WESTERN HIGHWAY PROJECT
SECTION 2 BEAUFORT TO ARARAT

ASSESSMENT

under

ENVIRONMENT EFFECTS ACT 1978

Minister for Planning

May 2013

GLOSSARY

AH Act	Aboriginal Heritage Act 2006
AMP	Access Management Policy
ASS	Acid sulphate soils
CEMP	Construction Environmental Management Plans
CFA	Country Fire Authority
CHMP	Cultural Heritage Management Plan, prepared under Aboriginal Heritage Act 2006
CMA	Catchment Management Authority
DPCD	Victorian Department of Planning and Community Development
DPI	Victorian Department of Primary Industries
DSE	Victorian Department of Sustainability and Environment
DSEWPC	Commonwealth Department of Sustainability, Environment, Water, Populations and Communities
EE Act	Environment Effects Act 1978
EES	Environment Effects Statement
EMF	Environmental Management Framework
EMS	Environmental Management Strategy
EPA	Environment Protection Authority
EP Act	Environment Protection Act 1970
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESD	ecologically sustainable development
EVC	Ecological Vegetation Class
FFG Act	Flora and Fauna Guarantee Act 1988 (Vic.)
GEWVVP	Grassy Eucalypt Woodland of the Victorian Volcanic Plain
GDE	Groundwater Dependant Ecosystems
GSM	Golden Sun Moth
ha	hectares
HCS	high conservation significance
Hha	habitat hectares
km	kilometres
LOTs	Large Old Trees
LPPF	Local Planning Policy Framework
m	metres
NES	national environmental significance
NTGVVP	Natural Temperate Grassland of the Victorian Volcanic Plain
NVMF	Victoria's Native Vegetation Management Framework
P&E Act	Planning and Environment Act 1987

PAO	Public Acquisition Overlay
PEPS	Project Environmental Protection Strategy
PSA	Planning Scheme Amendment
SEPP	State Environment Protection Policy
SPPF	State Planning Policy Framework
TMP	Traffic Management Plan
VHCS	very high conservation significance
WHP2	Western Highway Project Section 2 (Beaufort to Ararat)

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1 INTRODUCTION

1.1 Purpose of this Document

This is the assessment of environmental effects (Assessment) under the *Environment Effects Act 1978* (EE Act) for the Western Highway Project Section 2 Beaufort to Ararat (WHP2). It represents the final step in the Environment Effects Statement (EES) process under the EE Act by providing advice to decision-makers on the likely environmental effects of the proposal, their acceptability and how they should be addressed in relevant statutory decisions. The Assessment is informed by the report of the recent Inquiry together with the EES and public submissions.

This Assessment will inform the decisions required under Victorian law for the proposal to proceed, in particular approval decisions under the *Planning and Environment Act 1987* (P&E Act). It will also inform the approval decision under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.2 Project Description

VicRoads proposes to duplicate the Western Highway between Beaufort (Martins Lane) and Ararat (Warrayatkin Road) as part of a larger project to duplicate the highway between Ballarat and Stawell. It is proposed to upgrade Section 2 Beaufort to Ararat to freeway standard in the long term. The project does not involve bypasses of Beaufort or Ararat.

The project would mainly involve construction of a second carriageway adjacent and parallel to the existing highway on adjacent land. At Box's Cutting and Buangor, new dual carriageways are proposed, and the existing highway would revert to a local road. When traffic conditions warrant and funding becomes available, it is proposed to upgrade Section 2 to a rural freeway standard. This would require construction of service roads for local access and grade separated interchanges. The EES addresses the effects of both the interim upgrade to a divided rural highway and the ultimate upgrade to a freeway.

The project covers a route length of approximately 38 km through the Shire of Pyrenees and the Rural City of Ararat. The alignment spans six significant waterways and would require a new crossing of the Ballarat – Ararat railway line. It would affect land that is predominantly used for a variety of agricultural uses including plantations, grazing and cropping.

A detailed description of the project is provided in Chapter 6 of the EES.

1.3 Structure of this Assessment

Section 2 of this Assessment outlines both the EES process and statutory approvals required for the proposed development.

The core part of this Assessment is Section 3, which first provides an outline of the process undertaken by VicRoads for analysing a range of potentially suitable alignment options, resulting in a short list of two options which would meet the project objectives. Section 3 then assesses the potential environmental effects of the two short-listed options evaluated in detail in the EES. Section 3 concludes with an assessment of the proposal and its overall outcomes in the context of applicable legislation, statutory policy as well as the relevant objectives and principles of ecologically sustainable development (ESD).

Table 3 provides specific responses to the recommendations of the Inquiry.

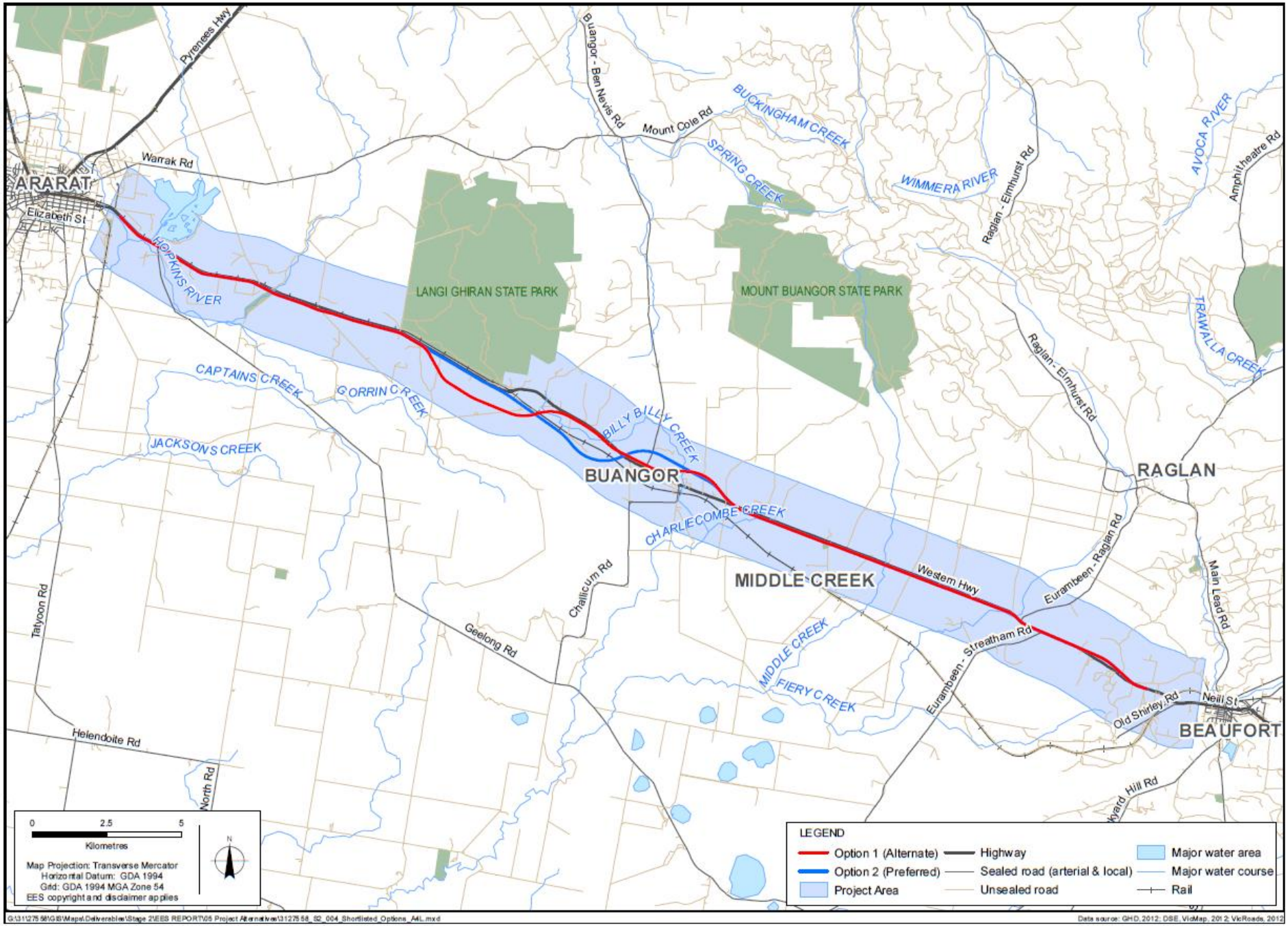

Figure 1. Western Highway Project Section 2 – preferred and alternative alignments

2 STATUTORY PROCESSES

2.1 Environment Effects Act 1978

On 27 October 2010, the former Minister for Planning determined that an EES was required for the project under the EE Act. The EES has been prepared by the proponent in response to Scoping Requirements issued by the Minister for the proposal in September 2011.

The EES was placed on public exhibition, together with draft amendments to the Pyrenees and Ararat Planning Schemes, from 14 September 2012 until 25 October 2012. Twenty-three submissions were received, five of which were from State and local government bodies.

The Minister appointed an Inquiry under the EE Act, to review submissions and inquire into the environmental effects of the WHP2, in accordance with terms of reference issued by the Minister on 2 November 2012. The Minister also appointed the Inquiry members as an Advisory Committee under section 151 of the P&E Act to consider the draft planning scheme amendments (PSAs) and related matters raised in submissions.

