Executive Summary

Introduction

This Environment Effects Statement (EES) relates to Section 3 of the Western Highway Project, which involves the duplication of the Western Highway over approximately 24 kilometres (km) between Ararat and Stawell, Victoria.

The purpose of the EES is to provide stakeholders and decision makers with a clear description of the proposed alignment, relevant alternatives and assessment of the potential environmental, social and economic effects.

The EES process informs the various statutory approvals required for the Project and invites comment on outcomes of the assessments undertaken. Relevant decision-makers need to have regard to the Minister for Planning's Assessment of the Project and its effects, which will be provided at the conclusion of the EES process.

The EES and draft Planning Scheme Amendments (PSAs) were developed between March 2010 and December 2012. This Executive Summary provides an overview of the Project, the assessment and approvals framework, predicted environmental effects and management measures that are recommended.

The Western Highway (A8) in Victoria is the principal road link between Melbourne and Adelaide. The highway serves interstate trade between Victoria and South Australia, and is the key transport corridor through Victoria's west. It also supports the farming industry, grain production, regional tourism, and a range of manufacturing and service activities in Victoria's west. Currently, more than 5500 vehicles travel the highway west of Ballarat each day, including 1500 trucks. In terms of freight movements, the Western Highway is one of the busiest rural highways in the country with the traffic expected to significantly increase by 2040.

VicRoads is proposing to duplicate the Western Highway between Ararat and Stawell (the Project), as part of the larger Western Highway Project which involves duplication of the highway between Ballarat and Stawell, not including bypasses of Beaufort and Ararat.

The existing highway between Ararat and Stawell is undivided with a single lane in each direction and overtaking lanes at various locations. Initially, the existing highway would be upgraded to a divided highway standard with two lanes in each direction separated by a central median, associated intersection upgrades and a bypass of the township of Great Western.

At some time in the future, when traffic volumes warrant and funding is available, the divided highway would be upgraded to a freeway standard.

Proponent

The Roads Corporation (VicRoads) is a Victorian statutory authority whose objectives, functions and powers are outlined in the *Transport Integration Act 2010.* VicRoads is one of several State Government agencies that assist the Government to achieve its integrated transport policy objectives. VicRoads also administers a number of Acts and Regulations including the *Road Management Act 2004* and the *Road Safety Act 1986*. As the statutory authority for arterial roads (including highways and freeways), VicRoads is responsible for the Western Highway and is the proponent for this Project.

Project Funding and Staging

The Western Highway is part of the National Land Transport Network, which is the national network of strategically important land transport linkages. As part of the Nation Building Program, which assists national and regional economic and social development by the provision of funding aimed at improving the performance of land transport infrastructure, VicRoads was allocated funding from both the Commonwealth and State Governments to progressively upgrade the Western Highway into a four-lane divided highway. This larger project, known as the Western Highway Project, extends for approximately 100km, commencing at the western edge of Ballarat and finishing at the south-eastern edge of Stawell. This does not include bypasses of Beaufort or Ararat.

The Western Highway Project has been split into a series of sections for planning and delivery purposes:

- Ballarat to Beaufort (Section 1);
- Beaufort to Ararat (Section 2); and
- Ararat to Stawell (Section 3).

Section 1, which did not require an EES, is currently being constructed and expected to be completed in 2014. Section 2 is the subject of a separate EES, which has recently been placed on public exhibition, and is programmed for construction between 2013 and 2016. Section 3 is the subject of this EES and is programmed for construction between 2014 and 2016. Completion of Sections 2 and 3 is subject to future funding, with the current funding allocation allowing for all planning to be completed, and construction as far west as Buangor in Section 2. The sections of the Western Highway Project are shown in Figure 1.

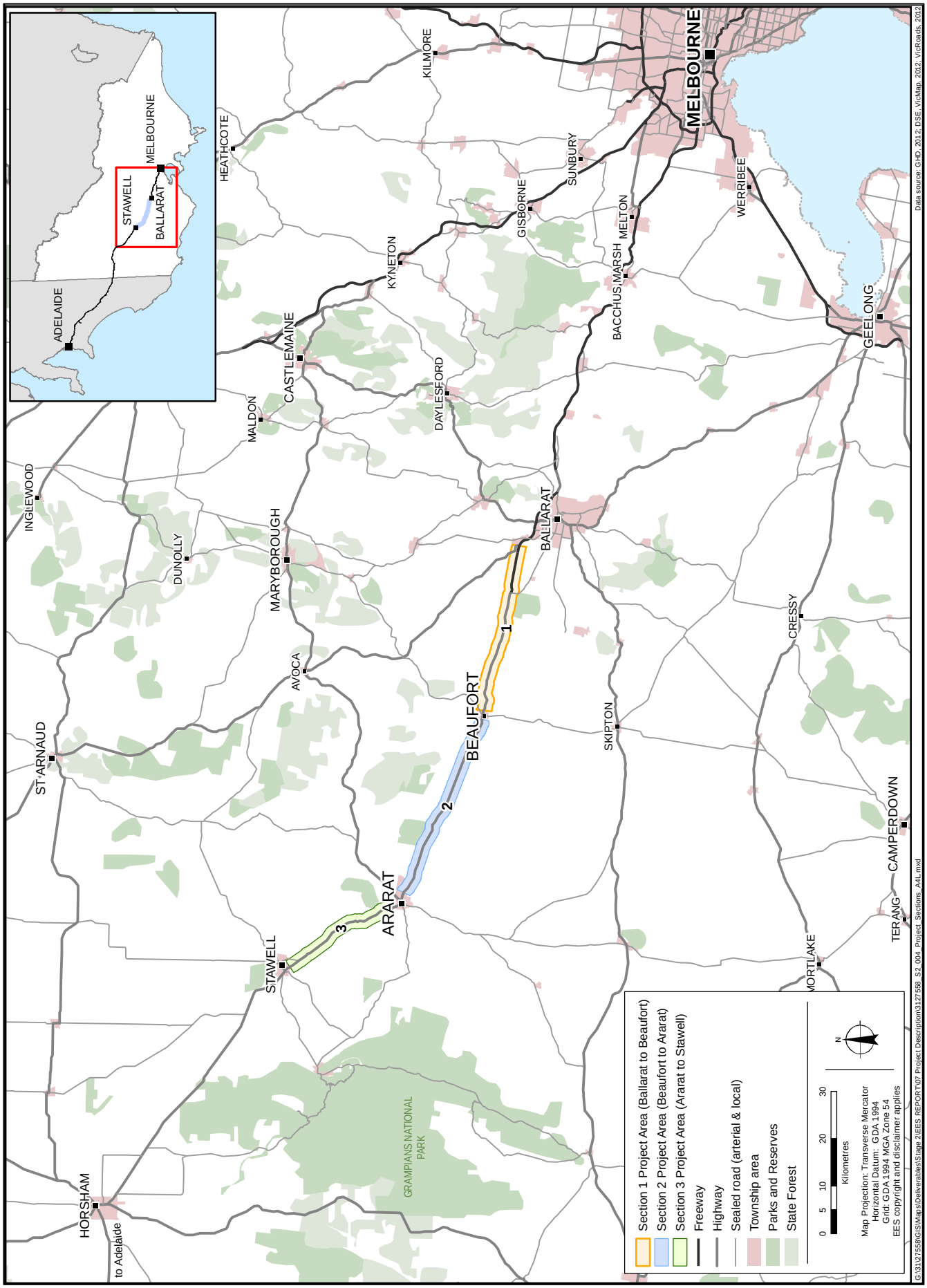

Figure 1 Western Highway Project Sections

Project Rationale

The key drivers for the Western Highway Project are road safety and transport efficiency. These drivers are key elements of Victorian Government transport policies, as well as the VicRoads operating charter as set out in the *Transport Integration Act 2010*. Specifically, the Project would assist in meeting the objectives of the following policies/strategies:

- National Transport Links – Growing Victoria's Economy Strategy;
- Nation Building Program – Roads to Recovery;
- Melbourne-Adelaide Corridor Strategy;
- Western Highway M8/A8 Corridor Strategy;
- Central Highlands Regional Transport Strategy; and
- Arrive Alive! (Victoria's Road Safety Strategy).

When the last of the duplication of the Hume Highway between Melbourne and Sydney is completed, due to be finished in mid-2013 with the completion of the Holbrook Bypass, the Western Highway will be the busiest un-duplicated national highway link in Australia in terms of interstate freight movements (WHAC Committee Report, SKM 2007).

Project Area and Study Area

The project area was defined for the purposes of characterising the existing conditions for the Project, and to consider alignment alternatives. The project area encompasses a corridor extending up to 1500 metres (m) either side of the existing highway, except around Great Western where the project area extends up to 1800m (encompassing the extent of new alignment possibilities). It commences north of Pollard Lane, Ararat and extends approximately 24km to just south of Gilchrist Lane, Stawell.

A study area was also defined for each specialist assessment. Some of the assessments undertaken to inform this EES have adopted larger study areas than the project area for the purposes of characterising relevant effects. Therefore, when discussing specialist studies, the area is referred to as the study area.

Road Safety

The existing highway between Ballarat and Stawell has remained largely unchanged for almost a century in some locations. However, the total traffic volumes and proportion of heavy vehicles have significantly increased, especially in recent times, which are contributing to a relatively high crash rate.

Between Ararat and Stawell, the existing highway has a crash history of 4.24 crashes per 100 million vehicle km travelled. There have been no fatalities recorded on this section within the last five years (VicRoads Crash Statistics, 2007-2011).

There are several aspects of the current highway configuration which are the key problem areas:

- Few overtaking opportunities;
- Property access safety;
- Poor road geometry; and
- Lack of rest break areas.

Transport Efficiency

The Western Highway is currently supporting a large variety of vehicle types, ranging from tourist traffic and commuter traffic to large B-double trucks, and farm machinery. Over the past 20 years, the total traffic volumes along the Western Highway between Ballarat and Stawell have increased by approximately 47%. The proportion of heavy vehicles has increased by 12% over the same period.

