of Victoria's eighteen Heritage Rivers and the only one of the six major rivers rising in the Wombat Forest with this designation. Heritage rivers are protected under the Heritage Rivers Act 1992 (Vic) for their high conservation, recreation or cultural values. Part of the river is also classified as a Representative River due to its significant geomorphic and hydrologic features.

The Park is listed as State significant by the National Trust due to the high scenic value of its riverine and gorge landscape.

History

European occupation of the area commenced during the 1830s. The area was rich in alluvial gold and large nuggets were found chiefly in the bed of the Lerderderg River and its tributaries in what is now the Wombat State Forest and Lerderderg State Park.



Indigenous Culture

The Wurundjeri (or 'Woiwurung') and Wathaurung tribes are known to have lived in the area west of Melbourne. These tribes mostly camped and hunted across the plains south of the Park. However, it is likely that they would have visited the area to fish and hunt, as well as forage for food and other resources. Three registered Aboriginal archaeological sites are recorded for the Park. All Aboriginal material and sites are protected under the Archaeological and Aboriginal Relics Preservation Act 1972 (Vic.) and the Aboriginal and Torres Strait Islanders Heritage Protection Act 1984 (Cwlth).

Landscape Character

The Lerderderg State Park is within the Foothills landscape character type (Leonard & Hammond 1984). The Lerderderg River catchment has a strongly dissected mountainous terrain with numerous rock outcrops and cliffs. The whole river corridor has been assessed as having high scenic landscape value, from forested upper slopes to the spectacular scenery of the gorge (LCC 1991). Any significant development along the Lerderderg River or its immediate viewshed would have a detrimental effect on scenic quality.

Visual Amenity

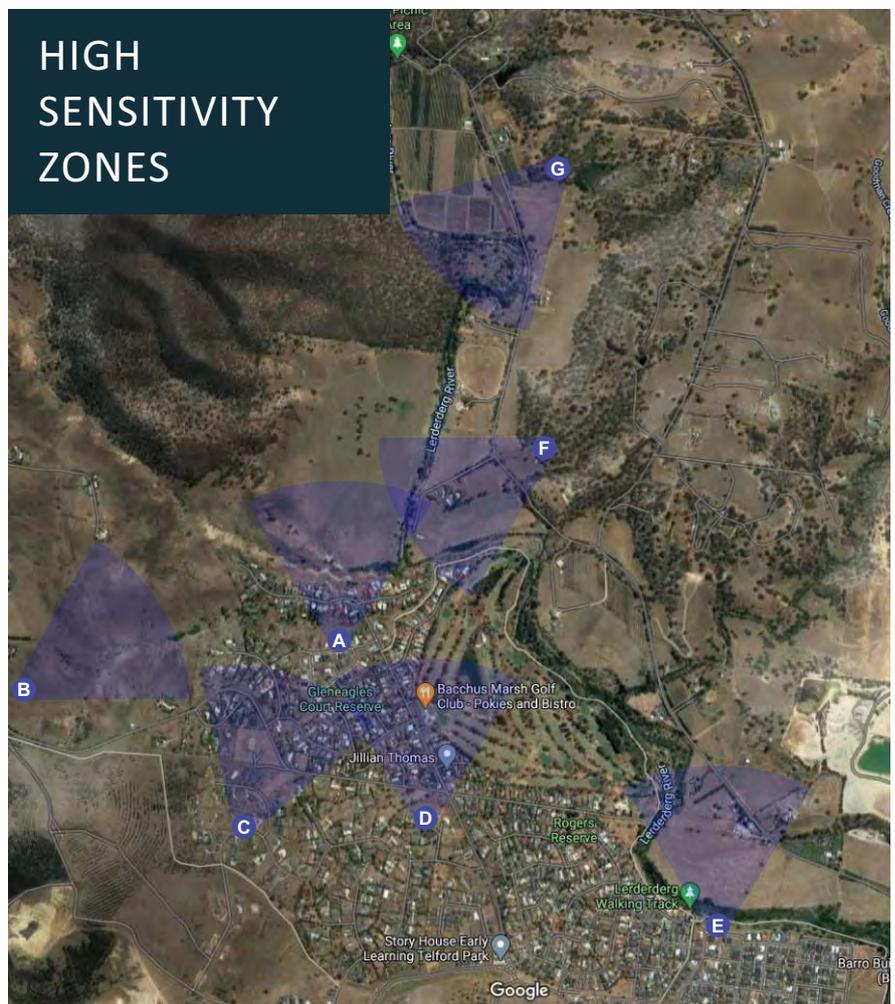
Impact of the Project on the residential visual amenity of property

