Report for Western Highway Project

Visual and Landscape Impact Assessment Report Section 3: Ararat to Stawell

Client: VicRoads

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1. Executive Summary

1.1 Introduction

VicRoads is progressively upgrading the Western Highway to a four-lane divided highway between Ballarat and Stawell (Western Highway Project). The Western Highway Project consists of three sections, to be constructed in stages. Section 3 (Ararat to Stawell) of the Western Highway Project (here within referred to as 'the Project') is the subject of this report.

1.2 EES Objective

On 27 October 2010, the Victorian Minister for Planning advised that an Environment Effects Statement (EES) would be required to identify the anticipated environmental effects of the Project. As part of the EES, a Visual and Landscape Impact Assessment is required to assess the potential visual effects of the duplication and address the following EES draft evaluation objective specified in the EES scoping requirements (September 2011):

- *To avoid or minimise air emissions, noise, visual, landscape, and other adverse amenity effects on local residents, during the development and operation of the proposed duplicated highway to the extent practicable.*

1.3 Assessment Objectives

In order to assess the duplication upon this objective, ASPECT Studios determined appropriate assessment objectives which were endorsed by VicRoads. These objectives, which form the basis of the Visual and Landscape Impact Assessment, are:

- *To minimise the impact upon the amenity of adjacent residents;*
- *To minimise the impact upon townships and cultural and natural values;* and
- *To minimise detrimental impact upon existing landscape character.*

1.4 Analysis

An existing conditions analysis was undertaken in order to inform the visual and landscape impact assessment. Relevant elements identified within the analysis include:

- Natural and cultural values;
- Dwelling locations and concentrations;
- Scenic views; and
- Landscape character types, their scenic value and sensitivity to change.

These attributes are then evaluated by the impact assessment.

1.5 Impact Assessment

The impact assessment has been undertaken in accordance with the EES Scoping Requirements. The assessment identified the level of visual change and thus impact rating of the proposed alignment upon the assessment objectives being dwellings, townships and places of natural and cultural value and landscape character. The tools utilised within the assessment included site investigations, Landscape and Visual Impact Plans, cross sections, 3D photomontages and viewshed analysis diagrams.

The impacts were evaluated utilising standard mitigation treatments utilised by VicRoads for projects of this type. In instances where impacts could be further reduced using non-standard mitigation, these measures are proposed and the resultant impact ratings identified. The overall impacts for each assessment objective are discussed below.

Impact on Residents

The existing residents who live along the highway are currently affected by the highway in terms of landscape and visual impact. Where the duplication occurs adjacent to the existing highway, the visual impact upon adjacent residents is low, as it is already an existing transport corridor.

Dwellings located adjacent to overpasses and the Great Western Bypass receive a higher visual impact and risk rating as the duplication inserts new carriageways and large scale road infrastructure upon visual outlooks that do not typically contain such elements. However, with careful landscape mitigation as described in Section 6.3 Table 6, the effects can be reduced to an acceptable level.

Impact on Townships and Cultural and Natural Values

The duplication typically results in an insignificant visual impact upon Great Western Town Centre and other places of natural and cultural value. However, the visual impact upon Outer Great Western and Sisters Rocks are comparably higher, resulting in a medium and high risk rating respectfully. These risks can be reduced to acceptable levels through the use of non-standard mitigation, comprising of screening vegetation and the sensitive design of road infrastructure.

Impact on Landscape Character Areas

The majority of the proposed duplication 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 the area with the incorporation of non-standard mitigation, including roadside tree planting and the retention of existing roadside vegetation.

Key areas where the landscape character is likely to be diminished include the Great Western Bypass, where the alignment deviates from the existing Western Highway corridor and where new road interventions such as overpasses and ramps are constructed upon 'Vegetated Rural' or 'Rural' landscape character types. However, with careful non-standard mitigation, including the sensitive design of road infrastructure and planting characteristic of the character types, the visual impact and risk ratings upon these character types are reduced.

1.6 Conclusion

Overall, 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.

This report, together with other technical reports prepared by GHD and other consultants as part of the EES, will inform VicRoads' detailed planning and design of the proposed alignment for the Project.

2. Introduction

2.1 Background

The Western Highway (A8) is being progressively upgraded as a four-lane divided highway for approximately 110 kilometres (km) between Ballarat and Stawell. As the principal road link between Melbourne and Adelaide, the Western Highway serves interstate trade between Victoria and South Australia and is the key corridor through Victoria's west, supporting farming, grain production, tourism and a range of manufacturing and service activities. Currently, more than 5500 vehicles travel on the highway west of Ballarat each day, including 1500 trucks.

The Western Highway Project consists of three stages, illustrated in Figure 1:

- Section 1: Ballarat to Beaufort
- Section 2: Beaufort to Ararat
- Section 3: Ararat to Stawell

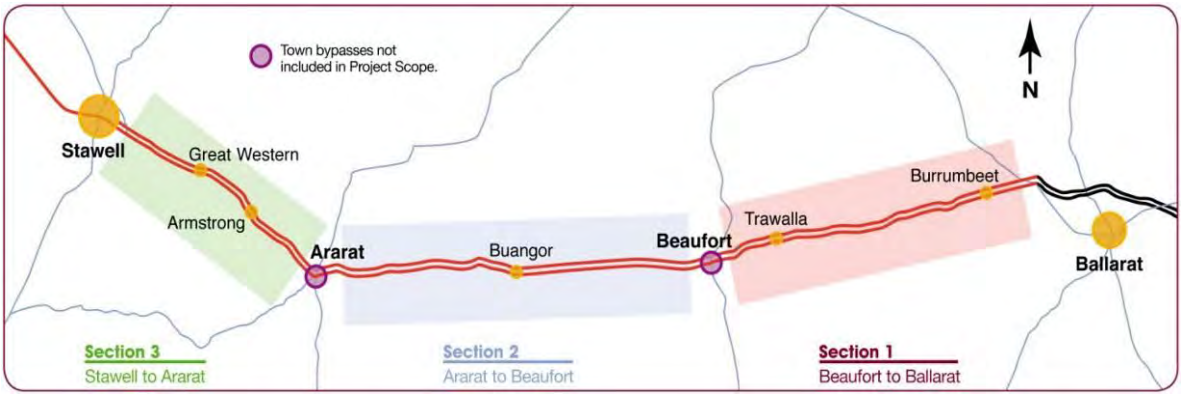

Figure 1: The Western Highway Project

Works on an initial 8 km section between Ballarat and Burrumbeet (Section 1A) commenced in April 2010 and will be completed in 2012. Construction for Section 1B (Burrumbeet to Beaufort-Carngham Road) commenced in early 2012 and is expected to be completed by June 2014. The last 3 km section from Beaufort-Carngham Road to Smiths Lane in Beaufort (Section 1C) commenced in late 2011 and will finish in 2012.

Separate Environment Effects Statements (EESs) and Planning Scheme Amendments (PSAs) must be prepared for both Sections 2 and 3. It is expected that Sections 2 and 3 will be completed and opened in stages through to 2016, subject to available funding.

Section 2 of the Project commences immediately west of the railway crossing (near Old Shirley Road) west of the Beaufort township and extends for a distance of approximately 38 km to Heath Street, Ararat.

Section 3 of the Project commences at Pollard Lane, Ararat and extends for approximately 24 km to Gilchrist Road, Stawell.

The EES will focus on assessment of the proposed ultimate upgrade of the Western Highway between Ararat and Stawell to a duplicated highway standard complying with the road category 1 (freeway) of VicRoads Access Management Policy (AMP1). The project includes a duplicated road to allow for two lanes in each direction separated by a central median.

The EES for the Project has also considered a proposed interim upgrade of the Western Highway to a highway standard complying with the VicRoads Access Management Policy AMP3. When required, the final stage of the project is proposed to be an upgrade to freeway standard complying with AMP1.

The proposed interim stage of the Project (AMP3) would provide upgraded dual carriageways with wide median treatments at key intersections. Ultimately the Western Highway is proposed to be a freeway (AMP1) where key intersections would be grade separated, service roads constructed and there would be no direct access to the highway.

To date $505 million has been committed for the Western Highway Project by the Victorian Government and the Australian Government as part of the Nation Building Program.

Highway improvements for the Western Highway Project would involve:

- Constructing two new traffic lanes adjacent to the existing highway, separated by a central median.
- Converting the existing highway carriageway to carry two traffic lanes in each direction.
- Constructing sections of new four-lane divided highway on a new alignment.

In addition to separating the traffic lanes, highway safety would be improved with sealed road shoulders, safety barriers, protected turning lanes, intersection improvements, and service lanes for local access at some locations.

Town bypasses of Beaufort and Ararat are not included in the current proposals. Beyond Stawell to the Victorian border, ongoing Western Highway improvements would continue with shoulder sealing works, new passing lanes and road surface improvements.

The aims/objectives of this Project are 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.
- Improve efficiency of freight by designing for High Productivity Freight Vehicles.
- Provide adequate and improved rest areas.
- Locate alignment to allow for possible future bypasses of Beaufort and Ararat.

2.2 Project and Study Areas

2.2.1 Project Area

The Section 3 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 generally up to 1500 metres (m) either side (east and west) of the edge of the road reserve, except around Great Western where the Project Area extends up to 1800 m (encompassing the extent of new alignment possibilities).

2.2.2 Study Area

The core Study Area for this landscape and visual impact assessment is the same as the Project Area described above. However, the study is not solely restricted to this area as there may be instances where visual impacts need to be investigated outside of the 1500 m proximity.

The Study Area is identified with Appendix A, Maps 1 and 2 – Study Area.

2.2.3 Proposed Alignment

A multi-criteria assessment of alignment options was conducted based on information from the existing conditions assessments. The outcome was the selection of a proposed alignment for further consideration in the EES for the Project. The proposed alignment and associated construction corridor is the subject of the risk and impact assessment presented in this report and are described in more detail in Section 7. The assessment of alignment options and selection of the proposed alignment is documented in Chapter 5 of the EES, and in the Options Assessment Report (Technical Appendix to the EES).

3. EES Scoping Requirements

3.1 EES Objectives

For the landscape and visual impact aspects of the Western Highway Project, the relevant draft evaluation objective outlined in the EES Scoping Requirements are:

- *To avoid or minimise air emissions, noise, visual, landscape, and other adverse amenity effects on local residents, during the development and operation of the proposed duplicated highway to the extent practicable.*

3.2 EES Scoping Requirements

The EES Scoping Requirements for landscape and visual impact aspects are as follows:

- *Characterise the existing landscape character, identify sensitive receptors (including dwellings, Sisters Rocks, Ararat Regional Park, including Ararat Hills Block and Block with McKays Circuit and Woodfines Track, Great Western Bushland Reserve, gold mining relics and shallow mine shafts, mining dams and water races, waterways and other recreational or community spaces) in the Project Area;*
- *Describe the significance of the landscape and its sensitivity to change;*
- *Identify the key features of the proposed project and relevant alternatives, which may result in visual and landscape effects during construction or operation;*
- *Identify and assess the potential changes to the landscape, and associated effects on visual amenity;*
- *Assess the capacity of the landscape as a whole to accommodate the project and any relevant alternatives without significantly diminishing the landscape character;*
- *Assess potential visual effects from key vantage points in the landscape including at sites of topographical prominence and sites with notable natural, scientific, cultural, recreational or aesthetic values. This assessment could involve the use of computer-based simulation of route options or parts of the route options to assist with the evaluation of landscape changes and visual effects;*
- *Assess potential effects of the project and relevant alternatives (including ancillary works, such as acoustic barriers) on identified sensitive receptors in the Project Area, including dwellings. This assessment should take into account relevant findings of the existing and future land use assessment;*
- *Assess the effects of the project on the visual and landscape character of the Project Area and adjoining areas taking into account distances and user group sensitivities to landscape modifications;*
- *Identify measures to avoid, minimise and/or mitigate visual and landscape effects; and*
- *Assess likely residual effects on the visual amenity of sensitive receptors and the landscape character within and adjoining the Project Area.*

4. Legislation, Policy and Guidelines

There is no legislation, policy or guidelines specifically relevant to the landscape and visual environment within the Study Area. However there are a number that provide some relevance that are discussed below.

4.1 Commonwealth Legislation

There is no relevant Commonwealth legislation specifically relevant to the landscape and visual assessment. There is however, Commonwealth legislation relating to environmental law:

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999*, any work that could significantly impact threatened flora and fauna species and vegetation communities listed under the EPBC Act requires referral to and potentially approval of the Minister for Sustainability, Environment, Water, Population and Communities.

4.2 State Legislation and Policy

There is no State legislation specifically relevant to the landscape and visual assessment. There is however, State legislation relating to environmental, planning and heritage law:

4.2.1 Flora and Fauna Guarantee Act 1988 (Victoria)

Under the *Flora and Fauna Guarantee Act 1988* rare, threatened and significant flora and fauna are protected.

4.2.2 Victorian Heritage Act 1995 – Victorian Heritage Register and Inventory

The Victorian *Heritage Act 1995* provides for the protection and conservation of places and objects of cultural heritage significance and the registration of such places and objects.

'Heritage Victoria' maintains a list of State-significant heritage places and objects which are protected under the Victorian *Heritage Act 1995*. The Victorian Heritage Register is the highest level of protection and lists the heritage places/objects.

The Victorian Heritage Inventory lists the archaeological sites in Victoria that are older than 50 years.

The value of heritage places and objects can be related to the landscape and visual setting.

4.2.3 Planning and Environment Act 1987 (Victoria)

The *Planning and Environment Act 1987* establishes a framework for planning the use, development and protection of land in Victoria. Under this Act, a Planning Permit is required to remove/disturb native vegetation and for other specified purposes within the Study Area.

For details of the local legislation and policy, including overlays that fall within the Study Area, refer to Section 4.3.

4.2.4 Native Vegetation Management Framework, 2002

The Native Vegetation Management Framework 2002 is implemented under the *Planning and Environment Act 1987.* The removal of any remnant patches of native vegetation or scattered indigenous trees requires consideration of Victoria's Net Gain Policy, described within the Native Vegetation Management Framework.

4.2.5 Victorian Planning Policy Framework

The Victorian Planning Policy Framework seeks to ensure that the objectives of planning in Victoria are fostered through appropriate land use and development planning policies and practices which integrate relevant environmental, social and economic factors in the interests of net community benefit and sustainable development. The Victorian Planning Policy Framework is developed under the *Planning and Environment Act 1987*.

Items relevant to the landscape and visual assessment include:

Clause 15: Environment

- Planning authorities should plan for regional open space networks to be used for recreation and conservation of natural and cultural environments. Planning and responsible authorities should ensure that open space networks are linked through the provision of walking and cycle trails and rights of way; and
- Planning and responsible authorities should ensure that land use and development adjoining regional open space networks, national parks and conservation reserves complements the open space in terms of visual and noise impacts.

4.3 Local Legislation and Policy

The Study Area falls within two municipalities, Ararat Rural City and the Northern Grampians Shire. The following Council policies and strategies identify the existing landscape and visual values of the Study Area and the desired future landscape values to be achieved.

4.3.1 Ararat Planning Scheme

Local Planning Policy Framework

The Local Planning Policy Framework contains a number of points relevant to the landscape and visual assessment. In summary, the policy identifies the following directions:

- The municipality contains a number of places of historic and cultural significance which are important to the local and wider community and must be protected and enhanced for their conservation and tourism potential.

Overlays

There are a number of overlays that are relevant to the landscape and visual assessment which are identified within Appendix A, Maps 3 and 4 – Planning Overlays. A summary of each overlay is provided below.

Heritage Overlay (HO)

There are a number of Heritage Overlays within or in proximity to the Study Area. These include:

- HO112 - Fountain Head Brewery Residence, Military Bypass Road, Armstrong;
- HO113 - 'Westgate', Westgate Road, Armstrong; and
- HO114 - Hard Hill Mining Site at Garden Gully Road and Hard Hill Road, Armstrong.

There is no information stated within the Heritage Overlays relating the value of these heritage elements to their landscape setting.

Vegetation Protection Overlay VPO1 Significant and Remnant Vegetation Areas

The Vegetation Protection Overlay VPO1 seeks to protect areas of significant vegetation for their ecological value.

Vegetation Protection Overlay VPO2 Roadside Vegetation Protection Areas

The Vegetation Protection Overlay (VPO2) seeks to protect areas of significant remnant vegetation along roadsides that provide wildlife habitat. While this is the primary purpose of the overlay, it also acknowledges the contribution this vegetation provides to the quality of travel experience and visual quality.

A number of roads, including the Western Highway, within the Study Area are covered by this overlay.

4.3.2 Northern Grampians Planning Scheme

Local Planning Policy Framework

The Local Planning Policy Framework contains a number of points relevant to the landscape and visual assessment. In summary, the policy identifies the following directions:

- Identifying, protecting and conserving significant items, places and areas of natural and cultural heritage;
- Protecting and enhancing native flora and fauna to improve biodiversity; and
- Conserving and protecting sites and precincts of natural, archaeological, architectural, cultural and historic significance.

Overlays

There are a number of overlays that are relevant to the landscape and visual assessment which are identified within Appendix A, Maps 3 and 4 – Planning Overlays. A summary of each overlay is provided below.

Environmental Significance Overlay ESO1 Significant Ridge Environs

The Environmental Significance Overlay ESO1 seeks to maintain the landscape qualities of the ridge system, especially when viewed from surrounding areas and the protection of remnant native vegetation. Areas covered by this overlay are outside of the Study Area.

Heritage Overlay (HO)

There are a number of Heritage Overlays within or in proximity to the Study Area. These include:

- HO1 - Seppelts Champagne Cellars, 36 Cemetery Road, Great Western; and
- HO7 – Hard Hill Mining Site, Garden Gully Road, Great Western.

There is no information stated within the Heritage Overlays relating the value of these heritage elements to their landscape setting.

4.4 Other Strategic Policies / Strategies

Roadside Vegetation Management Plan, 2008-2011

The Roadside Vegetation Management Plan prepared by Northern Grampians Shire Council provides a framework for consistent and strategic management of roadsides across the Shire, focussing on improving the management of remnant native vegetation located on roadsides and ensuring a safe and efficient transport network.

The report discusses the following item relevant to the landscape and visual assessment:

- The important function of the roadsides including aesthetic amenity.

The report includes the following objectives relevant to the study:

- Protect cultural and heritage values; and
- Maintain and enhance the visual amenity and landscape quality of roadsides.

Urban Design and Tourism Investment Strategy for the Great Western Township, 2003

The Urban Design Framework establishes an integrated design vision for the desired future development of the Great Western township within the Northern Grampians Shire.

The report discusses the following items relevant to the landscape and visual assessment:

- The native roadside vegetation along the Western Highway creates a strong township approach, which is more defined along the eastern (Ararat) approach than the western (Stawell) approach;
- The entrances to the town can be enhanced with a number of improvements including:
    - Protection and enhancement of roadside vegetation; and
    - Development of strong planting themes to increase the significance of the eastern approach;

- Vineyards are integral to Great Western. Glimpses of vineyards reinforce the town's 'wine village' theme, and where possible, these views should be retained and new ones created;
- Great Western is characterised by a number of distinct landscape characters including roadside vegetation, vineyards, deciduous street tree planting and informal avenues of eucalypts; and
- Key passive and recreational areas within Great Western include the Memorial Park, Red Bend Rest Stop, Eric Thompson Sports Reserve, Racecourse and Recreational Reserve, Cemetery and the Great Western Bushland and Historic Lead Mining Reserve.

Landscape and Visual Assessment Industry Guidelines

There are no relevant Government guidelines relating to landscape and visual assessment relevant to the scope of this project. The *Landscape Assessment Guidelines*, 2009 by Heritage Victoria provides an approach to visual assessment, but is specifically limited to determining and assessing the impacts upon sites of cultural heritage significance. There is no information relating the cultural value of these heritage elements (identified by heritage overlays) to the landscape setting. However, there are generally utilised guidelines and processes that have become 'industry standard' and are used in the preparation of this landscape and visual assessment. These are:

- *Landscape Character Types of Victoria*, 1983 by Leonard M and Hammond R; and
- *Guidelines for Landscape and Visual Impact Assessment*, 2003 by the Landscape Institute and the Institute of Environmental Management and Assessment.

5. Methods

5.1 Existing Conditions

This section outlines the landscape and visual values that inform the assessment for the Project.