The combination of the rise in overall traffic, the increase in proportion of heavy vehicles and the reduction of speed limits in various locations (as a measure to improve road safety) means that the time it takes to travel between Ballarat and Stawell has also increased by approximately seven minutes over the past 10 years. This extended travel time is impacting on the operating cost and travel time reliability for the freight industry and other users of the highway.

Project Objectives

With regard to the key drivers for this Project, VicRoads has defined the following Project objectives:

- To provide safer conditions for all road users by:
  - Reducing the incidence of head-on and run-off road crashes;
  - Improving safety at intersections; and
  - Improving safety of access to adjoining properties;
- To improve the efficiency of freight by designing for High Productivity Freight Vehicles;
- To provide adequate and improved rest areas; and
- To locate the alignment to allow for possible future bypasses of Beaufort and Ararat.

Completing the duplication of the highway between Ballarat and Stawell (including Section 3 between Ararat and Stawell) would improve road safety and freight efficiency, delivering benefits to communities and industries that depend upon the highway for access to services, facilities, resources, domestic and export markets.

EES and Approvals

On 27 October 2010, the then Victorian Minister for Planning determined that an EES was required under the *Environment Effects Act 1978* to document the likely environmental, social and economic effects of

the Project. The reasons for the Minister's decision included:

- The Project is likely to result in significant adverse effects on biodiversity, including native vegetation, listed flora and fauna species and listed ecological communities.
- The Project could have significant effects on Aboriginal and non-Aboriginal cultural heritage.
- The Project could have significant effects on existing land uses, infrastructure and communities, including the impact on amenity and landscapes.
- The opportunity to avoid or minimise significant adverse effects through the selection of the roadway alignment and design, as well as mitigation and offsetting measures, requires further detailed investigation.
- An integrated assessment of environmental effects associated with alternative alignments is needed to inform decision-making.

Commonwealth Approval Requirements

On 20 December 2010, the delegate for the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities determined the Project to be a controlled action that requires assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The relevant controlling provisions for the Project under the EPBC Act are threatened species and ecological communities (Sections 18 and 18A). The EES process is to be applied as an accredited process under the EPBC Act in accordance with the bilateral agreement between the Commonwealth and Victorian governments. This means that the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities will make a decision whether to approve the Project under the EPBC Act, based on the EES and not a separate assessment process.

EES Scoping Requirements and Evaluation Objectives

The EES Scoping Requirements issued by the Victorian Minister for Planning set out the range of environmental, social and economic matters to be investigated and documented in the EES including Commonwealth requirements under the EPBC Act.

The draft EES Scoping Requirements for the Project were placed on public exhibition in May 2011 and then issued by the Minister for Planning in their final form in September 2011.

The evaluation objectives, documented in the EES Scoping Requirements, reflect the key issues as identified by the Minister for Planning. The evaluation objectives for the Project are outlined in Table 1 and are addressed in the relevant chapters of the EES with a summary provided in the conclusion.

Table 1 Evaluation Objectives

EES Evaluation Objective	Relevant EES Chapter
To provide for the duplication of the Western Highway between Ararat and Stawell to address safety, efficiency and capacity issues.	▪ Chapter 9 ▪ Chapter 19
To avoid or minimise effects on flora and fauna species and ecological communities listed under the *Flora and Fauna Guarantee Act 1988* (Vic) or the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth), and to comply with requirements under *Victoria's Native Vegetation Management – A Framework for Action (2002)*.	▪ Chapter 13 ▪ Chapter 20
To protect catchment values, surface water and groundwater quality, stream flows and floodway capacity, as well as to avoid impacts on protected beneficial uses.	▪ Chapter 10 ▪ Chapter 11 ▪ Chapter 12
To avoid or minimise disruption and other adverse effects on infrastructure, land use (including agriculture) and households, as well as road users resulting from the construction and operation of the highway duplication.	▪ Chapter 8 ▪ Chapter 9 ▪ Chapter 18 ▪ Chapter 19
To minimise air emissions, noise, visual, landscape and other adverse amenity effects, during the construction and operation of the proposed duplicated highway to the extent practicable.	▪ Chapter 15 ▪ Chapter 16 ▪ Chapter 17 ▪ Chapter 18
To protect residents' well-being and minimise any dislocation of residents or severance of communities, to the extent practicable.	▪ Chapter 7 ▪ Chapter 18
To protect Aboriginal and non-Aboriginal cultural heritage.	▪ Chapter 14
To provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with the project in order to achieve acceptable environmental outcomes.	▪ Chapter 4 ▪ Chapter 21
Overall, to identify an alignment and conceptual design for the Western Highway Duplication from Ararat to Stawell that would achieve a balance of economic, environmental and social outcomes.	▪ Chapter 5

Technical Reference Group

Prior to the commencement of the EES process, a Technical Reference Group (TRG) for the Project was established and chaired by the Department of Planning and Community Development (DPCD). As set out in the Terms of Reference, the role of the TRG was to provide advice to the proponent (VicRoads) and DPCD as appropriate. The TRG was to also enable relevant government departments and local councils to provide input and guidance to the EES process in relation to the adequacy of investigations being undertaken and the Project's compliance with statutory requirements.

The TRG was made up of representatives from the following government departments, local councils and other organisations:

- Department of Planning and Community Development (DPCD);
- Department of Sustainability and Environment (DSE);
- Aboriginal Affairs Victoria (AAV);
- Victorian Environment Protection Authority (EPA);
- Heritage Victoria;
- Ararat Rural City Council;
- Northern Grampians Shire Council;
- Parks Victoria;
- Glenelg Hopkins Catchment Management Authority;
- Wimmera Catchment Management Authority; and
- VicRoads Western Region.

The first TRG meeting was held on 12 May 2011. In total, nine TRG meetings were held throughout the development of the EES. Additional meetings were also held with particular TRG agencies in order to discuss key issues in more detail where this was required. TRG agencies were briefed at meetings and provided with draft reports to review. Comments received from TRG members were taken into consideration in the preparation of the EES.

Professional and Local Services Group

The Profession and Local Services Group (PLSG) was formed to ensure that emergency services, private infrastructure operators, local services providers and community representatives including Members of Parliament, Council representatives, and tourism and progress associations are included in the planning process. The feedback from these meetings was used to inform the EES process.

Community Consultation

Consultation with the community is an integral part of the EES process. As per the EES Scoping Requirements, VicRoads has undertaken a formal process of communication and consultation with relevant stakeholders including potentially affected parties, the community and interested organisations and individuals throughout the development of the EES in order to identify and respond to their concerns.

The main issues identified throughout the consultation process, and the responses to these issues are summarised in Table 2.

Table 2 Summary of Consultation Key Issues and Responses

Issue	Response
Land Acquisition	
Most participants did not support options that involved land acquisition on their properties. Some participants said that their businesses (mostly farms) could be rendered less viable if their land or parts thereof was acquired for the Project. Landowners were concerned that some options would result in acquisition of their prime farming land.	Agricultural assessments were undertaken for properties where landowners raised concerns that the Project would affect viability. The outcomes of these assessments were used to draw conclusions regarding land use impacts in the Planning and Land Use Assessment. VicRoads has provided landowners with information on the land acquisition process, where requested. In selecting the preferred alignment, consideration was given to minimising land acquisition. The current design was refined through the EES process to avoid and minimise land acquisition, land severance and acquisition of dwellings, where practicable.
Severance of agricultural properties	
This included concerns about the loss of agricultural land affecting the viability of farms, as well as access to other agricultural properties in the same ownership located on the other side of the duplicated highway. Some participants stated that if they were no longer able to drive farm machinery on the duplicated highway to access their other properties this would be a major issue.	The proposed alignment has been selected to avoid and minimise severance of private land. Agricultural assessments were undertaken for properties where landowners raised concerns that the Project would affect viability. The locations of some median breaks and intersections were selected to assist known movement of farm machinery. VicRoads has advised landowners that the highway, initially under Access Management Policy (AMP) road category 3 (AMP3) conditions, would have the same status as the existing Western Highway once duplicated, in that it would allow continued use by registered/permitted items of plant. VicRoads has also advised that at some future time restriction to highway access would be introduced and it would be consistent with the AMP road category 1 (AMP1) upgrade in this proposal.

Issue	Response
Amenity, including noise, air quality and visual impacts	
A range of concerns were raised with regards to amenity impacts, these included noise levels increasing at private residences and community facilities from both an increase in traffic volume and closer proximity of the proposed alignment to sensitive receptors. Some participants were concerned about the visual impact of the road encroaching on their properties, particularly in the vicinity of Great Western township and the Stawell Park Caravan Park. Some landowners and residents sought clarification as to how noise would affect adjoining residents and whether the VicRoads Noise Policy applied.	A number of photomontages from residential viewpoints have been developed which show what the ultimate upgrade (AMP1 freeway standard) would look like. Landscaping would be used to mitigate adverse effects at key locations. Noise mitigation measures (such as road surfacing) would be considered during detailed design at key locations such as intersections and in the vicinity of Great Western township. The Great Western bypass would be built in cut at some locations, further reducing noise and visual impacts. Air quality impacts have been investigated and would have minimal impact.
Safety	
The issue of safety was raised by many participants, with respect to a number of existing highway sections and intersections, including within Great Western township and London Road, Stawell. Some stated that they did not feel safe using some of the current access points and intersections on the existing highway. Others were concerned about increasing volumes of traffic, altered access to properties and proximity of the alignment options to residences and community facilities associated with the options presented. Safety was a concern along the entire alignment; however, the issue was more pronounced through and around the Great Western township, with participants concerned that an increase in traffic volume could hinder the community's ability to walk and ride bikes along some roads and also cause safety issues for children accessing community facilities and the school.	Traffic volumes, including truck volumes, within the project area are predicted to grow, which is one of the key drivers for the Project. Road safety is a key priority in this Project. Intersections and the highway alignment would be designed in accordance with relevant safety standards. VicRoads has noted that road safety audits would be undertaken throughout the Project to ensure that safety standards are being met.
Access	
Some participants identified that adequate access to their properties and their community was a major issue for them. Participants did not want the Project to sever access to their community and services, nor did they wish to travel further (e.g. be required to turn left and perform a U-turn, when they can currently turn right onto the existing highway) to access their communities or properties. Some agricultural landowners that reside between Ararat and Stawell raised the issue of requiring regular access to their properties by B-Double trucks and/or farm machinery.	The location of intersections has been considered to best meet traffic and road safety requirements. Community consultation sessions held have shown the location of median breaks and feedback received has been incorporated into the proposed alignment where possible. Assessments were undertaken on the types of vehicles turning at different locations along the highway and how far they had to travel in order to make the turns. The results of these assessments were considered in the design of the proposed alignment.
Flooding	
A number of landowners, particularly those in the Great Western area, have expressed concern over the current flooding issues within the town and its outskirts. In January 2011 there was a large flood event that overtopped the existing highway and flooded many properties in the district. Some landowners are worried the Great Western bypass will further increase the flooding impacts on the town.	VicRoads has been working with Wimmera and Glenelg Hopkins Catchment Management Authorities and would design the road so that the flood extent for the proposed alignment would be no worse than the existing flood extent for the same storm event. In addition, the Project would investigate options that reduce flooding impacts within Great Western, where possible.
Environmental	
Some landowners expressed concern at native vegetation impacts and severance of wildlife corridors.	During consultation, the significance of the vegetation and the legislative requirements to avoid or minimise impacts on this vegetation was explained. The adopted alignment would be designed to minimise native vegetation and fauna habitat removal within the alignment corridor. During detailed design, the adopted alignment would be further refined to minimise native vegetation removal within the alignment corridor, with mitigation measures adopted (e.g. wildlife crossings) as appropriate to minimise impacts to wildlife corridors for significant native fauna.