Visual Amenity refers to the views and surroundings that create the backdrop to an area. A Residential Visual Amenity Assessment assesses the potential visual impact of a development on the residential amenity of property.

The overall sensitivity of a particular viewing location or area to change in the visual environment is an important factor in undertaking an assessment of the Project's potential visual impact. A viewing location with a higher level of sensitivity, such as a residential dwelling, would be more susceptible to visual impacts than a viewing location with a lower sensitivity, such as an industrial property.

High sensitivity – Significant visual impacts would be experienced as a result of the proposed change to the visual environment. A high sensitivity to visual change is either as a result of the proposed activity not integrating with the existing environment and/or there are numerous sensitive receptors with potential views of the proposed activity.

HIGH SENSITIVITY ZONES



High sensitivity to visual change

Northern Darley is unique in providing **uninterrupted views** of the Lerderberg State Park and surrounding plains to a **large number of existing residents**. This specific area contains properties where visual amenity has a higher perceived importance, and the duration of views and number of observers is greater than surrounding areas. Overhead transmission infrastructure will result in significant and unacceptable visual impacts.

Visual Amenity

Determining the Impact in Visual Amenity

The viewpoints selected were re-created to be consistent with those represented in the Western Victoria Transmission Network Project Aol. The viewpoints are identified further on proceeding pages.

The visual impact of the selected viewpoints were evaluated on a qualitative basis. The visual impact of the Proposal was assessed using a range of criteria against which the relative importance of each observer location was determined, including: context, setting, site elements, site character, adjacent development, distance to view (foreground, middle-ground and background), land use, visual prominence of the development, and potential changes to the view setting.

These re-creations allow the existing character of the area to be visually evaluated and specifically confirmed the relevance of locations that would potentially be subject to visual impacts from the Proposal.

Cumulative Visual Impact

Darley is unique in providing uninterrupted views of the Lerderderg State Park and surrounding plains.

Coimadai is unique in providing uninterrupted views of the Lerderderg State Park and surrounding plains.

Merrimu is unique in providing uninterrupted views of the Pyrete Range portion of the Lerderderg State Park and Merrimu Reservoir.

These areas, north of Bacchus Marsh, contain properties where visual amenity has a high perceived importance, and the duration of views and number of observers is greater than some surrounding areas, the resulting visual impact is regarded as being extremely high.

The potential impacts of the proposed corridor outweigh any benefits to these communities. The local landscape has a limited capacity to absorb further changes from transmission project development, and the specific location and scale of the project would result in material impacts on local landscape values and features.

Irreversible impact
on landscape character,
visual amenity and tourism

Overhead transmission infrastructure will result in:

- Direct and cumulative visual impacts on residences, public viewpoints and the surrounding landscape.
- Irreversible impact on the landscape character and significant landscape features of the region.
- Impacts on current and planned tourism developments including the Bald Hill Activation project.



Visual Amenity

DARLEY

Re-creations demonstrating the impact on visual amenity



A

FAIRWAY CRESCENT

Environmental Protection Act 1986: Under this Act, ‘environment’ is defined as “living things, their physical, biological and social surroundings, and interactions between all of these”. The factors and objectives generally relevant to landscape and visual impacts are:

- **Landforms:** “To maintain the variety and integrity of significant physical landforms so that environmental values are protected”
- **Social Surroundings:** “To protect social surroundings from significant harm”.