The landscape analysis includes:

- Review of background reports, relevant maps and aerial photographs of the region;
- Review of maps and reports prepared for VicRoads and GHD by various consultants which identify values important to the assessment;
- Review of other relevant strategic documents;
- Site investigation and photography;
- Identification of existing physical features;
- Identification of natural and cultural values;
- Identification of the landscape character types of the area; and
- Identification of the value or level of significance and sensitivity to change of the landscape character types.

The existing conditions analysis informs the landscape and visual assessment outlined in this report and is directly applicable to the identification of:

- The impacts on existing dwellings, townships, places of cultural or natural value and landscape character;
- The opportunities and constraints of the design and construction of the Western Highway Project; and
- Mitigation measures to minimise impact.

5.2 Impact and Risk Assessment

Landscape and Visual Impact is a term used to identify change in the landscape that affects detrimentally or positively, the landscape character or value of an area. Landscape and visual impacts are separate, but related and the *Guidelines for Landscape and Visual Impact Assessment,* 2003 provides a clear definition of both:

- Landscape impacts result in changes to the fabric, character and quality of the landscape as a result of development; and
- Visual impacts are a subset of landscape impacts and relate to changes to available views of the landscape, and the effects of those changes on people.

The impact assessment is guided by the draft evaluation objectives and criteria established and comments on how well the Project performs against these criteria or objectives.

Five main tools have been used to determine impacts, they are:

- Site Analysis;
- Landscape and Visual Impact Assessment Plans;
- Cross Sections;
- 3D Photomontages; and
- Viewshed analysis.

5.2.1 Description of Photomontage Visualisation Process

Photomontages provide a digital replication of the proposed duplication upon an existing view or photograph to assist in the assessment of visual impact. The process used to construct these images is conventional. The methods are professionally agreed to and are accurate to a level accepted by Planning Panels Victoria and the Victorian Civil and Administrative Tribunal.

The process is as described below:

- 3D modelling of alignment on 3D topography.
- High resolution renders of the model are taken without the terrain and other contextual elements.
- The render of the alignment is then photo matched to high resolution digital photographs taken on site. Photographs have been taken using a 70 mm lens length.
- A GPS reading is taken for each photograph, as well as manual survey information. This information is then used to position a camera in the model with the same location, rotation, and focal length characteristics as the real camera.
- Renders are created from each of these cameras, and the resulting image is then composited into the photograph.

As visual impact assessment of major development projects relies on GPS readings taken on site to inform the photomontage process, it is necessary to understand their limitations. Whilst GPS readings have a certain error margin, the process of using a GPS is regarded as ‘best practice’ and is more reliable than onsite measurements or other estimations. For the purposes of this study a Magellan Meridian Gold GPS unit was used. The accuracy limitations with this GPS unit are limited to a maximum error of 7 metres 2D Estimated Position Error in a Cartesian plane.

It is widely accepted in the industry and by planning panels that minor adjustments occasionally need to be made to bring the origins of images into line with the 3D model to rectify any inaccuracies. Where this has occurred, survey information, matching photographic points, aerial photography, and other base material was used as a reference.

5.2.2 Description of Viewshed Visualisation Process

A 'Viewshed' visualisation identifies areas within the landscape that have visual exposure to, or a view towards an element of the duplication, such as an overpass. This assists in identifying areas or views that may incur a visual impact by the Project. Note that the viewshed analysis does not take into account objects within the landscape, such as vegetation or buildings that may provide screening to the viewshed element. The following is a description of the viewshed analysis methodology:

- This study utilises 3D modelling and 3D visualisation techniques to construct conceptual 3D images of the alignment in the existing context.
- A top-orthographic / birds-eye camera was placed above points of interest and a series of high intensity light sources were placed approximately 2 m high above the road alignments, between points of interest (i.e. over an overpass).
- The shadows generated by these light sources when rendered are represented in a semi-opaque black. When placed over a render of the terrain, the shadows indicate the areas of the terrain (along the length specified) which are not visible from the overpass and road. The specified lengths of road are indicated by red lines.
- These images provide a graphic representation to help understand the potential impact and the type of visual impact it may have on the landscape.
- Images are taken from the 3D model and matched with photographs taken from specific site locations.

5.2.3 The Impact and Risk Assessment

The following impact and risk assessment methodology was used to determine the landscape and visual impact pathways and risk ratings for the Project:

1. Determine the impact pathway (how the Project impacts on a given landscape and visual value or issue);
2. Describe the consequences of the impact;
3. Determine the maximum credible 'consequence level' associated with the impact. Table 3 provides guidance criteria for assigning the level of consequence. The method for defining these criteria is described in Section 5.2.4;
4. Determine the likelihood of the consequence occurring to the level assigned in step 3. Likelihood descriptors are provided in Table 1; and
5. Use the Consequence Level and Likelihood Level in the Risk Matrix in Table 2 to determine the risk rating.

Table 1 Likelihood Guide

Descriptor	Explanation
Almost Certain	The event is expected to occur in most circumstances
Likely	The event will probably occur in most circumstances
Possible	The event could occur
Unlikely	The event could occur but not expected
Rare	The event may occur only in exceptional circumstances

Table 2 Risk Matrix

Likelihood	Consequence Level				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Low	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Negligible	Low	Medium	High	High
Unlikely	Negligible	Low	Medium	Medium	High
Rare	Negligible	Negligible	Low	Medium	Medium

5.2.4 Consequence Criteria

Consequence criteria range on a scale of magnitude from “insignificant” to “catastrophic”. Magnitude was considered a function of the size of the impact; the spatial area affected and expected recovery time of the environmental system. Consequence criteria descriptions indicating a minimal impact over a local area, and with a recovery time potential within the range of normal variability were considered to be at the insignificant end of the scale. Conversely, catastrophic consequence criteria describe scenarios involving a very high magnitude event, affecting a State-wide area, or requiring over a decade to reach functional recovery.

ASPECT Studios assessed the project objectives as identified within the *Environment Effects Statement Scoping Requirements* and from this, determined appropriate assessment objectives. These are:

- *To minimise the impact upon the amenity of adjacent residents;*
- *To minimise the impact upon townships and cultural and natural values;* and
- *To minimise detrimental impact upon existing landscape character.*

The following criteria have been defined in order to undertake the visual and landscape impact evaluation. The criteria have been characterised below based upon the objective which they are relevant to.

Objective: *To minimise the impact upon the amenity of adjacent residents.*

Criteria: To assess the number and level of visual impact of dwellings affected by the project.

Dwellings located within 500 m proximity of the Project have been considered within the risk assessment. This proximity is a typical benchmark for VicRoads and other studies to identify households that may receive a visual impact from proposed developments. Outside of this 500 m proximity, typically visual impact significantly reduces as elements become recessed within their visual context and make up a dramatically smaller portion of a view.

The assessment utilises three different attributes to evaluate the likely visual impact of the duplication upon dwellings. They are:

- The type of duplication being constructed;
- A qualitative judgement based on the extent of visual change; and
- The quantity of dwellings likely to be affected.

Each of these attributes is discussed in further detail below.

Firstly, the duplication of the Western Highway has been characterised into three separate typologies which are included within the Project. It can be assumed that these three typologies provide varying degrees of visual impact upon dwellings. They are:

- Construction and operation of the duplication along the existing Western Highway alignment. In this typology, the duplication itself is an exacerbation of an existing condition rather than a new condition, i.e. the existing highway footprint is made wider. Thus, it is considered that views towards this type of duplication, occurring along the existing highway alignment are of a lower sensitivity to visual change.
- Construction and operation of a new overpass or bridge along the existing Western Highway alignment. In this category, the duplication establishes a new elevated road infrastructure along the existing highway alignment. While the dwellings have an existing view towards existing road infrastructure, the inclusion of an elevated road infrastructure element, such as a bridge or overpass, results in a dramatic visual change upon these views. Thus, views towards this duplication type are of a higher sensitivity.
- Construction and operation of a new highway alignment. In this category, dwellings with views that do not include the existing highway receive new road infrastructure within their views. Thus, views towards a new highway alignment are of a higher sensitivity to visual change.

Secondly, a qualitative judgement is made upon the scale of change of the visual impact imposed by the Project. The following factors are used to consider the scale of the different types of visual change from dwellings:

- Distance from the dwelling to the Project including the maximum construction footprint;
- Cut and fill;
- Overpasses, proximity and scale;
- Retained existing vegetation outside of the maximum construction footprint;
- Vegetation assumed to be removed within the maximum construction footprint; and
- Topography.

The descriptors, 'insignificant,' 'minor,' 'moderate' or 'major' in Tables 3 to 5 are used to rank the level of visual change.

Thirdly, the final attribute considered is the number of dwellings. For the second and third types of duplication construction discussed above, it is considered that the number of dwellings is an important consideration. The greater the number of dwellings whose views undergo visual change, the greater the impact of the duplication. The categories relative to this assessment and are as follows:

- **Low** number of dwellings affected, 1 to 5
- **Medium** number of dwellings affected, 6 to 20
- **High** number of dwellings affected, greater than 20.

The quantity of dwellings affected by the first duplication type, along the existing Western Highway alignment, is not considered. These dwellings have an existing visual outlook upon a road infrastructure element and the duplication results in an exacerbation of this existing visual condition. As such, it is considered that the quantity of dwellings whose views undergo visual change does not alter the resultant consequence of the visual impact of the duplication within Table 3.

Visual impact consequence tables for each duplication type, along the existing highway, overpass or bridge along the existing highway and new highway alignment have been prepared in Tables 3 to 5.

Table 3 Landscape and Visual Impacts Consequence Table – Dwellings (Duplication along Existing Western Highway Alignment)

Insignificant	Minor	Moderate	Major	Catastrophic
Minor *or* ***moderate*** *visual change from dwellings by the duplication within the* ***existing highway alignment****.*	***Major*** *visual change from dwellings by the duplication within the* ***existing highway alignment****.*	*Not applicable*	*Not applicable*	*Not applicable*

Table 4 Landscape and Visual Impacts Consequence Table – Dwellings (Overpass along Existing Western Highway Alignment)

Insignificant	Minor	Moderate	Major	Catastrophic
Minor *or* ***moderate*** *visual change from a* ***low*** *number of dwellings by an* ***overpass****; or* ***Minor*** *visual change from a* ***medium*** *number of dwellings by an* ***overpass****; or* ***Insignificant*** *visual change from a* ***high*** *number of dwellings by an* ***overpass****.*	***Major*** *visual change from a* ***low*** *number of dwellings by an* ***overpass****; or* ***Moderate*** *visual change from a* ***medium*** *number of dwellings by an* ***overpass****; or* ***Minor*** *visual change from a* ***high*** *number of dwellings by an* ***overpass.***	***Major*** *visual change from a* ***medium*** *number of dwellings by an* ***overpass****; or* ***Moderate*** *visual change from a high number of dwellings by an* ***overpass****.*	***Major*** *visual change from a* ***high*** *number of dwellings by an* ***overpass****.*	*Not applicable*

Table 5 Landscape and Visual Impacts Consequence Table – Dwellings (Duplication along a New Highway Alignment)

Insignificant	Minor	Moderate	Major	Catastrophic
Minor *or* ***moderate*** *visual change from a* ***low*** *number of dwellings by a* ***new highway alignment****; or* ***Minor*** *visual change from a* ***medium*** *number of dwellings by a* ***new highway alignment****; or* ***Insignificant*** *visual change from a* ***high*** *number of dwellings by a* ***new highway alignment.***	***Major*** *visual change from a* ***low*** *number of dwellings by a* ***new highway alignment****; or* ***Moderate*** *visual change from a* ***medium*** *number of dwellings by a* ***new highway alignment****; or* ***Minor*** *visual change from a* ***high*** *number of dwellings by a* ***new highway alignment****.*	***Major*** *visual change from a* ***medium*** *number of dwellings by a* ***new highway alignment****; or* ***Moderate*** *visual change from a* ***high*** *number of dwellings by a* ***new highway alignment****.*	***Major*** *visual change from a* ***high*** *number of dwellings by a* ***new highway alignment****.*	*Not applicable*

Objective: *To minimise the impact upon townships and places of cultural and natural value.*

Criteria: To assess the project's impact of visual change to the landscape from townships, vistas and places of cultural and natural value.

The consequence criteria are based upon a qualitative assessment of the level of visual change from townships and places of cultural and natural value.

The following factors are used to determine the likely level of visual change:

- Distance of the Project from a township or place of natural or cultural value; and
- Estimated visual prominence of the Project from a township or place of natural or cultural value, including cut, fill and overpasses.

The level of sensitivity of the township or value is an important consideration and is ranked low, medium or high. The determination of the level of sensitivity is a qualitative judgement based on the elements level of significance. Visual impact consequence tables have been prepared for each level of sensitivity in Tables 6 to 8.

Table 6 Landscape and Visual Impacts Consequence Table – Township and Values of Low Sensitivity

Insignificant	Minor	Moderate	Major	Catastrophic
Moderate *visual change from townships and places of cultural and natural value of* ***low sensitivity****.*	***Major*** *visual change from townships and places of cultural and natural value of* ***low sensitivity****.*	*Not applicable*	*Not applicable*	*Not applicable*

Table 7 Landscape and Visual Impacts Consequence Table – Township and Values of Medium Sensitivity

Insignificant	Minor	Moderate	Major	Catastrophic
Minor *visual change from townships and places of cultural and natural value of* ***medium sensitivity****.*	***Moderate*** *visual change from townships and places of cultural and natural value of* ***medium sensitivity****.*	***Major*** *visual change from townships and places of cultural and natural value of* ***medium sensitivity****.*	*Not applicable*	*Not applicable*

Table 8 Landscape and Visual Impacts Consequence Table – Township and Values of High Sensitivity

Insignificant	Minor	Moderate	Major	Catastrophic
Insignificant *visual change from townships and places of cultural and natural value of* ***high sensitivity****.*	***Minor*** *visual change from townships and places of cultural and natural value of* ***high sensitivity****.*	***Moderate*** *visual change from townships and places of cultural and natural value of* ***high sensitivity****.*	***Major*** *visual change from townships and places of cultural and natural value of* ***high sensitivity****.*	*Not applicable*

Objective: To minimise detrimental impact upon existing landscape character.

Criteria: To assess the capacity of the landscape character types to absorb the visual change from the project.

The consequence criteria are based upon a qualitative assessment of the likely level of impact of the Project based on the level of change made to the landscape character type.

The criteria take into account level of landscape sensitivity of each landscape character type, shown below.

Landscape Character Type:	*Level of Sensitivity:*
◗ Bushland	High landscape sensitivity
◗ Mountain Bushland	High landscape sensitivity
◗ Great Western	High landscape sensitivity
◗ Vegetated Rural	Medium to high landscape sensitivity
◗ Township Fringe	Medium landscape sensitivity
◗ Rural	Medium landscape sensitivity
◗ Vegetated Highway	Low landscape sensitivity
◗ Highway	Very low landscape sensitivity
◗ Quarry	Very low landscape sensitivity

The level of sensitivity of each landscape character type discusses the character type's ability to absorb the duplication without detrimentally impacting upon its visual qualities. For example, the Bushland landscape character type is of high landscape sensitivity, as the insertion of the duplication upon this character type results in a dramatic change upon its perceived sense of naturalness. In comparison, the Highway landscape character type is of very low landscape sensitivity, as the insertion of the duplication results in an insignificant change to the visual qualities of the character type, as it is a road carriageway. The sensitivity and visual qualities of each landscape character type are elaborated within Section 6.4.4, Specific Landscape Character Types within the Study Area.

Landscape character types of higher landscape character type sensitivity impacted upon by the duplication are considered to result in a higher consequence than those with lower landscape sensitivity. Change to landscape character types of very low landscape sensitivity were not considered as any visual change to these does not result in a detrimental visual impact. Visual impact consequence tables (Tables 9 to 12) have been prepared for each level of landscape character type sensitivity below.

Table 9 Landscape and Visual Impacts Consequence Table – Landscape Character of High Sensitivity

Insignificant	Minor	Moderate	Major	Catastrophic
Insignificant *change upon landscape character types of high landscape sensitivity.*	***Minor*** *change upon landscape character types of* ***high landscape sensitivity****.*	***Moderate*** *change upon landscape character types of* ***high landscape sensitivity****.*	***Major*** *change upon landscape character types of* ***high landscape sensitivity.***	*Not applicable*

Table 10 Landscape and Visual Impacts Consequence Table – Landscape Character of Medium to High Sensitivity

Insignificant	Minor	Moderate	Major	Catastrophic
Minor *change landscape character types of* ***medium-high landscape sensitivity.***	***Moderate*** *change upon landscape character types of* ***medium-high landscape sensitivity****.*	***Major*** *change upon landscape character types of* ***medium-high landscape sensitivity.***	*Not applicable*	*Not applicable*

Table 11 Landscape and Visual Impacts Consequence Table – Landscape Character of Medium Sensitivity

Insignificant	Minor	Moderate	Major	Catastrophic
Minor *change landscape character types of* ***medium landscape sensitivity****.*	***Moderate*** *change upon landscape character types of* ***medium landscape sensitivity****.*	***Major*** *change upon landscape character types of* ***medium landscape sensitivity.***	*Not applicable*	*Not applicable*

Table 12 Landscape and Visual Impacts Consequence Table – Landscape Character of Low Sensitivity

Insignificant	Minor	Moderate	Major	Catastrophic
Minor *or* ***moderate*** *change upon landscape character types of* ***low landscape sensitivity****.*	***Major*** *change upon landscape character types of* ***low landscape sensitivity****.*	*Not applicable*	*Not applicable*	*Not applicable*

6. Existing Conditions

The existing conditions assessment is based upon background research and site investigations held on June 23rd to 24th 2011 and January 9th to 12th 2012.

6.1 Existing Physical Features

6.1.1 Geology

Changes in geology often result in a consequential change in topography, land use, and vegetative cover. It is important to recognise geological patterns (in conjunction with community perception and cultural values) as these inform the transitions between landscape characteristics.

The *Cultural Heritage Due Diligence Report 2008*, by Dr. Vincent Clark & Associates Pty. Ltd. Identifies the following three major land units within the Study Area:

- The Ararat System – From Ararat to Great Western, undulating plains on sedimentary and metamorphosed sedimentary rocks;
- The Mt William Creek Land System – Dominated by flat alluvial plains; and
- The Mirranatwa Land System - between Great Western and Stawell. Dominated by undulating plains and intrusions which are now exposed as hills and plains of granite.

6.1.2 Dwellings

Throughout the Study Area, there are a number of areas containing concentrations of occupied dwellings. It is important to understand where these concentrations are as they are sensitive receptors to changes in landscape and visual character.

Concentrations of occupied dwellings within the Study Area occur at:

- Armstrong, in a bushland and rural setting; and
- Great Western township, where there is a relatively larger concentration of rural dwellings.

Other dwellings are found scattered along the Western Highway.

6.2 Natural and Cultural Values

A number of natural and cultural features within the Study Area have been identified in other specialist studies prepared for the EES for the Project including the flora and fauna and heritage studies. Some of these natural and cultural features are also of landscape significance, or are important due to the visual, aesthetic, or landscape setting value attributed to them individually. This assessment focuses on those issues with direct connection to the objectives of this landscape study.

The cultural and natural values are identified in Appendix A, Maps 5 and 6 – Cultural and Natural Values.

6.2.1 Natural Values

Key natural values within the region which have visual, aesthetic or landscape value are listed below. Note that many of these natural features are also of cultural value.

- Regional parks and bushland reserves including Ararat Regional Park, Great Western Bushland Reserve, Sisters Rocks Bushland Reserve, Black Range Scenic Reserve; and
- Mountain ranges and ridgelines including the Ararat Hills and Black Ranges.

6.2.2 Cultural Values

Key community facilities, tourist attractions, cultural and heritage places which have visual, aesthetic or landscape value are listed below:

- Recreational areas including Stawell Park Caravan Park, Sisters Rocks, Sisters Rocks Bushland Reserve, Grange Golf Club, Great Western Memorial Park, Great Western Racecourse, Great Western Bushland Reserve, Ararat Regional Park, including the Ararat Hills Block with McKays Circuit and Woodfines Track and Ararat Hills Scenic lookout;
- Community facilities including the Great Western Primary School; and
- Tourist facilities such as Bests Winery, Seppelt Winery and Grampians Estate Wine Centre.

6.3 Scenic Views

Across the Study Area there are a number of scenic views and viewing points. These views have been informed by local maps and the site investigation. As a standard principle of landscape and visual assessment, a higher significance is placed on public viewpoints in comparison to residential viewpoints. The majority of these scenic views are located along the existing Western Highway alignment.

