regional roads victoria

Executive summary

Beaufort Bypass Environment Effects Statement

Authorised by the Victorian Government,
1 Treasury Place, Melbourne

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Tables

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ES.1 Overview

Regional Roads Victoria (RRV) are planning the development of an 11 km bypass north of Beaufort connecting to the Western Highway to the east and west of the Beaufort township. The bypass would form a part of Western Highway duplication between Ballarat and Stawell, the principal road link between Melbourne and Adelaide.

The Western Highway is one of Victoria's busiest rural highways. As the principal road link between Melbourne and Adelaide, the Western Highway serves interstate trade between Victoria and South Australia. It is also the key transport corridor through Victoria's western districts, supporting farming, regional tourism, and a range of manufacturing and service activities. The highway currently passes through the town of Beaufort.

ES.1.1 Project objectives

Travel efficiency, town amenity and road safety are key factors for the need for the bypass. The current situation through Beaufort involves:

- reduced speed two-lane single carriageway
- close proximity to residences and small businesses
- presence of larger vehicles within confined streets, creating community safety concerns with cyclists and pedestrians.

This upgrade will improve:

- road capacity and efficiency for through traffic
- safety and lower the risk and severity of crashes
- walking and cycling safety.

The Beaufort Bypass (the project) will address the existing and future traffic and safety challenges, improve freight routes, and improve the amenity and safety of Beaufort community. An Environment Effects Statement (EES) and Environmental Management Framework have been prepared to assess and manage potential impacts of the design, construction, and operation of the project. The EES provides a detailed description of the project, the alternative alignments that were considered and assesses the potential impacts and committed mitigation measures of the preferred alignment to manage residual impacts on the environment.

Benefits of the project include:

- improve overall functionality of the current Western Highway
- reduced travel time
- improved operating costs
- reduced traffic volumes through the Beaufort township
- reduced intersection delays
- reduced vehicle/pedestrian interfaces for improved safety
- improved social amenity of Beaufort by improving pedestrian safety in the town centre and activity areas
- improve freight efficiency.

ES.1.2 Improved road safety

More than 6,000 vehicles travel along the Western Highway west of Ballarat each day, with heavy vehicles making up around 25% of these vehicles. From January 2014 to May 2019 there were over 190 crashes on the Western Highway in Victoria, including nine fatalities. This includes ten crashes and one fatality within proximity to the Beaufort township.

Currently, the Western Highway passes through the centre of the township of Beaufort, and is the last township stop on the Highway before metropolitan Melbourne.

Within Beaufort, the Western Highway is reduced to a 60 km per hour speed limit, two-lane single carriageway, comprising of Neill Street and Ararat Road. Essential services are located either side of the Western Highway (Neill Street). Pedestrians regularly need to cross the Western Highway for services such as education, health, community facilities and transport (train station). There is only one controlled crossing location in Beaufort, being the signalised intersection of Lawrence Street and Neill Street. Although these pedestrian signals are frequently used, the movement of pedestrians within the shopping precinct often occurs at other, non-designated crossing points along the length of the street, posing significant risk to pedestrians. There are no dedicated on-road bike lanes or bicycle facilities within the Neill Street precinct.

The Western Highway is being progressively duplicated between Ballarat and Stawell to provide a safer and more efficient four-lane divided route. In addition to separating the traffic lanes, highway safety will be improved with sealed road shoulders, safety barriers, protected turning lanes, intersection improvements, and service lanes for local access at specific locations.

The elimination and or significant reduction in possible traffic conflicts minimises the risk of serious crashes between road users. Improved access and traffic flow reduce the level of risk-taking behaviour. The project is intended to improve road safety through reduced traffic volumes through the Beaufort township, through traffic and pedestrian interaction. As well as improving access to markets and increasing the competitiveness of local industries.

ES.1.3 Travel efficiency

A wide range of vehicle types utilise this route, ranging from standard personal vehicles, caravans and trailers associated with tourist traffic and commercial vehicles including B double trucks and farm machinery. Around 25% of the traffic on the Western Highway is comprised of heavy commercial vehicles.

The number of vehicles on the highway is increasing, and there is an increasing problem of queuing behind slow moving vehicles. The increased queuing is leading to escalating travel times in the region of seven minutes over the last 10 years between Ballarat and Stawell. This extended travel time is impacting on the operating cost and reducing travel time reliability for the freight industry and other users of the highway.

Minimisation of travel delays on the Western Highway and reduction in travel time variability provides efficiencies to the freight industry and improved confidence. This allows businesses to get their goods to market quicker, as well as assisting interstate travel. The project also contributes to improved operation of the Beaufort road network and making it more available to other road user groups.

ES.1.4 Township amenity

Commercial and residential property in Beaufort is largely concentrated around the Western Highway (Neill Street). The impact of heavy vehicle traffic is therefore felt by many in the Beaufort community. In addition, the levels of noise along with air pollution emitted by vehicles impact on the environment of Beaufort residents. Many properties within Beaufort experience unacceptable noise levels from heavy vehicle traffic. This results from a combination of braking, acceleration/deceleration, gear changing, loose loads, and occasional poorly maintained vehicles.

The project will reduce traffic noise and improve the amenity, attractiveness, and safety of the commercial and residential precincts adjacent to the Western Highway by significantly reducing the number of larger trucks. The reduction in traffic will make the Neill Street precinct a more pleasant and safer environment to walk, park, shop and socialise. With the amenity improvements in the township, there is the potential in the long-term for Beaufort to leverage these environmental benefits to broaden its appeal to visitors and potential residents.

ES.1.5 Western Highway upgrade

The Western Highway duplication shown in Figure ES.1 and upgrade is being completed in three main stages: Ballarat to Beaufort; Beaufort to Ararat; and Ararat to Stawell.

Infrastructure upgrades, such as those on the Western Highway, are an important part of road safety improvements in Western Victoria:

- the duplication of the Western Highway between Ballarat and Beaufort from two to four lanes was completed and opened in March 2015
- the 15 km duplication from two lanes to a four-lane divided carriageway between Buangor and Beaufort was completed in April 2016
- pre-construction activities for the duplication of the Western Highway between Ararat, west of Pollards Lane and Stawell, east of Gilchrist Road has commenced. The EES and Planning Scheme Amendment process was approved by the Minister for Planning on 31 October 2014.