The Inquiry held a directions hearing on 13 November 2012, followed by its public hearing over three days from 4 to 6 December 2012. The Inquiry provided its report to the Minister on 11 February 2013. The report has informed the preparation of this Assessment of the environmental effects of the WHP2 under the EE Act.

The next step is the provision of the Assessment to statutory decision-makers, who must consider it before deciding whether to allow the proposal to proceed. This Assessment will inform approval decisions under Victorian law (outlined below), as well as by the Australian Government Minister for Sustainability, Environment, Water, Population and Communities (DSEWPC) under the EPBC Act.

2.2 Victorian Statutory Approvals

The WHP2 requires a number of Victorian statutory approvals, including:

- Amendment C37 to the Pyrenees Planning Scheme and Amendment C27 to the Ararat Planning Scheme under the P&E Act to allow the application of Public Acquisition Overlays (PAO) to the land to be compulsorily acquired for the project and to exempt VicRoads from the requirement to obtain planning permits for works and vegetation removal associated with the project, provided certain conditions are met in accordance with an Incorporated Document.
- Consents for works on waterway under the *Water Act 1989*.
- An approved Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006* (AH Act).

Exhibition of draft PSA C37 and C27 for the preferred and alternative alignments was coordinated with the exhibition of the EES for WHP2.

2.3 Commonwealth Statutory Approval

On 17 December 2010, the delegate of the Australian Government Minister for Sustainability, Environment, Water, Population and Communities decided that the proposal was a 'controlled action' and therefore requires assessment and approval under the EPBC Act. The Victorian EES process is accredited as the necessary Commonwealth assessment process through a Bilateral Agreement between Victoria and the Commonwealth, made under Section 45 of the EPBC Act. Therefore, this Assessment under the EE Act will inform the Commonwealth's approval decision under the EPBC Act.

3 INTEGRATED ASSESSMENT

3.1 Approach to this Assessment

To provide a coherent and integrated structure for this Assessment of likely adverse environmental effects, the key aspects of relevant legislation, statutory policy and the principles and objectives of ESD[1] have been synthesized into a set of evaluation objectives that are pertinent to the WHP2. A draft set of evaluation objectives was included in the Scoping Requirements for this EES, which were used by the proponent in their assessment of options and effects within the EES. The Inquiry also used the draft objectives to frame its consideration of the key issues of the WHP2. Table 1 lists the final set of evaluation objectives used in this Assessment and the core legislation that underpins them.

[1] See *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* made under section 10 of the EE Act; pp. 19 and 27.

Table 1. Assessment Evaluation Objectives

	Evaluation Objectives	Key Legislation
1	Road safety and capacity To provide for the duplication of the Western Highway between Beaufort and Ararat to enhance the safety and capacity of this inter-regional and interstate transport link.	*Transport Integration Act 2010*
2	Biodiversity To avoid or minimise effects on flora and fauna species and ecological communities listed under the *Flora and Fauna Guarantee Act 1988* or the *Environment Protection and Biodiversity Conservation Act 1999*, as well as to comply with requirements under *Victoria's Native Vegetation Management - A Framework for Action (2002)* (NVMF).	*Flora and Fauna Guarantee Act 1988* *Wildlife Act 1975* *NVMF* EPBC Act
3	Infrastructure and land use To avoid or minimise adverse effects on existing infrastructure and land uses.	P&E Act *Transport Integration Act 2010*
4	Amenity and landscape To minimise dust emissions, noise, visual and other adverse effects on residents' amenity as well as effects on landscape values.	P&E Act *Environment Protection Act 1970 (EP Act)* *Transport Integration Act 2010*
5	Catchment values To protect catchment values, including in relation to soils, surface water and groundwater quality, stream flows and floodway capacity, as well as to avoid impacts on beneficial uses.	*Water Act 1989* *Catchment and Land Protection Act 1994* *EP Act 1970* P&E Act
6	Cultural heritage To protect Aboriginal and non-Aboriginal cultural heritage.	AH Act *Heritage Act 1995* P&E Act
7	Environmental management framework To provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with the project in order to achieve acceptable environmental outcomes.	P&E Act *EP Act 1970* EPBC Act
8	Ecologically sustainable development To achieve an appropriate balance of environmental, economic and social outcomes, consistent with the principles and objectives of ESD.	P&E Act *EP Act 1970* *Transport Integration Act 2010* EPBC Act

3.2 Assessment of Options

The EES was required to describe and assess relevant design alternatives and alignment options having regard to the evaluation objectives in the scoping requirements. VicRoads also considered project objectives in devising the evaluation framework that was applied in a three-phase process to identify, assess and evaluate alignment options. Two important factors that influenced the development of alignment options were the need for appropriate connection with, and optimal use of, current infrastructure such as the existing highway.

In addressing potential alignments, VicRoads split the section of the Western Highway between Beaufort and Ararat into four zones as follows:

- Zone 1 Beaufort to Eurambeen Road - Streatham Road
- Zone 2 Eurambean Road to Charliecombe Road
- Zone 3 Charliecombe Road to Langi Gharin Track
- Zone 4 Langi Gharin Track to Ararat.

In phase 1 of the options assessment process, VicRoads identified up to 10 alignment options within each zone. The evaluation of this "long list" and the reasons for rejecting most of the options are provided in Chapter 5 of the EES.

Phase 2 involved a more detailed assessment of short-listed options. Zones 1 and 3 were split into smaller sub-zones to allow more detailed comparison across alignment options. Section 5.4 of the EES provides a detailed description of the methodology used while section 5.5 provides an analysis of the results. The outcome of VicRoads' analysis of the short-listed options was the selection of two potential alignments for between Beaufort and Ararat, identified as Options 1 and 2.

The preliminary analysis of the two options showed that their environmental risks were largely comparable and there was no clearly preferred option at that stage. Option 2 was considered to have less land severance, acquisition and therefore less impact on land-uses such as farming. From an environmental perspective, option 2 was considered to involve less impact on Golden Sun Moth habitat and less removal of the Grassy Eucalypt Woodland of Victorian Volcanic Plains community, which is listed under the EPBC Act. Overall, Option 1 was considered to involve the removal of less total native vegetation, as well as one less dwelling being directly impacted.

VicRoads determined that both Options 1 and 2 would meet the project objectives and deliver the desired benefits of improved road safety and transport efficiency. It therefore decided to subject both options to detailed assessment and evaluation in the EES to enable better differentiation between them. During the drafting of the EES VicRoads identified Option 2 as their preferred option, while Option 1 was identified in the EES as an alternative that could be implemented.

Draft PSAs were prepared for both Options 1 and 2 and the potential environmental effects were assessed in the same level of detail in the EES.

Conclusions

The generation and evaluation of options by VicRoads for the EES has been comprehensive and sufficient to inform the selection of two alignments for detailed examination within the EES, which in turn enables the identification of an optimal alignment for the duplication of the WHP2.

The remainder of this Assessment considers the environmental effects of Options 1 and 2 in detail.

3.3 Road Safety and Capacity

Evaluation Objective - *To provide for the duplication of the Western Highway between Beaufort and Ararat to enhance the safety and capacity of this inter-regional and interstate transport link.*

Key Issues

The key issues to consider regarding the project's design and its associated safety and capacity benefits are:

- Whether the WHP2 would sufficiently improve road safety, in terms of the incidence and severity of road crashes on the Western Highway between Beaufort and Ararat.
- Whether the design addresses capacity requirements in the context of its strategic role in the national transport network.

Relevant Context

The relevant policies and guidelines that VicRoads have applied to the development and design of the WHP2 include the VicRoads Access Management Policy (AMP) and the AustRoads Guide to Road Design.

Initially WHP2 involves upgrading the existing highway to accord with Schedule 3 (Limited Access – Rural) of the VicRoads AMP usually referred to as AMP3. This would involve wide median treatments at key intersections to accommodate safe turning movements. It is proposed to design the medians to provide for the turning manoeuvre requirements of standard B-Double trucks. In general highway access would be left-in, left-out.

Ultimately WHP2 is proposed to be further upgraded to a rural freeway standard designated by VicRoads as AMP1. This would require grade separated freeway interchanges and entry and exit ramps to be provided. Service roads would be provided wherever alternative access to an existing property is not available.

Discussion and Findings

The Western Highway duplication (between Ballarat and Stawell) has been funded by the Commonwealth and State Governments as part of the Nation Building Program. This was done in the context of the Western Highway being part of the National Land Transport Network, a strategically important network of transport linkages. Indeed the Western Highway is the principal interstate road link between Adelaide and Melbourne, providing a key route for the freight industry and tourist traffic to and from the west - it is one of the busiest rural highways in the country and the most significant interstate route that is not duplicated.

According to the EES[2], the total traffic volume along the Western Highway has increased five per cent over the past three years. The Western Highway is currently supporting a variety of traffic ranging from tourist traffic attracted to the Goldfields Touring Route, commuter traffic, B double trucks and farm machinery. About one-third of the highway traffic is heavy vehicles. There is an increasing problem of queuing behind slow-moving vehicles and additional costs borne by the freight industry through reductions in speed limits to improve road safety. Therefore duplication is intended to allow safe overtaking at all times and eliminate traffic queuing.