The scenic views and viewing points of the Study Area (which are shown in Appendix A: Maps 7 and 8 Topography and Views) are:

- Figure 3. Views north from Ararat Regional Park viewing area;
- Figure 4. Views west towards the Black Ranges outside of Great Western along the Western Highway; and
- Figure 5. Views south towards the Black Ranges outside of Stawell along the Western Highway.

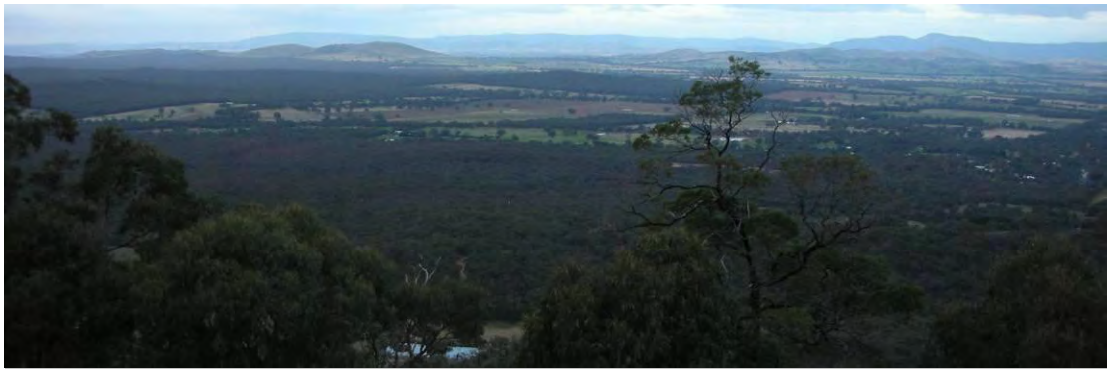

Figure 3: View 1 from Ararat Regional Park Viewing Area towards the north

Figure 4: View 2 from outside Great Western along the Western Highway west towards the Black Ranges, Ch. 16000

Figure 5: View 3: Views from outside Stawell along the Western Highway south towards the Black Ranges, Ch. 21600

Figure 6: View 4: Views from Robson Road / Western Highway south over Pleasant Creek Valley towards the Black Ranges, Ch. 23900

6.4 Landscape and Visual Character

6.4.1 Landscape Character Types

'A landscape character type is a broad scale area of land with common distinguishing visual characteristics.' (Leonard M and Hammond R, *Landscape Character Types of Victoria*, 1983).

The landscape character provides a picture or sense of the landscape and is defined by the area of visually distinct common features.

Defining the landscape character types and their values, aids in determining the capacity for the landscape to accommodate the Project.

Landscape character types have been established through the integration of site observations and surveys, and review of analysis information including:

- Geology and geomorphology;
- Topography;
- Land use patterns;
- Existing vegetation;
- Water courses and water bodies;
- Aerial photography;
- Legislative information; and
- Other consultant reports, in particular the flora and fauna studies and the cultural heritage report.

6.4.2 Landscape Values

Landscape value provides an indication of whether the landscape and or the elements within the landscape are of significance to the local or wider community, residents and other parties. The values assigned to the landscape character types are based on whether the landscape character types contain attributes that are considered to be visually valued, its prominence and also the extent that it occurs within the landscape context.

6.4.3 Landscape Sensitivity

Landscape sensitivity provides an indication of the ability for a landscape to absorb change without dramatically altering its character. This assessment identifies the landscape character types that:

- Cannot absorb any physical change;
- Can absorb change with sensitive mitigation; or
- Can absorb change.

6.4.4 Specific Landscape Character Types within the Study Area

There are nine distinctive landscape character types within the Western Highway Section 3 Study Area. The landscape character types, their value and sensitivity are discussed below and identified within Appendix A, Maps 9 and 10 – Landscape Character Types.

Type 1: Bushland

- Of typical natural bushland character, comprising of open eucalypt forest and understorey vegetation; and
- The topography ranges from flat to gently undulating.

Landscape values

The bushland landscape character type is of high landscape value due to the visual qualities of its following attributes:

- High degree of perceived naturalness;
- Relatively low occurrence within the surrounding landscape context; and
- Gently undulating topography.

Landscape Sensitivity

The bushland landscape character is of high landscape sensitivity. Any development to occur within the character type would result in a significant visual change due to the loss of bushland vegetation and perceived sense of naturalness.

Figure 7: Landscape Character Type 1: Bushland

Type 2: Mountain Bushland

- Of typical natural bushland character, comprising of open eucalypt forest and understorey vegetation;
- The topography is characterised by steeply undulating mountain ranges and isolated peaks, creating a visually dramatic vertical contrast to the generally flat and slightly undulating surrounding topography; and
- The character type includes land within and adjacent to the Ararat Regional Park.

Landscape values

The mountain bushland landscape character type is of high landscape value due to the visual qualities of its following attributes:

- High degree of perceived naturalness;
- Relatively low occurrence and high visual prominence within the surrounding landscape context; and
- High undulating topography.

Landscape Sensitivity

The mountain bushland landscape character is of high landscape sensitivity. Any development to occur within the character type would result a significant visual change due to its visual prominence and the loss of bushland vegetation and perceived sense of naturalness.

Figure 8: Landscape Character Type 2: Mountain Bushland

Type 3: Vegetated Rural

- Of typical rural character, with open agricultural land and scattered rural infrastructure including dams and low scale rural sheds and residences;
- Comprises of an understorey of pasture grasses and crops;
- Scattered mature indigenous trees, including densely vegetated pockets;
- Linear bands of canopy vegetation, both indigenous and exotic, line property boundaries and road reserves;
- Strips of indigenous canopy and understorey vegetation occur along existing waterways; and
- Flat to slightly undulating topography.

Landscape value

The vegetated rural character type is of medium to high landscape value due to the visual qualities of its following attributes:

- Distinctive remnant vegetation bands along roadsides, waterways and scattered within the agricultural land;
- Variations in the topography from flat to slightly undulating;
- Expanses of similar vegetation pattern; and
- Regular occurrence within the surrounding landscape context.

Landscape Sensitivity

The vegetated rural character type is of medium to high landscape sensitivity. Large scale development to occur within the landscape type would result in the loss of vegetation, but may retain the sense of open agricultural plains.

Figure 9: Landscape Character Type 3: Vegetated Rural

Type 4: Rural

- Of typical rural character, with open agricultural land and scattered rural infrastructure including dams and low scale rural sheds and residences;
- Comprises expansive areas of pasture grasses, predominantly devoid of scattered canopy trees;
- Linear bands of canopy vegetation, both indigenous and exotic, line property boundaries and road reserves;
- Strips of indigenous canopy and understorey vegetation occur along existing waterways; and
- Flat to slightly undulating topography.

Landscape value

The rural character type is of medium landscape value due to the visual qualities of its following attributes:

- Distinctive remnant vegetation bands along roadsides and waterways;
- Variations in the topography from flat to slightly undulating;
- Expanses of similar vegetation pattern; and
- Regular occurrence within the surrounding landscape context.

Landscape Sensitivity

The rural character type is of medium landscape sensitivity. Any development to occur within the landscape type may result in the loss of some vegetation, but may retain the sense of open agricultural plains.

Figure 10: Landscape Character Type 4: Rural

Type 5: Township Fringe

- Characterised as a transition zone between rural land and rural settlement, containing an increase in density of low scale residential and industrial buildings;
- Linear bands of canopy vegetation, both indigenous and exotic line property boundaries and road reserves; and
- The topography is generally gently undulating across the character type.

Landscape value

The township fringe character type is of high landscape value due to the visual qualities of its following attributes:

- Distinctive remnant vegetation bands along roadsides;
- Gradual transition between rural plains to rural settlement; and
- Limited occurrence within the surrounding landscape context.

Landscape Sensitivity

The township fringe is of medium landscape sensitivity. Any development to occur within the landscape type may visually affect local residents who are sensitive to landscape change.

Figure 11: Landscape Character Type 5: Township Fringe

Type 6: Great Western

- Of traditional rural town character, with a relative increase in density of low scale residential, commercial and heritage buildings on varying small to large allotment sizes;
- Provides a smooth transition from the surrounding rural land with agricultural land uses within the town including wineries;
- Vegetation is characterised by small scale residential gardens, scattered street tree planting and entrance avenues; and
- The topography is generally flat, however slightly rises towards the east and west.

Landscape value

The Great Western character type is of high landscape value due to the visual qualities of its following attributes:

- Remnant historic buildings;
- Tree lined entrance avenues; and
- Transition to rural land and visually prominent rural land uses such as the wineries.

Landscape Sensitivity

Great Western is of high landscape sensitivity. Any development to occur within the landscape type may impact the rural town character of the town and visually affect the local residents who are sensitive to landscape change.

Figure 12: Landscape Character Type 6: Great Western

Type 7: Vegetated Highway

- Comprises of the Western Highway alignment with native tree and shrub vegetation within the road reserve.

Landscape value

The Vegetated Highway character type is of moderate landscape value due to the visual qualities of its following attributes:

- Vegetation along the highway, providing filtered views to the surrounding landscape. The value this attribute provides for scenic quality is highlighted within the Vegetation Protection Overlay of the Ararat Planning Scheme; and
- Road carriageway as a predominant road infrastructure element.

Landscape Sensitivity

The Vegetated Highway is of low landscape sensitivity. Any road development to occur within the landscape type may impact the character through the removal of vegetation.

Figure 13: Landscape Character Type 7: Vegetated Highway

Type 8: Highway

- Comprising of the Western Highway alignment without roadside vegetation.

Landscape value

The Highway character type is of low landscape value due to the visual qualities of its following attribute:

- Road carriageway as a predominant road infrastructure element.

Landscape Sensitivity

The Highway is of very low landscape sensitivity. Any road development to occur within the landscape type would not detrimentally impact upon the character.

Figure 14: Landscape Character Type 8: Highway

Type 9: Quarry

- Includes the quarry and landfill to the north of Great Western;
- Comprises of deep exposed excavations into the topography and is devoid of vegetation.

Landscape value

The Quarry character type is of very low landscape value as it does not contain any notable visual qualities.

Landscape Sensitivity

The Quarry is of very low landscape sensitivity. Any development to occur within the landscape type would not detrimentally impact upon the character.

Figure 15: Landscape Character Type 9: Quarry

7. Impact Assessment

7.1 Project Description

The detailed impact assessment documented in this report addresses the potential impacts of the construction and operation of the proposed alignment of the Project. The alignment assessed is a culmination of progressive refinement of the design and consideration of potential impacts. The process for assessment and rationale for selection of the proposed alignment is assessed in the EES is described in the 'Western Highway Project Section 3 Options Assessment Report' (February 2012) (Technical Appendix B of the EES).

The Existing Conditions assessment in Section 6 of this report covers an area encompassing the long list of alignment options considered for the Project. Potential impacts of each option in the long list of alignments were considered in Phase 1 of the options assessment process, and were used to reduce the initial long list to a short list of alignment options.

The potential impacts of each option in the short list of alignment options were considered in more detail in Phase 2 of the option assessment process. A single proposed alignment was selected for further detailed assessment in the EES. The impacts of the proposed alignment, together with potential mitigation measures, were considered in detail through the environmental risk assessment process. The outcomes of the risk assessment process were used to finalise the proposed alignment assessed in the EES. The environmental risk assessment methodology and completed risk register for all specialist disciplines is presented in 'Western Highway Project Section 3 EES Environmental Risk Assessment' (November 2012) report.

The proposed alignment assessed in this impact assessment is the outcome of progressive refinement through each phase of the options assessment process. The proposed alignment was also refined following the initial consideration of the environmental risk assessment.

Extracts from the environmental risk register prepared for the EES are provided in this report and the identified impacts of the proposed alignment are considered in detail in the following sections.

The impact assessment in this report is undertaken in two parts:

- Analysis of the landscape and visual impacts upon the project objectives; and
- Identification of impact pathways and resultant risk assessment.

The impact assessment identifies the level of visual change, and thus impact rating for specific issues, which become the basis of the risk assessment within Table 13. This table provides an overall summary of the impact assessment of the landscape and visual impacts of the Project which are discussed in detail in Section 7 of the report.

The impacts of the duplication are assessed after the application of standard mitigation measures. These have been developed by VicRoads to provide a level of mitigation appropriate to minimise typical physical impacts upon the environment and community and can include treatments such as indigenous planting within the right of way. In instances where there is opportunity to further reduce the impact rating of specific issues, non-standard mitigation measures have been proposed. The resultant impact ratings incorporating both standard

mitigation and non-standard mitigation treatments are provided. For further information regarding mitigation, refer to Section 8 Mitigation Measures.

To assist with the preparation of the impact assessment, the Study Area has been divided into six separate areas. The extent of these areas is identified in Appendix A, Maps 11 and 12 – Area Plans.

7.2 Area 1: Ararat Hills

The area includes the densely vegetated Ararat Regional Park and surrounding 'Vegetated Rural land.' A number of residential dwellings are scattered along the existing Western Highway alignment (Ch. 0-4200).

Description

The area is characterised by steeply undulating topography towards the north-east and the south-west. The Western Highway traverses along a valley defined by the slopes rising away from the alignment.

The Ararat Regional Park is the dominant visual element and is of the 'Mountain Bushland' landscape character type, containing steep topography and dense vegetation on both the east and west sides of the highway. These visual elements act as a visual gateway between the Ararat township and rural land to the north.

The land adjacent to the park comprises of undulating 'Vegetated Rural' land. There are a total of ten dwellings along the Western Highway, located at varying distances away from the highway. Two of these dwellings are located on a single hill (east of the Western Highway) with elevated panoramic views over the highway towards the south-west.

The existing Western Highway corridor is utilised for the proposed alignment. Elements of the proposed alignment that are visible and have been assessed within this area are:

- Upgrade of the existing highway carriageway for northbound traffic and duplication to the east for southbound traffic (Ch. 0-1300 and 2800-4200) refer Figure 16;
- Upgrade of the existing highway carriageway for southbound traffic and duplication to the west for northbound traffic (Ch. 1600-2600) refer Figure 17 and 18;
- Areas of fill along the southbound carriageway between chainages 2650-3100 and 3250-4050, peaking at 4.80 m (Ch. 2800), 5.59 m (Ch. 3500) and 5.11 m (Ch. 3750);
- Areas of cut along the northbound carriageway between chainages 1600-2400 and 2400-2700, with cut peaking 3.34 m (Ch. 2100), 5.74 m (Ch. 2300) and 2.71 m (Ch. 2600);
- Service roads along the western side of the northbound carriageway from The Majors Road at Ch. 800 to Ch. 4200 and along the eastern side of the southbound carriageway between chainages 2400 to 4200; and
- Intersection treatments between the alignment and the intersection with Main Divide Road / The Majors Road and at the intersection with Petticoat Gully Road / McDonalds Park Road.

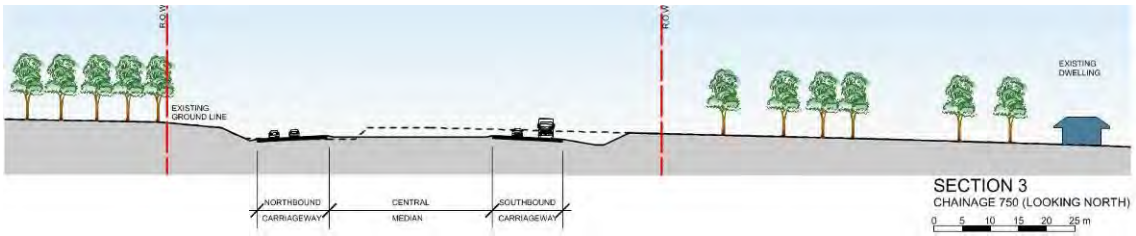

Figure 16: Cross section at Ch. 750, looking north

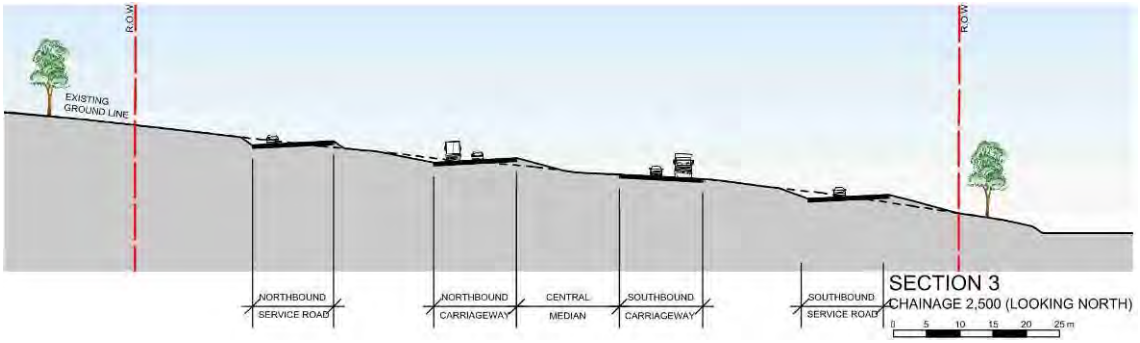

Figure 17: Cross section at Ch. 2500, looking north

Figure 18: Aerial perspective of the digital model showing the proposed alignment between Ch. 1800 to 3600

Impact

Dwellings

Refer to Appendix B - Visual Impact Map 13 for dwelling locations.

There are two areas of dwellings within the area which would experience visual change by the Project.

Dwellings between Ch. 400 to 900

The first of these areas comprises of three dwellings located around The Majors Road / Western Highway intersection (Ch. 400-900). The dwellings have a visual outlook towards the existing Western Highway, partially screened by both vegetation within their properties and roadside vegetation. The duplication is located along the existing Western Highway alignment, and proposes a new southbound carriageway to the east of the existing alignment, reducing the distance between the dwellings and to road infrastructure and removing existing roadside vegetation. While the scale of road infrastructure is increased upon their outlook, it is anticipated that vegetation within the private properties would continue to provide visual screening. Thus, it is expected that the dwellings would experience a minor visual change from the duplication and as it is located along the current highway alignment, the resultant impact rating is insignificant.

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three
Level of change	Minor
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Dwellings between Ch. 1400 to 3600

Refer to Appendix B - Visual Impact Map 13 for dwelling locations.

The second area comprises of seven dwellings on both sides of the existing highway carriageway between chainages 1400 to 3600. The dwellings have a visual outlook towards the existing highway that is partially screened with existing roadside canopy vegetation. The duplication utilises the existing Western Highway alignment, locating new carriageways and service roads and removing some of the existing roadside vegetation. The loss of this vegetation, along with the widened road corridor and additional carriageway and service roads results in a moderate visual change upon the outlook of the dwellings. As the duplication is located along the existing Western Highway alignment, the resultant impact rating is insignificant.

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Seven
Level of change	Moderate
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Townships and places of natural and cultural value – Ararat Regional Park

Refer to Appendix A – Cultural and Natural Values Map 5 for location.

The Ararat Regional Park is of high landscape sensitivity as its natural and cultural values relate to its scenic qualities as a vegetated bushland. This dense vegetation effectively screens views from within the park towards the duplication, including the walking tracks of McKays Circuit; refer Figure 19 and Hude Track. The Ararat Regional Park contains an elevated scenic lookout point approximately 2.5 km directly west of the duplication, refer to Figure 3. The lookout provides distant scenic views, however the existing Western Highway and the proposed alignment are not visible.

Figure 19: View of the bushland vegetation along McKays Circuit, Ch. 2100

The level of visual change experienced from the Ararat Regional Park is insignificant and thus results in an insignificant impact rating.

Level of sensitivity	High
Level of change	Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV2A

Landscape Character – Vegetated Highway

Refer to Appendix A – Landscape Character Types Map 9 for character type location.

The existing Western Highway carriageway is lined with roadside vegetation and is characterised as a narrow, vegetated road alignment with filtered views through this vegetation to the surrounding context. The duplication proposes the removal of some of this vegetation, with the exception between chainages 2800 to 4200 and widens the road corridor through the inclusion of a new carriageway and service roads. The 'Vegetated Highway' landscape character experiences a major level of visual change through the removal of roadside vegetation and widening of the road corridor. As the landscape character type is of low landscape sensitivity, the resultant impact rating is minor.

Level of sensitivity	Low
Level of change	Major
Impact assessment / consequence	Minor
Risk No.	LV3E

Mitigation Recommendations

The standard mitigation treatments incorporated in the above assessment include:

- Planting within the duplication Right Of Way (ROW).

Non-standard mitigation measures provide an opportunity to further reduce the anticipated visual impacts. The retention and planting of roadside vegetation where possible provides an effective means of mitigating the visual impact upon dwellings by providing visual screening and also mitigating the impact upon landscape character by retaining and enhancing characteristic vegetation through new planting.

