Western Outer Ring Main Gas Pipeline Project

Minister's Assessment
Environment Effects Act 1978

Minister for Planning
January 2022

VICTORIA State Government | Environment, Land, Water and Planning

Acknowledgment

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

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Abbreviations

AASS	Actual acid sulfate soils
CEMP	Construction Environment Management Plan
CHMP	Cultural heritage management plan
DAWE	Department of Agriculture, Water and the Environment
DELWP	Department of Environment, Land, Water and Planning
EE Act	Environment Effects Act 1978
EES	Environment effects statement
EMF	Environmental management framework
EMM	Environmental management measure
EMP	Environmental Management Plan
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EVC	Ecological vegetation class
FFG Act	Flora and Fauna Guarantee Act 1988
GDE	Groundwater dependent ecosystem
GED	General environmental duty
GSM	Golden Sun Moth
HDD	Horizontal directional drilling
KP	Kilometre point
MSA	Melbourne Strategic Assessment
MNES	Matters of national environmental significance
OEMP	Operation Environment Management Plan
OMR/E6	Outer Metropolitan Ring/E6 reservation
PASS	Potential acid sulfate soils
PSP	Precinct Structure Plan
RAP	Registered Aboriginal party
SDSMP	Sodic and Dispersive Soils Management Plan
VNIE	Victorian Northern Interconnect Expansion
VPA	Victorian Planning Authority
VTS	Victorian transmission system
WWCHAC	Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation

Executive summary

On 22 October 2019, following receipt of a referral from APA VTS Australia (Operations) Pty Ltd (APA) under the *Environment Effects Act 1978*, I decided that an environment effects statement (EES) was required for the Western Outer Ring Main Gas Pipeline Project. APA prepared an EES which I authorised for public exhibition. The EES was exhibited for public comment from 7 July 2021 to 17 August 2021.

On 28 July 2021, I appointed an inquiry under the Environment Effects Act to consider the project's EES. The inquiry was also appointed as a panel under the *Pipelines Act 2005* to consider the pipeline licence application and related submissions. Planning Panels Victoria received 25 submissions and the inquiry and panel[1] held a public hearing over six days between 4 and 14 October 2021. The inquiry provided its report to me on 8 December 2021. The inquiry's report, EES documentation and other material including submissions and documents provided at the hearing have informed the preparation of my assessment of the environmental effects of the project, as set out within this document.

It is my assessment that the project can proceed with acceptable environmental effects, subject to the implementation of project modifications recommended in this assessment and environmental management measures (EMMs) consistent with those endorsed by the inquiry and refined as per the findings and recommendations of my assessment. In particular, the proposed crossing of Jacksons Creek should be modified, as detailed within this assessment. Changing the construction approach to use trenchless methods to cross Jacksons Creek and other areas of high conservation significance should be fully explored. If a trenchless crossing of Jacksons Creek (at the existing crossing site or nearby suitable location) is not feasible, I recommend the proponent further assess the potential environmental impacts and further develop mitigation measures to avoid and minimise impacts to the extent practicable. The proposed approach to managing these impacts should be developed in consultation with the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation (WWCHAC) and and Melbourne Water, and be to the satisfaction of Department of Environment, Land, Water and Planning (DELWP)[2].

My assessment includes specific recommendations for the attention of Victorian statutory decision-makers, the Commonwealth Minister for Energy, Environment and Climate Change and the proponent. Decision-makers must consider this assessment before deciding whether and how the project should proceed.

The project is a controlled action under the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to potential impacts on matters of national environmental significance (MNES). Accordingly, the Victorian EES process was undertaken as an accredited assessment process for EPBC Act purposes. Therefore, the EES and my assessment examine impacts on relevant MNES and will be provided to the Australian Minister for the Environment to inform their decision about whether and under what conditions to approve the project under the EPBC Act.

It is my assessment that residual impacts on MNES will be significant for two EPBC Act listed fauna species and two EPBC Act listed vegetation communities. However, these impacts will be acceptable with implementation of the appropriate project modifications, environmental management and offsetting, as outlined in this assessment. Residual impacts on these species and communities are proposed to be offset in accordance with the EPBC Act *Environmental Offsets Policy* and can be acceptably managed through the recommended EMMs and required approvals. I support amendments to EMMs as recommended by the inquiry and further strengthened by my assessment to assist in avoiding and minimising impacts on MNES as detailed in Appendix A of my assessment.

1. The inquiry and panel is referred to hereafter as 'the inquiry'.
2. Specifically, the Regional Director Port Phillip Region (or delegate).

1. Introduction

On 28 October 2019, APA VTS (Operations) Pty Ltd (APA) referred the Western Outer Ring Main Gas Pipeline Project to me under the *Environment Effects Act 1978* (EE Act). On 22 December 2019, I decided that an environment effects statement (EES) was required under the EE Act. In my decision, I included my procedures and requirements for the EES, in accordance with section 8B(5) of the EE Act and the Ministerial Guidelines[3]. In particular, I specified that the EES needed to investigate and report on effects on/of:

- biodiversity and ecological values;
- waterways, wetlands and groundwater hydrology, quality and aquatic ecology;
- Aboriginal and non-Aboriginal cultural heritage values;
- land uses;
- land stability and erosion;
- amenity;
- socioeconomics; and
- waste.

1.1 Purpose of my assessment

This document constitutes my assessment of the environmental effects of the project under the EE Act and provides authoritative, statutory advice and recommendations to decision-makers. It represents the final step in the EES process and provides findings on the likely environmental effects of the project and their acceptability subject to recommendations on how those effects should be mitigated and addressed in relevant statutory decisions. My assessment is informed by the report of the inquiry that I appointed, as well as by the EES, submissions and documents tabled at the inquiry hearing.

My assessment will inform decisions required under Victorian law for the project to proceed, as well as a decision by the Commonwealth Minister for the Environment on whether to approve the project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.2 Structure of the assessment

In my assessment:

- Section 2 provides a brief description of the project;
- Section 3 outlines both the EES process and statutory approvals required for the project;
- Section 4 summarises my approach to assessing the environmental effects of the project and provides my overarching findings in relation to the proposed management framework for the project;
- overarching assessment of the approach to managing environmental effects of the project;
- Section 5 assesses the environmental effects of the project, providing findings in the context of the applicable legislative and policy framework;
- Section 6 contains my overall conclusions, including responses to the recommendations of the inquiry;
- Appendix A contains a consolidated assessment of impacts on matters of national environmental significance (MNES); and
- Appendix B contains a consolidated list of the inquiry's recommended changes to environmental mitigation measures (EMMs), and my assessment of these recommendations.

3. Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978.

2. Project description

APA propose to construct a high-pressure gas transmission pipeline and to upgrade APA's existing gas compressor station at Wollert. The pipeline would connect the eastern and western sections of the Victorian Transmission System between Plumpton and Wollert, allowing for increased gas storage at the Iona Underground Gas Storage facility to meet winter peak gas demands.

As outlined in the EES, the project proposed by APA comprises three key operational components:

- a new pipeline approximately 51 kilometres in length and fully buried within a 15-metre-wide easement (Figure 1);
- three mainline valves located along the pipeline alignment within the proposed easement; and
- construction of a new Solar Centaur 50 compressor, an end of line scraper station and a regulating station within APA's existing compressor station at Wollert (Figure 2).

The preferred pipeline alignment (Revision 10) runs between APA's existing Plumpton Regulating Station (approximately 38 kilometres northwest of Melbourne's CBD) and Wollert Compressor Station (approximately 26 kilometres northeast of Melbourne's CBD). The pipeline route intersects four local government areas (Melton, Hume, Mitchell and Whittlesea) and the pipeline alignment crosses three main creeks (Jacksons, Deep and Merri creeks). The current land-uses within the project area are largely agriculture and open space/reserves, although parts of the pipeline are located close to urban areas and rural residences. The project area is mostly within Melbourne's growth areas subject to either an existing or future precinct structure plan (PSP). The remainder is primarily within a green wedge area.

2.1 Proposed changes since EES exhibition

APA proposed a number of changes to the project after the exhibition of the EES. Most notably, the pipeline alignment and construction footprint has been altered in several areas. The exhibited EES presented a pipeline alignment described as 'Revision 7', which has since been updated to 'Revision 10'. As outlined in the inquiry's report, the key differences between these were:

- construction footprint locally reduced in response to landowner feedback or to reduce impacts;
- construction footprint expanded in other areas to account for the above changes where necessary;
- redesign to reflect boring construction technique for Beattys Road (instead of horizontal directional drilling [HDD]);
- realignment at Deep Creek crossing at the landowner's request to minimise impact on flat land (kilometre point [KP] 16.3 to 17.3);
- realignment between KP17.32 and 18.32 at the landowner's request to minimise the impact on a dam;
- realignment between KP19.24 and 20.88 at the request of the Department of Transport to minimise the interface with the Outer Metropolitan Ring/E6 reservation (OMR/E6) transport corridor;
- removal of potential access tracks between KP41.16 and 42.13, as access could be accommodated from the south; and
- slight increase of construction footprint near and around the Wollert Compressor Station to accommodate the pipeline inspection gauge trap construction, allow easier access and accommodate design changes.

Unless specifically mentioned, this assessment considers alignment Revision 10 and associated changes to the project layout as described above.

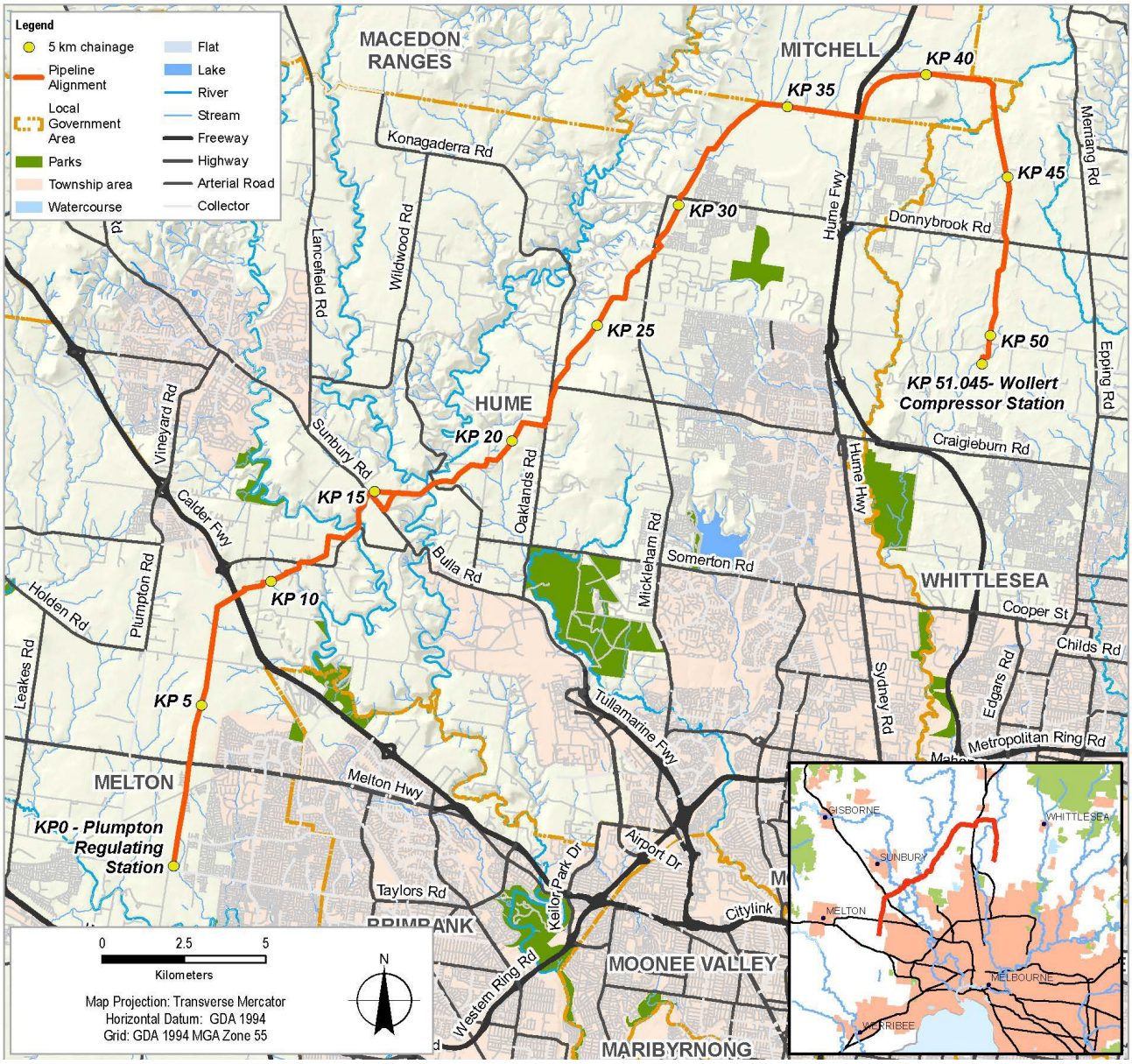

Figure 1: Project location and overview of pipeline alignment (Source: project EES).

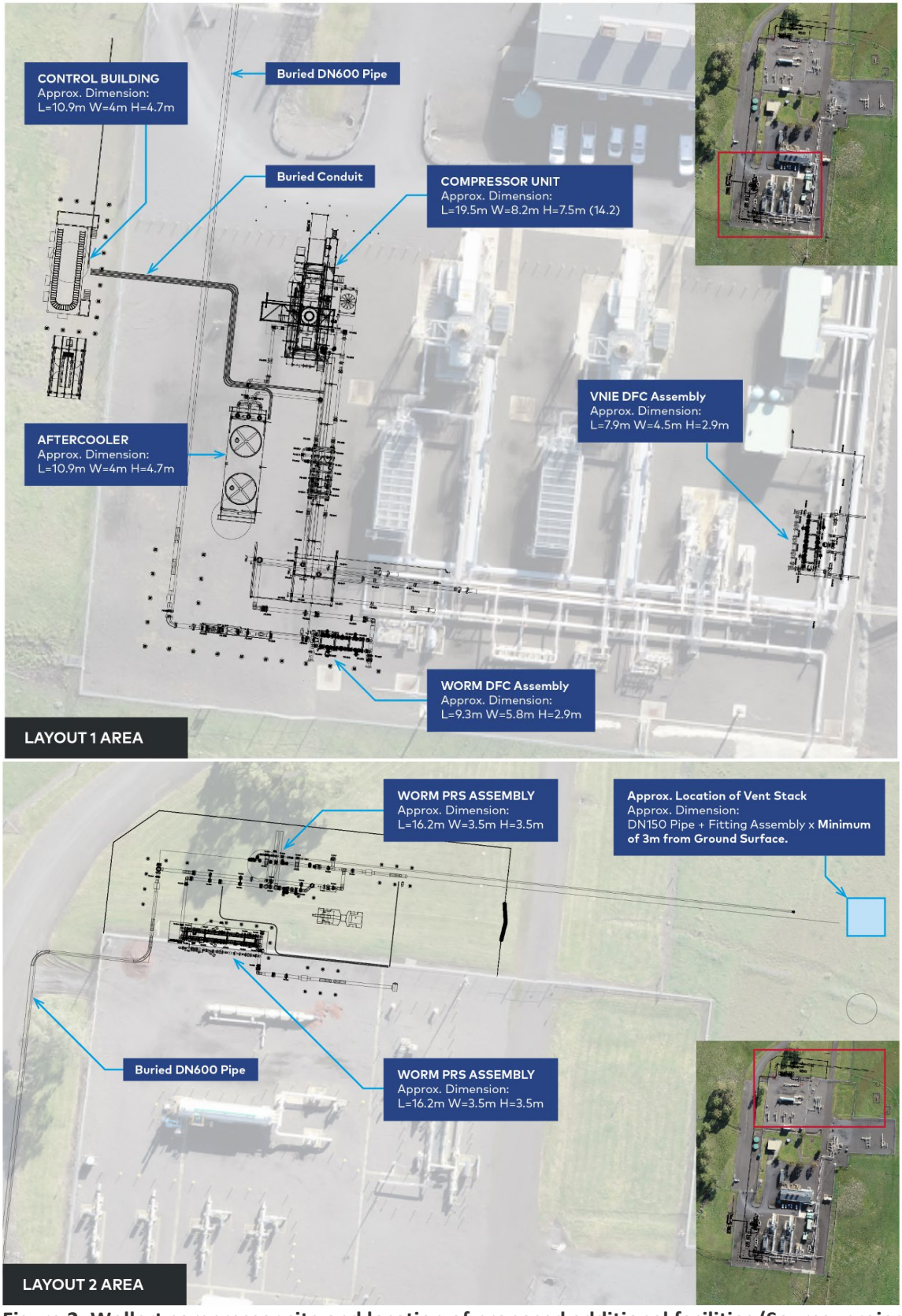

Figure 2: Wollert compressor site and location of proposed additional facilities (Source: project EES).

3. Statutory processes

To proceed with the project, APA require a variety of statutory approvals under Victorian and Commonwealth law. My assessment under the EE Act will inform approval decisions under the *Pipelines Act 2005* and the *Aboriginal Heritage Act 2006*, as well as a range of other permits and consents. In addition, the project is a controlled action requiring approval under the EPBC Act.

3.1 Environment Effects Act 1978

The EE Act provides for assessment of proposed projects that are capable of having a significant effect on the environment.

I issued scoping requirements to specify the matters to be addressed by APA in its EES for the project in late August 2020, following the exhibition of draft scoping requirements for public comment during July and August 2020. The Department of Environment, Land, Water and Planning (DELWP) convened a technical reference group[4], in accordance with normal EES practice, to provide advice to APA (and DELWP) on the preparation of the EES. The EES was prepared by the proponent in response to the scoping requirements. The EES was placed on public exhibition from 7 July 2021 to 17 August 2021. A pipeline licence application was also prepared together with the EES and exhibited for public comment.

