

Environment Effects Act 1978

Planning and Environment Act 1987

EES Inquiry and Advisory Committee Report

Mordialloc Bypass Project

2 May 2019

Environment Effects Act 1978

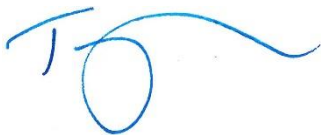
Inquiry Report pursuant to Section 9 of the Act

Planning and Environment Act 1987

Advisory Committee Report pursuant to section 151 of the Act

Mordialloc Bypass Project

2 May 2019



Trevor McCullough, Chair



Mandy Elliott, Deputy Chair



Sandra Brizga, Member



Elizabeth Hui, Member

Contents

	Page
PART A BACKGROUND AND INQUIRY PROCESS	
1 Introduction.....	1
1.1 The Inquiry.....	1
1.2 Inquiry process	1
1.3 Planning Scheme Amendment	2
1.4 Terms of Reference	2
1.5 Submissions	3
1.6 Limitations on the scope of the IAC’s consideration.....	4
1.7 Structure of this report.....	4
1.8 Acknowledgements	4
2 The Project	6
2.1 Project background	6
2.2 Project description	6
2.3 Project objectives, benefits and constraints	7
2.4 Project alternatives	8
3 Legislative and policy framework	14
3.1 Victorian legislation.....	14
3.2 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth).....	15
3.3 Other relevant legislation.....	15
3.4 State and Local Planning Policy	15
3.5 Other relevant planning strategies and policies	17
3.6 Ministerial Direction 19.....	17
4 Environmental assessment framework.....	19
4.1 The EES process	19
4.2 Scoping requirements	20
4.3 EES assessment approach	20
4.4 Content of the EES.....	21
4.5 Environmental Management Framework (EMF)	23
PART B ENVIRONMENTAL EFFECTS ASSESSMENT	
5 EES assessment overview.....	25
5.1 Potential impacts of the Project as identified in the EES.....	25
5.2 Inquiry approach to assessment	28
6 Traffic and transport	29
6.1 Background.....	29
6.2 The issues and risks	29
6.3 Traffic modelling.....	30

6.4	Project response.....	32
6.5	Construction impacts	43
6.6	Proposed EPRs.....	44
6.7	IAC findings.....	44
6.8	Recommendations.....	45
7	Land use and planning.....	46
7.1	Background.....	46
7.2	The issues and risks	46
7.3	Project response.....	47
7.4	Evidence and submissions	47
7.5	Findings.....	47
8	Biodiversity.....	48
8.1	Background.....	48
8.2	The issues and risks	48
8.3	Project response.....	48
8.4	Evidence and submissions	54
8.5	Discussion	60
8.6	IAC findings.....	62
8.7	Recommendations.....	63
9	Landscape, urban design and visual impacts.....	64
9.1	Background.....	64
9.2	The issues and risks	64
9.3	Project response.....	65
9.4	Evidence and submissions	66
9.5	Discussion	68
9.6	IAC findings.....	70
9.7	Recommendations.....	70
10	Noise and vibration effects.....	71
10.1	Background.....	71
10.2	The issues and risks	71
10.3	Project response.....	71
10.4	Evidence and submissions	73
10.5	Discussion	75
10.6	IAC findings.....	79
10.7	Recommendations.....	79
11	Air quality and greenhouse and gas	80
11.1	Background.....	80
11.2	The issues and risks	81
11.3	Project response.....	81
11.4	Evidence and submissions	82
11.5	Discussion	83

11.6	IAC findings.....	84
11.7	Recommendations.....	85
12	Historic and Aboriginal cultural heritage.....	86
12.1	Background.....	86
12.2	The issues and risks	86
12.3	Project response.....	86
12.4	Evidence and submissions.....	86
12.5	Discussion	89
12.6	Findings.....	89
12.7	Recommendations.....	89
13	Surface water.....	90
13.1	Background.....	90
13.2	The issues and risks	91
13.3	Project response.....	91
13.4	Evidence and submissions.....	92
13.5	Discussion	99
13.6	Construction impacts	102
13.7	IAC findings.....	104
13.8	Recommendations.....	105
14	Groundwater	106
14.1	Background.....	106
14.2	The issues and risks	108
14.3	Project response.....	108
14.4	Evidence and submissions.....	108
14.5	EPRS and protection levels.....	115
14.6	Discussion	116
14.7	Construction impacts	118
14.8	IAC findings.....	118
14.9	Recommendations.....	119
15	Soils and contaminated land	120
15.1	Background.....	120
15.2	The issues and risks	121
15.3	Project response.....	121
15.4	Evidence and submissions.....	122
15.5	Discussion	127
15.6	IAC findings.....	128
15.7	Recommendations.....	129
16	Social impacts and economic effects	130
16.1	Social impacts.....	130
16.2	Economic effects	132

17	Cumulative impacts.....	134
17.1	Background.....	134
17.2	The issues and risks	134
17.3	Evidence and submissions.....	135
17.4	Discussion	138
17.5	IAC findings.....	139
18	Environmental Management Framework	140
18.1	Background.....	140
18.5	Findings.....	145
19	Integrated assessment	147
19.1	EES evaluation objectives	147
19.2	Overall assessment findings	152
19.3	Index to Terms of Reference report requirements.....	154
20	The Incorporated Document	157
20.1	The issue	157
20.2	Submissions	157
20.3	Discussion	158
20.4	Findings.....	158
20.5	Recommendation	159
PART C	MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE	160
21	Matters of National Environmental Significance	161
21.1	The issue	161
21.2	EES documentation	161
21.3	Submissions and evidence	166
21.4	Discussion and findings	166
Appendix A	Terms of Reference	
Appendix B	Submitters to the Inquiry	
Appendix C	Parties to the Hearing	
Appendix D	Document list	
Appendix E	IAC preferred version of the EPRs	
Appendix F	IAC preferred version of the Incorporated Document	

List of Tables

	Page
Table 1	EES chapter structure 21
Table 2	Attachments to the EES..... 22
Table 3	Specialist studies used to prepare the main EES report 22
Table 4	Summary of EES assessment of environmental effects 25
Table 5	Expected native vegetation removal..... 53
Table 6	IAC assessment against EES evaluation objectives 147
Table 7	IAC response to Terms of Reference 154
Table 8	Findings in relation to potential risks to Matters of National Environmental Significance 167

List of Figures

	Page
Figure 1	EES process and legislative framework 19
Figure 2	2031 two-way daily light vehicle volume difference plot (2031 freeway configuration minus 2031 Base Case) 35
Figure 3	Woodlands Drive truncated as proposed in exhibited EES..... 38
Figure 4	Revised Woodland Drive and northbound exit ramp layout 39
Figure 5	Bridge over Mordialloc Creek showing No-go Zones 50
Figure 6	MRPV proposed extent of HO104 87
Figure 7	Governance framework for the EMF 141
Figure 8	EPBC Act listed flora and communities and No-go Zones..... 163

Glossary and abbreviations

ACM	asbestos containing material
Act	<i>Planning and Environment Act 1987</i>
AEP	Annual Exceedance Probability
AGRA	Aspendale Gardens Residents Association
AQA	Air Quality Assessment
ASS	Acid Sulfate Soils
Baseline ESA	Baseline Environmental Site Assessment
BPEMG	Best Practice Environmental Management Guidelines
BSE	Mesozoic and Palaeozoic Bedrock
CAMBA	China - Australia Migratory Birds Agreement
CASS	Coastal Acid Sulfate Soils
CEMP	Construction Environmental Management Plan
CHMP	Cultural Heritage Management Plan
CNVMP	Construction Noise and Vibration Management Plan
Council	Kingston City Council (unless otherwise indicated)
CPTED	Crime Prevention Through Environmental Design
dB	Decibel
DELWP	Department of Environment, Land, Water and Planning
DoEE	Commonwealth Department of Environment and Energy
EE Act	Environment Effects Act 1978
EES	Environment Effects Statement
EMF	Environmental Management Framework
EPA	Environment Protection Authority Victoria
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>
EPR	Environmental Performance Requirement
ERA	Environmental Risk Assessment
EVC	Ecological Vegetation Class
FESWI	Friends of Edithvale Seaford Wetlands Incorporated
FFG Act	<i>Flora and Fauna Guarantee Act 1988 (Vic)</i>
GDE	Groundwater Dependent Ecosystem
HO	Heritage Overlay

IAC	Inquiry and Advisory Committee
IREA	Independent Reviewer and Environmental Auditor
JAMBA	Japan - Australia Migratory Birds Agreement
LCA	landscape character areas
LTA	Lower Tertiary Aquifer
LVIA	Landscape and Visual Impact Assessment
LXRA	Level Crossing Removal Authority
MFFB	multi-function fauna barriers
MMBW	Melbourne Metropolitan Board of Works
MNES	Matters of National Environmental Significance
MRPV	Major Road Projects Victoria (formerly MRPA)
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007</i>
NVIA	Noise and Vibration Impact Assessment
OEMP	Operational Environmental Management Plan
OVGA	Office of the Victorian Government Architect
PAO	Public Acquisition Overlay
PASS	Potential Acid Sulfate Soils
PFAS	Per and poly-fluoroalkyl substances
PM	Particulate Matter
PONLs	Project Objective Noise Limits
PPF	Planning Policy Framework
QA	Quaternary Aquifer
RAMF	Residents Against the Mordialloc Freeway
ROW	right of way
SEMP	Site Environmental Management Plan
SEPPs	Victorian State Environment Protection Policies
SEPP-AAQ	State Environment Protection Policy – Ambient Air Quality
SEPP-AQM	State Environment Protection Policy – Air Quality Management
SIA	Social Impact Assessment
the Project	Mordialloc Bypass Project
SIDRA	Signalised intersection analysis software

SUP	shared use path
TIA	<i>Mordialloc Bypass Transport Impact Assessment, WSP September 2018</i>
TNRP	VicRoads Traffic Noise Reduction Policy
TPZ	tree protection zone
TSP	total suspended particles
UMTD	Upper-Mid Tertiary Aquitard
UTAF	Upper Tertiary Aquifer
VITM	Victorian Integrated Transport Model
VPP	Victoria Planning Provisions
WHO	World Health Organisation
WMMP	Water Management and Monitoring Plan
WSRD	Water Sensitive Road Design

Overview

Project	
The Project	Mordialloc Bypass Project
The Proponent	Major Road Projects Victoria
Subject Site	The alignment passes through Clayton South, Dingley Village, Braeside, Waterways, Aspendale Gardens and Chelsea Heights in the City of Kingston, and Bangholme in the City of Greater Dandenong.
Victorian Statutory Approvals	<ul style="list-style-type: none"> - An amendment to the Kingston and Greater Dandenong Planning Schemes under the <i>Planning and Environment Act 1987</i> - An approved cultural heritage management plan under the <i>Aboriginal Heritage Act 2006</i> - Approvals for works on roads under the <i>Road Management Act 2004</i> - Approval for works on waterways under the <i>Water Act 1989</i> - Permits to remove protected flora and/or fauna from public land under the <i>Flora and Fauna Guarantee Act 1988</i> (if required) - Permits to take wildlife under the <i>Wildlife Act 1975</i> (if required).
Commonwealth Statutory Approval	<p>The Project is a controlled action and requires assessment and approval under the Commonwealth's <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) before the Project can proceed. Controlling provisions:</p> <ul style="list-style-type: none"> - Ramsar wetlands (sections 16 and 17B) - Listed threatened species and communities (sections 18 and 18A) - Listed migratory species (sections 20 and 20A).
Planning Authority	Minister for Planning
Exhibition	Between 26 October and 14 December 2018
Submissions	Number of Submissions: 112
Inquiry process	
The Inquiry	A combined Inquiry appointed under section 9(1) of the <i>Environment Effects Act 1978</i> and Advisory Committee pursuant to Part 7, Section 151 of the <i>Planning and Environment Act 1987</i> .
Members	Trevor McCullough (Chair), Mandy Elliott (Deputy Chair), Sandra Brizga and Elizabeth Hui
Directions Hearing	The Dingley Hotel, 31 January 2019
Panel Hearing	The Dingley Hotel, 25, 26, 27, 28 February, 1, 4, 5, 6, 8, 12, 13, 14, 15 March 2019
Site inspections	Accompanied, 26 February 2019 and various other unaccompanied
Citation	Mordialloc Bypass Project (EES) [2019] PPV
Date of this Report	2 May 2019

Executive summary

(i) The Project

The Mordialloc Bypass Project (the Project) is a nine kilometre freeway linking Dingley Bypass in the north and the Mornington Peninsula Freeway in the south.

The Project is a four lane freeway passing through the suburbs of Clayton South, Dingley Village, Braeside, Waterways, Aspendale Gardens, Chelsea Heights and Bangholme. The Project is to be constructed entirely within an existing road reserve provided that the changed access arrangements for Woodlands Drive are adopted as proposed during the EES hearings.

(ii) The EES and IAC process

In September 2017 the Minister for Planning determined that an Environmental Effects Statement (EES) was required for Project the under the *Environment Effects Act 1978*. The reasons for the decision included that the Project has potential for significant environmental effects, particularly on:

- The habitat value and quality of wetlands and other habitats adjoining or traversed by the Project, especially with regard to threatened species;
- The surface water and groundwater systems which contribute to the health and habitat quality of adjacent and nearby wetlands, including the Ramsar-listed Edithvale wetland;
- Indigenous cultural heritage values that may occur within the Project alignment;
- The containment and management of potentially contaminated soils and potential acid sulfate soils; and
- Amenity values of adjacent land, especially residential land and parkland.

In addition, the Commonwealth Minister for the Environment and Energy determined that the Project is a controlled action that requires approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), due to potential impacts on particular matters of national environmental significance (MNES).

Major Road Projects Victoria (MRPV) prepared and exhibited an EES and draft Planning Scheme Amendment for the Project.

The EES identified the main positive impacts of the Project as:

- Improved travel times, enhanced safety and improved road network capacity
- Significant reductions in traffic on some surrounding roads, such as Wells Road, Boundary Road and White Street
- Promotion of active transport through a shared use path along the Project corridor
- Contribution to the direction and strategies of Plan Melbourne by delivering improved transport in one of greater Melbourne's fastest growing areas. The freeway will help support future land use development and employment clusters in the area, including Moorabbin Airport, and indirectly improve access to the Monash National Employment and Innovation Cluster.

- Positive social impacts during the operational phase with the Project providing improved access and connectivity through reduced traffic volumes, reduced heavy vehicles on local roads and improved pedestrian and cycling routes.

The EES identified the following potential environmental impacts of the Project:

- During construction, there is the potential for short-term flooding due to the presence of temporary works within the floodplain, reducing flood conveyance or floodplain storage. Erosion causing sediment and pollution to water bodies is also a risk during construction.
- Habitat loss, mortality and injury of wildlife from vehicle collisions, reduced habitat connectivity, habitat degradation from increased disturbance and physical changes.
- Changes in ecological character of environments in and adjacent to the Project area. These changes, mainly from noise and light impacts, may include changes in species composition and loss of species due to fragmentation and reduction in habitat quality.
- Residual impacts on threatened and migratory fauna are unlikely to be significant with the incorporation of sufficient mitigation (e.g. multi-function fauna barriers), and implementation of the recommended EPRs.
- Negligible to low risk of impacts on groundwater.
- Potential contaminated land and acid sulfate soil (ASS) impacts including:
 - disturbance handling, storage and disposal of potential (unknown) and actual ASS, contaminated soil and groundwater during the construction and operation phases resulting in environmental or health impacts
 - management of soil repositories (including PFAS contaminated wastes), landfill waste, leachate and landfill gas during the construction and operation phases resulting in environmental or health impacts
 - changes to groundwater migration flow paths and environmental impact on adjacent and nearby wetlands, including the Edithvale Wetlands, and movement of contaminants resulting in environmental or health impacts
 - fuel, chemical and waste water spills during the construction and operation phase resulting in environmental or health impacts.
- The impact assessment identified that there will be some impact to the landscape character surrounding the Project. The medium to high landscape risks primarily relate to the visual intrusion of the Project structure on the existing landscape, provision of connectivity, adequate surveillance and vegetation or wetland loss.
- Potential noise and vibration risks of construction and operation phase impacts to residential areas in proximity to the project. Construction noise and vibration targets have been developed and restrictions will be placed on construction work hours to minimise disruption.
- Modelling results for the impact assessment indicated that Project Objective Noise Limits can be achieved at all identified receptors through the design and implementation of noise barriers along the alignment.
- Dust from construction activities is predicted to be greatest during roadway and embankment formation and laying of the pavement base. Recommended standard management measures would be implemented to limit the extent of dust and

likelihood of adverse effects on sensitive receptors. This would manage the construction dust to a level of minor impact.

- The operational impacts on air quality are predicted to be negligible and within relevant design criteria for carbon monoxide and particulate matter (PM10 and PM2.5). Predicted levels of nitrogen dioxide beyond 20 metres from the roadway will be below the one hour design criterion with the application of standard controls.
- The social impact assessment found that the most significant impacts of the Project on local communities would occur during the construction phase and are therefore temporary in nature.

The EES assessment is summarised in Chapter 5 of this report and discussed in more detail in the IAC's assessment in Chapters 6 to 20.

Public exhibition of the EES was undertaken between 26 October and 14 December 2018, and 112 submissions were received.

A combined Inquiry and Advisory Committee (IAC) was appointed in October 2018 to consider the EES and draft Planning Scheme Amendment GC107 in accordance with the Terms of Reference approved by the Minister for Planning on 8 October 2018.

The IAC comprises Trevor McCullough (Chair), Mandy Elliott, Sandra Brizga and Elizabeth Hui. The purpose of the Inquiry is to investigate and provide an integrated assessment of the potential effects of the Mordialloc Bypass Project.

The IAC conducted public hearings from 25 February to 15 March 2019 at the Dingley Hotel, Dingley including submissions from MRPV, Kingston City Council, Transport for Victoria, VicRoads, Friends of Edithvale-Seaford Wetlands, Mordialloc Beaumaris Conservation League Inc, Kingston Residents Association, Residents Against Mordialloc Freeway Inc. and a number of local residents.

Submissions raised the following key issues about the potential impact of the Project:

- Air quality issues, including human health risks
- Dust emissions, particularly from any disturbed landfill sites
- Potential leachate from former landfill
- Concerns about disturbance to acid sulfate soils
- Environmental impacts on the Waterways, Woodlands and Braeside Park wetlands, Mordialloc Creek, Edithvale-Seaford wetlands and Port Phillip Bay
- Effects on surface water and groundwater, and potential damage to wetlands
- Potential fauna and avifauna mortalities and loss of habitat
- The potential cumulative impact on the Edithvale wetlands of the Project and other projects in the area including the rail level crossing projects
- Concerns about potential impacts of the Project on migratory birds
- Concerns about greenhouse gas emissions
- Several submitters suggested changes to the wording or scope of EPRs
- Impact on local businesses from the truncation of Woodland Drive
- Impacts on the local community, including health impacts, littering and loss of amenity

- Loss of open space as a result of using the road reserve rather than keeping it as a reserve
- Concerns about impacts on Braeside Park, including visual and noise impacts on birdlife and on users of the Park
- Visual impacts of the Project, including requests for more landscaping and 'softening' of the impact of noise walls
- Noise impacts of the Project on residential properties
- Concerns that the business case for the Project has not been released
- Requests for other options to be explored as alternatives to the Project, including public transport options or different road upgrade option
- Concerns about the traffic impacts of the Project on the surrounding road network, including induced traffic demand
- Requests for additional road upgrades to be completed as part of the Project, including to South Road, Governor Road, Dingley Bypass, Thames Promenade and the Mornington Peninsula Freeway.

The EES proposes an Environmental Management Framework (EMF) to manage the potential environmental impacts of the Projects, both during construction and in operation.

A key element of the EMF is the Environmental Performance Requirements (EPRs).

The EPRs provide performance-based requirements that guide the preparation of the other elements of the EMF. The IAC has concentrated its assessment and recommendations on the content of the EPRs.

MRPV has prepared and exhibited draft Planning Scheme Amendment GC107 to the Kingston and Greater Dandenong Planning Schemes that introduce Incorporated Documents to provide the necessary planning approvals for the Projects. The Incorporated Documents require the Project is constructed and operated in accordance with the EMF (including the EPRs) approved by the Minister for Planning.

(iii) Inquiry and Advisory Committee findings

The IAC has considered the EES and associated technical reports, all submissions and the extensive body of expert evidence provided and makes the following main findings:

Project alternatives:

- MRPV has correctly concentrated its efforts on considering alternative road configurations and designs for the freeway rather than alternatives to the freeway.
- A freeway design will achieve better traffic performance and reduced delays compared to the arterial road option.

Land use and planning impacts:

- The Project is unlikely to have substantial negative impacts on the surrounding land use provided that amenity impacts on residential areas are appropriately mitigated.
- The benefits of the freeway are acknowledged, particularly in terms of providing more direct access to employment areas and the Moorabbin Airport.

Biodiversity impacts:

- Construction impacts of the Project, particularly bridge construction over the Mordialloc Creek/Waterways wetlands, will cause some disturbance to birds and other fauna species, as well as impacts on aquatic and riparian vegetation. These impacts are expected to be short-term (24 months) and once construction is completed and with effective implementation of the mitigation measure proposed, the IAC accepts the evidence of the experts that the birds, including species of conservation significance, will return to the wetlands.
- Removal of native vegetation and some large trees within the alignment is not considered to be a significant impact of the Project. Although much of the significant EVCs are associated with the constructed wetland habitats, with rehabilitation measures using appropriate shade tolerant aquatic species underneath the new bridge, it is expected that the wetland environment will return and provide habitat for birds and other fauna species.
- The surface water and groundwater assessments in the EES determined that hydrological changes from the Project would be negligible and therefore highly unlikely to have ecological impacts on the Edithvale-Seaford Ramsar Wetlands.
- The impacts to fauna during operation, such as noise, lights, traffic, and barriers to fauna connectivity, are considered acceptable with effective Multi-Function Fauna Barriers (MFFBs), culverts and use of fauna sensitive lighting. The IAC considers three metre MFFB could be optimal along the entire eastern boundary of Braeside Park as well as in sensitive wetland areas. The Flora and Fauna Monitoring and Management Plan (EPR B6) will be an important mechanism for ensuring compliance with biodiversity EPRs.

Landscape, urban design and visual impacts:

- Changes in landscape character and impacts to visual amenity in key residential areas can be adequately mitigated through the measures proposed in the EPR
- The requirement for an independent design reviewer in EPR LV8 is supported.

Noise and vibration:

- The proposed EPR NV2 for the management of construction noise must include specific noise targets for day, evening and night-time periods that apply from Day 1 of the Project construction and allow for a quantitative assessment to be undertaken. The targets should be developed in consultation with the EPA.
- The proposed EPR for the management of vibration impacts is adequate.
- The recommended Project Objective Noise Limits (PONLs) are appropriate.

Air quality:

- The proposed EPRs EM2 and AQ2 will adequately manage air quality impacts from construction to both residential and commercial receptors.
- Proposed EPR LV1 must include a requirement for denser planting of a 15 metre wide band of trees (small and medium size) at areas where residences are within 35 metres of the roadway.

Historic and Aboriginal heritage:

- The IAC accepts that there is a low potential for significant historical cultural heritage or archaeological features to be located within the Project alignment.
- With respect to the HO104, the IAC agrees that a revised HO extent is required and this should include at a minimum the two brick buildings and some curtilage. The IAC agrees with Council that a further consultation between Council and Parks Victoria is required to resolve the extent of the HO104 and that a further heritage assessment may be required to resolve the extent.
- The IAC accepts that in regard to Aboriginal cultural heritage significance there are no significant sites within the Project area and notes that protocols will be in place under the Cultural Heritage Management Plan to protect any Aboriginal cultural heritage that may be located during construction.

Surface water:

- Subject to the recommended changes to the EPRs and with implementation of the identified mitigation measures, the IAC considers that the impacts of the Project on surface water can be satisfactorily resolved and concludes that the Project is not expected to have unacceptable impacts on surface water.

Groundwater:

- The road embankments are unlikely to have a significant impact on groundwater, although monitoring is necessary to confirm this. EPR W5 is recommended to be amended to require this.
- The EES does not provide sufficient information regarding the impacts of piling and structures in the vicinity of landfill to make a conclusive assessment. The IAC accepts that this issue can be satisfactorily resolved in the detailed design.
- Additional groundwater monitoring is necessary to establish an adequate baseline, and the IAC recommends the EPR W5 be amended to require this.
- The IAC recommends that the EPA should have a role in ensuring that requirements relating to groundwater are met.

Soils and contaminated land:

- Soil management in association with import and disposal of fill can be satisfactorily managed with appropriate EPRs. The IAC has recommended changes to the EPRs in response to the EPA submission.
- Acid Sulfate Soils (ASS) and Potential Acid Sulfate Soils (PASS) occur extensively in the central and southern portions of the Project area. The IAC accepts MRPV's proposed approach to managing ASS/PASS subject to some clarification in the EPRs.
- The IAC notes that the Project will interact with former landfills in the northern portion of the Project area. The IAC accepts that the issues can be managed through the EPRs and has recommended minor changes to the EPRs.

Cumulative impacts:

- The Project will not have a cumulative impact on the Edithvale Wetlands provided that measures to mitigate risks to surface water quality are implemented, maintained and monitored; and upgraded if the proposed measures are found to be ineffective.

The proposed EPRs:

- The use of EPRs as the primary means of setting the framework for avoiding, monitoring and mitigating environmental risks associated with the Project is supported.
- The IAC's preferred version of the EPRs is shown in Appendix E.

The Incorporated Document:

- The Incorporated Document as proposed by MRPV should be adopted subject to the minor changes shown in the IAC preferred version at Appendix F of this report.

Matters of National Environmental Significance (MNES):

- The Project will not have a significant impact on MNES providing the mitigation and management measures proposed in EPRs are effectively implemented.

(iv) Recommendations

Based on the reasons set out in this Report, the Inquiry and Advisory Committee recommends that the Mordialloc Bypass Project be approved provided it is constructed and operated in accordance with the approved Environmental Management Framework and Environmental Performance Requirements.

The Inquiry and Advisory Committee recommends the following changes to the exhibited environmental and planning controls:

- 1. Approve the Environmental Management Framework, subject to the removal of the reference to the Environmental Management Framework being "updated and re-assessed by the Minister for Planning if traffic lanes are proposed to be added to the Project in the future".**
- 2. Adopt the Inquiry and Advisory Committee preferred version of the Environmental Performance Requirements as shown in Appendix E.**
- 3. Adopt the Inquiry and Advisory Committee preferred version of the Incorporated Document as shown in Appendix F of this report.**

The Inquiry and Advisory Committee recommends the following Project design inclusions and changes:

- 4. Construct one additional lane in each direction on the Mornington Peninsula Freeway between Thames Promenade and Springvale Road.**
- 5. Duplicate Centre Dandenong Road between Old Dandenong Road and Boundary Road, including upgrading the Boundary Road intersection.**
- 6. Replace the Thames Promenade/Wells Road roundabout with traffic signals.**
- 7. Adopt the modified layout proposed for Woodlands Drive and the freeway off ramp to Lower Dandenong Road as presented to the Inquiry and Advisory Committee and shown in Figure 4 of this report.**
- 8. Construct a shared user pathway crossing across the north-east slip lane from Springvale Road to Mornington Peninsula Freeway.**

The IAC Recommends that the following associated works should be undertaken on the surrounding road network in conjunction with the Project:

- 9. Upgrade the capacity of Centre Dandenong Road west of Boundary Road.**
- 10. Upgrade the capacity of Governor Road either side of the Mordialloc Bypass.**
- 11. Upgrade the capacity of South Road between Warrigal Road and Nepean Highway.**
- 12. Implement other local traffic improvements as required to address any unintended consequences of the Project.**

The Inquiry and Advisory Committee makes the following further recommendation:

- 13. Major Road Projects Victoria should consult with Kingston City Council and Parks Victoria to resolve the HO104 extent.**

PART A BACKGROUND AND INQUIRY PROCESS

1 Introduction

1.1 The Inquiry

The Minister for Planning determined that an EES was required for the Mordialloc Bypass Project under the *Environment Effects Act 1978* on 13 September 2017. The reasons for the decision included that the Project has the potential for a range of significant environmental effects, particularly on:

- The habitat value and quality of wetlands and other habitats adjoining or traversed by the Project, especially with regard to threatened species;
- The surface water and groundwater systems which contribute to the health and habitat quality of adjacent and nearby wetlands, including the Ramsar-listed Edithvale wetland;
- Indigenous cultural heritage values that may occur within the Project alignment;
- The containment and management of potentially contaminated soils and potential acid sulfate soils; and
- Amenity values of adjacent land, especially residential land and parkland.

The Minister's reasons identified that other potential effects on the social or environmental setting are less likely to be significant and should be amenable to effective management through statutory processes and requirements under the *Planning and Environment Act 1987* and *Environment Protection Act 1970*.

In addition, the Commonwealth Minister for the Environment and Energy determined that the Project is a controlled action that requires assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), due to potential impacts on particular Matters of National Environmental Significance (MNES). The controlling provisions under the EPBC Act relate to Ramsar wetlands (sections 16 and 17B), listed threatened species and communities (sections 18 and 18A) and listed migratory species (sections 20 and 20A).

A combined Inquiry and Advisory Committee (IAC) was appointed on 16 September 2018 to consider the Project's EES and draft Kingston and Greater Dandenong Planning Scheme Amendment GC107 in accordance with the Terms of Reference approved by the Minister for Planning on 8 October 2018. The Terms of Reference are attached as Appendix A.

The IAC comprises Trevor McCullough (Chair), Mandy Elliott (Deputy Chair), Sandra Brizga and Elizabeth Hui.

The IAC conducted the inquiry and prepared its report in accordance with the Terms of Reference issued by the Minister for Planning on 8 October 2018.

1.2 Inquiry process

The IAC was appointed under section 9 of the *Environment Effects Act 1978*, and an Advisory Committee under section 151 of the *Planning and Environment Act 1987*.

The EES and draft planning scheme amendments were placed on public exhibition between 26 October and 14 December 2018.

The IAC held a Directions Hearings on 31 January 2019 at The Dingley Hotel, Dingley. The public hearings took place on 25-28 February, 1-6 March, 8 March, 12-15 March 2019 at Dingley International Hotel.

1.3 Planning Scheme Amendment

The proponent has prepared a draft planning scheme amendment for the Project (Amendment GC107) to the Kingston and Greater Dandenong Planning Schemes, in accordance with the *Planning and Environment Act 1987*.

The draft Amendment GC107 proposes to insert or amend:

- a Schedule to Clause 45.12 'Specific Controls Overlay'
- Clause 72.03 'What does this planning scheme consist of?'
- Clause 72.04 'Documents incorporated in this planning scheme' of the Kingston and Greater Dandenong Planning Schemes to insert a new Incorporated Document for the Project.

The Incorporated Document relates to a specific planning control and would govern the use and development of the Project.

The Amendment proposes to amend Map 6HO to the Kingston Planning Scheme to correct the curtilage of HO104 in respect of the Parks Victoria buildings in Braeside Park.

The Amendment amends map 6PAO of the Kingston Planning Scheme to apply the Public Acquisition Overlay (PAO) to four parcels of land in Braeside to facilitate the truncation of Woodlands Drive. The IAC notes that MRPV now proposes a modified alignment for this interchange which sees Woodland Drive continuing as a through road. This negates the need for the PAO.

The Incorporated Document will require plans and documents to be prepared to the satisfaction of the Minister for Planning (or the relevant planning authority) in accordance with an Environmental Management Framework (EMF) and Environmental Performance Requirements (EPRs).

1.4 Terms of Reference

The Terms of Reference require the IAC to produce a report to inform the Minister for Planning's Assessment of the Project under the *Environment Effects Act 1978* (the EE Act) and will also assist the Minister to make a decision about the proposed Amendment to the Kingston and Dandenong Planning Schemes to facilitate the Project.

The Terms of Reference are attached as Appendix A.

Paragraph 18 of the Terms of Reference sets out the purpose of the Inquiry:

- a. Consider and report on the potential significant effects of the Project investigated in the EES, taking into account the procedures and requirements of the Minister for the preparation of the EES under section 8B(5) of the EE Act and the controlling provisions under the EPBC Act.
- b. Recommend necessary avoidance, mitigation or management measures for the development of the Project to balance project objectives with environmental, economic and social outcomes.
- c. Assess the adequacy of the proposed environmental performance requirements and their suitability to achieve Project-wide environmental outcomes, as described in the scoping requirements.

Paragraph 19 requires that the IAC undertake an integrated assessment of the potential significant environmental effects of the Project.

Paragraph 20 sets out the purpose of the Advisory Committee:

The IAC is to:

- a. Review the draft planning scheme amendment along with public submissions received in relation to the planning controls proposed by the draft planning scheme amendment.
- b. Assess whether the planning controls proposed by the draft planning scheme amendment are appropriate to facilitate and control the use and development of the Project.

1.5 Submissions

In response to the public exhibition of the EES, 112 submissions were received.

The submissions relating to the EES were well summarised by MRPV in its Part A submission (Document 6). The following is a summary of the main issues raised by submitters:

- Air quality issues, including human health risks
- Dust emissions, particularly from any disturbed landfill sites
- Potential leachate from former landfills
- Concerns about disturbance to acid sulfate soils
- Environmental impacts on the Waterways, Woodlands and Braeside Park wetlands, Mordialloc Creek, Edithvale-Seafood wetlands and Port Phillip Bay
- Effects on surface water and groundwater, and potential damage to wetlands
- Potential fauna and avifauna mortalities
- The potential cumulative impact on the Edithvale wetlands of the Project and other projects in the area including the rail level crossing projects
- Concerns about potential impacts of the Project on migratory birds
- Concerns about greenhouse gas emissions
- Several submitters suggested changes to the wording or scope of EPRs
- Impact on local businesses from the truncation of Woodland Drive
- Impacts on the local community, including health impacts, littering and loss of amenity
- Loss of open space as a result of using the road reserve rather than keeping it as a reserve
- Concerns about impacts on Braeside Park, including visual and noise impacts on birdlife and on users of the Park
- Visual impacts of the Project, including requests for more landscaping and 'softening' of the impact of noise walls
- Noise impacts of the Project on residential properties
- Concerns that the business case for the Project has not been released
- Requests for other options to be explored as alternatives to the Project, including public transport options or different road upgrade option
- Concerns about the traffic impacts of the Project on the surrounding road network, including induced traffic demand
- Requests for additional road upgrades to be completed as part of the Project, including to South Road, Governor Road, Dingley Bypass, Thames Promenade and the Mornington Peninsula Freeway.

Substantial submissions were provided by Kingston City Council. Council generally supported the Project subject to additional works, changes to a number of design elements, some additional investigation work and changes to the EPRs. Council's response is discussed in each relevant chapter.

The EPA made a submission providing comments on the content and implementation of the EPRs. Parks Victoria, who are responsible for the management of Braeside Park, made a submission generally supporting the Project and asked to be further consulted during detailed design. Melbourne Water made a submission in relation to the legislative framework and indicated that it anticipated further engagement during the detailed design.

VicRoads' submission supported the Project, subject to minor changes to the wording of EPRs.

The IAC considered the exhibited EES and Amendment, all submissions and evidence provided at the Hearing by the parties presenting and all written submissions. In addressing the issues, the IAC has been assisted by the information provided to it as well as its observations from inspections of the Project area.

1.6 Limitations on the scope of the IAC's consideration

The IAC Terms of Reference require the IAC to "*consider and report on the potential significant effects of the Project investigated in the EES*". The Project investigated is a freeway standard road, generally following the alignment of an existing road reserve.

The EES gave only limited consideration to other alternatives to a roadway and the IAC is therefore limited in its consideration of other alternative options to a roadway. The IAC has restricted its consideration and report to the options addressed in the EES and this is discussed in section 2.4 of this report.

1.7 Structure of this report

This report is structure in three parts as follows:

Part A Background and Inquiry Process

This covers a broad overview of the Project, the IAC process, alternatives to the Project and the legislative and policy framework for the Project and EES.

Part B Environmental Effects Assessment

The IAC's detailed assessment of the impacts of the Project as assessed in the EES and examined in submissions and evidence before the IAC.

Part C Matters of National Environmental Significance (MNES)

A summary of the MNES relevant to Commonwealth legislation.

1.8 Acknowledgements

The IAC would like to acknowledge the substantial body of work undertaken by the staff and consultants engaged by MRPV in preparing the EES and its associated Technical Reports. The reports are of a high standard and are very comprehensive in identifying the key issues.

The IAC also acknowledges the detailed work done by submitters in preparing high-quality submissions to the Inquiry process. The IAC applauds the respect shown by all submitters to the IAC and to each other in presenting their sometimes conflicting points of view.

The IAC would like to acknowledge the contribution of Greta Grivas (Planning Panels Victoria), who provided project and administrative support to the IAC.

2 The Project

2.1 Project background

The *Melbourne Metropolitan Planning Scheme Report 1954* first proposed an arterial road to bypass the bayside suburbs on the Nepean Highway between Mordialloc and Frankston. The report proposed an arterial road, designated Route 26 that connected Brighton and Frankston, bypassing the bayside suburbs. The reservation was later earmarked in the *1969 Melbourne Transportation Plan* and the *Metropolitan Strategy Implementation 1981*.

Most of the land for the Project between Dingley Bypass and Springvale Road has been subject to a Public Acquisition Overlay (PAO) since the late 1990s.

In 2010, VicRoads commissioned a strategic transport assessment followed by a feasibility study to investigate the benefits, impacts and viability of various transport solutions within the reservation.

The study concluded that demand was not sufficient to warrant investment in a freeway at that time, but that there would be increased demand in the future to justify completing a business case for the construction of an arterial road within the reservation.

Since 2016, VicRoads, and now MRPV has been re-evaluating options to manage the projected traffic volumes in Melbourne's south-eastern region. This was done in response to high competing traffic movements and network constraints leading to increased congestion and travel times in the corridor. Traffic modelling undertaken as part of this EES showed that between 2021 and 2031, traffic demand (without the Project) along Mornington Peninsula Freeway is expected to increase by more than eight per cent, primarily due to population growth and land use development in the south-eastern suburbs. The modelling showed that a freeway would better accommodate the increased travel demand associated with this growth, compared with an arterial road.

2.2 Project description

The proposed Project alignment is located 5 kilometres east of Mordialloc and 25 kilometres south-east of Melbourne's central business district. It passes through the suburbs of Clayton South, Dingley Village, Braeside, Waterways, Aspendale Gardens and Chelsea Heights in the City of Kingston. Small areas of proposed works will take place in Bangholme in the City of Greater Dandenong.

The Project (as exhibited) is located mainly within land reserved for road purposes. Some minor additional land acquisition is required to assist access at Woodlands Drive if the exhibited alignment is adopted. The IAC notes that if the proposed modified layout for Woodlands Drive is adopted, no acquisition is required and the PAO can be deleted from the proposed Amendment.

The freeway passes between the western boundary of Braeside Park and the eastern boundary of the Woodlands Industrial Estate constructed wetlands, and crosses constructed wetlands at Waterways. It also passes within one kilometre of the Ramsar listed Edithvale–Seaford Wetlands (Edithvale Wetlands portion). The northern and southern ends of the alignment pass through and along the border of the South East Green Wedge.

The Project includes:

- a nine kilometre freeway, consisting of two-lane carriageways in each direction
- bridges over Springvale, Governor, Lower Dandenong and Centre Dandenong Roads, along with new freeway entry and exit ramps at each intersection
- bridges over Old Dandenong Road and sensitive Mordialloc Creek and Waterways wetlands
- upgrades to the existing interchange at Thames Promenade, Chelsea with the Mornington Peninsula Freeway, along with freeway entry and exit ramps
- a new shared walking and cycling path along the entire freeway length.

The Project assessed by the EES is for a four lane (two lanes in each direction) freeway. The proposed alignment provides for the possibility of a third lane to be added in each direction if required for future growth. The IAC notes that if extra lanes are proposed in future the environmental impacts of that work will need to be separately assessed.

2.3 Project objectives, benefits and constraints

The EES stated the objectives of the Project are to:

- improve the safety, efficiency and functionality of the road network
- improve transport connectivity, which would help the freight and logistics sectors by improving efficiency and vehicle operating costs
- improve amenity by reducing the reliance on local and low capacity arterial roads as key movement routes through the middle south-eastern suburbs
- reduce delays at intersections
- facilitate public transport improvements
- provide better access to economic and activity centres like shopping centres and business districts
- reduce travel time variability and delays for commuters
- protect, and where possible enhance, natural and cultural values during the planning, construction and operation of the Project
- support sustainable communities and land development during the planning, construction and operation of the Project
- achieve value for money for Victoria
- secure timely delivery of the Project.

MRPV submitted that the Project will produce the following benefits¹:

- (a) Delivering a connection between the Dingley Bypass and Mornington Peninsula that has been anticipated since the 1960s and has been proposed for this alignment since the 1990s
- (b) Providing additional road capacity to meet the needs of our growing city, including the needs of commuters, business and industry
- (c) The increased access opportunities for economic and industrial centres, including the Moorabbin Airport

¹ MRPV Part B submissions p10, 11

- (d) Improving road safety and travel efficiency by providing a safer and faster way to move between the Dingley Bypass and Mornington Peninsula Freeway
- (e) Delivering overall improvements in terms of safety and efficiency for the local road network
- (f) Providing a more direct route for heavy vehicle movements (particularly freight), freeing up local roads for use by other vehicles and reducing amenity impacts along those roads
- (g) Providing improved efficiencies for public transport through bus service lanes, and
- (h) Facilitating active transport by delivering new Share User Paths for cyclists and pedestrians.

MRPV submitted that, while the Project has the potential to have negative environmental effects, the design of the Project, including the EPRs, is such that those impacts can be satisfactorily avoided, managed or mitigated to acceptable levels in accordance with the EES Evaluation Objectives.

2.4 Project alternatives

2.4.1 The scoping requirement for alternatives

The scoping requirements for the EES require MRPV to document “*consideration of relevant alternatives and include an explanation of how specific alternatives were shortlisted for evaluation within the EES*”. It is required that the EES provides details of alternatives investigated for the Project, selection processes including likely environmental effects and where these may offer potential to achieve beneficial environmental outcomes and meet the objectives of the Project.

2.4.2 Strategic alternatives to the Project

(i) Submissions

The EES sets out² the process followed by MRPV to examine strategic intervention options and arrive at a preferred option to meet the Project objectives.

The analysis identified the strategic interventions (in order of preference) as:

- infrastructure approach
- network upgrade approach
- network optimisation approach
- land use approach
- alternative transport approach.

The EES noted³:

The infrastructure approach was identified as the preferred option as it provides the highest number of benefits –improvements to transport network efficiency and amenity, and attractiveness of the area for business and industry – and provides the best long-term solution to the problems identified. Providing an entirely new road

² EES Chapter 5 p5-1, 5-2

³ Ibid p5-2

connection would give direct access to employment centres and discourage trucks from using secondary arterial roads and local roads in the area.

Although the network upgrade approach provided reasonable benefits, the population and employment growth in the south-east made this solution potentially unsustainable in the long-term. It also entails significant risks, including the potential for protracted and expensive land acquisition processes and a lack of community support for the solution ...

...

The alternative transport approach also requires significant long-term changes to travel behaviour. Without significant improvements to the greater and local road network capacity, new and existing bus services are likely to suffer delays as they compete for road space with other on-road vehicles. This option will involve significant disruption to the road network, property access, utility services and involve significant land acquisition.

Several submitters including Residents Against the Mordialloc Freeway (RAMF), the Kingston Residents Association, the Public Transport Users Association and several local residents submitted that alternative options to a freeway had not been given enough consideration. They submitted that public transport options and an upgraded local road network would provide a better and more sustainable outcome. The RAMF submitted that, at the very least, the Project should be deferred until other alternatives are more fully investigated and that longer-term environmental sustainability should be given more weighting.

MRPV responded, in its Part B submission, that the Transport efficiency, capacity and safety Evaluation Objective for the Project specifically requires the Project to “*provide for an effective connection between the Mornington Peninsula Freeway and the Dingley Bypass*”. It is only if an alternative project could achieve this objective that it was required to be evaluated as part of the preparation of the EES.

MRPV submitted that this is consistent with the terms of the Ministerial guidelines (DELWP 2006) for the assessment of environmental effects under the *Environmental Effects Act 1978* which state that an EES:

will not normally be required to document alternatives **to** a project proposal, as opposed to alternatives **for** a project. ... The only alternative to a project proposal that will be routinely described in detail in an EES is the ‘no project’ scenario.⁴

The Project investigated in the EES, as referred to in paragraph 18(a) of the IAC’s Terms of Reference, is the connection of the Mornington Peninsula Freeway to the Dingley Bypass.

MRPV submitted⁵:

The various alternatives advanced by submitters, such as public transport projects or upgrades of other road infrastructure, were not – and were not required to be – considered as part of the EES as they are incapable of fulfilling a critical element of the Transport Objective for the Project, namely, providing a connection between the Dingley Bypass and the Mornington Peninsula Freeway.

In response to the submissions of RAMF and others, MRPV submitted that private and public transport are not perfectly substitutable, and the reality is that, as recognised in the

⁴ Department of Sustainability and Environment (7th ed., 2006), p. 15

⁵ MRPV Part B submission p6

Transport Integration Act 2010, all modes have a role to play in the delivery of an integrated transport system. MRPV noted that the Victorian government has committed to the construction of many public transport projects, including the Metro Tunnel and the Suburban Rail Loop that will directly benefit residents of the Project area.

MRPV also noted that the Project includes public transport components in the form of the bus priority lanes at key interchanges.

(ii) Discussion and conclusions

The IAC accepts the submissions of RAMF and the Kingston Residents Association that analysis of alternatives to the freeway have not been examined in detail in the EES. The IAC agrees that further consultation could have occurred with a broader range of stakeholders in analysing the strategic alternatives.

Having said that, the IAC accepts that MRPV did do a degree of strategic analysis and the IAC agrees with the conclusion of that analysis that the ‘infrastructure approach’ best meets the Project objectives. The IAC also accepts MRPV’s submissions that the EES does not need to consider alternatives to the Project in any detail and should concentrate on alternatives for the Project to meet the Project objectives.

Ultimately the strategic decision on whether to proceed with this or any other project in preference to another is a decision for government. Such decisions are guided by analysis of environmental effects (amongst other things), and the IAC’s primary role is to provide advice on the environmental effects of the Project as proposed. In terms of alternatives, the IAC has a role in commenting on whether the scoping requirements have been met in the preparation of the EES but has no role in commenting on whether alternatives to the Project have relative merit.

On this point, the IAC is satisfied that the EES analysis satisfactorily addresses the scoping requirements and appropriately weights the objective of providing a connection between the Dingley Bypass and the Mornington Peninsula Freeway in concluding that the ‘infrastructure approach’ best meets the Project objectives.

The IAC believes that MRPV has correctly concentrated its efforts on considering alternative road configurations and designs for the freeway. The EES considers these alternatives in much more detail and consultation on the Project has appropriately centred on assessing and addressing issues arising from the preferred freeway option.

2.4.3 Alignment options

For the following reasons alignments other than the designated road reserve were not seriously contemplated:

- A bypass of Mordialloc has been proposed for decades with development excluded from the road reserve.
- Land has been acquired by VicRoads and reserved for road purposes.
- The southern end of the alignment, where the Project connects to the Mornington Peninsula Freeway, is a fixed location.
- At the northern end of the alignment, there is limited scope to connect the Project to the Dingley Bypass in any location other than where proposed.
- The proposed alignment is capable of achieving the Project objectives.

The IAC supports MRPV's conclusion that the road reserve should be the preferred alignment and that it is not necessary to assess alternative alignment corridors as part of this EES process.

2.4.4 Freeway versus arterial road

(i) Submissions

The EES developed and assessed four main options for the design of the road within the road reserve along with a 'do nothing' scenario. The Traffic Impact Assessment (TIA) (Appendix A to the EES) provides a detailed analysis of the transport and traffic related differences between 'do nothing', an arterial road option and a freeway option. Chapter 5.6 of the EES provides the following summary of the options assessment that includes comparison of benefit cost ratios⁶:

Option 0: Do Nothing

This option was ranked last as it did nothing to improve the existing problems identified as needing to be addressed by the proposed Project.

Option 1: Four-Lane Arterial Road

This option was assessed as returning \$2.30 for every \$1 invested on the Project mainly through improved travel time performance.

This option also was assessed as only moderately well addressing the transport needs, road safety needs and stakeholder expectations of the Project.

Option 2: Four-Lane Freeway/Arterial (Freeway from Springvale Road to past Governor Road)

This option was assessed as returning \$3.50 for every \$1 invested on the Project mainly through improved travel time performance.

This option also was assessed as only moderately well addressing the transport needs, road safety needs and stakeholder expectations of the Project.

Option 3: Four-Lane Freeway

This option was assessed as returning \$3.90 for every \$1 invested on the Project mainly through improved travel time performance.

This option also was assessed as addressing the transport needs, road safety needs and stakeholder expectations of the Project well.

Option 3A: Four-Lane Freeway including additional ramps at Thames Promenade

This option was assessed as returning \$4.00 for every \$1 invested on the Project mainly through improved, and more efficient, travel time performance.

This option also was assessed as addressing the transport needs, road safety needs and stakeholder expectations of the Project well.

Option 4: Six-Lane Freeway

This option was assessed as returning \$3.50 for every \$1 invested on the Project mainly through improved travel time performance.

This option also was assessed as addressing the transport needs, road safety needs and stakeholder expectations of the Project well.

⁶ EES Chapter 5 p5-6

The IAC was not provided with a copy of the benefit cost analysis. Several submitters were critical of the benefit cost analysis not being made public.

The EES analysis found that a freeway is preferable to an arterial road because⁷:

- it provides more congestion relief on adjacent roads such as Nepean Highway, White Street, and Springvale Road
- it reduces travel times by about 20 percent
- it provides greater throughput capacity with a lower impact on intersecting roads, thereby extending the period before any further upgrades are required
- the freeway reduces the likelihood of incidents, making it safer than the arterial road option. This is achieved by reducing congestion in surrounding roads, and providing less interaction at traffic lights, where accidents are more likely to occur
- the community has a very strong preference for a freeway option, as evidenced by feedback received (including via a web-based social pin-point survey; refer to Chapter 7: Consultation and stakeholder engagement)
- it provides the highest returns on investment with a Benefit Cost Ratio (BCR) of 4.0
- it is expected to generate stronger economic returns by providing companies with faster access to employees and reducing transit times for goods and services
- the arterial options would be significantly more expensive to upgrade to freeway in the future compared with today's cost differential.

Mr Kelly gave evidence that the freeway scenario was preferred due to⁸:

- Higher level of travel efficiency, network capacity and travel time improvements
- Better access to existing arterial routes
- Better alignment with Safe Systems principles resulting in lower crash risk
- Greater amenity due to greater reductions in total traffic and heavy vehicle traffic.

The EES also noted⁹:

Although the preferred option selected is the four-lane freeway, MRPA has incorporated sufficient room on the inside of the road design for the future upgrade of the road to a six-lane freeway. In addition, all bridge structures will have enough space for an additional lane to be added when traffic numbers and congestion increase.

The Aspendale Gardens Residents Association submitted that the freeway should be built as a six-lane freeway from the start to ensure future capacity and reduce future upgrade costs.

During the development of the design for the Project several variations on interchange design were examined. These issues are discussed on Chapter 6.

(ii) Discussion and conclusions

The IAC makes no comment about the unavailability of the benefit cost analysis. The IAC has not been able to examine the analysis so will restrict its assessment to the material it has been provided with.

⁷ EES Chapter 5 p5-5

⁸ Mr Kelly's presentation to the Hearing

⁹ EES Chapter 5 p5-6

The IAC agrees with the conclusions of the TIA that a freeway design will achieve better traffic performance and reduced delays compared to the arterial road option. The IAC also accepts that the freeway option is superior to the 'do nothing' base case.

The IAC was not provided with costings of the various options and is not in a position to comment on whether it represents better value to construct the Project as a six-lane freeway in the first instance.

2.4.5 Findings

The IAC makes the following findings in relation to Project alternatives:

- The EES analysis satisfactorily addresses the scoping requirements and appropriately weights the objective of providing a connection between the Dingley Bypass and the Mornington Peninsula Freeway in concluding that the 'infrastructure approach' best meets the Project objectives.
- MRPV has correctly concentrated its efforts on considering alternative road configurations and designs for the freeway. Consultation on the Project has appropriately centred on assessing and addressing issues arising from the preferred freeway option.
- The road reserve should be the preferred alignment and it is not necessary to assess alternative alignment corridors as part of this EES process.
- A freeway design will achieve better traffic performance and reduced delays compared to the arterial road option. The freeway option is superior to the 'do nothing' base case.
- The IAC was not provided with costings of the various options and is not in a position to comment on whether it represents better value to construct the Project as a six-lane freeway.

3 Legislative and policy framework

3.1 Victorian legislation

Environment Effects Act 1978

The *Environment Effects Act 1978* (EE Act) contains a framework by which projects with the potential to have significant effects on the environment may require the preparation of an EES for assessment by the Minister for Planning. The process under the EE Act is an assessment, rather than an approval, process.

After considering all relevant submissions and conducting any necessary hearings, the IAC's report will be provided to the Minister for Planning to assess the environmental effects of the Project and will be provided to relevant statutory decision-makers to inform their decision whether or not to approve the Project and, if so, under what conditions.

The Minister's Assessment determines whether the likely environmental effects of a Project are acceptable, and whether any modifications or specific mitigation measures are required to achieve acceptable outcomes. Decision-makers are required to consider the Minister's Assessment and are encouraged to consult with the Minister where it is not proposed to adopt the recommendations in the Assessment.

Chapter 4 of this report sets out the environmental assessment framework and Figure 1 shows the relationship between the state and commonwealth approval processes.

Other approvals

The Project requires approvals under Victorian legislation, including:

- *Planning and Environment Act 1987* (Vic): Amendments to the Kingston and Greater Dandenong Planning Schemes, including reserving land for road purposes and approval to remove native vegetation.
- *Flora and Fauna Guarantee Act 1988* (Vic) (FFG Act): A licence to remove protected flora and fauna from public land.
- *Wildlife Act 1975* (Vic): Permits to remove trees containing habitat or any other fauna habitat areas or fauna salvage and translocation.
- *Water Act 1989* (Vic): A licence to construct works on a waterway or to construct a bore and take water from a waterway or groundwater use.
- *Aboriginal Heritage Act 2006* (Vic): Preparation of a Cultural Heritage Management Plan (CHMP).
- *Heritage Act 2017* (Vic): Consent to disturb archaeological sites and/or permits to carry out works at a heritage place.
- *Road Management Act 2004* (Vic): Road opening permits to undertake works.
- *Catchment and Land Protection Act 1994* (Vic): Measures to avoid and or minimise weed dispersal from work sites.

Other legislation relevant to the implementation of the Project includes:

- *Land Acquisition and Compensation Act 1986*
- *Crown Land (Reserves) Act 1978*
- *Environment Protection Act 1970 (and relevant State Environment Protection Policies).*

3.2 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

In addition to Victorian legislation, the Project is a controlled action and requires assessment and approval under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

MRPV referred the Project to the Commonwealth Government under the EPBC Act on 30 October 2017. On 30 January 2018, the delegate to the Minister for Environment and Energy determined that the Project is considered a controlled action for the following reasons:

... the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

- Ramsar wetlands (sections 16 and 17B)
- Listed threatened species and communities (sections 18 and 18A)
- Listed migratory species (sections 20 and 20A).

Under the Bilateral Assessment Agreement between the Commonwealth and Victoria, the EES is accredited as an assessment able to inform the Commonwealth decision under the EPBC Act. This means that the Commonwealth Minister for the Environment and Energy will decide whether to approve the Project under the EPBC Act, based on the Victorian Minister's Assessment of the environmental effects of the Project.

3.3 Other relevant legislation

Stakeholder engagement has been undertaken in accordance with the following legislation and guidelines:

- *Transport Integration Act 2010 (Vic)*
- *Environment Effects Act 1978 (Vic)*
- *Accessible Communications Guidelines 2014*
- *Public Participation in Government Decision-Making Guide 2015.*

3.4 State and Local Planning Policy

Technical reports prepared for the EES included a Land Use Impact Assessment. The Assessment reviews relevant sections of the Planning Policy Framework and other relevant land use planning provisions. The key areas of State and local policy are summarised as follows:

(i) Planning Policy Framework

Key State policy areas applicable to the Project include:

- Clause 11 – Settlement
- Clause 12 – Environment and landscape values
- Clause 13 – Environmental risks and amenity
- Clause 14 – Natural resource management
- Clause 15 – Built environment and heritage
- Clause 18 – Transport.