Between 1 January 2007 and 31 December 2011, there were a total of 20 recorded crashes within the project area, two of which resulted in fatalities and 11 resulting in serious injury. WHP2 is intended to deliver important improvements to road safety by minimising existing road safety risks and providing a higher road safety standard. Key improvements expected to increase safety include: provision of central medians to reduce head-on collisions; clear zones either side of the carriageways; improved vertical and horizontal alignments; and adequate rest area facilities. VicRoads predict that the WHP2 would reduce the crash rate from 5.5 to 3.4 per 100 million km (when constructed to AMP1 standard), therefore it is expected to substantially reduce the incidence of casualty crashes[3].

Adverse impacts during the construction period would be manageable through the implementation of detailed traffic management plans (TMPs) and community consultation. The Inquiry noted that there is no discernable difference between Options 1 and 2 in relation to traffic impacts and predicted transport outcomes.

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[2] See EES page 2-5

[3] See p. 69 of Appendix D to the EES

Conclusions

Having regard to the EES, submissions and the Inquiry Report, it is my assessment that WHP2 would enable road safety to be improved between Beaufort and Ararat irrespective of whether Option 1 or 2 is selected as the final alignment. Further, the project will contribute to the upgrade in capacity and reliability of an important inter-regional and inter-state transport link, enabling the efficient movement of freight through this corridor.

3.4 Biodiversity and Habitat

Evaluation Objective – *To avoid or minimise effects on flora and fauna species and ecological communities listed under the Flora and Fauna Guarantee Act 1988 or the Environment Protection and Biodiversity Conservation Act 1999 as well as to comply with requirements under Victoria's Native Vegetation Management - A Framework for Action (2002).*

Key Issues

In the context of the relevant legislation and statutory policy, the evaluation of potential effects on biodiversity and native vegetation needs to address the following issues:

- Whether the potential effects on native vegetation are acceptable, including whether the removal of very high and high conservation significance ecological vegetation classes (EVCs) are acceptable in the context of the provisions of *Victoria's Native Vegetation Management - A Framework for Action* (NVMF).
- Whether the potential direct and indirect effects on protected species of flora and fauna and their habitat, as well as on listed ecological communities, are significant and/or acceptable.

Discussion and Findings

Native Vegetation

WHP2 would affect 10 EVCs of varying quality and conservation significance. These are listed below along with their conservation status under the NVMF:

- Plains Grassland (endangered)
- Plains Grassy Woodland (endangered)
- Alluvial Terraces Herb-rich Woodland (endangered)
- Hills Herb-rich Woodland (vulnerable)
- Heathy Dry Forest (least concern)
- Creekline Grassy Woodland (endangered)
- Grassy Woodland (endangered)
- Plains Grassy Wetland (endangered)
- Grassy Dry Forest (depleted)
- Heath Woodland (depleted).

In the selection of alignment options for WHP2, VicRoads gave a high priority to avoiding and minimising effects on native vegetation of very high conservation significance (VHCS) and high conservation significance (HCS). Table 13-9 of the EES lists specific locations where the alignment or design has been varied for both Options 1 and 2 to reduce effects on native vegetation of VHCS and HCS categories. These measures also included narrowing of the median to reduce effects on Golden Sun Moth habitat and the use of a wide median between the carriageways to protect Yarra Gums adjacent to the existing highway.

Table 2 summarises the net native vegetation losses for Options 1 and 2 after alignment/design measures for reducing vegetation losses have been taken into account.

In addition, some 221 large old trees (LOTs) would be lost under Option 1 and 214 LOTs would be lost under Option 2. Under the NVMF, offsetting requirements for Option 1 would include a net gain target of 65.54 Habitat hectares (Hha), protection of 1414 LOTs and recruitment of 7070 trees. For Option 2, the corresponding figures would be a net gain

target of 86.98 Hha, protection of 1254 LOTs and recruitment of 6270 trees. According to the EES[4], the figures provided for the loss of LOTs are likely to be reduced further during the detailed design phase through micro alignment and construction planning.

VicRoads propose to source offsets required under the NVMF from a number of sources including: VicRoads Net Gain Bank, BushBroker, Trust for Nature and private offset brokers. There is also the potential to acquire land for offsets through negotiations with land owners near the project.

Table 2. Comparison of native vegetation losses

Option	Conservation Significance	Hectares (ha)	Habitat Hectares (Hha)	Net Gain Target (Hha)
1	Very High	34.19	15.38	30.76
1	High	66.51	21.53	32.31
1	Medium	6.52	1.57	1.57
1	Low	3.55	0.9	0.9
1	Total	110.77	39.38	65.54
2	Very High	38.93	19.31	38.62
2	High	77.17	29.36	44.05
2	Medium	12.63	3.21	3.21
2	Low	3.13	1.1	1.1
2	Total	131.86	52.98	86.98

It is noted that the DSE submission on the EES comments that VicRoads' strategies for achieving net gain provide "adequate evidence of practical achievability". At the same time, DSE's submission describes the proposed impacts on native vegetation as "substantial". Indeed, the considerable extent of native vegetation and LOTs required to offset the large losses associated with Option 1 (110.77 ha) and Option 2 (131.86 ha) was raised in a number of submissions. The extent of the proposed clearing for WHP2 under Option 2 alone is more than 80 per cent of the total permitted clearing of native vegetation in Victoria in the financial year 2010/2011, which was 159 ha or 76 Hha (see DSE submission on Western Highway Project Section 3).

During its hearings, the Inquiry considered a submission that put forward alternative alignments for the route west of Buangor in the vicinity of Hillside Road. These were identified by the submitter as "northern option 1" and "northern option 2". Practical Ecology were engaged by the submitter to assess the potential biodiversity impacts of these northern options relative to VicRoads' Options 1 and 2 presented in the EES. Evidence was provided by VicRoads at the Inquiry that options similar to the "northern route options" were considered in the early stage of the route selection process but were rejected, partly because of difficulty in bridging the railway at a narrow angle[5] but also because they would have a

[4] See EES p. 13-2.

[5] See Document 9 tabled at Inquiry (Emails and Drawings for Alignment Options along Existing Highway at Base of Mt Langi Ghiran (GHD, June 2012)

greater impact on native vegetation of VHCS and HCS[6]. VicRoads noted that the calculations for the northern options put forward by the submitter underestimated impacts because they did not allow for service roads that would be required for the ultimate AMP 1 standard road. On balance, the Inquiry concluded that there is insufficient advantage from the northern options to recommend them above VicRoads' Options 1 and 2.

The Inquiry gave careful consideration to the differences in the biodiversity impacts of Options 1 and 2 near Langi Ghiran State Park, particularly in relation to differences in impacts on native vegetation of VHCS and impacts on Langi Ghiran State Park.

The extent of native vegetation clearing and associated impacts on biodiversity is a key consideration in selecting the final alignment for WHP2. In this respect there is a significant difference between Options 1 and 2 in terms of the amounts of VHCS and HCS native vegetation needing to be cleared (refer to Table 2). For Option 1, a total of 100.7 ha equating to 36.91 Hha of VHCS and HCS native vegetation would be cleared, whereas under Option 2 the corresponding figure is 116.1 ha, which equates to 48.67 Hha. The additional area of about 15 ha lost under Option 2 must be considered relative to other differences in biodiversity impacts as well as other factors to be considered later in this Assessment.

Approval will be required from the Minister for Environment and Climate Change to permit the clearing of any VHCS native vegetation[7]. This decision is made in relation to whether impacts on VHCS vegetation are an unavoidable part of a project and takes into account environmental, social and economic factors from a State-wide perspective. The Inquiry considered that in light of the extensive work undertaken to avoid and minimise effects on VHCS vegetation, particularly though the evaluation of alternatives alignments, the resulting clearance of VHCS vegetation is required for the project to proceed and is therefore unavoidable. The proposed clearance of VHCS vegetation will result in significant biodiversity impacts, although on balance this should be acceptable in light of both the further opportunity to avoid native vegetation through detailed design and the need to meet appropriate offset requirements for VHCS vegetation under the NVMF.

Matters of National Environmental Significance

The relevant controlling provisions under the EPBC Act are Sections 18 and 18A (listed threatened species and communities).

The EPBC-listed species identified in the EES investigations as potentially affected by WHP2 are:

- Dwarf Galaxias (vulnerable)
- Golden Sun Moth (GSM) (critically endangered)
- Spiny Rice-flower (critically endangered)

The Button Wrinklewort, which is listed as endangered under the EPBC Act, was recorded during the EES investigations. Some 85 individual plants were recorded within the road reserve east of Warrayatkin Road, and another five plants were recorded in the Woodnaggerak Reserve. The proposed alignment for WHP2 has been refined specifically to avoid these plants. Additional measures are also proposed to ensure that they are not disturbed, such as the use of appropriate fencing.

Targeted surveys were also conducted for a range of other flora species that are listed under the EPBC Act and could be present in the project area. Details of these surveys are provided in Table 20-2 of the EES. From these investigations, it was concluded that no other EPBC-listed flora species were likely to be affected by WHP2. This conclusion is supported.

The EES considered potential indirect effects on listed flora species and concluded that the risks are low to negligible.

Listed Flora Species

The *Spiny Rice-flower* is listed under both the EPBC Act and the FFG Act, hence VicRoads put considerable effort into avoiding or minimising impacts on this species during the route selection process. About 575 individual plants were recorded in the existing highway reserve between the Ararat Aerodrome entrance and Warrayatkin Road, with all but one of these plants recorded between the existing road pavement and the railway line (to the north of the existing

[6] See Statement of Expert Evidence by Ecology & Heritage Partners (November 2012) page 33.