EES Approvals Process

Following public exhibition of the EES, the Minister for Planning will appoint an Inquiry Panel for the Project to review the EES and any submissions as well as conduct public hearings. Following receipt of a report from the Inquiry, the Minister will then prepare an Assessment under the *Environment Effects Act 1978*.

Once the Minister's Assessment has been released, statutory approvals will be sought and relevant decision-makers need to have regard to the Minister's Assessment. The Project requires:

- Approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*;
- Amendments to relevant Planning Schemes (the Ararat and Northern Grampians Planning Schemes) under the *Planning and Environment Act 1987*; and
- An approved Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006*.

The relationship of these approvals to the EES is shown in Figure 2.

A number of approvals under other legislation for components of the project are also required. These additional approvals are outlined in Section 4 in each of the Chapters 8 to 20.

The draft Planning Scheme Amendments (PSAs) are included in the EES so that they may be exhibited concurrently and comments are be sought on the PSAs as well as the EES during the exhibition period. The PSAs would include application of a Public Acquisition Overlay to the private land to be compulsorily acquired for the Project. They would also remove the need for planning permits associated with the Project. It is proposed that the PSAs for the Project would be processed pursuant to Section 20(4) of the *Planning and Environment Act 1987* (the Minister for Planning being the Planning Authority), following completion of the EES process.

A CHMP is being developed for the Project, and will be submitted to Aboriginal Affairs Victoria (AAV) for evaluation and approval following the EES process.

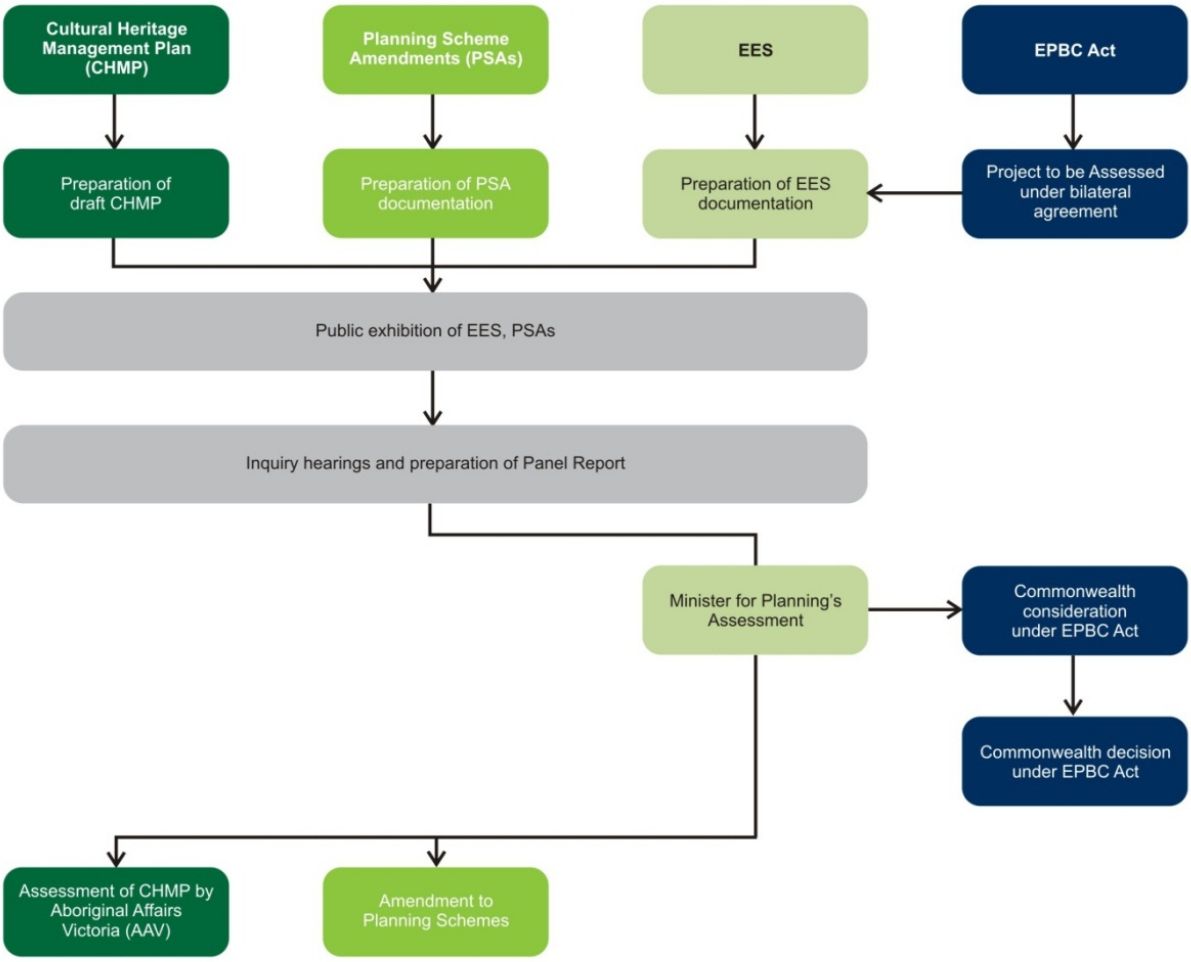

Figure 2 Approvals Process

Project Alternatives

In order to achieve the Project objectives, VicRoads is proposing to duplicate the Western Highway from Pollard Lane, Ararat to Gilchrist Road, Stawell. The following describes the project alternatives assessed for the EES to meet the Project objectives.

The 'No Project' Scenario

Consideration of the 'no project' scenario is important in order to evaluate the implications of not undertaking the Project. Assessment of the 'no project' scenario is inherent in the assessments undertaken for the EES as described below. The rationale for the Project is outlined above and further detail is provided in Chapter 2 (Project Rationale) of the EES.

The impact assessments undertaken for the EES describe the existing conditions within the project area in order to establish the baseline for impact assessments. In relation to project objectives, relevant assessments also consider future changes that would occur if the Project was not developed, for example road safety would be likely to deteriorate further.

The evaluation framework utilised to assess alignment options has considered the potential benefits and adverse impacts of each option relative to the 'no project' scenario. Neither the benefits nor the adverse impacts attributable to the proposed alignment, as documented in the EES, would be realised for the 'no project' scenario.

Alternative Solutions

As part of the Project, a number of alternative solutions were considered in order to improve connectivity and efficiency between Ballarat and Stawell. These potential solutions include:

- Use of an alternate route;
- Use of an alternative transport mode;
- Construction of a greater number of overtaking opportunities; or
- Duplication of the Western Highway (this Project).

The first of these solutions was not considered for further investigation as roads along alternative routes are not constructed to the standard required for traffic and would cost far more to upgrade than the option of duplicating the existing Western Highway.

The upgrade of the existing railway was considered and it was identified that 75% of freight between Melbourne and Adelaide is non-bulk items. The need for these items to be collected from and distributed to many different locations means that there is a reliance on flexibility in the delivery chain that is provided by road solutions.

While construction of additional overtaking opportunities would be a potentially cheaper response, this alternative does not fully address the travel time issue as the posted speed would have to remain at 100km/h and there would still be delays behind slow moving vehicles in the sections that did not have overtaking lanes. More significantly, the opposing directions of traffic are not separated under this option, therefore the current safety issue associated with head on crashes is not treated, leaving this risk within this corridor.

The final option, duplication of the Western Highway, involves the construction of a second carriageway and increasing the number of lanes on the highway to four lanes. This option effectively doubles the capacity of the highway and provides for considerably safer overtaking opportunities. The separation of the two directions of traffic would reduce the likelihood of head on crashes and reduce the chances of rear end crashes by allowing vehicles to use the extra lane to move around slow or stationary vehicles on the highway.

The duplication of the Western Highway would allow safer access to and from adjoining local roads and private properties through the construction of wide median treatments at some existing intersections and some private properties. The wide median intersections would allow safe turning movements to and from local roads or private entrances.

For the above reasons, it has been determined that the duplication of the Western Highway between Ballarat and Stawell, including Section 3 (between Ararat and Stawell), would be the most appropriate means of addressing safety and efficiency.

Options Assessment and Selection Process

A number of different alignment options for the Project were developed, assessed and selected through a three phase process.

The project area was defined for the purpose of existing conditions and options assessments. The project area is a corridor which extends 1500m either side of the existing highway, except around Great Western where the project area extends up to 1800m. The options assessment process for the Project involved specialists in the relevant fields considering alternate options and assessing the impacts of each. Feedback was sought from the local community via community meetings held in July 2011 and November 2011 and from the TRG via meetings, and was considered throughout the process.