Of these, Clauses 12, 13 and 15 are most relevant to the EES:

Clause 12.05-2S (Landscapes) seeks to protect and enhance significant landscapes and open spaces that contribute to character, identity and sustainable environments. The potential visual and landscape effects of the proposed Mordialloc Bypass on the surrounding areas were considered as part of the EES process.

Clause 13 (Environmental Risks) recognises that planning should adopt a best practice environmental management and risk management approach which aims to avoid or minimise environmental degradation and hazards. Planning should identify and manage the potential for the environment, and environmental changes, to impact upon the economic, environmental or social well-being of society. This includes floodplain management, noise abatement and air quality.

Clause 15.01-1S (Urban Design) seeks to create urban environments that are safe, functional and enjoyable and that contribute to a sense of place and cultural identity. The EES process requires assessment of the visual effect of the Project on the surrounding land use. The Project seeks to improve safety and efficiency of the road network.

Clause 18.01-1S of the PPF seeks to create ‘a safe and sustainable transport system by integrating land use and transport’. Strategies underpinning this objective include:

- Develop integrated and accessible transport networks to connect people to jobs and services and goods to market.
- Plan urban development to make jobs and services more accessible by:
 - Ensuring equitable access is provided to developments in accordance with forecast demand, taking advantage of all available modes of transport and to minimise adverse impacts on existing transport networks and the amenity of surrounding areas.

(ii) Local Planning Policy Framework

Relevant clauses of the Greater Dandenong Planning Scheme for the Project include:

- 21.03 Council’s vision for Greater Dandenong includes a “state of the art intermodal transport interchange for south-eastern Victoria”
- 21.06 seeks to identify and protect areas of ecological value in Greater Dandenong
- 21.07 includes objectives relating to the efficient movement of freight within the municipality, with an emphasis on avoiding freight transport on local roads
- 22.03 identifies the Sandbelt Open Space Project, which provides a regional strategy for the development of a series of linked parks extending across the Heatherton and Dingley areas.

Relevant clauses of the Kingston Planning Scheme for the Project include:

- 21.10 aims to support and maintain the Green Wedge concept while ensuring activities in the Green Wedge are consistent with, and contribute to, optimal long-term planning solutions for the whole of the south-east metropolitan Green Wedge
- 21.12-3 advocates for major road infrastructure construction in key priority areas to assist regional movements in a north–south direction
- 21.03 identifies transport as a key issue for the municipality, with deficiencies in key arterial routes, which has consequences for the local road network
- 21.09 aims to protect and improve the functions of existing floodplains and waterways, and to consolidate their habitat and recreational importance

- 21.12 seeks to improve key freight networks, address deficiencies and conflicts between arterial traffic and abutting land use and manage high volumes of industrial traffic on roads that are operating at or near capacity.

3.5 Other relevant planning strategies and policies

(i) *Plan Melbourne*

A key outcome of the Plan is that *“Melbourne has an integrated transport system that connects people to jobs and services and goods to market”*. To achieve this outcome, the Plan includes the following directions:

- transform Melbourne’s transport system to support a productive city
- improve transport in Melbourne’s outer suburbs
- improve local travel options to support 20-minute neighbourhoods
- improve freight efficiency and increase the capacity of gateways while protecting urban amenity.

The Project is included in Plan Melbourne's Southern Region.

The Project would contribute to the direction and strategies of Plan Melbourne by delivering improved transport in Melbourne’s outer suburbs and allowing for the integration with other transport projects in the Southern Region.

(ii) *Kingston Green Wedge Plan 2012*

The Plan identifies the values and features of the Green Wedge, the preferred land uses, environmental and natural resources that should be protected, and the needs of the local community.

The need to manage interfaces with existing uses is particularly relevant for Project land adjacent to Braeside Park, the Dingley Village, Aspendale Gardens and the Waterways residential developments.

(iii) *Kingston Biodiversity Strategy 2018 -2023*

The Kingston Biodiversity Strategy 2018-2023 sets out goals and strategic objectives for protecting, preserving and improving biodiversity within Councils Natural Resource Areas (NRA). Mordialloc Creek Reserve is designated as a site of high conservation significance. These initiatives should be considered as part of any landscape treatments which accompany the proposed Mordialloc Bypass Project.

3.6 Ministerial Direction 19

Ministerial Direction 19 applies to the review of planning schemes, preparation of planning scheme amendments that may: (amongst other things) *“allow the use or development of land that could result in water, noise, air or land pollution impacts on the environment, amenity or human health, including as defined by State Environment Protection Policies”*.

The Ministerial Direction requires that the planning authority must seek the written views of the EPA and address the views of the EPA.

The IAC is satisfied that MRPV has met this requirement by seeking a submission from the EPA, receiving a written submission and responding to the issues raised in the EPA's submission.

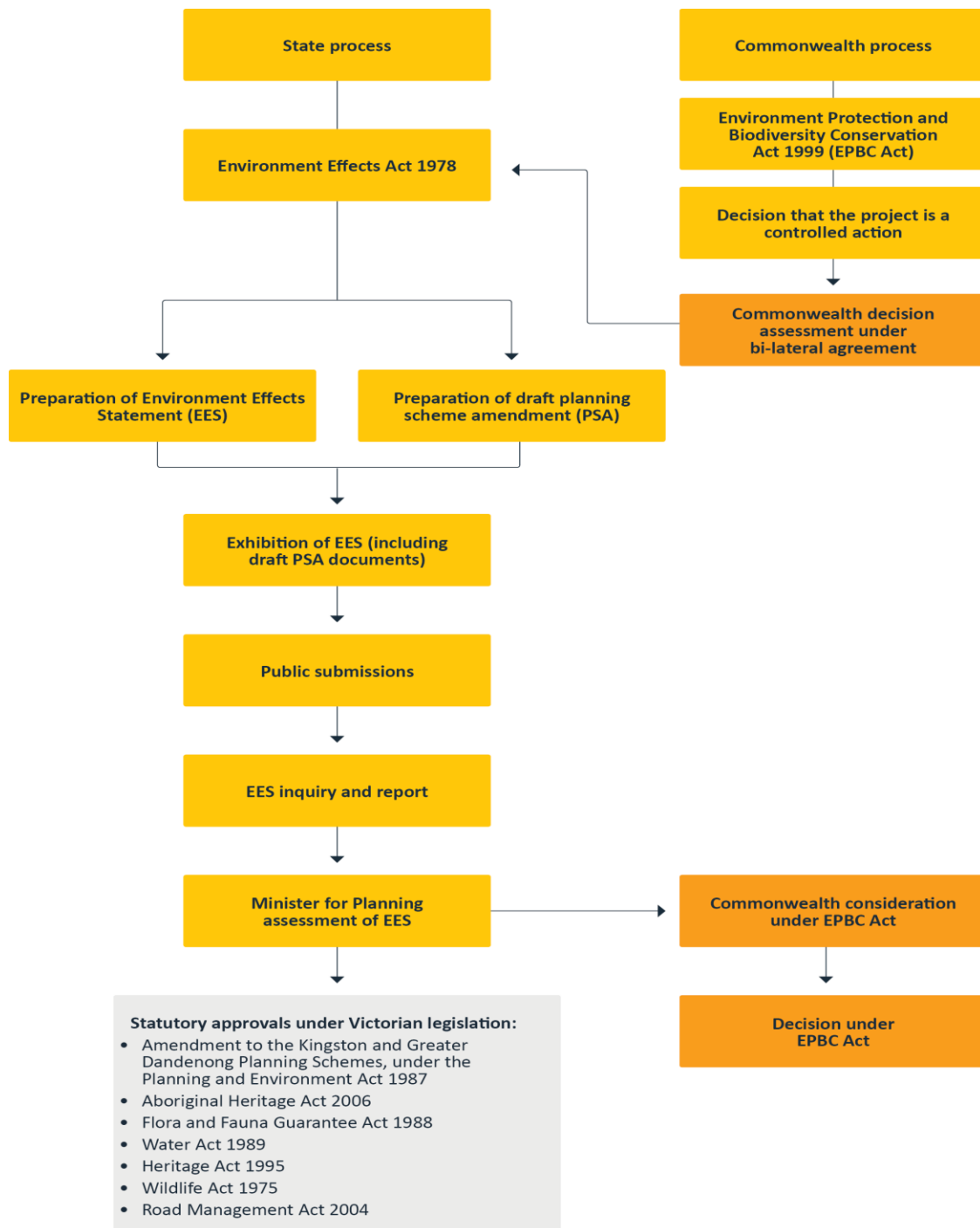
4 Environmental assessment framework

4.1 The EES process

The legislative framework for the Project is set out in section 3.1 of this report.

The EES process is set out in Figure 1, which is extracted from Chapter 3 (page 3-3) of the EES Main Document.

Figure 1 EES process and legislative framework



4.2 Scoping requirements

As part of the EES process, scoping requirements are issued by the Minister for Planning to guide the preparation of the EES. The Minister for Planning issued scoping requirements for the EES in May 2018. The scoping requirements set out the matters to be investigated and documented by the proponent within its EES.

The Scoping Requirements:

- detail the matters to be addressed in the EES
- contain evaluation objectives for the assessment of significant environmental effects
- require the EES to canvass an environmental management approach to ensure any environmental effects are identified and avoided, minimised or mitigated.

Section 3 of the scoping requirements details the matters to be addressed in the EES, and Section 4 of the scoping requirements requires the EES to identify any potential adverse environmental effects of the Project, and sets out draft evaluation objectives and key issues to be addressed in relation to:

- Biodiversity
- Water, catchment values and hydrology
- Land contamination and acid sulfate soils
- Cultural heritage
- Amenity and environmental quality
- Social, land use and infrastructure.

4.3 EES assessment approach

The environmental studies undertaken by the MRPV and specialists for the Mordialloc Bypass EES included:

- Existing conditions assessment
- Environmental Risk Assessment (including residual risks)
- Impact assessment and mitigation (including residual impacts)
- Cumulative impact assessment and mitigation
- Development of the Environmental Management Framework including Environmental Performance Requirements (EPRs).

Environmental risk assessment

As required by the EES Scoping Requirements, a risk-based approach was adopted during the EES studies, and an integrated risk and impact assessment process underpinned each specialist study. The Environmental risk assessment (ERA) process covered risks associated with all Project phases, including the design phase, construction and operations/maintenance phase of the Project.

The EES describes the purpose of the ERA was to provide a systematic approach to identifying and assessing all environmental risks as a result of the Project, including cultural heritage, social, health and economic aspects. Through the ERA process, risks were identified, analysed and evaluated. Where appropriate, Project-specific management and mitigation measures were developed to minimise the level of risk to meet Project objectives.

4.4 Content of the EES

The EES responds to the scoping requirements using the structure shown in Tables 1, 2 and 3.

Table 1 EES Chapter structure

Chapter	Chapter summary
1 Introduction	Describes the Project, its proponent, objectives and EES structure.
2 Project rationale and benefits	Outlines the previous studies and context (transport, historical, social and economic) for the Project.
3 Legislative framework and approval requirements	Describes the approvals framework and legislation relevant to the Project.
4 EES assessment framework and approach	Describes the methodology used to prepare this EES including environmental risk assessment and the scope of specialist studies.
5 Project alternatives	Describes the Project alternatives that have been considered, and the process followed to develop the reference design.
6 Project description	Outlines the proposed Project and associated construction and operation.
7 Consultation and stakeholder engagement	Describes key stakeholders in the Project, the consultation undertaken by VicRoads and MRPA, and major issues identified by stakeholders and the community.
8 Traffic and transport 9 Land use and planning 10 Biodiversity 11 Landscape and visual effects 12 Noise and vibration effects 13 Air quality and greenhouse gas 14 Aboriginal cultural heritage 15 Historical cultural heritage 16 Surface water and hydrology 17 Groundwater 18 Soils and contaminated land 19 Social effects 20 Economic effects	Chapters 8 to 20 describe the discipline-specific environments that the Project operates within, and the potential risks and impacts of the Project. It explores mitigation and management measures for these risks, and the residual environmental effects of the Project.
21 Cumulative impacts	Describes the potential cumulative effects of the Project (noise, air quality, visual amenity) at sensitive receivers, along with the cumulative impacts from other projects in the area.
22 Matters of National Environmental Significance	Assesses the Project's potential to impact Matters of National Environmental Significance, as defined within the EPBC Act.
23 Environmental management framework	Outlines the environmental management framework and environmental performance requirements. Outlines the monitoring programs, auditing and reporting.
24 Conclusion	Presents the conclusions of the EES.

Table 2 Attachments to the EES

Attachment	Title	Attachment summary
I	Environmental risk assessment report	A detailed report containing an assessment of all environmental risks associated with the planning, construction and operation of the Project.
II	Draft planning scheme amendment	Includes a copy of the draft Incorporated Document, Explanatory Report, maps and other documents proposed to be lodged, subject to assessment and approval of the Project.
III	Maps and figures	Large versions of key maps and figures found within this EES main document and supporting documents.
IV	Engagement report	Provides a summary of the feedback captured about the concept design between August and October 2017.

Table 3 Specialist studies used to prepare the main EES report

Appendix	Study	Author	EES chapter
Appendix A	Transport impact assessment	WSP	Chapter 8
Appendix B	Land use and planning impact assessment	WSP	Chapter 9
Appendix C	Flora and fauna impact assessment	WSP	Chapter 10
Appendix D	Landscape and visual impact assessment	Aspect	Chapter 11
Appendix E	Noise and vibration impact assessment	WSP	Chapter 12
Appendix F	Air quality impact assessment	Ian Wallis Consulting Environmental Engineers	Chapter 13
Appendix G	Greenhouse gas impact assessment	WSP	Chapter 13
Appendix H	Aboriginal cultural heritage impact assessment	Archaeology at Tardis	Chapter 14
Appendix I	Historical heritage impact assessment	Andrew Long and Assoc	Chapter 15
Appendix J	Surface water impact assessment	WSP	Chapter 16
Appendix K	Groundwater impact assessment	WSP	Chapter 17
Appendix L	Contaminated land impact assessment	WSP	Chapter 18
Appendix M	Social impact assessment	WSP	Chapter 19
Appendix N	Economic impact assessment	Essential Economics	Chapter 20
Appendix O	Preliminary tree assessment	C&R Ryder Consulting	Chapter 10, 11

The specialist studies in the appendices in particular provided a high level of detail that the IAC found very useful in preparing its report and drawing conclusions about the assessment.

4.5 Environmental Management Framework (EMF)

The planning approvals required for the Project are implemented through the Incorporated Document (introduced through draft Amendment GC107 to the Kingston and Greater Dandenong Planning Schemes GC107, which was exhibited with the EES). The Incorporated Document provides the necessary approvals for the Project to proceed provided that the Project is designed, constructed and operated in accordance with the EMF and, in particular, the EPRs approved by the Minister for Planning.

The Minister for Planning is the Responsible Authority for the Incorporated Document and is therefore responsible for the implementation and enforcement of the requirements set out in the Incorporated Document, including the EMF.

The EMF provides the structure for managing the Project to achieve compliance with relevant legislation and policy and encourages continual improvement in environmental performance. The EMF includes mechanisms for establishing and assessing performance against the Projects' environmental commitments; developing and implementing appropriate plans and procedures for all phases of the Projects; and monitoring, auditing, reviewing and reporting performance.

An EMF is a recent approach to identifying how the environmental impacts of large government projects will be managed, and has been employed for the East West Link, Melbourne Metro Rail, West Gate Tunnel, Victorian Desalination Plant, Edithvale and Bonbeach Level Crossing Removal projects and Peninsula Link.

The key elements of the EMF are as follows:

- Purpose of the EMF
- Contract Structure
- Governance Framework
- Roles and Responsibilities
- Statutory Approvals and consents
- Environmental Management plans and Documentation
- Consultation, Stakeholder Engagement and Communications
- Performance Management
- EPRs.

The EPRs are set out in section 23.12 of the EMF. The EPRs cover a range of responses to risks identified in the EES. The EMF, the EPRs and the IAC proposed changes are discussed further in Chapter 18 of this report.

Many EPRs require consultation to be undertaken with relevant stakeholders. The EPRs are performance based and generally require the preparation of a plan or design that meets certain outcomes.

PART B ENVIRONMENTAL EFFECTS ASSESSMENT

5 EES assessment overview

5.1 Potential impacts of the Project as identified in the EES

Chapter 24 of the EES summarises the assessment under the headings shown in Table 4 below. The key findings of the EES assessment are discussed in more detail at the start of each of the relevant assessment Chapters 6 to 20.

Table 4 Summary of EES assessment of environmental effects

Effects on traffic and transport

The Project will result in improved travel times, enhanced safety and improved road network capacity.

Some surrounding roads such as Wells Road, Boundary Road and White Street will experience significant reductions in traffic. Sections of some arterial roads connecting to the freeway will experience increased traffic and will require upgrade works in conjunction with the Project.

Active transport will be promoted through a shared use path along the Project corridor.

The freeway will help support future land use development and employment clusters in the area, including Moorabbin Airport, and indirectly improve access to the Monash National Employment and Innovation Cluster.

Effects on biodiversity

The total amount of native vegetation to be removed is 12.10 hectares, including up to 24 large trees due to the Project works. This amount also includes native vegetation counted as lost due to shading underneath the bridge at Mordialloc Creek/Waterways Wetlands.

No significant flora species are expected to be substantially affected by the Project.

A total of 210 fauna species have been recorded at the site, including 41 species of conservation significance, 13 of which are EPBC Act listed migratory birds. Habitat loss, mortality and injury of wildlife from vehicles collisions, reduced habitat connectivity, habitat degradation from increased disturbance and physical changes are considered the main impacts from the Project.

Construction impacts will be managed through the application of a CEMP and additional controls including application of no-go zones, barriers to reduce noise and light spill from construction activities and specific measures such as invasive weed management to be adopted by the contractor.

There is limited scope to move the road within the Project area, and there are no alternative corridor options available. Minimisation strategies and mitigation measures to reduce impacts have been developed, including refinement of the Project footprint and revegetation under the bridge at Waterways Wetlands.

The four main operational phase impacts that require mitigation are: reduced connectivity, vehicle lighting, road noise and wildlife mortality due to vehicle collisions.

The Project may lead to changes in ecological character of environments in and adjacent to the Project area. These changes, mainly from noise and light impacts, may include changes in species composition and loss of species due to fragmentation and reduction in habitat quality.

Residual impacts upon threatened and migratory fauna are unlikely to be significant with the incorporation of sufficient mitigation (e.g. multi-function fauna barriers), and implementation of the recommended EPRs.

Effects on the water environment

Surface water

During construction, there is the potential for short-term flooding due to the presence of temporary works within the floodplain, reducing flood conveyance or floodplain storage. Erosion causing sediment and pollution to water bodies is also a risk during construction.

Construction phase risks were assessed as low with the implementation of standard construction environmental management practices.

The initial risks to flooding and water quality during road operations were assessed as medium.

A spill risk assessment was conducted for the operation phase to identify risks associated with spills of fuels and oils during operation of the road to impact on waterway health. It was found that the highest risk areas were near outfalls which drain to the Edithvale Wetlands, Waterways Wetlands and Woodlands Industrial Estate Wetlands. These risks would be managed through provision of sufficient spill containment.

The EES concluded that, through the implementation of the EPRs, the Project would have minimal impact on surface water, and floodplain environments and minimal effects on water quality and the beneficial uses under SEPP (Waters of Victoria), including the ecological character of the Edithvale-Seaford Wetlands Ramsar site.

Groundwater

The Project is proposed to be predominately built above the existing surface level without the need for major excavations.

The risk assessment found that the identified potential impacts on groundwater presented a negligible to low risk. This includes potential water quality impacts from geotechnical investigations, fuel and chemical spills, disturbance of existing contaminated soils and mobilisation of contaminated groundwater and impacts on the water quality of wetlands due to groundwater regime changes from construction activities.

Embankment structures along the alignment and at interchanges have the potential to compress soils and constrict groundwater flows in underlying aquifers. However, the impact assessment determined that construction of the Project would result in minimal impact to groundwater caused by the embankment structures.

Effects on land contamination

Potential contaminated land and ASS impacts resulting from the Project include:

- disturbance handling, storage and disposal of potential (unknown) and actual ASS, contaminated soil and groundwater during the construction and operation phases resulting in environmental or health impacts
- management of soil repositories (including PFAS contaminated wastes), landfill waste, leachate and landfill gas during construction and operation phases resulting in environmental or health impacts
- changes to groundwater migration flow paths and environmental impact on adjacent and nearby wetlands, including the Edithvale Wetlands, and movement of contaminants resulting in environmental or health impacts
- fuel, chemical and waste water spills during the construction and operation phase resulting in environmental or health impacts.

EPRs have been developed to reduce the residual risks to acceptable levels.

In order to meet these requirements, the former landfill in the northern portion of the site will require specific design treatments to ensure that landfill gas impacts are appropriately managed in accordance with EPA guidelines.

Effects on cultural heritage

Fieldwork investigations found two new Aboriginal cultural heritage sites containing low-density stone artefact distributions. Due to previous site disturbance, it is unlikely that there are large numbers of additional stone artefacts in the Project area that would be impacted by the Project, therefore resulting in a low overall impact on Aboriginal Cultural Heritage. No scarred, mortuary or birthing trees were identified within the Project area.

A draft Cultural Heritage Management Plan has been prepared.

At the time of publication of the EES, there were no registered historical heritage places within the study area. However, a proposed amendment to the Kingston Planning Scheme Heritage Overlay may potentially move the extent of Heritage Overlay 104 (HO104) – Braeside Park Precinct into the Project area. This is a matter to be further resolved with the City of Kingston and Parks Victoria.

Effects on amenityVisual amenity

The impact assessment identified that there will be some impact to the landscape character surrounding the Project. The medium to high landscape risks primarily relate to the visual intrusion of the Project structure on the existing landscape, provision of connectivity, adequate surveillance and vegetation or wetland loss.

Mitigation measures for landscape and visual impacts include: design to minimise visual effects e.g. barriers and planting, crime prevention design audits, integration of additional publicly accessible community infrastructure and amenity, provide pedestrian and cycle over or underpasses at regular intervals to enhance connections, and minimise removal of existing vegetation.

Construction impacts can be mitigated through the CEMP. The installation of hoardings in appropriate locations during construction would minimise visual impacts upon sensitive sites and residential areas.

Noise and vibration

The assessment found potential noise and vibration risks of construction and operation phase impacts to residential areas in proximity to the Project. Construction noise and vibration targets have been developed and restrictions will be placed on construction work hours to minimise disruption.

The noise impact assessment for road operations predicted noise levels at sensitive receptors for the future design year of 2031. Modelling results for the impact assessment indicated that Project Objective Noise Limits can be achieved at all identified receptors through the design and implementation of noise barriers along the alignment.

Air quality

Dust from construction activities is predicted to be greatest during roadway and embankment formation and laying of the pavement base. Recommended standard management measures would be implemented to limit the extent of dust and likelihood of adverse effects on sensitive receptors. This would manage the construction dust to a level of minor impact.

The operational impacts on air quality are predicted to be negligible and within relevant design criteria for carbon monoxide and particulate matter (PM10 and PM2.5). Predicted levels of nitrogen dioxide beyond 20 metres from the roadway will be below the one hour design criterion with the application of standard controls.

Effects on communitySocial

The social impact assessment found that the most significant impacts of the Project on local communities would occur during the construction phase (approximately 24 months) and are therefore temporary in nature.

Social impacts during the operational phase are anticipated to be positive with the Project providing improved access and connectivity through reduced traffic volumes, reduced heavy vehicles on local roads and improved pedestrian and cycling routes.

Land use

Strategically, the Project would contribute to the direction and strategies of Plan Melbourne by delivering improved transport in one of greater Melbourne's fastest growing areas. At a local level, the reservation for the Project between the Dingley Bypass and Thames Promenade is detailed in the Kingston Planning Scheme and the Greater Dandenong Planning Scheme, as such it has avoided redevelopment and remains largely greenfield.

Economic

The economic benefits of the Project will be far reaching, and it will act as a catalyst for growth in the south-eastern suburbs. Improving east-west and north-south connectivity and addressing the capacity constraints in the corridor will improve accessibility between National Employment and Innovation Clusters, industrial areas and residential areas in the south-east.

Potential impacts of land acquisition and access changes near Woodlands Drive have now been avoided with the proposed changed access arrangement (see section 6.4.3).

5.2 Inquiry approach to assessment

The IAC has considered the findings of the EES, along with information from technical reports and submissions and evidence provided to it, and has presented its assessment in Part B of this report under the following headings:

- Traffic and transport
- Land use and planning
- Biodiversity
- Landscape, urban design and visual impacts
- Noise and vibration effects
- Air quality and greenhouse gas
- Historic and Aboriginal cultural heritage
- Surface water
- Groundwater
- Soils and contaminated land
- Social impacts, economic impacts and access issues
- Cumulative impacts
- Environmental Management Framework
- Integrated assessment.

Where relevant, construction impacts are discussed under each subject area rather than in a standalone chapter.

The general approach adopted is to describe the potential risks, analyse the EES response and review the monitoring and mitigation regime proposed for each risk.

6 Traffic and transport

6.1 Background

Traffic and transport are dealt with in Chapter 8 of the EES and in Appendix A *Mordialloc Bypass Transport Impact Assessment*, WSP September 2018 (TIA).

The draft evaluation objective in the Scoping Requirements in relation to traffic and transport is:

To provide for an effective connection between the Mornington Peninsula Freeway and the Dingley Bypass; to improve travel efficiency, road safety, and network capacity; as well as improve amenity and local transport networks in the Aspendale/Dingley area.

The Traffic Impact Assessment considered the construction and operation impacts of the Project on:

- access as a result of induced demand by the Project compared to existing conditions
- the road network, considering forecast traffic demand, performance and safety
- the ability of the Project to support the intended network road use classifications
- the effectiveness of transport network integration with public transport and shared use paths
- potential construction impacts on safety and network operations.

The Assessment identified the key constraints of the current network and the key benefits of the Project. It also identified the key risks and impacts for the construction and operation phases of the Project on the road network and road safety.

The EES concluded that the Project will mostly result in positive outcomes for transport, including faster travel times and improved safety outcomes. There will be localised impacts, including higher traffic volumes on some surrounding roads. Additional works to upgrade affected roads such as Centre Dandenong Road are proposed as part of the Project to mitigate local impacts.

EPRs have been proposed to ensure the risk of adverse traffic and transport impacts during construction and operation are managed appropriately.

6.2 The issues and risks

The Traffic Impact Assessment reviewed 'primary' and 'cumulative' risks associated with the operation and construction of the Project.

The following risks were assessed as 'Medium':

- Project increases the likelihood of crashes at shared use path crossing locations.
- Project increases the likelihood of crashes within the network with the introduction of new intersections.
- Cumulative changes in traffic conditions from concurrent projects have negative impacts on road users during construction and operation.
- Construction works reduce capacity of the network and impacts travel time for general traffic, freight and public transport vehicles.

- Construction works impact on the safety and operation of pedestrian and cycling movements.

Other operational risks relating to induced traffic and inadequate network capacity were assessed as 'Low' risk based on the traffic modelling work done as part of the Traffic Impact Assessment.

Submitters raised concerns in relation to:

- the accuracy of traffic modelling
- the capacity of the Project design to achieve Project objectives
- the impact of the Project on surrounding roads
- local access concerns, particularly Woodlands Drive
- the most appropriate shared user path network to provide pedestrian and cycling access along and across the freeway.

The IAC received a presentation on the Project design and construction approach from Mr Kollmorgen of MRPV and was presented with expert traffic and transport evidence from the following:

- Mr Peter Kelly of WSP for MRPV
- Dr John Stone for RAMF (broad transport planning only).

6.3 Traffic modelling

(i) Modelling undertaken as part of the EES

The EES assessment of traffic impacts involved strategic transport modelling using the Victorian Integrated Transport Model (VITM). The model was used to assess the Project's potential to change travel-demand statistics, traffic volumes and travel times.

VITM models freight and transport movements, and provides an analytical tool to forecast travel and understand alternate travel in response to various transport and land use planning scenarios.

VITM provides a platform to assess impacts of key transport projects on the wider network. It has been used to assess the design of key elements of the Project including intersection design and recommend mitigation measures.

(ii) Issues

The issues are:

- Is the modelling fit for purpose?
- Does the modelling adequately allow for induced demand?
- Can the modelling be relied upon to support the claimed travel time savings and other benefits of the Project?

(iii) Evidence and submissions

Dr Stone gave evidence for the RAMF that, in his opinion, the traffic modelling undertaken was *"typical of the selective and incomplete analyses used to claim long term travel time savings and congestion relief for similar road-capacity expansion projects in suburban Melbourne over many years"*. Dr Stone did not offer any specific detail on how the modelling was flawed. He stated that the claims of travel time savings were overstated and

that any travel time savings on other projects have been short lived. He did not provide any further detail on the basis for these claims.

Mr Kelly made the following comments about VITM¹⁰:

The model is a powerful strategic planning tool commonly used in Victoria to assist in the planning of road and public transport infrastructure, particularly for comparing the likely impacts of scenarios under different land use and/or transport network assumptions.

VITM is considered a suitable tool for this Project, which requires transport modelling at the strategic level to inform assessment of different road network options.

It should be noted however, that any demand forecast is subject to uncertainties. Inevitably, some assumptions (e.g. land use, transport network) used to develop the forecasts will not be realized, and unanticipated events/circumstances may occur. No form of assurance can be provided that the reported forecasts will be achieved, as the actual outcomes could vary from those forecast.

The VITM Traffic Forecasting Report (EES TIA Appendix A) notes that the version of VITM used had previously undergone an extensive validation process, so no further model enhancements were made for this Project. However, a series of checks and refinements were carried out for the Project area to ensure the model was suitable for project testing, including an extensive review of the road network to ensure it was accurately represented the 2016 model. Land use in 2016 and all future years, as well as transport networks for the Base Cases in all future years, were also appropriately updated based on the latest reference cases.

Turning movement volumes and other volumes used for SIDRA analysis at intersections or microsimulation modelling were based primarily on the outputs of the VITM model, and enhanced with existing data where possible.

The methodology is based on industry guidelines, and I am not aware of any errors or omissions in the modelling undertaken.

In summary, Mr Kelly's evidence was that the modelling did appropriately allow for induced demand and was sufficiently accurate for the purposes it was used.

MRPV, in its closing submission submitted that the modelling is satisfactory and that "*no real doubt has been cast upon the transport modelling*". MRPV noted Dr Stone's criticisms but noted that the issues were not put to Mr Kelly under cross examination.

MRPV submitted that, in any event, the calculation of travel time savings is only one element of the modelling process and, even if inaccurate, such inaccuracy would not invalidate the broader modelling results which indicate that, in the absence of the Project, roads throughout the Project area and surrounds will continue to experience significant traffic growth.

(iv) Discussion and conclusion

The IAC accepts that the use of the VITM, appropriately validated and updated as it has been in this case, is a valid tool for traffic modelling for projects of this nature. The outputs of the model have been used to test network options against the base case, conduct SIDRA analysis of key intersection designs and develop mitigation plans.

¹⁰ Mr Kelly's evidence p19, 20

The IAC does not believe that the doubts raised by RAMF and Dr Stone are valid, and no clear evidence or alternative modelling has been produced that raises any credible concerns about the veracity of the modelling or its outputs.

The IAC has done its own review of the approach taken in the forecasting report and subsequent analysis and endorses the approach. The approach is similar to that taken in other major road projects.

The IAC concludes that the traffic modelling undertaken for the EES can be relied upon.

6.4 Project response

The IAC has reviewed the Project response to transport network and traffic issues under four headings:

- Freeway design configuration
- Surrounding road network
- Woodlands Drive
- Shared paths.

6.4.1 Freeway design configuration

(i) Issues

The Project is proposed as a four lane (two lane each way) freeway standard road with interchange configurations as follows:

- Dingley Bypass – at grade signalised intersection
- Old Dandenong Road - overpass with no connection to Old Dandenong Road
- Centre Dandenong Road – overpass with south facing ramps
- Lower Dandenong Road – overpass with full diamond interchange
- Governor Road – overpass with full diamond interchange
- Springvale Road - overpass with full diamond interchange
- Thames Promenade – overpass with the addition of north facing ramps to make it a full diamond interchange.

Submitters raised several issues about the appropriateness of the proposed interchanges.

(ii) Evidence and submissions

Kingston Council submitted that it supported the proposed interchange configurations, with the exception of Dingley Bypass. Other submitters made submissions in relation to specific interchanges, and these are dealt with below.

Dingley Bypass

Council submitted that the crossing of Dingley Bypass for pedestrians, cyclists and horses provides an important link between the Chain of Parks to the north and the shared user path along the freeway corridor to the south. In earlier submissions Council submitted that this would be best achieved by a pedestrian underpass or overpass over Dingley Bypass. In closing submissions, however, Council proposed that the Dingley Bypass be constructed as an overpass to allow at grade crossing of the Bypass for pedestrians, cyclists, horses and wildlife.

Council submitted that the at grade crossing of Dingley Bypass as proposed in the Project is not a satisfactory response.

The Aspendale Gardens Residents Association (AGRA) submitted that the intersection of the freeway with the Dingley Bypass should be a flyover from day one to avoid delays and support an upgrade of the Dingley Bypass to a freeway standard in the future.

Mr Kelly gave evidence that he did not support a grade separated interchange at the Dingley Bypass, given the substantial cost and construction difficulties it presented. He gave evidence that SIDRA assessment indicated the performance of a signalised intersection was sufficient to cater for the 2031 anticipated demand.

MRPV submitted that, on the evidence, there is no basis to recommend that a grade separated interchange be included at this location as part of this Project.

Old Dandenong Road

The option of truncating Old Dandenong Road on either side of the freeway was examined in the development of the Project. The proposed configuration of an overpass over Old Dandenong Road with no connection to the freeway was adopted to provide continued local access along Old Dandenong Road. This option is not opposed by any submitters.

Centre Dandenong Road

AGRA strongly supported the addition of northern ramps at the Centre Dandenong Road interchange in order to assist heavy vehicles to access Moorabbin Airport from Dingley Bypass.

The TIA states the main reason for not including the north facing ramps at Centre Dandenong Road is that the existing road network will provide a more direct and intuitive route for traffic that would otherwise use north facing ramps. That is: traffic from the north (Dingley Bypass or Boundary Road) bound for Moorabbin Airport or Dingley would likely use Boundary Road or Tootal Road to access Centre Dandenong Road in preference to getting on and off the freeway if there were north bound ramps at Centre Dandenong Road.

Mr Kelly, in his evidence, agreed with the conclusion that north facing ramps are therefore unnecessary.

Thames Promenade

Northern ramps were proposed to be added to the Thames Promenade interchange in response to early Project consultation. The ramps will provide much improved direct access to Patterson Lakes. The addition of the ramps was not opposed by any submitters, although there are some mitigation works required to address the closer proximity of the ramps and proposed additional freeway lane to residences.

(iii) Discussion and conclusions

Dingley Bypass

The IAC was not convinced of the need for a grade separated interchange at the Dingley Bypass. Based on the SIDRA analysis, an at grade intersection can operate at a satisfactory level of service well into the future. The IAC accepts the submission made by MRPV and the evidence of Mr Kelly that the additional cost is not justified at this time. The option of a future upgrade is, in any case, retained.

Centre Dandenong Road

The IAC agrees with the logic presented in the TIA that north bound ramps at Centre Dandenong Road are not required.

Thames Promenade

The addition of northern ramps at Thames Promenade is supported.

6.4.2 Surrounding road network

(i) Issues

Submitters raised concerns about the impact of the Project on traffic in the surrounding road network. Roads mentioned in submissions included:

- Mornington Peninsula Freeway
- Centre Dandenong Road
- Lower Dandenong Road
- Governor Road
- Thames Promenade
- South Road
- local roads including Tootal Road, White Street, Keys Road, Howard Road.

(ii) Evidence and submissions

Several submitters including the Residents Against Mordialloc Freeway and the Kingston Residents Association made assertions that the Project would result in increased traffic on local streets. These assertions were not supported by any evidence and are contrary to the results of the traffic modelling in the Project area and the expert evidence of Mr Kelly.

The IAC has examined the traffic modelling, the Traffic Impact Assessment report, evidence and submissions for the affected surrounding road network.

Figure 2 shows the difference in traffic volumes with and without the freeway in 2031. The Figure shows light vehicles only, but the heavy vehicle projections are similar.

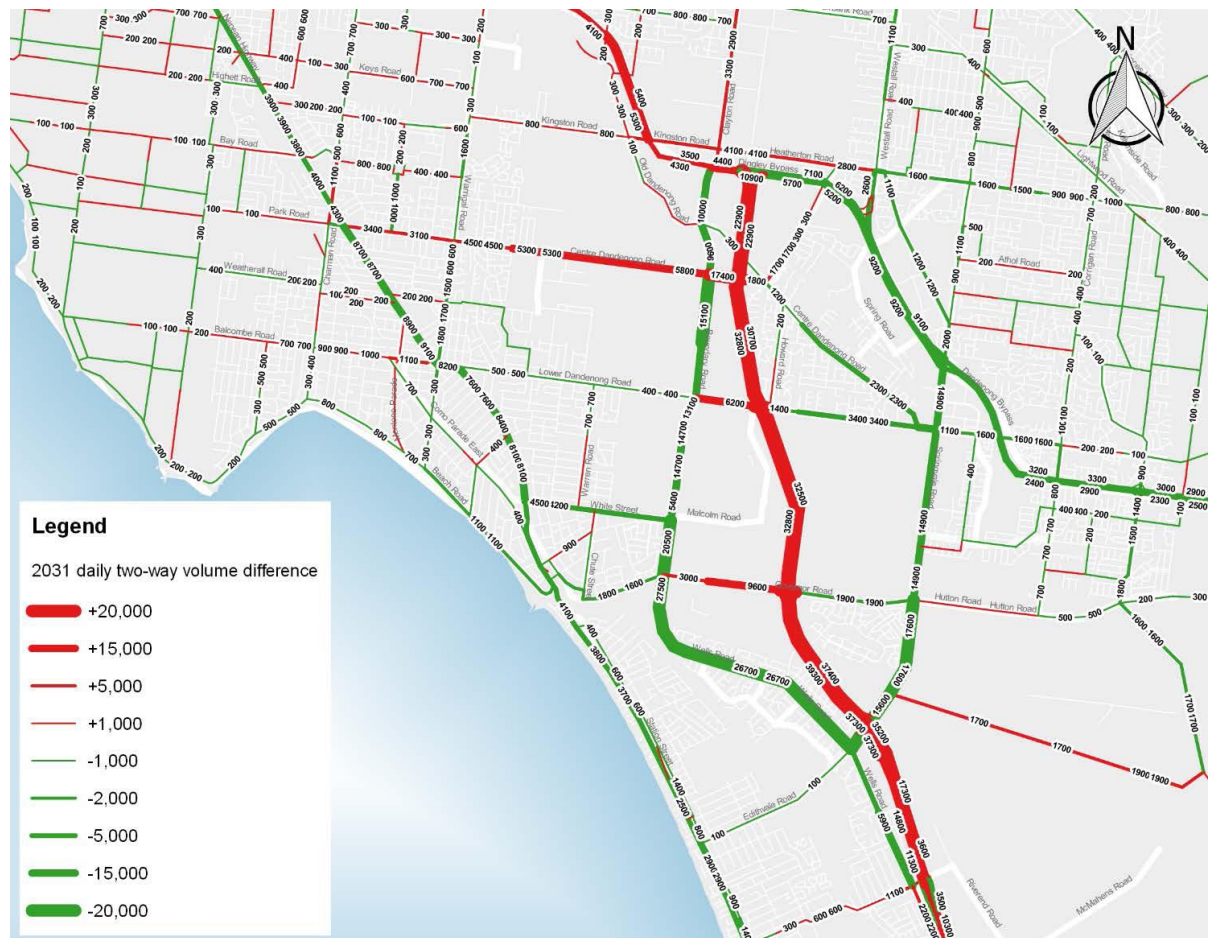
The TIA summarised key traffic volume changes driven by the Project as follows¹¹:

- a significant decrease in daily traffic volume, which equates to more than 70 percent to 75 percent, is anticipated along Wells Road, west of Springvale Road in the arterial road and freeway configurations, respectively
- a significant decrease in daily traffic volume of around 60 percent is anticipated along Boundary Road, south of Governor Road for both configurations
- a decrease in daily traffic volume along Springvale Road, north of Mornington Peninsula Freeway, of 15 percent and 35 percent for the arterial road and freeway configurations, respectively
- as a result of the proposed Old Dandenong Road truncation under the arterial road configuration, the anticipated daily volume is expected to be significantly reduced

¹¹ Traffic Impact Assessment (EES Appendix A) p79, 80

- daily traffic volume is estimated to increase along Mornington Peninsula Freeway, east of Springvale Road, by more than 40 percent in the arterial road configuration and by more than 60 percent in the freeway configuration
- daily traffic volume is estimated to double along Centre Dandenong Road, west of Mordialloc Bypass. The impacts of the arterial road configuration are expected be even greater (228 percent) due to the full northbound and southbound access at Mordialloc Bypass
- daily traffic volume is estimated to increase along Governor Road, west of Mordialloc Bypass, by more than 50 percent in the freeway configuration and nearly 90 percent in the arterial road configuration.

Figure 2 2031 two-way daily light vehicle volume difference plot (2031 freeway configuration minus 2031 Base Case)¹²



Mornington Peninsula Freeway

The TIA notes, at page 80, that daily traffic volume is estimated to increase along Mornington Peninsula Freeway, east of Springvale Road, by more than 40 percent in the arterial road configuration and by more than 60 percent in the freeway configuration.

Traffic modelling (microsimulation) identified that Mornington Peninsula Freeway between Thames Promenade and Springvale Road would become heavily congested with poor levels of service (Level of Service D) at projected 2031 traffic volumes if it remains as four lanes.

¹² Traffic Impact Assessment (EES Appendix A) p74 Figure 8.17

The TIA considered the benefits of providing an extra lane between Thames Promenade and Springvale Road, but the extra lane has not been included as part of the reference design.

Mr Kelly noted that this could be addressed as part of the Project under EPR T1 which states that the design must achieve acceptable operational performance. His evidence was that the freeway should be designed to meet or better Level of Service D.

Mr Kelly gave evidence that:

The assessment also indicated that an auxiliary lane between Thames Promenade and Springvale Road would enhance the resilience of the network by accommodating potential changes in traffic volume and pattern and is recommended to be considered by the Project.

Centre Dandenong Road

Several submissions raised concerns about the capacity of Centre Dandenong Road to cater for projected traffic increases. The TIA concluded that the traffic west of the freeway would double to 34,700 vehicles per day in 2031 with the freeway.

Mr Kelly noted that duplication of Centre Dandenong Road is proposed between Old Dandenong Road and Boundary Road (including upgraded Boundary Road intersection) as part of the Project. MRPV advised that Centre Dandenong Road is proposed to be upgraded west of Boundary Road as part of other planned works (outside the Project).

Mr Kelly's evidence was that the duplicated Centre Dandenong Road would cater for the predicted increase in traffic.

Thames Promenade

Mr Kelly gave evidence that his analysis of the Thames Promenade/Wells Road roundabout showed that it would be saturated by 2031 with a Level of Service of F (unsatisfactory). His analysis of a signalised intersection showed that if the roundabout was replaced by traffic signals acceptable levels of saturation could be achieved (0.88 AM, 0.90 PM). He recommended that the conversion to traffic signals be included as part of the Project.

MRPV indicated that it accepted this recommendation.

Governor Road

Several submissions raised concern about the capacity of Governor Road to accommodate future traffic increases once the freeway is open. Projected daily traffic increases of 54 percent are expected on Governor Road west of the Project.

Mr Kelly gave evidence that without further upgrade works Governor Road would be at capacity by 2031 with or without Project.

Mr Hronopoulos, on behalf of Transport for Victoria, advised the IAC that the government has committed to improvements to Governor Road. Any works will be undertaken as a separate project, not part of the Mordialloc Bypass Project.

South Road

Several submissions were concerned about the impact of the Project on South Road traffic. Projected daily traffic increases of 9.8 percent (west of Warrigal Road) and 13.1 percent (west of East Boundary Road) are forecast by 2031.

Mr Hronopoulos, on behalf of Transport for Victoria, advised the IAC that the government has committed to a \$30 million project to improve capacity and reduce delays along South Road. Mr Kelly gave evidence that the measures are likely to assist in improving operating conditions and mitigate the effect of increased traffic from the freeway.

Other local roads

The TIA notes that many local roads will benefit from reduced traffic as a result of the Project, including most notably Springvale Road, Wells Road, Governor Road east of the freeway, Nepean Highway, White Street, Boundary Road south of Lower Dandenong Road and Lower Dandenong Road west of Boundary Road.

The submission by Residents Against Mordialloc Freeway asserted that any spare capacity would be taken up by 'induced traffic' attracted to the less busy roads. No evidence was offered to support this claim.

In addition to the traffic increases on Mornington Peninsula Freeway, Centre Dandenong Road and Lower Dandenong Road discussed above, the TIA identified likely traffic increases on Wells Road north of Thames Promenade (AM peak only), Tootal Road south of Dingley Bypass, Westall Road north of Heatherton Road and Thames Promenade west of Wells Road.

Mr Kelly gave evidence that the projected traffic increases were not beyond the capacity of the road network. He noted that the most significant increases were on Tootal Road. He reviewed the capacity of Tootal Road and the Tootal Road/Centre Dandenong Road roundabout and concluded that the existing road and roundabout can cater for the projected increase in traffic to 2031.

(iii) Discussion and conclusions

The IAC supports Mr Kelly's recommendation for additional lanes on the Mornington Peninsula Freeway between Thames Promenade and Springvale Road. It appears from the assessment undertaken as part of the TIA that, if auxiliary lanes are not added in conjunction with the opening of the Mordialloc Bypass and addition of north bound ramps at Thames Promenade, this section of the Mornington Peninsula Freeway will be operating at an unsatisfactory level of service.

The IAC notes the proposed duplication of Centre Dandenong Road between Old Dandenong Road and Boundary Road proposed as part of the Project. The IAC agrees that this should be an essential part of the Project.

The IAC notes that commitments have been made to increasing the capacity of Governor Road, Centre Dandenong Road west of Boundary Road and South Road as part of other committed projects (outside the scope of the Mordialloc Bypass Project). The IAC believes that these works should be completed as a condition of approval of the Project. Without these associated works, the Project will not be effective in delivering stated objectives.

6.4.3 Woodlands Drive

(i) Issues

What is the most appropriate road and intersection configuration for the north bound off ramp at Lower Dandenong Road and Woodlands Drive?

The exhibited form of the EES showed the north bound off ramp connecting directly with Lower Dandenong Road, Woodlands Drive truncated and traffic from the Woodlands industrial estate diverted via Tarnard Drive and Bell Grove to a new intersection with Lower Dandenong Road as shown in Figure 3.

Figure 3 Woodlands Drive truncated as proposed in exhibited EES



(ii) Evidence and submissions

Several business owners in Tarnard Drive and Woodlands Drive raised concerns about the impact on their businesses if Woodlands Drive is truncated and traffic diverted via Tarnard Drive and Bell Grove. They raised concerns about impacts on access to businesses, opportunities for parking and unloading and safety concerns.

In response to submissions and discussions with property owners, MRPV explored other options that retained the Woodlands Drive direct connection to Lower Dandenong Road. Mr Wain (Submission 38) raised concerns about the impact of the revised layout on access to 21-29 Woodlands Drive. The preferred option was further refined during the course of the Hearing in response to Mr Wain's concerns and the preferred arrangement is as shown in Figure 4.

Kingston Council submitted that it preferred the revised layout. Mr Wain and other submitters contacted by MRPV also indicated their agreement to the revised layout.

Figure 4 Revised Woodland Drive and northbound exit ramp layout**(iii) Discussion and conclusions**

The issues raised in submissions are now resolved with the revised layout. MRPV and other parties are to be congratulated for the collaborative manner in which this was resolved.

The IAC supports the revised layout as shown in Figure 4.

6.4.4 Shared paths**(i) Issues**

The Project proposes a shared user pathway along the eastern side of the freeway alignment from Dingley Bypass to Waterways, then crossing to the west side from Waterways to Springvale Road. The Project proposes at-grade crossings for the shared user pathway at Dingley Bypass, Old Dandenong Road, Centre Dandenong Road, Lower Dandenong Road, Governor Road, Bowen Parkway and Springvale Road. The only connection across the freeway that is not at one of these roads is proposed to be at Braeside Park near Park Way.

Submissions and evidence raised several issues in relation to the extent and design of shared user pathways as discussed below.

(ii) Evidence and submissions

Council sought the following four changes to the shared user pathway:

- an underpass or overpass connection at the Dingley Bypass, from north to south on the eastern side
- a widened underpass (not less than 6 metres wide) from Park Way to Braeside Park

- an underpass connection at (approximately) Chadwick Reserve
- a boardwalk, south of Bowen Parkway, going east to west under the elevated carriageway at Waterways Estate, to meet the western SUP.

Dingley Bypass crossing

Kingston Council requested an overpass connection at the Dingley Bypass, from north to south, to support the long-term plan to connect the “Chain of Parks” in the Kingston City Council *Green Wedge Management Plan 2012*.

Council submitted that the introduction of the freeway does warrant the construction of an overpass *“albeit initial demand would only be from the Dingley Bypass SUP, with future demand coming from the Chain of Parks proposal.”* Council acknowledged that it could be argued that such a connection could be deferred until the Chain of Parks is implemented but argued that the connection is strategically important and should be constructed in the first stage of the freeway.

In response, MRPV submitted that providing a shared user pathway overpass at the Dingley Bypass *“had, at best, lukewarm support from Council’s own expert, Mr Biles”*.

Mr Biles gave evidence that although this proposed connection was a sound objective it was not a high priority.

Mr Kelly’s evidence was that the signalised crossing of Dingley Bypass was more appropriate than an overpass in this location. His evidence was that an underpass would not be a realistic option. It was his evidence that it would be expensive to construct, that further design work would be required to assess whether it could be delivered and that he was not aware of the number of pedestrians or cyclists that would use it.

MRPV submitted that the provision of the Project will not cause any loss of existing connectivity and an overpass is simply not necessary.

Braeside Park underpass

The location of the proposed freeway underpass at Braeside Park was agreed by all parties. The issue of the appropriate design of the underpass is discussed in Chapter 9 under urban design issues.

Chadwick Reserve underpass

There is an existing informal pedestrian track between Redwood Gardens Estate and Chadwick Reserve. The TIA noted at page 67 that:

The informal link between Redwood Gardens industrial area and Dingley Village shown in Figure 8.12 is not proposed to be retained. This link has not been incorporated into the designs because it is not a formal link and currently connects an industrial property car park on the western side to the Chadwick Reserve and the rear of residential properties on the eastern side.

Surveys of pedestrian and cyclists using the link were carried out as part of the preparation of the TIA. The survey¹³ indicated that:

¹³ 6:00 am and 9:00 pm from 30 January 2018 to 4 February 2018

- a maximum of 19 pedestrian movements was recorded on the weekdays
- a maximum of eight pedestrian movements was recorded on the weekend.

The TIA noted that, *“whilst the removal of this informal crossing will inconvenience some pedestrians, crossings are still possible approximately 800 metres to the north or south at Centre Dandenong Road and Lower Dandenong Road, respectively”*.

Council submitted that the connection is critical given that the SUP at this portion of the alignment is approximately 1.5 kilometres in length, without any points of access in between. Council showed the IAC aerial photographs over a period of time that shows that the informal pathway has been in use for many years.

Council submitted that the link provided an important connection between the residential area and Chadwick Reserve to the east and the employment area and commercial activities in Redwood Gardens to the west.

Ms Bauer gave evidence that the Chadwick Reserve underpass required further investigation to determine community benefits and visual impacts and that the provision of a pedestrian connection would be a good outcome if it could be achieved practically.

Ms Bisits recommended a connection between Chadwick Reserve and Redwood Industrial Estate.

The submission from the Office of the Victorian Government Architect supported further investigation of the link.

MRPV submitted that the evidence before the IAC is insufficient to establish a definite need for the underpass, or that it can be constructed in a manner that has acceptable visual, environmental and other impacts.

Mr Barlow, in his evidence, expressed concerns about the safety of an underpass in this location. Mr Kelly gave evidence that utilisation is *“considered low at this crossing point based on the surveys and a pedestrian underpass is unlikely to be justifiable”*.

MRPV noted that the land to the west of the connection proposed by Council is private land.

MRPV concluded that the connection ought to be rejected by the IAC as the evidence before the IAC is not sufficient to justify it and further design work would be required to assess whether it could or should be delivered.

Waterways boardwalk

Kingston Council requested the continuation of the shared user pathway as a boardwalk, south of Bowen Parkway, going east to west under the elevated carriageway at Waterways Estate, to meet the western side of the Project alignment.

Council submitted that a board walk is preferred for the following reasons:

- it would be a more direct connection without the ‘dog leg’ up Bowen Parkway
- it would bring users closer to the attractive wetland areas
- Mr Biles’ evidence was that there is an element of “compensation” to the more local users of the wetland.

Mr van der Ree and Mr Lloyd generally agreed in their evidence that construction of a boardwalk would not have a substantive ecological impact on the wetlands. Council

submitted that it was an opportunistic time to build a boardwalk given that the wetlands would be disturbed by the bridge construction anyway.

MRPV submitted that the proposal for a boardwalk in the vicinity of Bowen Parkway received little support from Ms Bauer. She acknowledged the potential for impacts upon the environment might mean the proposal was unacceptable. Mr Biles described the provision of the boardwalk as 'desirable' but stopped short of saying it should be provided.

Mr McCaffrey considered the provision of the boardwalk structure would have a further impact upon the ecological values of the Waterways Wetlands, both in terms of the construction techniques to provide the boardwalk, increased human activity in the area, and the additional shading, with no potential for light to filter through given its proximity to the water.

MRPV submitted that, for these reasons, the IAC should not recommend the EPRs or reference design be amended to require a boardwalk.

Springvale Road

Mr Kelly noted in his evidence that the shared pathway connection across the Springvale Road north-east slip lane on to the Mornington Peninsula Freeway was not controlled and could be potentially dangerous. He recommended that a pedestrian / bicycle crossing should be added across the Springvale Road north-east slip lane onto the Mornington Peninsula Freeway to provide a safe connection to Soden Road.

MRPV agreed that this was appropriate, and no other parties raised any objection.

(iii) Discussion and conclusion

Dingley Bypass crossing

The IAC acknowledges that pedestrian, cycling and possibly equestrian links between the Chain of Parks and the north-south shared user path are important, and will become more important in the future as the Chain of Parks is more fully developed. The IAC is not, however, convinced that there has been a strong case presented for an overpass in the short term. The IAC notes that there are six other at grade crossings of main roads along the length of the shared user path and is not convinced that making one of them grade separated is particularly helpful in improving the overall experience for shared pathway users.

Once the Chain of Parks is more developed the demand for north-south movement can be assessed and a future decision can be made about the nature of the Dingley Bypass crossing. In the meantime, an at grade crossing from north to south at the proposed traffic signals seems to be a safe and reasonable alternative.

Chadwick Reserve underpass

The IAC agrees with Council that a connection between Redwood Gardens and Chadwick Reserve is a 'nice to have' but is not convinced that there is a demonstrated need. The current pathway is an informal one, and there has not been any detailed analysis by Kingston City Council to establish the likely usage level of this connection. In addition, the MRPV explained that the informal path currently connects to the Redwoods Industrial Estate which is private property and continued access to this area could not be guaranteed in the future.

Waterways boardwalk

The IAC does not believe that a boardwalk at Bowen Parkway is warranted. The IAC accepts evidence from biodiversity experts that such a boardwalk may have additional impacts to the wetlands, both during construction but also bringing humans closer to these environments may directly affect bird behaviour. Adequate connectivity in this area is provided by Bowen Parkway (although the IAC agrees with Council that the existing shared pathway may need upgrading) and an additional connection is not required.

Springvale Road

The IAC agrees that a shared user pathway crossing should be added across the Springvale Road north-east slip lane on to the Mornington Peninsula Freeway to provide a safe connection to Soden Road.

6.5 Construction impacts

The TIA identifies, at page 98, traffic impacts that may be created from construction activities to include:

- Use of road infrastructure by construction vehicles to access construction site
- Temporary construction traffic management measures associated with road works during bypass construction.