Impact on Significant Features



B

SWANS ROAD



C

MANNING BOULEVARD

Impact on Public Viewpoints



D AKERS COURT



E BENSON VALLEY ROAD

DARLEY

Impact on Landscape Character



F

LERDERBERG GORGE ROAD

COIMADAI



G

CAMERONS ROAD



COIMADAI PRIMARY SCHOOL



COIMADAI PRIMARY SCHOOL



RUSSELLS ROAD



RUSSELLS ROAD

COIMADAI

Impact on Landscape Character



RUSSELLS ROAD

MERRIMU



MERRIMU RESERVOIR PICNIC AREA

Tourism & Recreation

Tourism & Recreation

Set amid picturesque rolling hills only 55km west of Melbourne, Bacchus Marsh combines country living with easy access to the city. An attractive mix of open spaces, friendly towns, orchards, deep gorges and forests, Bacchus Marsh is a great tourist destination.

The Moorabool Shire contains a number of environmental and natural assets both of National, State and local significance. This includes the Long Forest Nature Conservation Reserve, Brisbane Ranges National Park, **Lerderderg State Park**, Werribee Gorge State Park, and the Wombat State Forest all of which are key assets within the Shire and attract an estimated visitation of approximately **500,000 people per year** across all sites.

Landscapes are significant to different people for different reasons. The reasons vary from bring admired for their scenic beauty, to the historic value, recreation, mental health, the environmental qualities, and/or the value to the regional economy and other less tangible values associated with the place, such as memories or associations.

Bushwalkers visit the Lerderderg State Park extensively to escape from the hustle and bustle of the suburbs, the noise and congestion of the city and built-up urban environment. They come to this park for mental health benefits and to unwind and find peace in nature. They do not come here to be confronted with 85m steel monstrosities.

Overhead transmission lines through this corridor will cause extensive, unnecessary, irreversible, and entirely unacceptable damage to the Park amenity. The reasons for visiting this region will be impacted significantly by forcing recreation seeking tourists to simply turn away.



The community has grave concerns of the impact on amenity the transmission lines will have on State and Regionally significant landscapes and views that were identified in the South West Landscape Assessment Study. (*Planisphere, 2012*)

The South West Landscape Assessment Study Describes the Lerderderg as...

- *This landscape is iconic as a wild and rugged place within the context of the broader regional landscape, in close proximity to Melbourne.*
- *The distinctive rock formations and contrast in vegetation patterns of the gorge is iconic and scarce within the local context.*
- *The composition of views and landscape elements within the Park are iconic in the context of the immediate location. Panoramic views of the broader landscape from Mount Blackwood are exceptional.*

- The community has grave concerns of the impact on amenity the transmission lines will have on these natural landscapes and the negative impact that will have on recreation, tourism, and the State and Regionally significant landscapes and views.



Tourism & Recreation



View from Bald Hill with transmission lines superimposed

1001 Steps image: Moorabool Shire Council
(Bald Hill Activation Plan - Moorabool Shire)

Bald Hill Activation Project

The plan to create a recreation paradise at Bald Hill is one step closer as the State Government announced they will hand over \$1.6 million for the development of the 1001 Steps at Darley's Bald Hill for arts and nature-based tourism.

When construction is complete, the projected annual site visitation is more than 347,000 people and would have a total construction cost, including recreational and commercial parts, of \$12.38 million.

Bald Hill Activation Project

The Bald Hill proposal currently includes:

- The 1001 steps walk
- A mountain bike cross country course
- Bald Hill Gravity Mountain Bike Park
- All abilities trail
- A commercially operated Adventure Park/Playspace
- An open air events space
- Restaurant /café function centre
- Picnic and BBQ areas
- Visitors hub
- Sculpture trail
- Lookout points with spectacular 360 views

Although the construction cost is huge, the ongoing economic benefit to Bacchus marsh is estimated to be \$6.8 million annually, with a during-construction boom of \$23.28 million. The financial benefits include ongoing employment at the site as well as tourist dollars.