[7] See *Victoria's Native Vegetation Management, A Framework for Action* (DSE, 2002), Table 6, Appendix 4 (page 54).

highway). WHP2 should only impact on one Spiny Rice-flower plant through the deviation of the alignment to the south of this significant Spiny Rice-flower population. This is not considered to be a significant impact on the species.

Listed Fauna Species

Targeted surveys were conducted for a range of fauna species listed under the EPBC Act that were likely to be present in the study area, notably the Golden Sun Moth (GSM), Growling Grass Frog, Southern Brown Bandicoot and Dwarf Galaxias. No Growling Grass Fogs or Southern Brown Bandicoots were recorded.

Some 156 *Dwarf Galaxias* were recorded in Billy Billy Creek during targeted aquatic surveys employing a range of techniques[8]. This species is listed under both the EPBC Act and FFG Act. The main risk to this species would arise from building new bridges over this creek. Specific measures are proposed to avoid or mitigate impacts on the species (see EES Table 20-5) including:

- Development of a conservation management plan for Dwarf Galaxias
- No structures to be placed in low-flow channel
- Construction in and around Billy Billy Creek to occur outside the breeding/dispersal period (May to October)
- Waterway crossings within potential habitat to be designed for unimpeded Dwarf Galaxias dispersal during flood conditions.

Specific measures would also be undertaken to protect the water quality of Billy Billy Creek including sediment and erosion controls. It is considered that the risk to the species would be low provided the mitigation measures above are implemented.

Targeted surveys[9] were conducted for the *Golden Sun Moth* which was recorded at a number of locations in the study area both within the existing road reserve and in adjoining paddocks. Some 145 individuals were recorded. The GSM is listed under both the EPBC Act and the FFG Act. Because of the linear corridor required for WHP2 and the widespread location of GSM habitat, it is not possible to avoid all impacts on GSM habitat. The habitat loss under Option 1 would be 31.56 ha and the corresponding figure for Option 2 would be 23.8 ha. These would both be considered as a significant impact under the DSEWPC guidelines.

Listed Communities

The EPBC-listed ecological communities likely to be affected by WHP2 and their status are:

- Natural Temperate Grassland of the Victorian Volcanic Plain (critically endangered)
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain (critically endangered)

The impacts on these listed species are discussed along with species listed under the *Flora and Fauna Guarantee Act 1998* (FFG Act).

In the selection of route options, priority was given to avoiding and minimising impacts on Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) and Grassy Eucalypt Woodland of the Victorian Volcanic Plain (GEWVVP)[10]. Examples of this approach are provided in Table 20-3 of the EES. Nevertheless it has not been possible to avoid all patches of NTGVVP and GEWVVP. The net result is that approximately some 5.25 ha of NTGVVP would be removed under both Options 1 and 2 where it occurs in the common alignment east of Ararat. Under Option 1, about 11.14 ha of GEWVVP would be removed, while 8.65 GEWVVP would be removed under Option 2. Both of these impacts are considered significant based on the Significant Impact Guidelines published by DSEWPC [11]. The residual impacts of WHP2 on these communities would be considered acceptable only if offsets were secured that met the requirements of the EPBC Act Environmental Offsets Policy (October 2012).

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[8] Details of the aquatic surveys, which were conducted across all suitable creeks and drainage lines, are provided in the EES Appendix H, page 30. Survey methods included bait trapping, fyke netting, electrofishing and dip netting.

[9] Details of the targeted Golden Sun Moth surveys are provided in the EES Appendix h page 28.

[10] These two communities correspond with some components of the endangered EVCs identified as Plains Grassland and Plains Grassy Woodland under the NVMF.

[11] *Matters of National Environmental Significance- Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*

Other species

Apart from the species listed under the EPBC Act and FFG Act, WHP2 would also impact on a number of species that are considered rare or vulnerable. These impacts are as follows:

- 1 Golden Cowslip individual (Option 1)
- 12 Emerald-lip Greenhoods (Option 1)
- Brown Toadlet (both options)
- Brown Treecreeper (both options)
- 8 Yarra Gums (Option 2).

It is considered that these impacts would be minor.

Conclusion

While the two options would have quite different impacts in the area west of Buangor near the Langi Ghiran State Park, WHP2 (both options) would result in significant impacts on:

- native vegetation of VHCS and HCS
- two ecological communities listed under the EPBC Act (although these are largely components of the high quality native vegetation already mentioned)
- GSM habitat.

The identification of the option with the lower biodiversity impacts is not entirely straightforward, although the EES[12] clearly concludes that "Option 1 is considered the preferred alignment from the biodiversity and habitat perspective". Overall, Option 1 has significantly less impact on native vegetation, including less impact on VHCS and HCS native vegetation, while Option 2 has less impact on GSM habitat.

The ecological consultants who undertook the flora and fauna investigations for VicRoads recommended that Option 1 should be selected, particularly due to the much lower impact on high quality native vegetation and habitat[13]. DSE supported this view through their submission to the Inquiry. Both considered the extent of VHCS and HSC vegetation to be a more determining factor than the slight differences in impacts on GSM habitat or other matters of NES for the two options.

Apart from the direct loss of native vegetation and fauna habitat, Option 1 provides the opportunity for superior ecological outcomes in terms of: lower impacts on Langi Ghiran State Park, less potential for road kill of native animals due to reduced habitat exposure, and better habitat connectivity between the State Park and bushland south of the existing highway.

The Inquiry has carefully considered this matter and has also found that Option 1 is superior in terms of the overall biodiversity outcomes (even though impacts on matters of NES would be marginally higher).

It is my assessment that:

- WHP2 would result in the loss of a considerable amount of native vegetation and habitat, including significant quantities in the VHCS and HCS categories, affecting 10 EVCs, six of which are endangered.
- The EES demonstrates that the alignment options selection process and specific design measures have attempted to avoid and minimise the impact on native vegetation to the extent practicable in achieving a highway of AMP3 standard between Beaufort and Ararat, although further avoidance of native vegetation (consistent with the NVMF) can be achieved through the detailed design stage (as outlined in the EES).
- The proposed clearance of VHCS native vegetation will be an unavoidable impact of the project. This is considered to be acceptable providing appropriate offsets are provided that meet the requirements of the NVMF and given there is some opportunity to minimise this during the detailed design stage.

[12] See EES page 13-34

[13] See p. 130-131 of Appendix H to the EES

- There would be significant impacts on two EPBC-listed communities (Natural Temperate Grassland of the Victorian Volcanic Plain and Grassy Eucalypt Woodland of the Victorian Volcanic Plain). These impacts would be considered acceptable only if offsets were provided that met the NVMF and the EPBC Act Environmental Offsets Policy (October 2012).
- The impacts on the Spiny Rice-flower and the Dwarf Galaxias are not likely to be significant provided the environmental management commitments in Section 21.7.6 of the EES are fully implemented.
- WHP2 would have a significant impact on the Golden Sun Moth through habitat removal, despite attempts to minimise this impact through the options selection process. These impacts would be acceptable only if offsets are provided to satisfy both the NVMF and the EPBC Act Environmental Offsets Policy (October 2012).
- Option 1 presented in the EES is superior in terms of overall biodiversity outcomes, particularly in reducing impacts on native vegetation of VHCS and HCS. It is noted however that Option 1 would have slightly higher impacts on matters of NES.

Further, it is my assessment that:

- The commitments in Section 21.7.6 of the EES for managing potential impacts on flora, fauna and native vegetation be fully implemented.
- A native vegetation management plan detailing additional measures to reduce the impacts on native vegetation and listed ecological communities, identified during the detailed design stage, be prepared to the satisfaction of DSE and DSEWPC before construction commences.
- Given the potential significant effects on threatened species and communities, specific conservation management plans for the Spiny Rice-flower, Dwarf Galaxias and Golden Sun Moth be prepared by VicRoads in consultation with and to the satisfaction of DSEWPC and DSE, prior to any works being undertaken which may affect these species.
- A native vegetation offset management plan be prepared to address the requirements of both the NVMF and the EPBC Act Environmental Offsets Policy (October 2012), to the satisfaction of DSE and DSEWPC. Further, either as part of or in addition to the native vegetation offset management, a plan for the long-term sustainable management of vegetation in the existing road reserve be endorsed by DSE.

3.5 Infrastructure and Land use

Evaluation Objective – *To avoid or minimise adverse effects on existing infrastructure and land uses.*

Key Issues

In the context of relevant legislation and policy, the key issues for the assessment of impacts on land use and infrastructure are:

- Whether the project is consistent with planning policy.
- Whether the associated interfaces with or disruption of existing infrastructure would be acceptable.
- Whether the required land acquisition and/or displacement of land uses, with its associated socio-economic effects, is acceptable.

Discussion and Findings

Planning policy

In addition to its national highway function, the WHP2 will support relevant provisions of the Ararat and Pyrenees Planning Schemes related to regional and economic development. The WHP2 will improve access to the local area, its businesses, tourism sites and provide construction jobs, which is all consistent with the relevant planning scheme

policies and strategies. In addition, the bypass of the Buangor township will improve safety and amenity of residents (as discussed further in section 3.6) but is unlikely to increase development pressures to the extent of requiring rezoning[14].

In relation to Local Planning Policy Framework (LPPF) clauses on environmental and natural resource values, both options will have direct impacts on agricultural land and native vegetation (as discussed further in section 3.4). However, as noted in the previous section, Option 1 will have significantly less impact on native vegetation, particularly as it is aligned further to the south of Langi Ghiran State Park and significant habitat in this area west of Buangor.