On 28 July 2021, with the consent of the Governor in Council, I appointed an inquiry under section 9(1) of the EE Act to review submissions and inquire into the environmental effects of the project in accordance with its terms of reference, which I approved on 10 June 2021.

The inquiry held a directions hearing on 6 September 2021. The main hearing was then held via video conference over 6 days between 4 and 14 October 2021. The inquiry provided its report to me on 8 December 2021. The inquiry's report, along with the EES documentation, submissions and documents tabled at the inquiry hearing, has informed the preparation of this assessment of the environmental effects of the project under the EE Act.

The EE Act requires me to provide my assessment of the environmental effects of the project to Victorian statutory decision-makers. These decision-makers must then consider my assessment before deciding whether and how the project should proceed.

3.2 Pipelines Act 2005

The Pipelines Act governs the construction and operation of gas pipelines in Victoria and requires that an environmental management plan (EMP) must be accepted by the Minister for Energy prior to any pipeline operation. A pipeline licence application, including a proposed construction EMP, was submitted to the Minister for Energy, Environment and Climate Change on June 30, 2021 and was jointly exhibited with the EES. All operation activities were proposed to be managed through the APA VTS Operating Environmental Management Plan (OEMP), which covers all existing APA pipelines.

A delegate for the Minister for Energy, Environment and Climate Change decided that the submissions received on the pipeline licence application and EMP would be referred to a panel for consideration (under section 38[1]). The Minister for Energy, Environment and Climate Change also appointed the inquiry

4. The technical reference group comprised representatives of government agencies, regional authorities, municipal councils and RAPs with statutory or policy interest in the project, including DELWP (Pipelines, Planning and Environment portfolios), First Peoples State Relations, Heritage Victoria, Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation, EPA Victoria, Melbourne Water, Department of Transport, Victrack, Energy Safe Victoria, Melton City Council, Hume City Council, Mitchell Shire Council and City of Whittlesea Council. The proponent and relevant members of its consultant team also attended meetings of the technical reference group.

members as a panel under section 40 of the Pipelines Act and the inquiry's report considered submissions made on the pipeline licence application[5].

Matters relevant to the assessment of the pipeline licence application are addressed throughout this assessment. In making their decision, the Minister for Energy, Environment and Climate Change should have due regard to the inquiry and my recommendations as provided in sections 4, 5 and 6 and appendices A and B of this assessment.

3.3 Environment Protection Act 2017

I note that on 1 July 2021, the *Environment Protection Act 1970* was repealed; the *Environment Protection Act 2017* and *Environment Protection Regulations 2021* now apply. As a result, state environment protection policies have been largely replaced by environmental reference standards. A general environmental duty (GED) also now applies to all projects in Victoria and requires proponents to reduce the risk of harm from pollution or waste from their projects to human health and the environment.

The inquiry's report noted that during the inquiry hearing, APA made minor changes to the proposed EMMs to more clearly refer to the GED and environmental reference standards, instead of referring to superseded policies.

Matters relevant to the assessment of the project against the requirements of the Environment Protection Act and regulations are addressed in sections 4, 5 and 6 of this assessment.

The Environment Protection Act and associated regulations did not require a development licence for the upgrade of the Wollert Compressor Station or any other components of the project.

3.4 Aboriginal Heritage Act 2006

Aboriginal cultural heritage is regulated and protected under the *Aboriginal Heritage Act 2006*. The Aboriginal Heritage Act stipulates that an approved cultural heritage management plan (CHMP) must be prepared for works for which an EES is required. Matters relevant to the assessment of the CHMP are addressed in Section 5.7 of this assessment.

As outlined in the EES, APA is preparing two CHMPs for this project. CHMP 16593 covers the area of the pipeline alignment between for KP8.29 and 51.04 and is being undertaken with the registered Aboriginal party (RAP) Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation (WWCHAC). CHMP 16594 covers KP0 to 8.29 and is being undertaken with First Peoples State Relations and in consultation with WWCHAC.

3.5 Other Victorian statutory approvals

The project is expected to require other Victorian statutory approvals including:

- consent for works potentially impacting listed heritage places under the *Heritage Act 2017*;
- consent for works on waterways under the *Water Act 1989*;
- 'Works in Conservation Areas' approval for works identified as conservation areas 28b and 34a under the *Biodiversity Conservation Strategy for Melbourne's Growth Corridors;*
- Gas Safety Case (amendment to existing Victorian transmission system (VTS) safety case to include the project) under the *Gas Safety Act 1997* and regulations; and

5. Note the inquiry and panel is referred to in this report as 'the inquiry'.

- a permit to remove listed flora and/or fauna from public land under the *Flora and Fauna Guarantee Act 1988* (FFG Act*)*.

3.6 Commonwealth statutory approval

In January 2020, APA referred the project to the Commonwealth (EPBC 2019/8569) for a determination on whether the project is a controlled action requiring approval under the EPBC Act. On 21 February 2020, a delegate for the Commonwealth Minister for the Environment determined that the project is a controlled action, as it is likely to have a significant impact on listed threatened species and communities, which are protected as MNES under Part 3 of the EPBC Act.

The project's EES process has been undertaken as an accredited assessment, in accordance with the bilateral agreement between the Australian and Victorian Governments. Therefore, my assessment will inform the Commonwealth Minister for the Environment's decision about whether and under what conditions to approve the project, fulfilling the assessment requirements for MNES under the EPBC Act. My assessment of the potential impacts of the project on MNES is addressed in Appendix A of this assessment.

4. Environmental assessment and management framework

This part of my assessment:

- summarises my approach to assessing the environmental effects of the project;
- explains relevant aspects of the proposed environmental control regime that have informed my assessment; and
- sets out my analysis and findings in relation to the proposed management framework for the project.

4.1 Consideration of environmental effects

My assessment has been informed by consideration of the EES, public submissions, evidence tabled to the inquiry, information and submissions presented at the inquiry hearing and the inquiry's report. Legislation, policy, strategies and guidelines and the objectives and principles of ecologically sustainable development contextualise my assessment.

4.2 Assessment evaluation objectives

To provide an integrated structure for this assessment, key aspects of legislation and statutory policy have been synthesised into a set of evaluation objectives (Table 1). These objectives are derived from the evaluation objectives included in the scoping requirements for the EES and used by APA in its assessment of environmental effects within the EES. The inquiry also considered the project's effects having regard to the evaluation objectives.

Table 1: Assessment evaluation objectives.

Evaluation objective	Relevant section of this report
*Provide for **safe and cost-effective** pipeline connection between the eastern and western sections of the Victorian Transmission System.*	2, 5.8
*Avoid and minimise potential adverse effects on **native vegetation, listed threatened and migratory species and ecological communities, and habitat for these species,** as well as restore and offset residual environmental effects consistent with state and Commonwealth policies.*	5.1, Appendix A
*Maintain the functions and values of **groundwater, surface water and floodplain environments** and minimise effects on water quality and beneficial uses.*	5.3, 5.4, 5.5
*Avoid, or minimise where avoidance is not possible, adverse effects on **Aboriginal and historic cultural heritage** values.*	5.7, 5.8
*Minimise potential adverse **social, economic, amenity and land use** effects at local and regional scales.*	5.2, 5.8
*Minimise generation of **wastes** from the project during construction and operation, and to prevent adverse environmental or health effects from storing, handling, transporting and disposing of waste products.*	5.5, 5.6

4.3 Management of environmental effects

I acknowledge that a project of this scale and type will generate environmental effects. A sound regulatory framework and environmental control regime is needed to ensure that adverse effects of the project are effectively mitigated and managed. I have considered key elements of that regime, described below, when assessing the project's environmental effects.

Environmental management framework

An environmental management framework (EMF) was presented in Chapter 19 of the exhibited EES, which outlines the key environmental management documentation proposed to be developed for the project, and associated review and environmental reporting requirements (as summarised in Figure 2). The EMF also provides a consolidated list of the proposed EMMs and identifies the key project approvals and compliance requirements. For this project, the EMMs will be given statutory weight via either conditions of approval or be captured in various environmental plans required to be approved by a statutory authority. Further, the project does not require a planning permit as when a licence is issued under the Pipelines Act, section 85 of that Act removes the requirement for a planning permit under the relevant planning scheme.

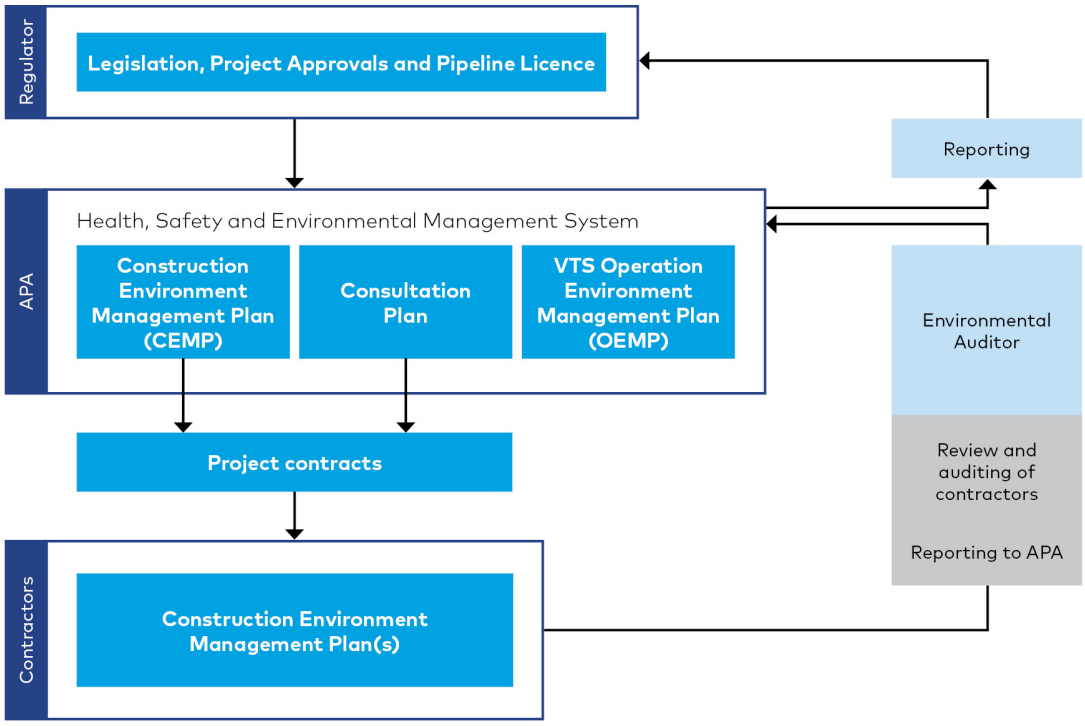

Figure 2: Overview of the key environmental management documentation and associated review and reporting requirements (Source APA, Chapter 19 of the EES).

A key element of the proposed EMF is the proposed EMMs, which set out the commitments the proponent has made to manage the potential environmental effects of the project identified in the EES. The EMMs were the subject of considerable discussion during the inquiry hearing. The proponent revised the EMMs to address a number of the issues raised during the inquiry hearing ('final day' version, tabled document 159). The inquiry made recommendations about the final day version of the EMMs, which are further examined in sections 5 and 6 and Appendix B of my assessment.

The inquiry concluded that it was satisfied with the structure and content of the EMF, subject to applying the recommended changes to various mitigation measures. The inquiry also noted that elements of the exhibited EMF (including some EMMs) have been revised by the proponent to reflect the new requirements of the Environment Protection Act and the GED. The inquiry was satisfied that the EMF appropriately addressed the requirements of the Environment Protection Act.

I support the findings and recommendations of the inquiry in relation to the EMF. In relation to auditing of the environmental management of the project, it my assessment that an external audit should be conducted at the commencement of construction to verify that all required environmental management and monitoring procedures and equipment is in place and fit for purpose, including all management plans listed in Appendix F of the CEMP. I also recommend that the proponent publish the results of the environmental performance and compliance auditing on their website. This approach has been adopted for a number of major projects during recent years, as recommended by my assessment of those projects under the EE Act. Allowing the community to find out about the project's environmental performance improves transparency and accountability of the proponent.

Environmental management plans

As outlined in the EMF presented in Chapter 19 of the exhibited EES, two key environmental management plans for the project are the:

- construction environment management plan (CEMP); and
- VTS OEMP.

Notably, the VTS OEMP governs the operational environmental management of all APA pipelines. My recommendations on the OEMP in this assessment are made specifically in relation to their application to the project. Whether these recommendations should apply to other APA projects, and how they are implemented, is beyond the scope of this assessment.

The proponent made updates to the CEMP and VTS OEMP during the inquiry hearing and provided the following final day versions, which were considered in the inquiry's report:

- CEMP Introduction (Tabled Document 168);
- CEMP Appendix H – EMMs (Tabled Document 159); and
- VTS OEMP - Matters to be addressed in next update (Tabled Document 169).

Along with the inquiry, I support the proponent's changes to the CEMP and VTS OEMP included in the final day versions unless otherwise recommended in Section 5 and appendices A and B of this assessment.

4.4 Consideration of project alternatives

As set out in the scoping requirements and the EES procedures and requirements, the project's EES was required to describe and assess effects of relevant alternatives for the project. This needed to include comparative assessment of the technical feasibility and environmental effects of relevant feasible alternatives, as well as explain why the preferred alternative was selected.

Chapter 3 of the EES assessed a number of project alternatives with a particular focus on pipeline route options and creek crossing techniques. Other design and construction method options discussed in the EES included pipeline diameter, compressor type and pipeline burial depth.

The key findings of the inquiry in relation to alternatives were that the assessment of pipeline route options in the EES and other background documents was acceptable and that the proposed route (Option C) was a legitimate option that warranted detailed assessment. I support these findings.

APA refined route Option C to alignment Revision 7 for the purposes of preparing the EES. Revisions during the inquiry hearing are described in Section 2.1 of this assessment.

My assessment of the alternatives considered for creek crossings is provided in sections 5 and 6 as well as Appendices A and B.

5. Assessment of environmental effects

Overall, it is my assessment that the project can meet the EES evaluation objectives, and that its environmental effects will be acceptable, subject to the implementation of the project modifications proposed in this assessment and EMMs consistent with those endorsed by the inquiry and refined as per the findings and recommendations of this assessment.

The inquiry made numerous findings and recommendations in respect of the project and its effects. My response to its findings and recommendations, along with my assessment of the environmental effects of the project, are detailed in the sections below.

Section 6 provides my main conclusions and recommendations about the environmental effects of the project and responds to inquiry's key recommendations. My findings in relation to matters of national environmental significance (MNES) are also provided in Appendix A. Appendix B summarises my recommendations for the EMMs.

5.1 Biodiversity

Evaluation objective

Avoid and minimise potential adverse effects on native vegetation, listed threatened and migratory species and ecological communities, and habitat for these species, as well as restore and offset residual environmental effects consistent with state and Commonwealth policies.

Assessment context

Biodiversity effects were discussed in Chapter 7 and Technical Report A of the EES, as well as in Chapter 5 of the inquiry's report. Additional material was provided in APA's Technical Notes 07, 08, 15, 16, 31 and 33. The EES proposed 24 EMMs to deal with biodiversity effects, and some of these EMMs have been the subject of recommendations by the inquiry.

A number of potential impacts of the project for biodiversity values were examined through the EES and inquiry process, in particular:

- loss or degradation of native vegetation and/or habitat for fauna and flora species and communities listed under the EPBC Act, FFG Act and DELWP Advisory lists;
- impacts on threatened species;
- impacts on non-threatened fauna; and
- disturbance effects from changes in water quality, contaminants and pollutants, edge effects, habitat fragmentation, dust, noise, environmental weeds and pathogens.

Discussion

Native vegetation

Seven ecological vegetation classes (EVCs) were recorded within the project area. Technical Note 15 identified a maximum extent of 19.31 hectares of native vegetation patches and 18 large, scattered trees that are expected to be cleared due to the project. As detailed in Table 2, all native vegetation to be removed belongs to EVCs with a bioregional conservation status of 'endangered'.

The vegetation to be removed includes two threatened FFG Act listed communities: Western (Basalt) Plains Grasslands Community; and Western Basalt Plains (River Red Gum) Grassy Woodland. It also includes two

'critically endangered' EPBC Act listed communities: Natural Temperate Grassland of the Victorian Volcanic Plain; and Grassy Eucalypt Woodland of the Victorian Volcanic Plain (Table 3). As discussed in Appendix A of my assessment, the removal of the two EPBC Act listed communities is a significant impact and Federal offsets are required for vegetation removed from areas outside the Melbourne Strategic Assessment (MSA) area. The inquiry considered the residual impacts of native vegetation clearance to be significant at a state level. I agree with this assessment because most of the vegetation proposed to be removed belongs to communities listed as threatened under the FFG Act and all of it is EVCs with an endangered bioregional conservation status.

The inquiry noted that during the peer review undertaken by Mr Dunk, only minor discrepancies in vegetation mapping were observed (Appendix 4 of Tabled Document 69). The inquiry therefore considered that the characterisation of vegetation by the proponent team was appropriate and that any additional areas of vegetation mapped by Mr Dunk should be added for the calculation of offsets. I agree with these findings.

The inquiry assessed whether the project had demonstrated sufficient avoidance of native vegetation. Several submitters argued that the proponent team should take additional measures to avoid impacts to native vegetation, particularly in areas of high conservation value. For example, the Grassy Plains Network argued that areas supporting grasslands of the Victorian Volcanic Plains should be further avoided through trenchless construction, particularly where these areas supported habitat for Striped Legless Lizard. The inquiry incorporated the area of known habitat for Striped Legless Lizard at property 12LP92520 into its amendment to EMM B1, requiring the investigation and implementation of further opportunities to avoid the loss of native vegetation through trenchless construction. I agree with this amendment to EMM B1.