- The impact of overhead transmission infrastructure on public viewpoints, landscape character and prominent features of the surrounding landscape are irreversible.
- The projected economic benefit to Bacchus Marsh will be adversely affected as the impact of infrastructure undermines the purpose of this tourism hub.

Visitation numbers are based on the current population of Bacchus Marsh, Melton and the western fringe of Melbourne and do not take into account the future growth of the areas and therefore likely increased visitation. To completed project is proposed to be completed over five stages, with funding also being sought from other parties.

Sadly, the tourism benefit of this project risks being lost before the project begins.

Once constructed, the views from this long awaited and economically beneficial tourism hub is going to be permanently destroyed, dominated by a long line of 85m, 500kV high voltage transmission towers as a result of the Western Victoria Transmission Network Project.

The desire for tourist to climb the 1001 steps, expecting to be rewarded with spectacular 360 views, will be greatly impacted when all they will see is a long line of monstrous high voltage towers in every direction.

West of Melbourne, Bacchus Marsh and Darley is a popular tourism destination for more than 500,000 visitors each year. Many make the journey across the western plains to visit the rugged and iconic Lerderderg State Park.

The close proximity of Bald Hill to the Lerderderg State Park creates a highly scenic viewing opportunity. The foreground is composed of a sweeping panorama of folding dark green hills, blanketed in vegetation. These hills can be seen to disappear in the distance as Uplands give way to the flat volcanic plain.

85m high voltage transmission lines passing through the narrow corridor between Darley and the Lerderderg State Park will cause extensive, unnecessary, irreversible, and entirely unacceptable damage to the Park amenity. The reasons for visiting this region will be impacted significantly and recreational tourists numbers will decline.

Economic Impact

Diminished Regional Appeal and Negative Economic Impact

85m high voltage transmission towers will destroy the widely held view of the Moorabool region as being a clean, green, healthy, semi-rural lifestyle, surrounded by pleasant landscapes and natural assets.

Devaluing the 'appeal' of the region will have flow-on effects and will impact on the number of visitors to the region (currently >500,000 per year) and also retard the projected growth-rate of this, 'significant Growth-Corridor', as identified in both the Plan Melbourne and Central Highlands Regional Growth Plans.

As land values for the area decline and the population growth expectations reduce, so will future investment, amenities, facilities and consequently, quality of the lifestyle of residents, property owners and businesses.

Residents living in the Moorabool Shire do so because they want to be near Melbourne while still living a lifestyle surrounded by a semi-rural atmosphere and its associated natural landscapes. Everyone loves our smaller towns with their serene country charms, and we need to protect these from the impacts of imposing infrastructure.

Overhead transmission infrastructure will drastically affect the environment and significant views, forever. The flow on effect will be to negatively impact land and property values. Impacts that cannot be mitigated later.



Livability and Well-being

Residents have chosen to live in Bacchus Marsh for a peaceful, country lifestyle, with stunning views, surrounded by nature.

The importance of major infrastructure projects with state-wide benefits, is recognised and supported by the communities, but it is important to ensure that these benefits are not delivered at the expense of significant impacts on select communities along its path.

It is important to consider community concerns of the potential impacts this project will have on their lifestyle and mental health.

The proposed northern alignment is having a profound **mental health** and physiological impact on many in the community who are likely to be impacted by the WVTNP. The undue stress and anxiety experienced by members of the community demonstrates a clear lack of understanding and concern about the cumulative impacts on this region.

- The proposed corridor has created undue anxiety and stress for residents and demonstrates a clear lack of concern for residents, the environment and tourists who frequent the region.
- Devaluing the 'appeal' of the region will have negative social and economical effects.



Social License



Social License to Operate

AusNet need to partner with the community in every aspect of planning, development and decision making, including the development of alternatives and the identification of a preferred solution. Community engagement key to the success of any major infrastructure project and is most successful when it establishes and delivers on clear expectations and gives people the opportunity to influence decisions.