While the TIA acknowledged that very large volumes of fill would be required for the construction of the freeway, access to the site is spread over a very large area and the impacts of construction traffic can likewise be dispersed. The TIA estimated construction vehicles rates of 12 heavy vehicles per hour on average spread over 6 arterial roads, equating to a maximum of 3 vehicles per hour on key roads¹⁴.

Several submissions expressed concern over construction impacts, mainly relating to construction vehicles on the road network.

Mr Kelly's evidence was that the anticipated level of construction impact is considered to be minimal due to the generally greenfield nature of the site, and the excellent site access via established declared roads, such as Centre Dandenong Road, Dingley Bypass and Springvale Road.

EPR T2 sets out that Transport Management Plans with very detailed requirements must be developed to minimise impacts during all stages of construction. EPR T2 includes requirements to consider cumulative impacts from other projects.

EPR T2 notes that the Transport Management Plan may restrict vehicles during the construction phase and EPR B4 notes that impacts on fauna during construction works are to be minimised through, amongst other things, restricting heavy construction vehicles along Edithvale Road.

¹⁴ Traffic Impact Assessment (EES Appendix A) section 8.6

6.6 Proposed EPRs

MRPV submitted that the freeway design has been informed by Austroads and VicRoads design standards in addition to VicRoads policies, the Environmental Management Framework and the Urban Design and Land Use Framework.

Three Transport EPRs are proposed:

- EPR T1 -requires the Project to be designed to appropriate performance standards
- EPR T2 – requires Transport Management Plans to minimise disruption to affected local land uses, traffic, on-road public transport, pedestrian and bicycle movements and existing public facilities during all stages of construction
- EPR T3 – requires vehicle and pedestrian access to maintained.

No changes were proposed to the transport EPRs during the course of the Hearing.

Following from Mr Kelly's evidence and questions from the IAC to Mr Kelly, the IAC makes a minor amendment to EPR T2 regarding construction times of between 7am and 7pm as well as prioritising the use of arterial roads during construction. There are no other changes to the Transport EPRs subject to the recommended design changes and associated works (summarised in the findings below) being implemented.

6.7 IAC findings

The IAC makes the following findings:

- Traffic modelling undertaken for the EES has been appropriately validated and tested and can be relied upon to test network options, conduct more detailed design analysis and develop mitigation options.
- The freeway interchange configuration proposed for the Project is supported, including the addition of north bound ramps at Thames Promenade.
- The Project is likely to have substantial net positive impacts on the surrounding local road network.
- The following works are essential to the proper functioning of the Mordialloc Bypass Project and should be included as part of the Project:
 - one additional lane in each direction on the Mornington Peninsula Freeway between Thames Promenade and Springvale Road
 - duplication of Centre Dandenong Road between Old Dandenong Road and Boundary Road, including the Boundary Road intersection
 - replace the Thames Promenade/Wells Road roundabout with traffic signals.
- The following associated works on the surrounding road network are essential to the proper functioning of the Mordialloc Bypass Project and should be undertaken in conjunction with the Project:
 - upgrade the capacity of Centre Dandenong Road west of Boundary Road
 - upgrade the capacity of Governor Road either side of the Mordialloc Bypass
 - upgrade the capacity of South Road between Warrigal Road and Nepean Highway
 - other local traffic improvements as required to address any unintended consequences of the Project.
- The IAC supports the modified layout proposed for Woodlands Drive and the freeway off ramp to Lower Dandenong Road as presented to the IAC and shown in Figure 4 of this report.

- A shared user pathway overpass of Dingley Bypass is not supported.
- While a shared user pathway crossing (underpass) of the freeway between Redwood Gardens and Chadwick Reserve may be a 'nice to have' to support local access, the IAC does not believe the link is justified based on the evidence provided.
- A shared user path boardwalk at Bowen Parkway is not supported.
- A shared user pathway crossing should be constructed across the north-east slip lane from Springvale Road to Mornington Peninsula Freeway.
- The construction traffic impacts can be appropriately managed.
- The proposed Transport EPRs are satisfactory subject to a minor amendment to EPR T2 regarding construction times of between 7am and 7pm and prioritising the use of arterial roads during construction.

6.8 Recommendations

The Inquiry and Advisory Committee recommends:

Adopt the Inquiry and Advisory Committee amended version of Environmental Performance Requirement T2 as shown in Appendix E.

The Inquiry and Advisory Committee recommends the following Project design inclusions and changes:

- **Construct one additional lane in each direction on the Mornington Peninsula Freeway between Thames Promenade and Springvale Road**
- **Duplicate Centre Dandenong Road between Old Dandenong Road and Boundary Road, including upgrading the Boundary Road intersection**
- **Replace the Thames Promenade/Wells Road roundabout with traffic signals**
- **Adopt the modified layout proposed for Woodlands Drive and the freeway off ramp to Lower Dandenong Road as presented to the Inquiry and Advisory Committee and shown in Figure 4 of this report**
- **Construct a shared user pathway crossing across the north-east slip lane from Springvale Road to Mornington Peninsula Freeway.**

The Inquiry and Advisory Committee recommends that the following associated works should be undertaken on the surrounding road network in conjunction with the Project:

- **Upgrade the capacity of Centre Dandenong Road west of Boundary Road**
- **Upgrade the capacity of Governor Road either side of the Mordialloc Bypass**
- **Upgrade the capacity of South Road between Warrigal Road and Nepean Highway**
- **Implement other local traffic improvements as required to address any unintended consequences of the Project.**

7 Land use and planning

7.1 Background

Chapter 9 of the EES details issues relating to land use and planning. Appendix B of the EES prepared by WSP provides an assessment of land use and planning impacts.

The EES described the aim of the assessment *“to describe the existing and planned land uses inside or adjacent to the Project area and assess the potential effects of the Project on these land uses”*.

The assessment reviewed land use and planning related environmental risks, including the risk of cumulative impact, that may result from the development of the Project and recommended mitigation measures to minimise or avoid impacts to existing and planned land uses in the study area.

7.2 The issues and risks

The EES identified a range of potential environmental impacts on land use such as the impacts of traffic, noise, vibration, dust and increased greenhouse emissions. These impacts are covered in other chapters of this report.

The legislative and policy framework for the Project is discussed in Chapter 3, including the specific sections of the planning scheme that are relevant to the Project.

The EES notes that the Project is to be constructed within the existing road reserve, which is owned predominantly by VicRoads and is zoned Road Zone. Under the exhibited design, land acquisition was required in the vicinity of Woodlands Drive, requiring the introduction of a Public Acquisition Overlay on four parcels of land. The land use and planning assessment identified delays to land acquisition as a potential risk to the timely completion of the Project.

The revised design now accepted by all parties does not require land acquisition, negating the land acquisition issue.

The planning and land use assessment examined the sensitivity of surrounding land uses to the impacts of a new freeway. The assessment determined that the potential amenity impacts (visual, noise, air quality and social) are ‘high’ for residential land uses, ‘medium’ for recreational land use and ‘low’ for commercial and green wedge land uses.

In relation to the operation of the Project, the EES noted that the *“new freeway will connect the Dingley Bypass with the Mornington Peninsula in greater Melbourne’s south-eastern suburbs. It will provide a much-needed additional route, easing congestion and improving safety on nearby roads, as well as improving access to the Dandenong South Employment and Innovation Cluster, the industrial areas in Braeside and Moorabbin, and residential, recreation and other nearby shopping and entertainment precincts”*.

No significant primary land use and planning impacts were identified for the operation phase.

7.3 Project response

There are no specific EPRs for land use and planning. Amenity impacts are dealt with under each discipline in the EES.

7.4 Evidence and submissions

MRPV submitted that the Project will not materially impact on the land use pattern in the surrounding area and the Project is supported by State and local planning policy.

The only land use and planning evidence provided to the IAC was that of Mr Michael Barlow, called by MRPV. Mr Barlow noted that current alignment of the freeway had been formalised and reserved in the planning scheme by 1981 and the majority of the development adjacent to the freeway post-dates the reservation. He gave evidence that¹⁵:

The Project will immediately benefit the existing industrial areas in the broader locality and the Moorabbin Airport permitting these areas to further develop and intensify activities into the future.

From a strategic land use assessment, the Project will achieve the following important outcomes:

- Provide enhanced accessibility to the Moorabbin Airport which is nominated as a Transport Gateway in Plan Melbourne.
- Enhance accessibility for freight movements throughout the southern corridor and support the intensification of employment activities in key locations in the southern corridor.
- Provide enhanced access to employment opportunities for the surrounding region.

Mr Barlow noted that some submitters had raised concerns about the impact of the freeway on residential properties, particularly with respect to noise. He gave evidence that *“it is evident that the residential development having occurred since the designation of the freeway reserve, the form, siting and orientation of the development has responded to the future development of the Project”*.

He suggested several locations where noise and visual amenity impacts warranted more careful consideration and suggested some mitigation options (Those issues are dealt with under the relevant chapters).

7.5 Findings

The IAC makes the following findings in relation to land use and planning impacts:

- the Project is unlikely to have substantial negative impacts on the surrounding land use provided that amenity impacts on residential areas are appropriately mitigated.
- the benefits of the freeway are acknowledged, particularly in terms of providing more direct access to employment areas and the Moorabbin Airport.
- the only identified potential planning risk relating to land acquisition has now been negated by the changed layout for Woodlands Drive.

¹⁵ Mr Barlow’s evidence p6

8 Biodiversity

8.1 Background

Chapter 10 of the EES (Volume 1), Appendix C *Flora and fauna impact assessment* and Appendix O *Preliminary tree assessment* detailed the potential impacts of the Project on:

- wetlands and waterways (including the Edithvale-Seaford Ramsar wetlands, Waterways Wetlands, Braeside Park wetlands, Mordialloc Creek, and Woodlands Industrial Estate wetlands)
- remnant and high quality planted native vegetation
- habitat and fauna connectivity, and
- matters of national environmental significance (protected under the *EPBC Act* 1999).

Potential cumulative impacts on biodiversity are addressed in Chapter 21 of the EES.

The evaluation objective for biodiversity of the EES is:

- to avoid, minimise or offset potential adverse effects on native vegetation, listed migratory and threatened species and communities, as well as habitat for other protected species.

8.2 The issues and risks

The key issues identified in the EES and in expert evidence were:

- ecological impacts of a new bridge across the Mordialloc Creek / Waterways Estate wetlands
- removal of native vegetation and very large old trees
- ecological impacts of the Project on the nearby Edithvale-Seaford Ramsar wetlands
- impacts to migratory and threatened avifauna species
- impacts to fauna connectivity and potential for avifauna collision with vehicles.

8.3 Project response

8.3.1 Construction impacts in wetlands

A key issue raised in submissions was the impact of the bridge construction over the Mordialloc Creek / Waterways Wetlands and the removal of native vegetation and habitat. Construction within the Mordialloc Creek / Waterways Wetlands is expected to take up to 24 months¹⁶.

The EES (10-1) stated that since the reservation was put in place, much of the native vegetation within the Project area has been cleared and now consists of exotic or planted roadside vegetation, modified agricultural land and constructed features such as roads, housing development and industrial areas. Constructed wetlands (Waterways Wetlands and Woodlands Industrial Estate wetlands) have been established after the 1960s reservation (approximately 15-20 years ago).

¹⁶ Document 54, page 4

Braeside Park was established in 1987 in an area formerly used for farming and water treatment and has been extensively revegetated. The Braeside Park wetlands are located in the south west of the park and support various wetland habitat types.

The Woodlands industrial estate wetlands are located immediately west of the Project area, north of Governor Road. They are a constructed area of Melbourne Water retention ponds, consisting of three deep ponds and some associated shallow wetlands. Construction of the wetlands commenced in 1992 and was completed in 2002.

The Waterways wetlands which occur along the Mordialloc Creek within the estate is a 48 hectare area planned and revegetated as part of the residential development of the Waterways estate which commenced in 2000. The deep pools were designed to contain permanent water, thereby providing minimal mudflat foraging habitat for migratory waders, although threatened and migratory species are regularly recorded¹⁷.

MRPV propose to construct a bridge over the Mordialloc Creek and Waterways Wetlands from the centre to reduce the construction footprint.

Technical note number one¹⁸ describes the proposed construction methodology for works within the Waterway Wetlands area and Technical note number two¹⁹ describes the construction methodology for management of acid sulfate soils within the Waterways Wetlands.

To minimise removal of native vegetation and large trees and disturbance to habitat environments, MRPV propose work buffer areas of eight to ten metres as 'No-go Zones', including in the vicinity of the bridge works as shown in Figure 5 below²⁰.

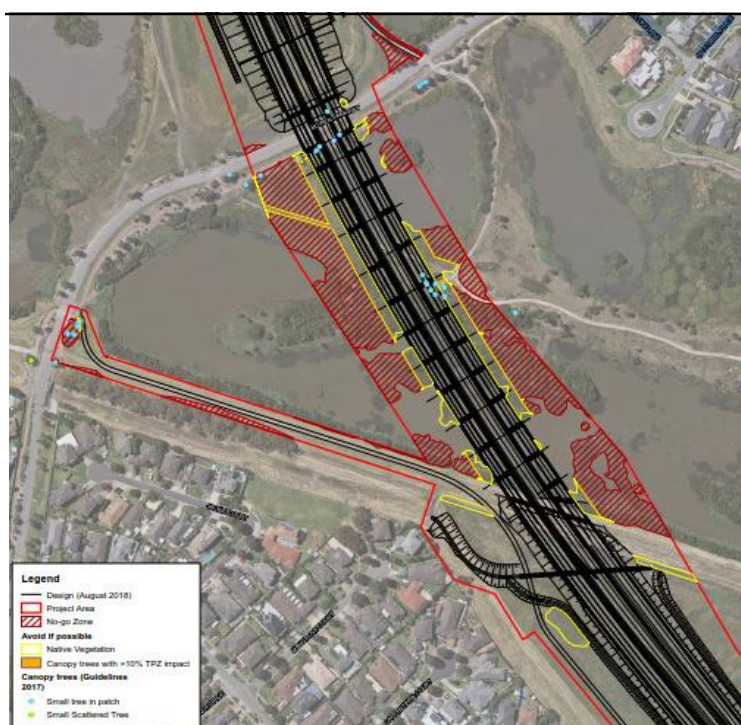
¹⁷ EES, Appendix C Flora and Fauna Impact Assessment p37

¹⁸ Document 54

¹⁹ Document 90

²⁰ Document 23 Mr McCaffrey presentation, p18

Figure 5 Bridge over Mordialloc Creek showing No-go Zones



In response to the identified impacts and residual risks, the Project proposes:

- Avoidance of native vegetation where possible
- Protection of very large old trees and tree protection zones where practicable
- Culverts (minimum of two) for passage of fauna between the Waterways Wetlands and Woodlands Industrial Estate wetlands and habitats and between Braeside Park and the other wetlands (minimum of three)
- Multi-function Fauna Barriers to encourage birds to fly at suitable heights above the new freeway to avoid collision with vehicles
- Utilisation of native wetland flora species in landscaping around the wetland area (list of shade tolerant native plant species is attached to Document 109 - *Analysis of potential shade effects from the Mordialloc Creek/Waterways wetlands bridge*)
- Planting of both native plant tube stock and larger shrubs (15 litre capacity) along the freeway embankments
- To reduce impacts from lighting, fauna sensitive lighting design is to be incorporated into the Project (EPR B2).

8.3.2 Operational impacts of the Project

(i) Shading

The Project proposes elevated structures and noise walls erected over areas of wetland vegetation, which would limit light available for vegetation located below these roadways.

MRPV stated that the bridge proposed over Mordialloc Creek and the Waterways Wetlands will result in the shading of some native aquatic vegetation and habitat. The EES stated that

all vegetation under and within eight metres of the bridge has been considered lost or removed for the calculation of vegetation impacts. Key findings of the shading assessment²¹ are:

- There are only minor impacts on the key sunlight hours (middle of the day, 9am-3pm) within construction No-go Zone areas. Indirect light levels are still expected to be high. There are no areas of No-go Zones that get no direct light or get less than 3 direct sunlight hours in Winter (solstice) or 5 direct sunlight hours in Summer (solstice).
- Light directly underneath the bridge structures is expected to be sufficient to support revegetation using shade tolerant plant species with a focus on indigenous shrubs and understorey plant species.
- There are no areas under the bridge structures which receive no direct sunlight, with most areas receiving more than four hours of sunlight per day.

The authors of the shading assessment memo state that:

More important will be ensuring that these areas receive sufficient rainfall/water to allow for survival and that soil substrates are appropriate for plant growth. In the centre of the bridge structures, there may be areas where rain penetration is insufficient to allow for continuous terrestrial vegetation growth. In these areas, use of scattered rocks and logs is recommended to provide shelter for wildlife without obstructing bird flight or terrestrial fauna movement. The areas between and on either side of the bridge structures are expected to support revegetation without the potential issue of insufficient rainfall.

(ii) Migratory and threatened avifauna

Appendix C of the EES details the methodology for the targeted fauna surveys undertaken as part of the EES as well as the detailed bird habitat mapping completed. The likely use of the habitat types under low and high water conditions were documented in the EES for several key avifauna species.

Shore birds and waders

The habitat that Shore birds and waders are most likely to visit, are the shallow water areas of Braeside Park Wetlands, which occur outside of the Project area. The EES stated that the majority of the migratory bird species that visit the area are recorded in low numbers only (as a proportion of population). This includes the Australian Painted Snipe, Marsh Sandpiper, Pectoral Sandpiper, Ruff, Wood Sandpiper, Common Greenshank, Common Sandpiper, Long-toed Stint and Red-necked Stint. With appropriate mitigation measures to reduce noise and light impacts such as fauna sensitive lighting design and multi-function fauna barriers around wetland areas, the EES suggested that the Project is expected to have a negligible impact on these species.

For the Curlew Sandpiper, Latham's Snipe, and Sharp-tailed Sandpiper, habitat at and near the Project area (particularly at Braeside Park Wetlands) should be considered important. By designating no-go zones for retained habitat, minimising wetland vegetation clearance and revegetating under the Mordialloc Creek bridge and constructing MFFBs to minimise

²¹ Document 109

road mortality, as well as the mitigation for noise and light disturbance (EPRs B1, B4, B5), the EES stated that impacts upon these species is expected to be minimal.

Waterfowl

The EES described six significant waterfowl species (Australasian Shoveler, Blue-billed Duck, Freckled Duck, Hardhead, Magpie Goose and Musk Duck) that are likely to experience some fragmentation and loss/degradation of wetland habitat that is used for foraging, roosting and/or shelter.

The EES determined that no direct impacts upon known breeding habitat is anticipated from the Project. The EES presented that for breeding waterfowl, such as Blue-billed Duck and other species (non-listed), ongoing loss of connectivity and increase in road mortality is a potential risk of the Project. Multi-function fauna barriers, fauna connectivity culverts and revegetation of disturbed areas and areas to/from fauna passages will assist to mitigate these impacts and reduce potential risks to these species.

Other water birds

A total of ten other significant waterbird species (listed under EPBC Act and FFG Act) are likely to experience some direct loss of foraging, roosting and/or breeding habitat as a result of the Project. These species are the Australasian Bittern, Australian Little Bittern, Baillon's Crake, Lewin's Rail, Eastern Great Egret, Glossy Ibis, Intermediate Egret, Royal Spoonbill, Nankeen Night Heron and Little Egret. For some of these species, impacts include the loss of grassland habitat, which may be used occasionally for foraging or movement, particularly when flooded.

The EES noted that none of the species examined are likely to be substantially affected by direct habitat loss.

(iii) Fauna connectivity

In addition to birds, the aquatic and terrestrial habitats of the wetlands support a diverse range of other species.

The EES presented that 210 vertebrate fauna species have been recorded at or adjacent to the Project area, including frogs, mammals and six native fish species, and there are habitats for turtles and other reptiles. The Project will result in some habitat fragmentation, thereby limiting or preventing fauna movements. The EES stated that roads and traffic can form a barrier or filter to movement for certain species, particularly those that are sensitive to the noise, light and disturbance of traffic²².

The Project has responded by the provision of culverts (minimum of two) for passage of fauna between the Waterways Wetlands and Woodlands Industrial Estate wetlands and habitats and between Braeside Park and the other wetlands (minimum of three), in EPR B1.

²² EES Chapter 10, p10-37

(iv) Wildlife collision

Wildlife vehicle collisions and wildlife mortality in the Project area is expected to be highest near and between wetlands, where the road is at grade or above. The EES predicted that rates of wildlife collision at the Mordialloc Creek/Waterways Wetlands bridge are expected to be lower because there is space underneath for wildlife to cross, including birds. The Project will minimise the direct and indirect impacts on fauna through design (EPR B1). Design elements that minimise impacts on fauna include fauna connectivity culverts and MFFBs to reduce mortality in key wildlife areas.

(v) Loss of native vegetation and trees

The EES stated that the assessment of biodiversity impacts included an additional 20 metre buffer outside the Project boundary to ensure that potential connectivity impacts and any edge effects to vegetation, including impacts to tree protection zones (TPZ), were captured in the assessment. For wetland mapping, targeted bird surveys and bird habitat mapping, the study area extended further to include parts of the adjacent wetlands, to ensure all ecological values with the potential to be impacted were characterised.

Twelve ecological vegetation classes (EVCs) were recorded within the Project area. Mr McCaffrey presented a table²³ (reproduced as Table 5 below) that indicates MRPV expects up to 10.56 hectares of EVCs will be cleared for the Project, and up to 12.10 hectares total native vegetation removal once scattered tree buffers are included.

Table 5 Expected native vegetation removal

EVC (BENCHMARK) NAME	MAX ANTICIPATED LOSS (HA)
Aquatic Herbland	0.81
Creekline Grassy Woodland	0.22
Damp Sands Herb-rich Woodland	0.01
Plains Grassy Wetland	4.53
Plains Grassy Woodland	2.02
Sedge Wetland* (Plains Sedgey Wetland and Submerged Aquatic Herbland)	0.47
South Gippsland Plains Grassland	0.05
Swamp Scrub	0.53
Swampy Woodland	0.04
Tall Marsh	1.23
DELWP modelled wetland	0.64
Grand Total	10.56
Total including scattered tree buffers	12.10

²³ Document 23, page 12

Tree removal and replacement

Tree surveys were conducted (in accordance with Australian Standard *AS 4970-2009 Protection of trees on development sites*) and are reported in Appendix O: *Preliminary tree assessment report* (including detailed tree maps). For trees with greater than 10 percent TPZ impact from the Project, tree loss was assumed when calculating offsets. A total of 3,341 trees were recorded in the study area by either an arborist or ecologist. Most of these trees are planted native or exotic, with 784 considered by ecologists to be remnant native trees.

Native vegetation offsets

Where native vegetation cannot be avoided, and must be removed for the Project, native vegetation offsets are required as per the *Guidelines for removal, destruction or lopping of native vegetation* (DELWP 2017). Up to a total of 12.10 hectares of native vegetation is proposed to be removed and the EES stated that offsets would be secured through a third party offset provider (that is, purchased) and registered on the DELWP Native Vegetation Credit Register.

8.4 Evidence and submissions

The following evidence was called by MRPV in relation to ecological impacts:

- Mr Nic McCaffrey, of WSP
- Mr Allan Richardson, of WSP
- Mr Rodney van der Ree, of WSP (formerly Ecology & Infrastructure International)
- Mr Ian Smales, of Biosis.

Kingston City Council called the following evidence in relation to ecological impacts:

- Mr Lance Lloyd, of Lloyd Environmental regarding wetland impacts
- Mr Richard Loyn, of Eco Insights regarding ecology.

No other party to the Hearing called expert evidence in relation to ecological or arboricultural matters. Landscape architecture and design of embankments evidence (including where plants and trees are to be replanted) was called by MRPV and Council and is discussed in Chapter 9.

MRPV, through various expert evidence and in the EES, emphasised that the proposed alignment of the Mordialloc Bypass is within a road reservation protected for the purpose of a road since the 1960s.

8.4.1 Impacts to wetland environments during construction

The ecological experts agreed that the Project would have some degree of impact upon the ecological values within the Project alignment (flora, fauna and habitat), particularly on the Mordialloc Creek/Waterways Wetlands during construction.

Mr McCaffrey and Mr Richardson for MRPV presented to the IAC that the avifauna species at most risk of impact from the Project are those that:

- breed right next to the Project area
- visit regularly and/or in high numbers (as a proportion of population size)
- are resident
- are particularly sensitive to disturbance

- move locally at or near ground level.

Kingston City Council's key concerns of the Project are the potential impacts on the Waterways Wetlands, particularly the construction impacts on aquatic flora and fauna.

Ecological impacts on Edithvale-Seaford Ramsar wetlands

Mr McCaffrey referred to the groundwater assessment undertaken for the Project which determined that there would be a negligible impact upon groundwater volumes and flows in the area, including the groundwater-dependent ecosystems outside of the construction footprint and at the Edithvale-Seaford Ramsar wetland and in Mr McCaffrey's view, residual impacts upon wetland habitat values and health from hydrological changes will be negligible and that significant impacts upon the ecological values of the Edithvale wetlands are highly unlikely.

Other experts agreed with Mr McCaffrey that it is highly unlikely that direct impacts on the Edithvale-Seaford Ramsar wetlands will occur as a result of the Project. However, Mr Smales stated that there may be indirect impacts on the Edithvale-Seaford Ramsar wetlands because *'many of the relevant bird species may use the entire complex of local wetlands, some level of indirect effect may occur as a consequence on other wetlands in the complex'*.

The EES stated that measures will be taken to avoid direct impacts on the Edithvale-Seaford Wetlands during construction, including that haul trucks will not use Edithvale Road during construction. This is reflected in EPRs B4 and T2.

In regard to the wetlands, Mr Lloyd for Council stated that although the wetlands are within a modified Project area, they include sensitive and high value environments.

8.4.2 Operational impacts

(i) Shading

The evidence provided by Mr McCaffrey is that the construction of a dual bridge structure at Mordialloc Creek/Waterways Wetlands is proposed to ensure adequate light penetration for the vegetation below. He stated that *"with the dual structure, the height of the bridge, and the roughly north-south orientation, relatively high light penetration underneath is expected²⁴"*. The use of shade tolerant species will be important in the revegetation underneath the bridge (as required by EPR B5).

Mr Smales acknowledged that a permanent reduction in habitat quality is expected to occur in the portion of wetlands that will be shaded by the elevated structures but considers this to be acceptable as the area will still function as habitat for birds, although in a modified condition.

(ii) Migratory and threatened avifauna species

Mr McCaffrey stated that the assessment of bird movement and flight patterns across the corridor included how birds travelled between the various wetlands and across the landscape. He acknowledged that the existing habitat at the various wetlands is driven by

²⁴ Mr McCaffrey's expert witness statement, page 7

water levels. All experts agreed that the differing water levels between the wetlands are an important component to the diversity of avifauna utilisation of the wetlands. Mr Smales stated that movements of birds between the various wetlands allows them to locate and use resources as these vary between the wetlands over time and in response to environmental conditions.

Mr Smales acknowledged that the construction of the Project over and through the Mordialloc Creek/Waterways Wetlands will entail some disturbance of significant birds that use those wetlands and that use by avifauna is likely to reduce during the construction period (24 months in this area), however he expects that avifauna numbers in the wetland areas will return to present levels after construction.

Mr Smales evidence was that although Latham's Snipe (EPBC Act listed migratory species) does occur within the Woodlands Industrial Estate Wetlands, Braeside Wetlands and the Mordialloc Creek, a significant impact on the size or functioning of its population is not likely to result from the Project and that the existing habitat does not meet the EPBC Act guidelines for 'important habitat' for the species²⁵.

In his evidence Mr Smales noted *"that knowledge of threatened and migratory birds in the vicinity of the Project is better than it is for many other areas of Victoria"*²⁶ and that *"none of the migratory birds that occur on the entire complex of wetlands under consideration for the Project, breed in Australia"*.

Mr Smales stated that Australasian Bitterns are *"heavily dependent on a dense cover of reeds, rushes, sedge and other plants of relatively shallow water for their foraging, roosting and breeding activities. This habitat preference is reflected in the very great predominance of records in the Project areas having come from Woodlands Industrial Estate Wetlands and Braeside Park Wetlands. These areas of suitable habitat for the species will not be directly impacted by the Project and I consider that a significant impact in the size or functioning of its population is not likely to result from the Mordialloc Bypass Project."*

Mr Loyn, called by Council, gave evidence that climatic conditions also need to be taken into consideration when undertaking avifauna assessments, noting changes to breeding patterns over the last decade and cited the Freckled Duck at the wetlands as an example.

Friends of Braeside Park, Friends of Mordialloc Catchment, Friends of Edithvale and Seaford Wetlands, Waterways Estate 3195 and other submitters raised concerns about the impacts to avifauna and wetland habitats from the construction and operation of the Project.

(iii) Connectivity and fauna movement

Mr Lloyd's evidence was that the role of fauna connectivity was not adequately addressed in the EES and that the Project relies too heavily on the mitigation measures in the EPRs. He also wanted more prescription in the EPRs.

Some submissions (including Friends of Mordialloc Catchment) raised concerns about the proposed culverts and underpasses being used by predators to trap prey. The Friends of

²⁵ Mr Smales expert witness statement, p11

²⁶ Mr Smales expert witness statement, p5

Mordialloc Catchment requested an increased number of culverts at Braeside Park wetlands and Woodlands wetlands from three to four and at the Waterways wetlands from two to three nominated in EPR B1 to reduce the risk of predation. Mr van der Ree's evidence notes that although there may be an increased risk of predation, international research has shown no evidence of systematic predation²⁷.

Mr van der Ree also noted that the absence of a vegetated median and relatively low verges with appropriate ecologically sensitive plantings required in EPR LV1 will minimise birds landing or feeding in the centre median and verges, decreasing the likelihood of bird mortality.

The Friends of Braeside Park submitted that the freeway reservation is an important buffer zone for fauna on the western boundary of Braeside Park from the industrial lights and existing traffic noise²⁸. The Friends of Mordialloc Catchment stated in their submission that the proposed fauna culverts are *"a token infrastructure tool to justify development of environmentally sensitive areas. They can be an agent of wildlife decimation that restricts rather than enables safe passage for wildlife, because culverts restrict wildlife passage to singular entry and exit points where they can become easy tucker for feral animals"*²⁹.

Resident submissions and groups such as the Kingston Residents Association all raised concerns about the impacts on fauna and bird movements and connectivity to the wetlands.

The Friends of Edithvale-Seaford Wetlands Inc, raised a number of issues regarding impacts of the Project on biodiversity and stated in their submission:

This continuing threat of habitat loss and cumulative effects of predicted disturbance from the initial freeway construction, the physical barrier of the raised embankment, the footprint of the Project robbing natural habitat along with the noise drowning out bird calls, air and light pollution caused by the increased traffic must surely diminish what has been largely a nature reserve until now³⁰.

Ecology experts agreed that there will be some disruption to fauna movement, however this is unlikely to be significant and with mitigation such as proposed culverts and MFFBs, these will provide some assistance to the movement of fauna species between wetlands.

(iv) Noise

The impacts of noise on avifauna were tested during the course of the Hearing. All experts agreed that traffic noise has impacts on avifauna, however the extent of impact depends upon the species. Mr Loyn, in response to a question from Mr Sherman for Council about acceptable noise criteria for avifauna in wetlands, stated that he suspects people will never be able to agree on the relevant criteria, however he suggested a 60dBA (L_{1018hour}) limit has been used for a long time as an acceptable limit but he acknowledged some species can survive with higher than 60dBA and some species disappear with lower noise levels than this.

²⁷ Mr van der Ree exert evidence statement, p5

²⁸ Document 64, p2

²⁹ Document 63, p7

³⁰ Document 66, p2

When asked whether two metre high MFFB are sufficient to assist with noise impacts to birds, Mr Loyn replied that a two metre MFFB is not adequate but could not provide a definitive answer as to what may be more appropriate.

The evidence from MRPV noise expert Mr Dowsett indicates that with the proposed MFFB installed, road traffic noise would be reduced to 63dBA $L_{1018\text{hour}}$ in most areas of Braeside Park and to 63dBA $L_{1018\text{hour}}$ in the Braeside Park Wetlands and Woodlands Wetlands.

(v) Ecological light pollution

The Friends of Braeside Park and the Friends of Mordialloc Catchment submitted concerns about the impact of lights on both fauna and the recreational activities of night walks that occur at the park, which they submit is over 200 walkers per session.

(vi) Multi-function fauna barriers (MFFB)

MRPV proposed MFFB as part of the mitigation for potential vehicle collision and noise impacts to fauna, particularly avifauna. MFFBs would also reduce impacts from vehicle lighting across the wetlands. The extent and height of the MFFB was contested during the Hearing.

MRPV modified the location and extent of the MFFB proposed along sections of the Project alignment between Governors Road and the Waterway Wetlands to the south to the following after expert evidence from both MRPV and Council's experts and reflected these changes in the final MRPV ERPs³¹:

- Waterways Wetlands (north-west): on the west side of the new roadway, provision of a 2 metre high MFFB extending from Governor Road to the south approximately 600 metres, transitioning to a 1 metre high MFFB to be provided from that location to Bowen Park Way
- Waterways Wetlands (north-east): on the east side of the new roadway, provision of a 2 metre high MFFB extending from Governor Road to the south approximately 200 metres, transitioning to a 2.5 metre high MFFB to be provided from that location to the south approximately 175 metres, transitioning to a 3 metre high MFFB to be provided from that location to the south approximately 200 metres, transitioning to a 2.5 metre MFFB to be provided from that location to Bowen Park Way
- Waterways Wetlands (bridge structure): provision of a 3 metre high MFFB on the western side of the new western roadway bridge structure extending from Bowen Park Way south to the Melbourne Water Levy, and provision of a 3 metre high MFFB on the eastern side of the new eastern roadway bridge structure extending from Bowen Park Way south to the Melbourne Water levy.

MRPV summarised the differences between MFFB proposed south of Governor Road as part of the reference design and as part of MRPV's Version 2 EPRs as:

- Waterways Wetlands (north-west): the wall heights and lengths are unchanged, however, the 1 metre high noise wall is now to be specified in EPR B1 as a MFFB

³¹ Document 94

- Waterways Wetlands (north-east): the wall heights and lengths are unchanged; however, the noise walls are now to be specified in EPR B1 as MFFB
- Waterways Wetlands (bridge structure): the noise walls are now to be specified in EPR B1 as MFFB, and the height of the MFFB on the east side of the new eastern roadway bridge structure is increased by 1.5 metres so that it is now proposed to be 3 metres high.

Mr Smales' evidence is that the MFFB would not impede movements of wetland birds between the different wetlands.

Mr van der Ree, for MRPV, stated that *"the most effective approach to reducing wildlife vehicle collision is to install barriers that prevent wildlife from accessing the road, most typically in the form of fencing"*. He does not support the use of barbed wire fencing anywhere along the alignment because many species of birds and other fauna can become entangled. Mr van der Ree stated that the MFFB must be constructed of opaque/solid materials to discourage fauna from attempting to push through them. Mr Loyn, for Council, agreed with Mr van der Ree and also suggested the use of reflective or transparent materials should be avoided for the MFFB. MRPV amended EPR B1 to reflect the advice of the experts in their final version of EPRs.

Council submitted the need for a three metre high MFFB along the entire eastern boundary of Braeside Park as this height addresses visual impacts of the Project, acoustic issues for the park and the shared user path, provides a solution for ground movement of fauna and bird movement and close to a total solution in relation to the acoustic issue impacting birds at Braeside Park Wetlands.

Mr Loyn suggested the key is to encourage birds to fly higher than the larger vehicles using the road, such as planting larger trees alongside of the MFFB. Mr Loyn also suggested that further work be undertaken on the detailed design of the MFFB by qualified ecologists and the engineers. MRPV have included this recommendation in the revised EPR B1.

(vii) Removal of native vegetation and tress

A number of submissions raised concern with the impact to the aquatic vegetation associated with the Mordialloc Creek/Waterways Wetlands. Mr McCaffrey stated that the impacts expected on native vegetation, including the two EPBC Act critically endangered communities and two listed FFG Act communities mostly occur from the area of Waterways Wetlands to Governor Road³², however through the use of no-go zones and revegetation of embankments after construction with shade tolerant species, Mr McCaffrey said that these impacts can be minimised.

Some submissions were concerned that there will be impacts on a number of large and small trees throughout the Project area which provide habitat for a range of species.

The issue of large tree removal or tree protection zones for remaining trees was not a contentious issue at the Hearings or in submissions. Native vegetation and tree protection is addressed in EPR B1 and B3.

³² Mc McCaffrey expert evidence report, pages 6-7.

8.5 Discussion

The IAC acknowledges that both the MRPV and Council's experts commended the amount of material covered in the EES on biodiversity and note that numerous field investigations were undertaken for the EES.

8.5.1 Construction impacts in wetlands

It is evident to the IAC from the EES, public submissions and the evidence of ecologists, that there is an important connection for avifauna between the wetlands, although the extent varies due to the habitat requirements of certain species. The wetlands have a mix of habitat types (shallow, deep and mud flats) important for a variety of avifauna species and it will be important to ensure that the environment is restored post construction especially in the Waterways Wetlands area.

The IAC acknowledges ecological impacts of a new bridge across the Waterways and Woodlands Industrial Estate wetlands will have impacts on the environment during construction for a period of 24 months. The IAC understands from the evidence that disturbance of habitat, native vegetation and water quality during this time period will be mostly alleviated in time by the re-establishment of wetland shade tolerant species to be planted along the wetland edges and embankments near and underneath the bridge structures. Water quality impacts are discussed in Chapter 13. With suitable mitigation measures in place as required in the EPRs (B1, B3, B4, B5, B6, W1, W3 and W5), the impacts are not likely to be long term or cause significant adverse effects.

Ongoing monitoring of construction impacts is critical to the success of the mitigation, and the IAC supports EPR B1, B3, B4 and B5 being strengthened accordingly. The IAC notes that the Independent Reviewer and Environmental Auditor will review the Flora and Fauna Monitoring and Management Plan as required by the new EPR EM4.

The ecological impacts of the Project on the nearby Edithvale-Seaford Ramsar Wetlands will be minimal as the evidence suggests groundwater impacts will not occur as a result of the Project, impacts on surface inflows will be minor and impacts on water quality can be satisfactorily mitigated. IAC accepts the opinions of the ecological experts who all said there would be little, or no impact to the Edithvale-Seaford Ramsar Wetlands from the construction and operation of the Project.

8.5.2 Operational impacts of the Project

(i) Light and noise

The EES suggests that for all bird species, impacts from noise and light, loss of connectivity and road mortality will be reduced through the implementation of fauna sensitive design and mitigation measures. Although some of the impacts and the likely effectiveness of mitigation measures are difficult to quantify, the EES suggests that overall residual impact upon these species is expected to be minor. The IAC acknowledges that, as Mr Smales provided in his evidence, there are numerous locations in Australia and the world where avifauna, including migratory shorebirds, persist in very close proximity to major infrastructure such as ports, airports, refineries, heavy industries and major roads.

(ii) Migratory and threatened avifauna

The issues raised in the submissions regarding biodiversity were mostly about the potential impacts on avifauna that use the suite of wetlands that the Project traverses. The IAC notes that there are a number of constructed wetlands that provide habitat needs of a large variety of avifauna species, some of which are endangered, listed migratory and/or threatened under the EPBC Act. The IAC accepts the evidence of Mr Smales that there will be no significant impact on a population of these endangered, listed migratory and/or threatened avifauna species from the Project.

The experts noted in their evidence reports that all species will be subject to various impacts including disturbance from noise and light and a potential increase in mortality from road collisions. However, they agreed that these impacts are likely to be substantially reduced by the application of EPRs B1 and B2 including the MFFB and fauna connectivity culverts to minimise road mortality and fauna sensitive lighting design and noise attenuation (MFFB) in and around wetland areas to reduce habitat disturbance.

Although there may be some changes in bird patterns/utilisation during construction activities, the IAC accepts the evidence of Mr McCaffrey and Mr Smales that the avifauna are likely to adjust and return once the Project is operational.

The IAC concludes that successful implementation of the MFFB is important for reducing long term impacts on avifauna from the Project and finds that a three metre MFFB would be optimal in sensitive areas of the Mordialloc Creek/Waterways Wetlands and close to Braeside Park Wetlands. The MFFB are also important to ensure ground moving fauna can not access the roadway so need to be of a sufficient height for fauna not to 'push through', as Mr Loyn suggests.

(iii) Fauna connectivity and wildlife collision

The ongoing operational impacts to biodiversity from the Project are the impacts from the traffic and the Project itself being a barrier to fauna movement. The inclusion of a MFFB along much of the sensitive areas within the Project alignment (Mordialloc Creek/Waterways Wetlands and Braeside Park) will reduce the risk of avifauna collision with traffic as agreed by all experts.

The MFFB will limit the impacts of noise, light and motor vehicle collisions on avifauna using the valuable habitat at the Braeside and Woodlands wetlands. All experts agreed with this; it was the extent and heights of the MFFB that experts were not certain about because what may be satisfactory for one species may not be satisfactory for another.

The MFFB need to be designed so that they are opaque and solid as stated by Mr van der Ree. EPR B1 makes provision for ecologists to have input into the final design of the MFFB.

In regard to impacts to fauna connectivity, the IAC concludes that the Project will lead to a reduction in connectivity between the Waterways and Woodlands Industrial Estate wetlands for species such as frogs and fish. The use of culverts is an effective measure to ensure some connectivity remains.

The IAC agrees with Council that a three metre MFFB could be optimal along the entire eastern boundary of Braeside Park as well as sensitive wetland areas, although notes that the experts could not agree to a specific optimum height for birds (both regarding collision and noise impacts). Notwithstanding this, a consensus of approximately three metres in

areas crossing wetlands seemed appropriate to the experts. The inclusion in the EPR B1 of the requirement for this height requirement to be resolved in detailed design with suitably qualified specialist ecologist without compromising the achievement of other objectives (such as visual impacts) is a sensible outcome.

(iv) Loss of native vegetation and trees

The removal of up to 12.10 hectares of native vegetation (including large trees) will not have a significant impact on particular EVCs and listed threatened communities in the bioregion. The IAC notes that the removal of native vegetation may be further reduced during detailed design.

In regard to existing large old trees which provide some habitat for a number of species, it is considered that trees within the road reserve should be retained wherever practicable and adequate tree protection zones are in place prior to construction. The inclusion of the requirement to protect trees in accordance with *AS4970-2009 Protection of Trees on Development Sites* has been included in EPRs B3 and EPR B5 by the IAC as this standard refers particularly to requirements for tree protection zones during construction whereas the DELWP Guidelines (2017) describe the application of Victoria's statewide policy in relation to assessing and compensating for the removal of native vegetation³³. This standard has also been referenced in other major project EPR documents.

Changes to the EPR B3, LV1 and LV6 ensure better protection of native vegetation and trees and ongoing maintenance measures to ensure successful revegetation of the landscape along the embankments.

The shading of aquatic vegetation will cause some permanent removal of this vegetation and habitat, however the revegetation of the areas underneath the bridge will include shade tolerant aquatic species.

8.6 IAC findings

The IAC makes the following findings in relation to biodiversity impacts:

- Construction impacts of the Project, particularly as part of the bridge construction over the Mordialloc Creek/Waterways wetlands, will cause some disturbance to birds and other fauna species, as well as on aquatic and riparian vegetation. These impacts are considered to be short term (24 months) and once construction is completed and with effective implementation of the mitigation measure proposed, the IAC accepts the evidence of the experts that birds and other fauna will return to the wetlands.
- Removal of native vegetation and some large trees within the alignment is not considered to be a significant impact of the Project. Although many of the significant EVCs are associated with the constructed wetland habitats, with rehabilitation measures using appropriate shade tolerant plant species underneath the new bridge, it is expected that the wetland environment will return and provide

³³ Guidelines for the removal, destruction or lopping of native vegetation, DELWP 2017 p3

habitat for birds and other fauna species. EPR B5 has been amended to reflect the requirement for shade tolerant aquatic species.

- The hydrological assessment in the EES determined that there would be negligible hydrological changes from the Project and therefore the ecological impacts to the Edithvale-Seaford Ramsar wetlands would be highly unlikely. EPR B4 reflects the statement in the EES³⁴ that the CEMP will exclude haulage use along Edithvale Road near sensitive habitats during construction which will further minimise impacts from the Project on the Ramsar site. There may be indirect impacts to avifauna that utilise Edithvale-Seaford Ramsar wetlands as well as other wetlands in the vicinity of the Project. This impact is not considered to be significant on any particular species and considered by the experts as a construction impact.
- The impacts to fauna during operation, such as noise, lights, traffic, and barriers to fauna connectivity, are considered acceptable with effective MFFB, culverts and use of fauna sensitive lighting. The IAC considers three metre MFFB could be optimal along the entire eastern boundary of Braeside Park as well as in sensitive wetland areas. The IAC has made amendments to EPR B1 to reflect this and notes the inclusion in the EPR B1 of the requirement for the height of the MFFB to be resolved in detailed design with suitably qualified specialist ecologists without compromising the achievement of other objectives (such as visual impacts) which is a sensible outcome.
- The Flora and Fauna Monitoring and Management Plan (EPR B6) will be an important mechanism for ensuring compliance with biodiversity EPRs, in particular the measures outlined in EPR B1, B3, B4 and B5. The IAC agrees with MRPV that a monitoring timeframe of five years after Project opening, and not ten years as submitted by Council, is an appropriate timeframe. The IAC also acknowledges the Independent Reviewer and Environmental Auditor will provide review of the Plan.

8.7 Recommendation

The Inquiry and Advisory Committee makes the following recommendation:

Adopt the Inquiry and Advisory Committee amended version of the Environmental Performance Requirements B1 – B6 as shown in Appendix E.

³⁴ EES Chapter 10, p10-36

9 Landscape, urban design and visual impacts

9.1 Background

Landscape, urban design and visual impacts are addressed in Chapter 11 of the EES and in the Landscape and Visual Impact Assessment Report (LVIA) Technical Appendix D.

The draft evaluation objective of the Scoping Requirements for landscape and visual effects at Figure 1.2 of the EES is:

Social, land use and infrastructure – To minimise potential adverse social and land use effects, including impacts on existing infrastructure and open space.

The overall impact of the Project was determined by examining the sensitivity of each site in public and residential areas sensitive to change in visual amenity and the magnitude of change experienced at each of these sites. The impacts are due to the proximity of the Project area to residential areas and public open space and the impacts are magnified due to elements such as bridge structures, noise walls and fill over 2.5 metres high.

The LVIA provided an assessment of nine distinctive landscape character areas (LCA) and key sites in public and residential areas sensitive to change in visual amenity.

The value of each LCA was ranked from low to very high. The EES identified Braeside Parklands, Central wetlands (Braeside wetlands, Woodlands wetlands and Waterways wetlands west of the Project area) being of very high value³⁵. Dingley Village and Aspendale Gardens/Chelsea Heights residential areas were rated as moderate value. Remaining areas were rated low or low to moderate value.

Twenty three sites sensitive to change in visual amenity were also identified and their sensitivity ranked from low to very high. Public places rated as being of high sensitivity included Chadwick Reserve, Redwood Gardens Industrial Estate, Braeside Park trail, Rangers area, bird hide lookout, Woodlands wetlands and the park way shared trail path, Waterways Barmah Place trail and Bangalow Way. The Waterways Sunset Lagoon lookout is rated as having very high sensitivity as is the Bowen Parkway.

9.2 The issues and risks

The key issues identified by the IAC relate to:

- the change in landscape character and loss of visual amenity in key areas including Dingley Village, Central wetlands, Waterways Estate and Aspendale Gardens
- visual impact of bridges over intersections
- visual impact of the bridge at Waterways
- the loss of visual amenity for users of Braeside Park
- appropriate design of the underpass connecting Park Way to Braeside Park
- whether the design should include an underpass at Chadwick Reserve, an overpass at Dingley Bypass and a boardwalk at Waterways Estate
- the independent design reviewer.

³⁵ EES Technical Appendix D Figure 53, page 78

9.3 Project response

The LVIA states that standard mitigation measures as prescribed by VicRoads³⁶ will be adopted for the Project.

Such measures include but are not limited to:

- planting within the right of way (ROW)
- locating and designing bridges/culverts to complement and accommodate wildlife links, revegetation and creek systems
- revegetating wetlands with riparian species
- encouraging indigenous planting to the ROW boundary to strengthen the extent of the landscape character, where relevant.

The LVIA described additional non-standard mitigation measures that are proposed for the Project. These measures include the following:

- ensure bridge design minimises visual and landscape impacts
- ensure design of structural elements minimises visual and landscape impacts
- implement proposed landscaped treatment and associated design principles
- ensure pedestrian underpass design minimises impacts on visual
- enhance street design of key gateways.

With standard and non-standard mitigation measures included, landscape character impacts will still be high at Central wetlands, Waterways Estate and Aspendale/Chelsea Heights residential area. Visual impacts will remain moderate to high at eight key sites assessed within the Dingley Village residential area, Central wetlands, Waterways Estate and Aspendale Gardens residential areas.

The Project proposes an underpass at Braeside Park. The EES notes that *“a standard box culvert design of 2.6 metres high x 4 metres wide can make an underpass feel unsafe and unwelcoming to pedestrians and cyclists, negatively impacting use and safety”*, and proceeds to recommend that underpasses be designed to best practice measures.

An underpass from Chadwick reserve to Redwood Gardens Estate was also identified in the LVIA as a non-standard mitigation measure of high priority.

The EES concludes that as the design progresses, Project specific mitigation measures need to be developed and implemented to minimise potential impacts.

In response to the identified risks the LVIA included a suite of non-standard mitigation measures be included in the Project design. In addition, urban design principles³⁷ were developed for the Project.

The EPRs developed to protect and minimise landscape and visual impacts are LV1-7. MRPV Version 1 (Day 1) EPR were tabled at the Hearing:

- LV1 had been amended to include reference to urban design and design elements to be included on the plans

³⁶ VicRoads Contract Shell DC1: Design and construct, April 2012

³⁷ EES Table 11.6 page 11.20)

- LV2 relates to crime protection through environmental design
- LV3, LV6 and LV7 relate to revegetation and landscaping
- LV4 and LV5 relate to light spill.

9.4 Evidence and submissions

The following evidence was called in relation to landscape, urban design and visual impacts:

- MRPV – Kirsten Bauer of Aspect Studios
- Kingston City Council – Maddy Bisits of Spire and Tim Biles of Message Consultants.

9.4.1 Design outcomes

MPRV submitted that EPR in relation to landscape and urban design should not be overly prescriptive and submitted that there was enough detail in the EPR to ensure appropriate Project outcomes. MRPV stated that all experts agreed that the LVIA had correctly identified key affected areas and that all visual and landscape impacts could be managed to achieve an acceptable outcome³⁸.

Kingston City Council submitted that the EPRs should be amended to include a requirement for review by the Office of the Victorian Government Architect (OVGA), that Council be included as a stakeholder to be consulted throughout the design process, and that critical design objectives and elements be specified in EPR related to landscape and urban design³⁹. During the course of the Hearing, Kingston City Council issued a proposed version 3 EPR⁴⁰.

Specific requirements requested by Council⁴¹ included the following:

- a minimum six metres width of the Braeside underpass
- a new underpass at Chadwick Reserve
- a solid three metre high barrier along the Braeside Park interface
- a boardwalk at Bowen Parkway
- space allowance for the Council's purple pipe project
- an underpass/overpass at the Dingley Bypass
- allowances for a secondary shared use path (SUP) on the west side of the Project.

9.4.2 Evidence

Ms Bauer gave evidence regarding key issues associated with Dingley Village and Chadwick Reserve, Braeside Park, Waterways Estate, Aspendale Gardens and general urban design quality.

Ms Bisits gave evidence for Kingston City Council regarding landscape design and outlined six priority outcomes associated with identity and the environment, movement and connection and amenity.

³⁸ Document 103 paragraph 202

³⁹ Document 42 paragraph 4.6

⁴⁰ Document 62

⁴¹ Document 42 paragraph 4.16

Ms Bisits stated that the Council wanted the Project to project a strong identity for the area, highlighting important wetlands areas, protecting Braeside Park and demonstrating a commitment to Kingston City Council progressive strategies⁴².

Mr Biles gave evidence on planning and urban design issues for Kingston City Council. In regard to visual impact, Mr Biles stated that his findings were similar to those presented in the EES.

9.4.3 Visual impacts in residential areas

Ms Bauer noted that the road adjacent to Dingley Village would have high embankments, noise walls and a bridge overpass with only narrow areas available for landscaping.

The proposed bridge structures at Waterways Estate were highlighted as having high visual impacts to residences in the western area and south west of the estate. Ms Bauer stated that impacts could be reduced with appropriate design of bridges and noise walls and with the inclusion of appropriate planting. Under cross examination from Mr Sherman, Ms Bauer said principles of good design included reduction in pier thickness, integrating noise walls and the use of recessive or muted colours.

Aspendale Gardens residential areas would also be visually impacted by an elevated section of roadway and noise walls.

Ms Bauer gave evidence that impacts would be mitigated by landscaping using mature trees and advanced planting and implementing appropriate urban design principles especially in relation to noise walls and bridges.

Ms Bisits highlighted the desire for good quality noise walls with vegetation on both sides, high quality bridge structures and appropriate management of sensitive interfaces, i.e. acoustic barriers at residential interfaces, tree planting close to waterways residents and management of construction impacts in waterways areas through the use of exclusion zones to protect vegetation.

For residential areas impacted by the proximity of the road and barriers, for instance at Dingley Park, Mr Biles recommended that barrier design be articulated, and landscape treatments be used to mitigate impacts. He considered that careful bridge design would be required in the Waterways Estate and planting should be tall and generous in this area.

9.4.4 Visual impact at Braeside Park

Ms Bauer stated that Braeside Park was identified as a sensitive area with potential impacts for park users. Without solid barriers the roadway and associated traffic would be clearly visible to park users.

During the course of the Hearing, MRPV indicated that solid multi-function fauna barriers would be constructed along the Braeside Park interface.

Mr Biles recommended that the proposed multi-function fauna barrier be three metres high along the length of Braeside Park as this height would maintain amenity in the Park and also

⁴² Document 32 Slide 5

not erode the user experience on the freeway. Mr Biles considered that the experience of the park user would take precedence over the road user. He gave evidence that Braeside Park was identified as an important area of tranquillity and respite and he proposed that the provision of a three metre high MFFB would screen most vehicles from the park and would satisfy both visual impact and acoustic requirements.

9.4.5 Braeside Park underpass

Ms Bauer opined that the Braeside Park underpass should be “as wide as possible” but in answer to questions put by Mr Sherman, Ms Bauer said the specification of a minimum width was difficult and it may be better to specify performance criteria rather than dimension criteria. Ms Bisits recommended a minimum width of six metres for the Braeside Park underpass.

9.4.6 EPR LV1

Ms Bauer recommended that EPR LV1 include requirements for a quality urban design outcome.

Ms Bisits gave evidence that MRPV version 1 EPR LV1 did not provide comprehensive guidance and firm clear parameters to enable quality outcomes for the Project.

Mr Biles recommended that EPR governing landscape and urban design issues be amended to include a reference to urban design and a requirement for an independent reviewer. Mr Biles considered that the OVGA may not necessarily be the best choice of reviewer and suggested an alternative of a panel of stakeholders. Mr Biles considered MRPV Version 1 EPR LV1 to be a good starting point and stated that there needs to be a clear design process.

9.4.7 Other submissions

Many submissions were concerned with visual impacts in the Waterways Estate due to elevated bridges. Submissions also expressed concern with visual impacts at Braeside Park, Dingley Village and Aspendale Gardens.

9.5 Discussion

9.5.1 The change in landscape character and loss of visual amenity (including bridges)

The IAC acknowledges there will be changes to the landscape and visual amenity from the Project and accepts the evidence of all the experts that the visual impacts can be appropriately managed through the implementation of standard and non-standard mitigation measures. All expert witnesses agreed that acceptable Project outcomes could be achieved provided that the design process was adequately managed.

The IAC notes that proposed EPR LV1 requires landscape and urban plans to include vegetation and the use of mature tree stock with tube stock and advanced tree plantings where appropriate. There is also a requirement for an integrated landscape and urban design process for visually apparent elements.

MRPV version 2 EPR LV1 was also amended to include a requirement for landscape and urban designs plans for bridges and structures.

EPR LV1 specifies that all landscape and urban design plans must be prepared in conjunction with relevant stakeholders including Kingston City Council.

The IAC considers that EPR LV1 mostly provides adequate provisions to ensure acceptable outcomes related to visual impact however has recommended an additional measure of denser planting of a 15 metre wide band of trees (small and medium size) at areas where residences are within 35 metres of the roadway.