The Project Area was divided into three zones to allow for comparison of options against the existing highway and identification of preferable options having regard to potential social, environmental, cultural heritage and economic impacts.

In the first phase, a 'long list' of alignment options was developed through a workshop, drawing upon previous work undertaken by VicRoads and

introducing some new concepts. A number of factors influenced the development of the 'long-list' including: the need for an appropriate connection with the existing highway, allowing for a future bypass of Ararat (for which an alignment is not yet determined), and achieving design and safety standards while optimising use of the existing highway. All options sought to meet the project objectives and avoid significant known constraints.

Through a 'rapid assessment' workshop the long list of alignment options was assessed against a set of objectives and evaluation criteria covering the key issues and constraints as relevant to the Project. As a result of this workshop, some options were eliminated to create a 'short list' of options for more detailed consideration in the second phase.

In the second phase, the 'short listed' options were assessed in more detail. The objective was to assess the impacts to the identified values of the study area and to select an alignment that balanced impacts to biodiversity, social and cultural heritage values. The preferred options within each zone were connected to provide a proposed alignment option from the start to the end of Section 3.

Community consultation on the short-listed options was also conducted through public meetings held in Great Western and Ararat in July 2011. From this phase the proposed alignment was selected.

Whilst risks were broadly considered with the impacts of alignment options, a detailed Environmental Risk Assessment was undertaken for the proposed alignment during the third phase of the assessment. It was undertaken to identify the activities that could lead to pathways which impact on environmental, social or economic values of the project area. The risk assessment also identified alignment changes required to mitigate potential impacts.

Generally, biodiversity and social values are competing in the selection of a preferred alignment for linear infrastructure projects and Section 3 of the western Highway Project is not an exception. For Section 3 of the Western Highway Project, cultural heritage values were also a key consideration in the selection of the alignment.

In order to balance the impacts on the competing factors, the proposed alignment selected was one which primarily follows the existing highway on both sides of Great Western, and provides a bypass of the town to the north-east.

Proposed Alignment

As a result of the three phase assessment process and taking into consideration feedback received at community information sessions, VicRoads presents a proposed final alignment for consideration as part of the EES.

The proposed alignment meets project objectives and delivers the desired benefits of improved road safety and transport efficiency.

The proposed alignment utilises the existing highway corridor in part to reduce the potential impacts on landowners and the environment. The alignment has been designed to protect significant vegetation where possible.

The proposed alignment is shown in Figure 3 and is included in the mapbooks contained in Technical Appendix A to the EES.

Following selection of the proposed alignment option, the alignment has been refined through the EES assessment process. The proposed alignment is approximately 24km in length and commences north of Pollard Lane, Ararat.

The alignment duplicates the existing Western Highway (partly on the south-west side and partly on the north-east side) before following the Armstrong Deviation, bypassing Armstrong. This would require a new railway crossing for the two new lanes adjacent to the existing rail overpass.

A new dual carriageway is proposed to provide a north-eastern bypass of the township of Great Western. The proposed bypass would leave the existing highway just north-west of Delahoy Road and travel east. It would cross part of the former Great Western landfill and the adjacent quarry, to re-join the existing Western Highway near Briggs Lane.

From Briggs Lane to Hurst Road, the alignment duplicates the existing Western Highway on the south-west side. Two new carriageways are proposed over the railway line and Oddfellows Bridge at Harvey Lane would revert to an on-ramp for southbound traffic.

Section 3 finishes south of Gilchrist Road, Stawell.

Intersection of Western Highway and London Road

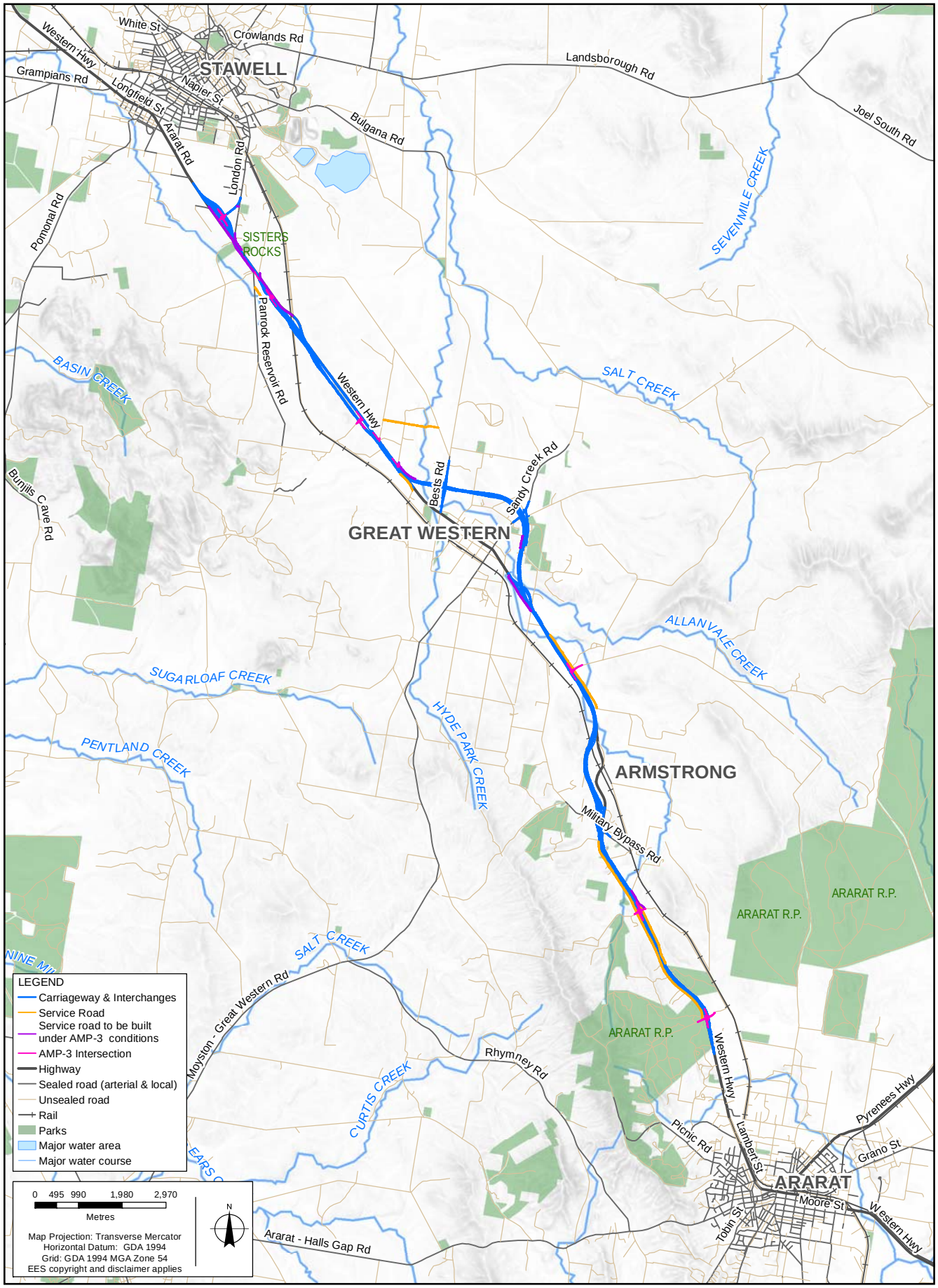

Figure 3 Proposed Alignment

Project Description

The Project Description summarised here outlines the physical footprint of the Project, the relevant design elements and an indicative construction methodology. The Project Description, together with VicRoads' standard environment protection measures for construction, has formed the basis for the risk and impact assessments included as technical appendices to the EES.

The Project Description also considers the two overall project phases, referred to as the interim and the ultimate upgrade. The interim upgrade to the existing highway is consistent with VicRoads Access Management Policy road category 3 ('AMP3'), a divided rural highway standard. When traffic volumes or other conditions warrant, further government funding would be sought for the ultimate upgrade from the 'AMP3' highway to 'AMP1', which is the freeway standard.

The EES has assessed the greatest potential impact resulting from the Project, therefore all assessments have considered the ultimate upgrade to an AMP1 freeway as it involves a larger physical footprint and more significant changes to access arrangements. The traffic and transport, economic and social impact assessments also considered the interim AMP3 upgrade because of the different access arrangements than the AMP1 standard road. However, other assessments only considered the ultimate (AMP1) upgrade.

Construction Area

A construction area has been defined for the Project, which is the area of direct impact for construction of the ultimate upgrade also encompassing the interim upgrade arrangement. The width of the construction area varies, reflecting the need for variable median widths between the carriageways, location of service roads and intersection treatments.

The construction area includes the following areas:

- Existing and new carriageways and medians;
- Grade-separated intersections (for AMP1) and wide median intersections (for AMP3);
- Service roads and rest areas/truck stops;
- Clear zones extending a minimum 10m either side of the edge of the traffic lanes (except where constraints are located); and
- Construction buffers beyond the clear zone that have been included to accommodate relocated services and potential changes to batter slopes.

Where sections of the proposed alignment utilise the existing road, the objective has been to convert the existing two-way road to two lanes in one direction, and a new parallel carriageway would be constructed to serve traffic in the other direction.

In some cases however, the alignment has been designed to minimise impacts on vegetation and/or landowners. Whilst the alignment follows the existing highway in some locations, the carriageway's gradeline and alignment means that the pavement cannot be retained.

The following generally applies to the construction area:

- The construction area required for a new dual carriageway and wide median (25m) is approximately 110m wide. This includes the pavement, clear zone, median and construction buffer areas identified. Depending upon topography, in some instances a wider area may be required.
- Where the existing roadway is utilised, depending on the condition of the existing roadway and its gradeline, pavement rehabilitation might be required. Otherwise, where the existing pavement can be utilised, the only construction works on the existing roadway would involve drainage improvement, shoulder construction and removal of hazards within the clear zone. For the purposes of the EES, the same construction corridor has been assumed for areas where the new carriageway alignment follows the existing highway to allow for these works. This is conservative, but it at least accounts for potential impacts which could be reduced through the detailed design process and management during construction.
- The construction area does not include space for construction site compounds as these are typically determined by the construction contractor. However, the EES has considered areas where site compounds should not be located due to environmental or cultural sensitivity.