Two conservation areas designated under the Biodiversity Conservation Strategy for Melbourne's Growth Corridors (BCS) are crossed by the pipeline. These are Conservation Area 28a and Conservation Area 34a. A 'Works in Conservation Areas' approval from DELWP will be required for works within conservation areas 28b and 34a. Under the BSC, the purpose of Conservation Area 28b is to preserve areas of Grassy Eucalypt Woodland of the Victorian Volcanic Plain, Natural Temperate Grassland of the Victorian Volcanic Plain and Striped Legless Lizard habitat, whilst the purpose of Conservation Area 34a is to protect important populations of Growling Grass Frog and provide habitat connectivity. Dr O'Shea and City of Whittlesea argued that further avoidance should be demonstrated in native vegetation and habitat within the MSA conservation areas, given their importance for protecting MNES and matters of state environmental significance. The proponent argued that following the existing pipeline easement in MSA conservation areas minimised impacts on native vegetation. The inquiry agreed with the submitters that further impacts to remaining native vegetation in conservation areas should be avoided and amended EMM B1 to include the requirement to investigate and implement opportunities for trenchless construction in conservation areas 28b and 34a. I support this amendment to EMM B1 and it is my assessment that it is a priority that impacts on native vegetation and habitats within the MSA conservation areas are avoided if at all feasible.

Groundwater dependent ecosystems (GDEs) were identified at a number of locations along the proposed alignment (EES Technical Report A). These include terrestrial ecosystems such as River Red Gum dominated riparian woodlands that rely on subsurface groundwater and aquatic ecosystems such as rivers, wetlands and springs. As discussed in my assessment of groundwater impacts (Section 5.3), I support the inquiry's view that groundwater impacts, including impacts on GDEs, are likely to be low and can be acceptably managed through the proposed and amended EMMs, with the possible exception of impacts at Jacksons Creek. The EES stated that Jacksons Creek supports potential terrestrial and aquatic GDEs. The inquiry noted that the EES does not explain how dewatering at Jacksons Creek would be managed, even

though there is interaction between surface and groundwater in this waterway. The inquiry recommended that this be addressed through the investigation of the potential for a trenchless crossing of Jacksons Creek. In the event trenchless crossing is not technically feasible the inquiry recommended further assessment of impacts of the crossing, including on groundwater and riparian biodiversity as included in a new surface water EMM (see Section 5.3). I support these recommendations.

The inquiry noted that the proponent had taken actions to avoid impacting native vegetation, but that further opportunities to minimise impacts should be investigated. The proponent's design actions to avoid native vegetation include through the choice of alignment, narrowing the easement in several locations and the revision of the crossing location at Deep Creek. The inquiry accepted that that co-location of the pipeline in the vicinity of the OMR/E6 transport corridor placed some constraints on the ability to avoid native vegetation in these areas. The inquiry recommended that EMM B1 be amended to require the investigation and implementation of further opportunities to avoid the loss of native vegetation through trenchless construction, particularly for FFG and EPBC Act listed communities. I agree that native vegetation clearing warrants very careful examination and that losses need to be minimised to the extent practicable during detailed design and construction to be acceptable. I support the amendments to EMM B1 and consider trenchless construction should be used to avoid native vegetation and habitats of high conservation value where feasible.

Table 2: Predicted maximum loss of EVCs for alignment Revision 10 (Source: Technical Note 15).

EVC (Bioregional conservation status)	Area of vegetation (ha)/ number of trees	
	Within MSA (timestamped mapping)	Outside MSA
Plains Grassland (endangered)	1.71	**7.87**
Plains Grassy Woodland (endangered)	2.49	5.56
Plains Grassy Wetland	0.17	
Riparian Woodland (endangered)	0.01	0.05
Stony Knoll Shrubland (endangered)	1.37	-
Creekline Tussock Grassland (endangered)	0.02	-
Aquatic Herbland (endangered)	-	0.06
Subtotal	**5.77**	**13.54**
Large, scattered trees	**2**	**16**
Combined total	**19.31 ha and 18 large, scattered trees**	

Table 3: Predicted maximum loss of threatened communities for alignment Revision 10 (Source: Technical Notes 15 and 16).

Community (conservation status)	Area of vegetation (ha)	
FFG Act listed community	Within MSA (timestamped mapping)	Outside MSA
Western (Basalt) Plains Grasslands Community (threatened)	1.71	7.87
Western Basalt Plains (River Red Gum) Grassy Woodland (threatened)	2.47	5.56
Subtotal	**4.18**	**13.43**
Combined total	**17.61**	
EPBC Act listed ecological community	Within MSA (field data)	
Natural Temperate Grassland of the Victorian Volcanic Plain (critically endangered)	0.74	4.46
Grassy Eucalypt Woodland of the Victorian Volcanic Plain (critically endangered)	0.05	2.29
Subtotal	**0.79**	**6.75**
Combined total	**7.51**	

Listed threatened flora

The EES identified 33 state and nationally significant flora species listed under the EPBC Act and/or FFG Act as having a moderate or greater likelihood of occurrence within the project area. A further 11 flora species, which were listed on the Victorian Advisory List[6] of threatened flora, were identified as having a moderate or greater likelihood of occurrence in the project area (EES Chapter 7). Most, if not all, of these species have since been added to the FFG Act list and the Victorian Advisory Lists have been revoked. Targeted surveys identified only three of these species as being present (Technical Report A):

- Matted Flax-lily (*Dianella amoena*), listed as critically endangered under the FFG Act and endangered under the EPBC Act;
- Tough Scurf-pea (*Cullen tenax*), listed as endangered under the FFG Act; and
- Arching Flax-lily (*Dianella longifolia var. grandis*), listed as critically endangered under the FFG Act.

Only a single Matted Flax-lily was recorded within the project area. No impacts are proposed to this plant as this section of the pipeline will be constructed with HDD and other mitigation measures are proposed to avoid accidental impacts including demarcation and fencing (EES Chapter 7).

Forty-eight individual Tough Scurf-pea plants were identified in a single location adjacent to a temporary construction area at Wollert Compressor Station. The project area has been aligned at this location to avoid impacts on this population and other mitigation measures are proposed to avoid accidental impacts including demarcation and fencing.

A single Arching Flax-lily was recorded within the project area, outside the MSA area. This plant is proposed to be removed prior to construction. The EES states that this single plant is likely to be unviable in the longer term and the overall impact on the species from the loss of this individual plant is minor. Whilst I accept this assessment, I recommend that the proponent coordinate the salvage and translocation of the plant in consultation with DELWP, given the conservation status of the species within Victoria has

6. DEPI (2014). Advisory List of Rare or Threatened Plants in Victoria.

recently been upgraded to critically endangered following revision as part of the Conservation Status Assessment project and it has been added to the FFG Act Threatened List under the FFG Act.

Within the MSA areas levies apply for the removal of timestamped habitat for EPBC Act listed flora species, including Spiny Rice-flower and Matted Flax-lily, in accordance with the *Melbourne Strategic Assessment (Environment Mitigation Levy) Act 2020* (Levy Act). This Act only applies for 'listed events'. Construction of a pipeline is not a listed event, but the subdivision required for Mainline Value 3 will trigger the payment of levies for this portion of the project (APA's Part A Submissions). The proponent has stated that "Removal of less than 0.5 ha of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species" (Technical Note 16). I agree with this assessment in regard to flora species. Other portions of the project within the MSA will not require the payment of levies for flora species.

Listed threatened terrestrial fauna

The EES identified 23 terrestrial state and nationally significant fauna species listed under the EPBC Act and/or FFG Act and having a moderate or higher likelihood of occurrence within the project area. Targeted surveys identified four of these species as being present within the study areas (EES Chapter 7):

- Striped Legless Lizard (*Delma impar*), listed as 'vulnerable' under the EPBC Act and endangered under the FFG Act;
- Golden Sun Moth (*Synemon plana*), listed as vulnerable under the EPBC Act and vulnerable under the FFG Act;
- Growling Grass Frog (*Litoria raniformis*), listed as vulnerable under the EPBC Act and vulnerable under the FFG Act; and
- Tussock Skink (*Pseudemoia pagenstecheri*), listed as endangered under the FFG Act.

Impacts on Striped Legless Lizard, Growling Grass Frog and Golden Sun Moth for areas outside the MSA are discussed in detail in Appendix A of my assessment. The project will have a significant impact on both Striped Legless Lizard and Golden Sun Moth. I consider that these impacts are acceptable on the basis that they will be offset in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* and can be acceptably managed through the recommended mitigation measures and required approvals. These recommendations include the need to use trenchless construction if feasible to avoid surface disturbance in the areas identified as important habitat for Striped Legless Lizard. Species-specific management plans are proposed for Striped Legless Lizard (EMM B20), Golden Sun Moth (EMM B19) and Growling Grass Frog (EMM B21). I agree with the inquiry's view that potential impacts on Growling Grass Frog related to the trenched crossing of Jacksons Creek are of concern. I support their recommendation for further investigation of the potential for trenchless crossing of Jacksons Creek to avoid and minimise impacts on the frog's habitat where reasonably practicable (see Section 5.3).

Within the MSA areas levies apply for the removal of timestamped habitat for EPBC Act listed fauna species, including Golden Sun Moth and Growling Grass Frog, in accordance with the Levy Act. As discussed above, only the subdivision required for Mainline Valve 3 will trigger the payment of levies (APA's Part A Submissions). The proponent has stated that "Removal of less than 0.5 ha of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species" (Technical Note 16). I agree with this assessment in regard to fauna species. Other portions of the project within the MSA will not require the payment of levies for listed fauna species.

As described above, Conservation Area 28a and Conservation Area 34a are crossed by the pipeline. As discussed above in the Native Vegetation section, I agree with the inquiry's changes to EMM B1 requiring

the use of trenchless construction in these areas where feasible. This would minimise impacts to habitat for Striped Legless Lizard and Growling Grass Frog in these areas.

Merri Creek is identified within the EES as providing habitat for Growling Grass Frog, which is reflected in its designation as a conservation area (Conservation Area 34a). The section of the creek within the project area is proposed to be crossed by open trenching, with a temporary access track crossing of the creek for approximately three months. As discussed in Section 5.3, I consider that the proposed trenched crossing of Merri Creek is acceptable, providing that all relevant mitigation measures are applied, including the amendments to EMMs recommended by the inquiry. I consider that impacts on the species would be much lower if the creek to was crossed by HDD and access was provided along the existing Victorian Northern Interconnect (VNI) easement north of the crossing. However, provided that the proposed Growling Grass Frog management plan (EMM B21) is implemented, impacts to the species should not be significant. I note that the proponent has stated that the crossing works would provide an opportunity to improve the quality of vegetation at the existing VNIE crossing. I therefore recommend that the Growling Grass Frog management plan include requirements for works to improve the habitat value of the Merri Creek crossing site for Growling Grass Frog, that would be implemented under EMM B7 (site rehabilitation after construction).

Tussock Skink was recorded 93 times, from 10 of the 20 tile grids, during the targeted surveys for Striped Legless Lizard. The EES described the species as having potential to be present in habitat dominated by native or introduced tussock grasses throughout the project area. Hume City Council and Dr O'Shea submitted that they had concerns about the outcomes for Tussock Skink and that it was unclear if the project area would be recolonised by the species following construction. The proponent's expert, Ms Dalton, considered that measures to capture and relocate Striped Legless Lizard prior to construction could also be applied to Tussock Skink. The inquiry supported this approach and recommended that EMM B20 be amended to include measures for salvage and relocation of Tussock Skink and any other species captured. I agree with this recommended amendment.

The EES stated that, with the exception of Latham's Snipe (*Gallinago hardwickii*), which may visit seasonal wetlands or dams, migratory species are unlikely to make significant use of the project area (Technical Report A). Whilst targeted surveys were not undertaken for Latham's Snipe, the project area was not considered likely to support important habitat for the species and the project would, therefore, not have a significant impact on the species. I agree with this assessment.

The inquiry considered that the proposed mitigation measures to minimise impacts on threatened fauna species were acceptable, provided that proposed amendments to improve clarity and strength of the EMMs are implemented. I agree with this conclusion.

Listed threatened aquatic fauna

The EES identified eight aquatic state and nationally significant fauna species listed under the EPBC Act and/or FFG Act as having potential habitat within the project area. Of these, only Australia Grayling (*Prototroctes maraena*), listed as vulnerable under the EPBC Act and endangered under the FFG Act, and Platypus (*Ornithorhynchus anatinus*), listed as vulnerable under the FFG Act, were considered to have a medium or higher likelihood of occurrence (EES Chapter 7).

Platypus has been recorded from Jacksons Creek within 200 metres of the construction footprint. The species was considered to have a low likelihood of occurrence within Deep Creek and Merri Creek in the vicinity of the project area. A species-specific management plan is proposed for Platypus (EMM B22). The

impacts of the open trench crossing of Jacksons Creek on Platypus were a key focus for the inquiry. The EES indicated that the key breeding period for the species is between August and early March. During the breeding period, mothers and their young occupy cryptic nesting burrows in stream banks. The proposed EMM B22 in the exhibited EES required construction at Jacksons Creek to be avoided during the peak nesting period for Platypus (i.e., September to March). However, Technical Note 33 proposed contingency measures if this construction timing could not be met due to project delays, including clearing of vegetation on the bank in September, undertaking surveys for and blocking any nearby camping burrows and additional measures such as the use of flumes to deal with water flow.

The inquiry did not support the proposed clearing of bank vegetation during spring to prevent Platypus nesting as this would lead to risks of stream bank erosion and water quality impacts. This was based on advice from Dr McCowan that stream crossing construction should occur in all high-risk waterways during summer or autumn low flow conditions. The inquiry recommended that if Jacksons Creek was to be crossed by trenching, then this should occur during autumn (March to May) to minimise the risks to bank stability, water quality and to nesting platypus. I agree with the inquiry and consider that, if trenching of Jacksons Creek is undertaken, then the proponent should make all efforts for this to occur during autumn, when flows are lowest and Platypus are not nesting. The potential impacts on Platypus are one of my reasons for recommending further investigation of the potential for a trenchless crossing of Jacksons Creek (see Section 5.3).

Australian Grayling has not been reported in either Jacksons Creek or Merri Creek and was not detected in either of these creeks during the EES investigations. Whilst the species was not detected in Deep Creek, the EES noted that the species may migrate through this stream within the project area (Technical Report A). As Deep Creek is proposed to be crossed by HDD, no impacts on this species are expected (Technical Report A). I agree that impacts on Australian Grayling are unlikely.

Unlisted fauna

The EES identified that construction activities could lead to the death or injury of fauna during or as a result of habitat removal or through fauna entering the construction area. Fauna most at risk from project construction are dependent young or those residing in habitats to be removed, those having limited mobility or straying into a construction area when it is unsupervised (such as at night). Most of these fauna species are likely to be non-threatened. The EES stated that, while individual non-threatened animals will be impacted, this is unlikely to have a population-level impact for most species (Technical Report A).

A fauna management plan (EMM B9) was proposed to establish general procedures to minimise risks to fauna. This plan would include mitigation measures such as pre-clearance surveys and inspections immediately prior to habitat removal, supervision of habitat removal by a wildlife handler, trench management to prevent and manage the trapping of fauna and provision of assistance to displaced or injured fauna in compliance with the Wildlife Act.

The EES identified that fauna movement could be restricted during construction, which could particularly impact Eastern Grey Kangaroos (Technical Report A). Kangaroo management measures are proposed to be included within the Fauna Management Plan, which I support.

The inquiry recommended that the fauna management plan should be approved by DELWP. I consider that the fauna management plan should be prepared to the satisfaction of DELWP[7] prior to construction.

Disturbance impacts

The EES identified that temporary localised habitat fragmentation will result from vegetation clearing required for the pipeline and works in waterways (Technical Report A). The pipeline trench will constitute a

7. Specifically, the Regional Director Port Phillip Region (or delegate).

temporary barrier to the movement of ground-dwelling species and required fencing may create a barrier to species such as Eastern Grey Kangaroo. The clearing of grassland will create areas that small ground-dwelling species will be reluctant to cross. Construction works within waterways, such as the trenching of Merri Creek and Jacksons Creek, will create barriers to movement of aquatic species. These works are expected to last 3-4 weeks for trenching and 3 months for the access track across Merri Creek. I support the inquiry's recommendation that these works should occur outside the breeding period for Platypus and the peak breeding period for Growling Grass Frog if feasible to minimise fragmentation impacts on these species. I note that whilst culverts are proposed for the access track across Merri Creek, this will still create a barrier that many species may be reluctant or unable to cross. I am satisfied that, following the reinstatement of vegetation, fragmentation effects will be reduced and these impacts will be of relatively short duration for most species.

Adjacent vegetation, habitats and species have the potential to be impacted by disturbance effects of the project such as weeds, pathogens, sedimentation and contamination. I am satisfied that the large number of measures included in the EMMs, as reviewed and amended by the inquiry, are sufficient to avoid and mitigate the majority of these effects.

Disturbance impacts during construction including lighting, dust, noise and vibration are likely to impact on fauna within and surrounding the project area (Technical Report A). This may result in fauna moving away from these areas and becoming displaced, leading to lower rates of survival for these individuals and impacts on life stages, such as breeding. I note that these impacts are likely to be relatively short term and will be mitigated through EMMs proposed to manage lighting, dust, noise and vibration impacts.

Assessment

Project impacts on biodiversity, particularly for the removal of native vegetation and habitat for threatened species, are significant at a state and national level. Whilst these vegetation and habitat impacts will be offset in accordance with state and Federal offset policy, I support the inquiry's recommendation for further use of trenchless construction methods in areas of high conservation value (summarised in Table 4) and consider that trenchless construction should be used in these locations, unless it is demonstrated to be unfeasible in consultation with DELWP. I assess the predicted biodiversity effects acceptable if managed appropriately through implementation of the proposed EMMs, incorporating all amendments proposed by the inquiry and this assessment.