During the Inquiry attention was drawn to the lack of explicit consideration of the implications of wildfire risk in the exhibited documents, as required under *Ministerial Direction No. 11 Strategic assessment of amendments*. Proposed PSAs need to address any relevant bushfire risk. In determining whether a PSA addresses this, the Strategic Assessment Guidelines (Practice Note 46) provide that the planning authority is to consider whether the amendment is consistent with the objectives of the State Planning Policy Framework (SPPF) and the LPPF and whether views have been sought from the relevant fire authority. This should include the prioritisation of the protection of human life over other considerations and the development of roads that minimise risks from fire[15].

The Country Fire Authority (CFA) was identified and consulted as a stakeholder through the proponent's implementation of its EES Consultation Plan. The explanatory reports for the draft PSAs[16] also stated that consultation with the CFA had assisted in determining the final alignment for the duplication. Neither of the two Councils nor the CFA raised concerns related to either of the proposed alignments in relation to bushfire risk in response to the EES.

Existing infrastructure

Construction of the project will require short-term impacts on existing infrastructure that will need to be relocated as part of the duplication. Impacts on existing infrastructure will be temporary in nature and able to be appropriately managed through the implementation of Construction Environmental Management Plans (CEMPs). Access for emergency service vehicles will be maintained during construction through traffic management plans, which will need to be developed in consultation with various emergency service bodies[17].

Both alignment options would require the relocation of power lines and fibre optic cables, though Option 2 would require a greater length of relocation of the fibre optic cable compared with Option 1[18]. Both options would require a new bridge crossing over the Ballarat-Ararat Railway line west of Buangor.

The EES outlines VicRoads' intention to reserve land for future improvement of the duplicated highway to freeway AMP1 standard. The inquiry considered the application of a PAO over the land required for this future development to freeway standard to be responsible and proper planning practice[19].

Impacts of land use disruption

The WHP2 is unlikely to result in any major land use changes. The EES identifies the number of properties that will suffer some severance impacts (16 under Option 1 and 15 under Option 2[20]) or require full acquisition (3 properties for both options)[21].

The acquisition of a few dwellings for either option will not result in a significant social impact as it is expected that residents will relocate locally and be compensated by VicRoads.

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[14] See EES p. 8-10 and 11

[15] Clause 22.06-03 of the Pyrenees Planning Scheme and Clause 21.04-02 of the Ararat Planning Scheme.

[16] See Appendix C to the EES

[17] See p. 66 of Appendix D to the EES

[18] See EES p. 5-28.

[19] See Inquiry Report p. 23

[20] See p. 44 – 46 of Appendix C to the EES.

[21] See EES p. 8-9 and p. 43 of Appendix C to the EES

Where land is severed by the project and remaining lots are below the minimum size for a dwelling in the farming zone (40 ha), lots may need to be consolidated or landowners could consult with the council regarding rezoning options (e.g. to rural living or low density residential). The EES identified only 2 lots for Option 1 and no lots for Option 2 in this situation[22] . To assist the consideration of any such requests and to assist further mitigation of potential adverse effects in the vicinity of Buangor, the Inquiry recommends the preparation of a structure plan by the Rural City of Ararat with some funding assistance to be provided by VicRoads[23]. However, it is not expected that WHP2 would result in any broad change of land use within the study area[24].

According to the EES, Option 1 will require the acquisition of approximately 365 ha, while Option 2 will require the acquisition of approximately 373 ha[25]. The resulting economic impact on business for the loss of land and severance is estimated to be in the range of $2.2 to $2.5 million over 30 years[26]. Economic loss to agriculture facilities and infrastructure over 30 years ranges from $1.5 million for Option 1 and $1.3 million Option 2. Revenue loss during construction through disruption to businesses is estimated as less than $100,000. The difference between the two options in terms of economic impact from land acquisition and severance is considered to be marginal[27].

Land acquisition will be compensated in accordance with requirements of the *Land Acquisition and Compensation Act 1986*. Where agricultural facilities are to be impacted either via necessary removal or reduced accessibility to other landholdings, VicRoads proposes to offer mitigation in the form of provision of duplicate facilities or alternate access arrangements as determined in consultation with individual land owners. In addition, VicRoads proposes to liaise with businesses to optimise construction schedules in order to minimise disturbance and also provide additional signage for businesses that rely on passer-by traffic.

Overall, economic impacts on agriculture and other businesses will be addressed readily through compensation and other mitigation measures.

Conclusions

It is my assessment that:

- The differences between the land use and infrastructure impacts of the two options are marginal and should not be a determining factor in the alignment choice.
- Although extensive land acquisition is required for the proposed road reservation, the associated economic effects have largely been minimised and are not significant considering the ability to compensate, and are therefore acceptable in the context of avoiding other significant environmental effects.

Further, it is my assessment that:

- While the assessment of wildfire risk has been broadly considered with respect to the both alignment options assessed within the EES, further consideration of the management of this risk for the design of the final alignment by VicRoads is necessary before approval of final PSAs.

[22] See p. 44 – 46 of Appendix C to the EES

[23] Inquiry Report p. 24.

[24] EES p. 8-1.

[25] See p. 34 of Appendix P to the EES

[26] EES Appendix P, p.34

[27] Inquiry Report, p. 21

3.6 Amenity

Evaluation Objective – *To minimise dust emissions, noise, visual and other adverse effects on residents' amenity as well as effects on landscape values.*

Key Issues

The key amenity-related and landscape issues associated with both construction and operation of the duplicated highway are:

- Whether the construction and/or operation phases of the WHP2 will produce unacceptable noise effects at sensitive receptors such as residences and whether these effects are readily mitigated or managed;
- Whether proposed measures to control dust emissions during construction will be adequate;
- Whether likely visual effects on public viewpoints and residential areas closer to the duplicated highway are significant and acceptable following applicable mitigation measures.

Discussion and Findings

Noise

The EES indicates that most construction activities occurring within 200 m of a sensitive receptor would exceed both evening and night-time criteria in the EPA Noise Control Guidelines (2008), i.e. 10 dB(A) above existing background levels for evening and inaudible within a habitable room of residential premises for night-time. However, construction outside of day-time hours is likely to be quite minimal and would require contractors to obtain approval from VicRoads and then to notify affected members of the community. VicRoads has advised that the CEMP to be prepared by the contractor prior to works commencing will adopt the EPA guidelines and provide proposed measures to minimise noise effects.

The modelling in the EES predicted operational noise levels for the duplicated highway and compared this to the noise increases for predicted traffic on an unduplicated highway in 2025 (i.e. the 'no project scenario'). The two optional alignments would have varying noise impacts on residences as the alignments would bring traffic closer to some residents and take it further from others.

The VicRoads Traffic Noise Reduction Policy 2005 seeks to limit noise for a "new alignment" to 63 dB(A) for residential dwellings (Category A) between 6 am and midnight and for schools and other noise sensitive buildings (Category B) between 6 am and 6 pm. Further, where the noise level adjacent to either Category A or B buildings prior to the road improvements is less than 50 dB(A), consideration is given to limiting the noise level increase to 12 dB(A). The VicRoads policy further states that consideration will be given to retrofitting mitigation measures to buildings for eligible projects where the traffic noise levels exceed 68 dB(A)[28].

The EES concluded that the project is likely to result in a 'clearly noticeable' increase in noise levels (i.e. change in sound level of 5 dB(A) or greater) for four dwellings for Option 1 and three dwellings for Option 2[29]. However, for each of these dwellings resultant noise levels are predicted to be less than or up to 63 dB(A). The predicted increase in traffic noise for the Buangor school is 13 and 15 dB(A) for Options 2 and 1 respectively, although the resulting noise levels at the closest facade for both options would be less than 63 dB(A).

The EES also notes that a clearly noticeable *reduction* in traffic noise will result from the project at 9 dwellings for Option 1 and 17 dwellings for Option 2, due to the road alignment moving further away. Therefore, a larger number of dwellings would experience a significant reduction rather than an increase in traffic noise as a result of the WHP2. The Inquiry noted that there would be an overall improvement in road operation noise levels in Buangor and around Box's cutting[30].

[28] See section 3.2 of Road Design Note: Interpretation and application of VicRoads Traffic Noise Reduction Policy 2005.

[29] See Table 32 of Appendix M to the EES.

[30] See EES p. 56

For both alignment Options 1 and 2 there are 16 residences for which the long term increase in noise levels is predicted to result in a total above 68 dB(A), although for all of these residences the increase attributed to the WHP2 would not be perceptible or noticeable as it is likely to cause an increase of less than 3 dB(A) [31].

VicRoads is considering implementing measures to mitigate noise at two dwellings and the school, as these are adjacent to portions of the alignment options classified as a "new alignment" under the VicRoads Policy. For one residence the final noise level would be less than 63 dB(A) (55 dB(A) for Option 1 and 42 dB(A) for Option 2) but this represents an increase of more than 12 dB(A) for both options. For the second residence the resultant noise level would be 70 dB(A) although this represents only a 1 dB(A) increase from the 'no project scenario'.

Proposed management measures provided in the EES include noise monitoring to check compliance with the policy and mitigation works as outlined in the policy to be carried out where required. In addition, VicRoads intends to limit potential noise generation or exposure during the design stage through the use of alignment shifts, pavement materials, speed limits and other measures as required along the entire alignment[32].