  Site compounds would be used to stockpile materials, store plant and equipment and to provide site offices, parking and amenities for construction staff. Site compounds and construction laydown areas are likely be located in close proximity to the section of highway under construction, but the exact number, area required and locations cannot be identified at this time. VicRoads would require that the construction contractor(s) identify suitable locations, preferably within both the project area and construction area, and obtain approval for these. If the contractor(s) identified a suitable location outside the Project and construction area, it would need to ensure it met performance standards that resulted in no impacts to the environmental and social values assessed in this EES and undertake appropriate consultation.

Intersections and Access

Intersections and turning movements for both the interim and ultimate upgrades have been designed to cater for vehicles likely to legally use the Western

Highway. This includes a standard 25m B-Double truck configuration (a vehicle consisting of a prime mover and two trailers linked together) and high productivity freight vehicles.

Interim Upgrade – Divided Highway

For the interim upgrade, wide median intersection treatments are proposed at:

- The Majors / Main Divide Road;
- Petticoat Gully Road;
- Allanvale Road;
- Churchill Crossing Road; and
- Between Panrock Reservoir Road and Harvey Lane.

The EES has been based on the proposal that the interchanges on either side of Great Western be grade separated for the interim upgrade.

Depending on project funding, VicRoads is proposing that Garden Gully Road and London Road will also be grade separated for the interim upgrade.

The existing highway at Oddfellows Bridge is proposed to become a service road providing southbound access to the highway. Similarly, the existing highway is proposed to become a service road adjacent to the proposed London Road interchange.

The majority of the remaining intersecting roads and property access would be restricted to 'left-in' and 'left-out' except where local roads are proposed to be truncated thereby restricting access the highway. In these locations, service roads have been proposed.

Ultimate Upgrade – Freeway

For the ultimate upgrade, access to the freeway would be provided via grade-separated interchanges connected to the local road network by service roads. The grade separated interchanges would be located at:

- Armstrong Interchange (Garden Gully Rd);
- Great Western Southern Interchange;
- Great Western Northern Interchange / Bests Road; and
- London Road.

Waterway Crossings

The proposed alignment would involve crossing of four significant waterways (ten crossings) and 28 minor waterways.

It is proposed that the type of waterway crossing treatments for the Project would typically match those of the existing highway. This means that where there is an existing culvert, a culvert is proposed for the duplicated highway, and where there is an existing bridge, a bridge is proposed for the duplicated highway.

The piers of any bridges would be constructed outside of the low flow channel extents. In order to prevent exacerbation of flooding it is likely that some existing bridges would require upgrades to accommodate the duplicated crossing. Preliminary flood modelling has been completed for key crossings and has informed the EES. Further flood modelling during detailed design would be required to confirm waterway crossing design details.

Railway Crossings

Two new crossings of the Melbourne – Adelaide railway line are proposed between Ararat and Stawell, each adjacent to an existing railway bridge, at Armstrong and approximately 5km east of Stawell.

Access arrangements regarding construction work over and in the vicinity of the railway line would be agreed between VicRoads and the Australian Rail Track Corporation. This agreement would identify when construction activities can occur, which would predominantly be between train movements (which are not frequent) or after hours. Although unlikely, it is possible that operation of passenger trains could be suspended for a short period to allow construction work to occur. In this case, a bus service could temporarily replace passenger train services for the construction period.

Bicycle and Pedestrian Usage

Based on VicRoads Access Management Policies and road rules, it is anticipated that cyclists would be able to continue using the Western Highway between Ararat and Stawell for both the interim and ultimate upgrade, provided road access signs do not prohibit cyclists. The proposed 3m sealed shoulder is sufficient width to allow for cyclists.

No specific provisions have been included within the design for pedestrians

Lighting and Traffic Signals

Street lighting would be provided in accordance with VicRoads standards at all freeway interchanges and wide median treatment intersections.

No traffic signals are proposed for the Project.

Speed Limits

The AMP1 section of the highway has been designed to 120 kilometres per hour (km/h) and would have a posted (signed) speed limit of 110km/h) on the main carriageways. The AMP3 section from Pollard Lane to Main Divide Road in Ararat has been designed to 110km/h and would have a posted speed limit of be 100km/h.

The proposed posted speed limit on exit ramps and crossroads is 90km/h, and 70km/h on service roads, with lower advisory speed limits at designated areas. These posted speed limits would apply to both the interim and ultimate upgrades for the Project.

Rest and Truck Stops

New northbound and southbound truck stops are proposed between Ararat and Stawell.

For the southbound carriageway, a truck parking bay has been proposed at approximately Ch. 9000 - 9500.

For the northbound carriageway, a new truck parking bay has been proposed at approximately Ch. 19000-19800.

Landscaping

Some vegetation in the road reserve which currently screens views to and from the highway would be removed for the Project. Landscaping for the Project would be undertaken in accordance with VicRoads Roadside Planting Guidelines (VicRoads 2010). The design and species selection for landscaping would be in keeping with the existing landscape.

Construction Sequencing and Working Hours

Once planning and environmental approvals are obtained, the two main activity sequences which follow are pre-construction and construction. The pre-construction phase would involve land acquisition and detailed design. Tendering the contract for construction would also occur during this period.

Construction is expected to be undertaken over a period of up to three years, subject to the availability of future funding.

Construction work for the Project would be undertaken during the standard hours for construction work as set out in VicRoads specifications, which are:

- Monday to Friday: between 7 am or sunrise (whichever is the later) and 6 pm or sunset (whichever is the earlier); and
- Saturday: 8 am to 2 pm typically.

Construction outside of the standard hours is likely to be minimal and would be subject to approval by VicRoads and notification of affected members of the community.

Upon completion of the works, the construction site would be progressively landscaped and re-vegetated, including reinstating topsoil, seeding, planting trees and shrubs, installing weed mats and mulch, and installing any design elements, as required.

Operation and Maintenance

Key operational activities would be the on-going road maintenance consistent with current VicRoads practices and standards. Assets to be maintained would include landscaping, stormwater drains, bridges, road pavement, signage, barriers and line marking.

Risk Assessment

A detailed environmental risk assessment for the proposed alignment was completed to characterise risks and identify appropriate responses. The environmental management measures which are required of all VicRoads construction projects, were assumed as a starting point. Additional project specific management measures were also recommended to reduce risks in some cases.

All management measures identified as part of the risk assessment have been included in the Environmental Management Framework presented in the EES. This Framework would inform development of a Project Construction Environmental Management Plan (CEMP).

Impact Assessment

The following sections provide an overview of each of the technical impact assessment studies completed for the EES, the predicted impacts and management responses recommended.

Planning and Land Use

The Planning and Land Use Assessment examined the potential effects of the Project on land use, zoning and public infrastructure and consistency with the Ararat and Northern Grampians Planning Schemes and other relevant planning strategies.

The study area spans part of Ararat Rural City and Northern Grampians Shire. It includes land that has been developed for grazing, cropping, viticulture, olive growing and residential and rural residential purposes. The Melbourne-Adelaide Railway line is within the study area, extending in part along the existing highway.

The assessment found that most land uses and planning related impacts would be experienced during the construction phase and therefore would be short term only. These include potential impacts on existing infrastructure due to the temporary relocation and/or disconnection of services, potential impacts on amenity such as noise and dust emissions, traffic disruptions and changes to landscape due to vegetation removal. Noise, dust, traffic and landscape impacts have been investigated through specific studies in this EES and would be managed to an acceptable level through the

implementation of the Project Construction Environmental Management Plan (CEMP).

The proposed alignment has been designed to minimise impacts on existing land uses by varying the corridor to accommodate either land uses on private property or to avoid significant vegetation where possible. It is expected that there would be limited change to existing agricultural land use patterns or to future planned land uses and developments as a result of the Project. Overall, land acquisition impacts on individual land holdings have been minimised as the proposed alignment generally utilises the existing road corridor for the majority of the study area. Compensation for land acquisition impacts would be provided in accordance with the *Land Acquisition and Compensation Act 1986.*

The Project would result in longer term benefits for the economy and tourism in the area due to improved accessibility following the duplication of the highway. It would also deliver benefits for Great Western township in particular, due to the diversion of freight and other vehicles out of the town centre, thereby improving the safety and amenity of the town.

The Planning and Land Use assessment concluded that the Project as a whole would not result in any significant inconsistency with planning policy, nor would it result in any broad change of land use within the study area.

As part of the planning assessment, draft planning scheme amendments have been prepared to the Ararat and Northern Grampians Planning Schemes to facilitate the acquisition of land by VicRoads (by applying a Public Acquisition Overlay) and the construction of the Project without the need for planning permits.

Traffic and Transport

The Traffic and Transport Assessment examined the extent to which the Project is expected to address road safety, accessibility, transport efficiency and capacity as outlined in the Project Objectives. It also examines how the Project would affect road users during both the construction and operation phases. The Traffic and Transport Assessment also considered the relevant differences between the interim (AMP3) upgrade and the ultimate (AMP1) upgrade.

It is expected that the Project would provide benefits to road users including:

- Increased capacity, which would enable the highway to accommodate the expected future traffic volumes;
- Travel time savings by a reduction in the number of intersections, continuous overtaking opportunities and removing the need to reduce speed through townships;
- Increased safety by reducing traffic volumes within Great Western, continuous overtaking opportunities, grade separated intersections for AMP1, improved alignment geometry and treatment of roadside hazards;
- Improved efficiency and safety for freight; and
- The potential to reduce the traffic on local roads due to the Western Highway becoming the preferred route.

It is anticipated that some local landowners may have slightly increased travel times in both the interim and ultimate upgrade due to reduced access to the highway. However, there are sufficient opportunities to complete a U-Turn that this is not anticipated to be a significant issue. In addition, agricultural machinery is not permitted on freeways, and therefore alternative access arrangements would be required for transport of these vehicles under the ultimate AMP1 configuration.