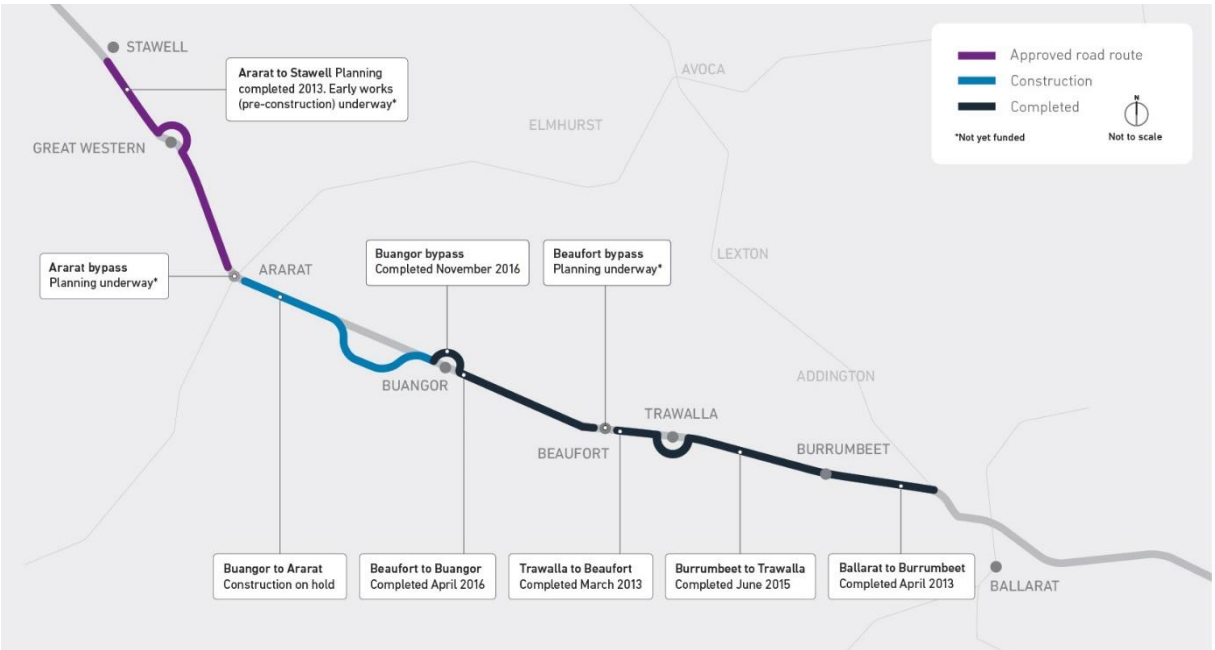

Figure ES.1 Western Highway duplication project overview map

ES.2 Environment Effect Statement

On 22 July 2015, the Minister for Planning determined under the *Environment Effects Act 1978* that an EES was required for the proposed Beaufort Bypass project.

The EES process is a rigorous and transparent assessment of the project's potential environmental impacts, with opportunities for input from stakeholders and the wider community. The Minister for Planning decided on the requirement for an EES in July 2015 and subsequently published the scoping requirements to guide the assessment of effects.

The EES documents the findings from the technical impact assessment reports in relation to the preferred alignment. The EES and technical appendices address the potential impacts of the project on the specific environmental matters set out in the scoping requirements. The Minister for Planning has authorised the release of the completed Beaufort Bypass EES for exhibition, providing members of the public opportunity to make formal written submission on the EES.

Approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is also required for the project. A referral under the EPBC Act for the project was submitted to the Commonwealth Minister for the Environment in January 2021, who has deemed the project a 'controlled action' for likely significant impacts to the EPBC Act listed Golden Sun Moth. The project is being assessed under a State accredited assessment process (EES).

ES.2.1 Options assessment and preferred alignment

Four alignment options, referred to as Options A0, A1, C0 and C2, as seen in Figure ES.2 were assessed in order to identify a preferred bypass alignment option. Following extensive community consultation and technical assessments, Option C2 was selected as the preferred route.

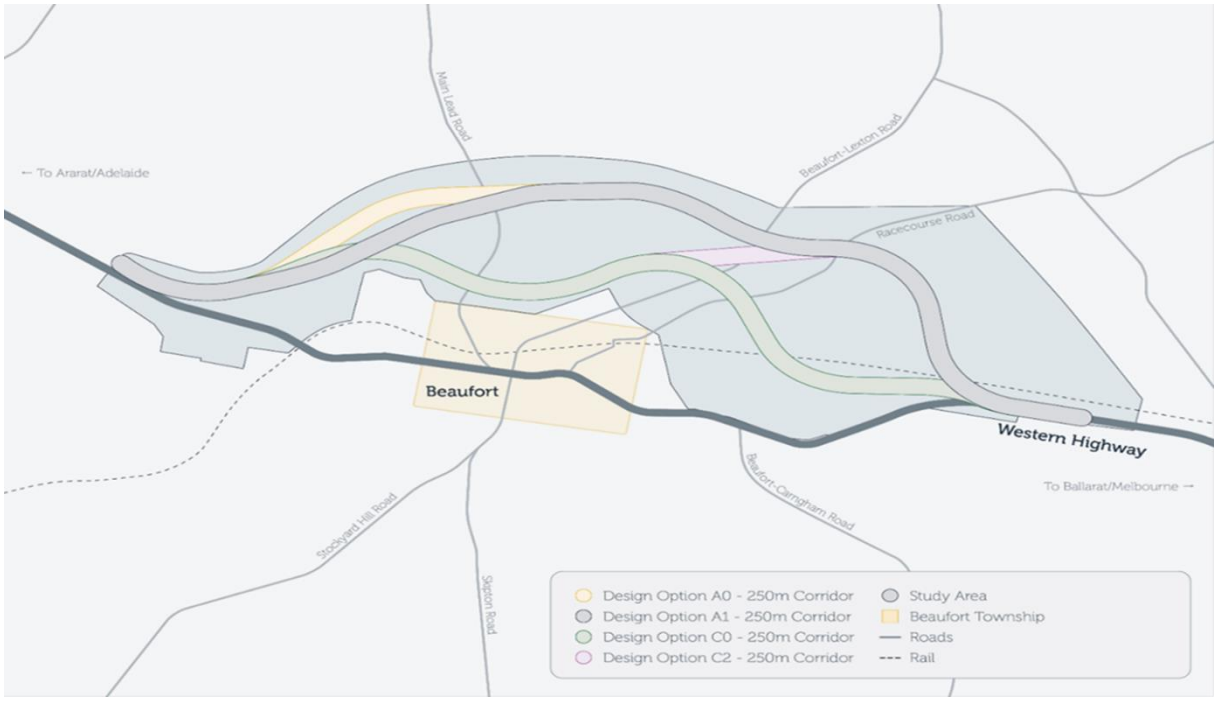

Figure ES.2 Alignment options

Option C2, as seen in Figure ES.3 is 11 km in length. At the western extent, access to Beaufort via the existing Western Highway will be maintained by a half diamond interchange, and there will be a full diamond interchange over Beaufort-Lexton Road. Access to Beaufort via the existing Western Highway at the eastern approach will be maintained by an outbound exit ramp at the eastern interchange.

Figure ES.3 Option C2

ES.3 Project description

The bypass will consist of an 11 km dual carriageway and will link completed sections of the Western Highway duplication to the east and west of the Beaufort township. The preferred C2 alignment is located approximately 160 km west of Melbourne's Central Business District and 50 km west of Ballarat in the Pyrenees Shire Council: It is expected that each carriageway would have two 3.5 m-wide lanes, with a 3 m-wide outside shoulder and 2.4 m-wide verge. A typical cross section in cut is shown in Figure ES.4.

ES.3.1 Bridges

All bridges are twin structures with a width between barriers of 13 m for all freeway bridges and 14.4 m for the western interchange bridge in the functional road design. There will be six main overpass/interchange structures, plus a combination of bridge and culvert structures across waterways. The six main bridges within the project include the:

- Western interchange bridge
- Back Raglan Road bridge
- Main Lead Road bridge
- Beaufort-Lexton Road bridge
- Racecourse Road bridge
- Melbourne-Ararat rail bridge.