Social license is another thing again: the informal “license” granted to a company by various stakeholders who may be affected by the company’s activities. Such a license is based on trust and confidence – hard to win, easy to lose.

The social license to operate is made up of three components: legitimacy, credibility, and trust.

Legitimacy: this is the extent to which an individual or organisation plays by the ‘rules of the game’. That is, the norms of the community, be they legal, social, cultural, formal or informal in nature.

Credibility: this is the individual or company’s capacity to provide true and clear information to the community and fulfil any commitments made.

Trust: this is the willingness to be vulnerable to the actions of another. It is a very high quality of relationship and takes time and effort to create.

- AEMO recognises that the regulatory framework does not currently fully consider the social and environmental factors that underpin social license.
- In the community’s view, AusNet Services does not have social license to operate this project or consider this alignment as a viable option.



Quotes attributable to Minister for Planning Richard Wynne

“While this project is important to the future of Victoria’s power system, it’s critical we assess its environmental effects to avoid or minimise impacts on the community or the environment.”

“The Victorian Government supports an efficient, modern, sustainable and affordable energy system – the EES process will tell us exactly where we stand and how we can move forward, it’s important to get this right.”

To regain its Social License to Operate, AusNet need to place decision-making in the hands of the community and implement what the community decides, not use old technology and present alternative corridors that do not minimise impacts and simply do not work.



The Solution

Protecting Park and Visual Amenity

The Darley, Coimadai and Merrimu community insist on a comprehensive analysis of underground alternatives prior to the submission of the EES, in accordance with regulatory requirements. The proposed option in the EES must be for underground cables, not overhead lines. Overhead lines would cause environmental impacts that are totally incompatible with the State and Regionally significant landscape of the Lerderderg State Park.

In the absence of intervention, 500kV overhead transmission lines will be proposed, suspended on steel lattice towers (up to 85 metres high). The lines would traverse eight kilometres alongside the Park within an easement up to 200 metres wide. The lines would be visible over a vast area, destroying the ambience and integrity of this remote and largely pristine region. Underground cables may be more expensive, but they have several offsetting benefits including minimal environmental impact, higher reliability, reduced maintenance, and less vulnerability to outages from lightning, storms, and bushfires.

The Lerderderg State Park is a special and irreplaceable place, is one of the most majestic parks in Victoria's western plains and one of the community's natural icons. It has fundamental cultural significance for Indigenous peoples and is very much loved and enjoyed by all Australians.

The unique character and values of the Lerderderg State Park must not be sacrificed for the cheapest transmission option, overhead lines, when viable and far less damaging underground alternatives are available.

Reducing the Impact

There is little incentive for putting high voltage lines underground particularly when the Network Service provider is predominantly driven by cost and shareholder profits to provide performance-based transmission services at a competitive price. So what is the solution?

High Voltage Direct Current (HVDC) Light technology plays an important role in achieving this solution. It provides improved power quality and power flow control as well as introducing extruded DC-cables which have no technical limit to distance. HVDC Light underground can provide a competitive alternative to overhead lines particularly when considering the total capital and environmental costs.

In Australia, Direct Link and Murraylink, are two such examples where HVDC Light technology with underground DC-cables has been implemented in a competitive, market-oriented network service.

Murraylink Interconnector

Murraylink Interconnector is an Australian underground transmission project which is both technically and economically feasible. It ships power efficiently underground for 177 km between Redcliffs, Vic, and Berri in SA.

The cable route required no easements over private land and uses existing road corridors, crossing under the Murray River as well as wetland areas, railway lines and highways. Once the cable was installed the cable route was then replanted providing a net gain in native vegetation.

The Murraylink project earned several Australian state and national awards for both environmental and engineering excellence.

The Solution

High Voltage Direct Current (HVDC)

The fundamental reason Murraylink is able to efficiently and economically achieve long distances underground, is because of the use of Direct Current (DC), rather than alternating current (AC).