The majority of adverse impacts are expected to occur during the construction phase of the Project where is it expected that there would be short term impacts on the operation of the existing Western Highway, including potential impacts to road safety through a change in road conditions, and a reduction in transport efficiency. Construction of the Project would be staged and traffic management plans would be implemented to reduce these impacts. It is expected that the potential impacts from the construction would be acceptable and that the Project would ultimately result in a net benefit to the community.

Soils and Geology

The Soils and Geology Assessment examined the potential for Section 3 of the Project to encounter adverse geological conditions, affect soil stability, cause soil erosion or expose contaminated or acid sulfate soils (ASS).

There is limited information on the soil properties and characteristics of the study area at this stage of project development and so specific areas which may be more susceptible to soil erosion cannot be accurately identified. However, there is a medium risk of encountering unstable geological units which may contribute to soil erosion, associated with softer alluvial sediments and historical mine workings. Standard construction management approaches have been recommended in this EES and site specific soil erosion management plans would be developed as part of the Project CEMP.

Detailed geotechnical site investigations, complemented with appropriate design of temporary and final batter slopes would largely eliminate issues of gross ground instability and minimise the potential for soil erosion.

Preliminary earthwork estimates suggest a large quantity of imported fill material would be required. Fill material would be sourced from surplus materials from site and additional sources such as local quarries. Where soils are to be imported to the site, all soils would need to comply with relevant legislative requirements to prevent the importation of contaminated materials.

Exposure to contaminated soils and ASS represent a potential risk to human health and the environment. ASS have not been identified within the study area based on the preliminary assessment. Pyritic and sulphidic rock both outcrop along the proposed alignment and these rock types potentially cause acid production when exposed during excavation. Therefore, targeted sampling would be required prior to construction, particularly in locations where infrastructure such as bridge supports would be installed at depth.

Construction activities also present a risk of contamination through fuel and chemical spills. These risks would be adequately managed, firstly through the identification of contaminated soils and spill risks and then by proper management via the Project CEMP.

Along the alignment is also the potential to encounter asbestos bearing rock (Ch. 2800 to 10000) which, if crushed, could release asbestiform fibres into the environment. Selected sampling would be required prior to construction to accurately determine risk, while a CEMP would provide guidance for appropriate action where required.

Based on a review of previous and current land use, the potential for localised contamination in the study area is considered to be moderate. Several features were identified that indicate potential for land contamination. These include:

- The former Great Western Landfill site;
- Farming/shearing sheds (often associated with sheep dips);
- Railway lines (historic land management practices);
- Areas of disturbed soils (potential sites of buried waste); and
- Historic mining works.

As part of the Project, potential impacts arising from contamination sources would be managed through the CEMP. In addition, discussions have been held with the EPA associated with the proposed alignment extending through part of the former Great Western Landfill and a process identified to manage impacts.

As discussed with EPA, the waste material from the area of landfill intersected by the proposed alignment would be relocated. This could result in an overall improvement in the containment and management of the waste material through upgraded storage conditions that meet current EPA regulations.

Groundwater

The Groundwater Assessment examined the potential effects of the Project on groundwater and its beneficial uses under the State Environment Protection Policy (SEPP) (Groundwaters of Victoria) as well as the potential for groundwater to impact on road construction and the structural integrity of the road.

Regional bore water information and mapping indicates that the salinity of the groundwater in the study area is relatively high with levels ranging from 1,500mg/L to 3,000mg/L of Total Dissolved Solids (TDS) near Stawell, to over 7,000mg/L TDS elsewhere. High salinity levels mean that groundwater in the area has limited extracted value, generally only suitable for stock watering and industrial use. Groundwater with lower salinity levels is suitable for irrigation, although water above 1,500 to 2,000mg/L TDS may cause plant stress. The SEPP (Groundwaters of Victoria) defines beneficial uses of groundwater, based on the existing groundwater quality (salinity).

Regional mapping by the Department of Primary Industries has identified a number of Groundwater Dependent Ecosystems (GDEs) in the study area that potentially use groundwater to some extent, although they may not necessarily be dependent on it. Limited data is currently available to assess whether or not these GDEs are actually dependent on groundwater. However, the higher salinity groundwater in much of the study area would not be conducive to plant growth.

There is limited development of the groundwater resources in the region therefore further investigation of groundwater depth, flows and quality would be required prior to construction. The program would be characterise the groundwater occurrence to inform the engineering design of the area of large cutting, particularly north-east of Great Western. However, based on the information available and considering that the project has few

areas of deep cut proposed, the information was suitable to inform the impact assessment.

The key risk considered in the impact assessment was the intersection of groundwater during construction. Although it is considered that the likelihood of this occurring is low, it cannot be discounted that groundwater may be unexpectedly encountered at localised areas along the alignment. If groundwater was intersected during construction it is expected that the impact of this event would range from insignificant to moderate depending on the location in which groundwater was intersected. Adoption of a Groundwater Management Plan would assist in managing impacts to groundwater and as a consequence, the overall impacts on groundwater would be negligible to low.

The proposed alignment passes through the former Great Western Landfill and an existing quarry. The deepest cuts of the alignment would occur within this area and would be a similar depth to the quarry. Geotechnical investigations would be required to characterise the groundwater occurrence and quality and inform the engineering design of the cutting in this area, however, preliminary indications are that groundwater is unlikely to be encountered as part of the cut for the proposed highway.

In assessing the impact to groundwater in the environmental risk assessment, the majority of risks associated with the Project have been assigned a negligible likelihood of occurring, as most of the Project would either be constructed above the existing grade or with small excavation depth and therefore, there would be limited opportunity for direct interaction with the groundwater environment. Management measures have been recommended to protect and maintain groundwater availability and quality.

Overall, it is concluded that the potential impacts to groundwater as a result of construction and operation of the Project would be insignificant to minor.

Surface Water

The Surface Water Assessment examined the potential effects of the Project on surface water environments including water quality, hydrology and waterway health.

The proposed alignment follows the existing highway on either side of Great Western. It crosses four significant watercourses including Concongella Creek (7 crossings), Allanvale Creek, Robinsons Creek and Donald Creek, and 28 minor waterways. Where the proposed alignment deviates from the existing highway to bypass Great Western, there are three new crossings proposed of significant waterways (two of Concongella Creek and one of Allanvale Creek).

Aquatic ecological surveys of the waterways were undertaken by Ecology Partners (2012) and no national or State significant aquatic species were identified.

The key risks are associated with impacts to river health and hydraulic impacts to waterways and floodplains due to the construction of waterway crossings and embankments. Construction of waterway crossing structures has the potential to impact on waterway health through disturbance to the bed, banks, vegetation, and aquatic fauna movement.

Existing waterway crossing structures would be upgraded and duplicated with a similar type of crossing structure (for example a culvert would be replaced with a culvert), retaining or enhancing the ability to convey flood waters and minimise river health impacts.

North of the crossing of Concongella Creek at Armstrong (Ch. 8200), the proposed alignment is located parallel to or over 140m of the creek. This would require the realigning of the creek into the adjacent paddock.

For locations where there are existing crossings of significant waterways (other than Concongella Creek at Ch. 8200) the river health impacts are minor, predominately on the basis of there being an existing crossing already causing a river health impact.

In two locations where new crossings are proposed and where realignment of Concongella Creek is proposed, the impacts are considered to be moderate. However, with appropriate measures developed through detailed design, the consequence could be reduced from moderate to minor.

Most of the study area is located within the Concongella Creek subcatchment. Concongella Creek is the predominant waterway in the study area with many tributaries, which flow north westerly and cross the existing highway in multiple locations.

Construction of the Project would result in changes to floodplain characteristics. Changes to the characteristics of Concongella Creek and its tributaries could result in potential impacts to rural properties and to Great Western township.

There is the potential to impact floodplain function and flow conveyance, particularly during peak events. The preliminary modelling indicates that the level of flood protection for the existing road is relatively low and showed that:

- The existing highway restricts flood waters at a number of waterway crossings;
- The modelled 100 year Average Recurrence Interval flood extent upstream of the existing highway stretches for several hundred metres, affecting property and dwellings in some locations; and

- There are a number of crossings where a significant portion of flood waters currently overtop the existing highway.

The potential flooding impacts of the Project can be summarised as follows:

- Potential flooding impacts to Great Western township would be major (given the township scale affected) but can be reduced to minor subject to detailed flood modelling and detailed design of the road and waterway crossings.
- Potential flooding impacts to rural properties with dwellings at significant crossing locations would be moderate, but can be reduced to minor subject to detailed flood modelling and detailed design of the road and waterway crossings.
- Potential flooding impacts at rural properties with no dwellings at significant crossing locations are minor.
- Potential impacts to minor waterway crossings were considered to be minor because potential impacts are local and no upstream properties are likely to be affected.

The preliminary flood modelling showed that the Project could be implemented without worsening the flooding impacts in the Great Western locality; however this would require mitigation measures to be implemented to restrict flood waters. Detailed design of the road and waterway crossings, and flood modelling would be required to confirm where and how restricting the flows upstream would benefit Great Western.

Overall, the Project would provide opportunities to improve existing conditions of waterway reaches within the vicinity of the works, as well as improve existing fragmentation caused by the existing highway by redesigning crossings (e.g. by oversizing waterway crossings). The project could also provide water quality treatment outcomes that are better than existing conditions.

Concongella Creek

Biodiversity and Habitat

A Biodiversity and Habitat Assessment was conducted between October 2010 and January 2012. These included preliminary assessments of native vegetation and habitat values and targeted surveys for nationally significant and State significant species.

The assessment identified two species that are listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) (which are also listed under the State *Flora and Fauna Guarantee Act* 1988) that would be impacted by the Project. These species are:

- Golden Sun Moth (Critically Endangered); and
- Trailing-hop Bush (Vulnerable).

The assessment also identified seven additional State listed species that would be impacted by the Project:

- Emerald-lip Greenhood (rare, on DSE advisory list);
- Rising Star Guinea-flower (rare, on DSE advisory list);
- Rosemary Grevillea (rare, on DSE advisory list);
- Barking Owl (FFG Act listed, endangered, on DSE Advisory list);
- Brown Toadlet (FFG Act listed, endangered, on DSE Advisory list);
- Brown Treecreeper (south-eastern ssp.) (near threatened, on DSE Advisory list); and
- Brush-tailed Phascogale (FFG Act listed, Vulnerable, on DSE Advisory list).