Table 2: Key biodiversity values of locations recommended for trenchless construction

Location recommended for trenchless construction	Key biodiversity values to be protected
Jacksons Creek	Riparian vegetation (including canopy trees) and habitat for threatened aquatic species, including Growling Grass Frog and Platypus
Property 12LP92520 and adjacent habitat in parcel 11LP92520	Habitat for an important population of Striped Legless Lizard
Conservation Area 28b	Grassy Eucalypt Woodland of the Victorian Volcanic Plain, Natural Temperate Grassland of the Victorian Volcanic Plain and Striped Legless Lizard habitat
Conservation Area 34a (Merri Creek)	Growling Grass Frog habitat
Properties north and south of Craigieburn Road and east of St Johns Road	Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Impacts on threatened and non-threatened species are acceptable provided that mitigation measures as outlined in the amended EMMs are implemented. This includes the requirement for species-specific management plans for Growling Grass Frog (EMM B21), Striped Legless Lizard (EMM B20), Golden Sun Moth (EMM B19) and Platypus (EMM B22) and a general fauna management plan (EMM B9), each of which are to be prepared to the satisfaction of DELWP[8]. Additionally, I recommend that salvage and translocation of the Arching Flax-lily should be undertaken in consultation with DELWP. I also consider that recommendations to improve the habitat value of the Merri Creek crossing site for Growling Grass Frog should be included in the management plan for the species (EMM B21) that would also be implemented under EMM B7 (site rehabilitation after construction).

Disturbance impacts of the project on species, vegetation and habitats within and adjacent to the project area are likely to be of relatively short duration and I consider these impacts acceptable, provided that the project is implemented in accordance with the proposed EMMs as amended by the inquiry.

5.2 Land use and planning

Evaluation objective

Minimise potential adverse social, economic, amenity and land use effects at local and regional scales.

Assessment context

Land use effects were discussed in Chapter 15 and Technical Report K of the EES, as well as in Chapter 15 of the inquiry's report. Social effects related to agricultural uses were discussed at Chapter 16.5 and site-specific land use effects were discussed in Chapter 18 of the inquiry's report. Additional material was provided in APA's Technical Notes 08, 13, 18, 26 and 28.

The impacts of the project on land uses, planning and social effects assessed via the EES and inquiry process relate primarily to current and future land uses, in particular:

- temporary impacts on existing land uses during construction, including impacts on agricultural land capability, noise, dust, traffic and access;
- restrictions on or changes to land use, including permanent access restrictions, within the 15-metre easement corridor;
- constraints on future development, including sensitive land uses, including within PSP areas;
- constraints on existing and future resource extraction in the Extractive Industries Investigation Area;
- impacts on conservation areas within MSA areas; and
- impacts of co-location with future infrastructure and services.

Potential land use and planning issues associated with the proposed co-location of the pipeline with the OMR/E6 transport corridor are discussed in Section 5.8.

Discussion

Strategic assessment of the project

As outlined in the EES, the project is located across four local government areas, the cities of Hume, Melton, Whittlesea and shire of Mitchell. In examining the effects of the project on the land uses and planning of the area I have considered the objectives for planning in Victoria from the *Planning and Environment Act 1987*, *Plan Melbourne 2017-2050*, the Victorian Planning Provisions, Municipal Strategic Statements or Municipal Planning Strategies and the Planning Policy Frameworks of each of the planning

8. Specifically, the Regional Director Port Phillip Region (or delegate).

schemes. These planning policies provide context for my consideration of the social, environmental and economic effects of the proposed pipeline for the planning of the area.

The relevant objectives of planning in Victoria, from Section 4 of the Planning and Environment Act, are to:

- provide for the fair, orderly, economic and sustainable use and development of the land;
- provide for the protection of natural and man-made resources and the maintenance of ecological process and genetic diversity;
- facilitate development in accordance with these objectives; and
- balance the present and future interest of all Victorians.

The project is to be located across a variety of planning zones that allow for, and currently have, a range of residential, agricultural, open space, conservation, commercial, industrial, quarrying, community facility, transport and infrastructure-based land uses. The project is located in growth areas of Melbourne subject to current and future PSPs, as well as within non-urban, green wedge land.

Plan Melbourne 2017-2050 provides strong policy support for the sustainable development of Melbourne's growth areas and protection of green wedges. I note that the relevant zones have purposes such as; protect and conserve environmental values, provide for and protect agricultural uses, and facilitate residential development. I have considered the project in an integrated manner to balance competing objectives in favour of net community benefit and sustainable development. My assessment includes consideration of the effects of the project on surrounding land uses. Other evaluation objectives closely related to land use relate to impacts on flora and fauna, noise and vibration, landscape and social aspects which are considered in other sections of this assessment.

I note that planning policy framework clause 19.01-3S Pipeline Infrastructure seeks to ensure that pipelines have minimal risk to people, other infrastructure and the environment. This is to be achieved by planning pipelines along appropriate routes with adequate buffers and environmental management. I am satisfied that the use and development of the land for a pipeline is an acceptable use in the zones that the pipeline passes through and is supported by policy. I agree with the inquiry's conclusion that no land use impacts preclude the development from being approved, and with the EMMs, the land use effects on the planning for the area will be acceptable, consistent with the relevant planning policies.

Land use impacts

The EES concludes that the construction of the pipeline will affect existing land use values and the establishment of the pipeline easement will cause ongoing impacts such as constraints on future use and development of land. As outlined in the inquiry's report, the proposed pipeline alignment was revised and refined through an iterative process while the EES was being prepared. Where possible, the proponent has sought to minimise impacts on landowners by aligning the pipeline within existing easements and along roads or property boundaries. The inquiry found that operation impacts for agricultural uses on matters such as land capability, biosecurity and access would not be significant overall and will largely be temporary during the pipeline construction. The Pipelines Act provides for acquisition of a pipeline easement under the *Land Acquisition and Compensation Act 1986.* This act requires compensation to be provided for the disruption associated with pipeline construction and the limitations on future use or development of the land within the easement. On this basis, I agree with the inquiry's findings that the impacts on land use associated with project construction activities are acceptable and appropriate for this project and the land use setting.

The project will impact on conservation areas through removal of native vegetation. The construction footprint partially follows the existing VNIE pipeline easement where it traverses two conservation areas within Biodiversity Conservation Strategy for Melbourne's Growth Corridors. I support the inquiry's recommendation that the proponent investigate additional trenchless construction within these conservation areas, to further minimise impacts on high conservation value areas of native vegetation and fauna habitat. My specific recommendations in relation to these areas are discussed in Section 5.1.

As outlined in the EES, APA has established a pipeline line measurement length of 526 metres either side of the pipeline to help ensure ongoing protection of the pipeline and the safety of sensitive receptors. If the project is constructed, APA will monitor land use within this area. I note that APA have also established a separate, smaller notification area ('area of consequence'), that extends 65 metres from the pipeline, which represents the area within which sensitive uses might be exposed to an unacceptable safety risk. AS/NZS 2885 defines a sensitive land use as one that may increase the consequence of a pipeline failure due to its use by members of the community that may be unable to protect themselves from the consequence of a pipeline failure. Uses that might be included in this definition include residential aged care facilities, hospitals and schools, but not standard residential development. The measurement length and area of consequence are not exclusion zones or a buffer, but rather a method that is used to inform risk management.

APA intends to consult with relevant councils on any future planning applications within the notification area and requests that it be notified of applications for sensitive uses. Generally, APA would object to the establishment of a sensitive use within the notification zone. However, if a sensitive use was to establish within this area, mitigation measures could be introduced to mitigate the safety risk. I note that APA does not seek any additional referral requirements given they already exist where the pipeline is proposed to co-locate with existing pipeline infrastructure in urban areas and, in the non-urban areas, the zoning requirements generally preclude the sensitive uses.

I agree with the inquiry's conclusions that the measurement length and area of consequence have been appropriately determined and that APA's intention to be notified of any future sensitive uses is consistent with current practice. I am also satisfied that, based on the current zoning of the land the pipeline is proposed to traverse, there are limited areas where sensitive uses would be able to establish within the area of consequence. I agree with the assessment of the inquiry that the project is unlikely to unreasonably or significantly constrain future development.

I note that Hume City Council did not support the alignment of the pipeline near residential land between Donnybrook Road and Gunns Gully Road in Merrifield West. However, I accept the findings of the inquiry that the alignment of the pipeline is acceptable in this area as compliance with the AS/NZ 2885 safety standard is expected to be able to be achieved in this location.

Similarly, some submitters raised concerns that the pipeline might preclude future extractive industry along the route where it passes through an extractive industry investigation area, and in the vicinity of existing and proposed quarries. I agree with the inquiry's findings that the pipeline will have minimal impact on existing quarries and will not significantly constrain future resource extraction in the extractive industry investigation area.

The Victorian Planning Authority (VPA) also raised concerns that the pipeline should be buried more deeply along Gunns Gully Road within the Merrifield North PSP. The preparation of this PSP is part of the VPA's forward business plan. The inquiry considered that the project should respond to and accommodate

planned and foreseeable infrastructure development, however I note that VPA were unable to provide the inquiry with the proposed location and details of underground infrastructure in this area. I agree with the inquiry that it is not necessary for the proponent to provide a blanket two metre depth for the pipeline in this location. I also support the inquiry's recommendation that the proponent should continue discussions with the VPA to identify specific locations where additional depth is required.

Assessment

It is my assessment that there is policy support for pipeline infrastructure in the planning schemes and, when balanced against the protection of existing values and land uses, it is an acceptable land use. I consider that the temporary impacts on existing and future urban land and green wedge land are acceptable and can be appropriately managed if the project is implemented in accordance with the EMMs as recommended by the inquiry and refined by my assessment (see Appendix B). I am also satisfied that these EMMs will allow the potential ongoing impacts on existing and future land uses in the project area to be appropriately managed during operation.

Potential land use and planning issues associated with the proposed co-location of the pipeline with the OMR/E6 transport corridor are discussed in Section 5.8.

5.3 Surface and groundwater

Evaluation objective

Maintain the functions and values of groundwater, surface water and floodplain environments and minimise effects on water quality and beneficial uses.

Assessment context

Surface and groundwater effects were addressed in Chapter 8 and the Technical Reports B and C of the EES, as well as in Sections 6 and 7 of the inquiry's report. Additional material was provided in APA's Technical Notes 04, 05, 11, 19, 30, 33 and 36. The EES proposed 10 EMMs to deal with surface water and seven EMMs for groundwater effects, and some of these EMMs have been the subject of recommendations by the inquiry. Some of the EMMs related to other matters (e.g., riparian vegetation, soils and aquatic ecology) and those relevant to water have been addressed in this section of my assessment.

A number of potential effects of the project for surface and ground values were examined through the EES and inquiry process, in particular the:

- potential impacts on waterways crossed by the pipeline alignment, with a particular focus on the three key creeks intersected: Jacksons Creek, Merri Creek and Deep Creek;
- potential erosion, sedimentation and landform stability effects of the project;
- potential Impacts of runoff and spills from construction activities;
- flooding risks and potential impacts;
- potential impacts on groundwater quality, level or flow paths during construction and operation;
- potential impacts on GDEs; and
- potential for impacts on water availability and quality for farming and other land uses.

Discussion

Waterway crossings

Potential effects on waterway crossings were a key issue identified in the EES and was also a major focus of submissions on the exhibited documents, as noted by the inquiry. The waterway crossings assessed in

detail in the EES were for the three 'complex waterways': Jacksons Creek, Deep Creek and Merri Creek. Three other waterway crossings were also considered in the assessment namely, Tame Street Drain, Kalkallo Creek and Merri Creek tributary at KP40.8. Flora and fauna impacts of waterway crossings are discussed in Section 5.1.

Deep Creek

The pipeline crossing of Deep Creek is proposed to be by HDD, whereas all other waterways are proposed to be crossed using open trenching. HDD is proposed for the Deep Creek crossing to minimise the environmental impacts on this waterway, including through reducing channel disturbance and removal of native vegetation and associated fauna habitat. I support the use of HDD at this sensitive location.

Jacksons Creek

Jacksons Creek and associated riparian vegetation is relatively undisturbed at the location proposed for the pipeline crossing. The proponent proposes to trench the crossing of Jacksons Creek. As outlined in the EES and the inquiry's report, a trenched crossing at this location would result in significant impacts, including:

- loss of riparian vegetation including two canopy trees – noting that while the trees within the construction footprint would be permanently lost, reinstatement of native vegetation is proposed as part of the final day version of the EMMs (see Section 5.1);
- impacts on water quality due to erosion and sedimentation, particularly due to the presence of unconsolidated sediment deposits and dispersive soils;
- bank stability risks due to removal of riparian vegetation and trenching works;
- impacts on fauna habitat including known habitat for Platypus and Growling Grass Frog (see Section 5.1); and
- possible impacts associated with disturbing acid sulfate soils or other contaminants during construction (see Section 5.5).

The inquiry was concerned about open trenching across Jacksons Creek due to the potential for significant environmental effects on water quality, bank stability, native vegetation and fauna habitat. As Jacksons Creek has perennial flows, a trenched crossing is more complicated due to the need to maintain flows during construction. This will increase the potential for impacts on water quality, with implications for downstream stream aquatic ecosystem health. The inquiry also noted a WWCHAC preference for Jacksons and Merri creek crossings to be constructed by HDD, where feasible (see Section 5.7).

Trenchless crossing of Jacksons Creek, such as by HDD, would greatly reduce impacts by removing the need to disturb riparian vegetation or the creek banks and bed. However, the proponent argued in the EES that HDD was not a feasible alternative as the "geology is considered a significant risk to HDD techniques, as it is not conducive to maintaining borehole stability". As noted by the inquiry, the proponent did not provide sufficient supporting evidence to demonstrate that HDD is not feasible at Jacksons Creek in the EES or during the inquiry hearing process. Further, the inquiry considered that only providing a single crossing location option in the EES was insufficient. The inquiry considered that further examination of potential trenchless crossing methods either at the proposed site or other nearby locations was warranted in order to minimise potential environmental effects. I support the inquiry's conclusion. Implementation of the mitigation hierarchy to prioritise avoidance of impacts of the Jacksons Creek crossing has not been adequately demonstrated. I therefore support the inquiry's recommendation to further investigate the use of trenchless crossing methods such as HDD to sufficiently protect the environmental values at Jacksons Creek and avoid significant environmental effects and recommend this project modification be adopted if feasible. I acknowledge that finding a suitable location for the use of a trenchless crossing method may require some realignment of the pipeline in the area near Jacksons Creek and this should be conducted in

consultation with local landowners and managers. These investigations should be completed in consultation with WWCHAC and Melbourne Water, and be to the satisfaction of DELWP[9].

I also support the recommendation of the inquiry that, in the case that HDD is found to be not technically feasible at Jacksons Creek, further assessment should be undertaken in accordance with the scope outlined in the inquiry's proposed new EMM SW8 to further examine and reduce the likely impacts and risks to the environmental values at Jacksons Creek to the extent practicable. The proposed approach to managing these impacts should be developed in consultation with WWCHAC and Melbourne Water, and be to the satisfaction of DELWP[10]. The scope of this further assessment should also include consideration of additional mitigation measures (or amendments to mitigation measures) informed by findings of the assessment. The CEMP (and potentially the OEMP) would then need to be revised to reflect the outcomes of the assessment prior to works commencing at Jacksons Creek.

Merri Creek

The inquiry noted that some submitters were concerned about impacts of trenching across the Merri Creek, however the proponent considered that the use of HDD at the site would not necessarily lead to a better environmental outcome. A key reason for this was that a trenched crossing, including a temporary access track across the creek, would avoid the need for an additional access roads to be established to allow access to the construction footprint between Merri Creek and the railway line.

The proposed crossing location on Merri Creek is in an existing easement in which the VNIE pipeline was previously installed across the creek through open trenching. The vegetation of the site is degraded with a high cover of weeds present. One tree (a River Red Gum) will require removal to allow a trenched creek crossing at the selected location. While this tree would not be able to be replaced in the pipeline easement due to safety requirements, it is proposed to be offset as part of the project's Ecological Offset Strategy provided in the EES. I note that the proposed EMMs include reinstatement of native vegetation that will assist in restoring the biodiversity values disturbed at Merri Creek, managing erosion and monitoring downstream water quality.

Given the existing degraded conditions at the site and the access constraints, I agree with the inquiry that the proposed trenched crossing of Merri Creek is acceptable, providing that all relevant EMMs are applied.

The management of project impacts on the intangible cultural values of Merri Creek is discussed in Section 5.7.

Other waterway crossings

I support the findings of the inquiry that the proposed open trenching of the other waterways crossed by the pipeline alignment is acceptable. Due to the erosion risks present, I also support the inquiry's recommendation to identify all three channels at Crossing 15 as 'high risk' waterways, so that the additional EMMs will be implemented to minimise environmental impacts at these waterway crossings.

Monitoring of waterway crossings

The inquiry proposed changes to the EMMs for surface water monitoring in response to submissions. I agree with the proposed changes to increase the length of the monitoring period to support detection of persistent or delayed impacts resulting from construction. As recommended by the inquiry, EMM SW6 should also include a requirement for periodic visual monitoring of all high risk waterways on an ongoing basis under the VTS OEMP to detect unforeseen impacts during project operation and support adaptive management. I also support the inquiry's proposed amendment to EMM SW5 to include

9. Specifically, the Regional Director Port Phillip Region (or delegate).
10. Specifically, the Regional Director Port Phillip Region (or delegate).

macroinvertebrate monitoring, which I note has already been adopted by the proponent for Jacksons Creek and Merri Creek in its CEMP (CEMP, Table 12.1).

Other surface water impacts

Other surface water impacts assessed in the EES include those related to flooding and impacts on water quality resulting from site runoff, spills and erosion of soils. Cumulative impacts of the project on surface water values were also assessed for four other planned projects. I generally agree with the inquiry's conclusion that the risks associated with flooding are generally low, subject to implementation of the recommended EMMs. Water quality risks associated with the project were assessed as low in the EES with the implementation of the proposed EMMs. However, due to the nature of the project construction activities and the presence of sodic and dispersive soils in some areas, impacts on downstream areas due to erosion and sedimentation are expected, even with effective implementation of the EMMs. Development of the proposed Sodic and Dispersive Soils Management Plan (EMM GM7) will minimise residual surface water impacts by implementing additional erosion management and monitoring in high erosion risk areas.