Non-standard treatments to reduce impact include:

- Retention of existing roadside vegetation where possible (protective fencing treatments may be required); and

- Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required).

It is anticipated that non-standard mitigation would result in the following residual impact ratings for dwellings and the 'Vegetated Highway' landscape character type.

Dwellings between Ch. 400-900

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three
Level of change	Standard mitigation: Minor Non-standard mitigation: Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Dwellings between Ch. 1400 to 3600

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Seven
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Landscape Character - Vegetated Highway

Level of sensitivity	Low
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV3E

7.3 Area 2: Armstrong

This area comprises of a concentration of residential dwellings between Old Brewery Road and the northern end of the Armstrong Deviation within 'Vegetated Rural' land (Ch. 4200-8300).

Description

The area is characterised by 'Vegetated Rural' undulating land. The existing Western Highway and Armstrong Deviation traverse through a localised valley, with topography rising towards the east and west. A concentration of dwellings is located around the Garden Gully Road / Armstrong Deviation, some with views towards the highway with others located behind ridgelines. Additional dwellings are located south of this intersection, but views from these dwellings are screened by topography and dense vegetation.

The proposed alignment utilises the current Western Highway and Armstrong Deviation alignment and establishes an overpass above Garden Gully Road with associated intersection works and adjacent street upgrades. Elements of the options that are visible and have been assessed within this area are:

- Upgrade of the existing highway carriageway for northbound traffic and duplication to the east for southbound traffic (Ch. 4200-8300);
- Areas of fill along the southbound carriageway between chainages 4200-4850, 5050-5350, 5750-8300, peaking at 3.12 m (Ch.4300), 6.38 m (Ch. 5200), 11.32 m (Ch. 6200), 4.50 m (Ch.7300) and 13.53 m (Ch. 7850);
- Areas of cut along the southbound carriageway between chainages 4850-5050 and 5350-5750, peaking at 2.97 m (Ch. 4950) and 4.36 m (Ch. 5500);
- Area of fill along the northbound carriageway between chainages 5600-6900, peaking at 8.83 m (Ch. 6150);
- Service roads along the western side of the northbound carriageway from Old Brewery Road (Ch. 4200) to chainage 5400;
- Overpass bridge across Garden Gully Road (Ch. 5400 to 6700) with a maximum height of 10.8m above existing ground level, refer Figures 20 to 22;
- Associated off and on-ramps from the overpass in both directions;
- Upgrades to Garden Gully Road, Military Bypass Road and Eaglehawk Road to connect with the on and off ramps; and
- Widening of the existing overpass across the rail line and associated embankments (Ch. 7600-8300).

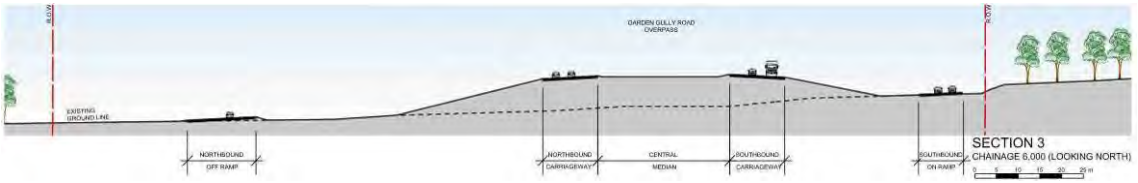

Figure 20: Cross section at Ch. 6000, looking north

Figure 21: Aerial perspective of the digital model showing the Garden Gully Road overpass, Ch. 5400-7400 towards the north

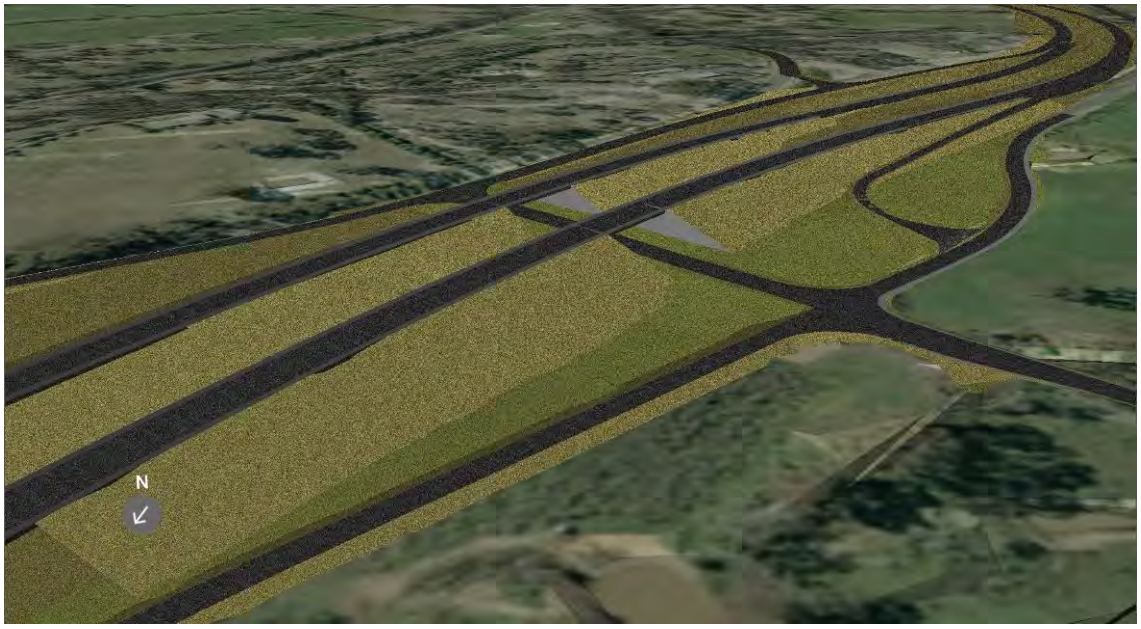

Figure 22: Aerial perspective of the digital model showing the Garden Gully Road overpass, Ch. 5000-6000 towards the south

Impact

Dwellings

Refer to Appendix B - Visual Impact Map 13 for dwelling locations.

There are two concentrations of dwellings within the area which would experience visual change by the duplication.

Dwellings along Garden Gully Overpass

The Garden Gully Road overpass and associated on ramps, off ramps and batters inserts a large scale road infrastructure element along the existing alignment of the Western Highway. The following Viewshed Analysis (Figure 23) demonstrates the high level of visibility of the overpass upon surrounding dwellings and landscape character, with the exception of areas to the east that are located behind escarpments. Note that the analysis does not take into account objects within the landscape, such as vegetation or buildings that may provide screening of the overpass.

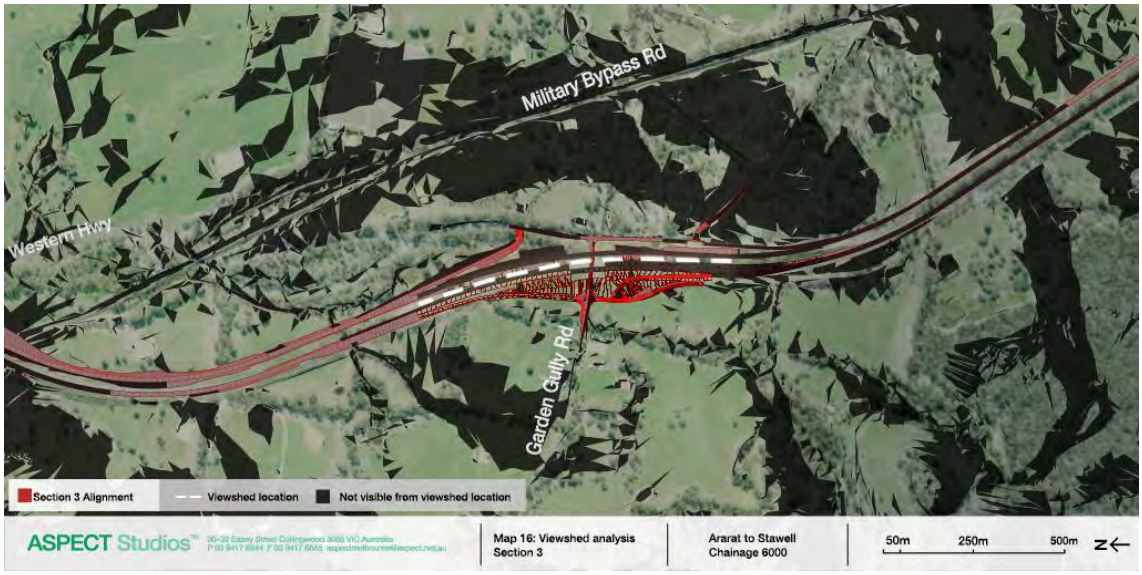

Figure 23: Viewshed of the Garden Gully Road Overpass

A concentration of dwellings is located around the overpass, with approximately eight having an outlook towards the overpass. The dwellings typically have a view of rural plains with scattered canopy vegetation through to the existing highway carriageway. A typical view between a number of dwellings is located along Garden Gully Road is provided in Figure 24 and referred to as Location A.

Figure 24: Location A, existing view looking east along Garden Gully Road

The existing view along Garden Gully Road is characterised by pastures with a band of native and exotic canopy vegetation across the foreground that provides partial screening of the view behind. The existing Western Highway is visible at the end of Garden Gully Road in the middle ground.

The photomontage (Figure 25) identifies the anticipated visual change from the duplication. The duplication inserts an elevated overpass across the view, visible at the end of Garden Gully Road. The visibility of the overpass is increased through the removal of existing vegetation along Garden Gully Road. The background landscape is visible through the overpass opening. Existing vegetation to the left of the view provides effective screening of the duplication; however the overpass is visible through existing vegetation to the right of the view. The duplication results in a major visual change upon this visual outlook.

Figure 25: Location A, photomontage with the duplication and overpass

Duplication type	Overpass along current highway alignment – high sensitivity
Number of dwellings affected	Eight
Level of change	Major
Impact assessment / consequence	Moderate
Risk No.	LV1B

Dwellings between Ch. 4500 to 5000

The second concentration comprises of five dwellings located between chainages 4500 to 5000. Two of these dwellings are located on the western side, approximately 100 m from the carriageway, while the remaining dwellings are located on the eastern side approximately 300 m away. The dwellings have a visual outlook upon the existing highway, across open rural land and through roadside vegetation that provides partial screening.

The duplication results in a moderate change upon this visual outlook through the removal of some of the existing roadside vegetation, widening of the road corridor and insertion of carriageways and service roads in closer proximity to dwellings than the existing Western Highway carriageway. As the proposed alignment is located along the existing Western Highway, the resultant impact rating is insignificant.

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Five
Level of change	Moderate
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Landscape Character – Vegetated Rural

Refer to Appendix A – Landscape Character Types Map 9 for character type location.

The landscape surrounding the Green Gully Road overpass is of ‘Vegetated Rural’ character and has a landscape sensitivity rating of medium to high. The duplication inserts a large scale road infrastructure element that is in stark contrast with the visual characteristics of the character type.

This landscape character type is of medium to high landscape sensitivity and the overpass imposes a major visual change upon it. The resultant impact rating is moderate.

Level of sensitivity	Medium to high
Level of change	Major
Impact assessment / consequence	Moderate
Risk No.	LV3B

Landscape Character – Vegetated Highway

Refer to Appendix A – Landscape Character Types Map 9 for character type location.

The duplication proposes the removal of existing roadside vegetation between chainages 4900 to 5500 and retains the vegetation between chainages 4200 to 4900. In addition to this removal, the duplication inserts a new carriageway and service road, widening the road corridor. The modification of the landscape character type from a narrow tree lined road corridor, to a wide one with some retained roadside vegetation results in a major visual change. As the 'Vegetated Highway' landscape character type is of low landscape sensitivity, the resultant impact rating is minor.

Level of sensitivity	Low
Level of change	Major
Impact assessment / consequence	Minor
Risk No.	LV3E

Mitigation Recommendations

The standard mitigation treatments incorporated in the above assessment include:

- Planting within the duplication ROW;
- Establishment of clusters of screening vegetation in line with the surrounding character, including trees at the toe of the embankment and shrubs on the fill embankment; and
- Use of grasses upon fill embankments consistent with surrounding 'Vegetated Rural' land.

Non-standard mitigation can be used to address the impact of the overpass and duplication upon dwellings and landscape character. The retention of existing roadside vegetation where possible, along with the establishment of tree avenues along both sides of carriageways and service roads would provide a consistently vegetated road corridor, and reduce its apparent width, keeping with the visual attributes of the 'Vegetated Highway' landscape character type. The impact of the overpass can be reduced through the sensitive design of embankments using batters keeping with the surrounding topography, and establishment of screening vegetation.

Non-standard treatments to reduce impact include:

- Retention of existing roadside vegetation where possible (protective fencing treatments may be required);
- Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required).
- Establishment of screening vegetation within the ROW for views from affected dwellings; and
- Sensitively designed fill embankments.

It is anticipated that mitigation would result in the following residual impact ratings for dwellings and landscape character.

Dwellings along Garden Gully Overpass

Duplication type	Overpass along current highway alignment – high sensitivity
Number of dwellings affected	Eight
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Moderate Non-standard mitigation Minor
Risk No.	LV1B

Dwellings between Ch. 4500 to 5000

Duplication type	Along current highway alignment
Number of dwellings affected	Five
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Insignificant Non-standard mitigation: Insignificant
Risk No.	LV1A

Landscape Character - Vegetated Rural

Level of sensitivity	Medium to high
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Moderate Non-standard mitigation: Minor
Risk No.	LV3B

Landscape Character -Vegetated Highway

Level of sensitivity	Low
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV3E

7.4 Area 3: Garden Gully

The Garden Gully area is characterised by rural land with scattered vegetation, located between the original Western Highway alignment and the more recent Armstrong Deviation Highway (Ch. 8300) intersection and Delahoy Road (Ch. 11200).

Description

The area is comprised of predominantly flat 'Vegetated Rural Land' with land rising towards the north-east and south-west. Three dwellings are located along the Western Highway, two of which are less than 50 m from the ROW. The Grampians Estate Winery is also located along the highway at chainage 11000.

The duplication is located along the existing Western Highway corridor. Elements of the options that are visible and have been assessed within this area are:

- Upgrade of the existing highway carriageway for southbound traffic and duplication to the west for northbound traffic (Ch. 8800-11200) refer Figure 26 and 27;
- Areas of fill along both carriageways between chainages 8300-9400 and 9950-10800, peaking at 4.48 m (Ch. 9050), and 3.73 m (Ch. 10500);
- Service road along the eastern side of the southbound carriageway from Kimbarra Road (Ch. 8600) to the private residence at chainage 10500;
- A truck parking bay for southbound traffic between chainages 9000 to 9500; and
- Intersection treatments between the alignment and the intersection with Allanvale Road.

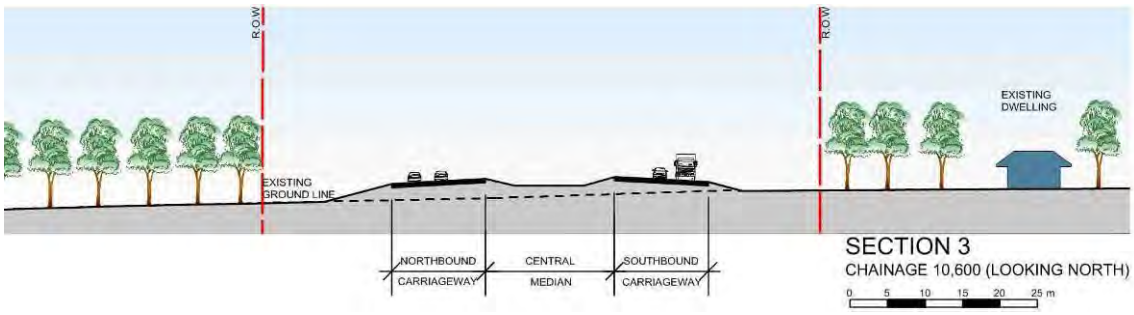

Figure 26: Cross section at Ch. 10600, looking north

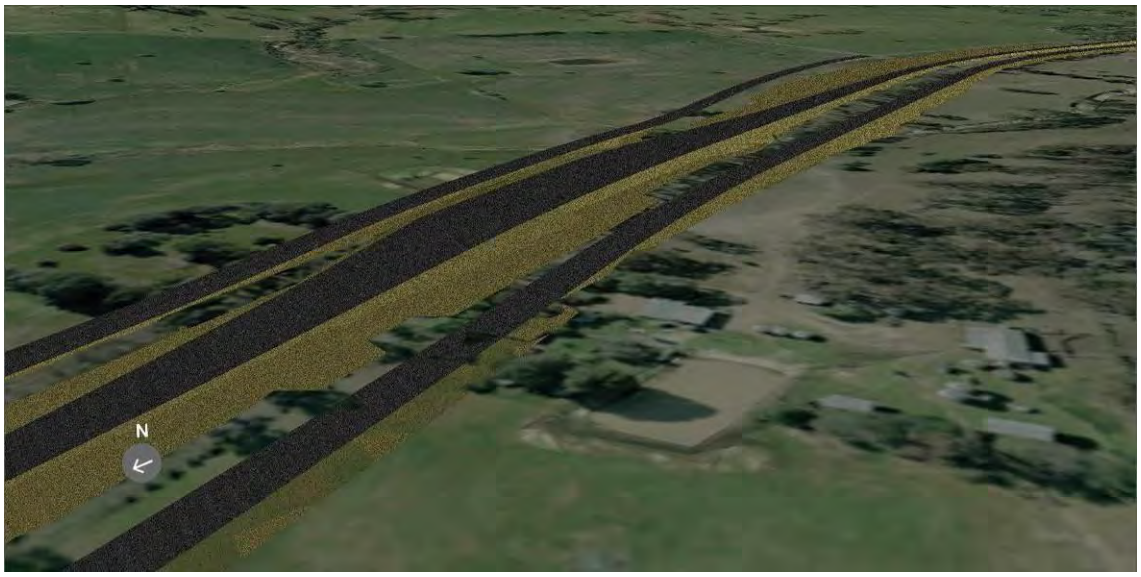

Figure 27: Aerial perspective of the digital model, Ch. 8000-9400 towards the south

Impacts

Dwellings

Refer to Appendix B - Visual Impact Map 14 for dwelling locations.

The area contains a total of three dwellings whose visual outlook would experience a visual change from the duplication. The dwellings located along chainage 9300 and 10600 are located a minimum of 50 m from the current Western Highway carriageway. Given their proximity, their visual outlook contains roadside vegetation that provides filtered views of the existing carriageway. The duplication widens the road corridor through the addition of a carriageway and removes adjacent roadside vegetation, which increases the dwellings visual exposure to road infrastructure. The resultant visual change upon these dwellings is moderate, resulting in an insignificant impact rating.

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three
Level of change	Moderate
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Townships and places of natural and cultural value – Grampians Estate Wines

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

Grampians Estate Wines is considered to be of medium visual sensitivity, characterised by linear vineyards and an open presentation to the existing Western Highway. The duplication proposes widening the road corridor adjacent to the winery, however as it does not dramatically alter the outlook of the winery, nor impact upon its visual characteristics, the duplication results in an insignificant visual change and insignificant impact rating.

Level of sensitivity	Medium
Level of change	Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV2B

Landscape Character – Vegetated Highway

Refer to Appendix A – Landscape Character Types Map 10 for character type location.

The 'Vegetated Highway' landscape character type is characterised as a narrow road corridor line with canopy vegetation. The duplication proposes the removal of existing roadside vegetation between chainages 8300 to 9600 and 10400 to 11200 and retains the vegetation between chainages 9600 to 10400. This vegetation removal, in combination with the widening of the road reserve due to the construction of a new carriageway and service roads results in a major change upon the character type. As the 'Vegetated Highway' landscape character type is of low landscape sensitivity, this change results in a minor impact rating.

Level of sensitivity	Low
Level of change	Major
Impact assessment / consequence	Minor
Risk No.	LV3E

Mitigation Recommendations

The standard mitigation treatments incorporated in the above assessment include:

- Planting within the duplication Right Of Way (ROW).

Non-standard mitigation measures provide an opportunity to further reduce the anticipated visual impacts. The retention and planting of roadside vegetation where possible provides an effective means of mitigating the visual impact upon dwellings by providing visual screening and also mitigating the impact upon landscape character by retaining and enhancing characteristic vegetation through new planting.

Non-standard treatments to reduce impact include:

- Retention of existing roadside vegetation where possible (protective fencing treatments may be required); and
- Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required).