The assessment also found that the Project transects three bioregions (Goldfields bioregion (GB), Central Victorian Uplands bioregion (CVUB) and Wimmera bioregion (WB)) and would intersect five Ecological Vegetation Classes (EVCs) of varying quality. These are:

- Plains Grassy Woodland (endangered in all three bioregions);
- Grassy Woodland (Vulnerable, in GB, endangered in CVUP and WB);
- Creekline Grassy Woodland (endangered in all three bioregions);
- Grassy Dry Forest (depleted in all three bioregions); and
- Heathy Woodland (depleted in all three bioregions).

Due to the size of the Project and its linear nature, some impacts on native vegetation and habitat are unavoidable. As such, priority was given to avoiding impacts on native vegetation and fauna habitat that are EPBC Act listed or of Very High or High conservation significance; however it was still

considered important to reduce impacts on as many ecological values as possible within the study area.

Through alignment design changes, avoidance of significant amounts of matters of NES was achieved. However, it was not possible to entirely avoid impacts on matters on NES. Therefore, it is expected that the Project would remove up to 21 Trailing-Hop Bush plants and up to 29.92 hectares (ha) of confirmed and 99.94ha of potential Golden Sun Moth habitat.

For Golden Sun Moth the impact of the Project as rated for the project area, was considered to be moderate as the Project would result in removal of greater than 1% of the project area population but less than 1% of the regional area population of this species.

For Trailing Hop-Bush the impact of the Project was considered to be minor as the Project would result in removal of less than 1% of the project area population. The impact to Trailing Hop-bush from the Project would be further reduced as individuals of this species would be translocated.

It is considered that the impacts on State listed species would be minor as the Project would impact on less than 1% of the regional populations of these species.

The Project would impact on approximately 133 hectares of EVCs (of which approximately 116 hectares are of Very High conservation significance). This is considered to be a moderate impact as it would result in a loss of 0.1 - 1% of the area of EVCs of Very High or High conservation significance within the region and the losses of EVCs are expected to be able to be offset in accordance with Victoria's Native Vegetation Management policy.

Consent from the Minister for Environment and Climate Change is required for the removal of vegetation of 'Very High' conservation significance.

The Project could also result in the loss of up to 882 Large Old Trees (LOTs) within remnant native vegetation patches, 792 of which are of Very High conservation significance. An additional 79 scattered old trees may be removed as a result of the Project.

Mitigation measures including detailed design should reduce the number of LOTs within remnant native vegetation patches and scattered old trees impacted by the Project. It is expected that the actual number of LOTs and scattered old trees impacted would be less than these totals because management measures, including micro-alignment during detailed design and construction planning, would be implemented to minimise the number of LOTs and scattered old trees impacted. It is expected that the impact on LOTs and scattered old trees would be moderate.

Further minimisation of impact on matters of NES and State significance would also be able to be achieved through micro-realignment of the road in the detailed design phase.

VicRoads would be required to obtain offsets for vegetation losses in accordance with Victoria's Native Vegetation Management – A Framework for Action and the Environmental Offsets Policy – Consultation Draft under the EPBC Act Environmental Offsets Policy. Preliminary investigations indicate that offsets are available and that VicRoads could source appropriate offsets from one or a combination of BushBroker, Trust for Nature, the VicRoads Net Gain Bank and private offset brokers.

Golden Sun Moth (Source: EHP 2012)

Aboriginal Cultural Heritage

To assess the impact of the Project on Aboriginal cultural heritage places, the following tasks were completed:

- Consultation with Aboriginal Affairs Victoria (AAV), Martang Pty Ltd and Barengi Gadjin Land Council Aboriginal Corporation (the Registered Aboriginal Party (RAP) Applicant);
- Desktop study;
- Standard Assessment under the provisions of the *Aboriginal Heritage Act 2006*; and
- Mortuary tree assessment.

The study area contains 10 identified Aboriginal cultural heritage places. The proposed alignment would directly encounter six registered Aboriginal cultural heritage places: three of which are of minor significance (artefact scatters) and three of moderate significance (scarred trees). The proposed alignment has been designed to avoid Sisters Rocks and minimise the extent of change to culturally sensitive views from Sisters Rocks to the Black Ranges. The places of Aboriginal cultural heritage value which would be impacted are of minor to moderate significance, therefore resulting in an overall minor to moderate impact on Aboriginal cultural heritage.

The locality has the potential for the presence of Aboriginal mortuary trees (a significant type of Aboriginal place where human remains and grave goods have been placed within the hollow of a tree

trunk or branch). However, no mortuary trees with human remains were found during the mortuary tree assessment and inspections carried out for the proposed alignment.

In the unlikely event that human remains are discovered during the construction of the Project, there are strict contingency measures which are required to be met in accordance with Section 18 (2) (b) of the *Aboriginal Heritage Act 2006*.

In accordance with Section 49 of the *Aboriginal Heritage Act 2006* a Cultural Heritage Management Plan (CHMP) is required for the Project. A complex assessment and final CHMP will be completed subsequent to the EES process and submitted to AAV and the RAP Applicant for evaluation and approval by AAV.

The CHMP would include management recommendations which detail the approach to managing potential impacts on Aboriginal cultural heritage sites.

Historical Cultural Heritage

Within the study area there are 12 registered historical sites. Following inspection of existing registered sites, archival research and community consultation, four previously unregistered sites were submitted to Heritage Victoria for listing on the Heritage Inventory under the *Heritage Act 1995* and two previously unregistered sites were recommended for submission to the Rural City of Ararat and Northern Grampians Shire respectively for consideration of inclusion in the Heritage Overlay in the Ararat and Northern Grampians Planning Schemes.

Of the registered and identified historical sites, a total of 13 sites would potentially be impacted by the proposed alignment. All 13 sites are of local historic significance and are listed with the Heritage Inventory and two (Great Western Lead Mine site and Sisters Rocks Graffiti Site) are listed as historic sites on Crown land by the Department of Sustainability and Environment (DSE). It is noted that four of these 13 sites have been registered as a result of the Project.

The proposed alignment would result in an overall moderate impact to Non-Aboriginal (historical) cultural heritage due to the small number of locally significant sites requiring removal or relocation.

An Environmental Management Plan (EMP) would be prepared which would include contingency measures to manage the unexpected discovery of previously unregistered and assessed historical cultural heritage sites and features.

Air Quality

The Air Quality Assessment examined the potential effects of the Project on air quality considering the requirements of and compliance with the State Environment Protection Policy (Air Quality Management) and identified strategies for management of effects of dust on sensitive receptors during construction.

The Project would result in generation of dust from construction activities and gaseous pollutants due to traffic movements during operation. Air quality impacts from construction are expected to extend beyond the construction corridor, with slightly greater effects noted to the west of the road than to the east due to meteorological behaviour. Construction dust has a predicted maximum impact zone of 520m from the western edge of the construction zone and 470m from the eastern edge of the construction zone.

There are approximately 117 potential sensitive receptors (dwellings) within study area. Of the 117 receptors, two thirds are situated adjacent the alignment. The remaining third are situated within, or on the western side of Great Western. There are 24 potential farms growing primary produce such as olive groves and vineyards within the study area.

During construction, up to seven primary production farms within 520m of the construction zone (to the west), and five primary production farms east of the construction zone would experience a temporary exceedance of air quality standards.

In order to reduce impacts associated with dust on sensitive receptors, implementation of management measures, such as dust suppression techniques, keeping construction vehicles to well defined haulage routes, and additional dust management controls such as scheduling construction works around bud burst season (late spring), are expected to result in insignificant to minor impacts.

As there are already vehicles travelling along the existing Western Highway, there are already vehicle emissions in the study area. It is expected that the increase in operational emissions from the Project would be negligible. As such, the impacts from vehicle emissions during operation of the Project are expected to be insignificant.

In addition, the assessment found that operational emissions and construction dust are not expected to affect domestic water supplies and all of the assessed air pollutants from vehicles using the road are predicted to be below the Intervention Level for Air Quality Management used in Victoria.

Noise and Vibration

The Noise and Vibration Assessment examined the existing ambient noise environment and the potential impacts that the Project could have on sensitive receivers (in this case, mostly dwellings).

The assessment found that the construction of the Project would have the potential to create adverse effects from noise and vibration at some sensitive receivers. Construction during the day is considered to be of negligible risk as management techniques including noise reduction technology on machinery would be implemented and generally, receivers are not as sensitive to noise during the day. Construction is considered to be of higher impact during the evenings, at night and at weekends, although evening, night time and weekend construction is only expected to occur in exceptional circumstances. Evening, night time and weekend construction noise impacts would be managed by consulting with potentially impacted residents and implementing a noise mitigation strategy.

Energy from construction activities can also be transformed into vibration. No significant vibration effects on human comfort are predicted; however vibration may be just perceptible at residences within approximately 50m of construction activities involving equipment such as rolling and compacting machinery. The vibration from rolling and compacting activities would be considered intermittent and short-term and likely to be tolerated if prior warning is given to the resident. Fourteen sensitive receivers have been identified within approximately 50m of the proposed alignment and may experience vibration impacts during construction. While vibration levels during construction could be noticeable at these dwellings, the vibration levels are not expected to be sufficient to cause damage to the structural integrity of the buildings and infrastructure.As a precaution, the construction contractor should undertake a property inspection for any buildings, structures or utilities located within 50m of construction works.

Noise modelling was also undertaken to predict the operational impact of the Project on the surrounding area, by considering predicted traffic volumes at completion (estimated as 2016), and 10 years into the future (2026). Results were compared with predicted traffic noise levels from the existing Western Highway in 2026.

The model predicts operational noise levels would increase when compared to the present, predominately due to increases in traffic which are anticipated regardless of whether or not the project proceeds. In some areas, the proposed alignment would be closer to sensitive receivers than the existing Western Highway and therefore the potential for impact is greater. In other cases, the proposed alignment would be further away from sensitive receivers, reducing noise levels.