ES.3.2 Crossings

One new road over rail crossing of the Melbourne-Ararat rail line crossing is proposed for the project. Access arrangements regarding construction work over and near the rail line would be agreed between RRV and VicTrack. The road over rail crossing would provide a minimum 7.1 m clearance (or alternative clearance (or as agreed with V-Line from an operational viewpoint) to the rail line for the crossing of the Melbourne-Ararat rail line.

ES.3.3 Interchanges

There are three interchanges included within the design of the proposed alignment:

- Beaufort-Lexton Road interchange
- eastern interchange
- western interchange.

ES.3.4 Waterways and drainage design

The preferred C2 alignment includes three crossings of the main waterway Yam Holes Creek and its tributaries. The cross-drainage infrastructure proposed to maintain waterflows for the main waterway includes a combination of box drainage and bridge structures at 14 locations. The functional drainage design arrangement has been selected to cater for both peak flood events and accommodate fauna passage in consultation with project ecologists. In addition to the main waterway cross drainage, 10 minor watercourse realignments will also be required to maintain waterflows of Yam Holes Creek tributaries. Minor watercourse realignments would be incorporated through the construction of swale drains within the road corridor, maintaining existing flow velocities in accordance with VicRoads' Integrated Water Management Guidelines (VicRoads 2013).

ES.3.5 Bicycle and pedestrian use

Provision for bicycle use would be made in each direction of the bypass through the 3 m sealed shoulders, which would be extended over bridge structure sections. VicRoads Supplement to Austroads Guide to Road Design Part 6A outlines design options for bicycle lanes on rural arterials and freeways.

ES.3.6 Noise barriers

The use of 2 m high noise barriers in selected locations would be incorporated into the detailed design and landscape strategy for the project. The visual impacts of noise barriers, as well as the functional design for these structures, are discussed in EES Chapter 15: *Landscape and visual amenity*.

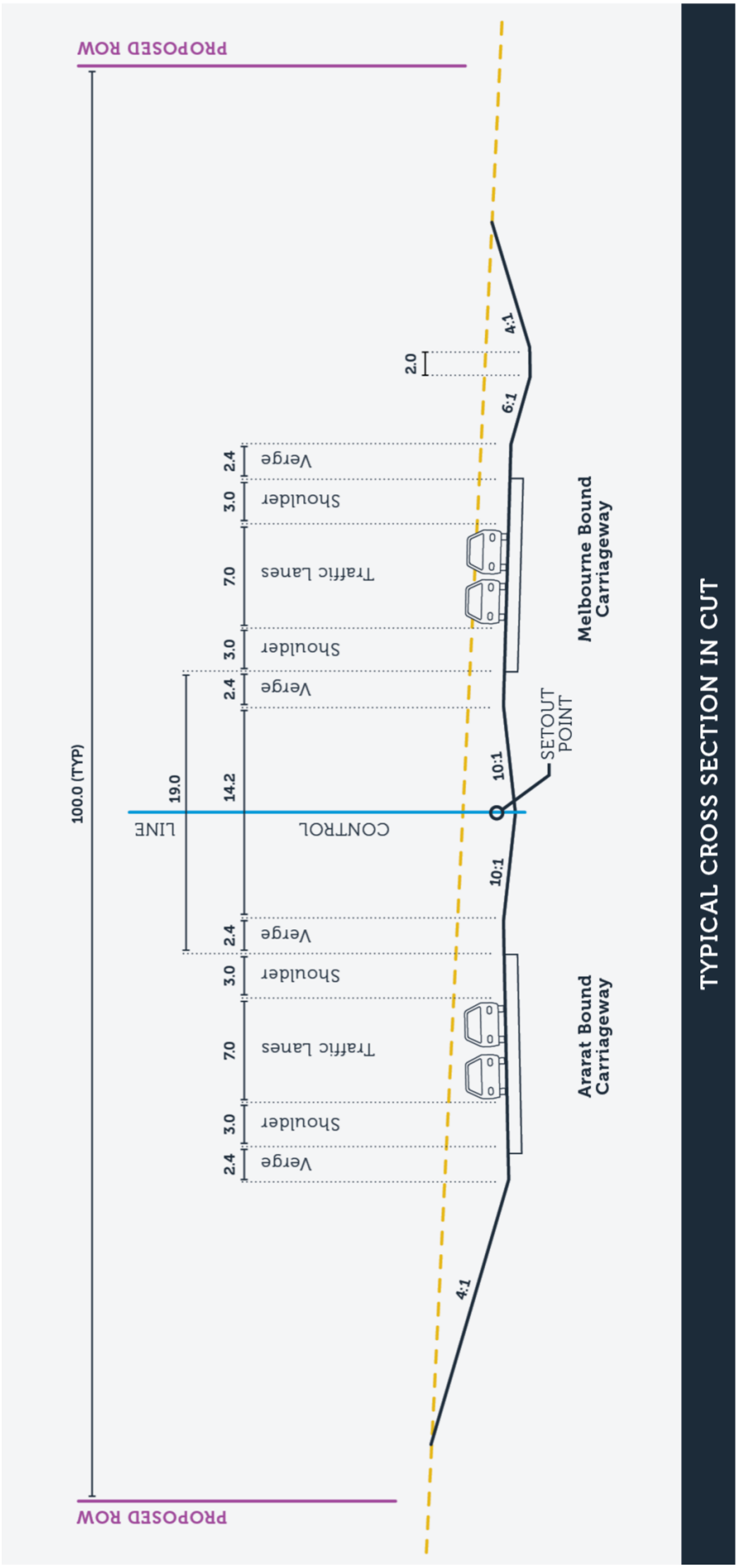

Figure ES.4 Typical cross-section within the alignment

ES.3.7 Utility relocation

Protection and/or relocation of utilities, such as electricity, gas and telecommunications services, have been considered in the development of the project. A detailed service protection and relocation plan will be prepared as a part of the detailed design in consultation with the relevant utility asset owners.

ES.3.8 Landscaping

Following completion of construction, landscaping and rehabilitation treatments would be applied to address visual amenity, water quality and biodiversity recommendations in the Environmental Management Framework. The design and species selection for landscaping would be sympathetic to the existing landscape and incorporate indigenous design elements in consultation with the Registered Aboriginal Party (the Wadawurrung Traditional Owners Aboriginal Corporation).

ES.4 Assessment framework and approach

To address the scoping requirements, a risk-based approach to impact assessment for the EES studies was undertaken.

ES.4.1 Environmental risk assessment

The environmental risk assessment process identified primary environment effects and associated risks which are directly attributable to project activities, such as vegetation removal. An initial risk rating was assigned for the primary environment effects. The initial rating was assigned using appropriate consequence and likelihood criteria for primary environment effects, assuming all standard controls are in place and working effectively. The risk assessment guided the level of investigation and assessment in the proceeding impact assessment phases.

ES.4.2 Impact assessment

Impact assessments, prepared by discipline technical specialists, were conducted for a suite of environmental, social and economic issues over two phases. The initial impact assessment was used to guide and inform the options assessment of the four shortlisted bypass options. The extent and complexity of the technical impact assessments were influenced by the risk assessment and sensitivity of the identified values in the study area. Detailed impact assessments were then undertaken following the selection of the preferred option. Where impacts were identified, mitigation treatments have been developed to avoid, reduce and minimise residual impacts. Input and consultation with the Technical Reference Group also informed the level of assessment for each of these studies prepared.