The IAC has also made changes to EPR LV7 – Landscape Management Strategy – to ensure that the ongoing health and maintenance of the landscape and tree planting measures are effective and it has modelled these additional requirements on the approved EPRs for the West Gate Tunnel project.

9.5.2 The loss of visual amenity for users of Braeside Park

As part of protecting fauna habitat, MRPV have included a solid MFFB on the Braeside Park interface with the Project. The barrier is proposed to be two metres high from Lower Dandenong Road to Park Way transitioning to three metres from Park Way to Governor Road.

All experts noted the importance of Braeside Park and agreed that a solid barrier (rather than a translucent one) would assist in mitigating visual impacts for park users.

Mr Biles recommended that the two metre section of barrier be increased in height to three metres so that the majority of vehicles would be screened from view. MRPV disagreed with this proposition stating that the proposed increase in height would only provide a limited visual benefit as most trucks/freight vehicles are approximately 4.3 metres.

Kingston City Council stated its preference for a three metre high wall along the entire length of Braeside Park as being a total solution for visual impacts, acoustic issues, protection of fauna and protection of birds from both noise and flight movements.

Ms Bauer considered that a 2 to 4 metre high barrier along Braeside Park would marginally increase visual impact on the Park but the use of landscaping could absorb this impact.

The IAC accepts the evidence of Mr Biles and considers that the proposed height increase to three metres will improve visual amenity, reduce noise impacts on the wetlands and provide benefits to park users. The IAC agrees that a consistent three metre barrier offers the best “total solution” as described by Kingston City Council. This matter is also discussed in Chapter 8 in regard to the benefits of a higher than two metre MFFB to reduce the potential for avifauna collision and noise and light impacts to the wetlands from the operation of the Project.

9.5.3 Appropriate design of the underpass connecting Park Way to Braeside Park

EPR LV1 requires the Braeside Park underpass to achieve best practice urban design principles. LV2 requires that the underpass be designed to the principles and guidelines of Crime Prevention Through Environmental Design (CPTED) and Urban Design Guidelines for Victoria (DELWP 2017).

MRPV considered that the ultimate width will be resolved through detailed design. Ms Bauer stated that the underpass should be “as wide as possible” and noted that the final width of the underpass would take into account the length of the underpass, safety considerations, shared path considerations and lighting outcomes. Ms Bauer suggested that

the underpass should be wider than four metres but suggested a performance criterion rather than a dimension criterion be applied.

Kingston City Council submitted their desire for a minimum width of six metres. Ms Bisits also recommended that the EPR should include a target width of six metres and Mr Biles supported this minimum width requirement. Mr Biles recommended that EPR LV1 should be drafted to require “best practice” design of the proposed Braeside Park underpass⁴³.

The IAC note that EPR LV1 now contains the recommendation made by Mr Biles in relation to best practice design for the underpass and accepts that EPR LV1 and LV2 will ensure an appropriate design outcome for the underpass.

9.5.4 The role of the independent design reviewer

MRPV version 2 EPRs added LV8 which requires an independent urban design review. The IAC supports the inclusion of this requirement. Although Kingston City Council requested its preference for review by the OVGGA, the IAC is mindful of the comments made by Mr Biles suggesting that the OVGGA may not be the best body to perform such a review and that an independent panel or peer review group may be more appropriate.

9.6 IAC findings

The IAC makes the following findings in relation to landscape, urban design and visual impacts:

- Changes in landscape character and impacts to visual amenity in key residential areas can be adequately mitigated through the measures proposed in the EPR.
- The proposed multi-function fauna barrier in the northern part of Braeside Park should be increased in height from two metres to three metres (EPR B1).
- The proposed EPR LV1 and LV2 will ensure an appropriate design outcome for the Braeside Park underpass.
- the requirement for an independent design reviewer in EPR LV8 is supported.

9.7 Recommendation

The Inquiry and Advisory Committee makes the following recommendation:

Adopt the Inquiry and Advisory Committee amended version of the Environmental Performance Requirements LV1 to LV8 as shown in Appendix E.

⁴³ Statement of evidence Tim Biles, page 45

10 Noise and vibration effects

10.1 Background

Noise and vibration impacts are addressed in Chapter 12 of the EES and in Technical Appendix E Noise and Vibration Impact Assessment (NVIA).

The draft evaluation objective of the Scoping Requirements in relation to noise and vibration at Figure 1.2 of the EES is:

Amenity and environmental quality - To minimise adverse noise and other amenity effects on nearby residents and land uses, having regard to relevant limits, targets or standards

The EES states that noise and vibration from construction would be managed through measures detailed in Construction Noise and Vibration Management Plan (CNVMP).

For operational noise, the EES proposes Project Objective Noise Limits (PONLs) for traffic noise based on the VicRoads Traffic Noise Reduction Policy (TNRP) 2005.

The EES concludes that with appropriate mitigation measures which includes the use of noise barriers and suitable road surface material, the PONLs can be achieved at all residential areas.

The EES considers that predicted operational noise levels to public open space at Braeside Park would be acceptable and noise mitigation to the Park was not required under VicRoads TNRP. The EES suggests that the use of a proposed multi-function fauna barrier in the southern portion of the Park will have additional acoustic benefits.

10.2 The issues and risks

The key issues identified by the IAC relate to:

- the management of construction noise impacts to residential areas and Braeside Park
- noise level targets for construction noise
- road traffic noise limits to residential areas and the assessment height at habitable buildings
- road traffic noise to non-residential areas including Braeside Park and the wetlands.

10.3 Project response

10.3.1 Construction noise and vibration

The EES states that a CNVMP based on the following relevant Victorian EPA guidelines will be developed:

- EPA Publication 480 Environmental guidelines for major construction sites
- EPA Publication 1254 Noise Control Guidelines.

EPA Publication 480 includes best practice measures for the control of noise and vibration from construction activities and machinery. EPA Publication 1254 contains guidance for community consultation and work scheduling.

The EES refers to construction vibration targets provided by British Standard BS6472-1:2008 Guide to evaluation of human exposure to vibration and buildings, Part 1: Vibration sources other than blasting. The EES proposes adopting the targets associated with Low Probability of Adverse comment⁴⁴.

The EES also refers to German Standard DIN 4150-3:1999 Structural Vibration, Part 3: Effect of vibration on structures. Tables 3.5 and 3.6 of the NVIA provide threshold limits for vibration velocities for structures and buried assets respectively.

Figure 7.1 in the NVIA shows predicted construction noise levels over distance for indicative scenarios. The NVIA states that *“The results indicate that significant levels of noise may occur from construction activities”* and recommends that a CNVMP be developed for the Project⁴⁵.

The NVIA⁴⁶ considers that the CNVMP would contain the following:

- Project specific noise targets for construction
- prediction of noise from each scenario
- assessment of each scenario
- mitigation measures
- requirements for a noise monitoring regime
- description of unavoidable evening and night-time works.

The NVIA⁴⁷ anticipates that the CNVMP will ensure vibration impacts are minimised and monitored during construction.

The EPR managing construction noise and vibration is as follows:

- EPR NV2: requires the preparation of a CNVMP.

10.3.2 Road traffic noise

The EES assesses future road traffic noise using the VicRoads Traffic Noise Reduction Policy (2005) and the Road Design Note (06-01)⁴⁸ and adopts the following PONLs:

- 63dBA $L_{1018\text{hour}}$ for sensitive receivers of noise from the Mordialloc Bypass (Freeway)
- 68dBA $L_{1018\text{hour}}$ for sensitive receivers of noise from the Mordialloc Bypass (Freeway) and the existing Mornington Peninsula Freeway.

VicRoads TNRP identifies sensitive receivers as residential dwellings, aged person homes, hospitals, motels, caravan parks, other buildings of a residential nature, schools, kindergartens, libraries and other noise sensitive community buildings.

⁴⁴ EES Technical Appendix E Table 3.4

⁴⁵ EES Technical Appendix E page 40

⁴⁶ EES Technical Appendix E page 41

⁴⁷ EES Technical Appendix E page 42

⁴⁸ Document 108

The TNRP also states that where existing noise levels are less than 50dBA $L_{1018\text{hour}}$ then consideration should be given to limit the noise increase to +12dB. The EES⁴⁹ states this limit will not be adopted in this instance for the following reasons:

- consistency with previous projects in Greater Melbourne
- acoustic benefit considered to be negligible
- costs and visual impacts associated with higher barriers.

Noise modelling indicates that the PONLs can be achieved through the installation of noise barriers ranging from one to six metres high along the freeway alignment. The road surface will be Open Graded Asphalt (OGA) which is a low noise pavement.

The EES did not consider noise mitigation for Braeside Park, stating that “*There are no criteria for parklands under the VicRoads TNRP*”⁵⁰. Noise predictions indicate a 5 to 12dB increase in current noise levels ($L_{1018\text{hour}}$) is expected in affected areas of Braeside Park.

The EPRs managing road traffic noise are as follows:

- EPR NV1: requires the compliance with PONL at sensitive receivers as defined by VicRoads TNRP
- EPR NV3: requires verification that PONLs have been achieved 6 - 12 months after opening of the Project.

10.4 Evidence and submissions

The following evidence was called in relation to noise and vibration impacts:

- MRPV – Mike Dowsett of WSP
- Kingston City Council – Ross Leo of Clarity Acoustics.

Mr Dowsett gave evidence that the construction activities are likely to have an adverse impact unless noise mitigation and management measures are implemented. Mr Dowsett considered that EPR NV2, which requires development of a CNVMP would adequately manage risks associated with construction noise and vibration. Mr Dowsett was concerned that the adoption of specific noise and vibration targets within the EPR would result in a significant administrative burden for the Project contractor.

Mr Dowsett considered that adoption of the VicRoads’ TNRP was appropriate and as such noise impacts to parkland and industrial areas did not require assessment as they are not considered as sensitive receptors.

Mr Dowsett gave evidence that proposed PONLs were appropriate and that the adoption of the more stringent limit of +12dB for receivers with an existing noise level of 50dBA $L_{1018\text{hour}}$ was not applicable for the following reasons:

- precedents set by previous road projects in Greater Melbourne
- likely acoustic improvement would not be significant
- potential cost associated with higher barriers
- visual impact due to needing barriers as high as 7.5 metres to achieve the standard.

⁴⁹ EES Technical Appendix E page 8

⁵⁰ EES Technical Appendix E page 45

MRPV submitted that adoption the PONL of 63dBA $L_{1018\text{hour}}$ at all dwellings along the alignment was the fairest outcome especially considering that VicRoads Road Design Note RDN 06-01 contained an exemption for providing noise attenuation where residential development has occurred after a road reserve has been set aside as in this case.

Mr Dowsett also noted that the VicRoads TNRP requires the PONL to be achieved at ground level of the affected dwelling.

In responding to submissions made by Residents Against Mordialloc Freeway (RAMF) (Submission 60) regarding the adoption of the World Health Organisation (WHO) traffic noise guidelines, Mr Dowsett stated that these limits were extremely stringent, and he was not aware of any Victorian guidelines which adopted these limits. Mr Dowsett also noted that many of the existing traffic noise levels measured at residential areas in the vicinity of the Project area currently exceed the WHO guidelines.

Mr Dowsett confirmed that there was no Victorian policy or standard that regulated noise to wetland areas where fauna may be affected but he considered that the threshold of 60dBA $L_{1018\text{hour}}$ suggested in the Flora and Fauna Impact Assessment⁵¹ to be appropriate.

Mr Leo gave evidence for Kingston City Council and stated that there were four key issues needing resolution:

- Appropriate PONLs
- Appropriate noise levels to recreational areas
- Application of PONLs at upper levels
- Construction noise management.

Mr Leo considered that dwellings currently experiencing noise levels of less than 50dB $L_{1018\text{hour}}$ should have the lower PONL of existing noise level +12dB. Mr Leo stated that the methodology described in VicRoads Road Design Note RDN06-01 should be implemented. This requires a feasibility study and a reasonableness study. Mr Leo also considered that the PONLs should be applied at upper levels of buildings as consistent with VicRoads publication "Requirement for Developers".

Mr Leo acknowledged that VicRoads TNRP did not include criteria for parkland areas. Mr Leo anticipated that the predicted increase in noise level of 10-12 dB in some areas of Braeside Park would have an impact on park users. Mr Leo recommended that EPR NV1 include noise criteria for Braeside Park.

Mr Leo asserted that the NVIA did not look at construction and vibration noise impacts in detail and recommended that proposed criteria for construction activities be included in the EPR. Mr Leo recommended changes and inclusions to the EPRs which are included in the Kingston City Council Version 3⁵².

The Victorian EPA made a written submission⁵³ but did not appear at the Hearing. The EPA recommended a number of inclusions in the EPR as follows:

- EPR NV1: inclusion of the reference year for achieving the PONLs

⁵¹ EES Technical Appendix C page 130

⁵² Document 62

⁵³ Submission 98

- EPR NV2: EPA to be consulted on the CNVMP
- EPR NV3: recorded verification noise levels be publicly available.

The MRPV Version 2 EPR's include the EPA recommendations made for NV1 and NV2.

Several submissions were concerned about construction and operation noise as well as noise affecting birds. Some submitters, including Mr Cadwallader⁵⁴ and Residents Against Mordialloc Freeway⁵⁵ recommended reducing speeds on the freeway to reduce noise and suggested that the PONLs were not appropriate.

Ms Giovas⁵⁶ recommended that the WHO traffic noise limits be adopted.

Ms Cormie on behalf of Enwerdt Pty Ltd⁵⁷ submitted that noise mitigation for commercial and industrial properties should be provided for both construction noise and on-going road traffic noise.

Friends of Braeside Park⁵⁸ raised concerns of increased noise in the Park especially at the office/depot area and the effect of the noise on local fauna.

10.5 Discussion

10.5.1 Construction noise management and relevant noise targets

The MRPV Version 2 EPR NV2 specifies that a CNVMP be prepared in consultation with the EPA and manage noise in accordance with EPA Publication 1254 and EPA Publication 480.

The IAC notes that neither of the EPA publications provide noise limits for daytime construction activities.

In evidence, Mr Dowsett acknowledged that noise from construction activities is likely to have an adverse impact unless mitigated and/or managed. The EES⁵⁹ states the following in relation to the guideline noise levels provided in EPA Publication 1254:

As indicated in the table [3.2], no Guideline Levels are specified in relation to construction during the day. However, noise emissions must be controlled during the daytime to ensure they are not unreasonable.

Neither the EES nor the evidence or submission of MRPV state what noise level would be considered unreasonable.

Mr Leo proposes a new EPR NV4⁶⁰ which provides construction noise targets for non-residential uses based on Australian Standard AS/NZS 2107:2016 *'Recommended design sound levels and reverberation times for building interiors and noise targets for residential uses'* based on the NSW Interim Construction Noise Guidelines (ICNG) Part 4.1.1 with the hours amended to correspond to EPA 1254.

⁵⁴ Submission 11

⁵⁵ Submission 60

⁵⁶ Submission 69 and Documents 72 and 96

⁵⁷ Submission 53 and Document 88

⁵⁸ Submission 71 and Document 64

⁵⁹ EES Technical Appendix E page 10

⁶⁰ Document 62

The IAC notes that the NSW ICNG Part 4.1.2 also includes noise targets for sensitive non-residential uses. Part 4.1.3 provide targets for commercial and industrial premises and refers to AS2107:2000 (now superseded by AS2107:2016) to determine relevant thresholds for construction noise at other business types.

MRPV in its closing submission⁶¹ disagreed with the use of AS/NZS: 2107:2016 as the Standard is expressly not intended for construction noise targets. MRPV makes no specific comment regarding the use of the NSW ICNG noise targets for residential uses but considers that there is enough guidance in MRPV Version 2 EPR NV2 to achieve acceptable construction noise outcomes.

Mr Leo also proposed additional EPRs NV5, NV6 and NV7, which provide targets for vibration control. The proposed targets in the additional EPRs are based on vibration standards which have been referenced in the EES (NVIA Section 3.56 p12).

Kingston City Council and Mr Leo indicated that the noise and vibration targets in the proposed EPR are similar to those recommended in the West Gate Tunnel.

MRPV considered that the proposed additional targets were unnecessary and argued that targets taken from the West Gate Tunnel Project are not relevant as the tunnel project will have significantly more machinery and construction intensity.

The IAC considers that noise targets are independent of the type of project or construction methodology. The purpose of appropriate noise targets is to protect the community from unreasonable noise. The means and ease by which the limits are achieved will be affected by the intensity of construction and machinery used.

The EES Appendix E page 41 states:

The CNVMP shall be approved by MRPA and relevant stakeholders, and would typically be expected to contain the following information:

Establishment of Project specific noise targets for construction (EPRs)

Presumably the noise targets will be developed by the Project contractor and approved by the EPA since EPR NV2 does not specify noise targets.

The IAC is concerned that there will not be sufficient consideration of construction noise from daytime activities as EPA Publications 1254 and 480 which are referenced in EPR NV2 do not contain any targets for such activities.

The IAC considers that the inclusion of specific noise targets within a CNVMP will assist in managing and mitigation construction noise impacts.

10.5.2 Traffic noise limits to residential areas

Noise modelling in the NVIA has shown that the PONLs adopted by MRPV can be achieved at all residential areas with the installation of appropriate noise barriers and low noise road surface treatment.

⁶¹ Document 103

The proposed PONLs have been determined from the VicRoads TRNP with additional guidance from VicRoads RDN06-01.

It was Mr Leo's evidence that VicRoads' RDN 06-01 specifies that where existing noise levels are less than 50dBA $L_{1018\text{hour}}$ then an assessment of noise barrier requirements to limit future noise level increases to less than 12dB must be undertaken.

In this particular case, MRPV has highlighted exceptions to the VicRoads' policy where properties may be exempt from consideration of noise attenuation. Exception 3 applies where new buildings or subdivisions are construction in areas abutting any road zone shown on any planning scheme for a new road or widening.

MRPV considers that strict application of the VicRoads' TRNP and RDN06-01 for the Project would result in many residences along the Project alignment being ineligible for noise attenuation as many of these dwellings would have been constructed after the road zone was established.

Along with the more stringent road traffic noise limit, Mr Leo also considered that the PONLs should be applied at all habitable levels (ground and upper levels) of an affected dwelling as recommended for the Westgate Tunnel. This proposition was rejected by MRPV as it was likely to lead to additional costs and higher barriers. MRPV also noted that the Minister had rejected this recommendation for the Westgate Tunnel and the urban context of the Westgate Tunnel was significantly different from this case.

Neither party provided the IAC with an indication of the number of two storey dwellings affected.

The IAC accepts that the adopted PONLs are appropriate and that in this case only ground level receivers need to be considered.

10.5.3 Traffic noise limits to non-residential areas

(i) Braeside Park and Woodlands wetlands

VicRoads' TRNP does not consider public open space such as parklands as a noise sensitive area and as such the EES did not recommend specific mitigation measures for road traffic noise for Braeside Park.

Although the EES identified the Braeside Park Wetlands and Woodlands Wetlands as Key Biodiversity Areas⁶² and proposed a threshold for noise (60dBA $L_{1018\text{hour}}$) to minimise the effect on birdlife, the EES did not propose any noise barriers adjacent to these areas⁶³.

During the course of the hearing MRPV submitted Version 2 EPRs⁶⁴.

EPR B1 (as modified) includes requirements for multi-function fauna barriers in Braeside Park, Woodlands Wetlands and Waterways Wetlands. Although these barriers are primarily for the protection of fauna, the barrier heights have been specified along with an acoustic

⁶² EES Technical Appendix C page 37

⁶³ EES Technical Appendix E, Appendix D Map 11

⁶⁴ Document 94

performance for the barrier material. The barriers include a two metre high section along the eastern side of the new roadway from Lower Dandenong Road to Park Way transitioning to a 3 metre high barrier from Park Way to Governor Road (The IAC has recommended that this should be a three metre barrier along the entire length of Braeside Park – see 9.7).

A memorandum provided by Mr Dowsett⁶⁵ shows that, with the proposed barriers installed, road traffic noise would be reduced to 63dBA L_{1018hour} in most areas of Braeside Park and to 60dBA L_{1018hour} in the Braeside Park wetlands and Woodlands wetlands. Noise modelling for the Waterways wetlands was not shown.

The EPR NV1 proposed by Mr Leo⁶⁶ recommends a noise limit of 63dBA L_{1018hour} for passive open space at Braeside Park and a noise level of 60dBAL_{1018hour} for the wetlands areas. The Kingston City Council advised that Mr Leo considered the proposed barrier heights acceptable for acoustic purposes.

When asked by the IAC, Mr Dowsett agreed that if the Braeside Park area was considered a noise sensitive space then the target for passive open space proposed by Mr Leo would be appropriate. This target is the same as the PONL for residential dwellings adjacent to the new road.

The IAC considers that the multi-function fauna barriers proposed in EPR B1 will provide sufficient attenuation from road traffic noise to the Braeside Park and the key wetlands areas in Woodlands Estate and Braeside Park.

(ii) Noise to industrial areas

The proposed Project alignment abuts existing commercial and industrial uses to the west in Redwood Gardens, Woodlands Industrial Estate and Canterbury Estate.

The NVIA (Appendix E of the EES) does not consider these areas as noise sensitive and PONLs do not apply in these areas.

A submission concerning noise to industrial premises was made by Ms Cormie on behalf of Enwerdt Pty Ltd⁶⁷ located 34-40 Garden Boulevard. Photographs provided in Document 88 indicate that the subject property and surrounding industrial uses are mainly single level warehouse buildings with office areas facing away from the road alignment.

Neither Mr Dowsett nor Mr Leo made any recommendations regarding noise to commercial and industrial receivers and no expert evidence regarding noise was provided by Enwerdt.

The Committee is satisfied that PONLs are not required for commercial and industrial areas adjacent to the Project alignment.

⁶⁵ Document 37

⁶⁶ Document 62

⁶⁷ Submission 53 and Document 88

10.6 IAC findings

The IAC makes the following findings in relation to noise and vibration:

- The proposed EPR NV2 for the management of construction noise must include specific noise targets for day, evening and night-time periods that apply from Day 1 of the Project construction and allow for a quantitative assessment to be undertaken. The targets should be developed in consultation with the EPA.
- The proposed EPR for the management of vibration impacts is adequate.
- The recommended PONLs are appropriate.
- The PONLs should apply at ground floor levels of habitable buildings.
- The proposed multi-function fauna barriers will have an added benefit of reducing noise levels at adjacent parklands and significant wetlands.

10.7 Recommendation

The Inquiry and Advisory Committee recommends:

Adopt the Inquiry and Advisory Committee amended version of Environmental Performance Requirement NV2 as shown in Appendix E.

11 Air quality and greenhouse and gas

11.1 Background

Air Quality and Greenhouse Gas is addressed in Chapter 13 of the EES and in Technical Appendices F (Air Quality Assessment (AQA)) and G (Greenhouse Gas).

The draft evaluation objective of the Scoping Requirements in relation to air quality and greenhouse gas at Figure 1.2 of the EES is:

Amenity and environmental quality - To minimise adverse noise and other amenity effects on nearby residents and land uses, having regard to relevant limits, targets or standards

The assessment of air quality and greenhouse gas includes a review of impacts associated with both construction and operation.

For the construction phase, dust containment and potential odour from road construction over the former landfill site to the northern end of the Project have been identified as the key risks. Greenhouse gas emissions associated with diesel fuel used to power construction equipment and embodied carbon in materials used for construction have been considered.

Pollutants associated with operation of the completed freeway and greenhouse gas emissions from vehicles and energy usage associated with freeway operation have been assessed.

Threshold levels for greenhouse gases have been set in accordance with *National Greenhouse and Energy Reporting Act 2007* (NGER Act).

Project design criteria for air quality have been set using State Environment Protection Policy – Air Quality Management (SEPP AQM).

The EES states that there is potential for air quality impacts from construction activities especially during roadway and embankment formation and laying of the pavement base on days when the weather is hot and/or windy. Dust as total suspended particles (TSP) and PM₁₀ could exceed the design criteria set by SEPP AQM at dwellings within 65 metres of the roadway. The impacts would be managed through mitigation measures detailed in the EPR.

Potential odour impacts from construction over the former landfill site have been assessed and are not expected to impact sensitive receivers which are located at least 300 metres from this area of the Project.

Greenhouse gas emissions associated with construction activities, mainly associated with construction traffic and machinery, are not considered significant.

Vehicle emissions from future traffic have been modelled. The modelling indicates that the modelled pollutants, carbon monoxide, Particulate Matter (PM₁₀ and PM_{2.5}) and nitrogen dioxide will be below required design levels at the nearest sensitive receivers. Although the relevant criteria are achieved, the EES acknowledged that there would be elevated levels of nitrogen dioxide at sites close to the freeway.

Greenhouse gas emissions associated with the freeway operation are expected to be below the NGER reporting threshold and a net reduction in greenhouse gas is anticipated compared to the 'no Project' scenario.

11.2 The issues and risks

The EES assessed all potential air quality impacts as negligible to low risk.

The key issues identified by the IAC relate to:

- adequate management of air quality during the construction process at both residential and commercial receivers
- ensuring vehicle emissions from freeway use will achieve required air quality standards at sensitive receivers.

11.3 Project response

11.3.1 Construction

The EES assessed potential dust emission impacts associated with construction activities. The assessment considered the volume of excavation/fill, construction time frame of up to two years, the type and number of construction vehicles.

In response to the identified risks from air quality impacts to nearby residential and commercial receivers, the Project proposes a suite of mitigation measures as detailed in Technical Appendix F⁶⁸. The measures include but are not limited to the following:

- Reduce activity during worst-case weather conditions
- Monitoring for PM₁₀ with portable stations between the work site and residential receivers as per VicRoads specification
- Responding if pre-determined trigger levels are exceeded
- Undertake regular watering of exposed surfaces especially on hot windy days
- Locate haulage routes away from sensitive receivers.

The required mitigation measures would be incorporated into the CEMP and EPR AQ2.

Greenhouse gas emissions associated with the construction phase of the Project are anticipated to be significantly below reporting thresholds set by the NGER Act. Although greenhouse gas emissions associated with construction are expected to be insignificant, control measures to mitigate greenhouse gases are contained in EPR GG1 and GG2.

11.3.2 Operation

For the operational phase, vehicle emissions were predicted based on the volume of traffic, types of vehicles, vehicle speed and emission rates per vehicle. Modelling illustrated that compliance with criteria set by SEPP AQM for Carbon Monoxide, PM₁₀, PM_{2.5} and nitrogen dioxide levels would be achieved at all sensitive receivers. Greenhouse gas emissions were also predicted to be insignificant.

EPR AQ1 sets mandatory criteria for air quality based on State Environment Protection Policy – Ambient Air Quality (SEPP AAQ) and SEPP AQM.

EPR GG1 and GG2 state that greenhouse gas emissions must be minimised.

⁶⁸ EES Technical Appendix F page 91

11.4 Evidence and submissions

The following evidence was called in relation to air quality and greenhouse gas emissions:

- MRPV – Dr Ian Wallis of Consulting Environmental Engineers
- RAMF – Dr Vicki Kotsirilos.

Kingston City Council did not call any evidence regarding air quality and did not cross examine either of the expert witnesses.

Dr Wallis highlighted three principal air quality issues:

- Dust during construction
- Odour from construction over former landfill site
- Vehicle emissions during operation.

Dr Wallis gave evidence that dust from construction activities were predicted to exceed the SEPP AQM design targets beyond 65 metres from the construction zone on hot, windy days (approximately two days per year). The amount of dust generated will depend on the weather and how the dust management controls are implemented. To further mitigate dust impacts, Dr Wallis recommended amending EPR AQ2 to include dust monitoring measures contained in VicRoads specifications.

Part of the northern section of the freeway will be constructed on top of a former landfill site. Dr Wallis stated that monitoring at the site had shown only small amounts of odourless gas currently being released. Noise sensitive receivers are over 300 metres from the landfill site. Dr Wallis considered the risk of odour from the landfill to be insignificant and also commented that work in this area would be managed through the CEMP which would also minimise the risk of odour from the construction area within the former landfill site.

Dr Wallis explained the methodology for assessing vehicle emissions and advised that the results of the modelling indicated that the contaminants carbon monoxide, PM_{2.5}, PM₁₀ and nitrogen dioxide would all meet the SEPP air quality requirements at all sensitive receivers.

Dr Wallis acknowledged that predicted nitrogen dioxide levels at the Parks Victoria annex building in Braeside Park would meet the design objectives but with only a small safety factor. He noted two potential mitigation measures:

- moving the annex building further from the roadway
- increasing the height of the proposed three metre multi-function fauna barrier adjacent to the annex to four metres and including planting to either side of the wall.

MRPV is not proposing to increase the height of the proposed three metre wall at this location.

Dr Wallis accepted that there are adverse health effects associated with PM_{2.5}. However, his statement of evidence⁶⁹ includes data from the EPA website stating that vehicle emissions are responsible for 31 per cent of all emissions of particles smaller than PM_{2.5}. 69

⁶⁹ Statement of evidence Dr Wallis paragraph 36 page 5

per cent of PM_{2.5} come from other sources such as bushfires, dust, wood, smoke, photochemically-generated particles, industrial emissions and sea salt⁷⁰.

Dr Wallis gave evidence that *“it is not correct to assume that the Mordialloc Bypass will suddenly cause a change from clean air to contaminated air. Instead the change will be from slightly contaminated air (most of the time) to slightly more contaminated air (most of the time).”*⁷¹

Dr Wallis gave evidence that dust management and vehicle impacts would be adequately managed by the proposed EPR AQ1 and AQ2 (MRPV version 2).

Dr Kotsirilos gave evidence regarding health impacts associated with air quality especially in relation to PM_{2.5}. Dr Kotsirilos stated that many medical studies had shown links between PM_{2.5} and premature death, lung cancer, cardiovascular disease and other negative health impacts.

Dr Kotsirilos asserted that there were no safe limits for pollutants especially PM_{2.5} and did not consider the EPA standards to represent a “safe” level.

Several submissions were concerned about construction and operation noise as well as noise affecting birds. Some submitters recommended reducing speeds on the freeway to reduce noise and suggested that the PONLs were not appropriate.

A number of submissions were concerned about air quality and health effects from the Project. Ms Prieto⁷² submitted that the health effects associated with pollutants from motor vehicles were significant and would cause adverse health effects. Ms Prieto also considered that there were no “safe” levels of pollutants.

Mr MacGuire⁷³ submitted that his dwelling in the Chelsea Heights Lifestyle retirement village in Wells Road would be affected by PM_{2.5} from the freeway operation and requested additional intensive vegetation screening to mitigate the impacts. Mr MacGuire considered that the predicted annual PM_{2.5} concentration should have been assessed against the 2025 Environmental quality objective in SEPP AAQ.

11.5 Discussion

11.5.1 Control of dust from construction activities

MPRV submitted that air quality during construction can be adequately managed though the CEMP required by EPR EM2 and AQ2.

No parties disputed Dr Wallis’ findings and the IAC considers that with appropriate mitigation measures in place, air quality associated with construction will meet appropriate standards and present a low risk at residential receivers. The IAC notes that EPR AQ2 was amended in accordance with the recommendations of Dr Wallis to include consideration of commercial receivers. The IAC agrees that this is a sensible change.

⁷⁰ Statement of evidence Dr Wallis paragraph 56 page 8

⁷¹ Statement of evidence Dr Wallis paragraph 51 page 8

⁷² Submission 72, document 76

⁷³ Submission 26, document 86

11.5.2 Vehicle emissions during operation

Air quality modelling has demonstrated that the relevant SEPP AQM and AAQ design criteria and quality objectives can be achieved at all sensitive receivers.

The IAC accepts that there is a recognised link between health effects and air pollution. The IAC also accepts that the EPA is the statutory body responsible for protecting the environment in Victoria and, as submitted by MRPV, the EPA (which has been part of the technical reference group for the Project) has not sought to be heard and has not requested any changes to the air quality EPRs.

MRPV submitted in closing that the 2025 quality objective was a possible future standard that had not yet been adopted. The IAC agrees that the 2025 quality objective for PM_{2.5} annual average of 7ug/m³ should be regarded as an aspirational goal. However, it is noted that the predictions of PM_{2.5} made by Dr Wallis in Figure A-4⁷⁴ and reproduced by Mr McGuire in his verbal submission (Document 86) indicates that the background PM_{2.5} level of 6.5ug/m³ is already approaching the 2015 goal. (It is noted that Figure A-4 shows the background PM_{2.5} level incorrectly on the chart). The chart indicates that the aspirational goal of 7ug/m³ annual average is likely to be achieved at 30-35 metres from the roadway although with no factor of safety.

The Chelsea Heights lifestyle village is 35 metres from the roadway and compliance with the 2025 quality objective is predicted but without any safety margin.

Dr Wallis stated that barriers of two metres make little difference to air quality, with small benefits occurring when barrier heights are three metres and greater improvements with even higher barriers. Dr Wallis also noted that a 15 metre band of vegetation could also assist dispersion and improve air quality.

The IAC considers that additional denser planting in areas where sensitive receivers are close to the roadway such as at the Chelsea Heights Lifestyle retirement village is warranted due to the minimal safety margin in the level of PM_{2.5} when compared to the aspirational goal.

11.6 IAC findings

The IAC makes the following findings in relation to air quality:

- The proposed EPR EM2 and AQ2 will adequately manage air quality impacts from construction to both residential and commercial receptors.
- Proposed EPR LV1 must include a requirement for denser planting of a 15 metre wide band of trees (small and medium size) at areas where residences are within 35 metres of the roadway.

⁷⁴ EES Technical Appendix F page 101

11.7 Recommendation

The Inquiry and Advisory Committee recommends:

Adopt the Inquiry and Advisory Committee amended version of Environmental Performance Requirements as shown in Appendix E.

12 Historic and Aboriginal cultural heritage

12.1 Background

Chapter 14 of the EES presented matters relating to Aboriginal cultural heritage and Chapter 15 of the EES details issues relating to historic cultural heritage. Appendix H of the EES details the Aboriginal cultural heritage impact assessment and Appendix I details the historical cultural heritage impact assessment.

Draft Amendment GC107 proposed to amend Map 06HO of the Kingston Planning Scheme to amend the boundary of the Heritage Overlay HO104, Braeside Park Precinct, to accurately reflect the location of the heritage asset.

The EES evaluation objective for both Aboriginal and historic cultural heritage is:

- To avoid or minimise adverse effects on Aboriginal and historic cultural heritage values.

12.2 The issues and risks

The key issues identified in the EES were the potential impacts to the Heritage Overlay (HO) site (HO104), which is the 'Braeside Park Precinct' and what the extent of a revised HO should be.

12.3 Project response

In order to avoid the Parks Victoria occupied buildings, MRPV have designed the Project to avoid many of the heritage elements of HO104.

A Cultural Heritage Management Plan (CHMP) is being prepared and will be considered for approval under the *Aboriginal Heritage Act 2006*. It is not the role of the IAC to review or make comment on a CHMP.

12.4 Evidence and submissions

The following evidence was provided by MRPV in relation to heritage:

- Mr Jonathan Howell-Meurs of Andrew Long & Associates in historical cultural heritage, and
- Ms Andrea Murphy of Archaeology at Tardis in Aboriginal cultural heritage.

The heritage experts were not called to provide evidence at the Hearing.

12.4.1 Historical cultural heritage

Braeside Park Precinct

The heritage impact assessment in the EES stated the study area has demonstrated varied land use activities including clearing vegetation, agricultural land uses, modifications to the hydrology of the region, development of commercial and industrial estates and construction of roads, rail and utility infrastructure.

The heritage overlay (HO104) Braeside Park Precinct comprises two components including a settling pond (in the north) and Melbourne Metropolitan Board of Works (MMBW) buildings and equipment (in the south). The Project intersects with the southern component. Known

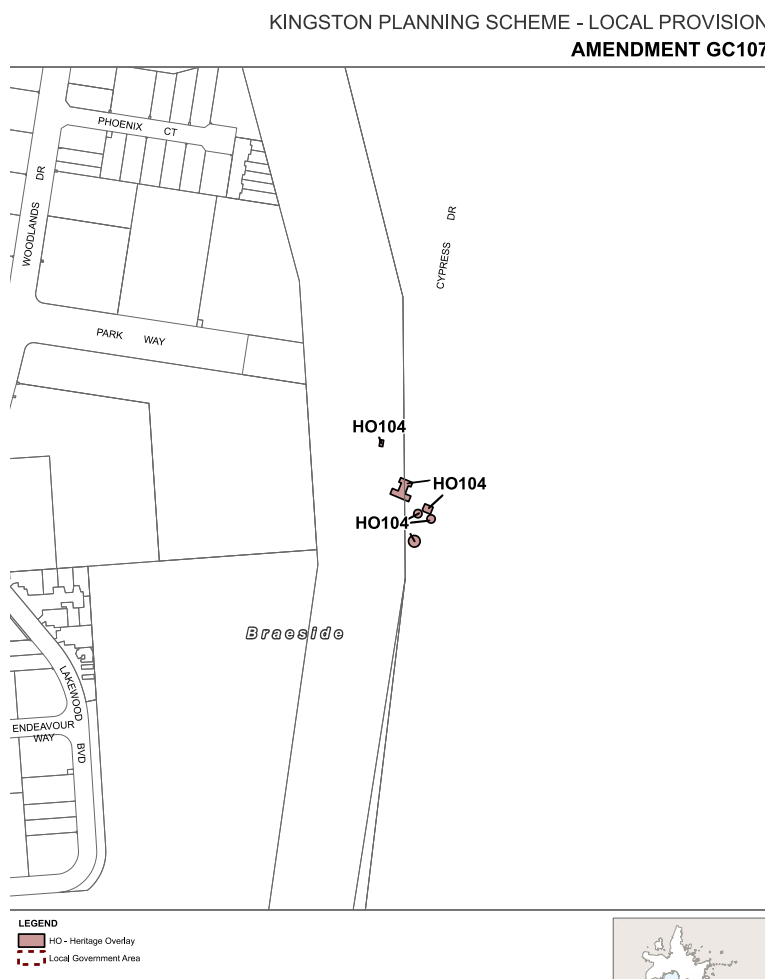
features include a brick-based administration building and a brick-based storage structure (former chlorine store).

The heritage impact assessment found that upon review of the heritage overlay, which included consultation with Council and Heritage Victoria, it was determined that the current mapped extent of HO104 (southern component) is inaccurately represented in the Kingston Planning Scheme. The heritage impact assessment noted that the place extent would need to be revised to more accurately reflect the location of the heritage place.

The EES stated that as part of the planning scheme amendment to the Kingston Planning Scheme, MRPV proposes to amend the extent of the HO to more accurately reflect the location of the Braeside Park Precinct (HO104). A proposed HO104 map was exhibited with Amendment GC107.

During the course of the Hearing, MRPV provided a revised HO104⁷⁵. The correction proposed by MRPV will apply HO104 to the two brick MMBW buildings (administrative and chlorine store) and key associated infrastructure such as the concrete tanks and treatment ponds located outside of the Project area (refer to Figure 6 below).

Figure 6 MRPV proposed extent of HO104



Council requested that the HO104 extent also include areas of curtilage, a stand of trees and sewerage infrastructure⁷⁶. Council's position is that there has been no updated assessment provided which supports decisions to leave out any particular elements.

The Friends of Braeside Park are satisfied that the Parks Victoria buildings will be protected, however it also wants to see a buffer protection zone around the former sewerage works area and is of the opinion that further assessment is required.

Other heritage sites

One site listed on the Victorian Heritage Register (VHR-HO255, also HO3) Former Christ Church of England, is located immediately adjacent, but not within, the road reserve area at the intersection of Old Dandenong and Centre Dandenong Roads. The evidence is that this site will not be impacted by the Project.

The heritage impact assessment found no other listings on the Victorian Heritage Inventory, National Heritage List, Commonwealth Heritage List or World Heritage List.

Archaeological Heritage

A survey for archaeological heritage was undertaken for the Project area, based upon the desktop review. After extensive field surveys, with the exception of the Braeside Park Precinct, the survey demonstrated a low potential for archaeological features and/or deposits of significance to be present. The EES stated that while there is a high potential for historical archaeological features relating to the Braeside Treatment Plant to be impacted by the Project, the features are likely to be of low historical archaeological significance.

12.4.2 Aboriginal cultural heritage

Cultural Heritage Assessment

The desktop assessment found 66 recorded Aboriginal places within the study area, including 34 scarred trees and 19 stone artefact scatters⁷⁷. Two subsurface stone artefacts were found during the standard assessment and six subsurface stone artefacts during the complex assessment. These are representative of those stone artefacts found in the region⁷⁸.

The EES concludes that due to past site disturbance, it is unlikely that there are large numbers of additional stone artefacts in the Project area that would be impacted by the Project.

Cultural Heritage Management Plan

Any project that requires an EES is required to prepare a CHMP. A draft CHMP has been prepared by the MRPV's consultant in consultation with the relevant traditional owner groups and will be provided to Aboriginal Victoria who will evaluate the CHMP⁷⁹.

⁷⁶ Document 103, p4

⁷⁷ EES Volume 2, Chapter 14, p14-7

⁷⁸ EES Volume 2, Chapter 14, p14-12

⁷⁹ Ms Andrea Murphy's expert evidence report, p2

12.5 Discussion

Historical cultural heritage matters are not considered to be significantly affected by the development of the Project as presented in the EES and the expert evidence statements.

The IAC agrees with Council that the exact location of the HO104 Braeside Park Precinct features will require detailed analysis (including survey) to fully refine the extent of the HO adjustment. In its closing submission, MRPV made it clear that they will further consult with Kingston City Council and Parks Victoria on an amended HO104 map to resolve the issue. The IAC accepts that this is a sensible outcome. EPR H2 and the IAC's revised EPR H3, reflecting the matters raised by Council, provide adequate guidance for protection of historic heritage matters, including the Braeside Park Precinct.

In regard to Aboriginal cultural heritage, the IAC notes that a CHMP will be prepared and will be required to be approved prior to works commencing on the Project. Notwithstanding, the EES and evidence is that although some artefacts were found during the assessment, these are representative of those stone artefacts found in the region and the Project is not likely to encounter significant artefacts due to the past disturbance of the area.

The IAC agrees with Ms Murphy that EPR H1 is adequate to address this matter.

12.6 IAC Findings

The IAC makes the following findings in relation to historic and Aboriginal heritage:

- The IAC accepts that there is a low potential for significant historical cultural heritage or archaeological features to be located within the Project alignment.
- With respect to the HO104, the IAC agrees that a revised HO extent is required, and this should include at a minimum the two brick buildings and some curtilage. The IAC agrees with Council that further consultation between Council and Parks Victoria is required to resolve the extent of the HO104 and that further heritage assessment may be required.
- The IAC accepts that in regard to Aboriginal cultural heritage significance there are no significant sites within the Project area and notes that protocols will be in place under the CHMP to protect any Aboriginal cultural heritage that may be located during construction.

12.7 Recommendation

The Inquiry and Advisory Committee makes the following recommendation in relation to heritage issues:

Major Road Projects Victoria should consult with Kingston City Council and Parks Victoria to resolve the HO104 extent.

13 Surface water

13.1 Background

Chapter 16 of the EES addressed issues relating to surface water, including water quality and flooding. It is based on the impact assessment by WSP presented in Appendix J: Surface Water Impact Assessment. Further details about the hydrologic and hydraulic assessment are presented in the *Mordialloc Freeway Hydrologic and Hydraulic Modelling Report* (WSP August 2018).

The draft evaluation objective of the Scoping Requirements in relation to ‘water, catchment values and hydrology’ is:

To minimise adverse effects on groundwater, surface water and floodplain environments and minimise effects on water quality and beneficial uses, including the ecological character of the Edithvale-Seaford Wetlands Ramsar site.

The EES presented separate assessments for surface water and groundwater. The IAC report structure reflects this, with separate chapters on surface water (this chapter) and groundwater (Chapter 14). The surface water assessment examined flow regimes, flooding and surface water quality.

The Project area is situated in the Mordialloc Creek sub-catchment of the Dandenong Creek catchment. The Project crosses Mordialloc Creek and a number of tributaries including Old Dandenong Road Drain, Smythes Drain, Dingley Drain, Gartsides North Drainage Scheme Drain, Gartsides Drainage Scheme Drain, Gartsides South Drainage Scheme Drain and Braeside West Drainage Scheme Drain.

The southern portion of the Project area is situated within the former Carrum Carrum Swamp and interacts with four major wetland areas. The Ramsar-listed Edithvale-Seaford Wetlands are remnants of the former Carrum Carrum Swamp whereas the Braeside, Woodlands and Waterways Wetlands are constructed wetlands within the former Swamp area. The Braeside Wetlands are situated upstream of the Project area (i.e. they drain towards the Project area), whereas the Edithvale, Woodlands and Waterways Wetlands are downstream of the Project area (i.e. they receive runoff from the Project area).

The EES proposed six EPRs (W1 to W6) to address potential impacts on surface water, which include a requirement for a Water Management and Monitoring Plan (EPR W5). The EES concluded that with appropriate management and monitoring, the potential impacts of the Project on surface water can be satisfactorily mitigated.

Evidence relating to potential impacts of the Project on surface water was received from three expert witnesses:

- Mr Rob Leslie, SWP (called by MRPV)
- Mr Warwick Bishop, Water Technology (expert witness report submitted by Council)
- Mr Andrew Prout, Engeny (called by Lugeo Anna Nominees).

Many submissions were received relating to impacts on surface water, including from Council,⁸⁰ Melbourne Water,⁸¹ EPA,⁸² Defenders of the South East Green Wedge,⁸³ Friends of Mordialloc Catchment,⁸⁴ a representative of Waterways Concerned Residents,⁸⁵ Lugeo Anna Nominees,⁸⁶ and several private submitters.⁸⁷

13.2 The issues and risks

The key issues identified by the IAC relate to:

- Potential impacts of the Project on streamflows and surface water inflows to the wetlands
- Potential impacts of the Project on flooding
- Potential impacts of the Project on water quality with implications for receiving waters including the Edithvale, Woodside and Waterways Wetlands, Mordialloc Creek system and Port Phillip Bay.

13.3 Project response

EPRs W1 to W6 address impacts on surface water and include a requirement for a Water Management and Monitoring Plan to be prepared and implemented (EPR W5). The EES surface water impact assessment outlined the mitigation measures that have been proposed for the Project.

The Project crosses Mordialloc Creek and seven other major drains and has potential to cause changes in flood behaviour. The reference design was developed with regard to flooding impacts and further work will be undertaken during detailed design, in consultation with Melbourne Water, Kingston City Council and City of Greater Dandenong. Relevant measures include drainage design, culvert sizing, flow retardation or detention, and adjustments to the vertical alignment of the road.

All construction (including stockpiles, temporary works and location of plant and equipment) within the 1 per cent AEP floodplain will be carried out in accordance with Melbourne Water requirements. Melbourne Water has indicated that it requires hydraulic modelling to assess the flood impacts of the construction works and details of proposed mitigation measures to mitigate or reasonably manage any increase in flood risk.⁸⁸

The EES indicates that construction will be undertaken in accordance with SEPP requirements to minimise land disturbance, soil erosion and discharge of sediment and other pollutants to surface waters. Mitigation measures will be consistent with guidance in the EPA publications *Construction Techniques for Sediment Pollution Control* (1991) and

⁸⁰ Council, Document 30 (Council Opening Submission), 31 (Council's Version 1 EPRs), 42 (Council's submission), 43 (Council's Version 2 EPRS), 62 (Council's Version 3 EPRS)

⁸¹ Melbourne Water, Submission 78

⁸² EPA, Submission 98

⁸³ Defenders of the South East Green Wedge, Submission 84

⁸⁴ Friends of Mordialloc Catchment, Submission 92

⁸⁵ Representative of Waterways Concerned Residents, Submission 47

⁸⁶ Lugeo Anna Nominees, Submission 89 and Document 74

⁸⁷ Submissions 39 and 69

⁸⁸ EES Appendix J, Section 7.4.3.1

Environmental Guidelines for Major Construction Sites (1996). Pumped discharges will be made in a way that does not adversely impact on existing flood levels or the capacity of the stormwater network.

The EES indicated that the following measures are likely to be used to mitigate impacts on surface water quality when the Project is operational:

- Grassed swales have been incorporated in the road design to treat stormwater runoff.
- Bioretention systems have also been proposed at three of the five outfalls draining to the wetlands to ensure that there is no net increase in pollutant loadings entering the Edithvale, Woodlands and Waterways wetlands.
- Spill containment with a minimum capacity of 20,000 litres (the capacity of a fully loaded fuel tanker) was proposed at four of the five outfalls draining to wetlands potentially integrated into the design of the bioretention systems.
- Enlargement of the roadside swales at Outfall H (near Governor Road) was proposed to assist in mitigating spill risk.

13.4 Evidence and submissions

13.4.1 Potential impacts of the Project on streamflow hydrology and inflows to wetlands

(i) EES/MRPV

The EES identified that the Project could potentially affect the hydrological regime of downstream waterways through changes in imperviousness, ground levels or other permanent works. However, Mr Leslie advised that the intention of the design was to preserve all existing cross drainage and road drainage would be discharged to the nearest drain, after treatment.⁸⁹

WSP used a MUSIC model to assess the impact of changes in impervious surface area due to the Project on streamflows at the Dunlops Drain gauging station (the only gauging station in the Mordialloc Creek catchment) and inflows to the Woodlands Wetlands.⁹⁰ They found that the increase in impervious area will have negligible impacts. The modelling predicted that climate change will have much greater impacts on surface water flows.

A MUSIC model assessment was not undertaken for the Waterways Wetlands. The area impacted by the Project comprises less than 1 per cent of the total catchment area of the Waterways Wetlands, therefore the EES surmised that hydrological impacts would be indiscernible. The EES indicated that the construction of the freeway between wetland cells could potentially have a greater effect on the hydrology of the Waterways Wetlands and this issue would be addressed in the detailed design.

The EES used a SOURCE water balance model to determine the impacts of increased surface runoff resulting from the impervious road surfaces, together with very minor changes in

⁸⁹ Mr Leslie, verbal evidence

⁹⁰ EES, Appendix J Surface Water

groundwater inflow to compression effects of the road embankments, on the hydrology of the Edithvale Wetlands.⁹¹ The SOURCE modelling showed that under existing climate conditions:

- the wetland surface area will increase by about 7 percent in the Edithvale North Wetland and 5 percent in the Edithvale South Wetland as a result of increased flows
- water levels will increase by a minor degree, except in wetland cells EN2 and EN3, where the 80th percentile water level is expected to increase by 0.4 m and 0.2 m respectively; however, impacts on 50th and 10th percentile water levels are predicted to be minor at EN2 (less than 5 centimetres) and negligible at EN3.

EPR W1 includes requirements to minimise impacts on surface water flow, including water flows to adjacent wetland areas. No specific mitigation measures have been proposed in relation to changes in runoff hydrology.

(ii) Other parties

No specific submissions were made in relation to changes in flow regime, other than flooding, which is discussed separately below. Defenders of the South East Green Wedge submitted that hydrology of the Edithvale-Seaford wetlands needs to be maintained⁹².

13.4.2 Potential impacts of the Project on flooding

(i) EES and MRPV

The EES indicated that hydrologic and hydraulic modelling was undertaken to define existing flood conditions, assess the impacts of the Project and investigate mitigation options. A RORB hydrology model was developed to provide flood hydrographs for input to a 2-dimensional TUFLOW hydraulic model. Assessments were based on a 1 percent Annual Exceedance Probability (AEP) design flood.

The Project crosses existing 1 per cent AEP flood extents at six locations⁹³ and includes extensive embankments. Flood impacts were assessed by detailed modelling of the proposed design including associated surface water drainage elements such as culverts, pipes and swales. The reference design includes standard swales and additional flood storage areas next to Braeside Park and the Woodlands Wetlands to compensate for existing floodplain storage lost due to the Project.

The impacts of the Project were assessed against *Melbourne Water standards for infrastructure projects in flood-prone areas*, which requires that risks to people and property must not increase as a result of the development, unless otherwise agreed by Melbourne Water. The EES reported that the reference design mostly meets these requirements, except for the following three locations outside the Project area with significant afflux (increase in flood level) in the 1 per cent AEP design flood:

- Immediately south of Lower Dandenong Road (up to 0.5 metre afflux)

⁹¹ EES, Appendix C to Appendix K

⁹² Defenders of the South East Green Wedge, Submission 84 and Document 68

⁹³ EES, p. 16-17

- Braeside Park and Woodlands Wetlands area (up to 0.05 metre afflux over a wide area)
- East of Bowen Parkway Road (up to 0.06 metre afflux).⁹⁴

The EES indicated that the afflux immediately south of Lower Dandenong Road will be resolved in the detailed design but does not propose further mitigation of the afflux at the other two sites.

The EES reported that the afflux in the Braeside Park and Woodlands Industrial Estate Wetlands area occurs mostly within parklands and grasslands and would not change the flood risk to people and property. Further mitigation measures, such as flood gates, are likely to result in undesirable side effects. Mr Leslie advised that Parks Victoria and Melbourne Water were consulted about the afflux in Braeside Park; Melbourne Water considers this impact to be acceptable on the basis that it does not materially change the flood hazard category or land use.

The afflux east of the Bowen Parkway Road would be contained within an open drainage channel. It occurs because the culvert for the Smythes Drain Crossing is designed to accommodate greater flows than the existing channel, to allow for future urban development upstream in accordance with the Melbourne Water's Bowen Road Drainage Scheme.

Mr Leslie advised that subsequent to the finalisation of the EES, WSP had undertaken an assessment of the impacts of the Project on the 1 per cent AEP flood under a climate change scenario based on DEWLP guidelines. This assessment predicted afflux in three areas:

- South of Centre Dandenong Road – up to 220 millimetres afflux impacting seven properties
- North of Lower Dandenong Road – up to 110 millimetres afflux impacting three properties
- Braeside – 15 to 27 millimetres afflux impacting up to 50 properties, and 45 millimetres afflux at the Parks Victoria office.

Mr Leslie advised that mitigation measures could be applied at the detailed design stage to increase compliance with required tolerances but warned that it may not be possible to be fully compliant.

EPR W2 states that the Project must meet the requirements of *Melbourne Water standards for infrastructure projects in flood-prone areas*.

(ii) Council

Council expressed concerns regarding the impacts of the Project on flooding and submitted that further work should be undertaken to mitigate and manage afflux impacts greater than 10 millimetres, including at the three specified locations. It submitted that EPR W2 should be amended to reflect this.⁹⁵

⁹⁴ EES Appendix J, Table 7.5

⁹⁵ Council, Document 62

Mr Bishop, for Council, highlighted that the hydraulic function of the proposed freeway is heavily reliant on lateral drainage connections (culverts) to convey flows and noted that catastrophic flooding could potentially occur if the culverts were undersized or became blocked. To address this risk, he recommended that the detailed design process should consider:

- Potential changes in hydrology resulting from climate change and/or land use change
- The performance of the drainage system in floods greater than the 1% AEP design flood (e.g. the 0.5 per cent and 0.2 per cent AEP design floods)
- Blockage.

Mr Bishop advised that blockage was a significant risk because the region is quite flat and recommended that an Asset Management Plan should be established that includes a proposed maintenance regime for the culverts.

Mr Bishop noted the widespread extent of the afflux predicted by the EES at Braeside Park and Woodlands Wetlands. He recommended that the implications of this afflux on the health and ecology of the wetlands should be confirmed.

(iii) Melbourne Water

Melbourne Water is the relevant floodplain management authority for the Project area and is responsible under the *Water Act 1989* to regulate works that have the potential to change the characteristics of floodplains. Melbourne Water submitted that subsequent to the completion of the EES, it has been working with MRPV in regard to the potential flood impacts and will continue to be involved in the review of the Project throughout the detailed design process to ensure the identified flood impacts (including those identified by the post-EES climate change scenario modelling) are resolved.⁹⁶ It expects it to be possible to mitigate impacts of the Project on flooding to a satisfactory level.

Melbourne Water submitted that the '*Melbourne Water standards for infrastructure projects in flood-prone areas*' sets out the minimum requirements in regard to impacts on flooding and noted that this was referenced in EPR W2.

(iv) Lugeo Anna Nominees Pty Ltd

Lugeo Anna Nominees Pty Ltd made a submission in relation to the property that it owns at 321 Old Dandenong Road, Dingley Village.⁹⁷ It is seeking to ensure that that the Project will not adversely affect the flooding of its property. It submitted that the capacity of Old Dandenong Road Drain upstream of Centre Dandenong Road is much smaller than further downstream in the Redwood Gardens Estate, but existing drainage easements provide sufficient space for the drain to be enlarged to a similar size as in the Redwood Gardens Estate. Lugeo Anna Nominees Pty Ltd submitted that the Project should either include works to increase the capacity of this part of Old Dandenong Road Drain or at least ensure that the Project does not preclude this from being undertaken in the future.