The community agree there are challenges with undergrounding AC – but we don't want AC, we never did. We want underground High Voltage Direct Current (HVDC).

While High Voltage AC is feasible for overhead power transmission, it is not technically feasible to put this underground for more than 35 – 70 km. In simple terms this is because the ground naturally 'absorbs' some of the power along the way and consequently, over a distance, less and less power remains available for the load. At some point, there will be no power left.

On the other hand, this limitation does not exist when you put High Voltage DC underground. DC is not absorbed anywhere near as much as AC, and therefore the power loss is much lower, allowing for the transfer of electricity over much longer distances very efficiently.



As towers aren't required for underground High Voltage DC, the straight-line distance is not critical, therefore undergrounding can use existing easements and rights of way along roads and highways. This minimises environmental and community impact, speeds up project delivery and reduces cost.

With the evolution in technology that has occurred since Murraylink, integration of HVDC into existing networks provides a range of additional advantages such as improving the stability of the existing power networks and facilitating the integration of renewable energy.

Undergrounding HVDC reduces the overall level of risk to communities and the environment:

- It eliminates the risk of damage and costly power outages from extreme weather. A freak storm event in late January 2020 knocked six transmission towers to the ground and damaged a seventh just north of the town of Cressy in Western Victoria
- It reduces the risk of high voltage lines starting bushfires, and avoids power having to be switched off during bushfires.
- HVDC underground does not interfere with agricultural operations or impose as many restrictions upon landowners whose properties are subject to easements.
- It will have less impact on property values
- Will not destroy the visual amenity of views and environment
- Will not negatively impact economic development or future tourism business opportunities.



The Solution

Comparison to AC Underground

Compared with AC underground cables the HVDC Light cable has significant advantages to be considered:

- DC cables require only two cables between each converter station.
- Unlike AC cables, which generally have a technical limit of around 100km due to reactive power and losses, DC-cables have no technical limit to distance.
- DC cables can carry up to 50% more power than the equivalent AC cable. There is no need to install groups of cables to achieve the required power rating.
- As there is no need to maintain wide distances between groups of cables, DC cables can be ploughed direct in the ground or laid together in narrow trenches.
- DC cables have a longer life expectancy than AC cables due to its lower operational stress level of around 20kV/mm.

When considering the cost of installing an HVDC Light underground transmission it is important to consider the total life cost benefits and not just the initial up front capital costs.

Renewable energy
transmission should
conserve and enhance
our environment.

HVDC Light - Modern Technology

HVDC Light is a modern technology that has been specifically developed to match the requirements of the new competitive electricity markets. It provides the ability to connect renewable generation to the AC grid. It allows us to supply power to remote locations and islands replacing local diesel generation. It is an ideal vehicle for privately funded developers to link different regions and trade energy.

By virtue of its standardised prefabricated modular construction, the benefits of HVDC Light are:

- short delivery times
- relocatable and expandable to growing demands
- provide accurate control of transmitted active power and independent control of reactive power in connected AC network

A pair of lightweight DC cables can be laid direct in the ground in a cost-effective way which is comparable to or less than a corresponding total life cycle cost of AC overhead line. As opposed to an overhead line, an underground cable pair has no visual impact on the landscape. Usually it's much easier to obtain permission and public approval for an underground cable transmission compared with an overhead line, especially in residential areas.

For these reasons HVDC Light provides an important role as a business concept and opens up new opportunities for both investors, the environment and communities.

Through alignment selection
and design the Project seeks
to avoid areas of significance.

(AusNet Services)



Conserve and enhance
our environment.



Western Victoria Transmission Network Project



Darley Power Fight is a group of residents in Darley, Coimadai and Merrimu. We are united against high voltage transmission towers passing through our backyard.

We came together through the realisation that a potential corridor passes right through the heart of OUR residential, significance areas, wildlife habitat and public open spaces.

The irreversible impact on our visual amenity, wildlife, environment, properties, and local community is unacceptable.



www.darleypowerfight.com.au