ES.4.3 Environmental management framework

To provide a transparent framework with clear accountabilities for managing the environment effects and hazards associated with the construction and operation phases of the project, to achieve acceptable environmental outcomes.

Proposed framework for managing the adverse environmental effects, including:

- the context of required approvals and consents, in particular requirements for related environmental management plans
- the environmental management system to be adopted, including organisational responsibilities and accountabilities
- the environmental management measures proposed in the EES to address specific issues, including commitments to mitigate adverse effects and enhance environmental outcomes
- proposed objectives, indicators and monitoring requirements, including for managing or addressing of key issues.

RRV have developed a draft Environmental Management Framework that details the environmental management arrangements for the design, construction and operation of the bypass. The Environmental Management Framework is an RRV document and will be used to guide environmental management for the project and to track the implementation of overall environmental commitments and approval conditions.

The draft Environmental Management Framework has been informed by the committed environmental management measures and objectives described in this EES. The final Environmental Management Framework will be informed and updated according to panel processes, Minister's Assessment as well as the conditions of approvals.

During project delivery the Environmental Management Framework and project risk register will be reviewed and updated in response to contractor performance reviews, changes in activities and work practices, legislation, aspects and impacts, or as a result of internal or external audit findings, incidents or complaints.

ES.5 Impact assessment

ES.5.1 Transport capacity and connectivity

The EES has assessed transport and traffic values, impacts, and proposes mitigations for the construction and operation of the project.

Existing conditions

Traffic and transport surveys have provided a detailed understanding of the existing conditions of the road network within the study area. Beaufort has on average 11,060 vehicles on the Western Highway in central Beaufort per day. A large portion of the eastbound and westbound traffic are heavy vehicles (23% and 28% respectively).

Impact assessment

In a 'no project' scenario, data suggests that this volume of heavy vehicles is set to increase steadily, creating more pressure on the local road network, leading to further delays in travel times and increased safety issues.

Construction impacts to the wider community are expected to be minor, with construction works largely occurring in greenfield areas, they will have limited impact on the existing road network.

There will be minor traffic impacts due to increased construction traffic and changed road environment. Temporary access changes to adjoining properties will occur at site entrances during the construction phase.

Mitigations

The project will develop and implement mitigation measures for traffic and transport impacts by developing a construction and operational access strategy during the detailed design and pre-construction phases.

The strategy will ensure retention or relocation of existing access is provided, to the satisfaction of the relevant approving authority and stakeholders. Measures in the strategy will include internal and local road access arrangements for the construction and operational phases.

Thorough public and private landholder/manager consultation process will be undertaken to manage access and severance impacts during the detailed design phase. Public advertisement of works and consideration of alternative access and redirections would be provided where existing access is removed.

ES.5.2 Biodiversity

The EES has assessed the flora and fauna values, impacts and proposes mitigations for the construction and operation of the project.

Existing conditions

Sixteen Ecological Vegetation Classes were mapped within the study area. The flora and fauna assessment also recorded two EPBC Act listed threatened ecological communities (Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plain, and White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Grasslands) and one *Flora and Fauna Guarantee Act 1988* (FFG Act) threatened community (Victorian Temperate Woodland Bird Community) within the study area. Nine high value wetlands were identified within the study area. A total of Fourteen significant fauna species were considered to have a moderate to high likelihood of occurrence in the study area.

A total of 160 native fauna species were recorded in the study area across all surveys from WSP and GHD 2015, and including previous records from the VBA. These records included:

- 127 bird species
- 9 frog species
- 9 native mammals
- 6 native reptiles
- 1 native invertebrate.

A total of 471 flora species were recorded in the study area, of which 350 (74%) were native and 121 (26%) introduced species. Wetlands in the study area are seasonal wetlands and provide potential habitat for various wetland bird and frog species, including threatened species.

Impact assessment

Up to 348 large trees (both in patches and scattered) and seven small, scattered trees have the potential to be impacted by the project. This includes trees which occur outside the construction footprint, but which would have indirect tree root impacts, resulting in the likely loss of the tree. Small trees in patches have not been considered in the tree assessment as these are accounted for through Ecological Vegetation Classes impacts. All potential tree impacts will be reviewed in detail once the detailed design has been confirmed.

Construction of the project will require the removal of 47.95 hectares of vegetation and habitat. Of this, 32.8 hectares is assessed as *Flora and Fauna Guarantee Act, 1988* listed Victorian Temperate Woodland Bird Community and 0.312 hectares is assessed as *Environment Protection and Biodiversity Conservation Act, 1999* listed Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains.

Nine high quality wetlands could be impacted by changes to surface water regimes from the project.

Threatened vegetation communities, including 0.312 hectares of Seasonal Herbaceous Wetlands (Freshwater) or the Temperature lowland plains (EPBC) and 32.9 hectares of the Victorian Woodland Bird Community (FFG) will be directly impacted by the project.

Connectivity of the wildlife patches will be affected due to clearing and fragmentation caused by the project, through loss of tree canopy, understorey vegetation and minor watercourse channel realignments.

The project is expected to impact habitat for significant flora species including the Matted Flax-lily *Dianella amoena,* River Swamp Wallaby-grass *Amphibromus fluitans* and Yarra Gum *Eucalyptus yarraensis*.

Fourteen EPBC Act and FFG Act threatened species were considered to have a moderate to high likelihood of occurrence within the study area. Of these the impact to threatened fauna from the construction and operation of the project is not considered to be significant, with the exception of one species – the Golden Sun Moth. The project will require the removal of 1.672 hectares of confirmed Golden Sun Moth habitat and 9.431 hectares of high potential habitat, as well as being likely to lead to an increase in habitat fragmentation and present a barrier to dispersal.

Mitigation

Mitigation measures have been provided in response as part of the EES to the identified impacts, which aim to avoid, reduce and/or minimise potential impacts to threatened species and their habitat. Following the implementation of the mitigation measures, residual impacts for the significant ecological values identified in the assessment range from low to high subject to nature, extent and duration of impact. The appropriate offsets will be identified and secured in the next phase of the project once the detailed design is confirmed.

Flora

Impacts to the significant flora species are considered to be low with the implementation of mitigation measures recommended in the draft Environmental Management Framework.

Vegetation impacts will be mitigated through detailed refinement of the design/construction footprint, including no-go zones to avoid and minimise vegetation removal, seed collection and translocation of threatened species directly impacted and incentives for contractors to further minimise vegetation and habitat loss.

Where mitigations cannot be implemented to minimise impacts to flora species, offsets will be obtained in accordance with State and Commonwealth offset policy. Based on the current construction footprint, 2.041 general habitat units are likely to be required, as well as species offsets for Ben Major Grevillea (27.002 species units), Emerald-lip Greenhood (32.250 species units) and Rough Wattle (28.002 species units).

Fauna

Impact from the construction and operation of the project is not considered to be significant for the fourteen significant fauna species identified in the site, with the exception of the Golden Sun Moth. This will be mitigated through design refinement, the Construction Environmental Management Plan, Operational Environmental Management Plan, and the Site Offset Management Plan.

The proposed measures to manage fragmentation impacts include the incorporation of wildlife crossings and fencing in strategic locations as well as specific culvert design, two stage clearing, replacement hollows, and the closing of trenches at night.