There are four houses for each option where there would be a change in noise considered to be 'just perceptible' (approximately 3 dB(A)), with the resultant levels being greater than 63 dB(A). There are no houses for which either option would result in a significant adverse effect (i.e. clearly noticeable increase) with resultant noise levels greater than 63 dB(A).

Air quality

The EES indicates that the project's effect on air quality will largely be confined to construction dust as the increase in operational air emissions from vehicles travelling along the duplicated highway would be negligible and remain below the relevant intervention levels under the State Environment Protection Policy (SEPP) (Air Quality Management)[33]. Construction dust is expected to extend approximately 400 m south of the construction corridor with slightly greater dispersal to the north of the road due to prevailing wind conditions. The EES states that, under the proposed Environmental Management Framework (EMF) for WHP2, VicRoads will implement a dust management protocol to minimise these impacts including by a staged approach to construction and promptly rehabilitating cleared areas[34].

Visual and landscape

The EES provides an evaluation of the potential visual impacts of WHP2, based on a systematic analysis of landscape character types and their sensitivity to visual change. Eight landscape character types were identified within the WHP2 viewshed and the sensitivity of each to visual change was rated on a scale from high (e.g. bushland) to very low[35]. The visual study assessed the level of change within eight areas along WHP2 on a scale from insignificant to major. The level of impact in each area was derived from a combination of the sensitivity of the landscape character and the level of change from WHP2 in each area to produce an impact rating.

It is noted that the impact on the visual amenity of dwellings along the alignment was assessed in the EES as mostly insignificant, apart from at Buangor where the visual change for 9 dwellings was assessed as being moderate and the impact as minor[36]. VicRoads will prepare a landscape plan for WHP2, which should involve consultation with adjoining residents in order to minimise visual intrusion into existing residential views. Table 17-11 in the EES outlines a range of measures that would be implemented to mitigate visual impacts through sensitive design, screening or landscaping along WHP2.

Apart from impacts on views from existing residences, the visual study identified three areas of landscape impact which were considered in more detail within the EES. These were:

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[31] See p. 64 of Appendix M of the EES.

[32] See EES p. 16-14.

[33] See EES p. 15-1

[34] See EES p. 15-10

[35] See Table 17-2 in EES

[36] See EES p. 17-12

- The Eurambeen area where a proposed overpass would be a dominant element in a large relatively flat area of rural land with views to Mount Buangor and Mount Langi Ghiran.
- Buangor area where WHP2 would be visible from the primary school and nearby houses.
- The Langi Ghiran area where the duplicated road would be more visible in the landscape from the State Park.

Photomontages were prepared for the Eurambeen area and the northern side of Buangor to show the anticipated visual impact on the residents and the Buangor Primary School. These demonstrate that suitable landscaping treatment, particularly of areas of fill, would reduce the residual risk of landscape impacts to a low-medium level[37].

In order to evaluate the potential landscape impacts from Mount Langi Ghiran, digital visualisations of views from a scenic lookout were prepared for both Options 1 and 2. These are shown in Figure 17-19 and 17-20 of the EES. These demonstrate that the visual impact of both options would be insignificant given the distance to the WHP2 alignments and the amount of detail evident in the expansive views from the lookout.

The Inquiry has considered the potential visual/landscape impacts of WHP2 and taken into account submissions from a number of local residents whose views are likely to be impacted by WHP2. The Inquiry has concluded that the detailed design for WHP2 would address submitters' issues of concern and would ensure that the visual and landscape effects were minimised.

Conclusions

It is my assessment that:

- The by-pass of Buangor will generally improve the amenity of the town.
- The operational noise increases due to the project (for both Options 1 and 2) are not likely to result in any significant adverse effects for sensitive receptors (residences and schools), that is where this involves both a 'clearly noticeable' increase in traffic noise and a resultant noise greater than 63 dB(A).
- Effects on air quality are likely to be confined to construction dust, which can be readily managed through standard procedures and additional measures that are outlined in the EMF.
- The potential visual amenity and landscape impacts of WHP2 are acceptable provided the detailed mitigation measures specified in Table 17-10 of the EES are incorporated into the landscape plan for WHP2 and are implemented.

Further it is my assessment that proposed mitigation measures to address noise set out in the EES be implemented, including noise monitoring to check where noise objectives are exceeded and mitigation is necessary, in accordance with VicRoads noise policy.

3.7 Catchment Values

Evaluation Objective – *To protect catchment values, including in relation to soils, surface water and groundwater quality, stream flows and floodway capacity, as well as to avoid impacts on beneficial uses*

Key Issues

The key issues in relation to water and catchment values are:

- Whether construction and operation of the WHP2 will have a potentially significant effects, such as through erosion, or the potential exposure of contaminated or hazardous soils.
- Whether the construction of the WHP2 will have a significant effect on groundwater and its beneficial uses including dependent ecosystems.

[37] See EES p.17-17

- Whether the construction of waterway crossing structures for the WHP2 will have a significant impact on the water quality and flood behaviour characteristics of surface waterways, to the detriment of beneficial uses.

Discussion and Findings

Soils

The EES' desktop study concluded that there was a moderate potential for the WHP2 to encounter contaminated soils during construction. Such sites could include contaminants from previous sheep dips, an existing service station, historic land management practices along the railway lines, historic mining works or buried waste. Such contamination if encountered is expected to be localised. Project specific controls include assessment in accordance with the relevant SEPP, National Environment Protection Measures and Australian Standards and potential remediation where contaminant concentrations could impact the beneficial uses identified in the SEPP.

No assessment of potential acid sulphate soils (ASS) was undertaken for the EES. However, VicRoads proposes that soils suspected of being ASS would be sampled and in the event that they are discovered to be ASS, an ASS Management Plan would be prepared[38] in accordance with the EMF.

Pre-construction geotechnical investigations will be undertaken to further examine the potential for erosion, soil stability issues and other risks associated with soils along the alignment, including in terms of potential sources of contamination. Erosion control measures and potential ground improvement techniques would be implemented through the EMF and CEMPs.

The Inquiry determined that VicRoads had adequately addressed issues associated with soils in the general project design and the EMF.

Surface Water

The WHP2 will cross six significant named watercourses (Fiery Creek, Middle Creek, Charliecombe Creek, Billy Billy Creek, Hopkins River, Green Hill Creek). New or replacement crossing structures will need to be constructed at these locations. All river crossings will be designed to retain or enhance the ability to convey flood waters, as well as to retain waterways' ecological conditions[39].

The EES identifies specific sites where there are risks to ecological conditions of waterways, including a new crossing of Billy Billy Creek (at chainage 18200m) which has significant aquatic health values and forms habitat for the Dwarf Galaxias (see section 3.4) and the diversion of Charliecombe Creek for a length of approximately 250 m[40]. Realignments may be required for Charliecombe Creek and one crossing of Billy Billy Creek to limit the length of waterway beneath carriageways and thus reduce potential impacts on aquatic health. Approval from the Glenelg Hopkins Catchment Management Authority (CMA) for Works on Waterway will be required under the *Water Act 1989*. Prerequisites will include an agreed design concept for the creek realignment that adequately addresses the reinstatement of stream morphology and environmental features/values. In addition, hydraulic modelling will need to be undertaken to ensure that waterway crossings do not increase flows, depths or velocities, including within floodplains and near property boundaries.

The Inquiry concluded that surface water impacts were low and acceptable[41].

Groundwater

The potential effect on groundwater resources is mainly related to excavation during construction intercepting the groundwater table and therefore requiring some dewatering. Hydrogeological investigations have yet to be undertaken to determine the actual depth of the groundwater across the study area, although the EES' desktop study used available information from some existing bores, which indicated groundwater depths range from less than 1 m to 22 m below the surface.

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[38] See EES p. 10-12

[39] See Panel Report p. 35

[40] See EES p. 12-6 cf. with p. 3 and Table 20 of Appendix G

[41] See Panel Report p. 37

In order to assess the potential risk of intercepting the groundwater table, the EES assessed areas where cuts below grade of greater than 3 m were required. The 3 m criterion was considered appropriate as in locations where groundwater is within 2 m of the ground surface, salinisation and water logging issues are likely to occur, for which road designers would likely establish grade lines in fill (as opposed to cut). Where cuts may occur in areas with groundwater less than 3 m below the surface, it is likely to be perched groundwater (i.e. above a shallow impervious layer) and to be manageable[42]. The groundwater assessment determined that for both options less than 1.6 km of the route would be likely to require a cut below 3 m and hence they present a relatively low and acceptable risk of intersecting groundwater. Further, the deepest cuts are likely to be in areas of high topography (such as near Langi Ghiran State Park), where deeper groundwater is expected[43].

Regional mapping of Groundwater Dependent Ecosystems (GDE) by the Department of Primary Industries indicates that such ecosystems may be present in the study area and likely to be using groundwater to some extent. However, the high salinity levels of groundwater likely to be present in the project area are not considered conducive to plant growth[44]. Where groundwater tables are shallower and recharge more rapidly, groundwater quality may be such that GDE could be supported. Alignment options south east of the Langi Ghiran State Park are considered to have a higher risk of shallow groundwater levels[45]. The EES assessed the residual risk of impacts on GDEs to be negligible, as alternative environmental water sources would be used to maintain any potentially affected GDEs[46].