I note that a number of the waterways in the project area are in Melbourne's growth areas and will be modified to enable future development. I support the inquiry's recommendation for the drainage line at 1100 Donnybrook Road to be treated as an additional waterway, requiring application of the relevant EMMs.

The EES also reported there is potential for cumulative surface water impacts from the project associated with OMR/E6 transport corridor and Bald Hill to Yan Yean Pipeline. However, I do not expect these cumulative impacts to be significant due to the low residual impacts on surface water expected for the project. In summary, I consider the potential surface water impacts related to flooding, site runoff, spills and erosion acceptable, subject to the diligent implementation of the recommended EMMs.

Groundwater

Most of the pipeline alignment will not interact with groundwater because the pipeline will be above the groundwater table. However, the EES identified several areas where the project is likely to interact with groundwater, such as were the pipeline alignment crosses the main creeks. Overall, risks to groundwater from construction were assessed as low to negligible in the EES. Ongoing risks to groundwater during operation were assessed as low. The potential for cumulative impacts from the project on groundwater associated with the Bald Hill to Yan Yean Pipeline in the area where the projects have a similar alignment (i.e., KP40 to 42) were identified. However, these impacts were not expected to significantly impact on beneficial water uses such as registered groundwater users or GDEs.

I agree with the inquiry's finding that the assessment of groundwater impacts in EES Chapter 8 and Technical Report C are appropriate and my assessment is that the residual impacts will be minor. This is because the extraction of small groundwater volumes over a short period in each area during construction will not cause significant groundwater drawdown and existing groundwater users are not expected to be noticeably affected. However, it is possible that unregistered bores close to the pipeline could be affected, and/or that the drawdown area will extend further than predicted. The complaints management process outlined in the EMF and CEMP will be a useful tool to detect any unforeseen impacts on groundwater users, and additional mitigation measures can then be implemented where appropriate.

The inquiry concluded, consistent with the findings of the EES, that groundwater flow paths are not expected to be significantly blocked or altered by the project. I concur with this assessment and I am satisfied that the EMMs outlined in the CEMP and OEMP appropriately address these risks.

The inquiry noted that there is some uncertainty as to where groundwater will be intercepted along the pipeline due to the high degree of spatial variability of the fractured rock aquifers. I support the inquiry's recommended additional EMM to manage impacts on any unexpected groundwater encountered during construction.

The inquiry noted that uncertainties with regard to contaminated groundwater were generally manageable if the recommended EMMs are implemented, except for groundwater interactions at Jacksons Creek. As noted in the inquiry's report, further investigations of groundwater contamination at Jacksons Creek were recommended in the EES, but have not yet been completed. My findings in relation to potentially contaminated groundwater at Jacksons Creek are described in Section 5.5.

Assessment

It is my assessment that, apart from the proposed Jacksons Creek crossing, the likely effects on surface water values will be low and acceptable, with the adoption EMMs including the inquiry's proposed changes and the further refinements set out in this assessment.

In regard to the proposed open trenched crossing of Jacksons Creek, it is my assessment that it has the potential for unacceptable environmental effects due to potentially significant environmental effects on water quality, bank stability and fauna habitat. I support the inquiry's recommendation to further investigate the use of HDD (or other trenchless crossing method) for the crossing in order to sufficiently protect Jacksons Creek's environmental values and avoid significant environmental effects and recommend this project modification be adopted. These investigations should be completed in consultation with WWCHAC and Melbourne Water, and be to the satisfaction of DELWP[11]. I consider the impacts associated with this creek crossing acceptable if trenchless crossing is implemented.

In the case that the further investigations demonstrate trenchless crossing is not technically feasible at Jacksons Creek (at the preferred site or another location nearby), I do not consider the impacts acceptable due to the potential for significant impacts from open trenching of the waterway. Further work would be required to develop specific mitigation approaches that sufficiently minimise effects of a trenched crossing to the extent practicable. To minimise impacts on the schedule for the project, I consider that works on other parts of the pipeline alignment can commence while further work is being undertaken to progress a trenchless crossing method, or designing a less impactful trenched crossing of Jacksons Creek.

I support the proposed trenchless crossing (i.e., HDD) at Deep Creek and open trenched crossing of Merri Creek within the existing pipeline easement. The proposed open trenching of other waterway crossings apart from Jacksons Creek is also considered acceptable.

In relation to other surface water impacts, I support the inquiry's finding that the EES assessment of surface water impacts in relation to water quality, flooding and future development is satisfactory. I also concur with the inquiry's conclusion that construction impacts associated with the pipeline can be satisfactorily managed through the recommended EMMs, noting that some erosion and sedimentation of downstream areas will be unavoidable during the construction phase. With diligent implementation of the proposed EMMs, the residual surface water impacts are expected to be minor and I consider these impacts acceptable. I support the inquiry's proposed minor amendments to the CEMP and OEMP, including the recommendation for the drainage line at 1100 Donnybrook Road to be treated as a waterway, requiring application of the relevant EMMs. Impacts on aquatic ecology from residual surface water impacts are discussed further in Section 5.1.

11. Specifically, the Regional Director Port Phillip Region (or delegate)

I agree with the inquiry's proposed changes to the EMMs in relation to monitoring of waterway crossings. While I support the proposed amendment to SW5, I do not consider this amendment necessary because macroinvertebrate monitoring at Jacksons Creek is already included in the CEMP.

In relation to groundwater, it is my assessment that the likely groundwater effects are generally low and are acceptable with the implementation of recommended EMMs. My assessment regarding potentially contaminated groundwater at Jacksons Creek is provided in Section 5.5.

5.4 Land stability and ground movement

Evaluation objectives

Maintain the functions and values of groundwater, surface water and floodplain environments and minimise effects on water quality and beneficial uses.

Minimise potential adverse social, economic, amenity and land use effects at local and regional scales.

Assessment context

Land stability and ground movement effects were addressed in Chapter 9 and Technical Report D of the EES, as well as in Chapter 8 of the inquiry's report. Additional material was provided in APA's Technical Notes 12, 20 and 35. The EES proposed seven EMMs to deal with land stability and ground movement matters, and some of these EMMs have been the subject of recommendations by the inquiry.

Land instability and ground movement can damage infrastructure, vegetation, natural landforms and farmland and reduce land function. Erosion can also lead to poorer water quality and waterway health. The key potential effects for land stability and ground movement identified through the EES and inquiry process were:

- ground movement and land instability that may arise from pipeline construction and ongoing operation, impacting on environmental values, land uses and infrastructure;
- erosion and sedimentation of sodic and dispersive soils; and
- disturbance to sites of geological and geomorphological significance.

Section 5.3 of my assessment deals with waterway stability and erosion in relation to surface water impacts.

Discussion

The EES defined 'ground movement' as '*smaller scale movements around the pipeline due to open trench construction or trenchless activities'* and 'land stability' as '*larger scale movements due to the formation of unstable soil or rock masses*'.

Ground movement issues noted by the inquiry included trench instability, trench ground movement and ground movement from boring, construction dewatering and construction drawdown.

The EES reported that standard measures required for projects of this type and additional management measures, which included trench support for any trench deemed to be at risk of instability (EMM GM3) and confirmation of ground risk where there is currently a lack of geotechnical information (EMM GM6), would manage ground movement risks, such that residual risks would be low. The inquiry found that construction and operation impacts on ground movement can be satisfactorily managed through the recommended mitigation measures.

With regards to land stability however, the inquiry found that erosion of sodic and dispersive soils is the most challenging land stability issue that needs to be addressed by the project.

Sodic and dispersive soils

Disturbance of dispersive soils can have adverse effects on water quality and waterway health. The movement of water across and through dispersive soils can result in rill, gully and tunnel erosion.

The VPA submitted that it had identified sodic and dispersive soils in the project area through preparation of planning scheme amendments in Melbourne's growth areas. VPA also drew attention to the proposed planning requirements in the Beveridge North West and Shenstone Park PSP Urban Growth Zone schedules for a Sodic and Dispersive Soils Management Plan where these soils are identified.

Regional mapping of sodic soils showed the project area contains "dense, dispersive subsoils" and EES soil testing showed that dispersive soils are present at Jacksons Creek, Deep Creek, Donnybrook Road (west), Merri Creek and Kalkallo Basin. Further investigations tabled by the proponent at the inquiry hearing found that the presence and severity of dispersive soils may vary significantly over short distances along the alignment.

The inquiry noted that not all dispersive soils are sodic and not all sodic soils are dispersive, even though in some instances these terms are used interchangeably. I support the inquiry's recommendation that references to sodic soils in the CEMP and EMMs should be revised to reference "sodic and dispersive soils", consistent with the relevant schedule to the PSP Urban Growth Zone, including the need to prepare a sodic and dispersive soils management plan.

I support the inquiry's recommendations to expand the scope of and strengthen the sodic and dispersive soils management plan required under EMM G7. My support is based on sodic and dispersive soils management not being as well understood as, for example, acid sulfate soils, the significant risk of harm to waterway health from poor management of sodic and dispersive soils and the expected highly variable presence of these soils across the project area.

Sites of geological and geomorphological significance

The EES identified five sites of geological and geomorphological significance in the vicinity of the project area, including sites on Merri Creek, Jacksons Creek, Deep Creek, Bald Hill and Hayes Hill. Of these five, the 'Merri Creek Park' site (Victorian Resources Online Site 35) is most affected by the project as it is bisected by the pipeline alignment. The EES reports that this section of the Merri Creek is considered to be of regional significance because the landscape and vegetation is relatively 'untouched' since pre-European settlement.

The project will result in direct disturbance to the site including construction of a trenched pipeline crossing through the site, as well as a temporary access road crossing. The EES reports that trench excavation at this site may cause erosion.

The inquiry proposed a new EMM to minimise disturbance at Merri Creek as far as practicable and restore the geomorphological values of the site post construction. Given the importance and values of the site, I support the inclusion of this new EMM. This EMM will require appropriate protection and restoration measures, as advised by an appropriately qualified geomorphologist, are identified during detailed design and implemented during construction and rehabilitation.

I also note the cultural heritage values that relate to the Merri Creek and Jacksons Creek crossing sites are subject to ongoing discussions with WWCHAC as part of the CHMP (see Section 5.7). While noting that the CHMP process provides a suitable forum for consultation with WWCHAC, I recommend that the new EMM G8 for Merri Creek also includes consultation with WWCHAC in regard to proposed protection and restoration measures, consistent with the new Surface Water EMM for the Jacksons Creek crossing.

Assessment

It is my assessment that ground movement and land stability risks can be readily managed if the project is implemented in accordance with the recommended EMMs (see Appendix B). I support the inquiry's recommendations for revisions to strengthen EMM GM7 to require a Sodic and Dispersive Soils Management Plan in order to minimise risks from disturbance of these soils.

I also support the inquiry's proposed new EMM to minimise harm to the geomorphological values of the Merri Creek site and ensure these values are restored post construction. In acknowledging the cultural heritage values of this site, I also recommend that this EMM include a requirement to consult with WWCHAC.

5.5 Contamination

Evaluation objectives

Minimise generation of wastes from the project during construction and operation, and to prevent adverse environmental or health effects from storing, handling, transporting and disposing of waste products.

Assessment context

Contamination effects were addressed in Chapter 10 and Technical Report E of the EES, as well as in Chapter 9 of the inquiry's report. Additional material was provided in APA's Technical Notes 02, 10 and 21. The EES proposed 10 EMMs to deal with contamination and some of these EMMs have been the subject of recommendations by the inquiry.

The key potential effects of contamination identified for this project through the EES and inquiry process were:

- disturbance of contaminated soils and groundwater during construction;
- disturbance of potential and actual acid sulfate soils; and
- management of contaminants and waste associated with project construction and operation.

Discussion

The EES identified areas within the construction footprint with potential for soil and groundwater contamination based on historical and current land uses. These areas included landfills and fill sites, industrial sites and rail reserves. Some of these 'higher risk' areas were subject to investigation following exhibition of the EES and contamination was not detected in the soils that were sampled. The inquiry noted that the EES and subsequent investigations indicate that risks arising from encountering contaminated soils during construction of the project are low, and that any contamination is likely to be limited in extent. This is owing to the nature of current and historical land uses and that contamination had not been detected by the sampling conducted. I note however that sampling at Jacksons Creek, while recommended by the EES, had not been undertaken due to land access, and this is discussed further below.

The Environment Protection Authority's (EPA) submission supported further soil investigations prior to construction, in accordance with the requirements set out in EMM C1. EPA also recommended soil

sampling in the vicinity of rail reserves. The inquiry supported this recommendation due to the possibility of contaminant migration in these areas. I support the inquiry's recommended amendment to EMM C1 to include a requirement for further testing in the vicinity of rail reserves.

The EES found that contaminated groundwater may be intercepted at Jacksons Creek and Deep Creek. Groundwater at these sites could be affected by regional groundwater contamination from sources including the nearby Bulla Landfill and Hi-Quality Landfill. Contaminated groundwater impacts would be managed via the proposed groundwater EMMs, including in respect to further sampling and analysis and the management of extracted contaminated groundwater. The inquiry recommended a new EMM to address instances where unexpected groundwater is encountered, which would include requirements to assess and manage unexpected discoveries of potentially contaminated groundwater. I support this EMM and my findings in relation to this issue are further described in Section 5.1 and 5.3.

The EES found that actual acid sulfate soils (AASS) and potential acid sulfate soils (PASS) are unlikely to be present in the construction footprint apart from where open trenching in alluvium material below the water table, specifically at Merri Creek and Jacksons Creek crossings. Following EES exhibition, further investigations at Merri Creek led to the conclusion that AASS/PASS was unlikely to be present at this site. However, equivalent investigations have not yet been undertaken at Jacksons Creek.

The EES also concluded that AASS/PASS assessment was not needed at the Kalkallo Retarding Basin and the Tame Street Drain owing to the depth of groundwater relative to the proposed trench in these locations. Based on subsequent design changes to the trench depth, the inquiry recommended further investigations in these areas. I support the inquiry's recommended amendments to EMM C3 to require acid sulfate soils assessment at Kalkallo Retarding Basin and the Tame Street Drain prior to dewatering.

With regards to the contamination and AASS/PASS status at Jacksons Creek, preliminary sampling in the EES showed elevated concentrations of per- and poly-fluoroalkyl substances (PFAS) in surface water in Jacksons Creek. Further investigations were proposed in the EES, including sampling of shallow groundwater for PFAS and additional soil sampling at the Jacksons Creek Crossing. The inquiry recommended that these additional investigations be completed as part of the further investigations of the Jacksons Creek crossing to pursue the adoption of HDD to avoid potentially unacceptable environmental effects of a trenched crossing of Jacksons Creek, and I support this recommendation (see Section 5.3). In the event that no trenchless crossing method is feasible for Jacksons Creek these investigations into soils and groundwater will be important to inform specific mitigation measures at this site to minimise potential effects on surface water values.

The risks related to contamination and waste generated by the project are considered to be low if managed in accordance with the recommended EMMs. The inquiry noted the proponent intends to re-use spoil on site in the reinstatement phase of the project where possible, in accordance with requirements in the EMMs, and considers this approach to be appropriate. I also support the re-use of spoil on site where practicable.

Assessment

It is my assessment that, in general, significant contamination effects from the project are unlikely and the potential impacts are acceptable, as they can be readily managed if the project is implemented in accordance with the recommended EMMs (see Appendix B).

However, uncertainties regarding the potential contamination of groundwater and soil at Jacksons Creek is one of the reasons why I have recommended the project pursue a trenchless crossing of the waterway at the selected location or a suitable nearby location (see Section 5.3). With this design modification, the overall impacts of the project associated with contamination are considered acceptable. In the event that it is found that no trenchless method is feasible for this creek crossing, I have also recommended investigations into contamination of soils and groundwater to inform specific mitigation measures at this site to minimise potential effects on surface water values (see Section 5.3).

5.6 Greenhouse gases

Evaluation objective

Minimise generation of wastes from the project during construction and operation, and to prevent adverse environmental or health effects from storing, handling, transporting and disposing of waste products.

Assessment context

Greenhouse gas effects were addressed in Chapter 10 and Technical Report H of the EES, as well as in Chapter 10 of the inquiry's report. Additional material was provided in APA's Technical Notes TN06, TN22 and TN29. The EES proposed four EMMs to deal with greenhouse gas emissions.

The potential greenhouse gas issues identified through the EES and inquiry process can be summarised as:

- the predicted greenhouse gas emissions associated with the construction and operation of the project; and
- the acceptability of the project's predicted greenhouse gas emissions in the context of Victoria's greenhouse gas emissions.

Discussion

The EES identified activities that would generate greenhouse gas emissions during the project's construction as including land use change due to site clearing and site establishment, fuel consumption by equipment and vehicles and embedded emissions in construction materials. During operation, greenhouse gas emissions would mainly be generated by fuel use by the compressor station.

The EES predicted the project would generate the following greenhouse gas emissions:

- 50,810 tonnes of carbon dioxide equivalents during construction–the majority from land clearance; and
- 15,380 tonnes of carbon dioxide equivalents annually during operation–the majority from fuel use by the compressor station.

Compared with Victorian annual emissions using 2018 data, the project was expected to contribute 0.019 per cent and 0.014 per cent of Victoria's total emissions for construction and operation, respectively.

Given changes to the alignment and pipeline design since exhibition of the EES, greenhouse gas emissions generated during construction was recalculated by the proponent and greenhouse gas emissions reduced by 10,257 to 40,554 tonnes of carbon dioxide equivalent. The inquiry found that the quantum of greenhouse gas emissions during construction would have only a marginal impact on Victoria's greenhouse gas emissions. Along with the inquiry, I support EMM GG1, which would require that greenhouse gas emissions are reduced during construction so far as reasonably practicable.