The connectivity of the wildlife patches, and wildlife mortality will be affected by the proposed road. Mitigation measures to maintain connectivity include design of connectivity structures, restoration, and revegetation of natural areas and by utilising safe wildlife crossings in strategic locations as well as actions prescribed in the Operation Environmental Management Plan.

Wildlife mortality is expected to be highest during the operation of the bypass. This will be mitigated through the design of the structure for safe fauna passages, as well as actions prescribed in the Operation Environmental Management Plan.

Wetlands

Impacts to wetlands will be predominantly mitigated using measures described in the Construction Environment Management Plan such as the screening of wetland habitat and installing multi-function fauna barriers to attenuate noise effects close to high value Wetland 1. Furthermore, maintenance and contractors will need to implement an Operational Environmental Management Plan which will document operational controls relating to environmental impacts including water quality and management.

ES.5.3 Aboriginal and historic heritage

The EES has assessed Aboriginal and historic cultural heritage values, impacts and proposes mitigations for the construction and operation of the project. The EES will inform a Construction Environmental Management Plan to include measures for the ongoing avoidance, management and mitigation of historic cultural heritage, including contingency plans for unexpected uncovering of heritage sites.

Existing conditions

There are 16 registered Aboriginal places in the Aboriginal cultural heritage investigation area, which comprises of the upper catchment of Yam Holes Creek. There have been several previous cultural heritage investigations conducted at a regional and local level, and seven Cultural Heritage Management Plans completed within the upper catchment of Yam Holes Creek. Seven components of a Low-Density Artefact Distribution have been previously registered within the study area. One new site, a scarred tree, was located during the ground surface survey of the study area.

Historic heritage investigations identified 16 registered historic places with eight historic places associated with mining history within the study area. Only one site on the Victorian Heritage Inventory was identified within the project area. Another site, Camp Hill Shallow Workings South, was also recorded within the project area. However, this site was not recommended for inclusion on the Victorian Heritage Inventory. No other heritage databases or registers identified historic records associated with the project area or study area.

Impact assessment

The project area intersects with previously registered place locations of seven components of a Low-Density Artefact Distribution site, located at the western tie-in area and the existing Western Highway, west of the township of Beaufort. The ground surface survey inspected these locations and found that all had been destroyed by highway and verge construction and according to the conditions of an approved Cultural Heritage Management Plan (no. 12708). Although the components of this site have been destroyed by highway construction, additional unrecorded artefacts associated with the place may remain in the vicinity. As such, the rating of impact at this site is considered to be high.

Site inspections determined that the project area intersects with one scarred tree, which comprises an unidentified species of gum tree that has been cut down mid scar at a height of approximately 80 cm. This place will be registered through the Cultural Heritage Management Plan process. As the construction of the project will directly impact this site and impacts will be permanent, the rating of impact to the scarred tree is considered to be high.

The determination of impacts to cultural landscapes and intangible cultural heritage values should be addressed in consultation with the Wadawurrung Traditional Owners Aboriginal Corporation during the development of the complex Cultural Heritage Management Plan. Consultation to date has not identified any intangible cultural heritage values, however thorough consultation throughout the remaining Cultural Heritage Management Plan process is required.

Nil Desperandum Mine Feature 1 (H7523-0071) is located within the project area and is included on the Victorian Heritage Inventory. While the site has been assessed as having local historic significance, the archaeological potential is low. The site may be impacted or completely removed during construction of the project, dependent on the final alignment within the project area. Currently, the site is located outside the functional design footprint. However, as the site is located within the project area and as the project is not currently at the detailed design phase, the potential impact to this site is deemed to be extreme.

The Camp Hill Shallow Workings South will be directly impacted by project construction. This heritage site comprises a water race, partially infilled gold prospecting pits, and glass and china scatter. While the site has local historic significance for its contribution to the gold mining history of Beaufort, it is unlikely to contain significant archaeological deposits and as such, has very low archaeological potential.

As this feature does not possess any demonstrable or scientific historical archaeological potential, the historic heritage consultants, in consultation with Heritage Victoria, determined that it is not necessary to add this place to the Victorian Heritage Inventory and consent will not be required prior to its disturbance. While the project will endeavour to minimise any impact to the site, the impact to this site is considered to be low.

Mitigations

A draft standard Cultural Heritage Management Plan has been prepared and will be progressed to the complex phase during the detailed design stage. The Cultural Heritage Management Plan will be finalised and assessed by the Wadawurrung Traditional Owners Aboriginal Corporation following the Ministers assessment of the EES. The Cultural Heritage Management Plan will include a condition to protect and manage cultural heritage, including a provision to relocate the identified scarred tree to a suitable location if it cannot be avoided during the detailed design.

The EES provides recommendations for the Nil Desperandum Mine if detailed design cannot avoid impact to it, then the appropriate consents from Heritage Victoria will be required.

ES.5.4 Hydrology and catchment values

The EES has assessed groundwater, flood and water quality values, impacts and proposes mitigations for the construction and operation of the project.

Existing conditions

The project is located within the Yam Holes Creek catchment, a tributary of Mt Emu Creek. Base case flood modelling illustrate that flooding is already occurring within the catchment, along Main Lead Road, King Street, Back Raglan Road and Jackson Street. Downstream of Beaufort township, Yam Holes Creek has an extensive floodplain, with water depths at the project crossings up to 1.34 m deep. The existing floodplain area at the crossing point of the project is approximately 810 m in length.

The study area is largely underlain by the Cambrian-Ordovician aged marine sediments of the Beaufort formation and Pyrenees formation. Groundwater resource units within the study area include the Quaternary Aquifer and Mesozoic and Palaeozoic Bedrock – Pyrenees and Beaufort Formations. Groundwater was encountered in three boreholes that intersected the alluvial material (Quaternary Aquifer). None of the boreholes drilled into bedrock material intersected groundwater.

Impact assessment

The majority of flood impacts are retained within the existing flood plain, however some impacts beyond the existing flood plain will occur during the peak flood events. These peak flood events will see increases to flood duration and extent on private land immediately upstream of the main crossing of Yam Holes Creek near Racecourse Road. No buildings are affected but parts of the floodplain and Racecourse Road upstream of the crossing are predicted to experience localised, temporary increased flood levels and hazard.

The project also runs along or over 10 minor watercourse channels, which will need to be realigned along the project before re-connecting to their original flow path further downstream. Channel realignments have the potential to create increased channel velocities and scour risk at transitions to downstream watercourses.

The wetlands impact assessment identified that the flooding regime only impacts two wetlands, with the wetland upstream of the main Yam Holes Creek crossing being most affected and subject to increased flood levels in moderate and major flood events. The impacts on both wetlands are considered minor due to the low velocity and duration impacts and the localised flood level impacts that do not extend over the majority of the wetlands.

Groundwater impacts are limited to the localised Quaternary Aquifer and thin deposits of alluvial material located within drainage lines. Groundwater is absent from the basement of the Beaufort and Pyrenees formations at the depths of proposed road cuttings. As such, impacts to groundwater beneficial uses, the mobilisation of contaminants, or the degradation of Groundwater Dependent Ecosystems is considered low to negligible.