⁹⁶ Melbourne Water, Submission 78

⁹⁷ Document 74, Submission 89

Mr Prout, for Lugeo Anna Nominees Pty Ltd, advised that the EES showed significant flooding across the property at 321 Old Dandenong Road, Dingley Village, whereas some of these areas are not currently flood prone, due to changes in surface levels since the 2006-07 Port Phillip and Western Port LiDAR data used in the EES.⁹⁸ The change in flood susceptibility was demonstrated by independent flood modelling by Engeny based on current survey.⁹⁹

Mr Bishop reviewed the Lugeo Anna Nominees Pty Ltd submission and noted that fill appears to have been placed on the site since 2007, partly blocking an existing flow path, which may have implications beyond the submitter's property. He noted that the apparent discrepancies are significant in places and recommended further investigation.

MRPV submitted that the additional information provided by Lugeo Anna Nominees Pty Ltd does not materially change the conclusions of the flooding assessment.¹⁰⁰ Mr Leslie advised that the EES flood model should be updated by incorporating the changed topography at the property.¹⁰¹

(v) Other submissions

Several private submitters raised concerns about potential impacts of the Project on flooding, including at Aspendale Gardens and Waterways Estate.¹⁰²

13.4.3 Potential impacts of the Project on water quality

(i) EES/MRPV

The EES identified that regular historical water quality data are available for one site in the Project area, Mordialloc Creek at Wells Road. It presented a review of historical water quality data for this site over the period 1994–2017, which shows that water quality did not comply with SEPP objectives for most indicators and metals, although non-compliance has decreased over time.

MUSIC modelling was used to assess the overall impacts of the Project on surface water pollutant loadings as well as impacts on pollutant loadings entering the Edithvale, Woodlands and Waterways Wetlands from the Project area as the result of land use change. The specific indicators used in the assessment were total suspended solids, total phosphorus, total nitrogen and litter (gross pollutants). The impact of the Project on heavy metals was assessed on the basis of total suspended sediment loadings, as the majority of heavy metals in road runoff are bound to the sediment.

The MUSIC modelling showed that the overall impacts of the Project on total annual pollutant loadings could be satisfactorily mitigated by grassed swales, although it was not possible to fully comply with water sensitive road design (WSRD) targets based on the Best Practice Environmental Management Guidelines (BPEMG) at two sites. The projected

⁹⁸ Document 75

⁹⁹ Document 75

¹⁰⁰ MRPV, Document 6 (MRPV Part A Submission)

¹⁰¹ Mr Leslie, Expert Witness Statement

¹⁰² Submissions 39 and 47

overall combined surface water contaminant levels for the whole Project are below the BPEMG WSRD targets.

The MUSIC modelling showed that annual pollutant loadings from the Project area to the Edithvale, Woodlands and Waterways Wetlands would be increased compared to existing conditions if grassed swales provided the only water quality treatment. Bioretention systems near three of the five outfalls draining to the wetlands satisfactorily mitigated the net impact of the Project on pollutant loads to the Edithvale, Woodlands and Waterways wetlands.

The Project will increase traffic in the Project area, which will increase the risk of fuel and chemicals spills from traffic accidents and firefighting activities. A spill risk assessment was carried out for each drainage outfall based on the likelihood of an accident (based on vehicle turning and merging movements) and the proximity of the outlet to a natural waterway or sensitive receptor. It showed that four of the five outlets draining to the Edithvale, Waterways and Woodlands wetlands were 'high risk', and the fifth (which drains to the Woodlands Wetlands) was 'moderate risk'. The following mitigation measures were proposed:

- Spill containment structures with a minimum capacity of 20,000 litres (the capacity of a fully loaded fuel tanker) at four high risk outfalls, potentially integrated into the design of the bioretention systems
- Enlargement of roadside swale at the moderate risk outfall to provide additional storage and increase the spill travel time to the Project boundary¹⁰³.

The EES proposed that the EPRs include the following requirements in regard to water quality:

- Avoid an increase in discharge of pollutant loading (to higher than existing conditions levels) on beneficial uses due to the construction of the Project in accordance with CSIRO BPEMG for Urban Stormwater (1999) and Water Sensitive Road Design (WSRD) (EPR W1)
- Incorporation of spill containment measures at outfalls that pose a high risk to sensitive receptors (EPR W1)
- A requirement for the design of surface water control measures to comply with the VicRoads Integrated Water Management Guidelines (2013) and CSIRO's BPEMG for Urban Stormwater (1999)
- Preparation and implementation of a Water Management and Monitoring Plan (WMMP) that requires provides for surface and groundwater monitoring for water quality and contingency measures if water quality trigger levels are exceeded (EPR W5).

(ii) Council

The expert witnesses called by Council had divergent opinions regarding the adequacy of the assessment of surface water quality impacts in the EES. Mr Bishop (expert witness on hydrology) advised that he considered the water quality impact assessment to be generally

¹⁰³ EES Appendix J (Surface Water), p. 53

appropriate for the purposes of identifying potential impacts to the receiving wetland environments. However, Mr Lloyd (expert witness on ecology) advised that in his opinion the EES provided inadequate information on water quality. In regard to the operational phase, he was particularly concerned the impact of spills on aquatic ecosystems was not adequately addressed. His advice in relation to the construction phase is discussed in Section 13.6 (below).

Mr Lloyd advised that the effectiveness of EPR W5 (Water Management and Monitoring Plan) in relation to protecting aquatic ecosystems is entirely dependent on details within the plan, which are not prescribed by the EPR. He advised that sediments, nutrients and toxicants are particularly important in relation to wetland ecosystems.

Mr Lloyd recommended a 10-year monitoring timeframe on the basis of anticipated timeframes for ecosystem adjustment. Based on this advice, Council submitted that the monitoring period for the Water Management and Monitoring Plan should be increased to 10 years.¹⁰⁴

Mr Bishop advised that reliance on bioretention systems to mitigate impacts associated with the freeway on pollutant loadings to the wetlands introduces risk for the following reasons:

- bioretention systems are challenging to construct correctly
- they require a higher degree of ongoing maintenance than vegetated swales
- they have a short lifespan relative to the life of the road network – i.e. they generally require a full reset every 7 to 10 years.

Based on these considerations, Mr Bishop recommended that an Asset Management Plan be established to cover all proposed on-going maintenance and ‘full reset’ activities, as well as specific requirements when oil/petrol /chemical spills occur if these assets are to play a part in spill containment. He did not provide advice on how this requirement should be incorporated into the EPRs.

(iii) Melbourne Water

Melbourne Water submitted that it requires the Project to comply with the SEPP (Waters of Victoria) and the relevant best practice performance objectives and process outlined in *Urban Stormwater: Best Practice Environmental Management Guidelines* (1999). It was satisfied that the Project will be able meet or exceed water quality obligations using swales and bio-retention systems as proposed in the EES.

(iv) EPA

The EPA submitted that the WMMP (EPR W5) should require monitoring of baseline sediment toxicity before, during and after construction as per SEPP (Waters of Victoria) 2018. In particular, it submitted that the sediment monitoring should focus on risks from metals and hydrocarbons.¹⁰⁵

¹⁰⁴ Council, Document 42

¹⁰⁵ EPA Submission 98

(v) Other submissions

Several submitters raised concerns regarding the impact of the Project on water quality, including the risk of spills of petrol or diesel flowing into Port Phillip Bay via Mordialloc Creek.¹⁰⁶ Ms Giovas submitted that EPR W1 should contain more detailed requirements in relation to the management of spills, including reference to the Austroads Guide to Road Design, Section 3.4.3 Spill Management. Ms Giovas submitted that EPR W1 should specify that if B-double and Higher Mass Load trucks will use the freeway, 40,000 litre spill containment capacity should be provided. She submitted that if 20,000 litre tanks are provided as indicated the EES, B-double and Higher Mass Load trucks should be banned from the freeway.¹⁰⁷

RAMF submitted that the Project will be an impediment to achieving the objectives of Melbourne Water's Healthy Waterways Strategy, including for Mordialloc Creek.¹⁰⁸ Several submitters highlighted the maintenance requirements and risks associated with bioretention systems.¹⁰⁹

13.5 Discussion**13.5.1 Potential impacts of the Project on streamflow hydrology**

The IAC accepts the findings of the EES that the Project will not significantly change the flow regime of Mordialloc Creek or inflows to the Woodlands or Waterways Wetlands. The Braeside Wetlands are upstream of the Project area. However, at the Edithvale Wetlands, EES modelling predicts a minor increase in wetland surface area (by 5 to 7 percent increase) and significantly elevated water levels in wetland cells EN2 and EN3 (by 0.2 to 0.4 metres) during drier periods.¹¹⁰ Potential ecological impacts arising from this change were included in the flora and fauna assessment for the EES (Appendix C). However, the IAC notes that cells EN2 and EN3 have open expanses of permanent water fringed with tall marsh that are subject to drawdown in summer and dry periods,¹¹¹ which may limit their susceptibility to ecological impacts arising from the predicted change in water level regime.

MRPV submitted that in response to the recommendation of Mr McCaffrey, EPR W1 should be amended by inserting a requirement to:

Minimise changes in water flows to adjacent wetland areas¹¹²

The IAC accepts this proposed change but with deletion of the qualifier 'adjacent' because the Edithvale Wetlands are not adjacent to the Project area. The IAC notes the relevance of this requirement to the detailed design of outflows from the Project area to the Edithvale Wetland.

¹⁰⁶ Submissions 69, 84, Mary Rimington (Mordialloc Beaumaris Conservation League Inc) and Bryan Aldridge, verbal submissions

¹⁰⁷ Document 96

¹⁰⁸ Verbal submission by Mr Morgans

¹⁰⁹ RAMF (Verbal submission by Mr Morgans) and Ms Giovas Document 72

¹¹⁰ EES, Appendix C to Appendix K (Edithvale Wetland Water Balance Modelling)

¹¹¹ LRXA Edithvale and Bonbeach Level Crossing Removals EES Technical Report B, Figure 10; EES, Appendix C to Appendix K (Edithvale Wetland Water Balance Modelling)

¹¹² MRPV Document 11

13.5.2 Flooding/afflux

Council and several submitters expressed concern about flood afflux. EPR W2 states that the Project must meet Melbourne Water's standard requirements in regard to impacts on flooding. Melbourne Water has advised that it expects it to be possible to mitigate impacts on flooding to a satisfactory level and it will continue to be involved in the Project through the detailed design process to ensure this issue is resolved.

The IAC notes that MRPV does not propose to resolve widespread flood afflux in Braeside Park as it would not materially change the flood risk to people or property. In response to questions put to them at the Hearing, Mr McCaffrey, Mr Richardson (MRPV), Mr Lloyd and Mr Loyn (Council) all advised that this is unlikely to have significant ecological impacts, indeed waterbirds are more likely to benefit rather than be disadvantaged by increased flooding.

Council submitted that EPR W2 should be amended to include a specific requirement to mitigate flood afflux at specific locations. MRPV disagreed with Council and submitted that a more general requirement to meet Melbourne Water's requirements in relation to flooding 'to the satisfaction of Melbourne Water'. The IAC prefers MRPV's more general requirement. It notes Melbourne Water's assurance that it will continue to work with MRPV to ensure a satisfactory outcome in regard to flood impacts. In addition, it considers a broader requirement to be preferable, as other issues relating to afflux may arise during the detailed design process.

The IAC notes Mr Bishop's advice regarding the reliance on lateral drainage connections (culverts) to convey flows across the Project area and the risk of catastrophic flooding in the event of blockage or a flood that is larger than the design flood. The IAC accepts Mr Bishop's recommendation that the detailed design process should include sensitivity testing in relation to these variables. It recommends that EPR W2 be amended by inserting a requirement for the Project design to minimise the risk of catastrophic flooding in the event of a flood larger than the 1 per cent AEP design flood or blockage.

The IAC also accepts Mr Bishop's recommendation that requirements be established for ongoing monitoring and maintenance of the culverts to prevent blockage. The IAC notes that EPR W2 requires that:

design-specific maintenance requirements relating to floodwater, and that do not form part of standard VicRoads maintenance requirements, must be included in the Water Management and Monitoring Plan

EPR W5 provides that the WMMP must be implemented for five years after opening the Project to the public. The IAC accepts that a finite monitoring period is acceptable for most aspects of surface water management; however, the maintenance and monitoring of the drainage culverts needs to be continued for a period longer than five years and this is a matter for VicRoads, Melbourne Water and Council to resolve and possibly be placed into an asset management regime that already exists within Council or Melbourne Water.

The submission of Lugeo Anna Nominees Pty Ltd and evidence of Mr Prout highlights that the survey data used in the model is over a decade old and does not accurately represent the existing topography at all locations, with implications for modelled flood levels. The IAC recommends that the EES flood model should be updated by incorporating the changed topography.

The IAC notes the submission of Lugeo Anna Nominees Pty Ltd in relation to flooding in the vicinity of Centre Dandenong Road. This submitter did not request a specific change to the EPRs but rather sought to be consulted during the detailed design process. The IAC notes that EPR S1 requires that the Community and Stakeholder Engagement Plan for the Project must “*identify all project activities that potentially impact on community and business operations and provide for well-coordinated communication and engagement processes in relation to each activity*”. The IAC considers that the consultation requested by the submitter falls within this provision.

13.5.3 Potential impacts of the Project on water quality

The EES indicates that the potential impacts of the Project on water quality can be mitigated to a satisfactory degree through extensive use of grassed swales together with as bioretention systems and spill containment measures in key areas to protect sensitive receptors.

The IAC accepts Council’s submission that EPR W1 should be amended to clarify that minimisation of changes in water quality to adjacent wetlands should be required (it recommends drafting to require minimisation of adverse changes in water quality, given that existing water quality in the Project area is poor). EPR W1 requires minimisation of changes in water quality to adjacent wetland areas during *design* and *operation*, but not *construction*. It also requires avoiding increased pollutant loadings on beneficial uses (not limited to wetland areas) during *construction* but not during *operation*. The IAC considers that it would be consistent with the findings of the EES assessments for the requirements of EPR W1 to extend across construction and operation.

Mr Bishop advised that the proposed bioretention systems will require ongoing maintenance including periodic resetting and recommended that this be addressed through an Asset Management Plan. The MUSIC modelling analysis presented in the EES indicates the critical role of the bioretention systems (or alternative water treatment measures) in mitigating the impacts of the Project on the water quality of inflows to the wetlands. and the need for ongoing monitoring and maintenance, including regular resetting. The IAC notes that the WMMP required by EPR W5 provides for a finite monitoring period, whereas the monitoring and maintenance of the bioretention systems will be ongoing. Therefore, the IAC recommends that the bioretention systems be included in the Water Asset Management Plan (Operation) (EPR W7), which must continue to manage the blockage risk for the drainage culverts.

The IAC notes the importance of spill containment measures for protecting the ecological health of the wetlands, as advised by the Mr Lloyd, and concerns raised by Ms Giovas about the inadequacy of the 20,000 litre tanks proposed in the EES. It considers it to be reasonable to require that spill containment measures comply with relevant industry standards and therefore the IAC recommends this be reflected in the requirements of EPR W1.

Council submitted, based on advice from Mr Lloyd, that the monitoring period for the WMMP in EPR W5 should be 10 years, rather than 5 years as proposed in the EES, to allow time for ecological adjustments. The IAC considers that monitoring should continue for a sufficient period to enable the effectiveness of management measures to be confirmed, and that a period of five years is generally an acceptable timeframe.

13.6 Construction impacts

13.6.1 The issues

The key issues identified by the IAC relate to:

- Potential impacts of construction on flooding
- Potential impacts of construction on water quality with implications for receiving waters including the Edithvale, Woodside and Waterways Wetlands, Mordialloc Creek system and Port Phillip Bay.

13.6.2 Evidence and submissions

(i) Potential impacts of construction on flooding

The EES indicated that temporary works associated with construction have the potential to temporarily worsen flooding. Impacts can arise from stockpiles, location of equipment and plant, temporary works, temporary diversions, working platforms and modifications to levees and banks. These factors can potentially lead to increases to flood levels, flow velocities and flood frequency resulting from reductions in flood conveyance or floodplain storage.

The EES indicates that construction activities within the 1 per cent AEP floodplain will be managed in consultation with Melbourne Water. EPR W4 – flood protection (construction) – stipulates compliance with Melbourne Water requirements.

Melbourne Water confirmed that it requires and will assist with the preparation of a hydraulic assessment and flood response plan to accompany the works package documentation to determine the impact of temporary works and identify appropriate mitigation measures.¹¹³

(ii) Potential impacts of construction on water quality

The EES identified that runoff from construction sites can mobilise large sediment loads and may contain pollutants including contaminated sediments, oils and chemicals. It also indicates that it may be necessary to dispose of polluted water from excavated areas using temporary pumping.

The EES proposes that these issues will be managed in accordance with EPR W3. Standard management techniques will be used to reduce the risk of contaminated runoff entering the stormwater drainage system, in accordance with the EPA's *Constructions Techniques for Sediment Pollution Control 1991* and *Environmental Guidelines for Major Construction Sites 1996*. A water collection and treatment system will be required to ensure that stormwater discharges comply with EPA and Melbourne Water performance criteria. The Water Management and Monitoring Plan (EPR W5) will also apply during the construction phase.

Mr Lloyd advised that impacts from poor water quality on aquatic ecosystems are overlooked or under-rated in the EES, including the effects of sediment runoff during

¹¹³ Melbourne Water Submission

construction. He advised that the risk of erosion and contribution of sediments to wetlands is likely to be high, especially during construction, and the residual risk will high despite the proposed mitigation measures¹¹⁴. In response to questioning from Mr Watters, Mr Lloyd indicated that his advice was based on general observations of construction sites rather specific aspects of the current proposal. However, the IAC notes that the EES does not provide detailed information regarding construction stage impacts on water quality because these risks are dependent on the construction methods and sequence of construction.¹¹⁵

The submission from Ms Giovas also indicated concern about potential damage to the wetlands caused by contaminated surface water from construction works.¹¹⁶

Melbourne Water advised that it requires a Construction Environmental Management Plan and Stormwater Management Plan to be prepared and implemented prior to the commencement of construction.

The EPA submitted that the *Australian Rainfall and Runoff* and *Australian Runoff Quality Guidelines* could also be referred to, to manage potential runoff during construction and operation.¹¹⁷

Ms Giovas submitted that it was important that a quick and effective reporting mechanism is available to the public if they observe spills or sediment inflows to drains during construction. EPR S1 allows for engagement processes and EPR EM3 includes a complaints management process.

(iii) Discussion and conclusions

The IAC agrees that temporary works associated with construction have the potential to temporarily worsen flooding, although are not considered to be a significant impact. It notes that the EES proposed appropriate management arrangements and Melbourne Water has indicated that it will provide relevant support.

The EES indicated that construction of the Project may pollute stormwater and proposes management arrangements based on standard measures to address this. The IAC notes that EPR W3 – surface water management (construction) – requires protection of local waterways (but not wetlands) by applying best practice sediment and pollution control measures and stormwater discharges to comply with SEPP (Waters of Victoria) and Melbourne Water performance criteria. EPRs W1 and W5 also specify requirements that apply during the construction period. EPR W1 includes a requirement to “*avoid an increase in discharge or pollutant loads ... due to the construction of the Project*”. EPR W5 requires monitoring to be undertaken at all stages of the Project including construction but does not specify in detail the construction-related (or other) issues that the monitoring needs to address.

¹¹⁴ Mr Lloyd Expert Witness Statement

¹¹⁵ EES Appendix J, page 27

¹¹⁶ Submission 69

¹¹⁷ EPA Submission 98, citing Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors), 2016, *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia, and Wong, T H F (Ed) 2006 *Australian Runoff Quality: A Guide to Water Sensitive Urban Design* (Engineers Australia)

The IAC accepts Mr Lloyd's advice about potential impacts of construction-related sediment on the wetlands and recommends that EPR W3 be amended to extend the requirement for sedimentation and pollution control measures to the wetlands, and to require monitoring to ensure no significant impact on the wetlands.

13.7 IAC findings

The IAC makes the following findings in relation to surface water issues:

(i) Hydrology and flooding

- The Project is not expected to significantly alter the flow regime of Mordialloc Creek or inflows to the Woodlands or Waterways Wetlands. The Braeside Wetlands are predicted to be affected by minor flood afflux but this is not expected to have significant ecological implications. Minor changes to the water level regime of the Edithvale Wetlands are predicted, particularly in cells EN2 and EN3 in the Edithvale North Wetland.
- The IAC accepts MRPV's submission that EPR W1 should be amended to require minimisation of changes in water flows to wetland areas.
- The IAC notes that construction of the Project between wetland cells at the Waterways Wetlands could potentially change the wetland hydrology. It recommends that EPR W1 should be amended to include an additional requirement to minimise changes in water flows *within* wetland areas.
- There are outstanding issues in relation to flood afflux that will need to be resolved in the detailed design. The IAC notes Melbourne Water's assurance that it will continue to work with MRPV to ensure a satisfactory outcome in regard to flood impacts and recommends that EPR W2 be amended to require that Melbourne Water's requirements in relation to flooding must be met 'to the satisfaction of Melbourne Water'.
- The IAC notes the importance of the drainage culverts associated with the Project for preventing exacerbation of flooding upstream and risks to the effectiveness of the culverts arising from blockages or unexpectedly large flows. The IAC recommends that the EPRs should be amended to include provisions requiring:
 - A robust design that can accommodate floods larger than the design event as well as blockages (EPR W2)
 - Ongoing monitoring and maintenance of the culverts to address blockage risks (EPR W7). EPR W2 should be amended to refer to the Water Asset Management Plan (EPR W7) rather than the WWMP (EPR W5).
- The IAC notes the submission of Lugeo Anna Nominees Pty Ltd in relation to flooding in the vicinity of Centre Dandenong Road and its request to be consulted during the detailed design process. The IAC considers that the consultation requested by the submitter falls within the provision of EPR S1.

(ii) Water quality

- The IAC accepts that potential impacts of the Project on water quality can be mitigated to a satisfactory degree with a suite of mitigation measures including grassed swales, bioretention systems and spill containment measures.
- The IAC recommends that EPR W1 should be amended to clarify that 'adverse' changes in water quality to wetlands must be minimised.

- The IAC recommends that the bioretention systems be included in the Water Asset Management Plan (Operation) (EPR W7), with a requirement for ongoing monitoring and maintenance.
- The IAC notes the importance of spill containment structures for protecting the wetlands from contamination in the event of an accident and recommends that EPR W1 be amended to require that spill containment measures comply with relevant guidelines and standards.

(iii) Construction impacts

- The IAC notes that construction of the Project may have temporary impacts on flooding and water quality. The EPRs require compliance with Melbourne Water requirements in relation to flood protection and standard management techniques for reducing the risk of contaminated runoff entering the stormwater system.
- The IAC recommends that EPR W3 be amended to apply the requirement for sedimentation and pollution control measures and construction monitoring to the wetlands.

(iv) Overall finding

Subject to the recommended changes to the EPRs and with implementation of the identified mitigation measures, the IAC considers that the impacts of the Project on surface water can be satisfactorily resolved and concludes that the Project is not expected to have unacceptable impacts on surface water.

13.8 Recommendation

The Inquiry and Advisory Committee recommends:

Adopt the Inquiry and Advisory Committee preferred version of the Environmental Performance Requirements at Appendix E.

14 Groundwater

14.1 Background

Chapter 17 of the EES addressed issues relating to groundwater. It is based on the impact assessment by WSP presented in Appendix K: Groundwater Impact Assessment. Matters relating to groundwater were also discussed in Chapter 18 of the EES and Appendix L: Soils and Contaminated Land.

The draft evaluation objective of the Scoping Requirements in relation to ‘water, catchment values and hydrology’ is:

To minimise adverse effects on groundwater, surface water and floodplain environments and minimise effects on water quality and beneficial uses, including the ecological character of the Edithvale-Seaford Wetlands Ramsar site.

The EES presented separate assessments for surface water and groundwater. The IAC report structure reflects this, with separate chapters on surface water (Chapter 14) and groundwater (this chapter).

The groundwater component of the EES (Chapter 18 and Appendix K) examined groundwater levels and quality, and surface-groundwater interactions. More detailed assessment of impacts on groundwater arising from the interaction of the Project with existing sources of contamination was undertaken as part of the soils and contaminated land component of the EES (Chapter 18 and Appendix L).

The study area for the EES groundwater assessment included the Project area and a two kilometre buffer radius. The EES identified five major hydrostratigraphic units in the study area:

- Quaternary Aquifer (QA)
- Upper Tertiary Aquifer (UTAF)
- Upper-Mid Tertiary Aquitard (UMTD)
- Lower Tertiary Aquifer (LTA)
- Mesozoic and Palaeozoic Bedrock (BSE)¹¹⁸.

The EES focused on the upper three units, the QA, UTAF and UMTD. It indicated that the Project is not expected to interact significantly with the lower units (LTA and BSE).

The EES indicated that the QA is an unconfined aquifer that forms the water table. It is present mainly in the southern portion of the study area, which was part of the former Carrum Carrum Swamp. The UTAF occurs across the entire study area. In the northern portion of the study area, the UTAF is unconfined but in the southern portion of the study area it is confined or semi-confined beneath Quaternary sediments associated with the QA. The QA and UTAF are hydraulically connected. Existing groundwater quality in the aquifers is variable, ranging from fresh to saline.¹¹⁹

The EES identified the following groundwater ‘users’ within the study area:

¹¹⁸ EES, Appendix K

¹¹⁹ EES, p. 17-16

- nine groundwater-dependent ecosystems (GDEs) that rely on the subsurface presence of groundwater and five GDEs that rely on the surface expression of groundwater, including the Edithvale Wetlands¹²⁰
- 402 registered groundwater bores, including 81 stock and domestic bores and 30 irrigation bores¹²¹.

The EES indicated that several cells in the Edithvale North wetlands are hydraulically connected to the QA and UTAF due to historical excavation and deepening in the 1980s. However, the Edithvale South wetlands and Edithvale North wetland cell EN1 appear to be entirely dependent on surface water. The constructed wetlands adjacent to the Project area are isolated from the underlying formations by clay liners.¹²² The Braeside, Woodlands and Waterways Wetlands and Mordialloc Creek have chemically different water signatures from the QA and UTAF and were not considered to be groundwater-dependent.¹²³

The EES groundwater impact assessment focused on the effects of the road embankments in the central and southern portions of the Project area. The EES concluded that the Project would have no significant impacts on groundwater. EPRs W5 (Water Management and Monitoring Plan) and CL7 (Landfill Material) include monitoring, design and construction requirements relating to groundwater.

Evidence relating to potential impacts of the Project on groundwater was received from four expert witnesses:

- Mr Ray Hatley, WSP (called by MRPV to give evidence on groundwater)
- Ms Helen Jones, WSP (called by MRPV to give evidence on contamination issues)
- Dr Anthony Smith, CDM Smith (expert witness report and supplementary report¹²⁴ submitted by MRPV)
- Mr Christopher Smitt, EHS Support (called by Council).

Many submissions were received relating to impacts on groundwater, including from Council, EPA,¹²⁵ Defenders of the South East Green Wedge,¹²⁶ Friends of Edithvale Seaford Wetlands Incorporated,¹²⁷ Friends of Mordialloc Catchment,¹²⁸ Kingston Residents Association,¹²⁹ Mordialloc Beaumaris Conservation League,¹³⁰ Port Phillip Conservation Council Inc.¹³¹, RAMF¹³² and a private submitter.¹³³

Council questioned the adequacy of the groundwater impact assessment presented in the EES, based on evidence from Mr Smitt. Council's concerns related to the assessment of

¹²⁰ EES, p. 17-17
¹²¹ EES, p. 17-18
¹²² Mr Hatley, verbal evidence
¹²³ EES Appendix K, p 67
¹²⁴ Document 112
¹²⁵ EPA, Submission 98
¹²⁶ Submission 84
¹²⁷ Submission 90
¹²⁸ Submission 92
¹²⁹ Submission 102
¹³⁰ Submission 28
¹³¹ Submission 97
¹³² Submission 60
¹³³ Submission 87

potential impacts of piling on groundwater, deficiencies in the groundwater monitoring data and modelling presented in the EES, and baseline data for future groundwater monitoring.

14.2 The issues and risks

The key issues identified by the IAC relate to:

- Potential impacts of the road embankments on groundwater
- Potential impacts of piling on groundwater, especially piling into landfill
- Adequacy of the groundwater modelling used in the EES
- Groundwater baseline data for the WMMP (EPR W5)
- Adequacy of the EPRs in relation to groundwater, including protection levels.

14.3 Project response

The EES groundwater assessment was based on the following assumptions:

- the Project will not include any trenching or dewatering, either of which could potentially lead to significant impacts¹³⁴
- a floating pavement structure supported by piles will be used to cross landfill material in the northern portion of the Project area
- the Waterways bridge structure will use singular piles spaced apart to avoid impeding groundwater flow
- all piling will be undertaken by percussion driving rather than drilling to limit the risk of creating vertical pathways.

The EES proposed that groundwater monitoring would be included in the WMMP required by EPR W5 but did not propose any EPRs specifically relating to groundwater. The groundwater impact assessment concluded that:

The risks caused by changes to groundwater levels or quality from the Project are considered sufficiently low that mitigation methods beyond the Project design phase would not be required.¹³⁵

The IAC notes that EPR CL7 addresses risks to groundwater arising from structures that penetrate landfill material, however the EPR is not referenced in the EES groundwater assessment.

14.4 Evidence and submissions

14.4.1 Potential impacts of the road embankments on groundwater

(i) MRPV

At an early stage in the EES, risk evaluations determined that the only potentially significant groundwater-related risk arising from the Project was a change in groundwater levels due to the compression of shallow unconsolidated aquifers by the road embankments.¹³⁶ In

¹³⁴ Mr Hadley evidence

¹³⁵ EES Appendix K, p xiv

¹³⁶ EES p. 17-29

particular, construction of embankments may lead to soil compaction that restricts groundwater flows, leading to groundwater mounding on the upstream side of the embankment and groundwater drawdown on the downstream side.¹³⁷

The EES presented a detailed assessment of this issue including:

- An embankment consolidation study¹³⁸
- Numerical modelling of impacts on groundwater levels
- Water balance modelling to assess the potential impacts of any changes in groundwater levels on the Edithvale Wetlands.

The numerical modelling used a MODFLOW-USG regional groundwater model. The model excluded the northern part of the Project area (north of Lower Dandenong Road) but extended beyond the southern limit of the Project area to the Patterson River. The model was designed to focus on the potential impact of proposed embankments on the Edithvale, Braeside Park, Waterways and Woodlands Wetlands, as well as the quantification of cumulative impacts associated with the Level Crossing Removal Authority's (LXRA's) Edithvale and Bonbeach Level Crossing Removal Projects.¹³⁹ The modelling assessment included sensitivity analysis on model parameters including horizontal and vertical flow rates and aquifer recharge rates as well as embankment heights. The effects of the embankments were simulated based on compression and did not include displacement of infiltration from the road area to the swales.¹⁴⁰

The groundwater modelling showed that the impacts of the embankments were within the natural range of groundwater fluctuation. Modelled changes in groundwater levels resulting from the embankments were in the order of 10-15 centimetres with most of the changes occurring directly under the embankments. By comparison, seasonal groundwater level variations range from 50 centimetres to 1 metre.¹⁴¹ Mr Hadley expressed "high confidence" in the conclusions that there would be negligible impact on groundwater due to the inherent conservatism of the modelling strategy. The modelling showed a very low likelihood of embankment impacts extending beyond the Project boundary.¹⁴² SOURCE water balance modelling indicated negligible impacts on wetland habitat at the Edithvale Wetlands.¹⁴³ The EES concluded that the proposed embankment structures would have minimal impacts on groundwater and no mitigation was required.

In written evidence to the IAC, Dr Smith advised that there is negligible potential for road embankment compaction impacts on groundwater in the northern portion of the Project, which was not covered by the groundwater model. He indicated that the EES provided insufficient information to determine this but he reached this conclusion based on additional information provided by Mr Hatley.¹⁴⁴

¹³⁷ EES p 17-1

¹³⁸ EES, Appendix C of Appendix K (Mordialloc Embankment - preliminary assessment of change in permeability due to embankment loading)

¹³⁹ Mr Hatley, Expert Witness Statement

¹⁴⁰ Mr Hatley, verbal evidence

¹⁴¹ EES 17-30, Mr Hatley Expert witness statement

¹⁴² Mr Hatley, Expert Witness Statement

¹⁴³ EES, Appendix C of Appendix K (Edithvale Wetland Water Balance Modelling)

¹⁴⁴ Document 112

(ii) Council

Mr Smitt expressed concerns about the adequacy of the numerical groundwater model that was used to assess the impacts of the road embankments on groundwater.¹⁴⁵ However, he advised that he would expect the long term effects of the embankments on groundwater levels to be minor, and conceded that would need to be major errors in the modelling to significantly change the conclusion.¹⁴⁶

(iii) EPA

The EPA submitted that monitoring should be undertaken to ensure that groundwater level changes are consistent with or less than predicted in the modelling to ensure that impacts on groundwater through loading from structures and embankments is negligible.¹⁴⁷

14.4.2 Potential impacts of piling on groundwater**(i) MRPV**

The Project will require piling for bridge construction and to provide support for the road where it crosses landfill material in the northern portion of the Project area. The EES indicated that piling depths would be less than 50 metres and therefore expected to remain largely in the QA and UTAF.

The EES groundwater assessment (Chapter 17 and Appendix K) did not include detailed investigation of potential impacts of piling on groundwater, including any model simulations. It concluded that the risk to groundwater resulting from piling was low for the following reasons:

- Separated piles are not expected to create a barrier to groundwater flow
- Aquifer units at the proposed piling locations are already hydraulically connected, reducing the significance of possible preferential vertical pathways
- Percussion driving of piles through the aquifer material will compress the near-pile material, making the holes self-sealing and preventing groundwater flow¹⁴⁸.

The EES soils and contaminated land assessment (Chapter 17 and Appendix K) indicated that piling into landfill material could potentially create preferential pathways between leachate and the shallow and deep aquifers, as well as causing direct transfer of contaminated material into aquifers. It reported that none of the landfills within and adjacent to the northern portion of Project area are known to be engineered with a basal or sidelining system. It therefore assumed that the landfills are hydraulically connected to the groundwater. The EES recommended that during and after construction, groundwater management would be necessary to ensure the Project does not cause the groundwater to be contaminated by leachate or other contaminants.

¹⁴⁵ Mr Smitt EWS

¹⁴⁶ Mr Smitt, verbal evidence

¹⁴⁷ EPA Submission 98

¹⁴⁸ EES p 17-1

Mr Hatley confirmed that risks associated with landfills (including risks to groundwater) had been addressed separately by experts in contaminated land, rather than as part of the groundwater assessment.¹⁴⁹

In additional evidence provided to the IAC after the Hearing, Mr Hatley and Dr Smith confirmed that they expected there to be free movement of groundwater into and out of the landfills. They noted that the landfills in the northern portion of the Project area are unlined, therefore there is no potential to disturb liners or barriers.¹⁵⁰ Overall, Mr Hatley advised that in northern portion of the Project area:

On-grade and pile-supported placement of the proposed road structures through this area will have negligible impact to historic, current and future groundwater flow and direction/s. As such, extending numerical flow modelling to cover the northern landfill section was deemed unnecessary¹⁵¹.

EPR CL7 is not mentioned in the EES groundwater assessment but is relevant to the potential impacts of piling on groundwater. It includes a requirement for structures that penetrate landfill to be designed and constructed so as to avoid creating new pathways for contaminants to move from leachate to surrounding groundwater.

(ii) Council

Mr Smitt drew attention to the potential risks to groundwater associated with piling into the former landfills in the northern portion of the Project area. He suggested that this issue fell in a gap between the groundwater assessment and soils and contaminated land assessment in the EES.¹⁵² He highlighted the following considerations:

- The EES identified contaminated soil, landfill gas and leachate in the northern part of the study area
- Any leachate management plans for the landfills would have been developed without knowledge of a highway being built
- Due to the north-south flow of groundwater (towards the wetlands), there was potential for adverse impacts to occur if the transport or movement of contaminated groundwater were altered
- There is uncertainty regarding the movement of groundwater between aquifers vertically, and this has implications for assessing risks associated with piling¹⁵³.

On this basis, Mr Smitt recommended that further investigations were necessary to properly understand the risks to groundwater resulting from piling in the landfill. This included extending the groundwater model to include the northern part of the study area, inclusive of landfills, and running the model under a range of scenarios designed to stress the system.¹⁵⁴

¹⁴⁹ Document 36, verbal evidence

¹⁵⁰ Document 112

¹⁵¹ Mr Hatley (supplementary memo, 19 March 2019 – in Doc 112)

¹⁵² Document 35

¹⁵³ Document 35

¹⁵⁴ Document 35

Based on Mr Smitt's advice, Council submitted that the EPRs should include a requirement for further groundwater risk assessment and modelling, including investigations to improve understanding of vertical hydraulic gradients. Council proposes that there should be re-evaluation of risks present in the northern portion of the Project area including landfills based on this additional information, including consideration of whether the risk increases from low to medium if piling has the potential to form preferential pathways.¹⁵⁵

(iii) EPA

The EPA noted the risk that structures in and around landfill areas may create new vertical pathways that would cause leachate to migrate into a previously uncontaminated groundwater body.¹⁵⁶ The EPA noted EPR CL7 and indicated that EPA strongly encourages planning and monitoring of the installation of structures in and around the known landfill areas to ensure that vertical pathways are not created.

(iv) Other submitters

A number of submitters, including Friends of Edithvale Seaford Wetlands Incorporated (FESWI) and the Mordialloc Beaumaris Conservation League, expressed concern regarding potential contamination of the groundwater resulting from piling into landfill.¹⁵⁷ The Mordialloc Beaumaris Conservation League also raised the potential spread of the contamination via groundwater to the wetlands, Mordialloc Creek and the marine environment.

14.4.3 Groundwater modelling

(i) MRPV

The EES groundwater assessment included the development of a numerical regional groundwater model using MODFLOW-USG, based on data collected as part of the EES investigations and from previous studies including the LXRA Edithvale Bonbeach Level Crossing Removal Projects. Mr Hatley claimed that model was a Class 2 predictive model, which had been peer reviewed by Dr Anthony Smith of CDM Smith and deemed fit for purpose.¹⁵⁸

The model extended beyond the southern limit of the Project area to the Patterson River but excluded the northern part of the Project area (north of Lower Dandenong Road). The model domain was centred on the Springvale Road and Governor Road embankment structures. Mr Hatley advised that the intention was to focus on the potential impact of proposed embankments on the Edithvale, Braeside Park, Waterways and Woodlands Wetlands, as well as the quantification of cumulative impacts associated with the LXRA Edithvale and Bonbeach Level Crossing Removal Projects.¹⁵⁹

¹⁵⁵ Council EPRs, Document 62

¹⁵⁶ EPA, Submission 98

¹⁵⁷ Mordialloc Beaumaris Conservation League Submission 28 and Document 67, page 1, FESWI Document 66

¹⁵⁸ Mr Hatley, Expert Witness Statement and Document 28

¹⁵⁹ Mr Hatley, Expert Witness Statement and Document 28

Mr Hatley advised that the scope of the groundwater investigations and modelling was determined in consultation with a technical reference group, which included EPA.¹⁶⁰ Dr Smith advised that¹⁶¹:

the limited extent of the groundwater model relative to the Project area does not affect the conclusions of the GIA with respect to potential effects from the proposed embankments and piling, including potential impacts on groundwater levels, flows and quality, and surface water-groundwater interactions in the northern part of the Project area

(ii) Council

Mr Smitt raised concerns about the groundwater model, particular the model extent and classification. His greatest concern was that the model did not cover the entire Project area and as a consequence the EES scoping requirements were not adequately addressed.¹⁶² He advised that the model should have included the northern portion of the Project area because of the presence of landfills (a potential contamination source) and the north–south movement of groundwater, from the northern portion of the study area towards the wetlands and Port Phillip Bay.

Mr Smitt did not agree that the groundwater model was a ‘Class 2’ model.¹⁶³ He advised that it would be more appropriately classified as ‘Class 1’ for a number of reasons, including the discrepancy between the model boundary and the area of interest and limited baseline monitoring data (as discussed in Section 14.4 below). He noted that a Class 1 model has relatively low confidence associated with any predictions and is best suited to assessing impacts of low-risk developments.

Council submitted that:

To the extent that the EES terms of reference should be interpreted to require groundwater modelling for the entire Project area, that has not occurred.¹⁶⁴

Mr Smitt advised that the consequence of not including the landfill area (and road construction over/ piling into landfill) in groundwater model is that risks coming from the north into the existing model area may be missed. He contended that it is impossible to determine whether or not there will be unacceptable impacts without additional modelling.¹⁶⁵

Council submitted that the EPRs should include a requirement for additional groundwater risk assessment and modelling to be undertaken, inclusive of landfills present in the northern area.¹⁶⁶

¹⁶⁰ Mr Hatley, verbal evidence

¹⁶¹ Document 112

¹⁶² Mr Smitt, Expert Witness Statement and Document 35

¹⁶³ Mr Smitt, Expert Witness Statement

¹⁶⁴ Council – Document 42, para 11.1

¹⁶⁵ Mr Smitt. Verbal evidence

¹⁶⁶ Council, Document 62

14.4.4 Groundwater baseline data

(i) MRPV

EPR W5 requires that the WMMP will incorporate baseline data collected to date. The field investigations for the groundwater assessment included 35 groundwater monitoring bores, with 28 of these bores in ‘nested’ pairs to assess different aquifers at a given location. The purpose of the monitoring bores included collection of baseline data reflecting seasonal, spatial and hydrostratigraphic variation.¹⁶⁷ Mt Hatley advised that in addition to the groundwater data presented in the EES, further groundwater monitoring has been undertaken following the finalisation of the EES.¹⁶⁸

MRPV’s Part A submission indicated that it considered that the monitoring and investigations required by the EMF and EPRs are appropriate, and it did not consider that additional monitoring and investigations are required. However, in response to questions at the Hearing, Mr Hatley advised that additional groundwater monitoring would be undertaken in northern part of the Project area (which is not covered by the groundwater model).¹⁶⁹ Ms Jones advised that there are only two wells in the northern portion of the Project area – one groundwater well and one leachate well.¹⁷⁰ She advised that only two wells were installed for the EES investigations because there is a lot of published information on groundwater quality in this area. However, she indicated that in the next stage of the Project, additional wells will be established to provide a baseline for groundwater monitoring. She advised that it will be necessary to have “a few” additional wells within the landfill area, rather than just rely on the existing two wells, to adequately monitor impacts of the Project on groundwater in this area.

(ii) Council

Mr Smitt advised that insufficient field assessment been undertaken to establish an adequate baseline for the WMMP. He highlighted the following deficiencies:

- No wells to the north of Lower Dandenong Road to verify groundwater contamination due to industry or landfills
- No evidence that dataloggers were installed in the wetlands or surface water systems, as would have been necessary to verify water balance modelling and confirm surface/groundwater processes
- Insufficient sampling frequency at some sites to establish a baseline¹⁷¹.

He recommended that the EPRs should set out more detailed requirements in regard to establishment of a groundwater baseline.¹⁷²

Council pointed out that that exhibited EPRs referred to the use of existing monitoring to establish a baseline and that no additional monitoring was proposed. They noted that

¹⁶⁷ Mr Hatley, Expert Witness Statement

¹⁶⁸ Mr Hatley, Expert Witness Statement

¹⁶⁹ Mr Hatley, verbal evidence

¹⁷⁰ Ms Jones, verbal evidence

¹⁷¹ Document 35

¹⁷² Document 35

additional monitoring was recommended by Mr Smitt and this was accepted by Mr Hatley and Ms Jones.¹⁷³

Council submitted that the EPRs should include a requirement to undertake a groundwater assessment to establish an adequate baseline for future monitoring. It also proposed stipulating detailed requirements in relation to how and where additional groundwater monitoring should be undertaken to establish the baseline.¹⁷⁴

(iii) EPA

EPA submitted that it expected that additional investigations would be undertaken as an input to the WMMP required by EPR W5.¹⁷⁵ This would include further site-specific data be collected on potential groundwater contamination to address data gaps as well as baseline data to be used in confirming the predicted negligible impact on groundwater flows resulting from structures and embankments. EPA stipulated that the additional investigations should be undertaken in accordance with EPA Publication 668 (Hydrogeological Assessment (Groundwater Quality) Guidelines and Publication 669 (Groundwater Sampling Guidelines).

(iv) Other submitters

FESWI expressed concern about the disagreement on the adequacy of baseline data for groundwater.¹⁷⁶

14.5 EPRs and protection levels

(i) MRPV

The EES proposed two EPRs that refer to groundwater, W5 and CL7, but no specific EPR that exclusively addressed groundwater.

The EES proposed that potential impacts of the Project on groundwater must be monitored as part of the Water Management and Monitoring Plan required by EPR W5. It did not nominate a SEPP protection level to be applied, although 95 per cent protection levels were used for screening purposes in the assessment of existing groundwater quality.

Mr Hatley indicated that water quality criteria for 95 per cent rather than 99 per cent protection levels were used as a “screening level” because this level is applicable to ecosystems that are slightly to moderately disturbed and the wetlands are recharged by runoff from surrounding urban and industrial areas. He also noted that the 95 per cent protection level was used in Melbourne Water’s Edithvale Seaford Wetlands Ramsar Management Plan.¹⁷⁷

¹⁷³ Council, Document 42, para 11.6

¹⁷⁴ Council, Document 62

¹⁷⁵ EPA Submission 98

¹⁷⁶ FEWSI Document 66

¹⁷⁷ Document 36

(ii) Council

Council submitted that in addition to the references in EPRs W5 and CL7, there should be a separate EPR for groundwater, EPR GW1, which sets out requirements in relation to:

- Undertaking a groundwater assessment to establish a sound groundwater baseline for future monitoring
- Groundwater risk assessment and modelling
- Protection levels for groundwater quality
- Vertical groundwater gradients in areas where piling is proposed.

Council also submitted that EPR W5 should be modified to include a requirement to adopt a 99 per cent protection level for freshwater ecosystems.¹⁷⁸ This was based on Mr Smitt's recommendation.¹⁷⁹ Mr Smitt advised that the 99 per cent protection level applies to "*high conservation / ecological value*" ecosystems in the case of chemicals that have the potential to bioaccumulate. He noted that the Edithvale Wetland is part of a Ramsar wetland, indicating high conservation value, and noted that the PFAS is known to be present and subject to bioaccumulation. Mr Smitt advised that under the SEPP (Waters of Victoria), background levels take precedence over exceedances against protection levels – if the background level shows greater disturbance than the protection level, this would be adopted rather than the protection level.

(iii) EPA

The EPA did not comment on specific levels of protection (95 per cent or 99 per cent) but indicated that the SEPP (Waters of Victoria):

... aims to maintain and, where necessary, improve water quality to a standard that protects existing and potential beneficial uses ... the protection of beneficial uses can be achieved through maintenance of the current level of environmental quality or through realistically achievable improvements.¹⁸⁰

14.6 Discussion**14.6.1 Potential impacts of the road embankments on groundwater**

The EES presented detailed investigations of this issue and concluded that the effects of the road embankments on groundwater will be minimal and unlikely to significantly affect the Edithvale Wetlands. Mr Smitt queried the adequacy of the groundwater modelling and conceded that it was unlikely that more detailed or extensive modelling would significantly change the EES conclusions. The IAC accepts the EES conclusion that the impacts of the embankments on groundwater are likely to be minimal but supports the EPA's recommendation that monitoring should be undertaken to confirm this, and this be specified as an EPR requirement (ERP W8).

¹⁷⁸ Document 42

¹⁷⁹ Mr Smitt, Expert Witness Statement and Document 35

¹⁸⁰ EPA Submission 98

14.6.2 Potential impacts of piling on groundwater

The potential impacts of piling on groundwater were addressed in two parts of the EES, the groundwater assessment and soils and contaminated land assessment, although the extent of each assessment was limited. The EES concluded that piling will not have significant impacts on groundwater flows or quality. This relied on several mitigation measures (including spacing of piles and type of piling) being an inherent part of the design as well as requirements set out in EPR CL7.

On the basis of evidence from Mr Smitt, Council submitted that the assessment of this issue in the EES was inadequate and further assessment should be required including re-evaluation of the risk level. The EPA noted that structures in and around the landfill areas may cause groundwater contamination by leachate and strongly encouraged planning and monitoring to address this risk. Other submitters including FESWI and Mordialloc Beaumaris Conservation League also expressed concern regarding the issue.

The IAC agrees with Council's proposition that it would have been better informed about this issue if more detailed assessment had been undertaken in the EES and that further assessment is required. It also agrees with EPA regarding planning and monitoring.

The IAC accepts assurances from Ms Jones that this issue can be satisfactorily resolved in the detailed design and recommends that more detailed investigation of this issue be required. This should include consideration of vertical hydraulic gradients and the direction of groundwater flow (north-south) in relation to the effects of piling on potential spread of groundwater contamination as submitted by Council.¹⁸¹ The IAC recommends changes to EPRs CL7 to address this.

14.6.3 Groundwater modelling

The IAC notes that the groundwater model does not cover the full extent of the Project area and also has other limitations as highlighted by Mr Smitt. It agrees with Council that more detailed assessment of risks associated with structures in and around landfill areas is required and proposes that EPR CL7 should be amended to address this as outlined above in Section 14.6.2.

14.6.4 Groundwater baseline data

EPR W5 indicated that the WMMP will incorporate baseline data collected to date. Council submitted that existing data does not provide an adequate baseline. EPA submitted that it also requires additional baseline data to be obtained.

The IAC accepts that additional baseline data is required to enable adequate monitoring and recommends that EPR W5 should be amended to require this to be obtained.

14.6.5 EPRs

Council submitted proposed wording for a new EPR, GW1 – Groundwater Management. The IAC notes that there is no EPR specifically for groundwater, although there are

¹⁸¹ Council EPRs Document 62

references to groundwater in EPRs W5 and CL7. The IAC notes that the changes to the EPRs that it considers necessary can be accommodated by changes to existing EPRs W5 and CL7.

The exhibited version of EPR W5 did not refer to any particular SEPP (Waters of Victoria) level of protection. Council proposed that EPR W5 should require 99 per cent protection levels to be applied, rather than 95 per cent protection levels as applied in the EES groundwater assessment. Council submitted that 99 per cent protection levels should be applied to groundwater and surface water. MRPV submitted that the 95 per cent protection level is adequate as it is the same level of protection for freshwater ecosystems as adopted by Melbourne Water as wetland manager for the Edithvale Wetlands and as waterway manager for the Mordialloc Creek system. The EPA did not request that any particular level of protection to be specified in the EPRs.

The IAC acknowledges the ecological values of the wetlands and in particular the high conservation value of the Ramsar-listed Edithvale Wetlands. However, it notes that SEPP (Waters of Victoria) provides guidance on determining appropriate levels of protection and that the EPA will be consulted in the preparation of the WMMP. It does not consider it necessary to prescribe a specific protection level in the EPRs.

14.7 Construction impacts

Impacts resulting from embankments and piling, to the extent that they occur, would arise during construction and then persist into the operation phase, either indefinitely or until a new equilibrium is attained.

The EES proposed that the risk of contaminants entering the groundwater system as a result of construction would be managed through the CEMP. It indicated that WMMP developed in accordance with EPR W5 would ensure any contamination of groundwater is identified and relevant contingency put in place.

No significant issues were raised in relation to construction impacts on groundwater, other than the impacts of embankments and piling addressed above.

14.8 IAC findings

The IAC makes the following findings in relation to groundwater:

- The road embankments are unlikely to have a significant impact on groundwater, although monitoring is necessary to confirm this and EPR W5 has been amended to require this. The EES does not provide sufficient information regarding the impacts of piling and structures in the vicinity of landfill to make a conclusive assessment of the potential impacts. The IAC accepts that this issue can be satisfactorily resolved in the detailed design. The IAC recommends that EPR CL7 should be amended by inserting the following additional text:
 - *The structures must be designed to avoid impacts on groundwater flows and groundwater quality, including consideration of vertical hydraulic gradients and lateral spread of contamination in relation to the direction of groundwater flow*
- The IAC recommends that the EPA should have a role in ensuring that the requirements of EPR CL7 are met and recommends that the requirements of EPR CL7 should be met *'to the satisfaction of the EPA'*.

- The IAC recommends that EPR W5 should be amended to include a requirement to monitor and, if necessary, mitigate the impact of piling on groundwater.
- Additional groundwater monitoring is necessary to establish an adequate baseline for the WMMP, and the IAC recommends the EPR W5 be amended to require this.
- A separate EPR to specifically address matters relating to groundwater, as submitted by Council, is not required provided that the IAC's recommended amendments are made to the existing EPRs.
- The IAC does not accept Council's submission that the EPRs should prescribe a particular level of protection to be applied in relation to SEPP (Waters of Victoria).
- The IAC recommends that the EPA should have a role in ensuring that requirements relating to groundwater are met.

14.9 Recommendation

The Inquiry and Advisory Committee recommends:

Adopt the Inquiry and Advisory Committee preferred version of the Environmental Performance Requirements at Appendix E.

15 Soils and contaminated land

15.1 Background

Chapter 18 of the EES details issues relating to soils and contaminated land. It is based on the impact assessment prepared by WSP and presented in Appendix L: Contaminated Land Impact Assessment.

The draft evaluation objective of the Scoping Requirements in relation to ‘land contamination and acid sulfate soils’ is:

To prevent adverse environmental or health effects from disturbing, storing or influencing the transport/movement of contaminated or acid-forming material.

The EES considered potential environmental and health impacts that may result from the disturbance and handling of contaminated material or acid sulfate soils (ASS) and potential acid sulfate soils (PASS) during the construction of the Project. It examined a range of issues relating to contamination, including the likelihood of encountering contaminated soil, spoil management, landfill gas, PFAS, leachate and groundwater contamination.

The EES presented a Baseline Environmental Site Assessment (Baseline ESA), which provides a high-level indication of the contamination and ASS or PASS that may be present in the Project area.¹⁸² The Baseline ESA included a desktop review, a boring and sampling program, and a conceptual model of contamination.

The Baseline ESA identified a number of former landfills in and adjacent to the northern portion of the Project area, which are associated with soil and water contamination (including PFAS) and landfill gas. In the central portion of the Project area, asbestos containing material (ACM) was encountered and there is potential for PFAS to be present. ASS/PASS are likely to occur across the central and southern portions of the Project area, south of Lower Dandenong Road.

The EES proposed seven EPRs (CL1 to CL7) to address potential impacts of the Project in relation to soils and contamination. The EES concluded that with appropriate management and monitoring, the potential impacts of the Project on soils and contamination can be satisfactorily managed.

MRPV called Ms Helen Jones (WSP) to provide expert evidence relating to potential impacts of the Project in relation to contamination and acid sulfate soils.

Council confined its submissions to potential impacts on groundwater and questions of oversight relating to soils and contamination.¹⁸³ It did not call expert evidence on this matter.

¹⁸² EES, Appendix B of Appendix L (Baseline Environmental Site Assessment)

¹⁸³ Council, Documents 30 (Council Opening Submission), 31 (Council’s Version 1 EPRs), 42 (Council’s submission), 43 (Council’s Version 2 EPRS), 62 (Council’s Version 3 EPRS)

Submissions relating to contamination and ASS/PASS were received from the EPA,¹⁸⁴ Defenders of the South East Green Wedge,¹⁸⁵ Dingley Village Community Association,¹⁸⁶ Friends of Mordialloc Catchment,¹⁸⁷ Kingston Residents Association,¹⁸⁸ Mordialloc Beaumaris Conservation League,¹⁸⁹ Port Phillip Conservation Council Inc.¹⁹⁰ Waterways Estate Residents 3195¹⁹¹ and several private submitters.¹⁹²

15.2 The issues and risks

The key issues identified by the IAC relate to:

- Soil management, including imported soils and excavated spoil
- Potential impacts arising from disturbance of ASS and PASS
- Interactions between the Project and former landfills.

These issues span the construction and operation phases of the Project. In some instances, a potential impact would be initiated in the construction phase and persist into the operational phase (e.g. disturbance of a contaminant source causing ongoing pollution). Therefore, the discussion in this Chapter is not separated on the basis of construction and operation.