It is anticipated that non-standard mitigation would result in the following residual impact ratings for dwellings and the 'Vegetated Highway' landscape character type.

Dwellings

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Insignificant Non-standard mitigation: Insignificant
Risk No.	LV1A

Landscape Character – Vegetated Highway

Level of sensitivity	Low
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV3E

7.5 Area 4: Great Western

The area comprises of the Great Western township and surrounding land of 'Vegetated Rural' and 'Bushland' landscape character (Ch. 11200-16600).

Description

Great Western comprises a small township with a concentration of residential dwellings. The topography rises to the north east and peaks across Sandy Creek Road. This elevated land comprises of the Great Western Bushland Reserve with dense bushland screening two quarries and a former landfill. The elevated 'Bushland' across the north eastern ridgeline and adjacent 'Vegetated Rural' land establishes a vegetated visual boundary to the town. Bests Winery is located to the north-east and the Seppelt Winery to the south west of the town centre.

The proposed alignment diverts around the Great Western township traversing through 'Vegetated Rural' landscape character and across elevated 'Bushland' landscape character to the north-east.

Elements of the options that are visible and have been assessed within this area are:

- Diversion of the duplication from the existing Western Highway corridor from Delahoy Road (Ch. 11200);
- Duplication alignment bypassing Great Western to the north-east (Ch. 11200-16400), refer Figures 28, 29 and 30;
- Connection to the existing Western Highway carriageway at Briggs Lane (Ch. 16600) refer Figure 31;
- Areas of fill along the southbound carriageway between chainages 11200-12650 and 15500-16600, peaking at 4.82 m (Ch. 11650), 5.78 m (Ch. 15900) and 3.74 m (Ch. 16350);
- Areas of fill along the northbound carriageway between chainages 11200-13100 and 15500-16600, peaking at 5.40 m (Ch. 12500) and 4.58 m (Ch. 16500);
- Area of cut along the northbound carriageway between chainages 13100-14700, peaking at 9.13 m (Ch. 13400) and 7.13 m (Ch. 14350), refer Figure 32;
- Upgrade of the existing Western Highway carriageway from Delahoy Road (Ch. 11200) as a northbound off ramp to Great Western;
- On ramp for southbound traffic from Great Western, overpassing and then joining the duplication alignment (Ch. 12100-11500) with a maximum height of approximately 11.6 m above the existing ground level, refer Figure 33;
- Upgrade of Sandy Creek Road to an overpass across the alignment and associated upgrade of Wattle Gully Road (Ch. 12800-13600);
- Upgrade of Bests Road to an overpass across the alignment, with a maximum height of approximately 9.3 m above ground level, refer Figure 34;
- Southbound off ramp to the Bests Road overpass (Ch. 15800-15000); and

- Service road along the eastern side of the southbound carriageway between chainage 16100 to Briggs Lane (Ch. 16600) and along the western side of the northbound carriageway between St Georges Road (Ch. 16000) and chainage 16400.

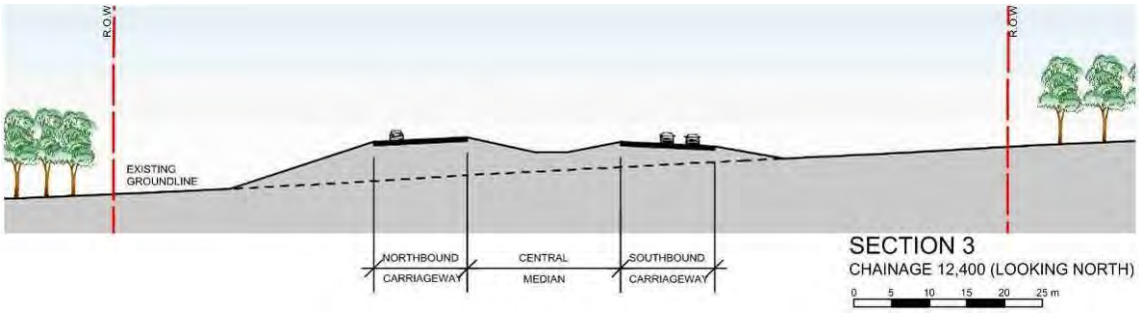

Figure 28: Cross section at Ch. 12400, looking north

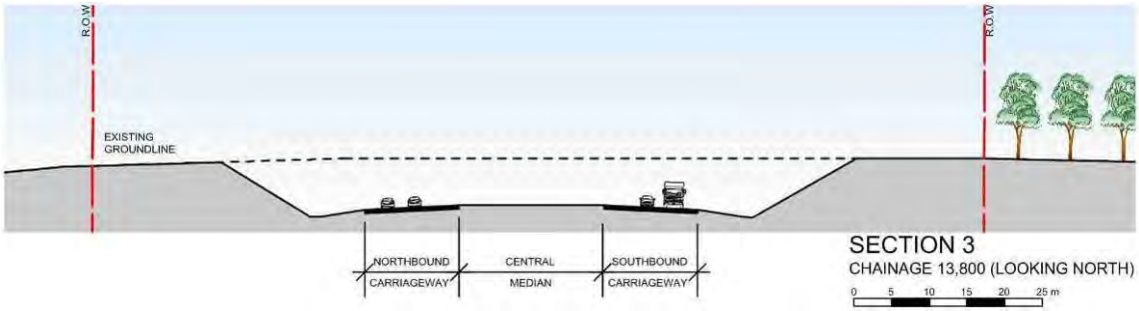

Figure 29: Cross section at Ch. 13800, looking north

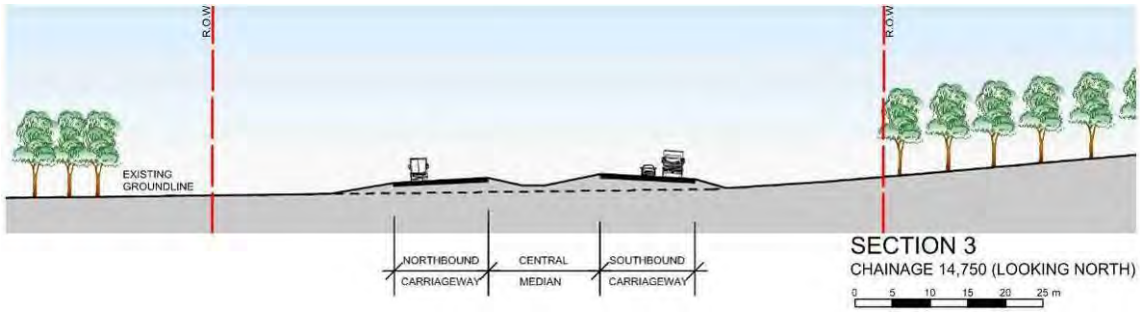

Figure 30: Cross section at Ch. 14750, looking north

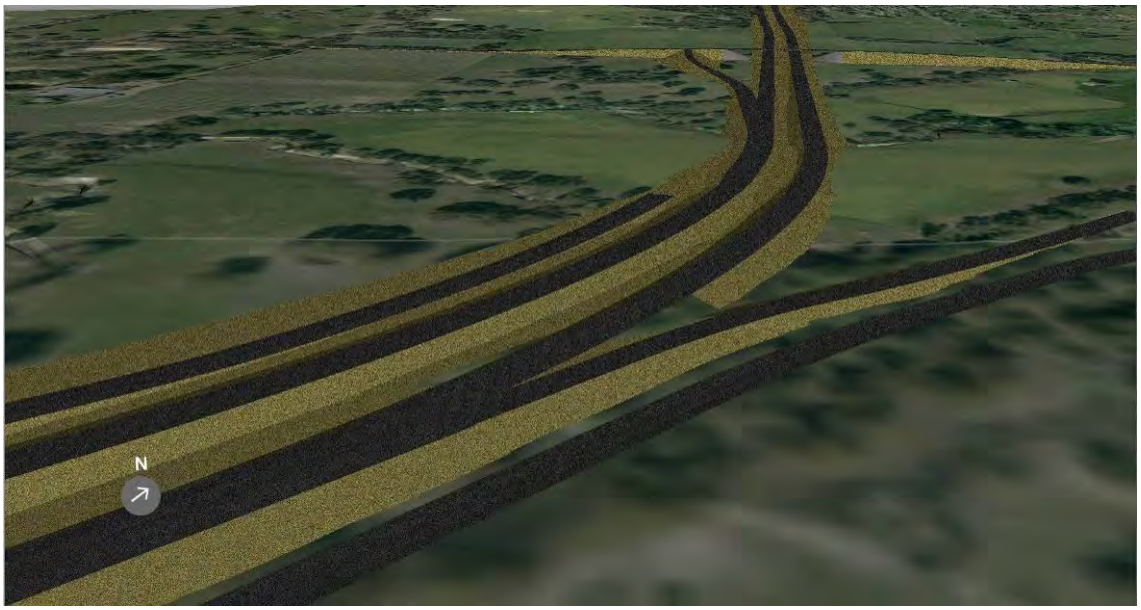

Figure 31: Aerial perspective of the digital model showing the duplication meeting with Briggs Lane, Ch. 15400-16800, with the Bests Road overpass in the background

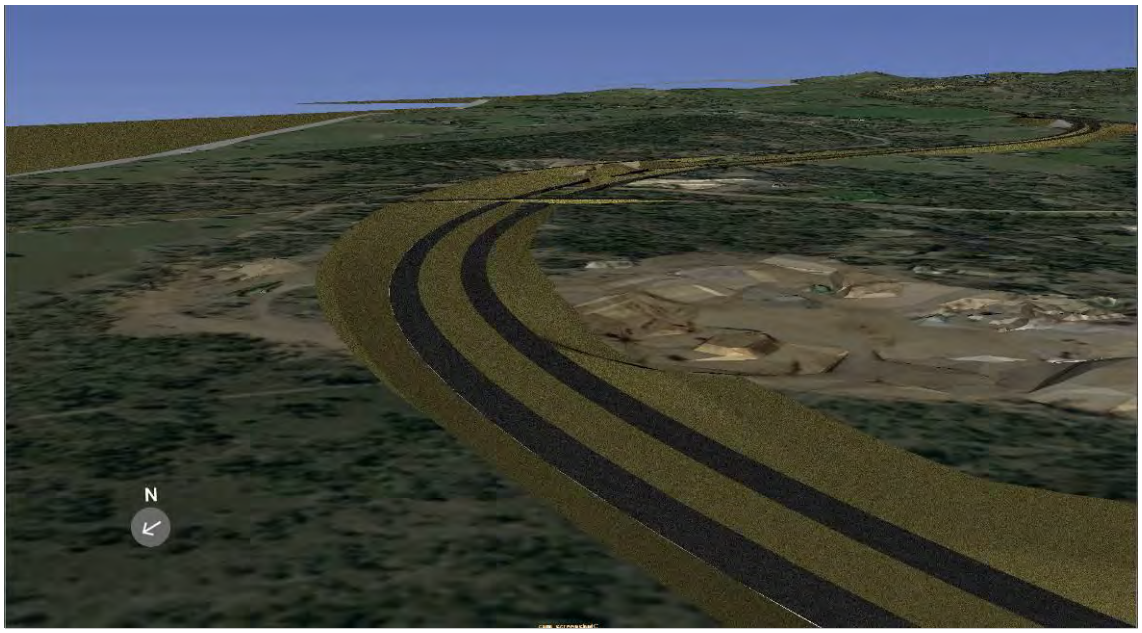

Figure 32: Aerial perspective of the digital model showing the duplication cut, north of Great Western, Ch. 13200-14400

Figure 33: Aerial perspective of the digital model showing the Southbound Overpass, Ch. 11000-12400

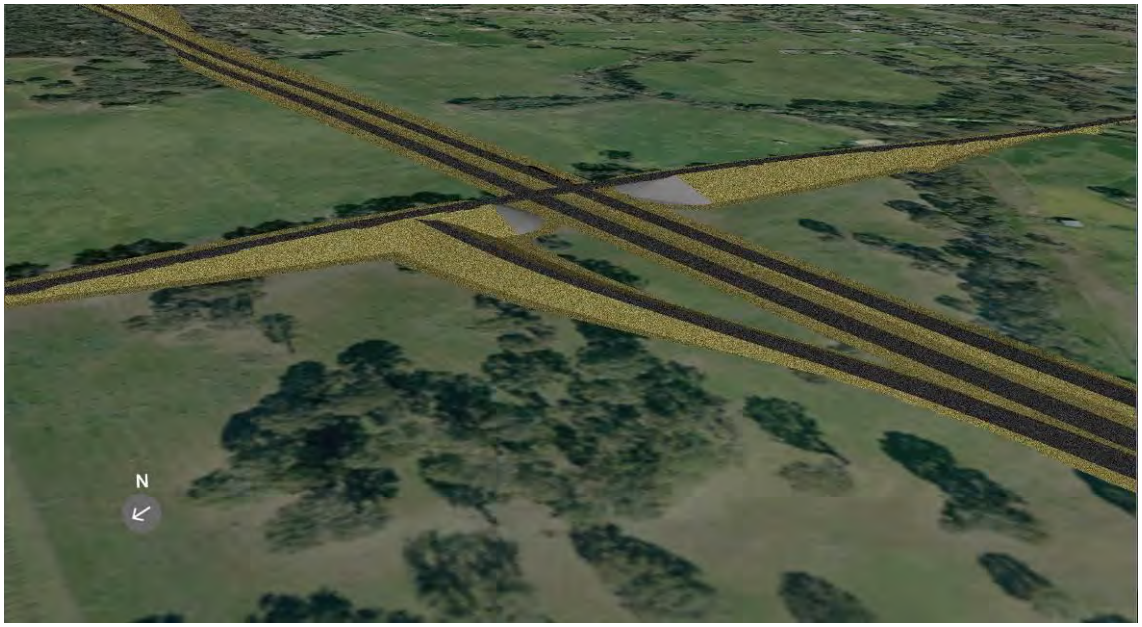

Figure 34: Aerial perspective of the digital model showing the Bests Road Overpass, Ch. 15400

Impact

Dwellings

Refer to Appendix B - Visual Impact Map 14 for dwelling locations.

There are two concentrations of dwellings visually impacted upon by the Great Western Bypass and associated overpasses.

Dwellings, Ch. 11400-12600

The first concentration comprises of four dwellings between chainages 11400-12600, located to the south east of Great Western. Three of these dwellings, between chainages 11400 and 12100 are located along Delahoy Road, east of the proposed Great Western Bypass and Southern Overpass, while the remaining dwelling is located on Stephenson Street at chainage 12600. There are a number of additional dwellings located opposite this dwelling, along the Western Highway, however it is anticipated that the duplication is not visible from these dwellings due to their outlook and residential fencing.

The dwellings along Delahoy Road currently have a visual outlook towards Great Western in the north west, through rural pastures and scattered native canopy vegetation. The dwelling in along Stephenson Street has an outlook away from Great Western, to the densely vegetated elevated area towards the east. The visual outlook from the four dwellings is characterised by rural plains and vegetation from the dwellings, undergoes a major change through the insertion of elevated carriageways and a large scale overpass. As the duplication occurs along a new alignment and includes overpasses and the impact is received by low number of dwellings (four), the resultant impact rating is minor.

Duplication type	New alignment including overpasses – high sensitivity
Number of dwellings affected	Four
Level of change	Major
Impact assessment / consequence	Minor
Risk No.	LV1C

Dwellings, Ch. 14400-16500

The second concentration comprises of ten dwellings located along the north to north western edge of Great Western between chainages 14400-16500. The dwellings are located along Western View Road, Hurleys Lane, St Peters Road and along Main Street. While there are many more dwellings within Great Western, they either won't experience visual change due to existing topography and vegetation, (such as those along Western View Road, where the duplication is in considerable cut) or are outside the 500 m proximity of the duplication and are not anticipated to experience a visual change from it.

The dwellings have a visual outlook towards the north-east, over rural pastoral land with scattered vegetation throughout. As per the previously discussed dwelling concentration, the duplication proposes new highway carriageways and an overpass at Bests Road, providing access into Great Western, which contrasts with the characteristics of the visual outlook. However, given that the duplication is typically located quite a distance away from the dwellings, the duplication becomes recessive in the view and results in a moderate visual change. As the proposed alignment impacts upon a medium number of dwellings, being nine, the resultant visual impact is minor.

Duplication type	New alignment including overpasses – high sensitivity
Number of dwellings affected	Ten
Level of change	Moderate
Impact assessment / consequence	Minor
Risk No.	LV1D

Townships and places of natural and cultural value – Great Western Town Centre

The Great Western town centre contains numerous community and recreational facilities. The town is characterised by a concentration of dwellings within a landscape setting of surrounding rural land with scattered canopy vegetation. The value of the town is related to these attributes and any visual change may result in a dramatic impact upon them. It is anticipated that the duplication would not be visible from the centre of Great Western, defined as Main Street between Paxton Street and Rennie Street, as existing dwellings and surrounding vegetation provide effective screening as shown in Figure 35. Thus the level of change and impact rating is insignificant.

Figure 35: Existing view from the Great Western Town Centre, intersection of the Western Highway and Cubitt Street, towards the north east

Level of sensitivity	High
Level of change	Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV2C

Townships and places of natural and cultural value – Outer Great Western

Areas of Great Western outside of the town centre form part of the entrance and departure experience of Great Western and provide views to the surrounding 'Vegetated Rural' visual context. These areas reinforce the valued visual attributes of Great Western, however are not as critical to the town as the centre itself and are of medium landscape sensitivity.

The areas of outer Great Western being investigated for visual impact are the southern entry of the town along the Western Highway from Stephenson Street and the northern edge of Great Western from the intersection of Western View Road and Hurleys Road.

The existing view from the intersection of the Western Highway and Stephenson Street towards the south west is demonstrated in Figure 36 and referred to as location B. Currently the view is characterised by a wide road, rural plains and scattered vegetation. This vegetation provides an effective screen of the proposed overpass as shown within the Figure 37 photomontage. The elevated carriageways are visible through screening vegetation to the left of the view. While the visual change from this location is low, it is anticipated that the elevated carriageways and overpass would be visible along the eastern edge of Stephenson Street. The perceived edge of Great Western is blurred through layers of vegetation and this soft edge is compromised through the insertion of a linear built element that establishes a new visual edge to the town.

Figure 36: Location B, existing view looking south east along the Western Highway

Figure 37: Location B, photomontage of the duplication and Southbound Overpass. The overpass is shown as a horizontal red band where it is screened by vegetation

The second view being investigated is from the intersection of the Hurleys Lane and Western View Road, referred to as location C. As demonstrated in Figure 38, the view is characterised by rural plains and scattered canopy vegetation. As discussed previously, the layering of this vegetation provides a blurred edge to Great Western that is compromised through the construction of road infrastructure upon this outlook, as demonstrated within the Figure 39 photomontage. It is anticipated that the Great Western Bypass would result in a moderate visual change upon Outer Great Western and thus a minor impact rating.

Figure 38: Location C, existing view looking north from the intersection of Hurleys Lane and Western View Road

Figure 39: Location C, photomontage with the duplication

Level of sensitivity	Medium
Level of change	Moderate
Impact assessment / consequence	Minor
Risk No.	LV2D

Townships and places of natural and cultural value – Great Western Primary School

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

The Great Western Primary School is of high sensitivity to visual change as modified views could affect the concentration of students on a daily basis. It is anticipated that the duplication would not be visible from the school due to surrounding vegetation and thus the level of change and resultant impact is insignificant.

Figure 40: Existing view from the intersection of Locke Street and Stephenson Street, adjacent to the Great Western Primary School towards the north

Level of sensitivity	High
Level of change	Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV2E

Townships and places of natural and cultural value – Great Western Bushland Reserve

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

The Great Western Bushland Reserve is of high landscape sensitivity given the scenic qualities of its bushland. The reserve would not be affected by the duplication as the dense bushland vegetation effectively screens internal views. The level of change and resultant impact is insignificant.

Level of sensitivity	High
Level of change	Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV2F

Townships and places of natural and cultural value – Bests Winery

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

The Bests Winery is considered to be of medium visual sensitivity, as its landscape setting of linear vineyards and surrounding rural land and scattered vegetation can be considered as part of the winery's appeal. This visual outlook would undergo a minor level of change through the introduction of the Bests Road overpass and duplication alignment towards the south and west. Due to the minor level of visual change, the duplication results in an insignificant visual impact upon the winery.