While submitters raised concerns about the project's contribution to future gas usage and resulting emissions, the proponent expects that the project would not lead to increased gas consumption beyond existing usage, as it is adding to the existing gas transmission network rather than augmenting extraction from gas sources or promoting an increase in demand for gas usage. Moreover, the proponent contends that the project would maintain and transfer gas more efficiently, potentially contributing to a reduction in ongoing operation emissions. The inquiry found that, on this basis, the project's overall contribution to Victoria's greenhouse gas emissions during operation would be minimal.

Assessment

It is my assessment that the predicted greenhouse gas emissions of the project are acceptable in the context of Victoria's greenhouse gas emissions and that the proposed EMMs are appropriate to ensure that greenhouse gas emissions are reduced during construction and operation to the extent reasonably practicable.

5.7 Aboriginal cultural heritage

Evaluation objective

Avoid, or minimise where avoidance is not possible, adverse effects on Aboriginal and historic cultural heritage values.

Assessment context

Aboriginal cultural heritage effects are addressed in Chapter 13 and Technical Report I of the EES, as well as in Section 13.3 of the inquiry's report. Additional material was provided in APA's Technical Notes 14. The EES proposed two EMMs to deal with Aboriginal cultural heritage, which were then revised to one during the inquiry hearing and presented in Tabled Document 159.

CHMPs are the principal mechanism for managing effects on Aboriginal cultural heritage and ensuring compliance with the Aboriginal Heritage Act (see Section 3.4).

A number of potential effects of the project for Aboriginal cultural heritage values were examined through the EES and inquiry process, in particular the:

- destruction or disturbance of known and currently unknown places of Aboriginal cultural heritage significance;
- adverse effects on intangible cultural heritage values; and
- adequacy of consultation of Traditional Owners.

Potential effects on historic heritage values are dealt with in Section 5.8 of my assessment.

Discussion

The Aboriginal Heritage Act provides for CHMP approval to be determined by a RAP appointed by the Aboriginal Heritage Council. When the proponent lodged its notice of intent to prepare CHMPs for the project, a RAP (WWCHAC) had only been appointed for KP8.29 to 51.045 of the pipeline alignment (CHMP 16593). The proponent lodged its notice of intent for KP0 to 8.29 (CHMP 16594) with Aboriginal Victoria (now First Peoples–State Relations). Since then, RAP boundaries for WWCHAC have been amended to include CHMP 16594. While First Peoples–State Relations retains statutory responsibility for determining the CHMP, it will undertake this function in consultation with WWCHAC.

The EES stated that 13 places on the Victorian Aboriginal Heritage Register were known to occur in the construction footprint. The proponent noted that survey work to identify additional places and development of the CHMPs in consultation with the First Peoples–State Relations and WWCHAC is ongoing. Impacts on these places and associated mitigation measures will be finalised through the CHMP processes.

Submitters raised concerns that Aboriginal places may not have been sufficiently avoided or that Traditional Owners may not have been sufficiently consulted. The inquiry noted that the preferred route was informed by a high-level consideration of Aboriginal cultural heritage impacts and more detailed investigations were progressing for the CHMPs to inform the significance of cultural heritage and intangible values and measures to minimise impacts on these values. I support this approach. If any alignment changes are necessary, I agree with the inquiry that consequential issues should be addressed through an iterative process as part of the development of the CHMPs.

I support the inclusion of an unexpected finds protocol in the CHMPs to provide for the identification and management of currently unknown Aboriginal cultural heritage places, noting that this is a matter for First Peoples–State Relations and WWCHAC. I note that an equivalent approach is provided for currently unknown historic heritage sites in the CEMP and EMM CH4.

Several submitters, including WWCHAC, raised concerns about open trenching the pipeline across Merri and Jacksons creeks. The proponent advised that discussions are in progress regarding the WWCHAC's recommendations for minimising project impacts on the intangible values of Merri and Jacksons creeks through reinstatement and weed management. I agree with the inquiry that the WWCHAC should be consulted on the management of environmental impacts of Jacksons Creek crossing (EMM SW8) and further recommend that WWCHAC be consulted on the Merri Creek crossing (new EMM for geomorphology). My findings in relation to environmental effects of these creek crossings are discussed in Sections 5.1-5.5.

I accept, along with the inquiry, the proponent's witness's advice that CHMP 16593 for the project will be able to co-exist with an existing CHMP 15612 that applies to the land of 1100 Donnybrook Road Pty Ltd.

I support EMM CH1, as proposed by the proponent and the inquiry, which is consistent with the Aboriginal Heritage Act in requiring implementation and compliance with the CHMPs.

I note that the project cannot proceed without CHMP 16594 and CHMP 16593 being approved by First Peoples–State Relations and WWCHAC, respectively. I, along with the inquiry, am not aware of any impediments to the CHMPs' future approval. Such approval of the CHMPs can follow the conclusion of the EES process.

Assessment

It is my assessment that the effects of the project on Aboriginal tangible and intangible cultural heritage values can be addressed to an acceptable level through further investigation and consultation with the First Peoples–State Relations and WWCHAC and their approval of the CHMPs.

5.8 Other effects

As noted in my published reasons for requiring an EES and the EES scoping requirements, the EES was to focus on potentially significant effects of the project including those related to terrestrial and aquatic biodiversity, waterways as well as Aboriginal cultural heritage values. The EES, submissions and inquiry carefully examined additional potential effects associated with land use and planning, surface and groundwater, land stability and ground movement, contamination and greenhouse gas emissions, which are considered in sections 5.1-5.7 of this assessment. Other less significant effects also examined during the EES and inquiry process were air quality, noise and vibration, historic heritage, landscape and visual, social, safety and traffic and transport. These topics were discussed in EES chapters informed by technical reports and in the inquiry's report.

Table 5 outlines the inquiry's findings in regard to these other effects and discusses the overall significance of effects against the proposed environmental control regime. Generally, I support the findings of the EES and inquiry in relation to other effects. It is my assessment that these effects are relatively low, localised and, for construction impacts, temporary, and they can be effectively managed through well-established practices including the recommended EMMs that would be given statutory weight through conditions on approvals and statutory environmental management plans.

Table 3: Other social and environmental effects.

Inquiry findings	Assessment
Air quality The EES identified that key air quality impacts during construction will result from dust (PM10) generated by mobile equipment (e.g., trucks, graders and excavators) and wind disturbed soil surfaces and stockpiles. All dust generated by the project has the potential to impact health and wellbeing, local amenity, visibility and ecosystems. The EPA's submission recommended that monitoring focus on a proactive and preventative framework and recommended several changes to the Air Quality EMMs and monitoring requirements in the CEMP. The proponent adopted all changes recommended by EPA except for EPA's recommendation to reduce maximum vehicle speeds to 20 kilometres per hour or less near sensitive receptors (such as private residences potentially affected by noise). The inquiry accepted the proponent's view that such a change was unnecessary and that potentially significant impacts can be addressed by the proposed adaptive management measures. The inquiry accepted the findings of the EES that residual risks to air quality from project activities will be low and was satisfied the proposed EMMs are generally appropriate. Given the proximity of proposed future residential development to the pipeline alignment, the inquiry recommended that the EMMs include a requirement for a review of sensitive receptors prior to construction.	I accept the inquiry's findings that the residual risks for air quality will be low and agree that the impacts on receptors such as residences can be acceptably managed with the recommended EMMs. I support the amendment to the EMMs to include a requirement to periodically review sensitive receptor locations to identify any new receptors, having particular regard to new residential development.
Noise and vibration The EES identified noise from construction activities as a key impact to be managed, particularly where the pipeline alignment occurs close to residential areas. The inquiry found that potential construction noise impacts from the project can be acceptably managed. The inquiry considered that the EMF appropriately addressed the requirements of the Environment Protection Act in relation to noise management. Potential vibrations risks were considered to have been appropriately addressed. Two minor amendments to the EMMs were recommended by the inquiry to improve their clarity and operation.	I accept the inquiry's findings and agree that the project's noise and vibration effects can be acceptably managed through the proposed EMMs. The proposed EMMs for noise management and monitoring will be complemented by the implementation of the complaints management process outlined in the EMF and CEMP. I support the minor amendments recommended by the inquiry to the relevant EMMs.

Inquiry findings	Assessment
Historic heritage The EES identified one historic heritage place on the Victorian Heritage Register, namely, Holden Cobbled Stone Road, within the construction footprint. An unregistered drystone wall on 170-200 Donovan's Lane, Beveridge was identified by a submitter. The proponent's witness accepted that there would be merit in assessing the wall before construction commenced. The inquiry was satisfied with the adequacy of the EES's historic heritage assessment and considered shallow horizontal boring under the Holden Cobbled Stone Road was appropriate subject to a Consent under the Heritage Act (EMM CH3). The inquiry recommended a new EMM to assess the significance and treatment of the drystone wall on 170-200 Donavan's Lane.	With the implementation of the recommended EMMs, I consider that effects on historic heritage values can be managed to acceptable levels. I accept the inquiry's findings and agree that impacts on the Holden Cobbled Stone Road can be managed to an acceptable level with the required heritage consents. I support the new EMM to assess the drystone wall on 170-200 Donavan's Lane before construction in the vicinity of this site commences, which will assist in determining if any further consents are required for disturbance of this feature. If any new historic heritage sites are identified during construction, any effects can be appropriately managed through the CEMP, EMM CH4 and heritage consents.
Landscape and visual The inquiry was satisfied with the landscape and visual impact assessment in the EES. It found that temporary construction impacts can be managed satisfactorily through the proposed EMMs, which focus on minimising: loss of trees that provide screening; leaving machinery, materials and infrastructure idle; and light spill during any night works (e.g., during HDD works). It also found that pipeline operation impacts would be managed appropriately by replacing screening trees that were removed during construction. The inquiry considered the landscape and visual impacts of the three main line valves to be low due to their small scale, the open nature of their design and site-specific considerations. The upgrade to the Wollert Compressor station was also considered to have low landscape and visual impacts due to the distance from public realm and residences as well as the large scale of the existing facility.	I accept the inquiry's findings and agree that the project's landscape and visual effects can be acceptably managed through the proposed EMMs.

Inquiry findings	Assessment
Social The inquiry was satisfied that the EES had appropriately characterised potential social effects of the project, which included reduced local amenity for private properties and community facilities (e.g., Cao Dai Temple) and increased travel times during pipeline road crossings, as well as reduced land availability for rural residential and agricultural uses. The inquiry considered that key adverse social impacts were all temporary and minor overall and would be appropriately minimised through implementation of the recommended EMMs. The inquiry accepted the proponent's approach to consultation to date, including with Cao Dai Temple and in addressing a range of linguistic needs, and acknowledged that engagement has been constrained by COVID 19 restrictions. For future engagement with the community, the inquiry recommended that the project's consultation plan (EMM S6) include an approach for engaging with culturally and linguistically diverse community members informed by community-specific advice from municipal councils.	I accept the inquiry's findings and agree that the project's adverse social effects can be acceptably managed through the proposed EMMs subject to the project's consultation plan (EMM S6) being strengthened to support engagement with culturally and linguistically diverse community members. I also acknowledge that the project will have community benefits in terms of gas supply and construction jobs.
Traffic and transport The inquiry accepted that construction of the pipeline will not generate a high volume of traffic and impacts on local traffic due to construction activities being temporary. The inquiry concluded that these impacts can be appropriately managed through the traffic management plans proposed to be prepared prior to construction. The inquiry recommended an amendment to EMM SA6 to ensure early consultation occurs with DOT as part of the preparation of traffic management plans. The inquiry noted a significant advantage of the project route was its integration within the Public Acquisition Overlay reservation for Outer Metropolitan Ring/E6 transport corridor, however, it does raise significant design challenges. The Proponent and Department of Transport have been progressively working through design issues where the proposed project would impact on existing or proposed transport infrastructure and seek to finalise an agreement on these challenges through a coordination deed. The coordination deed would require the Head, Transport for Victoria to approve final pipeline design plans.	I accept the inquiry's findings and agree the traffic impacts of the project are unlikely to be significant can be acceptably managed through the recommended EMMs. I support the inquiry's recommended amendment to EMM SA6. I accept the inquiry's findings that the coordination deed is an appropriate mechanism to coordinate the project's design and construction with existing and future transport infrastructure. I support the inquiry's recommendation that proposed coordination deed be executed prior to construction.

Inquiry findings	Assessment
Safety The inquiry noted that the regulatory framework for the project includes: a pipeline licence under the Pipeline Act; pipeline construction and operation in accordance with the Act and Australian Standard AS/NZS 2885:2018 Pipelines–Gas and liquid petroleum (which includes an alignment-specific Safety Management System); and preparation of a Health and Safety Management Plan for construction and operation of the project in accordance with the Victorian Transmission System Safety Case. The inquiry also noted that risks not addressed in the Safety Management System, such as from bushfire, blasting, trench stability and vehicle movements, were assessed in the EES and mitigation measures were proposed to manage these to a low risk level. The inquiry observed that safety risk identification and assessment would continue through design, construction and operation and was satisfied that safety risks associated with the pipeline and associated infrastructure would be properly controlled.	I accept the inquiry's findings and consider that the gas industry has a mature safety regulatory framework that gives me confidence that the project's safety risks will be managed to low and acceptable levels.

6. Conclusion

The project is expected to give rise to residual impacts particularly to biodiversity values, land use, Aboriginal cultural heritage, local waterways and amenity. Through the investigation of alternatives and the iterative development of EMMs, the proponent has sought to avoid and minimise potential impacts as part of the EES and the inquiry process. There will also be further opportunities for reducing residual impacts, particularly for biodiversity values, through detailed design and investigating use of trenchless construction in sensitive areas as recommended by the inquiry and this assessment.

My overall conclusion is that the project can proceed with acceptable environmental effects, subject to the implementation of project modifications recommended in this assessment and environmental management measures (EMMs) consistent with those endorsed by the inquiry and refined as per the findings and recommendations of my assessment.

In particular, the proposed crossing of Jacksons Creek should be modified, as detailed within this assessment. Changing the construction approach to use trenchless methods to cross Jacksons Creek and other areas of high conservation significance should be fully explored. If a trenchless crossing of Jacksons Creek (at the existing crossing site or nearby suitable location) is not feasible, I recommend the proponent further assess the potential environmental impacts and further develop mitigation measures to avoid and minimise impacts to the extent practicable. The proposed approach to managing these impacts should be developed in consultation with the WWCHAC and Melbourne Water, and be to the satisfaction of DELWP[12].

Further, it is my assessment that trenchless construction is be used for the following additional areas of high conservation significance, where feasible:

- Striped Legless Lizard habitat within property 12LP92520 and the adjacent habitat in parcel 11LP92520;
- previously undisturbed patches of native vegetation in Conservation Areas 28b and 34a; and
- areas of Grassy Eucalypt Woodland of the Victorian Volcanic Plain either side of Craigieburn Road and east of St Johns Road.

My assessment includes specific recommendations for the attention of Victorian statutory decision-makers, the federal Minister for Energy, Environment and Climate Change and the proponent. Decision-makers must consider this assessment before deciding whether and how the project should proceed.

The project is a controlled action under the Australian Government's EPBC Act due to potential impacts on MNES. Accordingly, the Victorian EES process was undertaken as an accredited assessment process for EPBC Act purposes. Therefore, the EES and my assessment examine impacts on relevant MNES (see Appendix A) and will be provided to the Australian Minister for the Environment to inform their delegate's decision about whether and under what conditions to approve the project under the EPBC Act.

It is my assessment that residual impacts on MNES will be significant for two EPBC Act listed fauna species and two EPBC Act listed vegetation communities. However, these impacts will be acceptable with implementation of the appropriate project modifications, environmental management and offsetting, as outlined in this assessment. This includes the recommendation to use trenchless crossings for key areas of habitat for Striped Legless Lizard and patches of Grassy Eucalypt Woodland of the Victorian Volcanic Plain. Residual impacts on these species and communities are proposed to be offset in accordance with the EPBC Act Environmental Offsets Policy and can be acceptably managed through the recommended EMMs and required approvals. I support amendments to EMMs as recommended by the inquiry and further

12. Specifically, the Regional Director Port Phillip Region (or delegate).

strengthened by my assessment to assist in avoiding and minimising impacts on MNES as detailed in Appendix B of my assessment.

My assessment addresses the environmental effects of the project that have been investigated through the EES process. My assessment does not endorse impacts resulting from subsequent project changes (e.g., alignment changes) or unforeseen scenarios that may have different or more severe environmental effects. My assessment also does not extend to an expanded or upgraded version of the project, nor to other related future projects that might interact with the project.

6.1 Summary of responses to inquiry's key recommendations

Table 6 summarises my responses to the inquiry's key recommendations. My comments on the proposed changes to EMMs or additional EMMs recommended by the inquiry or my assessment are presented in Appendix B.