15.3 Project response

The EES proposed the following measures to manage risks associated with ASS/PASS and contamination:

- Design of the Project to minimise disturbance of contaminated areas such as former landfills
- Standard VicRoads protection measures under VicRoads S.177¹⁹³
- Development and implementation of an EMS and a CEMP that includes an ASS Management Plan, Soil Management Plan and Landfill Gas Management Plan¹⁹⁴
- Bridging the landfill surface and installing a passive landfill gas management system where the road crosses the Lot 1 Grange Road Landfill, and potentially installing gas protection measures for underground services, pits and voids.

EPRs CL1 to CL7 address risks associated with ASS/PASS and contamination. They require the following plans to be prepared and implemented:

- Soil Management Plan
- Acid Sulfate Soils Management Plan
- PFAS Management Plan

¹⁸⁴ EPA, Submission 98

¹⁸⁵ Submission 84

¹⁸⁶ Submission 81

¹⁸⁷ Submission 92

¹⁸⁸ Submission 102

¹⁸⁹ Submission 28

¹⁹⁰ Submission 97

¹⁹¹ Submission 62

¹⁹² Submissions 69 and 87

¹⁹³ EES Appendix L, p. 57

¹⁹⁴ EES Appendix L, p. 57-59

- Landfill Gas Management Plan (Construction)
- Landfill Gas Management Plan (Operation).

Most of the EPRs relating to soils and contaminated land focus on the construction phase. The exceptions are CL3 – Passive landfill gas capture and venting, which extends across all Project phases, and CL5 – Landfill Gas Management Plan (Operation), which is limited to the operations phase.

15.4 Evidence and submissions

15.4.1 Soil management

(i) MRPV

The EES reported that contaminated soils are present in the northern portion of the Project area. All soil samples tested from the central and southern portions of the Project area were below human and ecological criteria for contamination. Asbestos was identified at one site in the central portion of the Project area.

The reference design for the Project makes extensive use of embankments but requires minimal excavation, resulting in a negative cut-fill balance. It assumes driven piles, which generate minimal spoil volume. The Project is estimated to require 1,120,000 cubic metres of imported soil.¹⁹⁵ The EES indicates that clean fill is expected to be sourced from other major projects including Melbourne Metro and the LXRA Edithvale and Bonbeach Level Crossing Removal Projects.

Given the negative cut/fill balance for the Project, it is anticipated that excavated material will be re-used within the Project area wherever possible. Some of the excavated material is likely to be unsuitable for re-use due to soil classification or geotechnical considerations and will require disposal. The potential volume of 'Category C Contaminated Soil' is estimated to be between 50,000 cubic metres and 65,000 cubic metres and most of this is associated with former landfill in the northern portion of the Project area.¹⁹⁶ The EES indicated that an in-situ sampling program in accordance with EPA guidelines and Australian Standards will be undertaken prior to excavation to provide waste soil classifications. The EES indicated that if contaminated material is re-used onsite, further assessment and management measures will be required to mitigate human health and ecological risks. If it is disposed offsite, it must be taken to an appropriately licensed landfill.

The following EPRs address soil management:

- CL1 – Soil Management Plan
- CL2 – Acid Sulfate Soil Management Plan
- CL6 – PFAS Management Plan
- CL7 – Landfill Material

¹⁹⁵ EES Appendix L

¹⁹⁶ EES, Appendix L, p. 54 and Ms Jones, Document 29

- EPR B4 – Fauna (Construction) – this EPR restricts heavy construction vehicle use along Edithvale Road, which reduces the risk of contaminated soil impacting Edithvale Wetlands¹⁹⁷.

(ii) EPA

The EPA's submission¹⁹⁸ pointed out that EPR CL1 did not refer to any specific regulations, standards or best practice guidelines, and advised that the following guidelines are relevant:

- the *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended in 2013
- EPA's contaminated soil management and reuse on major infrastructure projects approvals process.

The EPA submitted that it expects additional site-specific data to be collected on the characterisation and distribution of contamination in soil and groundwater. The additional investigation works should be undertaken in accordance with EPA Publication 702 (Soil Sampling) and Publication 669 (Groundwater Sampling Guidelines).

The EPA noted that EPR CL1 requires the EPA to be consulted in regard to the Soil Management Plan and advised that it also expects to be consulted in regard to the preparation of the PFAS Management Plan (EPR CL6).

The EPA submitted that consultation with EPA in regard to the Soil Management Plan (EPR CL1) should be undertaken with sufficient time to prepare any necessary approvals.

(iii) Other submitters

Community groups expressed concerns regarding the disposal of contaminated soils and potential introduction of contaminants found in imported fill.¹⁹⁹ Defenders of the South East Green Wedge submitted that the Soil Management Plan (EPR CL1) should include guidance on source and quality of any fill obtained off-site.²⁰⁰

15.4.2 Acid sulfate soils (ASS)

(i) MRPV

The EES identified the presence of ASS and PASS in the southern and central portions of the Project area, from the southern boundary of the Project area to south of Lower Dandenong Road.²⁰¹ ASS and PASS occur naturally across extensive areas around Port Phillip Bay.²⁰²

The EES indicated that disturbance of ASS and PASS by piling works and during excavation of trenches could lead to the production of sulfuric acid.²⁰³ It classified the Project as a High

¹⁹⁷ EES p. 18-17

¹⁹⁸ EPA, Submission 98

¹⁹⁹ Friends of Mordialloc Catchment, Document 63, Mordialloc Beaumaris Conservation League Inc. Document 67

²⁰⁰ Defenders of the South East Green Wedge Document 68

²⁰¹ Appendix L p 28

²⁰² Ms Jones, Document 29

²⁰³ Appendix L page 53

Hazard in accordance with the *Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils (CASS) (DELWP 2010)*.

MRPV proposed that ASS/PASS will be managed using the Victorian Statutory framework for ASS and a project-specific Acid Sulfate Soil Management Plan will be established in accordance with EPR CLR2²⁰⁴. Disturbance of ASS/PASS cannot be totally avoided. For example, ASS and/or PASS are expected to be encountered in the course of piling for bridge construction at the Waterways Wetlands.

Ms Jones advised that construction methods such as driven piles can assist in minimising disturbance and oxidation of materials.²⁰⁵ The EES indicated that excavated soils predicted to be ASS/PASS should be immediately removed from the Project area and transported to a facility licensed to accept such material. It is not recommended that ASS/PASS be stockpiled in the Project area.²⁰⁶

In response to supplementary information submitted by MRPV to provide more details about the proposed approach to construction of the bridge at the Waterways Wetlands,²⁰⁷ Ms Jones provided further advice in relation to potential impacts of this activity on ASS and PASS.²⁰⁸ She noted that the use of driven piles will negate the requirement for soil removal, therefore she stated the potential risk of oxidation of ASS/PASS is negligible as the soils would remain in situ and under water. Water quality in terms of pH would only be affected if the soils were allowed to oxidise. However, if excavation of ASS/PASS were required, further assessment and additional management measures would be necessary. The soil would need to be removed from the area and either stored in an engineered containment area and treated with lime or removed directly to a licensed facility. The containment area would need to be situated away from waterways and other sensitive areas and designed to mitigate the risk of waterway pollution by runoff.

(ii) EPA

The EPA submitted that it expected additional site-specific data to be collected on the actual distribution of ASS and likelihood of disturbance of the ASS.²⁰⁹

It also indicated that it encourages early consultation during the preparation of the Acid Sulfate Soil Management Plan (EPR CL2) to assist in complying with EPA requirements.

(iii) Other submitters

Many community groups and several other submitters expressed concern about potential impacts of the Project in relation to ASS/PASS, including of release of acid sulfate compounds and anaerobic organisms into surrounding soil, surface water and

²⁰⁴ Ms Jones, Document 29

²⁰⁵ Ms Jones Document 29

²⁰⁶ EES, p. 18-16

²⁰⁷ MRPV Documents 54 and 90

²⁰⁸ Ms Jones Document 99

²⁰⁹ EPA submission (98)

groundwater.²¹⁰ Much of this concern was focused on bridge construction at the Waterways Estate.

15.4.3 Landfills

(i) MRPV

The road in the northern portion of the Project area will cross a former landfill located at Lot 1 Grange Road and is surrounded by a number of other former landfills.²¹¹ Ms Jones advised that methane, carbon dioxide and carbon monoxide exceeding adopted criteria were identified within these former landfill areas. Ms Jones advised that the road at Lot 1 Grange Road will be constructed as a 'floating pavement structure' supported by piles into the underlying Brighton formation sand formation.

The EES indicated that piling has potential to create preferential pathways for contaminant migration, including entrainment of shallow contaminated soil into underlying aquifers, discharge of leachate into underlying aquifers, and connecting shallow and deep aquifers. The implications of piling into the landfills for groundwater have been discussed by the IAC in Chapter 14.

The EES assessed the potential for landfill gas in the northern portion of the Project area to interact with the Project and drew the following conclusions:

- the section of the road on top of the former Lot 1 Grange Road Landfill will significantly affect the emission of gas from the waste mass in the western portion of the former landfill
- landfill gas concentrations along the road alignment outside the former Lot 1 Grange Road Landfill site indicate a low to very low risk for development
- the adjacent former Din San and Barton landfills present a risk of gas migration into service trenches²¹².

The EES indicated that risks associated with landfill gas include hazards to workers during construction, gas accumulation beneath the road presenting a fire and explosion hazard, migration of gas into service trenches, and impacts on groundwater resulting from dissolution of methane, carbon monoxide and carbon dioxide.²¹³

The EES proposed the following management measures to address risks relating to landfill gas:

- installation of a passive landfill gas capture system (gas drainage blanket or trenches) with appropriate venting (e.g. stacks or biofiltration) to minimise the

²¹⁰ Defenders of the South East Green Wedge Document 68, Dingley Village Community Association Submission 81, Friends of Mordialloc Catchment Submission 92 and Document 63, Kingston Residents Association Submission 97 and Document 84), Mordialloc Beaumaris Conservation League Inc. Submission 28 and Document 67, Fiona Bell / Protectors of Public Land Victoria Submission 84 and Document 83, Port Phillip Conservation Council Submission 97, Residents of the Waterways Estate 3195, Submission 62 and Document 89, Scott Fothergill Submission 87, John Stavriniadis Document 85

²¹¹ Ms Jones Document 20

²¹² EES Appendix L pp. 39 - 40

²¹³ EES Appendix L p 55

accumulation of landfill gas beneath the road as well as minimising the possibility of the road substantially altering the gas emission regime

- impermeable barriers to prevent ingress/migration of gas in underground services, pits and other voids
- landfill gas monitoring.

Ms Jones advised that passive venting systems for landfill gas have been successfully used elsewhere in Australia and internationally, including the UK and Sydney.²¹⁴ She provided three Australian examples of passive landfill gas management systems.²¹⁵ Ms Jones advised that the landfills associated with the Project area are non-putrescible, and therefore landfill gas risks are different from Brookland Greens, which was putrescible.

The following EPRs address risks associated with landfill gas:

- CL3 – Passive landfill gas capture and venting
- CL4 – Landfill Gas Management Plan (Construction)
- CL5 – Landfill Gas Management Plan (Operation).

In response to questions from Council, Ms Jones advised that she did not believe that EPA licensing or works approval was required for the proposed works, including passive landfill gas system, but MRPV was open to advice from the regulator as to approval requirements.

(ii) Council

Council submitted that the EES provided limited information about the construction methodology at the landfill but noted assurances from MRPV experts that it should be possible to construct the road in such a way that risks are mitigated, including bridging the landfill surface and using driven piles.²¹⁶

Council submitted that the passive landfill gas capture and ventilation system in EPR CL3 must *“be prepared in consultation with the EPA”* and *“reviewed and approved by the IREA established under EPR EM3”*²¹⁷. MRPV responded that it is agreeable to EPA involvement, but does not agree the need for Independent Reviewer and Environmental Auditor (IREA) signoff.

Council made submissions regarding the potential impacts on groundwater arising from interaction of the road with landfill in the northern portion of the Project area,²¹⁸ and these have been reviewed by the IAC in Chapter 14 (Groundwater).

(iii) EPA

The EPA submitted that it supports the need to capture and vent landfill gas from beneath the proposed road as required by EPR CL3 and recommends early engagement of the EPA to clarify design requirements if necessary.²¹⁹

²¹⁴ Ms Jones, verbal evidence

²¹⁵ Ms Jones, Document 99

²¹⁶ Council, Document 42, para 11.4

²¹⁷ Council, Documents 31 and 62

²¹⁸ Council, Document 42

²¹⁹ EPA Submission 98

The EPA also expects to be consulted during the development of the Landfill Gas Management Plan (Construction) (EPR CL4) and Landfill Gas Management Plan (Operation) (EPR CL5). The EES version of CL4 requires consultation with the EPA but EPR CL5 does not require consultation.

The EPA commented on the provisions of EPR CL7 in regard to the implications of the installation of structures in and around the known landfill areas for groundwater, and this has been reviewed in Chapter 14 (Groundwater).

(iv) VicRoads

VicRoads submitted that EPR CL3 should be amended to require that the passive landfill gas capture and ventilation system be prepared in conjunction with VicRoads.

(v) Other submitters

Mordialloc Beaumaris Conservation League and Friends of Mordialloc Catchment expressed concerns regarding the management of landfill gas.²²⁰ Concern was also expressed about the implications of the proximity of the freeway for the rehabilitation of the Din San landfill.²²¹ Dingley Village Community Association submitted concern that the freeway could release dust and odour from former landfills noting that Dingley has long had issues with dust and odour.²²²

Submissions relating to potential impacts on groundwater arising from interaction of the road with landfill have been reviewed by the IAC in Chapter 14 (Groundwater).

15.5 Discussion

There was extensive concern about potential impacts arising from the interaction of the Project with ASS/PASS and several community groups also expressed concern in relation to contamination.

Council generally accepted the findings of the EES assessment and proposed mitigation measures, except in relation to impacts on groundwater (as reviewed by the IAC in Chapter 14 – Groundwater) and arrangements for independent supervision and review.

MRPV disagreed with Council's proposal for the IREA to sign off on the passive landfill gas capture and ventilation system required by EPR CL3. The IAC notes that EPR CL3 prescribes the installation of an engineering system whereas EPR EM3 requires the IREA to review and certify plans required by the EPRs. The IAC agrees with Council that independent review should be required because the system is not a standard measure in Victoria (Ms Jones cited examples from the UK and NSW rather than Victoria) and there are uncertainties regarding subsurface conditions as the relevant landfills do not appear to have been formally engineered.

The EPA submitted general agreement with the findings of the EES and the proposed EPRs and provided clarification in relation to some specific requirements. It sought more

²²⁰ Friends of Mordialloc Catchment Document 63, Mordialloc Beaumaris Conservation League Inc. Document 67

²²¹ Mordialloc Beaumaris Conservation League Inc. Document 67

²²² Dingley Village Community Association, Submission 81 and verbal submission

extensive involvement in the implementation of the EPR requirements and emphasised that consultation with EPA should commence at an early stage.

15.6 IAC findings

The IAC notes that there are significant risks arising from the interaction of the Project with contamination, particularly from former landfills, and ASS/PASS and the EES proposed a management framework to address them.

The IAC makes the following findings in relation to soils and contaminated land:

(i) Soil Management

- Potential impacts in relation to soil management are associated with the importation of fill and disposal of contaminated soil. The EPA and Council generally agreed with MPRV's proposed management approach. Based on the EPA's submission, the IAC recommends that EPR CL1 should be amended as follows:
 - insertion of references to the *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended in 2013 and EPA's 'Contaminated soil management and reuse on major infrastructure projects' approvals process
 - insertion of a requirement for soils investigations to be undertaken in accordance with EPA Publication 702 (*Soil Sampling*)
- The IAC recommends that EPR CL6 should be amended to require the PFAS Management Plan to be prepared in consultation with the EPA, as requested in the EPA submission.

(ii) Acid Sulfate Soils

- ASS/PASS occur extensively in the central and southern portions of the Project area and will require careful management during construction. The IAC agrees with both Council and the EPA that the MRPV's proposed approach to managing ASS/PASS is sufficient.
- The IAC accepts the EPA's submission that additional site-specific data should be collected on the actual distribution of ASS and to enable more detailed assessment of the likelihood of disturbance by the Project. It recommends that CL2 be amended to clarify this by inserting a requirement for the collection of site-specific data in areas at risk.
- The IAC notes the advice of Ms Jones regarding the siting of temporary storage and treatment areas for ASS/PASS to avoid waterways and other sensitive areas. The IAC recommends amending EPR CL2 to clarify this by inserting a requirement that sites for management, reuse or disposal of ASS be identified 'with regard to sensitive receptors (wetlands, waterways and residential areas)'.

(iii) Landfills

- The IAC notes that the Project will interact with former landfills in the northern portion of the Project area. Concerns were expressed by Council and several community groups in regard to this issue. Potential impacts on groundwater are addressed in Chapter 14.
- The EES proposed landfill gas management arrangements including a passive landfill gas capture and ventilation system to address risks associated with landfill

gas. The IAC accepts Council's submission that EPA CL3 should be amended to require IREA review of the design of the system, noting that the proposed system is not a standard measure in Victoria and uncertainties regarding the underlying landfill material.

- The IAC notes and accepts EPA's request that it be consulted during the development of the Landfill Gas Management Plan (Operation) and recommends that EPA CL5 be amended accordingly.

15.7 Recommendation

The IAC recommends:

Adopt the Inquiry and Advisory Committee preferred version of the Environmental Performance Requirements at Appendix E.

16 Social impacts and economic effects

16.1 Social impacts

16.1.1 Background

Social impacts are addressed in Chapter 19 of the EES and in the Social Impact Assessment (SIA) Report, Technical Appendix M.

The draft evaluation objective of the Scoping Requirements for social impacts at Figure 1.2 of the EES is:

Social, land use and infrastructure – To minimise potential adverse social and land use effects, including impacts on existing infrastructure and open space.

The overall impact of the Project was assessed by evaluating the existing conditions in the region by way of identifying communities, valued places and analysing the local access network.

A range of social impacts were identified as follows:

- permanent alteration or severance of existing local movement patterns and access to/from private land
- temporary alteration or severance of existing local movement patterns and access to/from private land
- temporary loss of or change of access to open space, facilities or local networks
- residents and land users temporarily displaced and change to local community and population
- permanent alteration of existing local movement patterns and access to/from private land.

Of the identified risks, the temporary change to local movement and temporary loss or change of access to open space were assessed as having medium residual risk. Other impacts were deemed to have low residual risk.

Impacts would occur during both construction and operation with construction causing temporary changes to the local road network and east-west connectivity. During operation of the Project, the EES notes that most of the ultimate changes will be beneficial with the Project providing enhanced connectivity at Braeside Park, better pedestrian crosswalks, and reduced traffic congestion.

The impacts are categorised as dislocation or disruption impacts and the EES proposed mitigation measures to be implemented during the construction and operation phases of the Project.

16.1.2 The issues and risks

The key issues identified by the EES relate to:

- dislocation of community facilities and/or services or open space
- disruption or changes to local access routes and connections.

16.1.3 Project response

The EES provided the following definition of dislocation²²³:

Dislocation occurs when land is acquired and residents or people/members of the community who use the land are displaced, or when acquisition or changing environments render existing uses unviable or untenable.

During construction and once the Project is complete, informal recreational use of the road reserve as currently publicly accessible space will cease. The freeway will also permanently alter the connectivity from east to west within the Project area.

The EES suggests mitigation measures²²⁴ to be implemented during both construction and operation of the Project to manage dislocation effects including but not limited to the following:

- notify communities of any changes to local road network access
- engage with the local community to understand value and uses of current open space and facilities
- retain east west connectivity.

Disruption impacts occur when movement around a locality is restricted or changed, or when public transport service routes are changed. Disruption effects will mainly occur during the construction stage of the Project and the EES proposed mitigation measures²²⁵ including the following:

- prepare detailed consultation plans and keep affected residents well informed and updated on planned road closures and alternate routes
- display communications in prominent community hubs
- avoid and minimise disruptions where possible
- maintain pedestrian and cycling access if possible.

The EES concluded that during operation of the Project, the ultimate changes would mostly be beneficial by providing enhanced connectivity especially at Bowen Park, signalised crosswalks at freeway interchanges and reduced traffic congestion on existing arterial roads.

The EPR managing social impacts are as follows:

- EPR S1: requires the preparation of a Community and Stakeholder Engagement Plan
- EPR S2: requires management of recreational facilities and provision of alternatives if required during the construction period.

16.1.4 Evidence and submissions

The following evidence was prepared on behalf of MRPV in relation to social impacts:

- Ms Naomi Cavanagh of WSP Australia.

Evidence was not presented at the Hearing.

²²³ EES Technical Appendix M 7.1 page 27

²²⁴ EES Technical Appendix M 7.1.3 page 28

²²⁵ EES Technical Appendix M 7.2.3 page 30

Written submissions raised broader issues relevant to social impacts including visual impact, air and noise pollution which are covered elsewhere in this report.

Some submissions raised disruption and marginalization of neighbourhoods²²⁶ and increased security and rubbish concerns²²⁷.

The written submissions and the concerns raised were considered by Ms Cavanagh in her statement of evidence and she expected that the proposed social EPR S1 along with EPR LV2 (requiring design to consider crime prevention) would adequately address the issues raised and other identified social impacts.

16.1.5 Discussion

Ms Cavanagh was not required by any party to provide evidence at the Hearing and the IAC accepts her evidence. Kingston City Council did not request any changes to EPR S1 and S2, nor did any other party.

16.1.6 IAC findings

The IAC finds that the proposed EPRs S1 and S2 are appropriate.

16.2 Economic effects

16.2.1 Background

Economic effects of the Project are addressed in Chapter 20 of the EES and in the Regional Economy, Existing Conditions and Impact Report Technical Appendix N.

The assessment identified the following six precinct areas²²⁸ within the Project area:

- Green wedge zone 2 land
- Moorabbin airport
- Garden Boulevard Industrial Precinct
- Woodlands Industrial Precinct
- Governors Road Industrial Node
- Chelsea Heights Node.

Three risk categories were identified and assessed:

- compulsory land acquisition
- access to businesses during construction
- operational phase impacts on business.

Economic risks associated with each category were assessed and apart from initial risk associated with construction activities affecting business which rated 'medium', all other risks had ratings of 'low' initial and residual risks.

During operation, the EES concluded that there would be potential benefits through better access to enterprise areas, trading catchments and improved distribution networks.

²²⁶ Submissions 9, 32 and 67

²²⁷ Submissions 20, 22 and 23

²²⁸ EES Chapter 20 Figure 20.1 page 20-4

16.2.2 The issues and risks

The key issue identified by the EES relates to:

- construction activities negatively affecting business trade including access to business.

16.2.3 Project response

The EES recognises that construction activities may negatively affect business trade through disruption to utilities and road closures.

The EES identified that the business at 63-67 Tarnard Drive would experience permanent loss or reduced access due to the proposed extension of Tarnard Drive. During the course of the Hearing MRPV provided an alternative design for the Woodlands Drive off ramps which removed the need to extend and connect Tarnard Drive to Woodlands Avenue. The proposed alternative design does not affect access to any business in the area and removes the identified risk to this property.

The impacts of construction activities will be mitigated through:

- EPR E1: Requires preparation of a Business disruption plan
- EPR E2: Requires minimisation of impacts on utilities through detailed design and construction
- EPR S1: Requires preparation of a Community and Stakeholder Engagement Management Plan.

16.2.4 Evidence and submissions

The following evidence was prepared on behalf of MRPV in relation to economic impacts:

- Mr John Noronha of Ethos Urban.

Evidence was not presented at the Hearing.

Mr Naronha's Statement of Evidence detailed the further work completed in relation to the Woodlands Drive alternative design and also confirmed that this design provided a superior outcome and minimised impact to businesses in the vicinity of Tarnard Drive.

Most written submissions related to business issues were in relation to the Woodlands Drive reference design impacting access to businesses (Submissions 37, 38, 63, 73, 79). This issue has now been resolved through the adoption of the proposed alternative design put forward by MRPV.

16.2.5 Discussion

Mr Noronha was not required by any party to provide evidence at the Hearing and the IAC accepts his evidence. Kingston City Council did not request any changes to EPR E1 and E2, nor did any other party.

16.2.6 Findings

The IAC finds that the proposed EPR E1 and E2 will adequately manage business disruption impacts.

The IAC supports the adoption of the Woodlands Drive alternative design.

17 Cumulative impacts

17.1 Background

Chapter 21 of the EES presented an assessment of the potential cumulative impacts arising from the proposed Project and other infrastructure projects or developments that are planned or currently being constructed in the vicinity of the Project area.

The scoping requirements for the Mordialloc Bypass EES referred specifically to the Edithvale and Bonbeach Level Crossing Removal project in regard to the assessment of cumulative impacts. The EES identified the following other projects as also potentially relevant:

- Hawthorn Football Club development
- Monash Freeway upgrade
- Westall Road extension
- City of Kingston Chadwick Reserve development
- Moorabbin Airport Master Plan
- Kingswood Dingley Village.

The EES included assessments of cumulative impacts for all assessment components, which were presented in the relevant Appendices. Cumulative impacts of the Project on traffic and transport, biodiversity, noise and vibration, air quality, surface water, groundwater, soils and contaminated land, social and economics were outlined in Chapter 21. All disciplines considered LXRA's Edithvale and Bonbeach Level Crossing Removal Projects and the Hawthorn Football Club future development. The scope of other projects considered in the cumulative impact assessment varied by discipline.

The EES indicated that cumulative impacts were embedded in the standard assessment process for noise and air quality. For example, the traffic estimates used in the noise modelling included all proposed roads that are expected to be constructed by 2031. Similarly, the air impact assessment incorporated major infrastructure projects up to 2031, including rail upgrades. The groundwater model was specifically designed to enable quantitative assessment of cumulative impacts on groundwater.²²⁹

The cumulative assessment within the EES did not address the expected increase in use of Moorabbin Airport (as identified in the Moorabbin Airport Master Plan) or any resulting increase in noise to surrounding areas.

17.2 The issues and risks

The key issues relating to cumulative impacts identified in the EES were:

- Cumulative impacts on the Edithvale Wetlands
- Other cumulative impacts on biodiversity
- Cumulative impacts on surface water and groundwater
- Cumulative impacts on soils and contaminated land

²²⁹ Mr Hatley, Expert Witness Statement

- Cumulative impacts of construction
- Cumulative benefits.

Submissions relating to cumulative impacts focused on the Edithvale Wetlands, particularly in relation to the LXRA projects.²³⁰ One submission drew attention to potential cumulative impacts of the Project and increased aircraft traffic at Moorabbin Airport.²³¹ Another submission raised concern about cumulative impacts of the Project and the North East Link Project on Latham's Snipe habitat and the Matted Flax-lily.²³²

17.3 Evidence and submissions

17.3.1 Cumulative impacts on the Edithvale Wetlands

MRPV submitted that:

The impacts on the Edithvale-Seafood Wetlands will be negligible and will be appropriately managed in accordance with the EMF and EPRs for the Project.²³³

The EES indicated that LXRA's Edithvale and Bonbeach Level Crossing Removal project is the nearest project with potential to impact on the Edithvale Wetlands. LXRA undertook detailed assessments of potential impacts on groundwater, which influenced the design of mitigation measures. Changes to groundwater levels resulting from the LXRA project are not expected to extend as far the Edithvale Wetlands or Mordialloc Freeway project area. On this basis, cumulative impacts on groundwater levels are not expected and cumulative hydrogeological effects on wetland habitats are unlikely.

The EES examined the biodiversity assessment for the LXRA Project, which determined that there would be no impacts on the ecology of the Edithvale Wetlands, including from groundwater changes. It was concluded that there is no cumulative ecological impact on this wetland.²³⁴

A number of submitters expressed concern about potential cumulative impacts of the Project on the Edithvale-Seafood Wetlands, particularly in relation to the LXRA Project.²³⁵

17.3.2 Other cumulative impacts on biodiversity

The EES presented a cumulative impact assessment for biodiversity, which presented the following summary information in regard to specific projects (Table 21.2):

- The Edithvale and Bonbeach Level Crossing Removal Project will involve removal of vegetation along the rail trench but no significant impact on migratory birds or the Edithvale Wetlands are expected.

²³⁰ Submission Nos. 14, 87, 97, 100, 102; Mr and Mrs Wilks (Doc 57), Defenders of the South East Green Wedge Inc (Doc 68), Mr Fothergill (Document 71), KRA (Document 84)

²³¹ Submission No. 60 (RAMF)

²³² Submission No. 69 (Ms Giovas)

²³³ MRPV Part A submission

²³⁴ McCaffrey expert witness statement, also EES Appendix C

²³⁵ Submission Nos. 14, 87, 97, 100, 102; Mr and Mrs Wilks (Doc 57), Defenders of the South East Green Wedge Inc (Doc 68), Mr Fothergill (Document 71), KRA (Document 84)

- The Monash Freeway Upgrade (Chadstone to Pakenham) area includes habitat for several relevant significant species (including the Australasian Bittern and Latham's Snipe), but requires minimal vegetation clearance, except possibly for Wet Verge Sedgeland near Dandenong Creek.
- No environmental assessment information is available for Westall Road Extension, City of Kingston's Chadwick Reserve development, Moorabbin Airport Master Plan or Kingswood Dingley Village and therefore cumulative impacts from these projects have not been addressed in the EES or within the IAC's report.

The EES reported that cumulative impacts of the Mordialloc Freeway and other nearby projects include:

- Cumulative loss of trees and native vegetation, which is proposed to be mitigated by offsetting but is expected to have a cumulative residual impact in terms of the overall loss of large trees
- Impacts on fauna habitat associated with clearing
- Mortality of fauna associated with clearing and construction – although with standard controls in place to minimise mortality, the cumulative risks are considered unlikely to be significant
- Operational impacts on fauna although with recommended mitigation measures in place such as MFFBs, the risk is not expected to increase.

The Kingston Residents Association's submission drew attention to other threatening actions affecting various sections of the Carrum Wetlands, including the filling of a small wetland on the corner of Thompson and Rossiter Road for a solar farm, and a wet grassland area that used to support snipe becoming a regularly mown pony club paddock ²³⁶.

17.3.3 Cumulative impacts on surface water and groundwater

The EES considered cumulative impacts on groundwater across an area extending from Heatherton Road in the north to the Patterson River in the south, and Dandenong Creek in the east to Port Phillip Bay in the west. The only project in this area identified to have the potential to affect regional groundwater was the Edithvale and Bonbeach Level Crossing Removal Project. As indicated in Section 17.3.1 above, cumulative impacts of these two projects on groundwater levels are not expected.

The EES indicates that in regard to surface water, each project is expected to mitigate its own impacts on surface water by compliance with the State Environment Protection Policy (SEPP) (Waters of Victoria) and regulatory control by Melbourne Water and local Councils.

The EES noted that some of the other nearby projects, such as the Chadwick Reserve development could be integrated with the WSUD assets for the current Project to optimise benefits for both projects. It indicated that such integration could be considered as part of the detailed design.

Council indicated that it has been in ongoing discussions with MRPV (and previously VicRoads) regarding appropriate drainage solutions for stormwater runoff. It submitted that

²³⁶ Document 84

measures to deal with stormwater discharging from the Project could be incorporated into local stormwater treatment and re-use proposals.²³⁷ In particular, it submitted that Council's proposed wetlands at Chadwick Reserve and Northern Project Wetlands at Dingley Bypass provided an opportunity for the Project to treat stormwater in combination with Council proposals to enhance stormwater treatment and re-use. Council invited the Committee to incorporate these in the EPR LV2 proposed by Council.²³⁸

17.3.4 Cumulative impacts on soils and contaminated land

The EES indicates that both the current Project and the LXRA's Edithvale and Bonbeach Level Crossing Removal project have potential implications for exposure of ASS. It reported that the EES for the LXRA project indicates a minor to negligible residual risk for activation of ASS. The current Project aims to minimise the likelihood of activation of ASS, and any potential ASS would be managed as specified in EPR CL2.

The EES indicates that the Hawthorn Football Club Redevelopment will extend onto a former landfill near the northern section of the project area. This would have the potential to impact on the Project if the contamination is not managed appropriately. The EES indicates that compliance with legislative requirements is expected to mitigate the risk of cumulative impacts.

The EES also notes that the cumulative impact of 'Category C Contaminated Soil' to landfill is not expected to be significant from the combined amount of potentially contaminated soil from the Project, the LXRA and Hawthorn Football Club developments.

17.3.5 Cumulative impacts of construction

The EES reported that potential cumulative impacts may occur if construction of the Project coincides with the construction of other nearby projects, including:

- Reductions in the functionality of the existing road network, including Springvale Road, Wells Road and Mornington Peninsula Freeway
- Cumulative impacts of noise and vibration on sensitive receptors
- Cumulative impacts of dust from construction on sensitive receptors
- Cumulative impacts on amenity, access to social facilities and services (including open space) and local access during construction.

The EES indicates that the following mitigation measures are proposed:

- Coordination with surrounding projects, including determining appropriate staging of the construction of the Project and scheduling of works
- Coordination of construction traffic management with relevant parties, including LXRA
- Mitigation measures for the current Project as set out in the CEMP and EPRs, including the plans required to be prepared to comply with the EPRS (including CNVMP, WMMP, Community and Stakeholder Engagement Plan).

²³⁷ Document 42, Section 15

²³⁸ Council, Doc 30, paras 2.29 to 2.31

17.3.6 Cumulative benefits

The transport assessment in the EES predicted that significant positive cumulative impacts (benefits) would occur when the Project and the proposed surrounding transport projects are completed, including improved travel times, enhanced safety and improved road network capacity to cater for future growth. The EES cautions that if the surrounding projects do not proceed, projected operational performance may not be achieved. A number of submitters drew attention to this issue, as discussed in Section 6.4.2.

The economic assessment in the EES did not include a specific cumulative benefits analysis, however, the EES indicated that cumulative economic benefits are likely to accrue from the combined effects of the Edithvale and Bonbeach Level Crossing Removal project, Moorabbin Airport and Hawthorn Football Club projects.

A number of objectors expressed concern that the business case for the Project (including benefit-cost analysis) was not publicly available and indicated that they were unconvinced of its net benefit.²³⁹

17.4 Discussion

(i) Cumulative impacts on Edithvale Wetlands

A number of submitters expressed concerns regarding cumulative impacts of the Mordialloc Bypass Project and LXRA Project on the Edithvale Wetlands. However, MRPV submitted that the Project will not have a cumulative impact on the Edithvale Wetlands.

The IAC agrees with MRPV's position that if all mitigation measures are in place and fully effective, cumulative impacts on the wetlands are unlikely. However, it notes that both the Mordialloc Freeway Project and the LXRA Project rely on mitigation measures that require ongoing maintenance to protect the Edithvale Wetlands. Therefore, there is potential cumulative risk to the Edithvale Wetlands if the mitigation measures fail or deteriorate.

The two projects pose different types of potential risks to the wetlands:

- The LXRA Project poses potential risks to habitat and water quality associated with groundwater mounding eastward of the Edithvale rail trench that are to be mitigated by engineering works
- The Mordialloc Bypass Project poses potential risks to surface water quality that are proposed to be mitigated by water treatment (vegetated swales, bioretention systems) and spill containment tanks.

In both instances, the mitigation measures are reliant on maintenance to ensure on-going effectiveness.

The question of cumulative impacts on birds that use the Edithvale wetland and other local habitat including the local wetlands adjacent to the Project area was discussed at the Hearing. For example, impacts resulting from temporary disturbance to local wetlands (particularly the Waterways Wetland) during construction, vehicle collision and potential

²³⁹ Including RAMF Submission 60, Mr Fothergill Document 71, KRA Document 84

barrier effects from the freeway. Evidence from Mr Smales indicated that the birds cover a wide range, are opportunistic, and would be expected return when conditions are suitable. This issue is discussed in more detail in Chapter 8.

(ii) Integration with Council's proposed stormwater treatment

The Committee notes Council's submissions regarding opportunities for stormwater treatment to be developed in conjunction with Council's proposals for Northern Project Wetlands at Dingley Bypass and Chadwick Reserve, and potential benefits that this may provide. However, it does not support Council's proposal for this to be stipulated as an EPR requirement as it is not integral to the Project or its mitigation.

17.5 IAC findings

The IAC makes the following findings in relation to cumulative impacts:

- The Project will not have a cumulative impact on the Edithvale Wetlands provided that measures to mitigate risks to surface water quality are implemented, maintained and monitored, and upgraded if the existing measures are found to be ineffective.
- The IAC has proposed in the Surface Water Chapter that the EPRs should be modified to include a requirement for ongoing maintenance and monitoring of the surface water treatment and spill containment measures relevant to the Edithvale Wetlands, because the risks will be ongoing.
- There may be other cumulative effects from the other projects nominated in the EES, however the EES noted that information was not available for these projects so cumulative effects could not be adequately addressed. The IAC accepts this outcome, however, would encourage Moorabbin Airport to continue to assess the impacts of noise to the local community as part of any future implementation of the Master Plan.

18 Environmental Management Framework

18.1 Background

The Environmental Management Framework (EMF) including the exhibited Environmental Performance Requirements (EPR) is addressed in Chapter 23 of the EES Main Document (Volume 3).

Section five of the EES Scoping Requirements sets out detailed requirements for the Project's EMF.

EPR EM1 to EM4 specifically dealt with matters relating to the EMF.

18.2 What is the EMF for the Project?

As stated in the EES, the EMF provides a transparent and integrated governance framework to manage environmental impacts as described in the EES for the design, construction and operational phases of the Project. The Project is that described in Chapter 6 of the EES.

The objectives of the EMF are to:

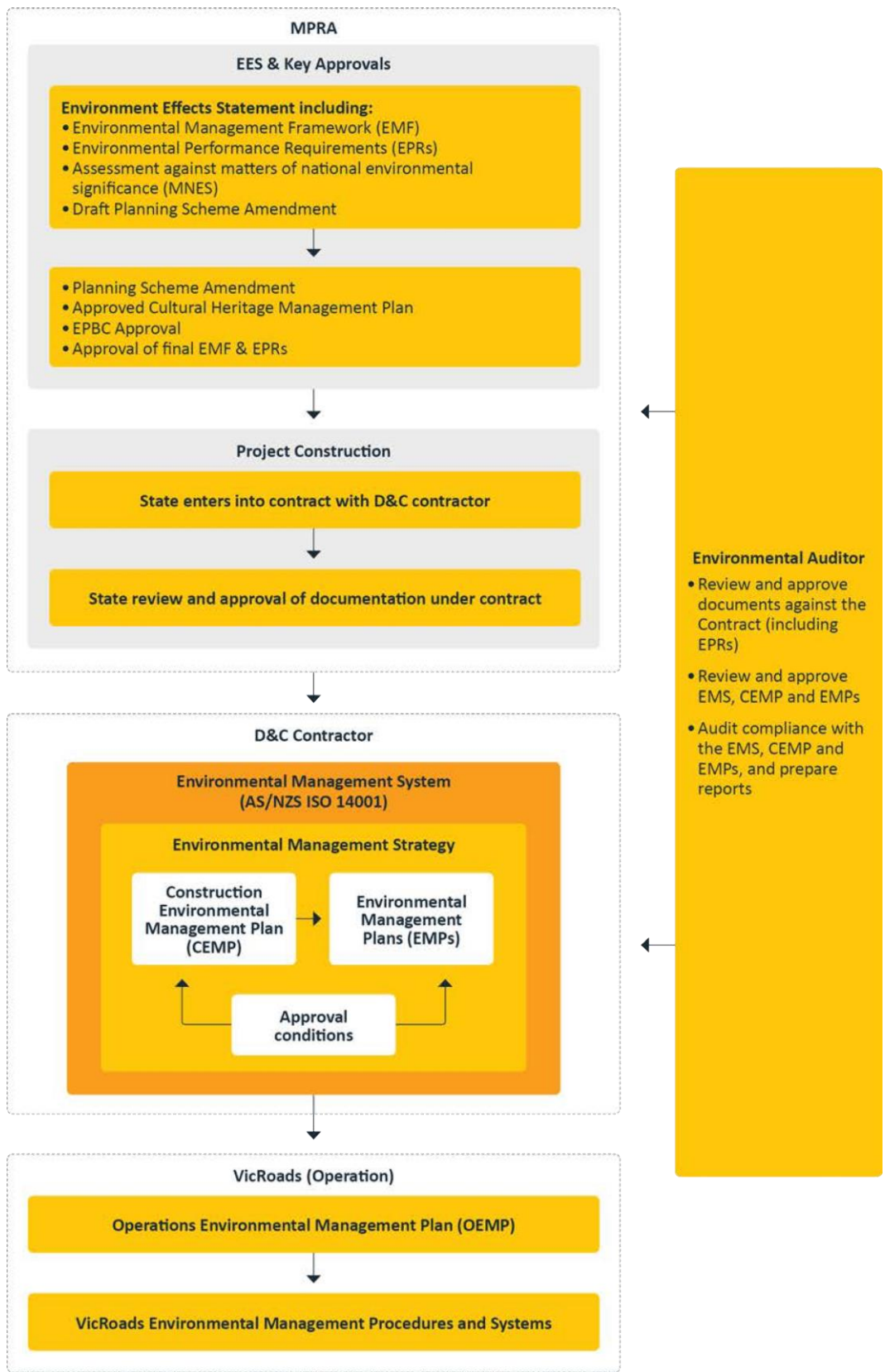
- Establish a framework to ensure compliance with statutory requirements, approvals, approval conditions and minimise environmental risks
- Set out the environmental outcomes to be achieved during the detailed design, construction and operation of the Project
- Ensure accountabilities are identified for managing environmental effects and hazards associated with implementation of the Project.

The EMF includes EPRs that define the Project-wide environmental outcomes that must be achieved during design, construction and operation of the Project (regardless of the detailed design solutions adopted). The EMF is given legal force by the Incorporated Document. The EPRs for the Project are referenced at clause 4.2.1 of the Mordialloc Bypass (Freeway) Incorporated Document. The Incorporated Document sets out planning controls for the Project under each relevant planning scheme.

The governance structure provides guidance on the roles and responsibilities for the implementation of the EMF, EPRs and Environmental Auditor. Importantly, as stated in the Incorporated Document at clause 4.2.1, the EMF (including the EPRs) will need to be prepared to the satisfaction of the Minister for Planning prior to the commencement of any works, excluding preparatory works permitted by the Incorporated Document.

The governance framework for the EMF is shown in Figure 7.

Figure 7 Governance Framework for the EMF



The MRPV, Council and some submitters, provided the IAC with revised versions of the EPRs, or suggested wording changes, for consideration. The IAC has considered these revised EPRs as well as the associated issues raised during the Hearing when providing its recommended version of the EPRs at Appendix E.

The EMF itself was not in contention, nor was the EMF reference at clause 4.2.1 of the Incorporated Document.

One matter that the IAC did raise at the Hearing, that was removed from the EPRs but also needs to be deleted from the EMF, is the following:

The EMF will be updated and re-assessed by the Minister for Planning if traffic lanes are proposed to be added to the Project in the future. This requirement is stipulated in the Planning Scheme Amendment (via the Incorporated Document and associated EPR EM1)²⁴⁰.

The reason for the IAC's question was that the Project, as defined in Chapter 6 of the EES, is for the provision of an upgrade to a six-lane freeway in the future, within the existing Project area. The EES states that traffic modelling and associated noise and air quality impacts have been assessed based on a four-lane freeway operation, whilst vegetation removal has assumed the construction of a road that caters for a six-lane road width²⁴¹. The EES states:

Should MRPA or VicRoads seek to expand the freeway to six lanes in the future, further planning scheme amendments will not be required, so long as works remain within the existing Project area. A revised Environmental Management Framework (EMF) relating to the upgrade works will be required (EPR EM1 ...)²⁴²

This may be the case for the planning scheme amendment; however, the environmental effects of the Project have not been assessed for a six-lane freeway. Counsel for MRPV acknowledged that this matter raised by the IAC is an issue and that the EMF would also need to be amended and that if future lanes were to be required, further statutory processes would be required (such as potential referrals under the *EE Act 1978* and *EPBC Act 1999*).

18.3 EPRs

(i) Governance

The EPRs as exhibited did not include the level of scrutiny that other major projects have had of the various 'plans' that must be prepared and approved under the EPRs and this was an issue raised by Council that the IAC agrees with.

Council raised questions about the governance arrangements of the various components required under the EPRs in particular the need for a third party auditor to review 'plans' called up as part of the EPRs and either the Minister or the 'State' be the entity to approve these plans, rather than the contractor.

²⁴⁰ EES Chapter 23 (Volume 3) p23-3

²⁴¹ EES Chapter 22 (Volume 3) p22-19

²⁴² *ibid*

MRPV made changes to its final version of the EPRs to reflect the matters raised by Council, which the IAC agree with, by including a new EPR EM4 Independent Reviewer and Environmental Auditor. The Independent Reviewer and Environmental Auditor will review plans that are called up in the EPRs and audit reports will be provided to the MTIA on a regular basis.

In response to the IACs questions regarding the Environmental Management Strategy being made public on an accessible website, the MRPV has included this arrangement in the revised EPR EM1 and the IAC has made amendments to this to ensure the EMS is made publicly available.

(ii) Scope of the EPRs

Although the matters identified in the EPRs were generally agreed, submissions were largely around the detail of particular EPRs. Council identified a number of additions to existing EPRs as well as edits that were suited to their own Council circumstances (additional noise and vibration monitoring for example). The details on these matters are discussed in other chapters of this report and recommendations made as appropriate regarding specific EPRs. However, MRPV provided the following summary of their final changes as follows²⁴³:

The reference to a six lane project has been removed from EPR EM1;

EPR EM2 now expressly requires the preparation of an OEMP in conjunction with VicRoads;

EPR EM4 makes appointment of the Independent Environmental Auditor a requirement of the EPRs as opposed to just the EMF and the design and construct contract.

Amendments to EPR B1 to require the implementation of MFBs as part of the detailed design of the Project. The MFBs must be designed to achieve a certain level of acoustic performance. While particular heights are nominated, in part to achieve noise outcomes in sensitive wetland habitats, amended EPR B1 requires consultation with an ecologist during detailed design to optimise the flight diverter effect of the MFBs. This is in response to the recommendation of Mr Loyn on behalf of the Council.

Amendments to EPR LV1 to provide more guidance on the approach to be taken in the urban design process. The amendment to LV1 is broadly modelled on the EPR LV1 adopted in the West Gate Tunnel Project which:

- Imposes a general obligation to minimise visual impacts; and
- Requires the Project to respond to urban design principles set out both in EPR LV1 itself and in other documents.

Insertion of new LV8 which provides for an independent urban design review process. MRPV accepts that there is value in having its proposed design reviewed by an independent person / body. The independent advisor would be appointed by the Major Transport Infrastructure Authority.

Various other smaller amendments to the EPRs are proposed to strengthen them and assist in achieving the outcomes sought for the Project.

The IAC agrees with Council and has strengthened the EPRs and the governance arrangements by including public reporting of the Independent Reviewer and Environmental

²⁴³ Document 103

Auditor (IREA) audits, more consultation within the EPRs with regulatory and relevant authorities and Council as well as providing more certainty as to how EPRs will be implemented.

(iii) Should the EPRs be prescriptive?

MRPV submitted that using the performance-based approach in EPRs is sufficient and that this does not mean that the method/s of how the EPR is to be achieved should be prescribed in the EPRs. MRPV do note however that for some EPRs prescription is required, for example the number of culverts.

The IAC's opinion, similar to other IAC's for major projects, is that there are no set rules that govern what must or must not be included in EPRs. Inevitably, a judgement is required as to the level of detail and information required in association with the particular project. MRPV suggested that the EPRs are performance-based and in some cases more specific requirements have been included to reflect the requirement to do so.

Submissions from Council and other parties to the Hearing on EPRs suggested changes that in some areas were quite detailed and prescriptive.

(iv) How will EPRs be implemented?

Council raised concerns about how the Project would be implemented and how the various plans, within the EPRs, would be managed both for construction and the Project operation. The IAC sought clarification from the MRPV as to how the EPRs and various plans will be implemented throughout the Project, including who is responsible for approval of such plans. MRPV confirmed that it is the Major Transport Infrastructure Authority (MTIA) that will approve the Environmental Management Strategy and plans called up under the EPRs. Notwithstanding, the IREA will review all plans prior to approval by MTIA. Audit reports will also be made public on a website. The EPRs have been strengthened to ensure this occurs.

The EPRs are a critical element of the EMF and of successful Project compliance with applicable environmental legislation, policy and standards and for the delivery of the Project.

Clause 4.2.1 to 4.2.4 of the Incorporated Document sets out the requirement for the EMF, including approval of the EMF by the Minister for Planning. At clause 4.2.1, the EMF must respond to the EPRs and at clause 4.2.2 the EMF must set out the process and timing for development of the Construction Environmental Management Plan (CEMP), Site Environmental Management Plan (SEMP) and other plans and procedures called for in the EPRs. The IAC notes that the Minister for Planning does not approve these other Plans, however audit reports of compliance with the EMF, CEMP, Operational Environmental Management Plan (OEMP) and SEMP from the IREA will be made publicly available on a regular basis. EPR EM1, EM2 and EM4 has been amended to reflect these governance arrangements including that audit reports be made publicly available on a regular basis.

(v) Summary of IAC assessment of EPRs

The IACs assessment of the EPRs is summarised as follows:

- Chapter 6 deals with transport and traffic and connectivity and does not propose any changes to the traffic EPRs

- Chapter 7 addresses land use and planning and does not propose any changes to EPRs
- Chapter 8 deals with impacts on biodiversity and the wetlands and recommends changes to biodiversity EPRs (B1, B3, B4, B5)
- Chapter 9 addresses landscape and urban design impacts of the Project and recommends changes to landscape EPRs LV1, LV7 and LV8
- Chapter 10 deals with noise and vibration and recommends changes to EPRs NV2
- Chapter 11 addresses the impacts of air quality and does not propose any changes to EPRs
- Chapter 12 addresses cultural heritage with a minor change to H3
- Chapter 13 addresses issues relating to surface water and recommends changes to EPR W1, W2, W3, W5 and adds new EPR W7
- Chapter 14 address issues relating to the groundwater and recommends changes to EPRs W5 and CL7
- Chapter 15 addresses soils and contaminated land and makes recommendations regarding EPRs CL1, CL2, CL3, CL5, CL6 and CL7
- Chapter 16 deals with other social and economic effects and does not propose any changes to EPRs
- Chapter 17 deals with Cumulative Effects and does not propose any changes to EPRs.

The IACs preferred version of the EPRs is as shown in Appendix E.

18.4 Conclusions

The IAC concludes that generally the EMF (including the EPRs) is a sound and robust framework for managing the environmental effects of the Project during its construction and operational stages. The Minister for Planning must approve the EMF and the IAC is comfortable that the Incorporated Document (subject to IAC's changes at Appendix E) provides the transparency and certainty for managing environmental effects of the Project. Strengthening the role of the IREA also provides the IAC with a level of certainty that various plans called up under the EPRs will have some transparency.

The IAC notes that the MRPV has responded to requests for changes to the EPRs during the course of the Hearings and should be commended for doing so. Appendix E shows the IAC's recommended changes to the EPRs compared to the 'final draft' MRPV (Document 94) tabled at the Hearing. The IAC recommends that the Minister for Planning adopt the IAC version.

18.5 Findings

The IAC makes the following findings in relation to the proposed EPRs:

- The EMF be amended to delete reference to the potential for other traffic lanes to be added to the Project in the future as the impacts of additional lanes has not been assessed in the EES.
- The use of EPRs as the primary means of setting the framework for avoiding, monitoring and mitigating environmental risks associated with the Project is supported.
- The IAC's preferred version of the EPRs is shown in Appendix E.

18.6 Recommendation

The Inquiry and Advisory Committee makes the following recommendations in relation to the proposed Environmental Management Framework:

Approve the Environmental Management Framework, subject to the removal of the reference to the Environmental Management Framework being “updated and re-assessed by the Minister for Planning if traffic lanes are proposed to be added to the Project in the future”.

Adopt the Inquiry and Advisory Committee preferred version of the Environmental Performance Requirements as shown in Appendix E.

19 Integrated assessment

This Chapter summarises the findings of the IAC and its response to the IAC Terms of Reference.

19.1 EES evaluation objectives

Table 6 summarises the IAC's assessment against each of the Evaluation Objectives in the EES.