Based on a comparison of predicted traffic noise levels from the existing Western Highway in 2026 and the predicted traffic noise levels from the proposed alignment for the same year, the Project is expected to result in slightly more dwellings experiencing a clearly noticeable reduction in traffic noise (decrease of 5dB(A) or more) than a clearly noticeable increase in traffic noise (increase of 5dB(A) or more).

The impact assessment identified that there are sensitive receptors, particularly north-east of Great Western, that would require further investigation to confirm if noise mitigation measures would be required.

Further acoustic assessment following completion of the detailed alignment design would be required to clarify areas and the extent to which noise attenuation may be required. Noise attenuation would be considered for the affected properties however, normal road wear and tear is expected to reduce these levels to within policy guidelines.

Visual and Landscape

The Visual and Landscape Assessment examined the potential effects of the Project on landscape character and the visual amenity of residents.

As part of this assessment, landscape character types were defined for the study area to assist in determining the ability of the landscape to accommodate the Project. The majority of the proposed alignment is adjacent to the existing highway and within the 'Vegetated Highway' landscape character area. It has been established that this landscape character area has a high capacity to accommodate change and the Project would not significantly diminish the landscape character of this area with the incorporation of mitigation measures, including roadside tree planting and the retention of existing roadside vegetation where possible. Where there is a new alignment or where the existing highway alignment would be elevated, there would be a visual impact on the nearby dwellings.

The proposed alignment would have a moderate impact on the areas of cultural or natural significance, such as Sisters Rocks. These potential impacts from the Project can be reduced through sensitive design and screening vegetation.

Many dwellings located along the existing highway have an existing view encompassing the highway. Therefore, where the alignment utilises the carriageway of the existing highway, the anticipated visual impact upon these dwellings is considered to be minor. Where the duplication deviates around Great Western and is elevated or at-grade, the impact upon dwellings is considered higher due to changes in the physical landscape. However, with sensitive mitigation, such as sensitive design and screening vegetation, these impacts would be reduced.

Key areas where the landscape character is likely to be diminished include the proposed interchanges at Armstrong, Great Western and London Road where the alignment deviates from the existing Western Highway corridor and where new road structures are inserted upon 'Vegetated Rural' or 'Rural' landscape character types.

The visual impact and risk ratings on 'Vegetated Rural' and 'Rural' landscapes could be reduced with careful mitigation, including the sensitive design of road infrastructure and planting characteristic of the locality.

By utilising the existing Western Highway alignment through the majority of its length, the proposed alignment reduces its visual impact upon dwellings, landscape character, townships and natural and cultural visual values. In areas where impacts are unavoidable, suitable mitigation measures can be incorporated to reduce the impacts and risks to acceptable levels. Therefore, the Project is considered to have an overall minor impact on visual and landscape characteristics.

Social

The Social Impact Assessment (SIA) examined the existing social and community conditions in the study area and the potential impacts that the Project could have on individuals and communities.

The SIA identified that the community within the study area has strong social linkages and a high degree of resilience. Community attitudes towards the Project were mixed. Community members expressed concerns about potential amenity impacts, including an increase in noise levels and impacts on visual amenity. Concerns were also raised about the potential social impacts of property acquisition, severance of agricultural land and changes in access arrangements to local properties and valued places such as Seppelt's Winery, Best's Winery, Stawell Park Caravan Park, Sisters Rocks and Grange Golf Club. The Project would not significantly affect access to any major community facilities or any tourism attractors, but may in fact encourage people to visit local towns and community services and facilities more frequently due to improved road safety and travel times. It is anticipated that the majority of the local community would accept slightly longer travel distances as there will be a trade-off against:

- Reduced travel times due to the improved road conditions;
- Safer driving conditions; and
- Safer access to and from side roads and properties.

The SIA considered the potential social impacts of the bypass of Great Western. The bypass is situated to the north-east of the township, with a half diamond interchange near Delahoy Road for north-bound traffic and a half diamond interchange near Briggs Lane / Bests Road for south-bound traffic. The community of Great Western raised concerns about the impact of the potential loss of passing trade due to the bypass, but also acknowledged that the bypass could increase amenity and safety within the town, which may encourage increased development. The SIA notes that a signage strategy could be developed to promote the town to travellers and tourists, to support businesses within the town.

The SIA identified that the key social impacts from the Project are expected to be:

- Changes in access arrangements and a slight increase in travel times for some individuals due to restrictions on some local road and property access, although these impacts are expected to be offset by an increase in safety, particularly in Great Western township; and
- Amenity impacts including increased noise levels for some individuals during construction and operation, and changes to visual amenity for some individuals.

Overall, the social impacts of the Project are considered to be low. However, for some impact pathways, including amenity during construction and operation and accessibility changes for individuals, there is still a residual risk rating of medium.

The SIA identified that most community members are tolerant of short-term amenity impacts from construction as they are cognisant that they would ultimately benefit from the Project. VicRoads would compensate owners of property that is acquired in accordance with the *Land Acquisition and Compensation Act 1986*.

Economic

The Economic Impact Assessment explored the potential economic effects of Section 3 of the Western Highway Project on the local community and the wider region.

During construction, the Project is expected to create approximately 1,536 Full Time Equivalent (FTE) jobs. These are jobs directly and indirectly involved in construction of the Project. Flow on effects to the wider community are expected (sourcing of goods and services and expenditure by workers and their families) to create around 2,856 FTE jobs.

The operation of the Project would result in significant economic benefits totalling around $140.7M over a 30 year operating life due to vehicle operating cost savings, travel time savings, crash cost savings, externality savings and residual savings.

It is expected that the Project would enhance connections between the local agricultural industry and the Port of Melbourne. The Project would also have benefits for the tourism industry by allowing more efficient and safer movement of people to and through the area.

The construction of the Project would result in the loss of agricultural facilities and infrastructure valued at approximately $1 million over a 30 year timeframe. The Project would also result in the loss of agricultural land and severance of properties with an economic impact on agricultural businesses estimated to be approximately $1.3 million over a 30 year timeframe. VicRoads would compensate eligible landholders in accordance with the *Land Acquisition and Compensation Act 1986* which reduces the impact to insignificant.

It is expected that the Project may disrupt access to non-agricultural businesses during construction, resulting in a revenue loss estimated to be less than $100,000 over a three year period. VicRoads would work with businesses to optimise construction schedules which would reduce the impact to insignificant. The loss of passing trade for businesses has also been estimated to be in the range of $100,000 to $1 million over a 30 year timeframe, most significantly in Great Western.

The cumulative impacts of the Project have been considered in relation to the town of Great Western. The potential impacts on businesses in the main street of Great Western are the most significant. There is a risk of a cumulative effect if several businesses in the town becoming unviable due to loss of passing, causing the town to become less liveable, and resulting in loss of population and potentially, reduction in numbers in schools and sporting clubs.

The completion of the sewerage project in Great Western, and subsequent residential development, along with its development as a draw-card wine village, would mitigate effects of lost passing trade and has the potential to attract new businesses to the township. Accordingly, there is a moderate risk that the Project could detrimentally impact on Great Western, but with mitigation measures such as detailed planning for the town, and consideration of a signage strategy to provide more prominence to the town for commuters on the highway, the potential negative impacts would be minor. However, the economic benefits of the Project are expected to be moderate.

Matters of National Environmental Significance

The Biodiversity and Habitat Assessment identified one EPBC listed flora species (Trailing Hop-bush, vulnerable) and one EPBC listed fauna species (Golden Sun Moth, critically endangered) that would be impacted by the Project.

During the Options Assessment process, matters of National Environmental Significance (NES) and vegetation of Very High and High conservation significance were deemed to be of highest conservation significance and priority was given to avoiding and minimising impacts on matters of NES where possible. However, it was not possible to entirely avoid impacts on matters on NES. Therefore, it is expected that the Project would remove up to 21 Trailing Hop-bush plants and up to 29.92 hectares of confirmed and 99.94ha of potential Golden Sun Moth habitat.

For Golden Sun Moth the impact of the Project, as rated for the project area, was considered to be moderate as the Project would result in removal of greater than 1% of the project area population but less than 1% of the regional area population.

For Trailing Hop-Bush the impact of the Project, as rated for the project area, was considered to be minor as the Project would result in removal of less than 1% of the project area population.

The impacts on the Golden Sun Moth habitat would be offset in accordance with the EPBC Act Environmental Offsets Policy. Offsets would be determined through negotiations with the Department of Sustainability, Environment, Water, Populations and Communities.

Trailing Hop-bush is listed as Vulnerable under the EPBC Act and as such, there are not likely to be any offsets required for impacts to this species. However, individuals that are impacted would be required to be salvaged and translocated in accordance with an approved Salvage and Conservation Management Plan, with translocated individuals managed and secured in perpetuity.

It is expected that VicRoads would be able to source appropriate offsets for this Project.

Environmental Management

The EES includes an Environmental Management Framework (EMF) incorporating all measures recommended to avoid, minimise and manage impacts that have been identified through the EES process. Whilst some of these measures are not strictly 'environmental', for completeness they are all included in the EMF.

VicRoads would develop a Project Environment Protection Strategy and contract specification(s) which would incorporate all environmental management measures as described in the EMF and any other requirements identified through the Minister's assessment of the EES and conditions of subsequent approvals. These documents would inform the detailed design and construction of the Project, including development of the contractor's CEMP.

VicRoads would be ultimately responsible for the implementation of the EMF, including net gain offsets for removal of native vegetation. Management measures relating to land acquisition and compensation will be in accordance with the *Land Acquisition and Compensation Act 1986*.

Conclusions of the EES

The EES for the Project has included an integrated assessment of the proposed alignment for the Project, considering a range of environmental, social and economic criteria. The proposed alignment was selected to achieve a balance between meeting project objectives and minimising negative impacts.

The Project is anticipated to deliver significant improvements to road safety and transport efficiency which would have a range of social and economic benefits.

The EES documents the predicted risks and impacts of the Project and recommends mitigation measures to reduce residual impacts to an acceptable level. The residual impacts of the Project are mostly of low significance. Further investigations are required to more accurately characterise potential impacts in some areas and appropriate management strategies have been identified should they be required.

Oddfellows Bridge, Western Highway