Mitigation

A number of mitigation measures were described in the EES, including:

- channel realignments should be carefully designed to avoid creation of new high hazard flow areas. Transitions to the downstream watercourses should be designed to avoid long-term scour and erosion impacts
- best practice stormwater treatment measures (such as bioretention systems) are required at all road drainage discharge points to protect downstream receivers such as wetlands from road runoff
- the draft Environmental Management Framework recommends additional surface water modelling for the project should be prepared during the detailed design phase to inform the detailed drainage design and further minimise surface water impacts
- to manage potential water quality impacts during construction, a Construction Environmental Management Plan that includes best practice measures to manage sedimentation and erosion impacts and temporary flooding impacts during the construction phase in accordance with all relevant guidelines must be prepared
- incorporation of a combination of culverts/bridge structures across unconsolidated sediments of the Quaternary Aquifer to avoid groundwater compaction impacts
- construction controls to manage potential contamination through spills
- a groundwater management plan to manage impacts on groundwater from potentially contaminated and saline soils.

ES.5.5 Social

The EES has assessed social values, impacts and proposes mitigations for the construction and operation of the project. Feedback from the community and stakeholders during the options assessment and EES process has provided insights into the community identity, values and goals and the perceived impacts and benefits of the project to inform the social impact assessment.

Existing conditions

The residential population of the Statistical Area Level 2 geographical census area that comprises the greater Beaufort area was 4,395 people, and 1,994 households or dwellings at the 2016 census. The residential population growth is 12.8% over a five-year period up to 2016. Beaufort has a higher proportion of middle aged and elderly residents, and a lower proportion of children and residents of young working age than the Victorian average.

Beaufort has a higher proportion of middle aged and elderly residents, and a lower proportion of children and residents of young working age than the Victorian average. This trend has increased between 2011 and 2016 and is generally consistent with ageing populations across regional Victoria.

The Western Highway currently passes through the centre of Beaufort, providing the community their primary east-west road connection.

The Beaufort Walkability Plan (Pyrenees Shire Council 2016) focuses on improving accessibility and infrastructure for pedestrians and cyclists in the Beaufort area. Currently there is only one signalised pedestrian crossing, located at the intersection with Lawrence Street, to cross the Western Highway which runs through the town centre. There are currently no designated on-road bike lanes.

Impact assessment

A total of 22 private landowners are expected to be permanently impacted by the project through the partial acquisition of land from 47 private parcels, which is confined to the project area. One dwelling has been identified as being directly impacted by the project, which will result in the displacement of the existing residents. The loss of dwellings and acquisition of land may result in major changes to the lives of those affected and may adversely affect their wellbeing, particularly those with a strong connection to their properties.

There is a further potential for impact on community access, social infrastructure and connectivity due to changes to traffic, transport and access arrangements during the construction of the project. Community amenity may be further impacted due to the changes in noise, air quality, and visual impacts during the construction phase.

Overall, reduced traffic flow through the township will have a positive impact on Beaufort's social fabric due to reduced air and noise pollution, enhanced road safety and improved pedestrian access and safety in the town centre. Similarly, reduced traffic through the main streets creates opportunities to develop social spaces, which will positively impact the sense of community pride. Improved, safer and more attractive streets create opportunities to increase social interaction and strengthen community networks.

The transition of Beaufort from a highway town to a bypassed town will have positive and negative economic impacts, including the potential short term loss of 27 full time equivalent positions, when the bypass becomes operational. Unemployment loss as an indirect result of the bypass can cause financial hardship and be a contributor to several health and wellbeing impacts, which could lead to housing issues, family tensions and breakdowns and mental stress.

Mitigation

The draft Environmental Management Framework recommends the following mitigations to minimise impacts to the Beaufort community:

- optimise the project design with the intention to reduce the acquisition impacts on private land
- ongoing and proactive consultation with landholders during the implementation of the acquisition and compensation process, managed through Stakeholder and Engagement Plans
- development and implementation of an Access Management Strategy during the detailed design phase
- development and implementation of a Construction Noise and Vibration Management Plan and Landscape and Design Plans which during the detailed design phase
- to mitigate potential negative economic impacts, the RRV in partnership with Council will identify potential resourcing, capacity building and funding options to support Council with implementation of transitional initiatives in alignment with the Pyrenees Economic Development Strategy – February 2020. These will include actions such as branding and promotion, as well as appropriate highway signage. Furthermore, local procurement strategies will ensure economic benefits are realised during the construction phase.

ES.5.6 Land use and economy

The EES has assessed the land use and economy of the study area and the potential impacts as a result of the Project, and proposes mitigations for the construction and operation of the project.

Existing conditions

The study area is located to the north of the Beaufort township in predominantly broadacre farming use, interspersed with native forested woodland. This is most evident in the rolling hills and plains, which are under agricultural use. The more steeply sided hills, unsuited to agriculture, are generally vegetated, such as Camp Hill which as a result has been provided recognition in its zoning for its conservation value.

The majority of landholdings within the study area comprise private property, with the remaining land parcels constituting Crown land. Local access roads are generally Crown land (government roads) managed by Pyrenees Shire Council.

The largest industry sectors of employment of residents of Beaufort State Suburb Code are ‘Health care and social assistance’ (13.2%), ‘Public administration and safety’ (12.6%) and ‘Retail Trade’ (12.0%). For the Pyrenees Shire Council, the largest industry sectors of employment of residents are ‘Agriculture, forestry and fishing’ (20.4%), ‘Health Care and Social Assistance’ (11.9%) and ‘Manufacturing’ (8.6%).

Impact assessment

The project will involve the severance of properties and acquisition of freehold land, equating to approximately 147 hectares. In addition, acquisition of four Crown land parcels owned by the Department of Land, Environment, Water and Planning equating to a total of approximately 6.5 hectares. The project will result in severance of the Camp Hill Recreation Reserve from the Camp Hill State Forest resulting in removal of informal tracks and pedestrian connections between the existing networks.

The project may cause reduced access to water and loss of irrigated land. In addition the project may cause impacts to livestock during construction through noise impacts with flow on impacts to business revenues.

Loss of access, including the ability to move heavy machinery and livestock between land on either side of the bypass will occur during construction and operational phases. Some farm infrastructure within the area will require removal.

The project will create additional demand for overnight accommodation in Beaufort during construction which may result in a local supply shortage and restrict overnight accommodation available for the tourist sector. However, benefits to future growth and development include:

- temporary uplift in local commercial accommodation occupancy during the construction phase
- temporary uplift in revenues of Beaufort’s retail business associated with the construction phase of the project
- temporary uplift to revenues of construction aligned industry located in Beaufort, wider Pyrenees Shire Council associated, and Ballarat region associated with the construction phase.

The total estimated negative revenue impacts for Beaufort businesses post construction is $5.2 million (or 16%) of total estimate revenue. This estimate represents the initial impact attributed to bypassing. There would be an opportunity to reverse the losses and even increase the revenue base relative to the no-bypass scenario if targeted steps are taken to broaden the town's appeal to visitors and grow the residential population. The associated unmitigated revenue impact will be high, localised and temporary in duration.

Once the project is operational, an uplift in revenues for local businesses due to improved township amenity, safety and environment from the reduction in through-traffic (especially heavy vehicles) through the town centre is a possibility.

Mitigation

To mitigate the impacts caused by the severance of properties, the design will be optimised to reduce acquisition impacts, and consultation with the affected landowners will be ongoing. Furthermore, compensation will be carried out in accordance with the *Land Acquisition and Compensation Act 1986*.