Table 6 IAC assessment against EES evaluation objectives

Evaluation Objectives		IAC Integrated Assessment	Report ref.
Transport efficiency, capacity and safety	<p>To provide for an effective connection between the Mornington Peninsula Freeway and the Dingley Bypass, to improve travel efficiency, road safety, and network capacity, as well as improve amenity and local transport networks in the Aspendale/Dingley area.</p> <p>Key legislation: TI Act, P&E Act, RM Act</p>	<p>The Project, with the IAC's recommended changes for good functioning of the Project, is likely to have a substantial net positive transport benefit and lead to improved conditions on the surrounding local road network.</p> <p>There are a number of other associated works on the surrounding road network that the IAC consider essential to the proper functioning of the Mordialloc Bypass Project and should be undertaken in conjunction with the Project (identified in chapter 6).</p> <p>The IAC concludes that the construction traffic impacts can be appropriately managed and the proposed transport EPRs are satisfactory.</p>	Chapter 6

Biodiversity	<p>To avoid, minimise or offset potential adverse effects on native vegetation, listed migratory and threatened species and communities, as well as habitat for other protected species.</p> <p>Key legislation: FFG Act, P&E Act, Wildlife Act, CF&L Act, EPBC Act</p>	<p>The Project will have some ecological impacts during construction, particularly as a result of the bridge construction over the Mordialloc Creek/Waterways wetlands as this will cause some disturbance to the habitats of avifauna and other fauna species, as well as on aquatic and riparian vegetation. This short-term (24 months) disturbance is not expected to have significant long-term impacts. Once construction is completed, and with effective implementation of the mitigation measures proposed in biodiversity EPRs, the IAC accepts the evidence of the experts that birds will return to the wetlands.</p> <p>Removal of native vegetation (approximately 12 hectares) including some large trees within the alignment is not considered to be a significant impact of the Project. Where possible, the Project has avoided the removal of native vegetation.</p> <p>The surface water and groundwater assessment in the EES determined that there would be negligible hydrological changes from the Project and therefore the ecological impacts on the Edithvale-Seaford Ramsar wetlands would be highly unlikely. There may be indirect impacts on avifauna that utilise Edithvale-Seaford Ramsar wetlands as well as other wetlands in the vicinity of the Project. This impact is not considered to be significant on any particular species and considered a construction (short term) impact.</p> <p>The impacts to fauna during operation of the Project, (noise, lights, traffic, and barriers to fauna connectivity), are considered acceptable with effective Multi Function Fauna Barriers (MFFB), culverts and use of fauna sensitive lighting. The IAC considers a three metre MFFB could be optimal along the entire eastern boundary of Braeside Park as well as in sensitive wetland areas. Due to the uncertainty amongst the experts of an adequate height for the MFFB, this matter is to be resolved in detailed design with suitably qualified specialist ecologist without compromising the achievement of other objectives (such as visual impacts).</p> <p>Overall, the potential adverse effects on native vegetation, listed migratory and threatened species and communities, as well as habitat for other protected species are not considered to be significant and that post construction, the Edithvale Wetlands and constructed wetland environments adjacent to the Project will continue to provide ongoing habitat for a diverse range of species, including migratory and threatened birds.</p>	Chapter 8
--------------	---	---	-----------

Water, catchment values and hydrology	<p>To minimise adverse effects on groundwater, surface water and floodplain environments and minimise effects on water quality and beneficial uses, including the ecological character of the Edithvale-Seaford Wetlands Ramsar site.</p> <p>Key legislation: EP Act, Water Act, C&LP Act, SEPPs, EPBC Act</p>	<p>Interception of groundwater is not likely to occur during construction of the Project and the road embankments are expected to have minor to negligible impacts on groundwater. GDEs are not expected to be impacted at Edithvale Ramsar wetlands.</p> <p>Construction of the bridge over the Mordialloc Creek/Waterways wetlands will cause some impacts to the surface water environment, which will be mitigated by the proposed construction methodology of driven piles and environmental controls to meet the EPR requirements, including in relation to sedimentation, spills and acid sulfate soils.</p> <p>The Project will not cause significant changes to the flow regime of Mordialloc Creek or inflows to Woodlands or Waterways wetlands. Minor increases in surface water inflows to the Edithvale North Wetland are not expected to significantly alter wetland habitat.</p> <p>Potential impacts of the Project on water quality, including the effects of road runoff and spills, can be satisfactorily mitigated using proposed measures including grassed swales, bioretention systems and spill containment but ongoing monitoring and maintenance will be required.</p> <p>The Project is not expected to exacerbate existing flood risks to people or property, with effective mitigation measures to be finalised in the detailed design to the satisfaction of Melbourne Water.</p> <p>Overall, the potential impacts to groundwater, surface water and floodplain environments are considered low.</p>	Chapter 13
---------------------------------------	--	--	------------

Land contamination and acid sulfate soils	<p>To prevent adverse environmental or health effects from disturbing, storing or influencing the transport/movement of contaminated or acid-forming material.</p> <p>Key legislation: EP Act, Water Act, P&E Act, C&LP Act.</p>	<p>There are potential impacts arising from the interaction of the Project with contamination from former landfills in the northern section of the Project and acid sulfate soils, which occur extensively in the central and southern parts of the Project area. The Project aims to minimise disturbance to former landfill sites in the northern component of the Project by the use of a ‘floating pavement structure’ supported by piles. EPRs CL3, CL4 and CL5 prescribe measures to manage risks associated with landfill gas.</p> <p>The IAC agrees with the assessment presented in the EES that excavated soils predicted to be acid sulfate soils (ASS) or potential acid sulfate soils (PASS) should be immediately removed from the Project area and transported to a facility licensed to accept such material. It is not recommended that ASS/PASS be stockpiled in the Project area, however EPR CL2 has been amended to better manage this impact to sensitive receptors. Notwithstanding, the MRPV expert noted that the use of driven piles will negate the requirement for soil removal within the Waterways Wetland area, therefore the potential risk of oxidation of ASS/PASS is minimised as the soils would remain in situ and under water.</p>	Chapter 14
Cultural heritage	<p>To avoid or minimise adverse effects on Aboriginal and historic cultural heritage.</p> <p>Key legislation: AH Act, Heritage Act, P&E Act, TOS Act, Native Title Act.</p>	<p>The Project avoids adverse effects on Aboriginal and historic cultural heritage.</p> <p>The IAC accepts the evidence that here is a low potential for significant historical cultural heritage or archaeological features to be located within the Project alignment.</p> <p>Further consultation with Council and Parks Victoria is required to resolve the extent of the HO104. The extent should include at a minimum the two brick buildings and some curtilage.</p> <p>In regard to Aboriginal cultural heritage significance the IAC accepts the assessment in the EES there are no significant sites within the Project area and notes that protocols will be in place under the Cultural Heritage Management Plan to protect any Aboriginal cultural heritage that may be located during construction.</p>	Chapter 12

Amenity and environmental quality	<p>To minimise adverse noise and other amenity effects on nearby residents and land uses, having regard to relevant limits, targets or standards.</p> <p>Key legislation: EP Act, SEPPs, P&E Act, RM Act, PHW Act</p>	<p>Noise during construction is considered to be an issue that requires some control. The IAC considers that noise targets are independent of the type of Project or construction methodology. The purpose of appropriate noise targets is to protect the community from unreasonable noise. For this reason, the IAC has recommended inclusion of specific noise targets within a CNVMP to assist with the management and mitigation of construction noise.</p> <p>Noise impacts from traffic on residential areas will meet the VicRoads policy with noise walls in place. The IAC notes that in some areas, the MFFBs will also assist with noise mitigation, particularly for users of Braeside Park.</p> <p>Air quality impacts arising from the Project are mostly dust during construction which can be managed and from vehicle emissions during operation. Air quality modelling has demonstrated that the relevant SEPP AQM and AAQ design criteria and quality objectives can be achieved at all sensitive receivers.</p> <p>The IAC accepts that there is a recognised link between health effects and air pollution. The IAC also accepts that the EPA is the statutory body responsible for protecting the environment in Victoria in regard to health impacts. Notwithstanding, the IAC considers that additional denser planting in areas where sensitive receivers are close to the roadway such as at the Chelsea Heights Lifestyle retirement village is warranted due to the minimal safety margin in the level of PM_{2.5} when compared to the aspirational goal.</p> <p>In regard to visual impacts of the Project, the EES and evidence suggested that changes to landscape character and loss of visual amenity can be appropriately managed via the EPRs. To protect the users of Braeside park, the IAC has recommended a three metre high wall, which will also reduce impacts of noise, vehicle lights, and fauna collision. The inclusion of EPR LV8 ensures an independent review of visual and urban design matters.</p>	Chapter 10 and 11
-----------------------------------	---	--	-------------------

Social, land use and infrastructure	To minimise potential adverse social and land use effects, including impacts on existing infrastructure and open space. Key legislation: P&E Act, PHW Act	The Project has been planned since the 1960s. No adverse social impacts, although informal use of the reservation as opens space and walking paths will be lost. Shared user paths will be created by the Project. No adverse impacts to surrounding land uses are anticipated.	Chapter 7 and 16
-------------------------------------	---	--	------------------

19.2 Overall assessment findings

The IAC makes the following overall comments on the environmental impacts of the Project. These comments are designed to respond directly to the requirements set out in the IAC Terms of Reference.

Findings on the significance of environmental effects of Project as proposed in the EES:

The likely risks of the Project on groundwater and surface water are dealt with in detail in Chapters 13 and 14 and the findings are as summarised in Table 6 above.

The IACs findings on the impacts on wetlands and aquatic vegetation are set out in Chapter 8.

In summary the environmental effects of the Project are expected to be acceptable if constructed and operated in accordance with the EMF and successful implementation of the measures identified in the EPRs IAC version in Appendix E.

In addition to the findings set out above in relation to groundwater, biodiversity and surface water, the IAC assessed other amenity and environmental impacts of the Project, both during construction and operation. In particular, the acoustic and air quality impacts of the Project to residential areas in close proximity to the Project. Noise during construction is required to be managed and the IAC makes a recommendation in regard to this. The IAC has concluded that air quality and noise criteria for operation can be adequately met with the inclusion of the IAC's version of EPRs and that the EPRs properly and comprehensively deal with the risks associated with the Project. The IAC has recommended some changes to the EPRs on these other items.

Matters of National Environmental Significance under the EPBC Act:

Matters of National Environmental Significance (MNES) relevant to the Project and the controlled action decision are summarised in Chapter 21.

With properly designed engineering mitigation measures for the bridge construction over the Mordialloc Creek/Waterways Wetlands and application of all relevant EPRs, the Project is not expected to have unacceptable impacts on the various wetlands or on migratory and threatened listed species and communities.

The Project is not expected to have unacceptable impacts on migratory and threatened listed species and communities due to changes in the ecological character of Edithvale Ramsar Wetlands, disruption to fauna connectivity or from operational impacts such as vehicle collisions and traffic noise.

The impacts from light spill, vibration and dust are primarily associated with construction, and are not expected to be detrimental to the ongoing ecological character of the wetland environments nor deter avifauna from returning to the site post construction. The EPRs require a range of measures to mitigate risks associated with construction.

Conclusions on the feasibility of the Project achieving acceptable environmental outcomes:

The IAC has considered the applicable legislation and related policy and has been provided with submissions and evidence on relevant best practice. The EES and associated Technical Reports, appropriately modified by peer review and the expert evidence and submissions provided through the EES process, provide a comprehensive risk-based analysis and response.

The IAC finds that the Project is feasible, and the environmental outcomes are manageable subject to the EMF being implemented, including the monitoring and mitigation plans as set out in the EPRs. The role of the Independent Reviewer and Environmental Auditor is an important component of the EPRs implementation.

Recommendations on whether the proposed Project will deliver an appropriate balance of environmental, economic and social outcomes:

Having regard to the evaluation objectives in the EES scoping requirements, public submissions and the IAC's conclusions on the significant effects of the Project; the IAC finds that the Project will deliver an appropriate balance of environmental, economic and social outcomes subject to the EMF being implemented, including the monitoring and mitigation plans as set out in the EPRs.

Recommendations for feasible modifications to the Project:

The EMF and EPRs set out in detail specific measures to prevent, mitigate or compensate for significant adverse effects of the Projects.

The IAC has recommended changes to the EPRs that include requirements for further mitigation and monitoring and where relevant, additional criteria to be met (through reference to certain standards or guidelines).

The EPRs as modified properly and comprehensively deal with the risks associated with the Project.

The proposed changes to the Project post exhibition regarding Woodlands Drive have been accepted by the IAC for reasons set out in Chapter 6. Recommendations have been provided by the IAC in order for the Project to function effectively with the surrounding road network.

Recommendations for approval conditions:

The Project require the following approvals under Victorian legislation:

- amendments to the Kingston Planning Scheme and Greater Dandenong Planning Scheme under the *Planning and Environment Act 1987*
- a Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006*.

Other approvals required for the Project under Victorian legislation may be required, depending on the final design. Relevant approvals likely to be required include:

- a permit to take protected flora under the *Flora and Fauna Guarantee Act 1988*
- a consent for works within a road reserve under the *Road Management Act 2004*
- a license to use groundwater and/or a permit for works on waterways under the *Water Act 1989*
- a management authorisation to remove any wildlife under the *Wildlife Act 1975*.

Recommendations on the framework for environmental management including the proposed environmental performance requirements for the Project:

The proposed EMF approach is supported. The framework proposed has been used successfully for other large, complex projects in Victoria and is appropriate to apply to the Mordialloc Bypass Project. The IAC's findings on the proposed EPRs are summarised in Chapter 18 and discussed in detail in Chapters 6 to 17 of this report. The EPRs are supported subject to the changes recommended in Appendix E.

19.3 Index to Terms of Reference report requirements

Table 7 is an index to the IACs response to the Terms of Reference paragraph 21 and 22 report requirements.

Table 7 IAC response to Terms of Reference

Terms of Reference	IAC response and findings	Report chapter
21a. findings on the significant environmental effects (impacts) of the Project proposed in the EES, including impacts on matters of national environmental significance protected under relevant controlling provisions of the EPBC Act	The likely risks of the Project on surface water and groundwater are dealt with in detail in Chapters 13 and 14.	13, 14
	The IACs findings on the impacts on biodiversity are set out in Chapter 8.	8
	An integrated assessment is provided on section 19.1 and 19.2 above.	19
	Matters of national environmental significance are summarized in Chapter 21.	21
b. conclusions on the feasibility of the Project achieving acceptable environmental outcomes in the context of applicable legislation, related policy, relevant best practice, and the principles and objectives of ecologically sustainable development	The IAC finds that the Project is feasible and the environmental outcomes is acceptable and manageable, subject to the Environmental Management Framework being implemented, including the monitoring and mitigation plans and other measures as set out in the EPRs at Appendix E.	18

Terms of Reference	IAC response and findings	Report chapter
c. recommendations on whether the proposed Project will deliver an appropriate balance of environmental, economic and social outcomes, having regard to the evaluation objectives in the EES scoping requirements, public submissions and the IAC's conclusions on the significant effects of the Project	The IAC finds that the Project will deliver an appropriate balance of environmental, social and economic outcomes subject to the proposed IAC changes to the Project outlined in Chapter 6 and to the Environmental Management Framework being implemented, including the monitoring and management plans as set out in the EPRs.	6 to 18, App E
d. recommendations for feasible modifications to the Project, including specific measures to prevent, mitigate or compensate for significant adverse effects in the context of relevant standards, objectives and guidelines established under relevant legislation	The IAC has recommended changes to the EPRs that include requirements for more extensive monitoring and mitigation plans for construction noise, surface water, groundwater, landfill gas and to aspects of the proposed biodiversity mitigation measures such as the Multi-Function Fauna Barriers.	8, 10, 13, 14, 15
e. recommendations for approval conditions under Victorian law necessary to achieve acceptable environmental outcomes in the context of applicable legislation and policy, including advice on the planning scheme amendment for the Project	The IAC recommends that the Project be approved to proceed subject to the Project being constructed and operated in accordance with the approved EMF and EPRs (IAC version at Appendix E).	18, 19 App E
f. recommendations on the framework for environmental management including the proposed environmental performance requirements for the Project	The proposed EMF approach is supported and its link with the Incorporated Documents. The EPRs are supported subject to the changes recommended in Appendix E.	18 App E

Terms of Reference	IAC response and findings	Report chapter
g. recommendations for the statutory planning framework established for the Project	The planning framework provides approval for the Project through the Incorporated Document, which in turn is conditional on compliance with the EMF. This approach is supported, and the IAC accepts the inclusion of EM4 (Independent Review and Environmental Auditor) to assist with transparency of the planning and environmental framework.	18, 20
h. recommendations for the proposed amendment to the Kingston and Greater Dandenong Planning Schemes under the P&E Act to facilitate the Project.	The proposed Incorporated Document is supported subject to the changes shown in Appendix F.	20 App F
22a. relevant information and analysis in support of the IAC's conclusions and recommendations	The main body of the IAC's assessment of the environmental effects of the Project is contained in Chapters 6 to 16.	6 to 17
b. a description of the proceedings conducted by the IAC and a list of those consulted and heard by the IAC	Chapter 1 provides a summary of the Inquiry proceedings and submissions received.	1 App B App C
c. a list of all recommendations including cross reference to relevant discussions in the report.	The main recommendations of the IAC are contained in the changes proposed to the EPRs and the Incorporated Document set out in Appendices E and F respectively. Chapters 6 and 12 make recommendations in relation to associated road works and heritage controls respectively.	App E App F 6, 12

20 The Incorporated Document

20.1 The issue

Amendment GC107 to the Kingston and Dandenong Planning Schemes inserts the incorporated document *'Mordialloc Bypass (Freeway) Incorporated Document, October 2018'* (incorporated document) into the schedules to Clause 45.12 Specific Controls Overlay (SCO) and the schedules to Clause 72.04 (Documents incorporated in the scheme).

The Incorporated Document requires use and development of the Project to be carried out in accordance with an Environmental Management Framework (EMF) which includes a set of approved Environmental Performance Requirements (EPRs).

Several issues were raised by Kingston City Council regarding the wording of the Incorporated Document.

20.2 Submissions

Kingston City Council supported the use of an Incorporated Document to grant overall planning approval for the Project and exempt the need for other planning approvals. Council noted that the use of incorporated documents for major projects has become relatively common. The approach provides project certainty, substantial timing benefits for project delivery and subject to its proper drafting and implementation, is a beneficial and appropriate planning tool for significant State projects that cover more than one municipality.

Council sought several changes to the Incorporated Document:

- 'Built form' or 'Urban design' should be added to the 4.2.1 sub sections.
- Amend clause 4.2.4 to read:

the use and development of the Project must be carried out in accordance with the approved EMF, the EPRs, the Construction and Environmental Management Plan, the Environmental Management Plans and all other plans approved under the EPRs.

In support of this, Council submitted that the structure of the EMF is such that it is not always clear who has responsibility for compliance. It submitted that whoever undertakes development, and whoever the development is undertaken on behalf of, must comply with the EMF and EPRs. For this reason, Council submitted that *"the simple solution to this is to include within the Incorporated Document an obligation that the Project, whoever undertakes it, must comply with the various elements."*²⁴⁴

Council proposed the following list of potential grammatical changes to the Incorporated Document:

- Deleting the words "developing and using" from clause 4.1(h);
- Deleting the word "Site" in the second line under clause 4.2.2(a). We understand they are simply "Environmental Management Plans";

²⁴⁴ Council submission Document 42 p6

- At clause 4.3(a)(i), deleting the word “Works”. Otherwise this appears to provide an opportunity to conduct any work before the EMF is approved. The reference to vegetation removal may be appropriate for retention.

In response, MRPV did not propose any significant changes to the Incorporated Document from the exhibited copy, apart from:

- Agreeing to Council’s suggestion that section 4.2.1 should refer to urban design, and
- Proposing an extension of the time to commence the development of the Project.

MRPV did not support Council’s request to add “*the EPRs, the Construction and Environmental Management Plan, the Environmental Management Plans and all other plans approved under the EPRs*” to clause 4.2.4. It submitted that it was simply not necessary.

20.3 Discussion

The IAC agrees with MRPV that it is not necessary to include “*the EPRs, the Construction and Environmental Management Plan, the Environmental Management Plans and all other plans approved under the EPRs*” in clause 4.2.4. The IAC believes it is sufficient to say that the use and development of the Project must be carried out in accordance with the approved EMF. The EMF includes the other elements referred to by Council and the ‘Other conditions’ section of the Incorporated Document sets out how plans and other documents are approved and amended, and importantly that, at 4.2.11, that “*The use and development of the land must be undertaken generally in accordance with the approved plans and documents.*” The IAC is comfortable that this means that all construction and operating authorities and parties constructing or operating on their behalf must meet the requirements of the EMF, including the EPRs and all approved plans and documents prepared under the EPRs.

The IAC accepts the minor changes proposed by MRPV.

The IAC agrees that the first of the minor grammatical changes proposed by Council (clause 4.1(h)) adds clarity and should be included. The second and third of the proposed grammatical changes are not supported by the IAC. The IAC believes that it is helpful to refer to ‘site Environmental Management Plans’ in clause in clause 4.2.2 to distinguish from the broader ‘Environmental Management Framework’. Removal of the word ‘Works’ from clause 4.3 a) i) does not add clarity and would change the meaning of that clause.

The IACs preferred version of the Incorporated Document is attached as Appendix F.

20.4 Findings

The IAC makes the following findings in relation to the Incorporated Document:

- The Incorporated Document as proposed by MRPV should be adopted subject to the minor changes shown in the IAC preferred version at Appendix F of this report.
- It is sufficient at clause 4.2.4 to say that “*the use and development of the Project must be carried out in accordance with the approved EMF.*” It is not necessary to add “*the EPRs, the Construction and Environmental Management Plan, the Environmental Management Plans and all other plans approved under the EPRs*” as proposed by Kingston City Council.

20.5 Recommendation

The Inquiry and Advisory Committee recommends:

Adopt the Inquiry and Advisory Committee preferred version of the Incorporated Document as shown in Appendix F of this report.

PART C MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

21 Matters of National Environmental Significance

21.1 The issue

The Project was referred to the Commonwealth Department of Environment and Energy (DoEE) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 30 October 2017. The delegate for the Minister for the Environment and Energy determined on 30 January 2018 that the Project is a ‘controlled action’ as it is likely to have a significant impact on the following Matters of National Environmental Significance (MNES):

- Ramsar wetlands (sections 16 and 17B)
- Listed threatened species and communities (sections 18 and 18A)
- Listed migratory species (sections 20 and 20A).

The EES process is accredited to assess impacts on MNES under the EPBC Act through the Bilateral (Assessment) Agreement between the Commonwealth and the State of Victoria – refer to Schedule 1 (part 5) of the Bilateral Agreement.

Note that what are generally termed ‘effects’ in the EES process correspond to ‘impacts’ under the EPBC Act. The EES for the Project will be undertaken in accordance with the Bilateral Agreement; there will be no separate assessment by the Commonwealth. This avoids process duplication and enables alignment of mitigation and requirements under the relevant state and commonwealth legislation.

The Commonwealth Minister or delegate will receive the Victorian Minister for Planning’s Assessment under the EE Act at the conclusion of the EES process and use it as the basis for deciding on the approval of the Project under the EPBC Act, including any conditions that the Commonwealth Minister may deem appropriate.

The Project will require both Victorian and Commonwealth approvals in order to proceed.

The key issues identified in the EES on MNES are direct loss and fragmentation of habitat, mortality of protected and significant fauna, traffic noise and the uncertainty regarding the level of impact the Project will have, even with mitigation, upon significant bird species.

21.2 EES documentation

The EES provided a comprehensive assessment of the implications of the Project for MNES in Chapter 22. Appendix C Flora and Fauna Impact Assessment provided a review of relevant database and literature within five kilometres of the Project area. The review was used to prepare a detailed list of threatened flora and fauna species, ecological communities, migratory species and any significant habitat previously recorded within the study area.

Chapter 10 of the EES details the series of ecological surveys that have been completed for the Project. Of relevance to MNES, the following surveys were undertaken as part of the EES:

- Vegetation assessments of EPBC Act listed ecological communities
- Targeted flora surveys for Swamp Everlasting, Matted Flax-lily and River Swamp Wallaby-grass were completed in December 2014, with additional surveys in January–May 2017 and November–December 2017

- Surveys for threatened waterbird and migratory shorebirds were completed in March 2013. Additional surveys for these birds were undertaken over the 2014–2015 summer, including targeted surveys for Latham’s Snipe and Australasian Bittern. More recently, detailed waterbird surveys were completed in November 2017 – March 2018 which consisted of walked transects and stationary spot counts
- Targeted surveys for the Growling Grass Frog were first conducted in the summer of 2012–2013, and again in the summer of 2014–2015. Sound recorder surveys for the species were then undertaken twice in 2017
- Dwarf Galaxias were surveyed for in the 2014–2015 summer and again in 2016–2017. Surveys involved a visual examination of aquatic habitats to determine likelihood of presence of Dwarf Galaxias and the use of dip nets and other methods in areas of possible occurrence²⁴⁵

An impact assessment to determine ‘significant impacts’ on MNES was undertaken in accordance with the Significant Impact Guidelines 1.1. MNES (DEWHA 2013) for Ramsar wetlands, listed threatened species and communities, listed migratory species and to determine cumulative impacts.

21.2.1 Matters of National Environmental Significance (MNES)

The Commonwealth identified three MNES that are potentially at risk from the Project which have been assessed in the EES:

- Ramsar wetlands
- Listed threatened species and communities
- Listed migratory species.

(i) Ramsar wetland

The Edithvale component of the Edithvale-Seaford Ramsar wetlands is located approximately 700 metres to the south-west of the Project area. The Edithvale component consists of a northern section of predominantly deep constructed pools and some shallow areas, separated by Edithvale Road from a southern section of shallow wetland. The Edithvale-Seaford Ramsar wetlands regularly support over 1 per cent of the flyover population of the migratory shorebird Sharp-tailed Sandpiper, as well as numerous other migratory, nomadic and resident birds.

The Ramsar wetland offers high-value seasonal mudflat foraging habitat for migratory waders, as demonstrated in the records for threatened fauna, which is not generally available within the permanent wetland habitat provided within the Project Area.

The Edithvale Wetland is a freshwater to brackish wetland, which provides flood mitigation storage for the surrounding areas, as well as valuable wetland fauna habitat. It features extensive marsh habitat which floods in winter and draws down in summer, providing valuable foraging habitat for migratory waders.

²⁴⁵ EES Chapter 22, p22-5

(ii) Listed threatened communities

Two EPBC Act listed threatened ecological communities occur in the Project area, both are listed as critically endangered:

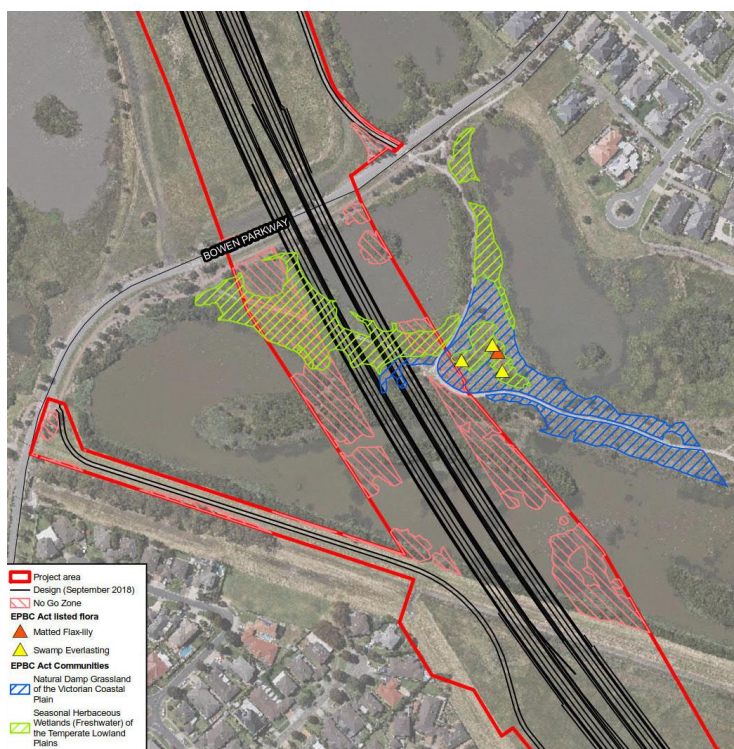
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (0.24 hectare proposed loss)
- Natural Damp Grassland of the Victorian Coastal Plains (0.04 hectare proposed loss).

The maximum areas of vegetation community loss include areas underneath the Mordialloc Creek bridge and a buffer to the bridge to allow for construction and potential shading impacts.

The listed threatened ecological communities are associated with the Mordialloc Creek/Waterways Wetlands area. These communities were planted as part of the creation of Waterways Wetlands residential estate development however are considered remnant for the assessment of impacts. The EES stated that they are generally of high quality, with low weed cover.

Figure 22.10 of the EES presents the EPBC Act listed flora (Swamp Everlasting and Matted Flax-lily) and ecological communities within and adjacent to the Project area and an extract of that figure is presented below:

Figure 8 EPBC Act listed flora and communities and No-go Zones



The EES stated that the impacts on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains and Natural Damp Grassland of the Victorian Coastal Plains are not likely to be significant and can be managed by rehabilitation and revegetation with shade tolerant species and re-establishment of landform and substrate underneath the bridge to facilitate this as required in EPR B1 and B5.

(iii) Listed threatened species

The EES noted that a combined total of 210 vertebrate fauna species have been recorded within 500 metres of the Project area from several sources (including surveys completed for the Project). A total of 41 species of conservation significance have been recorded, 13 of which are EPBC Act listed migratory bird species.

A total of 102 fauna species of state and/or national significance were assessed for the potential to occur within 5 kilometres of the study area. Of these species, the EES stated 44 are considered to have greater than a 'low' likelihood of occurrence within the study area based on database review, habitat assessment, and targeted survey (as described in Chapter 10 of the EES).

The EPBC Act listed fauna with a high to moderate likelihood of occurrence within the study area (which goes beyond the Project site boundary), include four are species listed as threatened under the EPBC Act. They are the ^[SEP] Australasian Bittern (high likelihood of occurrence), Australian Painted Snipe (low to moderate likelihood of occurrence), Curlew Sandpiper (moderate likelihood of occurrence) and Grey-headed Flying-fox (moderate likelihood of occurrence). Approximately 0.57 hectares of habitat for the Australasian Bittern is proposed to be removed. A description of these four species is provided in the EES²⁴⁶ and summarised below:

- *Australasian Bittern* - Listed as Endangered, the species is regularly recorded within the Edithvale-Seaford Wetlands, Woodlands Industrial Estate Wetlands, and Braeside Park. It has also been recorded at the Waterways Wetlands, although is likely to visit the habitat there only rarely. At the study area, it is recorded in low numbers only (usually only one bird). Direct impact on the habitat likely to be most valuable (the shallow wetland and surrounding reeds and rushes at Braeside Park Wetlands and Woodlands Wetlands) is not proposed.
- *Curlew Sandpiper* - The Curlew Sandpiper is listed as Critically Endangered as well as Migratory under the EPBC Act. It has been recorded within the Edithvale-Seaford Wetlands, Woodlands Industrial Estate Wetlands, and Braeside Park Wetlands but it is a non-breeding migrant to these areas and generally recorded in low numbers.
- *Australian Painted Snipe* - An infrequently recorded species, the Australian Painted Snipe is listed as Endangered under the EPBC Act. The species is unlikely to be substantially affected by the Project as direct loss of low quality potential foraging habitat is minor (0.23 hectares) and impact relating to fragmentation and degradation of habitat are not anticipated.
- *Grey-headed Flying Fox* - There is limited foraging habitat (i.e. eucalypts) for the Grey-headed Flying-fox (EPBC Act Vulnerable) within the Project area and the species is unlikely to regularly forage within the Project area itself. The species is however likely to fly over the study area and there is higher quality potential foraging habitat at Braeside Park and Woodlands Industrial Estate. The Project may result in a small loss of potential foraging habitat (i.e. wooded areas) however

²⁴⁶ EES Chapter 22, p22-27

much of the vegetation at the Project area is grassland, wetland, or cleared, and higher quality potential foraging habitat occurs in the locality.

(iv) Flora

Over a series of targeted field surveys, two EPBC Act-listed species were identified. These are the Matted Flax-lily and Swamp Everlasting.

The EES found that a third species, Swamp Fireweed, was considered to have the potential to occur in the Project area of the Waterways Wetlands and therefore, may be impacted by the Project.

The Matted Flax-lily (listed as endangered) was recorded outside of the Project area during targeted flora surveys completed for the EES. The known location of the species at the Waterways wetlands is not currently proposed to be impacted by the Project as it is outside of the alignment.

The Swamp Everlasting (listed as vulnerable) was recorded outside of the Project area during targeted flora survey completed for this study. The known location of the species at the Waterways wetlands is not currently proposed to be impacted by the Project.

The Swamp Firewood (listed as vulnerable) was not recorded in the Project area during surveys, however the EES stated that this species is known to have been planted in the Waterways Wetlands and may occur in shallow wetlands and margins of deeper wetlands.

For the listed flora species found in the study area, the EES determined that significant impacts are not anticipated²⁴⁷. No-go Zones will be established in the area where these species occur.

(v) Listed migratory species

The study area and vicinity provide foraging and roosting habitat for multiple migratory bird species, including species listed on one or more of several international agreements (JAMBA, CAMBA) and is thus listed pursuant to the EPBC Act.

Shorebirds and waders

The Edithvale-Seaford Wetlands are internationally important for their value to migratory waders. Migratory birds are generally highly mobile and will move between habitat patches depending on local conditions (water levels), thus all habitat patches in an area can be important at different times. The wetlands closely associated with the Project, including Woodlands Wetlands, Braeside Park Wetlands, and the Waterways/Mordialloc Creek can be considered part of the same habitat area for the species when they are present. The shallow water and emergent vegetation habitat types mapped at Braeside Park Wetlands, and to a lesser extent, at Woodlands Wetlands, are of particular value to migratory shorebirds, which rely on mudflats for foraging in summer. Most of these birds prefer open areas of habitat with good visibility, such as the shallow open areas at Braeside Wetlands. The EES states that the exception to this is snipes which require the security of vegetation.

²⁴⁷ EES Chapter 22, p22-22

21.3 Submissions and evidence

The potential for the Project to impact listed threatened species and communities and listed migratory species was identified in the EES at Chapter 22 and in the Flora and Fauna Impact assessment in Appendix C.

Expert evidence relating to matters of Commonwealth Interest was presented by Mr McCaffrey, Mr Richardson, Mr Rodney van der Ree and particularly Mr Smales for MRPV.

The EES and the expert evidence concluded there were potential impacts upon the following, but that the impacts were unlikely to be significant:

- Two migratory shorebirds – Sharp-tailed Sandpiper and Latham’s Snipe
- Three listed threatened fauna species – Australasian Bittern, Australian Painted Snipe and Curlew Sandpiper
- One listed vulnerable species – Grey-Headed Flying Fox
- Two listed ecological communities – Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowlands Plains and Natural Damp Grassland of the Victorian Coastal Plains.

Mr Smales specifically considered whether the impacts on these species were likely to be significant and concluded that it is unlikely having regard to the Guidelines published by the DoEE. He referred to the ‘population’ approach used for significant impacts set out in policy statements for the EPBC Act²⁴⁸.

The Friends of Edithvale Wetlands and others submitted that the Project could have impacts to the values of the Ramsar wetlands and migratory avifauna. Many of the issues raised by submitters are discussed in Chapter 8.

MRPV submitted that in relation to the two ecological communities, these were both planted as part of the creation of the Waterways wetlands and there are areas where two listed threatened flora species were found (Matted Flax-lily and Swamp Everlasting) however they are outside of the Project area.

The ecological experts all agreed that the proposed mitigation measures set out in EPRs B1 to B6 will assist in minimising impacts to biodiversity and in particular the Multi-function Fauna Barriers (MFFB) proposed to reduce collision with vehicles, also reducing noise to the wetland environments. Detailed discussion of these matters and the expert’s opinions are found in Chapter 8.

21.4 Discussion and findings

The potential impacts to the Edithvale Ramsar wetlands, listed threatened species and communities, and listed migratory species include:

- Changes to hydrology and / or water quality,
- fragmentation and degradation of habitat,
- increased noise and light pollution from traffic; and
- vehicle collisions.

²⁴⁸ Mr Smales evidence, p5

These impacts on biodiversity have been discussed in detail in Chapter 8. Table 8 below summarises the IAC's findings in relation to potential risks to MNES.

The IAC overall findings in regard to the Commonwealth EPBC Act MNES is that the Project will not have a significant impact on MNES providing the mitigation and management measures proposed in EPRs at Appendix E are effectively implemented.

Table 8 Findings in Relation to Potential Risks to Matters of National Environmental Significance

Potential Risk	Implications for Ramsar Wetlands	Implications for threatened species and communities	Implications for migratory species	Cross reference
Change in hydrology and/or water quality	<p>The Project works are 700 metres from the Ramsar wetland. No direct impacts are expected.</p> <p>The EES predicts minimal, if any, impacts to the wetlands from the Project because groundwater is not expected to be impacted and changes to surface inflows will be minor.</p> <p>Potential impacts of the Project on water quality can be mitigated.</p>	<p>The Project, with integrated engineering mitigation measures and bridge construction design for the Mordialloc Creek bridge, as well as application of relevant EPRs, is not expected to have significant impacts on threatened species (Including the Australasian Bittern) from potential changes in hydrology or water quality both during construction and operation of the Project.</p>	<p>With the application of relevant EPRs, the Project is not expected to have significant impacts on migratory species (Including shorebirds and waders) from potential changes in hydrology or water quality both during construction and operation of the Project.</p>	<p>Chapters 8, 13 and 14</p> <p>EPRs B1, B6, W1, W3, W5, W6, W7</p>
Fragmentation and degradation of habitat	<p>No impact to Ramsar wetland.</p>	<p>Loss of a small amount of low-quality foraging, non-breeding habitat is unavoidable, however, with the implementation of various mitigation measures, the likelihood of significant impact upon these species is low.</p> <p>Small areas of two listed ecological communities (0.24 hectares of Seasonal Herbaceous wetlands and 0.4 hectares of Natural Damp Grassland) are to be lost, mostly as a result of the Mordialloc Creek bridge construction and potential shading. EPRs B1, B4 and B5 provide adequate mitigation.</p>	<p>Migratory species will continue to utilise existing wetlands that surround the Project, although there is likely to be some disruption to continued use of the Waterways wetlands during construction. The evidence of Mr Smales is that the avifauna will return to the constructed wetlands after construction is complete and revegetation has occurred.</p>	<p>Chapter 8</p> <p>EPRs B1, B4 and B5</p>

Potential Risk	Implications for Ramsar Wetlands	Implications for threatened species and communities	Implications for migratory species	Cross reference
Vehicle collision	No impact to Ramsar wetland and heavy construction vehicles will not be using Edithvale Road, which is close to the Ramsar site.	There is a potential for vehicle collision if the implementation of the MFFBs are not effective. The IAC accepts the evidence of experts that a three metre MFFB (or potentially higher) will reduce the impacts of avifauna collision with vehicles. This issue is to be resolved during detailed design and is reflected in EPR B1.	There is a potential for vehicle collision if the implementation of the MFFBs are not effective. The IAC accepts the evidence of experts that a three metre MFFB (or potentially higher) will reduce the impacts of avifauna collision with vehicles. This issue is to be resolved during detailed design and is reflected in EPR B1.	Chapter 8 EPR B1 and T2
Noise	No impact to Ramsar wetland and heavy construction vehicles will not be using Edithvale Road which is in close proximity to the Ramsar site.	There will be some level of impact during construction. MFFBs will assist in reducing noise impacts from the Project on the wetland environments during operation.	Some level of impact during construction. MFFBs will assist in reducing noise impacts from the Project on the wetland environments during operation.	Chapter 8 and 9 EPR B1
Light spill	No impact to Ramsar wetland and heavy construction vehicles will not be using Edithvale Road which is close to the Ramsar site.	There will be some level of impact during construction. The implementation of MFFBs will assist in reducing impacts from vehicle lights on the wetland environments. EPR B2 includes effective measures to reduce impacts from vehicle lights during construction and operation.	There will be some level of impact during construction. The MFFBs will assist in reducing vehicle light impacts on the wetland environments. EPR B2 includes effective measures to reduce impacts from vehicle lights during construction and operation.	Chapter 8 EPR B2

Appendix A Terms of Reference

Terms of Reference

Proposed Mordialloc Bypass – Inquiry and Advisory Committee

An inquiry appointed pursuant to section 9(1) of the *Environment Effects Act 1978* and advisory committee appointed pursuant to Part 7, Section 151 of the *Planning and Environment Act 1987* to consider and report on the proposed Mordialloc Bypass Project, in accordance with these terms of reference.

Name

1. The combined inquiry and advisory committee is to be known as the **Mordialloc Bypass Project Inquiry and Advisory Committee (IAC)**.

Skills

2. The IAC is to include experience in:
 - a. coastal acid sulphate soils, hydrogeology and contaminated land/groundwater;
 - b. ecology, especially Ramsar listed wetlands and other wetland habitats and vegetation including groundwater-dependent ecosystems and migratory and other wetland birds;
 - c. amenity issues including noise and landscape and visual impacts;
 - d. general civil (traffic) engineering; and
 - e. strategic and statutory planning.
3. The IAC may seek additional specialist expert advice if required.
4. The IAC will include an appointed Chair, Deputy Chair and other members.

Background

Proposed Mordialloc Bypass Project (the project)

5. The project is intended to connect the Mornington Peninsula Freeway to the Dingley Bypass. The preferred option described in the environment effects statement (EES) for the project is a freeway-standard road with grade-separated interchanges at Springvale Road, Boundary Road, Lower Dandenong Road and Centre Dandenong Road and an upgraded interchange at Thames Promenade. The EES also addresses feasible alternatives which the proponent has considered in the light of potentially achieving project objectives.
6. The project is generally located within land which is identified for road purposes in the planning schemes. However, some works may be required outside that land relating to changed access arrangements, for example at Woodlands industrial estate.
7. Construction will involve site-establishment works such as utility relocation and establishment of site facilities. Project construction works will include construction of embankments, piered elevated roadways, works to manage spoil including potentially contaminated soil and potential acid sulphate soil, ancillary works to enable management of traffic noise, road run-off and fauna movements during the operational phase and other ancillary works.
8. The project proponent is the Major Road Projects Authority.

EES decision

9. On 13 September 2017, the Minister for Planning determined that an EES is required for the project under the *Environment Effects Act 1978* (EE Act) and issued his decision with procedures and requirements for the preparation of the EES under section 8B(5) of the EE Act. The reasons for

 Terms of Reference | Mordialloc Bypass Project – Inquiry and Advisory Committee

decision were based on the potential for a range of significant environmental effects, particularly those on:

- a. the habitat value and quality of wetlands and other habitats adjoining or traversed by the project, especially with regard to threatened species;
 - b. the surface water and groundwater systems that contribute to the health and habitat quality of adjacent and nearby wetlands, including the Ramsar-listed Edithvale-Seaford Wetlands;
 - c. indigenous cultural heritage values that may occur within the project alignment;
 - d. the containment and management of potentially contaminated soils and potential acid sulphate soils; and
 - e. amenity values of adjacent land, especially residential land and parkland.
10. The Major Road Projects Authority prepared an EES in response to the Minister for Planning's decision and the scoping requirements which the Minister issued for the EES in May 2018.
 11. The EES, including a draft amendment to the Kingston and Greater Dandenong planning schemes, is to be placed on public exhibition for 30 business days.

Commonwealth decision

12. The project was determined to be a controlled action that requires assessment and approval under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 30 January 2018, because of its potential impacts on particular matters of national environmental significance. The controlling provisions under the EPBC Act relate to Ramsar wetlands (sections 16 and 17B), listed threatened species and communities (sections 18 and 18A) and listed migratory species (sections 20 and 20A).
13. The EES process is an accredited assessment process under the Commonwealth-Victorian Bilateral Agreement for Environmental Impact Assessment¹, to provide for the assessment of matters of national environmental significance required under the EPBC Act. The Minister for Planning's assessment under the EE Act will be provided to the Commonwealth to inform the EPBC Act approval decision, in accordance with Schedule 1 Part B of the bilateral agreement.
14. Based upon the material provided to the IAC, its report should address impacts on matters of national environmental significance, as set out in paragraph 12, to inform the Minister for Planning's assessment.

Planning approval process

15. The proponent has prepared a draft planning scheme amendment (PSA) for the project (Amendment GC107 to the Kingston and Greater Dandenong planning schemes), in accordance with the *Planning and Environment Act 1987* (P&E Act).
16. The IAC is to provide advice on the draft PSA. The draft PSA will facilitate the use and development of the project in accordance with a project incorporated document to be inserted into the Kingston and Greater Dandenong Planning Schemes. The incorporated document will include a requirement for a framework to manage environmental effects associated with both the construction and operational phases of the project.

Other approvals

17. Under Victorian law, the project requires other approvals and consents, as outlined in the EES:
 - a. an approved cultural heritage management plan under the *Aboriginal Heritage Act 2006*;

¹The agreement came into operation on 25 June 2009 and provides for the accreditation of specified Victorian statutory processes to ensure an integrated and coordinated assessment of actions requiring Commonwealth approval. The current version of the agreement was signed in 2014.

Terms of Reference | Mordialloc Bypass Project – Inquiry and Advisory Committee

- b. approvals for works on roads under the *Road Management Act 2004*;
- c. approval for works on waterways under the *Water Act 1989*
- d. permits to remove protected flora and/or fauna from public land under the *Flora and Fauna Guarantee Act 1988* (if required); and
- e. permits to take wildlife under the *Wildlife Act 1975* (if required).

Purpose of the inquiry

18. In overview, the IAC is to:
- a. consider and report on the potential significant effects of the project investigated in the EES, taking into account the procedures and requirements of the Minister for the preparation of the EES under section 8B(5) of the EE Act (**see Attachment 1**) and the controlling provisions under the EPBC Act (**see Attachment 2**) as outlined in paragraphs 12-14 above;
 - b. recommend necessary avoidance, mitigation or management measures for the development of the project to balance project objectives with environmental, economic and social outcomes; and
 - c. assess the adequacy of the proposed environmental performance requirements and their suitability to achieve project-wide environmental outcomes, as described in the scoping requirements.
19. The IAC is to provide an integrated assessment of the potential significant environmental effects of the project.

Purpose of the advisory committee

20. The IAC is to:
- a. review the draft PSA along with public submissions received in relation to the planning controls proposed by the draft PSA; and
 - b. assess whether the planning controls proposed by the draft PSA are appropriate to facilitate and control the use and development of the project.

Report

21. The IAC must produce a written report for the Minister for Planning presenting the IAC's:
- a. findings on the significant environmental effects (impacts) of the project proposed in the EES, including impacts on matters of national environmental significance protected under relevant controlling provisions of the EPBC Act;
 - b. conclusions on the feasibility of the project achieving acceptable environmental outcomes in the context of applicable legislation, related policy, relevant best practice, and the principles and objectives of ecologically sustainable development;
 - c. recommendations on whether the proposed project will deliver an appropriate balance of environmental, economic and social outcomes, having regard to the evaluation objectives in the EES scoping requirements, public submissions and the IAC's conclusions on the significant effects of the project;
 - d. recommendations for feasible modifications to the project, including specific measures to prevent, mitigate or compensate for significant adverse effects in the context of relevant standards, objectives and guidelines established under relevant legislation;

 Terms of Reference | Mordialloc Bypass Project – Inquiry and Advisory Committee

- e. recommendations for approval conditions under Victorian law necessary to achieve acceptable environmental outcomes in the context of applicable legislation and policy, including advice on the PSA for the project;
 - f. recommendations on the framework for environmental management including the proposed environmental performance requirements for the project;
 - g. recommendations for the statutory planning framework established for the project; and
 - h. recommendations for proposed the proposed amendment to the Kingston and Greater Dandenong planning schemes under the P&E Act to facilitate the project.
22. The IAC's report must also include:
- a. relevant information and analysis in support of the IAC's conclusions and recommendations;
 - b. a description of the proceedings conducted by the IAC and a list of those consulted and heard by the IAC; and
 - c. a list of all recommendations including cross references to relevant discussions in the report.

Task

23. The IAC may apply to vary these terms of reference in writing, prior to submission of its report.
24. The IAC may inform itself in any way it sees fit, but must consider all relevant matters, including but not limited to:
- a. the exhibited EES and draft PSA;
 - b. all public submissions and evidence provided by the proponent, state agencies, local council and the public (including both written submissions in response to the exhibited EES and submissions presented during the IAC's hearing);
 - c. information provided by the proponent that addresses, to the extent practicable, the submissions provided by the public; and
 - d. other information provided to, or obtained by, the IAC, having regard to statutory provisions, policies and plans.
25. The IAC must conduct a public hearing and may make other such enquiries as it considers are relevant to its assessment of the potential environmental effects of the project.
26. The IAC must conduct its hearings in accordance with the following principles:
- a. the hearings will be conducted in an open, orderly and equitable manner, in accordance with the rules of natural justice, with a minimum of formality and without the necessity for legal representation;
 - b. the IAC process is to be exploratory and constructive with adversarial behaviour minimised;
 - c. parties without legal representation will not be disadvantaged – cross-examination will be regulated by the Chair; and
 - d. the IAC may commission specialist advice on other matters, if required, particularly in the areas of groundwater, engineering and ecology.
27. The hearings are to be conducted in public, unless a submission is confidential in nature and the IAC Chair deems the hearing should be closed to the public in relation to that submission.
28. The IAC will meet and conduct hearings when there is a quorum of at least two of its members present.
29. Hearing sessions may be recorded by any party at its cost, only with the prior approval of the IAC. The IAC may give directions regarding public access to any such recordings.

Terms of Reference | Mordialloc Bypass Project – Inquiry and Advisory Committee

Submissions

30. All submissions are to be collected by Planning Panels Victoria in accordance with the Guide to Privacy at PPV. Electronic copies of submissions will be provided to the relevant Council, DELWP and the proponent.
31. Petitions and pro-forma letters will be treated as a single submission and only the first name to appear on the first page of the submission will receive correspondence in relation to the IAC.
32. The IAC must retain a library of all written submissions or other supporting documentation provided to it directly, until either a decision has been made on its report or five years have passed from the time of its appointment.
33. Any written submissions or other supporting documentation provided to the IAC must be published on Planning Panels Victoria website, unless the IAC specifically directs that the material is to remain 'in camera'.
34. The IAC must notify submitters upon release of the Ministers for Planning's assessment and IAC report.
35. Submissions to the IAC are public documents unless otherwise directed by the IAC.

Timing

36. The IAC is required to begin its hearings process no later than 20 business days from the final date of the exhibition period, or as otherwise agreed.
37. The IAC is required to submit its report in writing to the Minister for Planning within 30 business days from its last hearing date.
38. The IAC may limit the time of parties appearing before it.

Fee

39. The members of the IAC will receive the same fees and allowances as a panel appointed under Division 1 of Part 8 of the P&E Act.
40. All costs of the IAC, including expert advice, technical administration and legal support, venue hire, accommodation, recording proceedings and other costs will be met by the proponent.

Miscellaneous

41. The IAC may retain legal counsel to assist it.
42. Planning Panels Victoria is to provide administrative support to the IAC.
43. The IAC may engage additional technical and administrative support as required.



Richard Wynne MP
Minister for Planning

Date: 8/10/18

Appendix B Submitters to the Inquiry

No.	Submitter	No.	Submitter
1	Robert Grummitt	30	Vicky Smith
2	Chay Ryan	31	Joseph Holzer
3	Brian Nicholls	32	Margaret Thompson
4	Paul Tait	33	Andrew Dawson
5	SP Products Pty Ltd	34	Paul Street
6	John Boothey	35	Brandon Cheshire
7	Kingston Bicycle User Group	36	David Laursen
8	John Stavrinidis	37	Be Wise Foods
9	Steven Silver	38	Peter Wain
10	David Collison	39	Senthuren Mahendren
11	Geoffrey Cadwallader	40	Parks Victoria
12	Andrew Hawkes	41	Geoffrey Nougher
13	Evergreen Christmas Trees	42	Rick Nixon
14	Denise Pilkington	43	Sam Webster
15	Billy Norman	44	Margaret Ann Hunter
16	Stewart Hine	45	Bradley Wright
17	Glenn George Bolster	46	Gerry Glennen
18	Peter Freeman	47	Alan Dow
19	Jason Vainer	48	James Harding
20	Vicki Jans	49	Philippe Lepetit
21	Gleeson Kevin John	50	Geraldine Bagwell
22	Catherine Berry	51	Gregory Mark Wapling
23	Sandra Benedek	52	Raymond Allen
24	Brian Quintal	53	Enwerdt Pty Ltd
25	Walter Pereira	54	Neighbourhood Watch Victoria (Waterways)
26	Frank Leonard McGuire	55	Stejepan Nikolic
27	Roy McCartney	56	Victoria
28	Mordialloc Beaumaris Conservation League	57	Michael Leo Bloink
29	Bryan Aldridge	58	Andrea Perkins

59	Matthew Iles	89	Devcon Group Pty Ltd
60	Residents Against the Mordialloc Freeway	90	Friends of Edithvale Seaford Wetlands Incorporated
61	Aspendale Gardens Residents Assoc.	91	South East Water
62	Waterways Estate Residents 3195	92	Friends of Mordialloc Catchment
63	Tradefaire International Pty Ltd	93	Ivy Steele
64	Debbie Murray	94	Jonathan Sise
65	South East Melbourne Manufacturers Alliance Inc.	95	Transport for Victoria
66	Roger Dobbie	96	Ian Hundley
67	Peter Steele	97	Port Phillip Conservation Council Inc.
68	Karen Luskie	98	EPA Victoria
69	Michelle Giovas	99	Peter James McKittrick
70	Name withheld	100	Judith Wilks
71	Friends of Braeside Park	101	Susan Telfer
72	Beatriz Prieto	102	Kingston Residents Association
73	Be Wise Food	103	Public Transport Users Association
74	Ian Hollow	104	Alex Breskin
75	Friends of the Earth Melbourne	105	VicRoads
76	Judith Sise	106	Gaytana Adorna
77	Hayley Phillips	107	Duncan Noel
78	Melbourne Water	108	Julia Smiles
79	Paul Rudzki	109	Christine Phillips
80	Rakali Ecological Consulting	110	Paul Stuart Phillips
81	Dingley Village Community Association	111	Charan Naidoo
82	Mary Nicholls	112	Shirley DeWever
83	City of Kingston		
84	Defenders of the South East Green Wedge		
85	Kelvey Luke		
86	Juliana Bedggood		
87	Scott Ronan Fothergill		
88	Clive Jelley		

Appendix C Parties to the Hearing

Submitter	Represented by
Major Road Projects Victoria (MRPV)	<p>Rupert Watters of Counsel and Serena Armstrong of Counsel instructed by William Bartley and Emily Smith of Clayton Utz, who called expert evidence on:</p> <ul style="list-style-type: none"> - Land use and planning from Michael Barlow of Urbis - Transport from Peter Kelly of WSP - Noise and vibration from Mike Dowsett of WSP - Landscape and visual from Kirsten Bauer of Aspect Studios - Air quality from Ian Wallis of Consulting Environmental Engineers - Surface water from Rob Leslie of WSP - Ecology from Nic McCaffrey, WSP /Allan Richardson, WSP/ Rodney van der Ree, Ecology & Infrastructure International/ Ian Smales, Biosis - Groundwater from Ray Hatley, WSP - Contaminated land and acid sulphate soils from Helen Jones, WSP
Kingston City Council	<p>Andrew Sherman and Chloe Hall of Russell Kennedy Lawyers, who called expert evidence on:</p> <ul style="list-style-type: none"> - Landscape design from Maddy Bisits of Spiire - Urban design and strategic planning from Tim Biles of Message Consultants - Ecology (wetlands) from Lance Lloyd of Lloyd Environmental - Acoustic engineering from Ross Leo of Clarity Acoustics - Hydrogeology from Chris Smitt of EHS Support - Ecology (fauna, specifically birdlife) from Richard Loyn, Eco Insights
DELWP Impact Assessment Unit	Jack Krohn
Transport for Victoria	Bill Hronopoulos
VicRoads	Kate Stapleton
Residents Against Mordialloc Freeway	<p>Ian Morgans and Michael Poulakakis who called expert evidence on:</p> <ul style="list-style-type: none"> - Health effects of air pollution from Assoc Prof (Dr) Vicki Kotsirilos AM - Land use and strategic planning from Dr John Stone
Beatriz Prieto	

Paul Rudzki	
Tradefaire International Pty Ltd	James Saunders
Be Wise Foods	Gary Morgan and Anthony Carter
Peter Wain	
Judith Wilks	
Friends of Mordialloc Catchment	Nina Earl
Friends of Braeside Park	Margaret Hunter and Judith Sise
Judith Sise	
Friends of Edithvale Seaford Wetlands Incorporated	Sue Telfer
Mordialloc Beaumaris Conservation League	Mary Rimington
Defenders of the South East Green Wedge	Diana Donohue
Aspendale Gardens Residents Association	Ken Carney
Dingley Village Community Association	David Madill
Friends of the Earth Melbourne	Rachel Lynskey
Scott Fothergill	
South East Melbourne Manufacturers Alliance Inc.	Phil Newman
Michelle Giovas	
Lugeo Anna Nominees Pty Ltd	Fred Krumins of Devcon Group Pty Ltd, who called expert evidence on Hydraulics from Andrew Prout of Engeny
Ian Hundley and Fiona Bell	
Kingston Residents Association	Mick Connolly and Trevor Shewan
Public Transport Users Association	Tony Morton
John Stavrinidis	
Bryan Aldridge	
Frank McGuire	
Alex Breskin	
Duncan Noel	
Enwerdt Pty Ltd	Holly Cormie
Waterways Estate Residents 3195	Carlo Bellino and Wayne Chapman

Appendix D Document list

No.	Date	Description	Provided by
1	25/1/19	Clayton Utz letter to IAC regarding Hearing timetable and expert witnesses	William Bartley, Clayton Utz, on behalf of Major Road Projects Victoria
2	29/1/19	Russell Kennedy letter to IAC regarding expert witnesses	Andrew Sherman, Russell Kennedy, on behalf of Kingston City Council
3	11/2/19	Russell Kennedy letter to IAC regarding wetlands	Andrew Sherman, Russell Kennedy, on behalf of Kingston City Council
4	11/2/19	Investigation of wetlands along Dingley Bypass within the Kingston Green Wedge	Andrew Sherman, Russell Kennedy, on behalf of Kingston City Council
5	11/2/19	Mordialloc Freeway Plans showing potential wetland locations	Andrew Sherman, Russell Kennedy, on behalf of Kingston City Council
6	18/2/19	MRPV Part A submission	William Bartley, Clayton Utz, on behalf of Major Road Projects Victoria
7	19/2/19	Letter to IAC requesting inspection sites	Andrew Sherman, Russell Kennedy, on behalf of Kingston City Council
8	22/2/19	Letter to IAC responding to IAC's direction and enclosing the following: a) Mordialloc Freeway Hydraulic and Hydrologic Modelling report (final version dated 19 June 2013) b) Flora and Fauna Investigation: Northern Extension of the Mornington Peninsula Freeway (final version dated 19 June 2013) c) Mordialloc Bypass: Flora and Fauna Investigation including habitat hectare assessment (final version dated 17 April 2015)	William Bartley, Clayton Utz, on behalf of Major Road Projects Victoria
9	25/12/19	DELWP Impact Assessment Unit presentation	Jack Krohn, DELWP Impact Assessment Unit
10	25/12/19	MRPV Part B submission	Rupert Watters of Counsel, on behalf of Major Road Projects Victoria