Figure 41: Existing view from the Bests Winery towards the south east

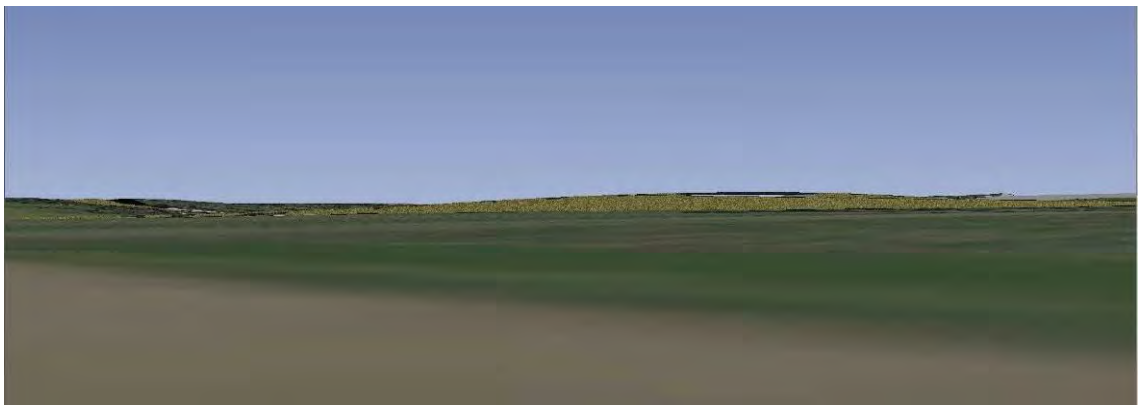

Figure 42: Indicative digital visualisation of the view from Bests Winery towards the Bests Road Overpass (refer to Figure 41 for actual view)

Level of sensitivity	Medium
Level of change	Minor
Impact assessment / consequence	Insignificant
Risk No.	LV2G

Townships and places of natural and cultural value – Seppelt Winery

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

Similar to the Bests Winery, the Seppelt Winery is considered to be of medium visual sensitivity. The winery provides scenic views of the Great Western periphery towards the east, and is characterised by sloping land with linear vineyards. This visual outlook would undergo change through the introduction of the Great Western Bypass and Southbound Overpass, large scale road infrastructure elements. However, given the distance between the winery and overpass, and its scale within the overall outlook of the winery and the effective screening canopy vegetation located along Concongella Creek, the visual change is minor, resulting in an insignificant impact.

Figure 43: Existing view from the Seppelt Winery towards the east, note the screening vegetation along Concongella Creek within the middle ground

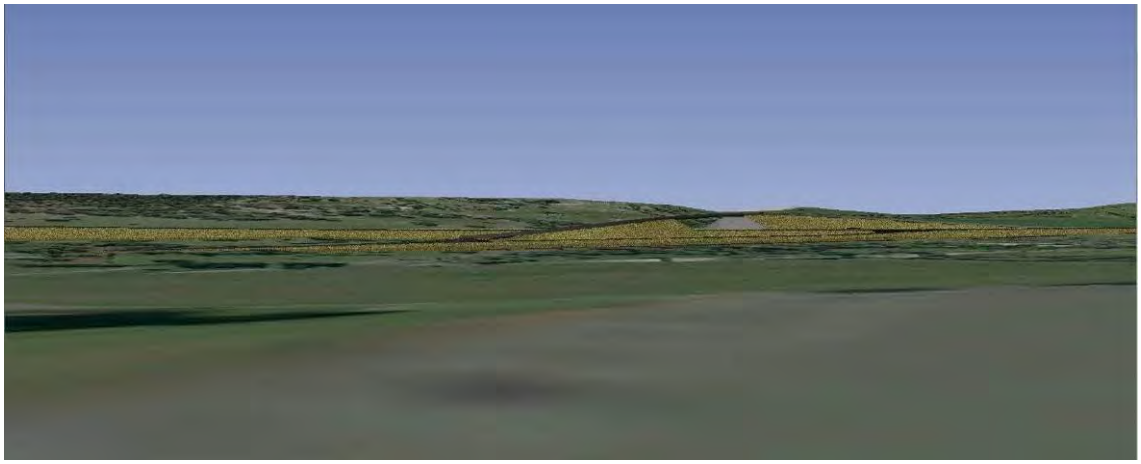

Figure 44: Indicative digital visualisation of the view from Seppelt Winery towards the Southern Overpass (refer to Figure 43 for actual view)

Level of sensitivity	Medium
Level of change	Minor
Impact assessment / consequence	Insignificant
Risk No.	LV2H

Landscape Character - Bushland

Refer to Appendix A – Landscape Character Types Map 10 for character type location.

The proposed alignment traverses through a segment of 'Bushland' landscape character to the north-east of Great Western between chainages 14000 to 14700. This landscape character type is of high landscape sensitivity. As the alignment is located along the edge of the 'Bushland' area and cut into the topography, the visibility of the duplication is reduced from the surrounding context and the character type would undergo a minor level of change. The duplication therefore results in a minor impact upon the Bushland landscape character.

Level of sensitivity	High
Level of change	Minor
Impact assessment / consequence	Minor
Risk No.	LV3A

Landscape Character – Vegetated Rural

Refer to Appendix A – Landscape Character Types Map 10 for character type location.

The duplication proposes a new highway alignment, the Great Western Bypass, through 'Vegetated Rural' land between chainages 11400-12900 and 14700-16400.

The duplication inserts large scale road infrastructure, including the Southbound Overpass (Ch. 11200-12100), Bests Road overpass (Ch. 15400) and elevated carriageways with maximum fills of approximately 5.40 m (Ch. 11200-13100). This infrastructure is highly visible from the surrounding landscape as demonstrated in the following Viewshed Analysis diagrams, refer Figures 45 and 46. Note that the analysis does not take into account objects within the landscape, such as vegetation or buildings that may provide screening of the overpass.

Figure 45: Viewshed of the Southbound Overpass

Figure 46: Viewshed of the Bests Road Overpass

Road infrastructure of such scale is inconsistent and unsympathetic to the visual characteristics of the 'Vegetated Rural' landscape character type and results in a major level of change. Given that the landscape character type is of medium to high landscape sensitivity, the impact rating is moderate.

Level of sensitivity	Medium to high
Level of change	Major
Impact assessment / consequence	Moderate
Risk No.	LV3B

Mitigation Recommendations

The standard mitigation treatments incorporated in the above assessment include:

- Planting within the duplication ROW;

Mitigation for the Great Western Area seeks to screen and reduce the visual contrast of the duplication upon its landscape context. Overpasses are to be designed to fit with surrounding topography with generous batters and suitable screening vegetation. Tall planting is recommended on the base of embankments and lower lying land to provide screening and not accentuate the height of the structure. Further screening planting is recommended along the sides of the duplication. This vegetation should be designed to fit with the 'Vegetated Rural' character of the area and should not incorporate rigid planting bands which contrast with this character. Also, the opportunity exists to incorporate gateway planting as recommended within the *Urban Design and Tourism Investment Strategy for the Great Western Township, 2003*.

Non-standard treatments to reduce impact:

- Establishment of tree and shrub screening planting to effectively screen the duplication and maintain a vegetated edge to the township. Vegetation should be established in clumps and not in linear banding that contrasts with the existing landscape character.
- Tree planting along the base and shrub planting along embankments to screen the overpass.
- Possible screen planting within private properties along the interface of the overpass;
- Design of embankments to be complimentary to the surrounding topography; and
- Enhance existing roadside vegetation and develop strong gateway planting upon the entrances to Great Western.

It is anticipated that mitigation would result in the following impact ratings for dwellings, the Outer Great Western and the 'Vegetated Rural' landscape character type.

Dwellings, Ch. 11400-12600

Duplication type	New alignment including overpasses – high sensitivity
Number of dwellings affected	Four
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV1C

Dwellings, Ch. 14400-16500

Duplication type	New alignment including overpasses – high sensitivity
Number of dwellings affected	Ten
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV1D

Townships and places of natural and cultural value – Outer Great Western

Level of sensitivity	Medium
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV2D

Landscape Character – Vegetated Rural

Level of sensitivity	Medium to high
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Moderate Non-standard mitigation: Minor
Risk No.	LV3B

7.6 Area 5: North Great Western

This area includes the rural land north west of Great Western between Briggs Lane (Ch. 16600) and past Harvey Lane (Ch. 21000).

Description

The area is characterised by undulating Rural land with a general fall towards the north-east. Four residential dwellings are located along the Western Highway. The highway includes an overpass across a rail line in a cutting.

The duplication is located along the existing Western Highway corridor. Elements of the options that are visible and have been assessed within this area are:

- Upgrade of the existing highway carriageway for southbound traffic and duplication to the west for northbound traffic (Ch. 16600-20000);
- Diversion from the existing Western Highway carriageway with an overpass across the rail line (Ch. 20000-21000) refer to Figures 47 and 48, with fill rising to a maximum 12.2 m above the existing ground level;
- Areas of cut along the northbound carriageway between chainages 17600-17800, 18150-18400, peaking at 3.19 m (Ch. 17700), 3.27 m (Ch. 18250) and fill between chainages 17800-18150, 18500-19050 and 19850-21000, peaking at 2.99 m (Ch. 18050), 4.89 m (Ch. 18950) and 12.18 m (Ch. 20450);
- Area of fill along the southbound carriageway between chainages 20000-21000, peaking at 11.29 m (Ch. 20500);
- Service road / southbound on ramp along the existing Western Highway carriageway to the duplication alignment (Ch. 20000-21000);
- Road upgrade between Bests Road and Humphrey Lane (Ch. 16800-17600);
- A truck parking bay for northbound traffic between chainages 19000 to 19800; and
- Intersection treatments between the alignment and Humphrey Lane (Ch. 17300) and Churchill Crossing Road (Ch. 17900).

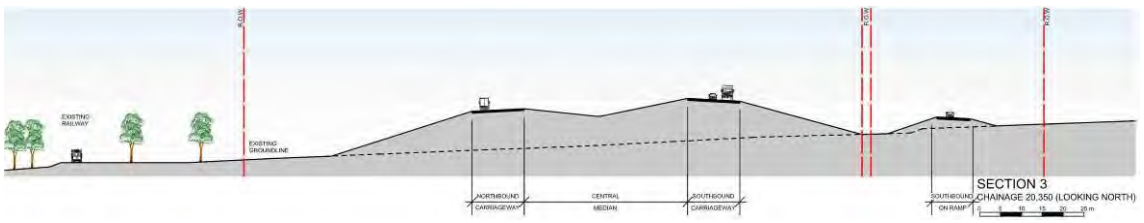

Figure 47: Cross section at Ch. 20350, looking north

Figure 48: Aerial perspective of the digital model showing the Rail Overpass, Ch. 20000-21200

Impacts

Dwellings

Refer to Appendix B - Visual Impact Map 15 for dwelling locations.

There are two areas of dwellings within the area which would experience visual change by the duplication.

Dwellings along rail overpass

A single dwelling located at chainage 20300 would experience visual change through the construction of an overpass along the existing Western Highway alignment. The visual outlook of this dwelling is across rural land towards the existing highway carriageway beyond and scattered roadside vegetation.

The duplication proposes the removal of this vegetation and conversion of the existing Western Highway carriageway into a southbound onramp to the duplication. Also, the duplication would incorporate an elevated overpass across the rail line and remove surrounding dense vegetation. It is anticipated that the overpass would be visible from the dwelling as demonstrated in Figure 49, inserting a large scale road infrastructure element upon the predominantly rural outlook of the dwelling. As such, the duplication results in a major visual change upon the dwelling and a minor impact rating.

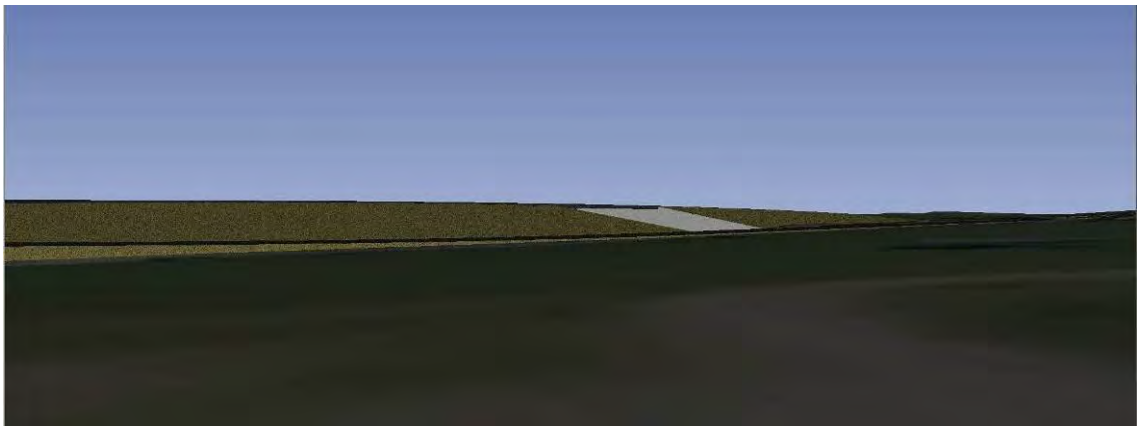

Figure 49: Indicative digital visualisation of the view from the dwelling at Ch. 20300 towards the duplication overpass across the rail line

Duplication type	Overpass along current highway alignment – high sensitivity
Number of dwellings affected	One
Level of change	Major
Impact assessment / consequence	Minor
Risk No.	LV1E

Dwellings between Ch. 17000 to 17200

Three dwellings located between chainages 17000 and 17200 would experience a visual change due to the duplication. The current visual outlook of these dwellings is across flat rural land towards the existing Western Highway carriageway, partially screened by the roadside vegetation that runs along its length. The duplication proposes the retention of this roadside vegetation, utilise the existing highway carriageway and insert a new carriageway on the western side, away from the dwellings, resulting in a minor visual change upon this outlook. As the duplication is located along the existing highway alignment, the resultant visual impact is insignificant.

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three
Level of change	Minor
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Landscape Character – Rural

Refer to Appendix A – Landscape Character Types Map 10 for character type location.

The duplication proposes an elevated overpass across the rail line within 'Rural' land. The insertion of an elevated road infrastructure element along the existing highway alignment contrasts with the visual qualities of this landscape character type characterised by open rural pastures. The landscape character type is of medium landscape sensitivity. However the duplication is located at the periphery of the landscape character type, where it meets the 'Vegetated Highway' and 'Bushland' types. Given that the overpass is located at this intersection of character types, it is anticipated that the overpass would result in moderate visual change and minor visual impact.

Level of sensitivity	Medium to high
Level of change	Moderate
Impact assessment / consequence	Minor
Risk No.	LV3D

Landscape Character – Vegetated Highway

Refer to Appendix A – Landscape Character Types Map 9 for character type location.

The duplication retains existing roadside vegetation on both the western and eastern sides of the existing highway carriageway through the area. Some vegetation is to be removed between chainages 20200 to 21000 where the duplication overpasses the rail line. The widening of the road corridor to accommodate the new carriageway and limited roadside vegetation within the area results in a moderate visual change upon the 'Vegetated Highway' landscape character type. As this character type is of low landscape sensitivity, the resultant visual impact is insignificant.

Level of sensitivity	Low
Level of change	Moderate
Impact assessment / consequence	Insignificant
Risk No.	LV3F

Mitigation Recommendations

The standard mitigation treatments incorporated in the above assessment include:

- Planting within the duplication ROW;
- Establishment of clusters of screening vegetation in line with the surrounding character, including trees at the toe of the embankment and shrubs on the fill embankment; and
- Use of grasses upon fill embankments consistent with surrounding rural land.

Non-standard mitigation can be used to address the impact of the overpass and duplication upon dwellings and landscape character, through retention of existing roadside vegetation and new screening plantings. The establishment of a tree avenue opposite areas where existing roadside vegetation is to be retained would provide visual consistency along the 'Vegetated Highway' landscape character type.

Non-standard treatments to reduce impact include:

- Retention of existing roadside vegetation where possible (protective fencing treatments may be required);
- Establishment of screening vegetation against views from the affected dwellings;
- Sensitively designed fill embankments; and
- Roadside avenue tree planting of suitable indigenous species opposite retained roadside vegetation.

It is anticipated that mitigation would result in the following residual impact ratings for dwellings and landscape character.

Dwellings along rail overpass

Duplication type	Overpass along current highway alignment – high sensitivity
Number of dwellings affected	One
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV1E

Dwellings between Ch. 17000 to 17200

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three
Level of change	Standard mitigation: Minor Non-standard mitigation: Insignificant
Impact assessment / consequence	Standard mitigation: Insignificant Non-standard mitigation: Insignificant
Risk No.	LV1A

Landscape Character – Rural

Level of sensitivity	Medium
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV3D

Landscape Character – Vegetated Highway

Level of sensitivity	Low
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Insignificant Non-standard mitigation: Insignificant
Risk No.	LV3F

7.7 Area 6: South Stawell

The area includes the southern outskirts of Stawell, where the land transitions from 'Bushland' to a 'Rural' landscape character and contains Sisters Rocks on the eastern side of the Western Highway (Ch. 21000-24600).

Description

The landscape character is defined by a heavily vegetated road corridor transitioning from surrounding 'Bushland' to 'Rural' land upon approach to Stawell. This transition and vegetated road defines the entry experience into Stawell. The topography is gently undulating with localised rises towards the east around Sisters Rocks and a general fall towards the west and Pleasant Creek.

The 'Bushland' contains a number of scattered dwellings along the duplication and their orientation and character becomes suburban in nature along Robson Road and then Mossman Road.

Sisters Rocks, Sisters Rocks Bushland, the Stawell Park Caravan Park and the Grange Golf Club are located adjacent to the Western Highway between Panrock Reservoir Road and London Road.

The duplication occurs along the existing Western Highway. Elements of the options that are visible and have been assessed within this area are:

- Duplication alignment re-joining the existing Western Highway carriageway (Ch. 21000-22000);
- Upgrade of the existing highway carriageway for southbound traffic and duplication to the west for northbound traffic (Ch. 22000-28900) refer Figure 50 and 51;
- Diversion of the duplication alignment from the existing Western Highway carriageway between London Road (Ch. 22900) and chainage 24300;
- Areas of fill along both the southbound and northbound carriageways between chainages 21000-21900 peaking at 6.23 m (Ch. 21650);
- Duplication overpass across London Diversion Road and associated intersection treatments including on and off ramps in both directions and connection to adjacent service road (Ch. 22900-24300) with maximum fill of 8.90 m (Ch. 23350) and 11.31 m (Ch. 23750) refer to Figures 52 to 55;
- Service roads to the eastern side of the southbound carriageway between chainage 21000 and Hurst Road (Ch. 22000) and Sisters Rocks (Ch. 22600) to London Road (Ch. 23100); and
- Service road to the western side of the northbound carriageway between Panrock Reservoir Road (Ch. 23100) and Robson Road, using the existing Western Highway carriageway between chainages 22900 to 23900.