Impacts to infrastructure and utility assets will be managed through continued consultation with asset owners and Central Highlands Water.

Thorough public and private landholder/manager consultation process will be undertaken to manage access and severance impacts during the detailed design phase. Public advertisement of works and consideration of alternative access and redirections would be provided where existing access is removed.

RRV propose to work with Council in developing transitional economic strategies to reposition Beaufort as a destination town as opposed to a highway town.

ES.5.7 Amenity

The EES has assessed air quality, noise and vibration values, impacts and proposes mitigations for the construction and operation of the project.

A total of 15 sensitive receptors for air quality were identified for the project, most of which consist of residential properties. Wind data from nearby weather stations indicate that morning wind speeds (8–14 km per hour) are consistently lower than afternoon wind speeds (13–18 km per hour). There is also a strong seasonal cycle, with higher wind speeds in spring and early summer and lower wind speeds in winter.

A total of 69 noise sensitive receptors were identified for the purposes of the noise assessment. Sensitive receptors considered within the noise and vibration assessment are described as two categories which include residential dwellings, aged persons' homes, hospitals, motels, caravan parks and other buildings of a residential nature, as well as schools, kindergartens, libraries and other noise-sensitive community buildings.

Air quality

Existing conditions

A total of 15 sensitive receptors for air quality were identified for the project. There is no known source of air quality monitoring data from the study area however air quality in Doveton Street, Ballarat was used to set baseline conditions as Ballarat is the closest monitoring site to the study area. The results of the air quality monitoring showed that Ballarat had generally good air quality but was locally impacted by bushfires and, on colder evenings, contributions from domestic wood smoke.

Impact assessment

Impacts to air quality during construction related to dust generation and vehicle emissions are expected to extend a short distance beyond the construction corridor on dry days with moderate to strong winds.

Impacts to air quality during project operation related to dust generation and vehicle emissions are expected to be negligible due to the number of vehicles predicted to be using the project in 2031. Outside the road reserve, the concentrations of air contaminants from vehicles are predicted to be well within the State Environment Protection Policy (Environmental Reference Standards) requirements for air quality. When operating, the bypass will result in an improvement in air quality along the main street of Beaufort as the majority of through traffic will have been diverted to the project.

The predicted greenhouse gas emissions of the bypass are estimated to be very small in comparison to other sources in Victoria.

Mitigation

A range of management measures have been identified, such as the development and implementation of a site-specific Dust Management Plan to limit the extent of dust and adverse effects on sensitive receptors during construction.

Transfer of traffic from the route through the centre of town to the project will result in a small reduction in greenhouse gas emissions from the bypass compared to the existing route through Beaufort.

Noise and vibration

Existing conditions

A total of 69 noise sensitive receptors were identified for the purposes of the noise and vibration assessment. Existing noise levels indicate that most locations have noise levels below 50 dBLA10,18HR. Two locations were measured to have existing noise levels above 50 dBLA10,18HR, up to 66 dBLA10,18HR.

Impact assessment

Impacts due to noise and vibration during construction are typically short term in nature. Noise levels were modelled for the future project design year (2031). The predicted noise levels for the operation of the project indicate that noise levels are likely to exceed the project objectives for some sensitive receptors such as dwellings.

A sleep disturbance assessment was also undertaken which indicates there is potential for up to 22 sensitive receptor locations outside the town to be impacted by truck engine braking noise during project operation. Within the Beaufort township, sleep disturbance impacts from trucks would likely reduce with the removal of heavy vehicles.

The majority of the sensitive receptors nearest to the trafficked lane are at minimum, located 100 m away and are therefore considered low risk to experience adverse vibration levels with respect to human comfort.

Mitigation

The development of a project specific Construction Noise and Vibration Management Plan will be prepared to manage the timing and duration of noisy construction activities.

The assessment indicates that the road design can achieve the project noise objectives through the design and implementation of noise mitigation such as lower noise road pavements, noise barriers and off-reservation treatments.

With the implementation of a two-metre-high noise barrier in targeted locations, the modelling indicates that the impact will significantly reduce the number of properties exceeding the project noise objectives. A small number of properties require further off-reservation treatment which would be resolved during through the detailed design phase to ensure compliance.

ES.5.8 Landscape and visual

The EES has assessed landscape and visual values, impacts, and proposes mitigations for the construction and operation of the project.

The landscape and visual impact assessment evaluated the potential for visual effects of the project based on numerous factors including quantity of dwellings, sites with cultural, community or natural value, rural open spaces, and proximity to dwellings and the Beaufort townships.

Existing conditions

Key views and viewsheds across the study area and Beaufort township, identified in the Landscape and Visual Impact Assessment, are Camp Hill Lookout view, Camp Hill and Island Uplands viewshed. The diverse range of vegetation across Beaufort and the study area contains eight landscape character types, including:

- open grassy plains
- open grassy plains and scattered trees
- grassy woodlands
- dense bushland
- riparian zones
- industrial plantations
- rural township vegetation
- industrial land use.

Impact assessment

Key landscape and visual issues identified include:

- potential adverse effects on landscape and visual values, particularly the sensitive landscape areas of local or regional significance including Camp Hill State Forest, Snowgums Bushland Reserve, Beaufort Trotting Track, Beaufort Motorcycle Track, and waterway crossings
- potential adverse effects on landscape and visual values associated with the loss of trees and other vegetation.

Key impacts to landscape character include:

- significant cut into the Camp Hill hillside with visibility of this for some distance and from within the Beaufort township
- lengths of elevated embankment and bridge structures within low wide waterway areas.

Mitigation

Specific design, construction and operational mitigation measures were developed to manage the potential landscape and visual impacts of the project. These range from the development of landscape plan and strategies, guidance on lighting and urban design as well as construction hoarding measures to reduce visual impacts during the construction phase.

ES.5.9 Soils and geology

The EES has assessed soils, geology and contaminated land values, impacts and proposes mitigations for the construction and operation of the project.

Existing conditions

The study area contains five primary geological units, with the Cambrian-Ordovician sandstone and mudstone considered to be basement formations that outcrop as the hills surrounding Beaufort, overlain by Tertiary gravels and Quaternary alluvial sediments along drainage lines and floodplains.

A review of the Potential Acid Sulfate Soils (ASS) database was conducted, which indicated a low probability of ASS albeit with very low confidence. Soil samples collected as part of the geotechnical assessment reported pH ranging between 4.8 and 8.6 within the study area. Emerson testing of soil samples indicate the presence of dispersive soils within the study area.

No known areas of contaminated land were identified during a review of the Environment Protection Authority audit database and Environment Protection Authority Priority Sites Register. However, there is potential for unregistered areas of contamination to be present.

Impact assessment

Potential contamination sources include:

- Melbourne-Ararat Railway Line
- former unlined landfill and council transfer station
- mine tailings
- former council works depot, located along Camp Hill Road
- Beaufort Trotting Training Track
- fuel service station sites
- farming activities
- EPA licensed premise – Central Highlands Water Wastewater Treatment Plant
- imported fill.