A Groundwater Management Plan, together with geotechnical investigations, is to be undertaken to inform detailed design of cuts. This will reduce the need for dewatering and hence will assist in mitigating the risk to a low or negligible level. The EES assessed the majority of groundwater risks to be negligible or low, largely due to much of the project being constructed above existing grade. The Inquiry stated that there was a reasonable basis to conclude there would be limited opportunity for direct interaction with and risk to groundwater[47].

Conclusions

It is my assessment that the potential environmental effects from works on and near waterways are unlikely to be significant. The effects on groundwater are also unlikely to be significant, although there is some uncertainty regarding the depth and quality of groundwater in the project area and its relationship to GDEs likely to be present, which needs to be resolved prior to completion of a detailed design.

Further, it is my assessment that:

- Detailed design of waterway crossings, culverts and creek realignments occur in consultation with Glenelg Hopkins CMA and relevant landowners, such that potential impacts on waterway environments, flooding extent and behaviour are avoided or minimised.
- Geotechnical investigations necessary to confirm the potential for ASS and groundwater to be intersected by the project, together with the Groundwater Management Plan, be provided to the Glenelg Hopkins CMA to assist with the confirmation of any measures necessary to minimise the potential for adverse effects on groundwater and any relevant GDEs, prior to any construction commencing.

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[42] See EES p. 11-7.

[43] *Ibid.*

[44] See EES p. 11-1.

[45] See EES p. 11-4.

[46] See EES p.11-10

[47] See Panel Report p. 33.

3.8 Cultural Heritage

Evaluation Objective – *To protect Aboriginal and non-Aboriginal cultural heritage*.

Key Issues

The key issue to be considered for this section is whether WPH2 would have a significant effect on Aboriginal or non-Aboriginal cultural heritage sites and values.

Discussion and Findings

Aboriginal

Thirty Aboriginal cultural heritage sites were identified in the study area for the EES. Both options would directly impact 11 currently registered Aboriginal cultural heritage sites. Nine of these are of minor significance (artefact scatters) and two of which are of moderate significance (scarred trees)[48]. While the project area also has the potential for mortuary trees, investigations to date of a total of 133 hollow trees have not identified any mortuary trees or human remains. The EES assessed the overall risk to Aboriginal cultural heritage from the project as being medium[49].

The Inquiry was satisfied that the assessment of potential effects on Aboriginal cultural heritage in the project area to date provides an adequate basis for concluding that the risks are low and acceptable[50].

Two Registered Aboriginal Parties for the project area (the Wathaurung and the Martang) will need to approve a CHMP prior to construction commencing.

Non-Aboriginal

A total of 17 historical sites were identified within and adjacent to the study area. Both options would require relocation of the Major Mitchell Cairn, considered of local historic significance. In addition, Option 2 would also encounter the Peacocks Road House ruins and the former Colvinsby School site (both sites have been submitted to Heritage Victoria for inclusion in the Heritage Inventory as a result of the project and are considered to be of local historic significance).

The EES concludes that the overall impact to Non-Aboriginal cultural heritage would be low[51].

Conclusions

It is my assessment that likely effects on Aboriginal and non-Aboriginal cultural heritage are acceptable and can managed through standard approaches.

3.9 Environmental Management Framework

Evaluation Objective – *To provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with the project in order to achieve acceptable environmental outcomes.*

Discussion and Findings

The EES provides a detailed EMF, which allocates responsibility and outlines the overall approach for the management of potential environmental effects of WHP2, from detailed design through to construction and operation. The framework is set up to ensure that measures suggested in the EES will be incorporated into project decisions and approvals. The framework is to be incorporated in the VicRoads Project Environmental Protection Strategy (PEPS) for WHP2. Measures will then be sorted according to work phase and carried through into appropriate management strategies and plans to be implemented by either VicRoads or a contractor (see Figure 2 below for further detail).

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[48] See p 14-1 of the EES.

[49] See Table 14-5 of the EES.

[50] See p. 47 of the Inquiry report.

[51] See EES p. 14-1

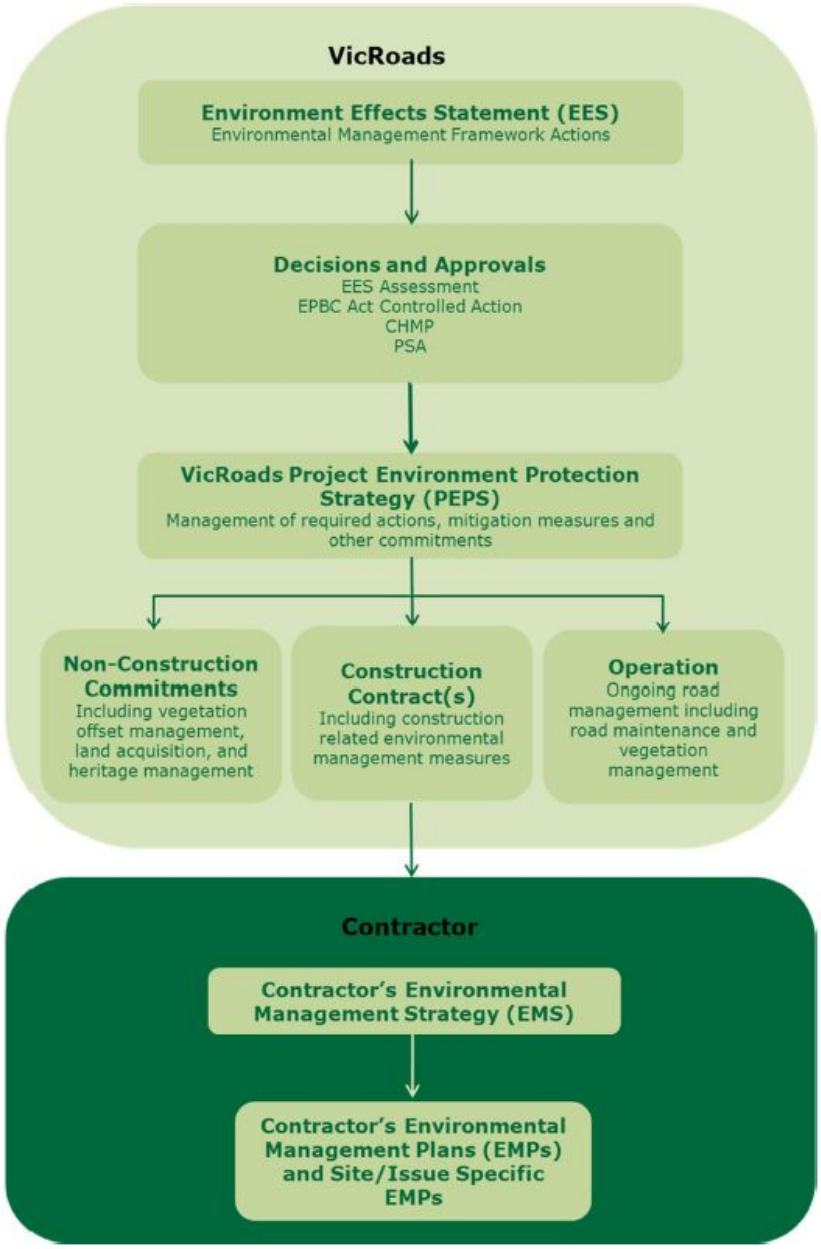

Figure 2. VicRoads' Project Environmental Management Structure (EES, Figure 21-1, page 21-4)

In addition to the PEPS, VicRoads would coordinate preparation of management plans by VicRoads and/or contractors, including:

- CEMPs.
- CHMP.
- Site and Species Specific Management Plans (e.g. for species listed under the EPBC Act or FFG Act - this would also include salvage and translocation plans for Dwarf Galaxias, Brown Toadlet and Brown Treecreeper).
- Offset Management Strategy (to accord with requirements of the NVMF).

The PEPS would detail all the environmental management measures required for the detailed design, construction and operation of WHP2. The contractor(s) would be required to have an Environmental Management Strategy (EMS) in place that is consistent with ISO14001:2004 standards. This EMS would encompass the development and implementation of both project-wide and site-specific CEMPs that ensure particular environmental risks at key locations are addressed. The

CEMPs would be developed in consultation with relevant authorities and to address the EPA Environmental Guidelines for Major Construction Sites.

The EES provides an outline of all the environmental measures that would be incorporated into the design, construction and operation of WHP2 through the management structure in Figure 2, as well as specifying the organisation responsible for those measures. Tables 21-3 to 21-40 in the EES specify the objectives, indicators and environmental measures that would apply to WHP2 under the relevant environmental factors, namely: Planning and land use, Traffic and transport, Geology and soils, Groundwater, Surface water, Biodiversity and habitat, Aboriginal cultural heritage, Non-Aboriginal heritage, Air quality, Noise, Visual and landscape, Social and Economic.

Conclusion

It is my assessment that the EMF for WHP2, as outlined in the EES, will provide a robust and transparent framework for the management of residual environmental effects and achievement of acceptable environmental outcomes.