Table 6: Response to inquiry recommendations

Inquiry recommendation		Minister's response
Construction Environment Management Plan		
1	Replace the second dot point with: • *Flora and fauna management plan(s) for approval by DELWP (prior to construction commencing) including:* - *Fauna management plan, including kangaroo management measures (required by EMM B9)* - *Species specific management plans for platypus (required by EMM B22), growling grass frog (required by EMM B21), golden sun moth (required by EMM B19), and striped legless lizard (required by EMM B20)* - *Threatened species handling and relocation protocol (required by EMM B9).*	Supported with the change that flora and fauna management plans are to be prepared to the satisfaction of DELWP (specifically the Regional Director Port Phillip Region), rather than for approval by DELWP.
2	Amend Table 4.2 'Applicable policies and guidelines' to include '*EPA Publication 1739 – Urban Stormwater Management Guidance*' in the list of EPA Publications.	Supported
3	Amend Table 2.3 'Pipeline construction sequence' and Section 2.7 – 'Rehabilitation' to replace '*Catchment Management Authority requirements*' with *'Melbourne Water requirements*'.	Supported
4	Change '*sodic soil management measures*' to '*sodic and dispersive soil management measures*'	Supported
5	Change '*Sodic Soils Management Plan for acceptance by DELWP as an EMP under the Pipelines Act prior to commencement or works.*' to '*Sodic and Dispersive Soils Management Plan for acceptance by DELWP as an EMP under the Pipelines Act prior to commencement* of *works*'	Supported
6	Change '*Sodic Soils Management Plan*' to '*Sodic and Dispersive Soils Management Plan*'	Supported
7	Change '*Ground Movement Management Plan (including sodic soils)*' to '*Ground Movement Management Plan (including sodic and dispersive soils)*' in Appendix F – Management Plans.	Supported
Environmental Line List		

Inquiry recommendation		Minister's response
37	Amend the Environmental Line List to identify the following waterway crossings as '*high risk waterways*': • the waterway crossing at KP 13.97 • the waterway crossings at KP 33.85 and KP 33.94.	Supported, with the addition that the drainage line at 1100 Donnybrook Road be treated as a waterway, requiring application of the relevant EMMs.
Operations Environment Management Plan		
38	Amend EMM SW6 so that it applies to all of the 'high risk' waterways, including Jackson's Creek, Merri Creek, Tame Street Drain, Jackson's Creek tributary (Crossing 8), Kalkallo retarding basin waterways (Kalkallo Creek and Crossings 15, 17, 18 and 19) and Merri Creek unnamed tributary.	Supported
Ecological Offset Strategy		
39	Amend the Ecological Offset Strategy to include impact and offset calculations for the additional areas of native vegetation identified in Figures 1-2 and 1-4 of Mr Dunk's Peer Review of Terrestrial and Freshwater Ecology at Appendix 4 of Document 69.	Supported
40	Replace the fourth sentence with: *Following further construction footprint refinement, landowner negotiations and construction methodologies the area of native vegetation impacted may decrease slightly and this will be addressed prior to the procurement process to purchase offsets, as well as during the reconciliation of impacts following construction.*	Supported
Other recommendations		
41	The Proponent should continue discussions with the Victorian Planning Authority and relevant infrastructure agencies to identify any future underground infrastructure along Gunns Gully Road, Merrifield North that would require a change to the pipeline depth. Any relevant infrastructure should be identified by 31 March 2022 and accommodated in the final pipeline design and depth.	Supported
42	The proposed 'coordination deed' between the Proponent and the Department of Transport should be agreed before the project's construction commences.	Supported

HON RICHARD WYNNE MP

Minister for Planning

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Appendix A Matters of national environmental significance

Under the bilateral agreement between the Australian and Victorian governments, the EES and this assessment must examine the Western Outer Ring Main Gas Pipeline Project's likely impacts on matters of national environmental significance (MNES) as identified in the Commonwealth controlled action decision under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions for the project are listed threatened species and communities (sections 18 and 18A).

This appendix consolidates information on likely effects of the proposal on MNES protected under the EPBC Act, drawing on the assessment of specific matters discussed in other sections of my assessment. This includes assessment findings on biodiversity (Section 5.1), surface and groundwater (Section 5.3) and contamination (Section 5.5).

Potential impacts on MNES are summarised in Chapter 18 and Technical report A of the EES. More detailed information about potential impacts that relate to my assessment of impacts on MNES can be found in Chapter 7 of the EES where biodiversity effects of the project are discussed. The EES identified the key issues for MNES as being significant impacts on two ecological communities (Natural Temperate Grassland of the Victorian Volcanic Plain and Grassy Eucalypt Woodland of the Victorian Volcanic Plain) as well as two threatened fauna species (Golden Sun Moth [*Synemon plana*] and Striped Legless Lizard [*Delma impar*]). These significant impacts are proposed to be offset. The EES stated that impacts on other threatened species listed under the EPBC Act will not be significant.

Section 19 of the inquiry's report summarised the likely impacts on MNES, with detailed discussion of evidence and submissions related to MNES provided in Section 5. The overall finding of the inquiry was that that whilst the project would have significant impacts on Golden Sun Moth, Striped Legless Lizard, Grassy Eucalypt Woodland of the Victorian Volcanic Plain and Natural Temperate Grassland of the Victorian Volcanic Plain, these impacts would be acceptable provided they were offset in accordance with the EPBC Act *Environmental Offsets Policy*. The inquiry considered impacts on MNES could be acceptably managed through the recommended EMMs and required project approvals.

A.1 Listed threatened species and communities

EPBC Act listed threatened species to be addressed in the assessment, as identified in the scoping requirements, were:

- Growling Grass Frog (*Litoria raniformis*);
- Golden Sun Moth (*Synemon plana*);
- Spiny Rice-flower (*Pimelea spinescens subsp. spinescens*); and
- Matted Flax-lily (*Dianella amoena*).

These and other EPBC Act listed species identified during the EES process as potentially present in the project area using the Protected Matters Search Tool (including Australian Grayling [*Prototroctes maraena*]) were assessed.

EPBC Act listed ecological communities to be addressed in the assessment, as identified in the scoping requirements, were:

- Natural Temperate Grassland of the Victorian Volcanic Plain;
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain;
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains; and

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Growling Grass Frog

Growling Grass Frog is listed as vulnerable under the EPBC Act. The EES identified that the project will have temporary impacts during construction on 0.03 hectares of habitat outside the Melbourne Strategic Assessment area. Impacts within the Melbourne Strategic Assessment area are discussed in Section 5.1 of my assessment. This species has been recorded from both Deep Creek and Jacksons Creek.

Growling Grass Frog was recorded during the EES targeted surveys at Deep Creek. The pipeline crossing at Deep Creek is proposed to be constructed using horizontal directional drilling (HDD). The EES (Technical Report A) stated that HDD will avoid impacts on stream and near-bank habitat and minimise impacts on adjacent terrestrial habitat. The species has been previously recorded at Jacksons Creek and was assumed to be present at this location for the EES assessment. The EES described the proposed Jacksons Creek crossing site as having little emergent or fringing vegetation. It further stated that habitat for the species does not extend beyond the edges of the banks due to their steepness and heavy grazing (Technical Report A).

Hume City Council submitted concerns about impacts on Growling Grass Frog from the proposed trenched pipeline crossings of Jacksons and Kalkallo creeks. The proponent's expert witness, Ms Dalton, gave evidence that recent mapping indicated suitable habitat for the species was not present at the crossing location for Kalkallo Creek.

The inquiry was satisfied that the proposed Growling Grass Frog management plan (including salvage and relocation measures), required under EMM B21, will reduce potential risks for the species. However, the inquiry expressed concern about the potential impacts of the trenched crossing at Jacksons Creek on several environmental values, as discussed in Section 5.3 of my assessment. I agree with the inquiry's view that potential impacts on Growling Grass Frog are of concern at this location and support its recommendation for further investigation of a trenchless pipeline crossing of Jacksons Creek to avoid and minimise impacts on the frog's habitat where reasonably practicable.

The EES (Chapter 18) assessed the impacts of the project on Growling Grass Frog under the EPBC Act *Significant Impact Guidelines 1.1–MNES*[13] using the criteria for vulnerable species and determined that the species is unlikely to be significantly impacted. I agree that the project is unlikely to have a significant impact on the Growling Grass Frog.

Golden Sun Moth

Golden Sun Moth is listed as vulnerable under the EPBC Act. The Federal Minister for the Environment recently decided to down-list the conservation status of the species from 'critically endangered' to 'vulnerable' on 15 November 2021, which took effect on 7 December 2021. The EES assessed impacts on the species using the previous critically endangered conservation status. Whilst the thresholds for the assessment of significant impacts have changed because of the species down-listing, as discussed below the project is still considered to have a significant impact.

The project will result in the removal of 19.93 hectares of known or assumed Golden Sun Moth habitat outside the Melbourne Strategic Assessment area. This comprises 11.85 hectares where the species was detected during targeted surveys and 8.08 hectares where its presence was assumed due to the survey method not meeting the relevant survey guidelines. This habitat comprises both native and non-native vegetation. The EES found that the project would have a significant impact on Golden Sun Moth because the habitat loss was more than 0.5 hectares in a landscape of contiguous habitat of greater than 10

13. Department of Environment (2013) Matters of National Environmental Significance: Significant impact guidelines 1.1., Environment Protection and Biodiversity Conservation Act 1999. Department of Environment, Australian Government.

hectares, in accordance with the *Significant impact guidelines for the critically endangered golden sun moth (Synemon plana*)[14]. The Department of Agriculture, Water and the Environment (DAWE) has since advised DELWP that these thresholds for Golden Sun Moth no longer apply and criteria for vulnerable species from the EPBC Act Significant Impact Guidelines 1.1–MNES should be applied instead.

These Guidelines state that "An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species
- reduce the area of occupancy of an important population
- fragment an existing important population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of an important population
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
- introduce disease that may cause the species to decline, or
- interfere substantially with the recovery of the species."

As many of the above criteria refer to impacts to an important population, DAWE has provided the following advice to DELWP:

"Considering the precautionary principle and the limited understanding of the local GSM populations impacted by this action, and without any substantive new information about the GSM populations, the department is still of the view that the populations impacted by the action should be considered important populations."

On this basis, I conclude that the removal of almost 20 hectares of known and assumed habitat for the Golden Sun Moth constitutes a significant impact to the species under more than one of the significant impact criteria.

Based on offset calculations for the EES, the proponent identified that 110 hectares of Golden Sun Moth habitat would be required to satisfy Principle 4 of the EPBC Act Environmental Offsets Policy. However, it may now be possible to satisfy this principle with a reduced offset (i.e., a smaller offset area) since the Commonwealth Minister for the Environment will be considering the species' vulnerable status in determining the acceptability of impacts and the associated suitability of any proposed offsets. The proposed offset site is different to the one presented in the EES's *Ecological Offset Strategy* (Attachment II) and is detailed in Technical Note 16. The proponent has stated that the site can provide overlapping offsets for Golden Sun Moth, Striped Legless Lizard and Natural Temperate Grassland of the Victorian Volcanic Plain. The proponent is preparing an Offset Management Plan for this site that is to be to DAWE's satisfaction.

The inquiry noted that the offset sites are distant from the species populations to be impacted and that it would be desirable for offset sites to be close to the impacted areas. Whilst I agree that it would be preferable for offsets to be located close to the areas of impact, I note the difficulty in obtaining overlapping offsets for significantly impacted MNES close to the project, particularly since such a large area is needed for offsets.

14. DEWHA (2009). Significant impact guidelines for the critically endangered golden sun moth (*Synemon plana*). Department of the Environment, Water, Heritage and the Arts, 2009.

The proponent proposed to rehabilitate areas of known and assumed Golden Sun Moth habitat following construction, including revegetation with native grass seed, given the species' dependence on suitable grass species. The EES acknowledged (Technical Report A) that the species is susceptible to ground disturbance and may not recolonise rehabilitated areas following construction. The inquiry supported the evidence that it is appropriate to offset the loss of habitat for Golden Sun Moth, whilst monitoring the success of revegetation in providing suitable habitat for fauna at impact sites. In addition, the inquiry suggested the Golden Sun Moth should be monitored, suggesting that landowners could be enlisted to assist with such monitoring. I support efforts to reinstate the original habitat components as closely as possible to the original condition. However, I note that monitoring for Golden Sun Moth requires specialist expertise and should be undertaken by technical experts (ecologists) rather than landowners. Furthermore, there would be great difficulties in determining whether flying Golden Sun Moth was emerging from within the construction footprint or outside it and I therefore recommend that monitoring is undertaken by ecologists and is focused on the success of fauna habitat reinstatement, rather than the use of these areas by the species.

The inquiry noted some inconsistencies in the mitigation measures for restoration following construction, where non-native vegetation was proposed to be reinstated in consultation with landowners. As mentioned above non-native vegetation can provide habitat for Golden Sun Moth, including areas dominated by weeds such as Chilean needlegrass (*Nassella nessiana)*. These proposed measures for non-native vegetation included fertiliser application and ripping of compacted soil, which contrast with habitat conditions required by Golden Sun Moth. The inquiry proposed minor changes to the EMM B8 to facilitate the re-use of stockpiled topsoil from weed-infested sites at the same location, where the site supports Golden Sun Moth and larvae may be present. I support this amendment.

The inquiry considered that the project will have significant residual impacts on Golden Sun Moth, but that this is acceptable provided the proposed and amended mitigation measures are implemented and impacts are offset in accordance with the EPBC Act Environmental Offsets Policy. I agree with this assessment.

Striped Legless Lizard

Striped Legless Lizard is listed as vulnerable under the EPBC Act. The project will remove 39.92 hectares of known and assumed habitat for the species. An important population of the species was identified at one property during the targeted EES surveys (Technical Report A).

An assessment of the impacts of the project on Striped Legless Lizard using the criteria for vulnerable species from the EPBC Act Significant Impact Guidelines 1.1–MNES determined that the project met the thresholds for a significant impact (EES Chapter 18). This was because habitat removal would potentially reduce the area of occupancy for an important population and fragment an existing population into two or more populations. I agree with this assessment and consider that the project could have a significant impact on Striped Legless Lizard.

Offsets calculated in the EES determined that 127 hectares of Striped Legless Lizard habitat would be required to offset habitat removal for the species. The proposed offset site, which is detailed in Technical Note 16, is that same as that proposed for Golden Sun Moth above.

As described for Golden Sun Moth above, the inquiry noted that reinstatement of non-native vegetation in consultation with landowners could be inconsistent with the requirements for reinstating Striped Legless Lizard habitat. The inquiry recommended that EMM B20 be amended to include the requirement for the

Striped Legless Lizard management plan to identify Striped Legless Lizard habitat to be reinstated. I agree with this amendment.

The Grassy Plains Network, Dr O'Shea and Hume City Council submitted concerns about the proposed capture and translocation measures for Striped Legless Lizard prior to vegetation clearance outlined in the EMM B20 (which included mowing and tyning), arguing these were not best practice and likely to result in mortality. The Grassy Plains Network recommended including pit fall traps as well as tiles to maximise the number of individuals caught. It further recommended a practice based on emerging evidence, of using large compounds prior to release to enable acclimatisation. The proponent amended EMM B20 to include installing and checking roof tiles to facilitate Striped Legless Lizard capture prior to clearance, in addition to active searching such as rock rolling. The requirement for tyning was removed, but mowing remained as a measure. The proponent team argued that pitfall traps and compounds were not required. The inquiry supported the proposed changes to salvage methods for Striped Legless Lizard, but noted that these had not been reviewed by DELWP as they were introduced post-exhibition. I support the changes to the salvage methods for Striped Legless Lizard and note that these will be reviewed by DELWP prior to endorsement of the species-specific management plan (EMM B20), with the potential to include other methods, such as pitfall traps and compounds, if DELWP finds these are warranted.

The Grassy Plains Network and Dr O'Shea submitted that habitat for Striped Legless Lizard should be avoided. The inquiry recommended the investigation of trenchless crossing of habitat for an important population of Striped Legless Lizard in property 12LP92520 and the adjacent habitat in parcel 11LP92520. I support this recommendation and consider trenchless construction should be used in this area, in consultation with DELWP, to avoid and minimise impacts on the species' habitat where reasonably practicable. This is the area of highest priority for avoidance as six individuals of the species were detected in this area during the targeted EES surveys (Technical Report A). I note that the EPBC Act Environmental Offsets Policy states that:

"Offsets will not be considered until all reasonable avoidance and mitigation measures are considered, or acceptable reasons are provided as to why avoidance or mitigation of impacts is not reasonably achievable".

I therefore recommend that impacts on this priority Striped Legless Lizard habitat be avoided through trenchless construction and impacts be minimised to extent practicable.

The inquiry considered that the project will have significant residual impacts on Striped Legless Lizard, but that these are acceptable provided the proposed and amended mitigation measures are implemented and impacts are offset in accordance with the EPBC Act Environmental Offsets Policy. I agree with this assessment. I note that impacts on this species will still be significant even with a trenchless crossing of habitat in parcels 12LP92520 and 11LP92520, but the impact will be substantially reduced by this approach.

Australian Grayling

Australian Grayling is listed as vulnerable under the EPBC Act. Though not identified as a species of concern in the EES scoping requirements, desktop and habitat assessments and targeted EES surveys determined a medium likelihood of occurrence of the species within Deep Creek and a low likelihood of occurrence in Merri and Jacksons creeks. As construction at Deep Creek is proposed to be by HDD, the species is unlikely to be impacted in this location.

An assessment of the impacts of the project on Australian Grayling under using the criteria for vulnerable species from the EPBC Act Significant Impact Guidelines 1.1–MNES determined that the project is unlikely to have a significant impact (EES Chapter 18). I agree that the project is unlikely to have a significant impact on Australian Grayling.

Spiny Rice-flower

Spiny Rice-flower is listed as critically endangered under the EPBC Act. Targeted EES surveys were undertaken for Spiny Rice-flower and the species was not detected. The project was therefore considered unlikely to have a significant impact on the species (Technical Report A). The inquiry considered that the biodiversity surveys for flora were appropriate. I agree that targeted surveys were adequate to determine that that Spiny Rice Flower is unlikely to occur within the project area and consider the project is unlikely to have a significant impact on Spiny Rice-flower.

Matted Flax-lily

Matted Flax-lily is listed as endangered under the EPBC Act. One plant was detected during targeted EES surveys for the species. This plant will be avoided during construction through using HDD and establishing a No-Go Zone at the location of the plant. The project was therefore considered unlikely to have a significant impact on the species (Technical Report A). The inquiry considered that the biodiversity surveys for flora were appropriate. I agree that targeted surveys were adequate to determine that that Matted Flax-lily is unlikely to occur within the construction area for the project and consider the project is unlikely to have a significant impact on Matted Flax-lily.