The study area contains a combination of low hills and valleys, the project will require some areas of cut and fill to achieve safe road design standards and identify geotechnical impacts. Soil tests samples indicate presence of dispersive soils. Cut and fill slopes formed during construction in dispersive soils have several potential impacts, including:

- surface water flow over slopes has the potential to cause slope erosion and sedimentation in watercourses
- steeper slopes have the potential to generate higher velocity surface water runoff which would accelerate the erosion of unprotected dispersive soil slopes compared with shallow slope angles
- eroded sediments may collect on the slope berms and within the catch drains creating the need for long term maintenance or produce blockages to the surface drainage systems
- unprotected soil stockpiles could potentially result in erosion and cause sediments to enter watercourses

- erosion of embankments along the edge of the road could compromise the shoulder of the road, requiring ongoing maintenance.

Impacts associated with sedimentation also have the potential to interact with biodiversity and water quality values, that rely upon watercourses and surface water as habitat.

Investigations also identified potential impacts related to road construction over compressible ground likely to result in ground settlement, potentially causing damage to adjacent buildings and infrastructure without implementation of mitigation measures. The settlement of embankments after construction also has the potential to increase the level of highway maintenance required without implementation of mitigation measures.

There may be presence of low strength soils, meaning they may not be suitable for re-use as fill. If excavated soils are deemed too weak or susceptible to degradation under traffic loading and cannot be used to form the fill embankments, then they will need to be replaced with imported soil.

There is potential for contaminants to be exposed during construction from historical land uses. The main impact would be to human health from exposure of construction workers during the construction phase to contaminated materials, dust, vapours, fuels and chemicals during the construction phase, as a direct result of excavation of contaminated ground.

Mitigation

Mitigation to avoid the above impacts includes:

- additional assessment of dispersive soils and development of a Construction Environmental Management Plan prior to construction. This will likely reduce the amount of exposed contaminants and erodible surfaces during construction and operation and mitigate the adverse effects of exposing dispersive soils
- additional geotechnical investigations to inform the detailed design and determine the specific engineering responses to geological conditions prior to construction.

ES.6 Environmental management framework

The Environmental Management Framework will provide a transparent framework to manage the environment effects identified in the Beaufort Bypass Environment Effects Statement in order to meet statutory requirements, protect environmental values and sustain stakeholder confidence. It forms one component of the overall governance framework for delivery of the project.

The Environmental Management Framework outlines clear accountabilities for the environmental requirements for the delivery of the project and compliance with all relevant environmental planning laws, approvals, approval conditions and environmental management plans and procedures to ensure that the environment effects of the bypass and any hazards associated with its construction and operation are effectively managed.

Key mitigation measures that will be outlined in the Environmental Management Framework including:

- traffic and access management
- construction noise and dust controls
- operational noise treatments
- economic initiatives for the Beaufort township
- landscape plans and urban design
- creating fauna connectivity to assist dispersal
- creation of bioretention to protect adjacent wetlands
- management of soil and spoil
- Aboriginal and historic heritage protection.

These outcomes will be routinely audited, issued to Minister for Planning and published by the Department of Transport for transparency purposes.

The approved Environmental Management Framework will contain the final environmental management requirements governing development and implementation of the project. Compliance with the Environmental Management Framework will also be mandated and enforced by RRV and Major Road Projects Victoria through the contractual arrangements for delivery of the project following project approval. Responsibility for compliance with the approved Environmental Management Framework during the operational phase will rest with the Victorian Department of Transport, as the Victorian road authority responsible for the management of all non-commercial arterial roads and freeways. Primary and secondary approvals for the project are detailed in the table below.

Table ES.1 Primary and secondary approvals for the project

Type of permit/approval	Description	Approval authority
Planning Scheme Amendment under the *Planning and Environment Act 1987*	Planning Scheme Amendment to permit use and development of the project under the Pyrenees Planning Scheme, this includes the removal of vegetation within the Planning Scheme Amendment area.	Minister for Planning
Cultural Heritage Management Plan (CHMP) approval under the *Aboriginal Heritage Act 2006*	Approval of the completed CHMP by the Registered Aboriginal Party to ensure the protection of Aboriginal cultural heritage in the activity area.	Wadawurrung Traditional Owners Aboriginal Corporation
Environment Protection Biodiversity Conservation Act 1999 (EPBC Act) approval	Commonwealth approval required to ensure the protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places is achieved.	Commonwealth Minister for the Environment
Wildlife Act 1975 permit	Permit required to remove fauna, salvage capture or relocate fauna as required by project mitigation measures.	Department of Environment, Land, Water and Planning
Flora and Fauna Guarantee Act 1988 permit	Permit required to take (defined by the Act as kill, injure, disturb or collect) flora protected under the Flora and Fauna Guarantee Act.	Department of Environment, Land, Water and Planning
Water Act 1989 approval	Obtain approval from Glenelg Hopkins Catchment Management Authority to construct a bridge, crossing or culvert.	Glenelg Hopkins Catchment Management Authority
Catchment and Land Protection Act 1994 permit	Permit to transport noxious weeds.	Agriculture Victoria (Department of Jobs, Precincts and Regions)

ES.7 Exhibition, submissions and inquiry, and the advisory panel process

The EES will be on public exhibition for a minimum of 30 days once published. This will be the final opportunity for the community to make comments regarding the primary approval of this project and the draft planning scheme amendment.

After the public exhibition period has concluded, the Minister for Planning will appoint an Inquiry and Advisory Committee to evaluate the project, the EES, the draft PSA Planning Scheme Amendment and all public submissions received.

The Inquiry and Advisory Committee will summarise their findings in a report and provide it to the Minister for Planning for consideration. The Minister for Planning will assess the likely environment effects of the project, the EES, public submissions and the committee's report. The Minister for Planning will then make their assessment on the project.

The Minister will assess whether the project has:

- an acceptable level of environmental impacts and can proceed
- an unacceptable level of environmental impacts and cannot proceed
- to be modified so the environmental impacts are at an acceptable level before it can proceed.

If the Minister for Planning assesses that the project can proceed, they will exercise their powers under the *Planning and Environment Act 1987* to amend the Pyrenees Planning Scheme.

The draft Planning Scheme Amendment will propose project specific amendments. Once approved, a notice of Planning Scheme Amendment will be published in the Victorian Government Gazette.

Once the approvals are granted, RRV will seek funding and commence the land acquisition and compensation process with impacted landowners.

The Minister's assessment will also be provided to the Commonwealth Minister for the Environment who will determine whether or not to grant approval for the project under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

ES.8 Conclusion

The project would increase travel efficiency on this important transit route and improve road safety, congestion and amenity for road users and people within the Beaufort township. Furthermore, the bypass will better connect people to residential, recreation, and service centres, significantly improving access to social and economic opportunities.

The key impacts identified in the EES include loss of land through public acquisition, displacement of residents, removal of existing vegetation and habitat, changes to existing drainage and hydrology and impacts to businesses dependent on highway trade. Other impacts identified are generally typical of large infrastructure projects of this nature and relate primarily to social and amenity impacts experienced through the construction phase. These impacts relate to construction noise and vibration, dust emissions, surface water quality (potential spills or siltation from works) and changes to normal traffic conditions.

The detailed design for the project would be developed to maximise benefits while further minimising the potential for adverse effects on the environment and community.

During the detailed design and construction of the project, prescribed measures and conditions in the Environmental Management Framework must be met to ensure environmental outcomes and minimal adverse impacts are achieved.

Where impacts have been identified, technical specialists have developed mitigation measures which have been incorporated in the Environmental Management Framework to avoid, minimise and manage those impacts.