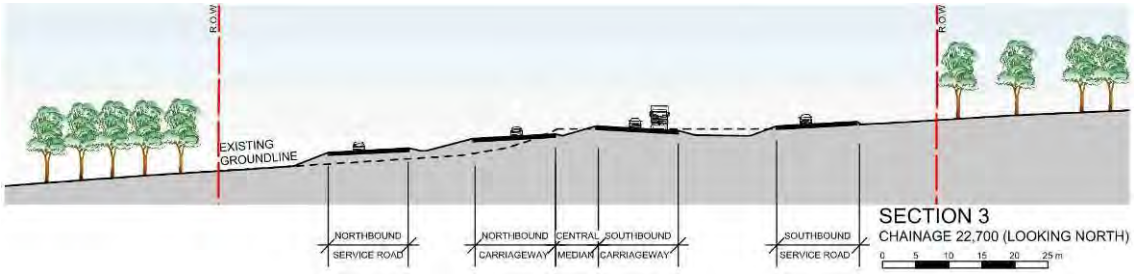

Figure 50: Cross section at Ch. 22700, looking north

Figure 51: Aerial perspective of the digital model towards the north west, Ch. 22200-23200, with the London Diversion Road in the background

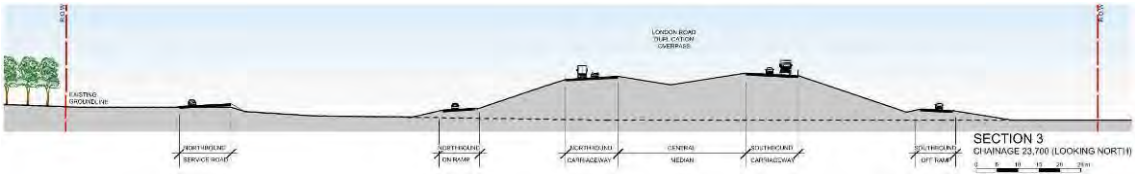

Figure 52: Cross section at Ch. 23700, looking north

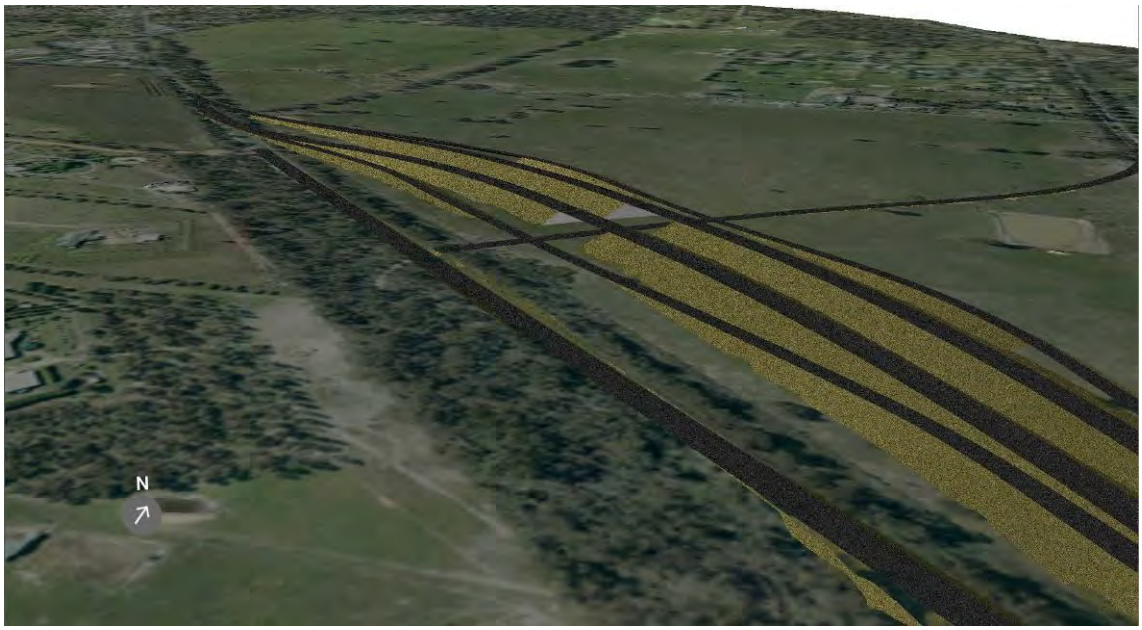

Figure 53: Aerial perspective of the digital model showing the London Diversion Road Overpass towards the north, Ch. 22900-24300

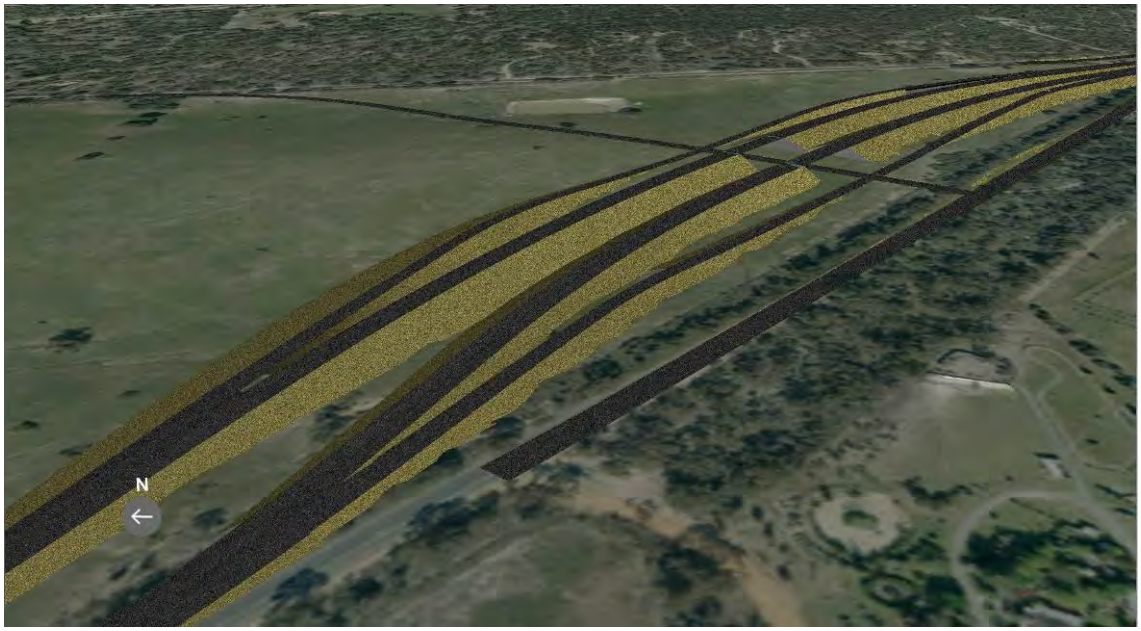

Figure 54: Aerial perspective of the digital model showing the London Diversion Road Overpass towards the east, Ch. 22900-24300

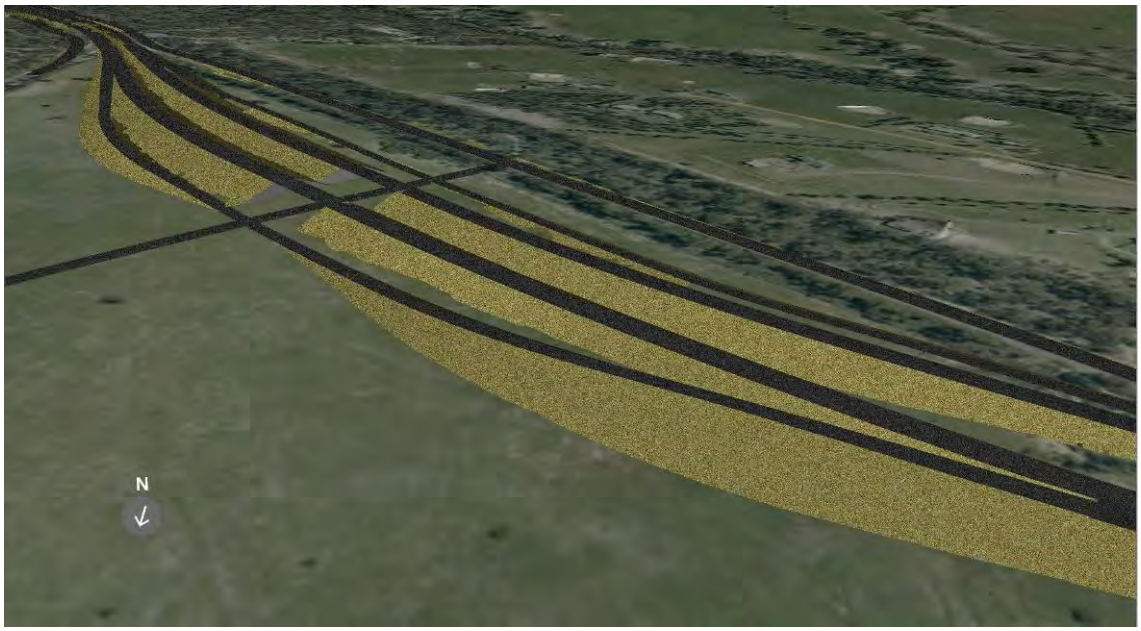

Figure 55: Aerial perspective of the digital model showing the London Diversion Road Overpass towards the south, Ch. 22900-24300

Impact

Dwellings

Refer to Appendix B - Visual Impact Map 15 for dwelling locations.

There are two different concentrations of dwellings within the area that experience visual change due to the duplication.

Dwellings between Ch. 21400 to 22200

The first concentration of dwellings includes three dwellings located between chainages 21400 and 21900 and those located within the Stawell Park Caravan Park at chainage 22200. The dwellings have a visual outlook upon the existing highway carriageway through roadside vegetation. The duplication proposes a new carriageway and service roads and the removal of roadside vegetation, typically in closer proximity to the dwellings than the existing carriageway, resulting in a moderate visual change upon these dwellings. As the duplication is along the existing highway alignment, this results in an insignificant impact rating.

An additional two dwellings are located within dense bushland between chainages 22300 to 22500. These dwellings do not have a visual outlook to the existing highway and it is anticipated that the duplication would not be visible from these dwellings.

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three with additional dwellings located within the caravan park.
Level of change	Moderate
Impact assessment / consequence	Insignificant
Risk No.	LV1A

Dwellings along London Duplication Road Overpass

The duplication proposes a large scale elevated overpass including batters, elevated on and off ramps and a new road, London Diversion Road. Dwellings are located in three locations around this overpass, eight along Robson Road, two on London Road and six along Mossman Road. All of these dwellings have a visual outlook upon the existing Western Highway carriageway, through either roadside vegetation or vegetation within private properties.

While retained vegetation does provide some screening, the scale and height of the overpass results in a major change to the visual outlook of these dwellings. As the overpass is located along the existing highway alignment and impacts upon a medium number of dwellings, the resultant impact rating is moderate.

An additional three dwellings are located within dense bushland along London Road. These dwellings do not have a visual outlook to the existing highway and it anticipated that the duplication would not be visible from these dwellings.

Duplication type	Overpass along current highway alignment – high sensitivity
Number of dwellings affected	Sixteen
Level of change	Major
Impact assessment / consequence	Moderate
Risk No.	LV1F

Townships and places of natural and cultural value – Sisters Rocks

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

Sisters Rocks is of high landscape sensitivity as an important cultural asset within a bushland setting. Being located directly adjacent to the existing Western Highway carriageway, the area containing the rocks and the informal car park has a visual outlook upon the highway that is partly screened by roadside vegetation.

The existing south western view from Sisters Rocks, referred to as location D (Figure 56) is characterised by a foreground of gravel paving and scattered canopy vegetation. Through this vegetation the Western Highway carriageway is visible in the middle ground with dense vegetation behind it. In the far background the Black Ranges are slightly visible above and between the tree canopies of the middle ground.

Figure 56: Location D, existing view from Sisters Rocks to the south west and the Western Highway

The photomontage (Figure 57) identifies the anticipated visual change from the duplication. The roadside vegetation along the highway is removed, widening the road corridor with additional road carriageways. The removal of vegetation and additional carriageway increase the amount of road infrastructure present in the view. The outlook of the Black Ranges and vegetation behind the highway is retained.

Figure 57: Location D, photomontage of the proposed alignment upon the existing view from Sisters Rocks

Given the increase of road infrastructure upon this view the duplication results in a moderate visual impact upon the view. As Sisters Rocks is of high landscape sensitivity, the resultant impact rating is moderate.

Level of sensitivity	High
Level of change	Moderate
Impact assessment / consequence	Moderate
Risk No.	LV2I

Townships and places of natural and cultural value – Sisters Rocks Bushland Reserve

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

The Sisters Rocks Bushland Reserve is of high landscape sensitivity as its natural and cultural value relate to its scenic qualities as bushland. This dense vegetation effectively screens views from internal paths and tracks out towards the duplication. Thus, it is anticipated that the anticipated level of visual change and impact is insignificant.

Level of sensitivity	Medium
Level of change	Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV2J

Townships and places of natural and cultural value – Grange Golf Course

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

The Grange Golf Course is of medium landscape sensitivity as the scenic qualities of the golf course can be considered as an important visual attribute. The golf course does not have a visual outlook upon the existing Western Highway due to its orientation and surrounding screening vegetation. Thus, the anticipated level of visual change and impact is insignificant.

Level of sensitivity	Medium
Level of change	Insignificant
Impact assessment / consequence	Insignificant
Risk No.	LV2K

Townships and places of natural and cultural value – Stawell Park Caravan Park

Refer to Appendix A – Cultural and Natural Values Map 6 for location.

The Stawell Park Caravan Park comprises of a collection of small dwellings and caravans and is of low landscape sensitivity. The existing Western Highway is visible from the Stawell Park Caravan Park through partially screening roadside vegetation along this interface. The duplication widens the existing highway at this point and removes this screening vegetation. This results in a minor level of visual change upon the outlook of the park and a minor impact rating.

Level of sensitivity	Low
Level of change	Minor
Impact assessment / consequence	Insignificant
Risk No.	LV2L

Landscape Character – Rural

Refer to Appendix A – Landscape Character Types Map 10 for character type location.

The duplication proposes a long overpass, associated on ramps and off ramps in both directions and London Diversion Road, inserting extensive road infrastructure upon the 'Rural' landscape character type. The horizontal scale, batters and height of the overpass result in a road infrastructure element in stark contrast to the flat, 'Rural' landscape character. The following Viewshed Analysis (Figure 58) demonstrates the high level of visibility of the overpass upon the surrounding rural character. Note that the analysis does not take into account objects within the landscape, such as vegetation or buildings that may provide screening of the overpass.

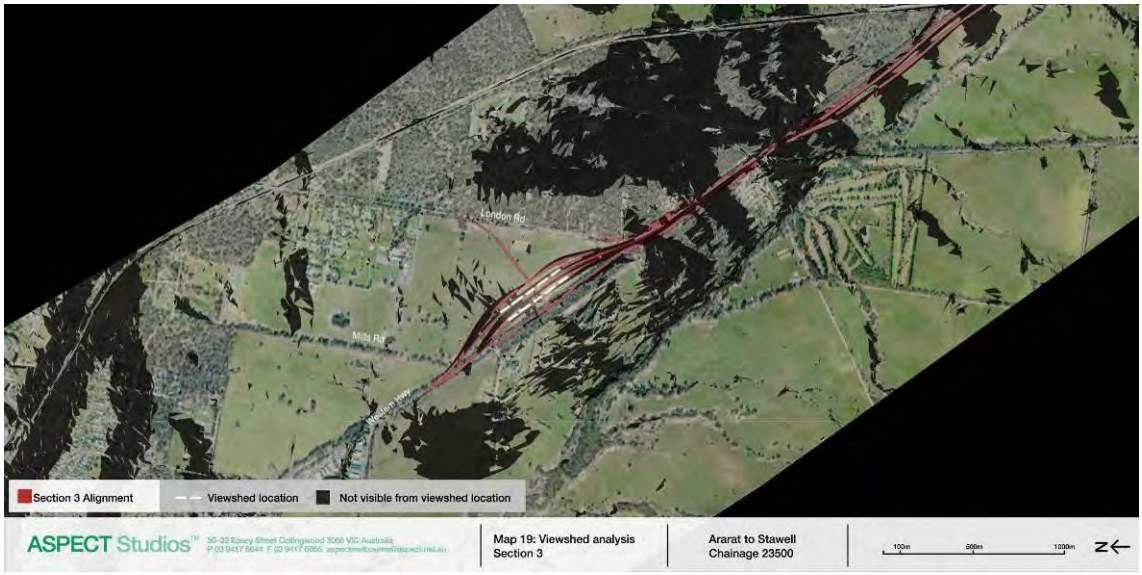

Figure 58: Viewshed of the London Diversion Road Overpass

This landscape character type is of medium landscape sensitivity and the overpass imposes a major visual change upon it. The resultant impact rating is moderate.

Level of sensitivity	Medium
Level of change	Major
Impact assessment / consequence	Moderate
Risk No.	LV3C

Landscape Character – Vegetated Highway

Refer to Appendix A – Landscape Character Types Map 10 for character type location.

The duplication proposes the removal of roadside vegetation through the area, with the exception of the vegetation located between chainages 21000 to 21800 which is to be retained. The 'Vegetated Highway' landscape character experiences a major level of visual change through the removal of roadside vegetation and widening of the road corridor. As the landscape character type is of low landscape sensitivity, the resultant impact rating is minor.

Level of sensitivity	Low
Level of change	Major
Impact assessment / consequence	Minor
Risk No.	LV3E

Mitigation Recommendations

The standard mitigation treatments incorporated in the above assessment include:

- Planting within the duplication ROW; and
- Use of grasses upon fill embankments consistent with surrounding rural land.

Non-standard mitigation of the duplication roads overpass is difficult given its scale and the surrounding open visual context. As the area is devoid of trees and shrubs, the use of screening planting would be in contrast with the surrounds and act to further highlight the overpass. Thus, mitigation should focus upon the form and design of the overpass and use of pasture grasses upon the embankments to provide visual consistency with the surrounding rural land. The establishment of isolated screening vegetation adjacent to dwellings located along the duplication would assist in mitigating the visual impact. Further non-standard mitigation can be used to reduce the visual impact upon Sisters Rocks, the Stawell Park Caravan Park, dwellings and landscape character.

Non-standard treatments to reduce impact include:

- Retention of existing roadside vegetation where possible (protective fencing treatments may be required);
- Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required).
- Establishment of screening vegetation against views for affected dwellings;
- Sensitively designed fill embankment; and
- Establish dense screening vegetation along the interface of the duplication to Sisters Rocks, within the ROW and within the informal Sisters Rocks car park.

It is anticipated that non-standard mitigation would result in the following residual impact ratings for dwellings, Sisters Rocks, Stawell Park Caravan Park and the 'Rural' and 'Vegetated Highway' landscape character types.

Dwellings between Ch. 21400 to 22200

Duplication type	Along current highway alignment – low sensitivity
Number of dwellings affected	Three with additional dwellings located within the caravan park.
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Insignificant Non-standard mitigation: Insignificant
Risk No.	LV1A

Dwellings along London Duplication Road Overpass

Duplication type	Overpass along existing highway alignment – high sensitivity
Number of dwellings affected	Sixteen
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Moderate Non-standard mitigation: Minor
Risk No.	LV1F

Townships and places of natural and cultural value – Sisters Rocks

Level of sensitivity	High
Level of change	Standard mitigation: Moderate Non-standard mitigation: Minor
Impact assessment / consequence	Standard mitigation: Moderate Non-standard mitigation: Minor
Risk No.	LV2I

Townships and places of natural and cultural value – Stawell Park Caravan Park

Level of sensitivity	Low
Level of change	Standard mitigation: Minor Non-standard mitigation: Insignificant
Impact assessment / consequence	Standard mitigation: Insignificant Non-standard mitigation: Insignificant
Risk No.	LV2L

Landscape Character – Rural

Level of sensitivity	Medium
Level of change	Standard mitigation: Major Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Moderate Non-standard mitigation: Minor
Risk No.	LV3C

Landscape Character – Vegetated Highway

Level of sensitivity	Low
Level of change	Standard mitigation: Minor Non-standard mitigation: Moderate
Impact assessment / consequence	Standard mitigation: Minor Non-standard mitigation: Insignificant
Risk No.	LV3E

7.8 Key Issues

A number of key impacts, those that resulted in a visual impact rating of moderate or higher have been identified from the assessment of the proposed alignments. They are as follows:

- The duplication overpass of Garden Gully Road in Armstrong, impacting upon adjacent dwellings and landscape character;
- The bypass of Great Western including overpasses, that impacts upon surrounding landscape character;
- The proximity of the duplication to Sisters Rocks, detrimentally impacting upon the outlook from this sensitive site and general amenity; and
- The London Diversion Road Overpass, impacting upon adjacent dwellings and landscape character.

7.9 Impact Pathways

The impact pathways resulting from the landscape and visual impact assessment are identified within Table 13 - Landscape and Visual Impact Assessment.

7.10 Risk Assessment

The risk assessment is provided in Table 13 - Landscape and Visual Impact Assessment. Table 13 provides an overall summary of the impact assessment of the landscape and visual impacts of the Project, in relation to both standard and non-standard mitigation types.

7.11 Key Risks

Key risks resulting from the risk assessment of the proposed alignment(s) and associated construction corridor are:

- Where the duplication occurs along the existing Western Highway alignment the risk rating is low.
- The Garden Gully Road overpass and Rail Overpass result in a medium risk rating, while the Great Western Bypass and London Diversion Road Overpass provide a high risk rating upon dwellings, These risks can be reduced to both low and medium respectively with the inclusion of non-standard mitigation;
- Outer Great Western receives a medium risk rating, reduced to low with non-standard mitigation;
- The risk rating of Sisters Rocks is high, reduced to medium with non-standard mitigation;
- The ‘Bushland’ landscape character type receives a medium risk rating, which cannot be reduced with non-standard mitigation;
- The risk rating upon the ‘Vegetated Rural’ landscape character type is both high and medium, reduced to medium and low with non-standard mitigation. The ‘Rural’ landscape character type receives a high risk rating due to the London Diversion Road overpass, reduced to medium with non-standard mitigation; and
- The visual impact upon the ‘Vegetated Highway’ landscape character type is major, resulting in a medium risk rating, reduced to low with non-standard mitigation.