Further, it is my assessment that:

- VicRoads ensure measures set out within the EES are incorporated into project implementation through the EMF (i.e. PEPS) and appropriate management strategies and plans (e.g. CEMPs)
- The EMF and core management plans be included as conditions (as set out below) of the PSA Incorporated Documents and be developed in consultation with and to the satisfaction of the appropriate agencies:
    - *EMF*: Prior to the commencement of construction or works associated with the project, an EMF or equivalent document must be prepared for the project, including relevant requirements as described in the Minister for Planning's Assessment under the *Environment Effects Act 1978*. The EMF or equivalent document needs to be submitted to and endorsed by the Secretary of DPCD (or delegate).
    - *CEMPs*: Consistent with the staging of works, and prior to the commencement of construction or carrying out of any works, Construction Environmental Management Plan(s) must be prepared in consultation with DSE, the relevant municipality of Ararat Rural City Council and or Pyrenees Shire Council, and then be submitted to, and endorsed by the Secretary of DPCD (or delegate).
    - A *native vegetation management plan* detailing additional measures to reduce the impacts on native vegetation and listed ecological communities, identified during the detailed design stage, be prepared to the satisfaction of DSE and DSEWPC before construction commences.
    - *Native Vegetation Offset Management Plan:* Prior to the commencement of construction or works and removal of any native vegetation associated with the project, a Native Vegetation Offset Management Plan be prepared in accordance with Victoria's Native Vegetation Management – A Framework for Action (2002) and the EPBC Act Environmental Offsets Policy (October 2012), in consultation with DSE and DSEWPC, and be submitted to and endorsed by Secretary of the DSE (or delegate).
    - *Threatened Species Management Plans*: Prior to the commencement of construction or carrying out of any works, Threatened Species Management Plans must be prepared in consultation with the DSE and DSEWPC and then be submitted to, and endorsed by the Secretary of the DSE (or delegate), including for the Spiny Rice-flower, Dwarf Galaxias and Golden Sun Moth.
    - *Groundwater Management Plan:* Prior to the commencement of construction or carrying out of any works, a Groundwater Management Plan must be prepared in consultation with the Glenelg Hopkins CMA, to assist with the confirmation of any measures necessary to minimise the potential for adverse effects on groundwater and any relevant GDEs.

3.10 Ecologically Sustainable Development

Evaluation Objective – *To achieve an appropriate balance of environmental, economic and social outcomes, consistent with the principles and objectives of ESD*.

This section focuses on the acceptability of the environmental outcomes of WHP2, relative to the economic and social outcomes, including in the context of the principles and objectives of ESD. The Ministerial Guidelines made under section 10 of the EE Act specifically require the assessment of the proposal and its effects to consider the principles and objectives of ESD. The WHP2's overall consistency with the following ESD objective and principle of ESD are particularly pertinent.:

- To protect biological diversity and maintain essential ecological processes and life-support systems.
- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations.

Environmental and Socio-economic Outcomes

In summary, this Assessment has identified the following key environmental and socio-economic outcomes:

- The implementation of WHP2 will result in a reduction in the crash rate between Beaufort and Ararat from 5.5 to 3.4 per million vehicle kms.
- The project will result in the permanent loss of a significant extent areas of native vegetation (111 ha under Option 1 and 132 ha under Option 2), most of which is VHCS and HCS native vegetation (approximately 101 ha for Option 1 and 116 ha for Option 2), as well as approximately 221 LOTs and 214 LOTs under Options 1 and 2 respectively.
- The project will result in a significant impact on two EPBC-listed communities (Natural Temperate Grassland of the Victorian Volcanic Plain and Grassy Eucalypt Woodland of the Victorian Volcanic Plain) and the Golden Sun Moth through habitat removal.
- Disruption to local agriculture, current landholders and residents will occur during the construction period and some landholders will be affected by public acquisition of land. The proposal would result in minor amenity impacts in local areas, including noise impacts (refer to section 3.6).
- Impacts on Aboriginal cultural heritage can be readily managed through the CHMP required under the AH Act (refer to section 3.8).
- The implementation of the EMF should enable the proposal to be implemented in an overall manner that is environmentally acceptable (refer to section 3.9).

Balance of Environmental, Social and Economic Outcomes

I concur with the Inquiry that subject to the implementation of appropriate offsets and mitigation measures proposed by VicRoads, the environmental effects of WHP2 can be managed to acceptable levels and that the adverse long-term effects on surrounding properties and landscape values should be minimal[52]. Despite the extensive land acquisition required for the road reservation and the need to relocate some infrastructure assets, the associated socio-economic impacts are essentially of local significance and are acceptable in the wider context.

In terms of economic outcomes, the role of this interstate freight link between regional and metropolitan centres including export hubs, as well as the nexus between agricultural output and manufacturing employment in the region, means that the upgrading of the Western Highways' capacity provided by WHP2 will make an important contribution to economic competitiveness[53]. Further, the expected generation of over 2000 full-time equivalent (FTE) jobs directly and indirectly involved with construction and flow-on effects of over 4000 FTE jobs will provide a boost to the regional economy over the three year construction period.

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[52] See p. 81 of the Inquiry report

[53] See EES p. 19-7

One key factor in the evaluation of alternatives and selection of a preferred and alternative alignment was the avoidance and/or minimisation of significant environmental effects, to help ensure biological diversity and ecological processes are maintained. In particular, the alignment options were selected by VicRoads to minimise impacts on native vegetation of VHCS and on matters of NES where possible.

During the EES investigations, VicRoads sought to achieve a balance of environmental, social and economic outcomes. In addition to considering how to avoid and reduce impacts on significant native vegetation and biodiversity values, VicRoads also addressed the potential social and economic outcomes for local communities and adjoining land use that could result from the acquisition of land. This was done consistently throughout the three phases of the options selection process (refer to section 3.2). The preferred and alternative alignments presented in the EES were also selected in light of community views through a staged community consultation process.

The Inquiry has given careful consideration to finding the most appropriate balance between the environmental, social economic outcomes for WHP2 given the differences in impacts between Options 1 and 2. The Inquiry has found that, on balance, the avoidance of significant vegetation by Option 1, coupled with the lesser severance impact on agricultural land around and west of Buangor, outweigh the marginal benefits of Option 2[54]. It is noted that, in coming to its view, the Inquiry gave weight to the availability for compensation of the impacts on individual property owners provided by the *Land Acquisition and Compensation Act 1986*.

This Assessment has examined the predicted effects and likely outcomes of both options for WHP2 in light of the Inquiry report and submissions, to reach a conclusion on the superior option. It has established that the difference in effects between Options 1 and 2 (save for biodiversity and habitat) are not substantial and therefore not significant factors in selecting the final alignment.

So the focus of determining which option should be implemented is the consideration of effects on biodiversity and habitat, largely native vegetation with VHCS or HCS which provides habitat for protected species. In doing so, this Assessment finds that Option 1 (the "alternative alignment" in the EES) would have a superior overall biodiversity outcome, due to clearly lower impacts on native vegetation (both total amounts and amounts of VHCS and HCS vegetation), as well as lower impacts on habitat areas adjacent to Langi Ghiran State Park. Option 1 would maintain better habitat connectivity between the State Park and large areas of bushland south of the existing highway in particular and result in less potential for road kill of native animals in this area of high biodiversity values. These ecological benefits in the areas adjacent and near the State Park, as well as the lower total amount of significant native vegetation to be cleared for Option 1, outweigh its marginally higher impact on Golden Sun Moth habitat and Grassy Eucalypt Woodland of the Victorian Volcanic Plain.

Overall Conclusions

Having regard to the EES, the Inquiry's report and matters raised in submissions, it is my overall assessment that:

- Option 1 provides a more appropriate balance between the likely environmental effects, social and economic outcomes and should be implemented in a manner consistent with this Assessment, including the following responses to the recommendations of the Inquiry.
- In relation to both the relevant legislation and policy framework and the overall benefits of the project in terms of enhancing its important role as a national highway, the potential environmental effects of WHP2 are acceptable, *provided the appropriate minimisation, mitigation and management measures*, as reflect in the findings of this Assessment, are implemented.
- The WHP2 will provide a net benefit to the State of Victoria, having regard to both long-term and short-term economic, environmental and social considerations.

MATTHEW GUY MLC
Minister for Planning

[54] See p.128 of the Inquiry report

Table 3. Inquiry's recommendations (in the left column) and the Minister for Planning's response to the recommendations (in the right column).

Inquiry Recommendation	Response
Road Alignment, Layout and Design	
1. VicRoads, in consultation with Councils, should consider the consolidation of any Farming Zone lots less than 40ha created as a result of the preferred Project alignment.	Agreed
2. Ararat Rural City Council should prepare, in collaboration with VicRoads and the local community, a structure plan for the Buangor Township.	Agreed
3. The Minister for Planning should approve Planning Scheme Amendments C37 to the Pyrenees Planning Scheme and C27 to the Ararat Planning Scheme via the provisions of section 20(4) of the *Planning and Environment Act 1987*, including:	Agreed
• Introduction of the proposed Public Acquisition Overlays in the Pyrenees and Ararat Planning Schemes consistent with the preferred alignment as recommended in Part B of this report;	
• Amendments to Clause 52.03 '*Specific Sites and Exclusions´* of the Pyrenees and Ararat Planning Schemes to exempt the Western Highway Project (Section 2 Beaufort – Ararat) and associated works from requiring planning permits; and	
• The proposed amendment to Clause 81.01 of the Pyrenees and Ararat Planning Schemes to introduce the '*Western Highway Project: Section 2 – Beaufort to Ararat Incorporated Document*'.	
The Panel recommends, subject to the implementation of mitigation measures proposed by VicRoads, and subject to the minor design changes presented to the Panel Hearing, that VicRoads' alignment Option 1 be adopted as a basis for detailed design and the implementation of Public Acquisition Overlays as proposed in Draft Planning Scheme Amendments C37 to the Pyrenees Planning Scheme and C27 to the Ararat Planning Scheme.	Agreed