No.	Date	Description	Provided by
11	25/2/19	Proponent's revised EPR's	Rupert Watters of Counsel, on behalf of Major Road Projects Authority
12	25/2/19	MRPV presentation – Project design and construction overview	Daniel Kollmorgen, Assistant Project Director, MRPV
13	25/2/19	Site inspection itinerary	Rupert Watters of Counsel, on behalf of Major Road Projects Authority
14	25/2/19	Presentation – Planning and Land Use Assessment	Michael Barlow of Urbis for Major Road Projects Authority
15	25/2/19	Presentation – Transport for Victoria	Bill Hronopoulos, Transport for Victoria
16	26/2/19	South East Green Wedge Map	Mr Bartley on behalf of MRPA
17	26/2/19	Peter Kelly presentation – Transport and Traffic	Mr Bartley on behalf of MRPA
18	27/2/19	Mike Dowsett presentation – Noise and Vibration	Ms Emily Smith, Clayton Utz, on behalf of Major Road Projects Victoria
19	27/2/19	Change in barrier height to achieve the +12dB criteria	Mr Bartley on behalf of MRPV
20	27/2/19	Kirsten Bauer presentation – Visual and Landscape	Ms Smith on behalf of MRPV
21	27/2/19	Ian Wallis presentation – Air Quality	Ms Smith on behalf of MRPV
22	27/2/19	Rob Leslie presentation – Surface Water	Ms Smith on behalf of MRPV
23	28/2/19	Nic McCaffrey and Allan Richardson presentation	Ms Smith on behalf of MRPV
24	28/2/19	Ian Smales presentation	Ms Smith on behalf of MRPV
25	28/2/19	Dr Rodney van der Ree presentation	Ms Smith on behalf of MRPV
26	28/2/19	VicRoads presentation	Ms Kate Stapleton for VicRoads
27	1/3/19	Exploring behavioural responses of shorebirds to impulsive noise (Referred to by Mr Smales)	Mr Bartley on behalf of MRPV
28	1/3/19	Ray Hatley presentation	Ms Smith on behalf of the MRPV
29	1/3/19	Helen Jones presentation	Ms Smith on behalf of the MRPV
30	4/3/19	Kingston City Council submission	Ms Hall on behalf of Kingston City Council

No.	Date	Description	Provided by
31	4/3/19	Kingston City Council EPR's tracked changes	Ms Hall on behalf of Kingston City Council
32	4/3/19	Maddy Bisits presentation	Ms Hall on behalf of Kingston City Council
33	4/3/19	Tim Biles presentation	Ms Hall on behalf of Kingston City Council
34	4/3/19	Lance Lloyd presentation	Ms Hall on behalf of Kingston City Council
35	4/3/19	Chris Smitt presentation	Ms Hall on behalf of Kingston City Council
36	4/3/2019	Response from Ray Hatley to questions from Chris Smitt	Mr Bartley (via email) on behalf of MRPV
37	5/3/2019	Memo from Mike Dowsett WSP	Mr Bartley on behalf of MRPV
38	5/3/2019	Extract from Moorabbin Airport Master plan including Figures 11.7, 11.8 and 11.9	Mr Bartley on behalf of MRPV
39	5/3/2019	Ross Leo presentation	Ms Hall on behalf of Kingston City Council
40	5/3/2019	Ian Morgans (RAMF) presentation	Mr Morgans for RAMF
41	5/3/2019	Dr Vicki Kotsirilos presentation	Mr Morgans for RAMF
42	6/3/2019	Submission of Kingston City Council - Mr Sherman	Ms Hall on behalf of Kingston City Council
43	6/3/2019	Version 2 EPR's	Ms Hall on behalf of Kingston City Council
44	6/3/2019	Letter from OVGA to Metropolitan Projects dated 30 May 2018	Ms Hall on behalf of Kingston City Council
45	6/3/2019	Extract from Aspect Studios report Appendix D EES. Sections 6.3.3 and 8.1.4	Ms Hall on behalf of Kingston City Council
46	6/3/2019	Google maps of Chadwick reserve connection to Redwood Gardens	Ms Hall on behalf of Kingston City Council
47	6/3/2019	City of Kingston Heritage Study Place Identification Form (2001)	Ms Hall on behalf of Kingston City Council
48	6/3/2019	Letter from South east water to Mr Sherman dated 12 February 2019	Ms Hall on behalf of Kingston City Council
49	6/3/2019	DELWP letter to City of Kingston Re: Recycled water dated 6 February 2019	Ms Hall on behalf of Kingston City Council

No.	Date	Description	Provided by
50	6/3/2019	Investigated of Integrated Stormwater Management Opportunities within the Kingston Green Wedge December 2012 Executive summary (prepared by Water Technology)	Ms Hall on behalf of Kingston City Council
51	6/3/2019	Chadwick reserve harvesting. Kingston Council Prioritisation Project – regional opportunities (prepared by Design flow)	Ms Hall on behalf of Kingston City Council
52	6/3/2019	Extract from Aspect Studios report Appendix D EES. Sections 12	Ms Hall on behalf of Kingston City Council
53	8/3/2019	Woodlands Drive Alternative Option Distribution Summary	Ms Smith on behalf of MRPV
54	8/3/2019	Technical note MRPV dated 8 March 2019 Predicted construction methodology and estimated construction duration	Ms Smith on behalf of MRPV
55	8/3/2019	Jamie Saunders Tradefaire International Pty Ltd presentation	Mr Saunders for Tradefaire International Pty Ltd
56	8/3/2019	Peter Wain (Peter Wain Plumbing) presentation	Mr Wain
57	8/3/2019	Judith Wilks presentation	Ms Wilks
58	8/3/2019	Michael Poulakakis for RAMF	Mr Poulakakis
59	8/3/2019	Letter from David Abramowitch Giant Inflatables dated 8 March 2019	Via email
60	8/3/2019	Mr Morgans presentation for RAMF	Mr Morgans
61	12/3/2019	Mr Paul Rudzki PowerPoint presentation	Mr Rudzki via email
62	12/3/2019	Kingston CC version 3 EPR's and letter to IAC enclosing version 3 EPRs	Ms Hall for Kingston CC via email
63	12/3/2019	Ms Nina Earl, Friends of Mordialloc Catchment presentation, and 3 attachments: a) Bird sightings b) Threatened Flora Survey Mordialloc Freeway September 2018 c) Newspaper article	Ms Earl for Friends of Mordialloc Catchment
64	12/3/2019	Ms Margaret Hunter, Friends of Braeside, and attachment: a) Society for Growing Plants Braeside	Ms Hunter for Friends of Braeside
65	12/3/2019	Ms Judith Sise presentation	Ms Judith Sise
66	12/3/2019	Ms Sue Telfer, Friends of Edithvale Wetlands presentation	Ms Sue Telfer for Friends of Edithvale Wetlands

No.	Date	Description	Provided by
67	12/3/2019	Ms Mary Rimington, Mordialloc Beaumaris Conservation League Inc presentation and attachment: a) Catchment map	Ms Mary Rimington for Mordialloc Beaumaris Conservation League Inc
68	12/3/2019	Ms Diana Donohue, Defenders of the South East Green Wedge presentation	Ms Diana Donohue for Defenders of the South East Green Wedge
69	12/3/2019	Mr Ken Carney, Aspendale Gardens Residents Association presentation	Mr Ken Carney for Aspendale Gardens Residents Association
70	12/3/2019	Ms Rachel Lynskey Friends of the Earth, PowerPoint presentation	Ms Rachel Lynskey via email
71	13/3/2019	Mr Scott Fothergill presentation	Mr Scott Fothergill
72	13/3/2019	Ms Michelle Giovas presentation including attachment: a) Information Sheet on Ramsar wetlands	Ms Michelle Giovas
73	13/3/2019	RAMF recommendations to the IAC	Ms Telfer for RAMF
74	13/3/2019	Devcon Group presentation	Mr Krumins for Devcon
75	13/3/2019	Mr Andrew Prout (Engeny) presentation	Mr Prout on behalf of Devcon
76	13/3/2019	Ms Beatriz Prieto presentation	Ms Beatriz Pietro
77	13/3/2019	Peter Kelly (WSP) memo from Woodlands Drive (MRPV)	Mr Bartley in behalf of MRPV
78	12/3/2019	Email from Mr Bryan Aldridge	Mr Bryan Aldridge
79	13/3/2019	IAC questions for MRPV for ecological experts and Dr Smith	Planning Panels Victoria
80	8/3/2019	Evergreen Christmas Trees presentation	Lou Mertens, Evergreen Christmas Trees
81	13/3/2019	Email from Ms Nina Earl, Friends of Mordialloc Catchment, to IAC	Ms Nina Earl for Friends of Mordialloc Catchment
82	14/3/2019	Ian Hundley presentation	Mr Hundley
83	14/3/2019	Fiona Bell on behalf of Protectors of Public Lands Victoria Inc presentation	Ms Bell on behalf of Protectors of Public Lands Victoria Inc
84	14/3/2019	Mick Connolly/Trevor Shewan on behalf of Kingston Residents Association Inc	Mr Shewan on behalf of Kingston Residents Association Inc
85	14/3/2019	John Stavrinidis presentation	Mr Stavrinidis
86	14/3/2019	Frank McGuire presentation	Mr McGuire

No.	Date	Description	Provided by
87	14/3/2019	RAMF recommendations for the IAC's report to the Minister for Planning FINAL	Mr Morgans
88	14/3/2019	Hollie Cormie on behalf of Enwerdt Pty Ltd presentation	Ms Cormie
89	14/3/2019	Mr Bellino for Waterways Estate 3195 presentation	Mr Bellino
90	14/3/2019	MRPV Technical note 02	Ms Smith on behalf of MRPV
91	14/3/2019	Letter from Mr Smales Biosis	Ms Smith on behalf of MRPV
92	14/3/2019	Heritage Overlay map	Ms Smith on behalf of MRPV
93	14/3/2019	MRPV Revised Incorporated Document (draft)	Ms Smith on behalf of MRPV
94	14/3/2019	MRPV Final draft EPR's	Ms Smith on behalf of MRPV
95	14/3/2019	Tony Morton for Public Transport Users Association presentation	Mr Morton on behalf of PTUA via email
96	15/3/2019	Michelle Giovas clarification on EPR's	Ms Giovas via email
97	15/3/2019	Peter Wain Final submission re Woodlands Drive	Mr Wain via email
98	15/3/2019	Frank McGuire email response to IAC question re EPR's	Mr McGuire via email
99	15/3/2019	Memorandum from Helen Jones WSP	Ms Smith on behalf of MRPV
100	15/3/2019	Memorandum from Ray Hatley WSP	Mr Bartley on behalf of MRPV
101	15/3/2019	Memorandum from Jay Knight WSP	Ms Smith on behalf of MRPV
102	15/3/2019	Kingston City Council	Ms Hall for Kingston City Council
103	15/3/2019	MRPV closing submissions	Ms Smith on behalf of MRPV
104	15/3/2019	Moorabbin Airport 2015 Master Plan excerpt	Ms Hall for Kingston City Council
105	15/3/2019	Extract from Kingston City Council Chain of Parks document	Ms Hall for Kingston City Council
106	15/3/2019	Article, Chelsea Mordialloc Mentone News 6 Feb 2019	Ms Hall for Kingston City Council
107	15/3/2019	Kingston Green Wedge Landscape Plan	Ms Hall for Kingston City Council
108	15/3/2019	VicRoads RDN 0601 July 2010	Mr Bartley on behalf of MRPV
109	15/3/2019	Memorandum from Samantha Vertucci and Nic McCaffrey shading analysis	Mr Bartley on behalf of MRPV

No.	Date	Description	Provided by
110	15/3/2019	Memorandum from Nic McCaffrey, ecological effects associated with construction	Ms Smith on behalf of MRPV
111	15/3/2019	SEPP AAQ	Mr Bartley on behalf of MRPV
112	19/3/2019	Tony Smith memorandum regarding groundwater impacts	Mr Bartley on behalf of MRPV
113	19/3/2019	Technical Note 3 regarding the Multi-function fauna barriers proposed south of Governor Road	Mr Bartley on behalf of MRPV

Appendix E IAC preferred version of the EPRs

All changes marked are as compared to the final draft EPRs tabled by MRPV during the Hearing (Document 94).

MORDIALLOC BYPASS PROJECT**ENVIRONMENTAL PERFORMANCE REQUIREMENTS**

The following Environmental Performance Requirements (EPRs) refer to the Mordialloc Bypass project as defined in the Incorporated Document.

Note – All EPRs need to be considered when developing mitigation strategies and plans.

EPR	Project phase
<p>EM1 Environmental Management Strategy</p> <p>Prepare an Environmental Management Strategy consistent with the Environmental Management Framework (EMF) approved by the Minister for Planning under the Incorporated Document applicable to the project. The Environmental Management Strategy is to demonstrate how the EMF and EPRs will be implemented in the design and construction of the project and is to be approved by the Major Transport Infrastructure Authority (MTIA) prior to the commencement of any works other than preparatory works referred to in the Incorporated Document.</p> <p>The Environmental Management Strategy must incorporate an Environmental Management System that complies with AS/NZS ISO 14001: 2015 <i>Environmental management systems – Requirements with guidance for use</i>.</p> <p>The approved Environmental Management Strategy must be made publicly available for at least five years after the commencement of operation of the project on a clearly identifiable website.</p>	Design, Construction
<p>EM2 Environmental management plans</p> <p>Prepare and implement a Construction Environmental Management Plan (CEMP) and other management plans as required by the EPRs in accordance with the Environmental Management Strategy, and prepare and implement an Operations Environmental Management Plan (OEMP) as required by the EPRs in accordance with the Environmental Management Framework. All plans must be prepared to the satisfaction of MTIA or the authority specified in the EPRs. Plans that apply to the operation phase of the project, including the OEMP, must be prepared in conjunction with VicRoads. All plans specified in the EPRs must be implemented.</p> <p>The CEMP must be prepared in accordance with Environment Protection Authority (EPA) Publication 480 <i>Environmental Guidelines for Major Construction Sites</i> (EPA Victoria 1996), EPA Publication 275 Construction Techniques for Sediment Pollution Control (EPA Victoria 275) and relevant best practice construction guidelines.</p>	All

EPR	Project phase
<p>The process for development and implementation of the CEMP and other management plan(s) must include consultation with the Kingston City Council, Greater Dandenong City Council, VicRoads, Melbourne Water and EPA Victoria as relevant. These consultation processes must be described in the Environmental Management Strategy. The CEMP and other management plan(s) must be integrated and must be approved by MTIA prior to the commencement of works (except for preparatory works referred to in the Incorporated Document). The OEMP must be approved by the MTIA prior to opening the project to the public.</p>	
<p>EM3 Environmental complaints management</p> <p>Prior to the commencement of works a process for recording, managing, and resolving complaints received from affected stakeholders must be developed and implemented. The complaints management arrangements must be consistent with Australian Standard <i>AS/NZS 10002: 2014 Guidelines for Complaint Management in Organisations</i>.</p>	Construction
<p>EM4 Independent Reviewer and Environmental Auditor</p> <p>Appoint a suitably qualified Independent Reviewer and Environmental Auditor (IREA) to review and certify the Environment Management Strategy, CEMP and other management plans as required by the EPRs, in accordance with the Environmental Management Framework. During construction audit reports must be provided to MTIA and the Minister for Planning on a regular basis as appropriate. Audit reports are to be made available to the public.</p>	Design, Construction
<p>AQ1 Air quality (operation)</p> <p>The project must be designed and constructed to minimise air quality impacts during operation and to ensure the requirements of relevant legislation, policies and guidelines are met, including but not limited to:</p> <ul style="list-style-type: none"> • State Environment Protection Policy (Air Quality Management) • State Environment Protection Policy (Ambient Air Quality). 	All
<p>AQ2 Air quality (construction)</p> <p>Measures to minimise dust, odour and other air emissions must be implemented in accordance with relevant legislation, policies and guidelines including, but not limited to:</p> <ul style="list-style-type: none"> • EPA Victoria Publication 480: Environmental Guidelines for Major Construction Sites; • VicRoads Contract Specification Standard Section 177, with PM10 monitoring undertaken for both residential and commercial receptors. 	Construction

EPR	Project phase
<p>B1 Fauna habitat</p> <p>Direct and indirect impacts on fauna must be minimised by preserving and enhancing habitat and facilitating habitat connectivity where practicable. This will be achieved through implementation of (as a minimum):</p> <ul style="list-style-type: none"> • fauna crossings, including culverts modified for fauna movement between the Braeside Park wetlands and Woodlands Industrial Estate wetlands (minimum of 3 culverts), and between the Waterways wetland waterbodies south of Governor Road (minimum of 2 culverts) • multi-function fauna barriers, to limit fauna mortality and limit disturbance to surrounding habitat, at the following areas, subject to detailed design: <ul style="list-style-type: none"> - Braeside Park: on the east side of the new roadway, provision of a 2 3 metre high barrier extending from Lower Dandenong Road to Park Way, transitioning to a 3 metre high barrier to be provided from Park Way to Governor Road - Woodlands Wetlands: on the west side of the new roadway, provision of a 4 metre high barrier extending from Park Way to the south approximately 750 metres, transitioning to a 3 metre high barrier to be provided from that location to Governor Road - Waterways Wetlands (north-west): on the west side of the new roadway, provision of a 2 metre high barrier extending from Governor Road to the south approximately 600 metres, transitioning to a 1 metre high barrier to be provided from that location to Bowen Park Way - Waterways Wetlands (north-east): on the east side of the new roadway, provision of a 2 metre high barrier extending from Governor Road to the south approximately 200 metres, transitioning to a 2.5 metre high barrier to be provided from that location to the south approximately 175 metres, transitioning to a 3 metre high barrier to be provided from that location to the south approximately 200 metres, transitioning to a 2.5 metre barrier to be provided from that location to Bowen Park Way - Waterways Wetlands (bridge structure): provision of a 3 metre high barrier on both sides of the new roadway bridge structure, extending from Bowen Park Way south to the Melbourne Water Levy • wildlife friendly fencing that does not use barbed wire, including to control human and dog access to Braeside Wetlands and Braeside Park from the shared user path or roadway • landscaping including: <ul style="list-style-type: none"> - the use of site-specific indigenous species - creating or revegetating habitat that maximises connectivity and minimises predation risk at fauna crossing points and under the constructed bridge over Waterways wetlands 	All

EPR	Project phase
<ul style="list-style-type: none"> - open wetland and grassy habitat where appropriate, including swales adjacent to fauna barriers - reinstatement of habitat in areas of the Waterways Wetlands disturbed by the project, including planting of wetlands species in accordance with the landscape plans (EPR LV1) <ul style="list-style-type: none"> • a dual bridge structure at Mordialloc Creek/Waterways wetland to allow light penetration and facilitate fauna movement. <p>The multi-function fauna barriers must be solid and free from gaps or cracks and must be constructed from a material must achieve with an acoustic performance of at least $R_w + C_{tr} 25$.</p> <p>During detailed design and in consultation with a suitably qualified specialist ecologist, refine proposed height, form and materiality of the multi-function fauna barriers to optimise the achievement of bird flight diversion objectives without compromising the achievement of other objectives.</p>	
<p>B2 Lighting design</p> <p>Fauna sensitive lighting design principles must be incorporated into lighting design in sensitive areas around wetlands and Braeside Park. The design principles are:</p> <ul style="list-style-type: none"> • Siting of lights: <ul style="list-style-type: none"> - Use lights only where necessary and use the minimum brightness (lumens) possible - Site lighting columns away sites of ecological value to the extent possible - Minimise the height of lighting where possible. • Fixtures: <ul style="list-style-type: none"> - Use shielding to fully shield bulbs and lenses and to minimise light spill onto sites of ecological value - Avoid reflective surfaces under lights. • Wavelengths: <ul style="list-style-type: none"> - Use narrow-spectrum light sources to lower the range of species affected by lighting, and avoid blue and white wavelengths (4200 kelvin, ideally <3000 kelvin) - Use long wavelength bulbs to minimise the emission of UV light. 	Design, Construction
<p>B3 Native vegetation and habitat</p> <p>Native vegetation removal must be avoided, minimised and managed in accordance with the <i>Guidelines for the removal, destruction or lopping of native vegetation 2017</i> (Guidelines 2017). Native vegetation offsets will be required for the removal of native vegetation, with the area (in hectares) to be calculated and approved in accordance with these guidelines.</p> <p>No-go zones will be established to protect sensitive vegetation, trees and habitat areas that are not removed in accordance with the Guidelines 2017. No-go zones will be detailed, protected and managed in accordance the</p>	Design, Construction

EPR	Project phase
<p>requirements set out in AS4970-2009 Protection of Trees on Development Sites and with the Environmental Management Strategy developed as per EPR EM1.</p>	
<p>B4 Fauna (construction)</p> <p>Minimise, monitor and document impacts on fauna during construction works, including:</p> <ul style="list-style-type: none"> • obtaining all relevant permits under the Wildlife Act 1975 • pre-clearing fauna surveys and relocation of fauna by qualified fauna handlers to nearby suitable habitat • directional temporary construction lighting to minimise lighting impact on sensitive fauna habitat • noise and vibration impacts on sensitive fauna • if construction works near wetlands occur between September and March, monitoring of birds before and at regular intervals during construction to assess disturbance impacts, with minimisation of noisy and high disturbance works where practicable • regular inspections of excavations/trenches • restricting excluding heavy construction vehicles along Edithvale Road near sensitive habitats • adding identified high value habitat trees (including hollow-bearing and large trees) into no-go zones where suitable • closure of excavations/trenches at the end of each day, where practicable, inspection of excavation/trenches for fauna at the start of each day and immediately before backfilling • minimise barriers to fauna movement at the end of each day and installation of fauna movement devices where effective to create safe crossing opportunities • enforced speed limits of 40km per hour within construction areas, outside of existing arterial roads. 	Construction
<p>B5 Native vegetation (construction)</p> <p>Monitor, minimise and document impacts on retained/adjacent native vegetation, including:</p> <ul style="list-style-type: none"> • pre-clearing surveys for threatened flora in the Mordialloc Creek/Waterways wetland impact area are to be conducted by a suitably qualified ecologist, and plants are to be relocated to a suitable recipient site where considered practicable by the ecologist • mapping and fencing of no-go zones and tree protection zones in accordance with AS4970-2009 Protection of Trees on Development Sites • no site compound, temporary offices, hardstand, plant storage facility or stockpiles will be established within no-go zones, nor will any works be conducted in such areas • environmental induction/training for construction personnel • development and implementation of weed hygiene measures to avoid the spread or introduction of weeds during construction, including vehicle and equipment hygiene measures 	Construction

EPR	Project phase
<ul style="list-style-type: none"> as far as practicable, re-establishing the landform and substrate under the Mordialloc Creek bridge following bridge construction, including revegetation using shade tolerant aquatic species. 	
<p>B6 Flora and Fauna (operation)</p> <p>Prior to opening the project to the public, a Flora and Fauna Monitoring and Management Plan must be prepared in consultation with Department of Environment and Energy (DoEE), Department of Environment, Land, Water and Planning (DELWP), Melbourne Water, Parks Victoria, VicRoads and any other relevant land manager. The plan must include flora and fauna monitoring by ecologists after opening, including:</p> <ul style="list-style-type: none"> annually, for 5 years, including one monitoring event immediately prior to opening monitoring of bird use of nearby wetlands (Woodlands Wetlands, Braeside Park Wetlands, and Waterways Wetlands) and threatened flora and weeds at the Waterways Wetlands Design, implement and maintain an Aquatic Flora and Fauna Ecosystem Reinstatement and Maintenance Plan for the Waterways wetlands ecological habitat. monitoring of measures to allow habitat connectivity for threatened fauna including Waterways bridge, fauna culverts, and revegetation evaluation of measures (fencing and multi-function fauna barriers) to reduce wildlife and vehicle collisions. 	Operation
<p>CL1 Soil Management Plan</p> <p>Prior to the commencement of works (other than preparatory works referred to in the Incorporated Document), a Soil Management Plan (SMP) must be prepared and implemented in accordance with relevant regulations, standards and best practice guidelines including the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013. The plan must be developed in consultation with EPA Victoria and address the management requirements associated with the handling, storage, reuse and/or disposal of soils (clean fill and contaminated spoil) and comply with EPA Victoria's contaminated soil management and reuse on major infrastructure projects approvals process.</p> <p>The SMP must make provision for additional assessments to be conducted, where required, to more accurately locate sources of contamination and to refine management measures. Investigations must be undertaken in accordance with EPA Publication 702 (Soil Sampling).</p> <p>The SMP must follow published EPA guidance on contaminated soil management and reuse on major infrastructure projects.</p> <p>The SMP must include an Acid Sulfate Soil Management Plan (EPR CL2) and management requirements for PFAS contaminated soils (see EPR CL6).</p>	Construction

EPR	Project phase
<p>CL2 Acid Sulfate Soil Management Plan</p> <p>Prior to the commencement of works (other than preparatory works referred to in the Incorporated Document), prepare an Acid Sulfate Soil Management Plan in consultation with EPA Victoria in accordance with the <i>Industrial Waste Management Policy (Waste Acid Sulfate Soils) 1999</i>, EPA Publication 655.1 <i>Acid Sulfate Soil and Rock</i>, and relevant EPA regulations, standards and best practice guidance. This plan must include:</p> <ul style="list-style-type: none"> • locations and extent of potential acid sulfate soils that could be disturbed or otherwise affected by the project, including site-specific information for areas at risk • assessment of potential impact on human health, odour and the environment • measures to prevent oxidation of acid sulfate soils wherever possible, and • suitable sites for management, reuse or disposal of acid sulfate soils with regard to sensitive receptors (wetlands, waterways and residential areas). 	Construction
<p>CL3 Passive landfill gas capture and venting</p> <p>A passive landfill gas capture and ventilation system must be developed where the roadway traverses the landfill area to facilitate the emission of landfill gas to the atmosphere so as to minimise accumulation of landfill gas below the roadway.</p> <p>The passive landfill gas capture and ventilation system must:</p> <ul style="list-style-type: none"> • be designed in conjunction with VicRoads and EPA Victoria; • meet the landfill gas management requirements of the EPA's guideline <i>Best Practice Environmental Management: Siting, design, operation and rehabilitation of landfills</i> (EPA Victoria 2015) and <i>Workplace Exposure Standards for Airborne Contaminants</i> (Safe Work 2013). • be reviewed and approved by the IREA established under EPR EM4. <p>During design, provision must be made for gas protection measures to be provided at all underground services, pits and other voids within the road reserve in locations where landfill gas is emitted, or to which it has the potential to migrate to.</p> <p>The passive landfill gas capture and ventilation system(s) must be maintained for the operational life of the project except where otherwise agreed to by EPA Victoria.</p>	All
<p>CL4 Landfill Gas Management Plan (Construction)</p> <p>Prior to the commencement of works (other than preparatory works referred to in the Incorporated Document), a Landfill Gas Management Plan (Construction) must be prepared (EPR EM2). The plan must be developed in consultation with EPA Victoria and in accordance with relevant regulations, standards and best practice guidelines including, but not limited to, <i>Best Practice Environmental Management: Siting, design, operation and</i></p>	Construction

EPR	Project phase
<p><i>rehabilitation of landfills</i> (EPA Victoria 2015) and <i>Workplace Exposure Standards for Airborne Contaminants</i> (Safe Work 2013).</p> <p>The plan must detail specific monitoring and risk mitigation requirements that are to be implemented during the construction phase to reduce landfill gas-related risks to neighbouring land users, site workers, plant and equipment.</p> <p>The Landfill Gas Management Plan must:</p> <ul style="list-style-type: none"> • reference applicable regulatory requirements • detail the nature and extent of contamination • include details of design and construction requirements for passive landfill gas and venting systems • define roles and responsibilities • detail landfill gas monitoring and reporting requirements • include monitoring requirements for explosive atmospheres and fire risks during construction • include guidelines for work areas which constitute confined spaces, and • include requirements for use of spark and flame emitting equipment, tools or plant during construction works. 	
<p>CL5 Landfill Gas Management Plan (Operation)</p> <p>Prior to the completion of construction of the passive landfill gas capture and venting system (EPR CL3) a monitoring and management program for surface, sub-surface and internal/underground voids, pits and service trenches will be specified within a Landfill Gas Management Plan (Operation). The plan must be developed in consultation with EPA Victoria and assess ongoing risk associated with landfill gas generated by the former landfill(s) in the northern portion of the project area.</p> <p>The plan must outline procedures for any future works within the project area, means of protection of in-ground gas protection/mitigation systems and monitoring and management requirements.</p>	Operation
<p>CL6 PFAS Management Plan</p> <p>Prior to the commencement of works (other than preparatory works referred to in the Incorporated Document), a site-specific PFAS management plan must be prepared in consultation with EPA Victoria in accordance with EPA Publication 1669.2 <i>Interim position statement on PFAS</i> (EPA Victoria 2018) and the Heads of EPAs Australia and New Zealand <i>PFAS National Environmental Management Plan</i> (PFAS NEMP) (HEPA 2018).</p>	Construction

EPR		Project phase
CL7	<p>Landfill material</p> <p>Structures that penetrate the landfill must be designed and constructed to avoid the creation of additional pathways for contaminants to move from leachate to surrounding groundwater and minimise the need for landfill material to be removed, to the satisfaction of the EPA.</p> <p>The structures must be designed to avoid impacts on groundwater flows and groundwater quality, including consideration of vertical hydraulic gradients and lateral spread of contamination taking into account the direction of groundwater flow.</p>	Design, Construction
E1	<p>Business Disruption Plan</p> <p>During design and construction, impacts on local businesses must be minimised through the preparation and implementation of a Business Disruption Plan. The Business Disruption Plan will be consistent with an approved Community and Stakeholder Engagement Management Plan (EPR S1) and include:</p> <ul style="list-style-type: none"> • transport planning prior to road closures to minimise impacts on business access and parking (EPR T1) • a process for communication with traders and businesses • management of potential amenity impacts during construction and operation (EPR AQ1, AQ2, NV2, and NV3). 	Design, Construction
E2	<p>Utility assets</p> <p>Through detailed design and construction, the impacts on utility assets must be minimised to the extent practicable including, but not limited to:</p> <ul style="list-style-type: none"> • stormwater and sewer assets • electricity transmission assets (overhead and underground lines) • gas and fuel pipelines • communications lines (e.g. fibre optic cables). <p>If relocations are required to facilitate the project, utility assets must be protected and, where required, modified to the satisfaction of the asset owners.</p>	Design, Construction
GG1	<p>Greenhouse gas monitoring and reporting</p> <p>Minimise and manage greenhouse gas emissions (GHG) arising from construction, operation and maintenance through the integration of sustainable design practices.</p> <p>Create a Sustainability Management Plan (SMP) which includes mandatory actions to monitor and report construction phase greenhouse gas emissions and to benchmark predicted operational phase greenhouse</p>	All

EPR	Project phase
emissions in accordance with Mat-1 and Ene-1 credits of the Infrastructure Sustainability (IS) rating tool (v1.2).	
<p>GG2 Emissions reduction</p> <p>The materials and equipment for the project must be selected with the intent to reduce the project associated GHG emissions during the construction and operational phases.</p> <p>A verifiable improvement in project GHG emissions must be achieved by achieving a minimum of Mat-1 (Level 1) and Ene-1 (Level 2) credits of the Infrastructure Sustainability (IS) rating tool (v1.2).</p> <p>A minimum of 20% of construction phase energy must be purchased from an accredited GreenPower product.</p>	All
<p>H1 Cultural Heritage Management Plan</p> <p>Comply with and implement the Cultural Heritage Management Plan (CHMP) approved under the <i>Aboriginal Heritage Act 2006</i>.</p>	Construction
<p>H2 Unidentified non-Aboriginal historical archaeological sites</p> <p>An archaeological discovery protocol must be prepared that specifies measures to avoid and minimise impacts on any previously unidentified historical archaeological sites and values discovered during construction. The management protocol must be consistent with the requirements of the <i>Heritage Act 2017</i> and must be developed in consultation with Heritage Victoria. The protocol must include procedures for ceasing work if human remains or archaeological artefacts are discovered, notifying Heritage Victoria of the find, obtaining consent to deal with the remains or artefact, and dealing with the remains or artefact in accordance with the consent.</p>	Construction
<p>H3 Non-Aboriginal heritage sites</p> <p>The project must be designed to avoid damage to the Braeside Park Precinct brick buildings.</p> <p>Prior to the commencement of works that have the potential to impact on heritage structures or places, appropriate heritage protection plans must be developed for inclusion in the CEMP and physical protection measures must be implemented to avoid or mitigate potential impacts to the heritage items within the revised Heritage Overlay.</p>	Design, Construction
<p>LV1 Landscape and urban design</p> <p>Landscape and urban design plans must be developed prior to the commencement of works (other than preparatory works referred to in the Incorporated Document) and must respond to or be based on relevant standards and the best practice principles of the:</p>	All

EPR	Project phase
<ul style="list-style-type: none"> • <i>Landscape Concept Plan</i> (VicRoads, August 2018) and <i>Landscape and Urban Design Strategy</i> (Aspect Studios, September 2018) for the project • <i>Good Design Principles - Transport</i> (OVGA 2015) • <i>Urban Design Charter for Victoria</i>, and • <i>Urban Design Guidelines for Victoria</i> (DELWP 2017). <p>The landscape and urban design plans must be prepared by suitably qualified professionals in consultation with relevant stakeholders, including Kingston City Council, and must incorporate, where practicable, high quality integrated mitigation measures to minimise the landscape and visual impact associated with the project, including in respect of:</p> <ul style="list-style-type: none"> • open spaces and recreational spaces • bridges and structures • significant views from the public domain • community facilities • residential interfaces • industrial interfaces, and • heritage assets. <p>The landscape and urban design plans must:</p> <ul style="list-style-type: none"> • include vegetation screening appropriate for visually impacted community spaces, including residential areas and public open spaces • in high traffic areas and at sensitive interfaces make use of mature tree stock (15 litre) where appropriate in combination with tube stock and advanced tree plantings to reduce the initial visual impacts • denser planting of a 15 metre wide band of trees (small and medium size) at areas where residences are within 35 metres of the roadway. • ensure that visually apparent elements (including acoustic and other barriers, bridges and abutments) are the subject of an integrated landscape and urban design process • minimise overshadowing by acoustic barriers of residential properties • utilise colours and materials derived from the existing landscape and ecological environment • make use of appropriate ecologically sensitive indigenous planting • consider existing landscape character and sensitivities • enhance key gateway streetscapes • maintain and enhance existing pedestrian connections, where practicable, and ensure that the underpass at Braeside Park achieves best practice urban design principles 	

EPR	Project phase
<ul style="list-style-type: none"> • be developed in consultation with appropriate Traditional Owner groups to provide direction on appropriate landscape typologies, land management practices and principles, and • incorporate requirements of EPR LV2 and EPR LV3. <p>Landscaping and urban design for the project in accordance with the landscape and urban design plans must be implemented and maintained (EPR LV7).</p>	
<p>LV2 Crime prevention through environmental design</p> <p>Landscape and urban design plans must protect and, where practicable, improve access to, and amenity for, potentially affected residents, open spaces, pedestrian and cyclist networks, social and community infrastructure and commercial facilities, whilst meeting the requirements of EPR B2. This includes implementing the principles and guidelines of <i>Crime Prevention Through Environmental Design (CPTED)</i> and <i>Urban Design Guidelines for Victoria (DELWP 2017)</i> and maximising passive surveillance levels as far as practicable.</p>	All
<p>LV3 Reinstatement works</p> <p>Within 12 months of the commencement of operation, the public open spaces, vegetation cover and facilities disturbed by temporary works must be reinstated to the reasonable satisfaction of the relevant land manager.</p>	Operation
<p>LV4 Lighting (operation)</p> <p>All lighting of permanent structures must be designed to minimise light spillage and protect the amenity of adjacent land uses to the extent practicable. Lighting in sensitive areas around wetlands and Braeside Park must also comply with EPR B2.</p>	All
<p>LV5 Light spillage (construction)</p> <p>All lighting during construction must be managed in such a way as to minimise light spill to surrounding residential land uses, sensitive areas including wetlands and Braeside Park, and neighbourhoods. The strategies and techniques to do so must be included in the CEMP.</p>	Construction
<p>LV6 Tree removal</p> <p>Minimise the removal of mature trees, particularly large amenity trees and those within or connected to public open spaces, that are not currently protected by no-go zones as described in EPR B3.</p>	Construction
<p>LV7 Landscape management strategy</p> <p>A landscape management strategy must be developed and implemented to ensure healthy growth of planted vegetation. The strategy will include watering and weed management and include a monitoring program.</p>	Construction, Operation

EPR	Project phase
<ul style="list-style-type: none"> • The plan must ensure the reinstatement of soils is of sufficient quality and volumes to support the long-term viability of replacement plantings. Ensure ongoing supply of water to tree root zones, especially during their establishment stage. Employ water sensitive urban design principles (WSUD) where possible. • The plan must specify the locations where installations of advanced trees are indicated to minimise impact of tree removal. • The plan must identify locations for planting prior to construction works where feasible to do so. 	
<p>LV8 Independent urban design review panel</p> <p>A suitably qualified Independent Urban Design Review Panel Advisor must be appointed for the project by MTIA. The landscape and urban design plans and Landscape Management Strategy must be referred to the Independent Urban Design Review Panel Advisor for review against the relevant EPRs and project objectives.</p>	Design
<p>NV1 Noise and vibration (design)</p> <p>Noise and vibration impacts on residents during operation must be minimised by the inclusion of appropriate noise attenuation measures and road surface specifications in the design. Road traffic noise emissions must comply with the <i>Project Objective Noise Levels</i>:</p> <ul style="list-style-type: none"> • 63dBA L_{10, 18Hr} for the new bypass, and • 68dBA L_{10, 18Hr} for the Mornington Peninsula Freeway works • For noise-sensitive receivers as defined in the VicRoads <i>Traffic Noise Reduction Policy</i>. <p>Design year 2031 must be used for the purpose of traffic noise modelling as part of the detailed design development.</p>	Design
<p>NV2 Construction Noise and Vibration Management Plan</p> <p>A Construction Noise and Vibration Management Plan (CNVMP) prepared in consultation with EPA Victoria must be implemented during construction to:</p> <ul style="list-style-type: none"> • manage noise in accordance with EPA Publication 1254 Noise Control Guidelines, EPA Publication 480 Environmental guidelines for major construction sites and VicRoads Noise Guidelines, unless otherwise specified in the CNVMP • include measures to manage vibration in accordance with human response to vibration targets (BS 6472 <i>Evaluation of human exposure to vibration in buildings (1–80Hz)</i>) and structural damage targets (DIN 4150 <i>Structural vibration - Effects of vibration on structures</i>). <p>The CNVMP must include requirements for substituting high noise or vibration construction plant or processes with a lower noise or vibration option. The CNVMP must make provision for <i>ad hoc</i>, targeted and routine noise</p>	Construction

EPR	Project phase
<p>and vibration monitoring to inform management and mitigation. The CNVMP should highlight potential unavoidable night works and consult with relevant stakeholders, including EPA, prior to construction.</p> <p>The CNVMP must include construction noise targets for residential and non residential receivers to enable a quantitative assessment of construction noise impacts to be undertaken. The targets should be developed in consultation with the EPA. Construction noise targets for day, evening and night-time activities should be specified. If construction noise is predicted to or does exceed the targets then management actions as specified in the CNVMP must be implemented.</p>	
<p>NV3 Traffic noise verification</p> <p>Traffic noise must be measured between 6 to 12 months after opening of the project, in accordance with the VicRoads <i>Traffic Noise Measurement Requirements for Acoustic Consultants – September 2011</i>, to verify conformance with the external traffic noise performance requirements set out in EPR NV1. Remedial action must be completed by Final Completion (at the completion of the Defects Liability Period) if the performance requirements set out in EPR NV1 are not met.</p>	Operation
<p>S1 Community and Stakeholder Engagement Plan</p> <p>A Community and Stakeholder Engagement Plan must be prepared in consultation with Kingston City Council and Greater Dandenong City Council prior to the commencement of works (other than preparatory works referred to in the Incorporated Document). The preparation of the plan must give consideration to relevant guidelines and the Victorian Auditor General Office: <i>Better Practice Guide: Public Participation in Government Decision Making</i>.</p> <p>The Community and Stakeholder Engagement Plan must:</p> <ul style="list-style-type: none"> • identify all project activities that potentially impact on community, land owners and business operations, and provide for well-coordinated communication and engagement processes in relation to each activity • outline key messages • ensure that project communications and engagement activities reflect the needs and profiles of local communities • ensure that consultation addresses the needs of vulnerable groups that will be impacted by the project, such as the elderly, socio-economically disadvantaged groups and children • address the needs of users of community facilities impacted by the project • set out processes and measures to provide sufficient prior notice to key stakeholders and other potentially affected stakeholders of construction activities (including any staged works, early works, or out of hours works), significant milestones, changed traffic conditions, interruptions to utility services, changed access and parking conditions, and periods of predicted high noise and vibration activities, 	All

EPR	Project phase
<ul style="list-style-type: none"> • including contact details for complaints and enquiries • provide for any interested stakeholder to register their contact details to ensure that they are automatically advised of planned construction activities, project progress, mitigation measures and intended reinstatement measures, where applicable • include a complaints management process, as specified in EPR EM3. 	
<p>S2 Recreational facilities</p> <p>Where construction works have a direct impact on the use and enjoyment of recreational facilities, appropriate management measures must be implemented in cooperation with the relevant land manager(s) and affected stakeholder organisations. These measures would include arrangements for the provision of alternative facilities, where required, for the period of disruption.</p>	Construction
<p>T1 Intersection and freeway design and performance</p> <p>Intersections and freeway facilities that are affected and/or proposed by the project will be designed and constructed to provide safe vehicle movements to the satisfaction of the responsible road management authority. The design of intersections and the freeway must meet VicRoads' design standards with analysis undertaken to ensure the proposed configuration will achieve acceptable operational performance.</p> <p>Road Safety Audits and/or Safe System Assessment in accordance with Austroads guidelines will be undertaken to maximise the safety potential of the project.</p>	All
<p>T2 Transport Management Plan</p> <p>Prior to the commencement of works, TMP(s) must be developed and implemented to minimise disruption (to the extent practicable) to affected local land uses, traffic, on-road public transport, pedestrian and bicycle movements and existing public facilities during all stages of construction. The plan(s) will comply with relevant standards and must be developed in consultation with Kingston City Council, Greater Dandenong City Council, VicRoads and public transport providers and be informed and supported by an appropriate level of transport analysis.</p> <p>The plan(s) must include:</p> <ul style="list-style-type: none"> • a program to monitor impacts of construction activities to all modes of active and passive transport. Where monitoring identifies adverse impacts, practicable mitigation measures must be developed and implemented • consideration of cumulative impacts of other major projects operating concurrently in the local area • identify the route options for construction vehicles (including haulage of spoil and other heavy materials to and from the construction site) travelling to and from the project construction site, recognising 	Construction

EPR	Project phase
<p>sensitive receptors, and minimising the use of local streets prioritising the use of arterial roads</p> <ul style="list-style-type: none"> • development of suitable measures to ensure emergency service access is not inhibited as a result of project construction activities (in consultation with emergency services) • provision for the minimisation of impacts on existing connectivity for pedestrians, cyclists, public transport and road vehicles as a result of construction, including the identification of alternative routes for pedestrians and cyclists and other measures to maintain connectivity and safety for pedestrians and cyclists • management of any temporary or partial closure of roads and traffic lanes, including provision for suitable routes for vehicles, cyclists and pedestrians, to maintain connectivity for road and footpath users • restrictions to the number of local roads to be used for construction-related transportation to minimise impacts on amenity, in consultation with the relevant road authorities, including at Edithvale Road (EPR B4) • reinstatement of access to open space, community facilities, commercial premises and dwellings if disrupted, as soon as practicable, and to an equivalent standard • provision for safe access points to laydown areas and site compounds • construction hours to be weekdays between 7am and 7pm • a communications strategy to advise affected users, potentially affected users, relevant stakeholders and the relevant road authorities of any changes to transport conditions in accordance with the Community and Stakeholder Engagement Management Plan (EPR S1). <p>The plan must include specific measures for discrete components or stages of the works having the potential to impact on roads, shared use paths, bicycle paths, footpaths or public transport infrastructure.</p>	
<p>T3 Vehicle and pedestrian access</p> <p>Where formal vehicle and pedestrian access are altered during construction, such access must be replaced in accordance with relevant road design standards, as soon as practicable.</p>	Construction
<p>W1 Water body health</p> <p>During design, construction and operation, impacts on surface water quality and flow must be minimised through adoption of measures to:</p> <ul style="list-style-type: none"> • minimise changes in water flows and adverse changes in water quality to and within adjacent wetland areas; and • avoid an increase in discharge of pollutant loading (to higher than existing conditions levels) on beneficial uses due to the construction and operation of the project in accordance with CSIRO <i>Best Practice Environmental Management Guidelines for Urban Stormwater (1999)</i> and Water Sensitive 	All

EPR	Project phase
<p>Road Design (WSRD).</p> <p>In addition, the project must incorporate spill containment at the outfalls which pose a high risk to sensitive receptors, including Waterways Wetlands, Woodlands Wetlands and Edithvale Wetlands and the waterway system including Mordialloc Creek. The spill containment must be designed, implemented and maintained in accordance with relevant guidelines and standards.</p> <p>Design specific maintenance requirements relating to water body health, (that do not form part of standard VicRoads maintenance requirements), must be included in the Water Asset Management Plan (EPR W7).</p> <p>The design of surface water control measures for the project as a whole must comply with the VicRoads <i>Integrated Water Management Guidelines (2013)</i> and CSIRO <i>Best Practice Environmental Management Guidelines for Urban Stormwater (1999)</i>.</p>	
<p>W2 Flood protection (operation)</p> <p>Changes to flood behaviour resulting from the project must meet the requirements of Melbourne Water's guideline "<i>Melbourne Water standards for infrastructure in flood prone areas</i>" to the satisfaction of Melbourne Water.</p> <p>The Project design must minimise the risk of catastrophic flooding in the event of a flood larger than the 1% per cent AEP design flood or blockage.</p> <p>Design-specific maintenance requirements relating to floodwater, and that do not form part of standard VicRoads maintenance requirements, must be included in the Water Asset Management and Monitoring Plan (EPR W57).</p>	Design, Operation
<p>W3 Surface water management (construction)</p> <p>Protect local waterways and wetlands by applying best practice sedimentation and pollution control measures in accordance with EPA Victoria publication 480 <i>Environmental Guidelines for Major Construction Sites</i> and EPA publication 275 <i>Construction techniques for sediment pollution control</i> through the Construction Environmental Management Plan(s) and other plans. Implement a water collection and treatment system to ensure that stormwater discharges comply with the State Environment Protection Policy (Waters) 2018 and Melbourne Water performance criteria. Such plans and systems should be prepared in consultation with relevant authorities before the commencement of works.</p>	Construction

W4	<p>Flood protection (construction)</p> <p>During construction, the requirements of the “<i>Melbourne Water standards for infrastructure in flood prone areas</i>” must be complied with. Measures must be implemented to the satisfaction of Melbourne Water and in consultation with any other relevant drainage authority, to ensure that temporary construction activities do not increase flood risks (including flood levels, flows and velocities) to the surrounding areas. A flood management plan must be developed in consultation with and not objected by Melbourne Water for any temporary works.</p>	Construction
W5	<p>Water Management and Monitoring Plan</p> <p>A Water Management and Monitoring Plan (WMMP) must be prepared in consultation with EPA Victoria and relevant water authorities, and be implemented prior to construction, during construction and for five years following opening the project to the public. The WMMP must incorporate both surface and groundwater monitoring.</p> <p>Monitoring should commence prior to the commencement of works (other than preparatory works referred to in the Incorporated Document) to establish baseline conditions.</p> <p>The WMMP must incorporate baseline data collected to date and additional baseline data as required to address key issues including impacts of embankments and piling on groundwater.</p> <p>Incorporating the baseline data, the WMMP must include:</p> <ul style="list-style-type: none"> • detail of the monitoring parameters, including the frequency and location of surface water monitoring points and groundwater monitoring bores • monitoring parameters should include, but not be limited to, sediment, nutrients and toxicants • specific trigger levels (water quality in surface water bodies and groundwater bores) and details of contingency plans in the case trigger levels are exceeded • detailed reporting requirements • roles and responsibilities, not limited to: <ul style="list-style-type: none"> - the owner of monitoring network assets - the manager of monitoring network assets and results - the party (or parties) undertaking monitoring (prior to construction, during construction and for five years following opening). <p>The groundwater component of the WMMP must include assessment and, if necessary, mitigation of the following impacts:</p> <ul style="list-style-type: none"> • the impact of the embankments on groundwater levels, flow and quality • the impact of piling on groundwater levels, flows and quality 	All

W6	Surface water management (design and operation) The volume, peak flow and quality of surface water discharges during operation must have no adverse impact to the drainage network capacities in consultation with Melbourne Water, Kingston City Council and Greater Dandenong City Council, as appropriate.	Design, Operation
W7	Water Asset Management Plan (Operation) Prior to completion of construction, an Asset Management Plan must be established to ensure the ongoing effectiveness of works to mitigate impacts on surface water, including drainage culverts and bioretention systems. The plan must specify requirements in relation to management, monitoring and reporting.	Operation

Appendix F IAC preferred version of the Incorporated Document

Mordialloc Bypass (Freeway)

Incorporated Document

March 2019~~October 2018~~

~~{Draft dated: 14 March 2019 15 October 2018}~~

IAC preferred version May 2019

Shows the changes proposed by MRPV at the Hearing and other changes supported by the IAC.

DRAFT

Incorporated document pursuant to section 6(2)(j) of the *Planning and Environment Act 1987*

1.0 INTRODUCTION

This document is an incorporated document in the Kingston and Greater Dandenong Planning Schemes (planning schemes) pursuant to Section 6(2)(j) of the *Planning and Environment Act 1987*.

The land identified in Clause 3.0 of this document may be used and developed in accordance with the specific control in Clause 4.0 of this document.

The control in this document prevails over any contrary or inconsistent provision in the planning schemes.

2.0 PURPOSE

The purpose of the control in Clause 4.0 is to permit and facilitate the use and development of land described in Clause 3.0 for the purposes of Mordialloc Bypass (Freeway) (the project).

3.0 LAND

The control contained in Clause 4.0 of this document applies to the land shown on planning scheme map number 7SCO of the Greater Dandenong Planning Scheme and map numbers 3SCO, 6SCO and 8SCO of the Kingston Planning Scheme (project land).

4.0 CONTROL

4.1 Exemption from planning scheme requirements

Despite any provision to the contrary, or any inconsistent provision, in the planning schemes, no planning permit is required for, and no provision in the planning schemes operates to prohibit, restrict or regulate the use or development of the project land for the purposes of, or related to, constructing, maintaining or operating the project.

The use and development of the project land for the purposes of, or related to, the project includes, but is not limited to:

- a) A freeway standard road connecting the Dingley Bypass with Mornington Peninsula Freeway.
- b) On and off ramps to connect the freeway with arterial and local roads.
- c) At grade, signalised intersection at Dingley Bypass.
- d) Grade separated interchange at Centre Dandenong Road, Lower Dandenong Road, Governor Road, Springvale Road and Thames Promenade (adding north-oriented ramps to an existing half-diamond) and an overpass at Old Dandenong Road.
- e) Elevated roads and road infrastructure including at The Waterways and Mordialloc Creek.
- f) Utility installation and relocation and associated services.
- g) Earthworks and related structures, kerbs, channels, water and soil transfer facilities and works, water quality facilities, retaining walls, noise and screen barriers, cuttings, batters and fill associated with the project.
- h) ~~Developing and using land for~~ walking and cycling infrastructure and facilities, including shared use paths.

- i) Any buildings and works or associated infrastructure and activities for the project.
- j) Ancillary activities to the use and development of the project land for the purposes of, or related to, the project including, but not limited to:
 - a) Undertaking any preparatory works as defined in Clause 4.3(a)
 - b) Developing and using lay down areas for construction purposes
 - c) Stockpiling of excavation material
 - d) Constructing and using temporary site workshops and storage, administration and amenities buildings
 - e) Removing, destroying and lopping trees and vegetation, including native vegetation
 - f) Demolishing and removing buildings, fixtures, structures and infrastructure
 - g) Constructing and carrying out works to install, upgrade, alter or relocate services and utilities
 - h) Roadworks and constructing and using temporary access roads, diversion roads and vehicle parking areas
 - i) Constructing or carrying out works for bridges, ramps, excavation, access roads, bunds, mounds, fences, temporary barriers, noise attenuation barriers, stabilisation, landscaping, water treatment, water storage, flood mitigation, drainage modification, and the salvage of artefacts
 - j) Creating and altering access to a road in a Road Zone Category 1 or land in a Public Acquisition Overlay if the purpose of the acquisition is for a Category 1 road
 - k) Earthworks including cutting and spoil removal, and formation of drainage works
 - l) Displaying construction, directional and business identification signs
 - m) Storage and assembly of materials required for the project
 - n) Restoration and reinstatement works
 - o) Subdividing and consolidating land

4.2 Conditions

The use and development permitted by this incorporated document must be undertaken in accordance with the following conditions:

Environmental Management Framework

4.2.1 Prior to the commencement of any development (excluding preparatory buildings and works under Clause 4.3), an Environmental Management Framework (EMF) must be approved by the Minister for Planning. The EMF must include Environmental Performance Requirements addressing the following areas and any other relevant matters:

- a) Acid sulfate soil / contaminated land
- b) Air quality
- c) Biodiversity and habitat/ wetlands and waterways

- d) Cultural heritage (Aboriginal heritage and historic heritage)
- e) Economic
- f) Environmental Management
- g) Greenhouse gas / sustainability
- h) Landscape, urban design and visual
- i) Noise and vibration
- j) Social
- k) Surface Water and Ground Water
- l) Traffic and transport

4.2.2 The EMF must:

- a) set out the process and timing for development of the Construction Environmental Management Plan, Site Environmental Management Plans and other plans and procedures required by the Environmental Performance Requirements, including the process and timing for consultation with relevant council/s, Heritage Victoria, the Roads Corporation, Melbourne Water, Public Transport Development Authority, and the Environment Protection Authority. and
- b) be accompanied by a statement explaining any difference between it, and the matters set out in the Minister's Assessment under the *Environment Effects Act 1978* dated [insert date].

4.2.3 The EMF may be amended from time to time, to the satisfaction of the Minister for Planning.

4.2.4 The use and development of the project must be carried out in accordance with the approved EMF.

Native Vegetation

4.2.5 To offset the removal of native vegetation associated with the project, an offset that meets the offset requirements described in the *Native vegetation removal report* (Report ID XX) must be secured.

4.2.6 If detailed design results in a revised area of impact, an updated *Native vegetation removal report*, detailing revised offset requirements, with an updated offset statement must be provided to the Deputy Secretary, Planning, Department of Environment, Land, Water and Planning (DELWP) for approval.

4.2.7 Evidence of the secured offset must be in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017) and be provided to the Deputy Secretary, Planning, DELWP prior to native vegetation removal.

Flood management

4.2.8 Where, but for this incorporated document, a planning permit would be required for buildings and works on land within the Special Building Overlay, the buildings and works must be undertaken to the satisfaction of the relevant floodplain management authority.

Other conditions

4.2.9 Unless otherwise stated, the plans and other documents listed in Clause 4.2 must be approved prior to the commencement of works. Plans and other documents may be prepared and approved for

separate components or stages of the project but each plan or other document must be approved before commencement of works for that component or stage.

4.2.10 The plans and other documents may be amended from time to time to the satisfaction of the Minister for Planning or the relevant approving authority. In deciding whether a plan or other document is satisfactory or whether to consent to an amendment to a plan or other document, the Minister for Planning or the relevant approving authority may seek the views of council and any other relevant authority.

4.2.11 The use and development of the land must be undertaken generally in accordance with the approved plans and documents.

Preparatory buildings and works

4.3 The following buildings and works may be undertaken before the EMF is approved:

- a) Preparatory works for the project including, but not limited to:
 - i. Works, including vegetation removal, where, but for this incorporated document, a planning permit would not be required under the provisions of the planning schemes;
 - ii. Investigating and testing to determine the suitability of land, and property conditions surveys;
 - iii. Creation and use of construction access points and working platforms;
 - iv. Site establishment works including temporary site fencing and hoardings, site offices, and hardstand and laydown areas;
 - v. Construction, protection, modification, removal or relocation of utility services, overhead and associated infrastructure;
 - vi. Establishment of environmental and traffic controls, including designation of “no-go” zones;
 - vii. Establishment of temporary car parking;
 - viii. Demolition to the minimum extent necessary to enable initial works;
 - ix. Salvaging and relocation of artefacts required to be undertaken in accordance with the approved cultural heritage management plan prepared for the project under the *Aboriginal Heritage Act 2006* or otherwise in compliance with that Act; and
- b) The removal, destruction or lopping of native vegetation to the minimum extent necessary to enable preparatory works, to the satisfaction of the Minister for Planning. Any native vegetation removed to enable preparatory works forms part of the total extent of native vegetation removal necessary for the construction of the project and native vegetation offsets must be provided in accordance with Clause 4.2.6, except as otherwise agreed by the Secretary to DELWP.

5.0 EXPIRY

The control in this incorporated document expires if any of the following circumstances apply:

- a) The development allowed by the control is not started by 1 August ~~2022~~2020;
- b) The development allowed by the control is not completed by 1 August 2025; or
- c) The use allowed by the control is not started by 1 August 2030.

DRAFT