Table 13 Landscape and Visual Risk Assessment

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV1A	Construction and operation of the duplication along the existing Western Highway alignment would visually impact upon adjacent dwellings. (Ch. 400-900, 1400-3600, 4500-5000, 9300, 10600, 17000-17200 and 21400-22200)	Approximately 24 dwellings and those located within the caravan park would be located adjacent to the duplication and would receive a moderate or minor visual change upon their views.	Provide planting within the duplication ROW.	*Insignificant*	*Likely*	*Low*	Non-standard treatments to reduce impact: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required); ◗ Establishment of screening vegetation within the ROW for views from affected dwellings; and ◗ Use of grasses upon fill embankments consistent with surrounding rural land.	*Insignificant*	*Possible*	*Negligible*
LV1B	Construction and operation of a new overpass along the current Western Highway alignment would visually impact upon adjacent dwellings. (Ch. 5300-6500)	8 dwellings would be located adjacent to the Garden Gully Overpass and would receive a major visual change upon their views.	Provide planting within the duplication ROW.	*Moderate*	*Almost Certain*	*High*	Non-standard treatments to reduce impact: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required). ◗ Establishment of screening vegetation within the ROW for views from affected dwellings; and ◗ Sensitively designed fill embankments.	*Minor*	*Almost Certain*	*Medium*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV1C	**Construction and operation of the duplication along a new highway alignment including overpasses would visually impact upon adjacent dwellings. (Ch. 11500-12600)**	**Approximately 4 dwellings would be located adjacent to Great Western Bypass and Southbound Overpass and would receive a major visual change upon their views.**	**Provide planting within the duplication ROW.**	*Minor*	*Almost Certain*	*Medium*	Non-standard treatments to reduce impact: ◗ Establishment of tree and shrub screening planting to effectively screen the duplication and maintain a vegetated edge to the township. Vegetation should be established in clumps and not in linear banding that contrasts with the existing landscape character. ◗ Tree planting along the base and shrub planting along embankments to screen the overpass. ◗ Possible screen planting within private properties along the interface of the overpass; ◗ Design of embankments to be complimentary to the surrounding topography; and ◗ Enhance existing roadside vegetation and develop strong gateway planting upon the entrances to Great Western.	*Insignificant*	*Almost Certain*	*Low*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV1D	Construction and operation of the duplication along a new highway alignment including overpasses would visually impact upon adjacent dwellings. (Ch. 14400-16500)	Approximately 10 dwellings would be located adjacent to Great Western Bypass and Bests Road Overpass and would receive a moderate visual change upon their views.	Provide planting within the duplication ROW.	*Minor*	*Almost Certain*	*Medium*	Non-standard treatments to reduce impact: ◗ Establishment of tree and shrub screening planting to effectively screen the duplication and maintain a vegetated edge to the township. Vegetation should be established in clumps and not in linear banding that contrasts with the existing landscape character. ◗ Tree planting along the base and shrub planting along embankments to screen the overpass. ◗ Possible screen planting within private properties along the interface of the overpass; ◗ Design of embankments to be complimentary to the surrounding topography; and ◗ Enhance existing roadside vegetation and develop strong gateway planting upon the entrances to Great Western.	*Insignificant*	*Almost Certain*	*Low*
LV1E	Construction and operation of a new overpass along the existing Western Highway alignment would visually impact upon adjacent dwellings. (Ch. 20200-21000)	1 dwelling would be located adjacent to the Rail Overpass and would receive a major visual change upon their views.	Provide planting within the duplication ROW.	*Minor*	*Almost Certain*	*Medium*	Non-standard treatments to reduce impact include: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); ◗ Establishment of screening vegetation against views for the affected dwellings; ◗ Sensitively designed fill embankments; and ◗ Roadside avenue tree planting opposite retained roadside vegetation.	*Insignificant*	*Almost Certain*	*Low*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV1F	Construction and operation of a new overpass along the existing Western Highway alignment would visually impact upon adjacent dwellings. (Ch. 23000-242000)	Approximately 16 dwellings would be located adjacent to the London Duplication Road Overpass and would receive a major visual change upon their views.	Provide planting within the duplication ROW.	*Moderate*	*Almost Certain*	*High*	Non-standard treatments to reduce impact include: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required). ◗ Establishment of screening vegetation against eastern views for the affected dwelling; and ◗ Sensitively designed fill embankment.	*Minor*	*Almost Certain*	*Medium*
LV2A	Construction and operation of the duplication would visually impact upon the Ararat Regional Park. (Ch. 1000-2400)	It is not anticipated that the duplication would be visible from the Ararat Regional Park and would receive an insignificant visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Unlikely*	*Negligible*	None required.	*Insignificant*	*Unlikely*	*Negligible*
LV2B	Construction and operation of the duplication would visually impact upon Grampians Estate Wines. (Ch. 11000)	The duplication would be visible from Grampians Estate Wines and receive an insignificant visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Almost Certain*	*Low*	None required.	*Insignificant*	*Almost Certain*	*Low*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV2C	Construction and operation of the duplication would visually impact upon the Great Western Town Centre.	It is not anticipated that the duplication would be visible from the Great Western Town Centre and would receive an insignificant visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Unlikely*	*Negligible*	None required.	*Insignificant*	*Unlikely*	*Negligible*
LV2D	Construction and operation of the duplication would visually impact upon Outer Great Western. (Ch. 11200-16400)	The duplication would be visible from Outer Great Western and receive a moderate visual change.	Provide planting within the duplication ROW.	*Minor*	*Almost Certain*	*Medium*	Non-standard treatments to reduce impact: ◗ Establishment of tree and shrub screening planting to effectively screen the duplication and maintain a vegetated edge to the township. Vegetation should be established in clumps and not in linear banding that contrasts with the existing landscape character. ◗ Tree planting along the base and shrub planting along embankments to screen the overpass. ◗ Possible screen planting within private properties along the interface of the overpass; ◗ Design of embankments to be complimentary to the surrounding topography; and ◗ Enhance existing roadside vegetation and develop strong gateway planting upon the entrances to Great Western.	*Insignificant*	*Almost Certain*	*Low*
LV2E	Construction and operation of the duplication would visually impact upon the Great Western Primary School. (Ch. 14600)	It is not anticipated that the duplication would be visible from the Great Western Primary School and would receive an insignificant visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Unlikely*	*Negligible*	None required.	*Insignificant*	*Unlikely*	*Negligible*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV2F	Construction and operation of the duplication would visually impact upon the Great Western Bushland Reserve. (Ch. 12400-13000)	It is not anticipated that the duplication would be visible from the Great Western Bushland Reserve and would receive an insignificant visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Unlikely*	*Negligible*	None required.	*Insignificant*	*Unlikely*	*Negligible*
LV2G	Construction and operation of the duplication would visually impact upon Bests Winery. (Ch. 15800)	The duplication would be visible from Bests Winery and receive a minor visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Almost Certain*	*Low*	None required.	*Insignificant*	*Almost Certain*	*Low*
LV2H	Construction and operation of the duplication would visually impact upon Seppelt Winery. (Ch. 12200)	The duplication would be visible from Seppelt Winery and receive a minor visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Almost Certain*	*Low*	None required.	*Insignificant*	*Almost Certain*	*Low*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV2I	Construction and operation of the duplication would visually impact upon Sisters Rocks. (Ch. 22000-22400)	The duplication would be visible from Sisters Rocks and receive a moderate visual change.	Provide planting within the duplication ROW.	*Moderate*	*Almost Certain*	*High*	Non-standard treatments to reduce impact: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required); and ◗ Establish dense screening vegetation along the interface of the duplication to Sisters Rocks, within the ROW and within the informal Sisters Rocks car park.	*Minor*	*Almost Certain*	*Medium*
LV2J	Construction and operation of the duplication would visually impact upon the Sisters Rocks Bushland Reserve. (Ch. 22800-23000)	It is not anticipated that the duplication would be visible from the Sisters Rocks Bushland Reserve and would receive an insignificant visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Unlikely*	*Negligible*	None required.	*Insignificant*	*Unlikely*	*Negligible*
LV2K	Construction and operation of the duplication would visually impact upon the Grange Golf Course. (Ch. 22000)	It is not anticipated that the duplication would be visible from the Grange Golf Course and would receive an insignificant visual change.	Provide planting within the duplication ROW.	*Insignificant*	*Unlikely*	*Negligible*	None required.	*Insignificant*	*Unlikely*	*Negligible*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV2L	**Construction and operation of the duplication would visually impact upon the Stawell Park Caravan Park. (Ch. 22000-22400)**	**The duplication would be visible from the Stawell Park Caravan Park and receive a minor visual change.**	**Provide planting within the duplication ROW.**	***Insignificant***	***Almost Certain***	***Low***	Non-standard treatments to reduce impact: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); and ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required).	***Insignificant***	***Almost Certain***	***Low***
LV3A	**Construction and operation of the duplication would visually impact upon landscape character types of high landscape sensitivity.** **(Ch. 14000-14800)**	**The duplication would result in a minor visual change upon the Bushland landscape character type through the removal of existing tree vegetation.**	**Provide planting within the duplication ROW.**	***Minor***	***Almost Certain***	***Medium***	None required.	***Minor***	***Almost Certain***	***Medium***
LV3B	**Construction and operation of the duplication would visually impact upon landscape character types of medium-high landscape sensitivity.** **(Ch. 5600-6400, 11600-12900, 14700-16400)**	**The duplication would result in a major visual change upon the Vegetated Rural landscape character type through the construction of the duplication, overpasses and removal of existing tree vegetation.**	**Provide planting within the duplication ROW.**	***Moderate***	***Almost Certain***	***High***	Non-standard treatments to reduce impact: ◗ Establishment of tree and shrub screening planting to effectively screen the duplication and maintain a vegetated edge to the township. Vegetation should be established in clumps and not in linear banding that contrasts with the existing landscape character. ◗ Tree planting along the base and shrub planting along embankments to screen the overpass. ◗ Possible screen planting within private properties along the interface of the overpass; and ◗ Design of embankments to be complimentary to the surrounding topography.	***Minor***	***Almost Certain***	***Medium***

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV3C	Construction and operation of the duplication would visually impact upon landscape character types of medium landscape sensitivity. (Ch. 23000-24000)	The duplication would result in a major visual change upon the Rural landscape character type through the construction of the duplication, overpasses and removal of existing tree vegetation.	Provide planting within the duplication ROW.	*Moderate*	*Almost Certain*	*High*	Non-standard treatments to reduce impact include: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required). Sensitively designed fill embankment.	*Minor*	*Almost Certain*	*Medium*
LV3D	Construction and operation of the duplication would visually impact upon landscape character types of medium landscape sensitivity. (Ch. 20200-21000)	The duplication would result in a moderate visual change upon the Rural landscape character type through the construction of the duplication, overpasses and removal of existing tree vegetation.	Provide planting within the duplication ROW.	*Minor*	*Almost Certain*	*Medium*	Non-standard treatments to reduce impact: ◗ Establishment of tree and shrub screening planting to effectively screen the duplication and maintain a vegetated edge to the township. Vegetation should be established in clumps and not in linear banding that contrasts with the existing landscape character. ◗ Tree planting along the base and shrub planting along embankments to screen the overpass. ◗ Possible screen planting within private properties along the interface of the overpass; and ◗ Design of embankments to be complimentary to the surrounding topography.	*Insignificant*	*Almost Certain*	*Low*

Risk No.	Impact pathway	Description of consequences	Planned Controls to Manage Risk / Standard Mitigation	Initial Risks			Additional Controls Recommended to Reduce Risk / Non-Standard Mitigation	Residual Risks		
				Consequence	Likelihood	Risk Rating		Consequence	Likelihood	Risk Rating
LV3E	Construction and operation of the duplication would visually impact upon landscape character types of low landscape sensitivity. (Ch. 0-5500, 8300-11200, 21000-24500)	The duplication would result in a major visual change upon the Vegetated Highway landscape character type through the removal of existing tree vegetation.	Provide planting within the duplication ROW.	*Minor*	*Almost Certain*	*Medium*	Non-standard treatments to reduce impact: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); and ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required).	*Insignificant*	*Almost Certain*	*Low*
LV3F	Construction and operation of the duplication would visually impact upon landscape character types of low landscape sensitivity. (Ch. 16600-21000)	The duplication would result in a moderate visual change upon the Vegetated Highway landscape character type through the removal of existing tree vegetation.	Provide planting within the duplication ROW.	*Insignificant*	*Almost Certain*	*Low*	Non-standard treatments to reduce impact: ◗ Retention of existing roadside vegetation where possible (protective fencing treatments may be required); and ◗ Establishment of tree and shrub planting of similar character to existing roadside vegetation in close proximity to the road edge (protective fencing treatments may be required).	*Insignificant*	*Almost Certain*	*Low*

8. Mitigation Measures

8.1 Construction and Operation

VicRoads would require the construction contractor to develop and implement a Construction Environmental Management Plan (CEMP) for the Project. VicRoads standard environmental protection measures and some additional Project specific controls identified below would be incorporated into the Environmental Management Framework for the Project. VicRoads would require the construction contractor to incorporate all of these measures into the CEMP.

Standard environmental protection measures are the type of landscape and design mitigation which VicRoads would undertake, as far as practical, as part of any major road project. These are described in VicRoads Contract Shell DC1: Design & Construct, April 2012, hereafter referred to as the "VicRoads standard environmental protection measures". These have been developed by VicRoads and provide a level of mitigation appropriate to minimise typical physical impacts on the environment and the community.

The impacts of the Project are assessed after the application of standard mitigation seven years post construction, rather than pre-mitigation. VicRoads' standard environmental protection measures for landscape that would be adopted for this Project include:

- Planting within the ROW;
- Bridges and culverts to be located and designed to complement and accommodate wildlife links, revegetation, and creek systems;
- Creek realignments to be minimised where practicable and stabilised through revegetation with appropriate riparian species;
- Locate and design watercourse crossings to minimise loss of riparian vegetation and to accommodate erosion control methods;
- Plant and mulch unstable batters to reduce the risk of erosion;
- Plant and/or landform between the freeway and the right of way boundary to screen adjacent access roads and dwellings;
- Encourage indigenous planting within the ROW freeway boundary to strengthen the extent of landscape character where relevant;
- Use a combination of landform and planting to screen the freeway from adjacent residencies;
- Use local planting themes where possible to identify 'gateways' within interchange reservation boundaries, in the design of rest areas or to identify other significant landscape elements;
- Where noise attenuation is required consider noise attenuation mounds, as a first option, followed by noise attenuation walls;
- Location and design of rest areas should coincide with significant cultural and landscape features, for example panoramic viewing points, historic sites and places of apparent change in landscape character; and
- Standard engineering bridge design.

These measures have been used as the starting point for the impact assessment. Those that are relevant to landscape and visual impact are included in the “planned controls” column of the risk assessment (Table 13) and discussed within the Impact Assessment Section 7.

As a result of the impact assessment, additional project specific controls have been proposed to reduce the visual impact of the Project. These are referred to as non-standard mitigation and are outlined in the “additional controls” column of the risk assessment in Table 13. Further information regarding these mitigation measures are provided within the Impact Assessment, relevant to each Project Area. Non-standard mitigation is assessed after seven years post construction and include:

- Minimise structural thicknesses of overpasses and bridges;
- Minimise the number of bridge piers;
- Use spill through abutments;
- Minimise the construction footprint to retain and protect continuous corridor vegetation along the highway;
- Minimise the grade line to ensure the structure and roadway are better absorbed into the surrounding landscape;
- Embankment treatments with maximum 1 in 3 grade to allow for mechanical mowing;
- Architecturally designed wall treatments and overpass elements;
- Wall treatments to be a material that is recessive in texture and colour, to neither highlight the vertical or horizontal form of the wall and be relative to a pedestrian scale;
- Custom designed gateway elements; and
- Custom design of overpass support piers.

Both VicRoads standard environmental protection measures and the additional Project specific controls have been included in the Environmental Management Framework for the Project which is documented in the Project Environmental Protection Strategy (PEPS). The PEPS is a VicRoads document that details the environmental management arrangements for the design, construction and operation of the Project. Refer to Chapter 21 of the EES for further explanation of the environmental management framework and documentation proposed for the project.

Conceptual diagrams of how the mitigation measures proposed above can be applied to sensitive areas of the duplication are provided within Appendix E. These diagrams also include areas of vegetation that are recommended for retention based upon their conservation status within the *Western Highway Project: Section 3, Ararat to Stawell, Victoria: ‘Impact Assessment Report – Flora, Fauna and Ecological Communities’* prepared for VicRoads in May 2012 by Ecology and Heritage Partners Pty Ltd. Any proposed mitigation would need to ensure the protection of the vegetation within these areas.

It is acknowledged that the recommended mitigation actions are subject to existing site conditions and infrastructure such as the location of existing services, and as such are subject to further detailed design.

The assessment identifies areas of sensitivity to visual impacts upon dwellings, townships, places of natural and cultural value and landscape character. It is recommended that construction operations, including material storage, depots, fill sites and borrow pits respond to these sensitive areas as far as practically possible.

9. Conclusion

The key EES objective relevant to visual and landscape impact assessment is outlined in the Scoping Requirements as follows:

- *To avoid or minimise air emissions, noise, visual, landscape, and other adverse amenity effects on local residents, during the development and operation of the proposed duplicated highway to the extent practicable.*

ASPECT Studios assessed the project objectives as identified within the *Environment Effects Statement Scoping Requirements* and from this, determined appropriate assessment objectives. These are:

- *To minimise the impact upon the amenity of adjacent residents;*
- *To minimise the impact upon townships and cultural and natural values;* and
- *To minimise detrimental impact upon existing landscape character.*

The impact assessment has been undertaken in accordance with the EES Scoping Requirements.

9.1 Impact on Residents:

The existing residents who live along the highway are currently affected by the highway in terms of landscape and visual impact. Where the duplication occurs adjacent to the existing highway, the visual impact upon adjacent residents is low, as it is already an existing transport corridor.

Dwellings located adjacent to overpasses and the Great Western Bypass receive a higher visual impact and risk rating as the duplication inserts new carriageways and large scale road infrastructure upon visual outlooks that do not typically contain such elements. However, with careful landscape mitigation as described in Section 6.3 Table 6, the effects can be reduced.

9.2 Impact on Townships and Cultural and Natural Values:

The duplication typically results in an insignificant visual impact upon Great Western Town Centre and other places of natural and cultural value. However, the visual impact upon Outer Great Western and Sisters Rocks are comparably higher, resulting in a medium and high risk rating respectfully. These risks can be reduced to acceptable levels through the use of non-standard mitigation, comprising of screening vegetation and the sensitive design of road infrastructure.

9.3 Impact on Landscape Character Areas:

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 the area with the incorporation of non-

standard mitigation, including roadside tree planting and the retention of existing roadside vegetation.

Key areas where the landscape character is likely to be diminished include the Great Western Bypass, where the alignment deviates from the existing Western Highway corridor and where new road interventions such as overpasses and ramps are inserted upon 'Vegetated Rural' or 'Rural' landscape character types. However, with careful non-standard mitigation, including the sensitive design of road infrastructure and planting characteristic of the character types, the visual impact and risk ratings upon these character types are reduced.

9.4 Conclusion

Overall, by utilising the existing Western Highway alignment through the majority of its length, the duplication 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.

This report, together with other technical reports prepared by GHD and other consultants as part of the EES, will inform VicRoads' detailed planning and design of the proposed alignment for the Project.

10. References

Clarke, V & Associates, 2008, '*The Cultural Heritage Due Diligence Report*'.

Hammond, R, Leonard, M 1984, '*Landscape Character Types of Victoria, Forests Commission Victoria*'.

Spon E & FN, 2002, '*Guidelines for Landscape and Visual Impact Assessment by the Landscape Institute and the Institute of Environmental Management and Assessment*'.

Legislative references:

Aboriginal Heritage Act 2006 and Aboriginal Heritage Regulations 2007

Ararat Planning Scheme (including policy and overlays)

Environment Protection and Biodiversity Conservation Act 1999

Flora and Fauna Guarantee Act 1988 (Victoria)

KLM Consulting Group Mary Maddock Consulting, 2003, Urban Design and Tourism Investment Strategy for the Great Western Township, 2003

Native Vegetation Management Framework 2002

Northern Grampians Planning Scheme (including policy and overlays)

Planning and Environment Act 1987

Victorian *Heritage Act 1995*