Natural Temperate Grassland of the Victorian Volcanic Plain

Natural Temperate Grassland of the Victorian Volcanic Plain is listed as critically endangered under the EPBC Act. The project will remove or fragment 4.46 hectares of this ecological community (Technical Report A). An assessment of the impacts of the project on Natural Temperate Grassland of the Victorian Volcanic Plain using the criteria for critically endangered ecological communities from the EPBC Act Significant Impact Guidelines 1.1–MNES found the project to have a significant impact. The reasons for this were that the action was considered likely to fragment or increase fragmentation of the ecological community leading to a significant impact, likely to modify or destroy abiotic (non-living) factors and likely to interfere with the recovery of the ecological community (EES Chapter 18). I agree that the project is likely to have a significant impact on Natural Temperate Grassland of the Victorian Volcanic Plain.

Offsets calculated in the EES determined that 16 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain would be required to offset removal of the ecological community. The proposed offset site, which is detailed in Technical Note 16, is that same as that described for Golden Sun Moth and Striped Legless Lizard above.

The inquiry considered that impacts on Natural Temperate Grassland of the Victorian Volcanic Plain are acceptable on the basis that they will be offset in accordance with the EPBC Act Environmental Offsets Policy and can be acceptably managed through the recommended mitigation measures and required approvals. I agree with this assessment.

Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Grassy Eucalypt Woodland of the Victorian Volcanic Plain is listed as critically endangered under the EPBC Act. The project will remove or fragment 4.46 hectares of this ecological community (Technical Report A). This ecological community occurs predominantly on two properties north and south of Craigieburn Road.

An assessment of the impacts of the project on Grassy Eucalypt Woodland of the Victorian Volcanic Plain using the criteria for critically endangered ecological communities from the EPBC Act Significant Impact Guidelines 1.1–MNES found the project to have a significant impact (EES Chapter 18). The reasons for this were that the action was considered likely to:

- be a significant impact due to reducing the extent of an ecological community;
- modify or destroy abiotic (non-living) factors;
- cause a substantial change in the species composition of an occurrence of an ecological community; and
- interfere with the recovery of an ecological community.

I agree that the project is likely to have a significant impact on Grassy Eucalypt Woodland of the Victorian Volcanic Plain.

The inquiry noted that peer reviewer Mr Dunk identified additional vegetation belonging to this ecological community within the properties north and south of Craigieburn Road and east of St Johns Road, due to finer grain analysis and mapping. Mr Dunk recommended rehabilitation measure EMM B15 specifically reference the property (i.e., 1/PS733045) so that rehabilitation measures for native vegetation would apply to the whole of the construction footprint in this land parcel. The proponent's expert Ms Dalton agreed with Mr Dunk's proposed approach. In addition, the inquiry recommended that Mr Dunk's mapping of this ecological community be added to the assessment of impacts and that EMM B15 be amended to rehabilitate the whole of the construction footprint within the land parcel north of Craigieburn Road. I agree with these changes.

Offsets calculated in the EES determined that 10.5 hectares of Grassy Eucalypt Woodland of the Victorian Volcanic Plain would be required to offset removal of the ecological community. The proponent identified a potential offset site for the ecological community and this is detailed in Technical Note 16. Initial surveys of the site have not been able to assess its suitability. The site will need to be reassessed three months after the cessation of grazing.

The proponent's expert, Ms Comber, identified Grassy Eucalypt Woodland of the Victorian Volcanic Plain either side of Craigieburn Road as supporting the "highest quality vegetation in the project area, warranting further avoidance if possible". The inquiry recommended that the proponent should investigate extending the existing trenchless crossings of Craigieburn Road and St Johns Road (around kilometre point 23) to further avoid this vegetation. I support the recommendation of the inquiry. It is my assessment that trenchless construction should be adopted for this location, in consultation with DELWP. Given the high conservation values of this area I consider that this vegetation should be avoided through trenchless crossing and impacts be minimised to the extent practicable.

The inquiry considered that impacts on Grassy Eucalypt Woodland of the Victorian Volcanic Plain are acceptable on the basis that they will be they will offset in accordance with the EPBC Act Environmental Offsets Policy and can be acceptably managed through the recommended mitigation measures and required approvals. I agree with this assessment, but note that vegetation either side of Craigieburn Road and east of St Johns Road should only be removed and offset if avoidance through trenchless crossing is not reasonably achievable. I also note that further assessment is required to determine that the proposed offset site is suitable. Removal of this ecological community must not occur until DAWE is satisfied that it can be appropriately offset.

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains is listed as critically endangered under the EPBC Act. EES vegetation assessments did not identify the ecological community within the construction footprint (Technical Report A). I consider that the project is unlikely to have a significant impact on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as critically endangered under the EPBC Act. EES vegetation assessments did not identify the ecological community within the construction footprint (Technical Report A). I consider that the project is unlikely to have a significant impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

A.2 Assessment

The project will have significant impacts on Golden Sun Moth and Striped Legless Lizard. These impacts are acceptable on the basis that they will be they will offset in accordance with the EPBC Act Environmental Offsets Policy and can be acceptably managed through the recommended mitigation measures and required approvals. These recommendations include the need to use trenchless construction to avoid surface disturbance in key areas and minimise impacts on important habitat for Striped Legless Lizard.

The project will have significant impacts on Natural Temperate Grassland of the Victorian Volcanic Plain and Grassy Eucalypt Woodland of the Victorian Volcanic Plain. These impacts are acceptable on the basis that they will be they will offset in accordance with the EPBC Act Environmental Offsets Policy and can be acceptably managed through the recommended mitigation measures and required approvals. My recommendations include the need to use trenchless construction methods to avoid impact on the Grassy Eucalypt Woodland of the Victorian Volcanic Plain either side of Craigieburn Road and east of St Johns Road where feasible.

Potential impacts to Growling Grass Frog do not meet significant impact criteria and are considered acceptable provided the recommended mitigation measures for the species are implemented. However, I recommend further investigation of the potential for trenchless crossing of Jacksons Creek to minimise potential impacts on habitat.

The project is unlikely to have significant impacts on Australian Grayling, Spiny Rice-flower or Matted Flax-lily.

The project is unlikely to have significant impacts on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains or White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

I support amendments to EMMs as recommended by the inquiry and further strengthened by my assessment to assist in avoiding and minimising impacts on MNES as detailed in Appendix A of my assessment.

Appendix B Environmental management measures

The inquiry recommended specific changes to many of the 'final day' environmental management measures (EMMs) in response to submissions and through their analysis of the issues. I support the inquiry's recommended version of each EMMs except where qualified in Table B1. Further details regarding my responses summarised in this table are contained in the relevant sections of this report.

Table B1: Recommended changes to environmental management measures.

Inquiry recommendation		Minister's response
8	Amend EMM AQ1 to add the following introductory requirement at the beginning: *Periodically review sensitive receptor locations to identify any new receptors, having particular regard to new residential development.*	Supported
9	Amend EMM B1 to add at the beginning: *Investigate and implement further opportunities to avoid the loss of native vegetation, particularly FFG and EPBC Act-listed communities, through detailed design and construction planning, including consideration of:* • *the possible extension of the proposed trenchless construction at Craigieburn Road and St Johns Road* • *relocating temporary access tracks* • *additional trenchless construction to avoid Property 12/LP92520* • *additional trenchless construction to avoid native vegetation in Conservation Areas 34a and 28b.*	Supported
10	Amend EMM B2 to include the following dot point under the first sentence: • *To the reasonable extent practicable, ensure vehicles and plant traversing between land parcels are managed to avoid the risk of additional spread of weeds between land parcels.*	Supported
11	Amend EMM B4 to include the following after the second dot point: • *Undertake a site survey during summer (dry conditions) to confirm the location of refuge pools in Merri Creek in the vicinity of the project area. The survey area should extend 150 metres from the edge of the project area.*	Supported
12	Amend EMM B8 to replace the second paragraph with: *Stockpiled topsoil from weed-infested sites may be reused at the same location where the soil is sourced from if the site supports golden sun moth and where larvae may be present.*	Supported
13	Amend EMM B15 to replace the second sentence with: *Prepare a Site Restoration Plan(s) for revegetation of native vegetation within the construction corridor (including the whole of the construction corridor in Property 1/PS733045). The plan(s) shall be prepared in consultation with each landholder and in accordance with any agreement made as part of easement negotiations.*	Supported
14	Amend EMM B15 to add after the second paragraph: *The Site Restoration Plan is to include any specific monitoring requirements and contingency measures for addressing potential rehabilitation issues such as weed invasion and sodic and dispersive soils, as they arise.*	Supported
15	Amend EMM B20 to add the following dot points:	Supported

Inquiry recommendation		Minister's response
	• *Details of the location of striped legless lizard habitat* • *Any deviation of proposed salvage and relocation measures required in the event tussock skink or other species are also captured.*	
16	Amend EMM B21 to reinstate the exhibited version.	Supported, with the addition that recommendations to improve the habitat value of the Merri Creek crossing site for Growling Grass Frog are to be included in the management plan for the species.
17	Amend EMM B22 to delete the second paragraph and the following two dot points.	Supported
18	Amend EMM B22 to include the following additional dot points under 'Measures to be implemented within Jackson's Creek to facilitate passage for Platypus through the works area are:' • *The construction works at Jackson's Creek waterway/banks must be timed to avoid the peak juvenile nesting period between September and the beginning of March* • *A pre-construction survey must be undertaken by a Platypus specialist for the presence of burrows within the construction corridor at Jackson's Creek* • *Excavations should proceed carefully using a non-toothed excavator bucket (e.g. mud or batter bucket) in order to allow any individuals present to escape*	Supported
20	Amend EMM C1 to include the following 'Assessment' requirement: • *Complete further testing to categorise soils in the vicinity of the railways for onsite re-use or offsite disposal.*	Supported
21	Amend EMM C3 by inserting the additional dot point requirement: • *Complete further acid sulfate soil assessment prior to dewatering at the following locations:* - *Tame Street Drain and floodplain* - *Kalkallo retarding basin*	Supported
22	Include a new 'Cultural heritage' EMM: *Investigate the significance and treatment of the drystone wall that would be intersected by the pipeline at 170-200 Donovans Lane, Beveridge.*	Supported, with the addition that this new EMM be implemented before construction commences in the vicinity of this site.
23	Include the following new 'Ground movement' EMM: *Impacts on the Merri Creek Site of Geological and Geomorphological Significance (VRO Site 35)* *Determine appropriate protection and restoration measures for the geological and geomorphological values of the site based on the advice of an appropriately qualified geomorphologist.* *Ensure that disturbance to the natural geomorphology of Merri Creek is minimised during construction to the extent practicable, including disturbance from construction of the pipeline crossing as well as the construction and use of the temporary access crossing, through implementation of appropriate measures in:* • *the detailed design of the Merri Creek crossing* • *the construction management plan for the Merri Creek crossing.*	Supported, with the addition that consultation is to be undertaken with the RAP in regard to proposed protection and restoration measures.

	Inquiry recommendation	Minister's response
	Ensure that rehabilitation of the construction corridor at this site restores the natural geomorphology of the site to the extent reasonably practicable.	
24	Amend EMM GM2 to change the third dot point to '*the potential presence of sodic and dispersive soils*'	Supported
25	Amend EMM GM7 as follows: • Change the first two sentences to: *Develop and implement a Sodic and Dispersive Soils Management Plan (SDSMP). The SDSMP is to be prepared by one or more suitably qualified professionals with relevant expertise, including soil science and geotechnical expertise, prior to the commencement of construction and must include:* • Change paragraph 2 '*details of completed soil investigations*' to '*review of completed soil investigations and site walkover by a suitably qualified soil scientist/geologist*'. • Change paragraph 3 '*The management of drainage at all stages of construction*' to '*The management of drainage and dewatering at all stages of construction*' • Insert a requirement that the '*Sodic and Dispersive Soils Management Plan must be prepared to the satisfaction of Melbourne Water and DELWP*'.	Supported. However I consider that the Sodic and Dispersive Soils Management Plan should be prepared in consultation with Melbourne Water, and be to the satisfaction of DELWP.
26	Include the following new 'Groundwater' EMM: *Managing unexpected groundwater encountered during construction* *The following actions are required when unexpected groundwater is encountered during construction:* • *Cease construction at the unexpected groundwater location and in the near vicinity.* • *Review contamination risks in relation to the unexpected groundwater and undertake testing to determine appropriate management and disposal options.* • *Undertake assessments for the presence of actual acid sulfate soils and potential acid sulfate soils in formations where such soils could potentially occur, including the Kalkallo retarding basin and other areas with Quaternary floodplain and swamp deposits.* • *Identify any groundwater bores that are likely to be affected by dewatering and liaise with the affected bore owners to make appropriate arrangements as required in EMM GW2.* • *Assess and manage ground movement risks related to construction dewatering in accordance with EMMs GM2 and GM3.* • *Review the construction methodology and change if appropriate.* • *Undertake other measures as necessary to meet the requirements of other relevant EMMs, including the groundwater EMMs GW1 and GW3 and the contamination EMMs C2, C3 and C4.*	Supported
27	Amend EMM NV2 to replace the last dash point with: *Assessment of the residual noise levels, in the context of criteria listed in NV10, once all reasonable and practicable noise mitigation controls have been implemented, at affected noise-sensitive receivers and*	Supported

	Inquiry recommendation	Minister's response
	nearby natural areas, in accordance with the Noise Protocol and Environmental Reference Standard respectively.	
28	Amend EMM NV10 to replace the first two sentences with: *Minimise the risk of harm from noise emissions from construction noise in accordance with the CNVMP by utilising the mitigation measures, where reasonably practicable, listed in EMM NV1. Ensure the following noise levels are not exceeded as far as reasonably practicable:*	Supported
29	Amend EMM S6 to replace the third dot point with: • *The approach for communicating and engaging with vulnerable groups, including community groups, culturally and linguistically diverse groups, and residents who do not speak English. The approach should outline circumstances under which translation services will be provided.*	Supported
30	Amend EMM S6 to include the following dot point: • *Liaise with municipal Councils, where appropriate, to gain insight into the most appropriate consultation methods for specific communities or community groups.*	Supported
31	Change the first dot point in EMM SA6 to: • *Consultation with the Department of Transport as early as practicable to identify works that have the potential for a high impact on the road network and measures to manage such impacts.*	Supported
32	Include a new 'Surface water' EMM: <u>*Further assessment of the Jackson's Creek crossing*</u> *Undertake further assessment of constructing a trenchless crossing of Jackson's Creek at the proposed location or at a nearby location where the geology may be more suitable. This assessment must be undertaken by a suitably qualified professional with expertise in relation to the construction of trenchless waterway crossings. This assessment should be completed to the satisfaction of DELWP and Melbourne Water, and include consultation with the RAP.* *In the event that there is no feasible alternative to open trenching, further analysis of likely impacts and suitable mitigation options for a trenched crossing must be undertaken, addressing the following matters:* • *Assessment of impacts and risks to Jackson's Creek function and values, including stream geomorphology, hydraulic habitat (e.g. pools and riffles), groundwater, surface water quality, riparian zone biodiversity, and aquatic biodiversity. Mitigation measures to manage these risks. Rehabilitation measures to ensure restoration of stream functions and values across all of these components.* • *Likely impacts of construction on pool water levels, water quality and habitat upstream and downstream of the crossing, including as a minimum, the backwater pool associated with the ford crossing at Bulla-Diggers Rest Road and the pool upstream of the project area, and how these impacts will be managed.*	Supported. The potential for trenchless crossing of Jacksons creek at the proposed location (or at a nearby location where the geology may be more suitable) is to be thoroughly investigated and implemented if feasible. I consider that this assessment should be conducted in consultation with the RAP and Melbourne Water, and be to the satisfaction of DELWP. I also support the requirements for further analysis if no feasible alternative to open trenching is identified to identify appropriate mitigation measures.

Inquiry recommendation		Minister's response
	• *Likely impacts of flow diversion and dewatering on surface-groundwater interactions, and how these interactions will be managed.* • *Sodic and dispersive soils assessment to determine the extent and properties of any sodic and dispersive soils at the site and how they will be managed during construction and operation to minimise risks including erosion and water quality impacts.* • *Contamination status of the soils and groundwater at the crossing site, including per- and poly-fluoroalkyl substances and acid sulfate soil, and how any contamination that is identified will be managed.* • *How the permanent loss of riparian zone values at the Pipeline crossing (resulting from the removal of existing vegetation and preclusion of revegetation with woody species) could be addressed at a reach scale, such as opportunities for riparian zone restoration beyond the project area.* • *Construction phase monitoring requirements to ensure minimisation of impacts during construction.* • *Operational phase monitoring requirements to ensure that rehabilitation measures are successful in the long term.*	
33	Amend EMM SW3 to replace dot point 7 with: • *Carry out routine inspections (e.g. minimum every six months plus potentially following any significant flood event) to monitor effectiveness of civil rehabilitation works (earthworks and rock beaching works) during the first 24 months post-construction. Where monitoring identifies defects or deficiency in civil rehabilitation works, appropriate rectification measures will need to be implemented.*	Supported
34	Amend EMM SW5 to insert the following requirement between paragraphs 3 and 4: *Monitor the benthic macroinvertebrate communities to assess pre-construction condition, detect and evaluate potential impacts from sedimentation and/or flow changes during construction and operation, implement better controls and initiate rehabilitation measures as needed.*	Supported, noting macroinvertebrate monitoring is already included in the CEMP (Rev0, May 2021).
35	Amend EMM SW5 to replace the final sentence in paragraph 4 with: *Biodiversity and water quality monitoring must be continued for a period of 24 months post-construction, to identify any potential effects from the construction and rehabilitation work, including secondary and lagged effects.*	Supported
36	Amend EMM SW8 to replace dot point 4 with: • *Carry out routine inspections (e.g. minimum every two months or following any significant flood event) to monitor effectiveness of civil rehabilitation works (earthworks and rock beaching works) during the first 24 months post-construction. Where monitoring identifies defects or deficiency in civil rehabilitation works, appropriate rectification measures will need to be implemented.*	Supported