APPENDIX B:
B2 - ALTERNATIVE CORRIDOR OPTIONS E6

This section of Appendix B describes and evaluates the alternative corridor options for the E6 Transport Corridor.

B2.1 ALTERNATIVE CORRIDOR OPTIONS E6

B2.1.1 PROCESS

In developing a proposal for a northwards extension of the E6 corridor, the alignment for the E6 reservation between the Metropolitan Ring Road, Thomastown, and north of Findon Road, Epping was taken into consideration. This alignment was previously developed by the City of Whittlesea and earlier VicRoads work, which is now reflected in the existing Public Acquisition Overlay (PAO).

An indicative E6 Corridor connecting to the Outer Metropolitan Ring at the Hume Freeway was published in the *Victorian Transport Plan*, December 2008. This schematic corridor was displayed on VicRoads OMR web site. This corridor is shown in Figure 1-3 Victorian Transport Plan Proposals, in the Introduction to this report.

Four options were initially developed (refer Figure B2.1):

- E6-1 to the east of Darebin Creek and crossing Donnybrook Road to the east of Epping Road;
- E6-2 essentially replacing Epping Road;
- E6-3 to the west of Epping Road all linking to the OMR at the Hume Freeway;
- E6-4 essentially an attempt to minimise the potential environmental impacts of E6-1 by considering an alignment to the west.

Option E6-2 was chosen as the preferred option, prior to the refinement of its location.

In a further refinement the alignment of E6-2 was moved to the east side of Bindts Road to avoid impacts on an area of land subject to a previously agreed structure plan within the existing Urban Growth Boundary. On the west side of Epping Road, the alignment was also moved slightly west to avoid the hills north of Donnybrook Road and altered slightly near Merri Creek to minimise environmental impacts.

B2.2 PREVIOUS WORK FOR THE E6 CORRIDOR

B2.2.1 EXISTING RESERVATION METROPOLITAN RING RD – JUST NORTH OF FINDON RD

The E6 corridor between the Metropolitan Ring Road at Thomastown and just north of Findon Road, Epping was previously developed as a freeway standard road and reserved in the Whittlesea Planning Scheme.

The reservation allows for a freeway to freeway connection between the E6 and the Metropolitan Ring Road between Dalton Rd and Plenty Rd, a northerly orientated interchange with McKimmies Road, an all movements interchange with Childs Rd, an overpass at McDonalds Road and an all movements interchange at Findon Road.

It is anticipated that the preferred option for the E6 Transport Corridor would ultimately extend to the Metropolitan Ring Road via this reservation. With that in mind, the existing plans were reviewed to ensure that a six lane freeway could be constructed to current design standards within the reservation. This has been confirmed, other than for an examination of requirements along the Metropolitan Ring Road, given the closeness of the E6 to the Dalton Road and Plenty Road interchanges. No further planning work is envisaged until detailed design just prior to construction. However, various issues will need to be managed to ensure the ongoing viability of the E6 reservation, for example, the levels of the proposed Epping – South Morang Railway line. The outcome of the review is described in B3 Links to OMR/E6 Transport Corridor, B3.3 Existing E6 Reservation.

B2.2.2 COUNCIL OPTION E6 – FINDON RD TO BINDTS RD

The City of Whittlesea has developed an alignment for an arterial road from the existing E6 reservation north of Findon Road to Bridge Inn Road, Wollert. It would skirt the Boral quarry to the north of Findon Rd, cross Darebin Creek slightly south of the E6-2 crossing and continue along Bindts Road to Bridge Inn Road. The road widening would be on the east side of Bindts Road between Harvest Home Road and Lehmanns Road to avoid land that is subject to an agreed structure plan. The City of Whittlesea has funding of $1 million from Auslink for this project to proceed.

A significant difference between this option and the other options considered in this PAR is that an arterial road would have different design standards which would allow tighter curves. An arterial road would also have a narrower reservation with intersections rather than interchanges at cross roads, and would allow limited access. The Whittlesea proposal would potentially also have a different vertical alignment. Thus a freeway route modelled on this option would of necessity be different.

B2.3 E6 FINDON ROAD – HUME FREEWAY INITIAL OPTIONS

This section describes and evaluates the options and variations of them, developed to link the existing E6 corridor between the Metropolitan Ring Road and just north of Findon Rd, to the OMR at the Hume Freeway just south of Donovans Lane, Kalkallo. The initial options are shown in Figure B2-1 Initial Corridor Options - E6 Corridor.

B2.3.1 DESCRIPTION OF OPTIONS

B2.3.1.1 OPTION E6-1

This option would extend northwards from the Findon Road interchange, curving to the west through the corner and following the west side of the Boral Wollert quarry. This option would then curve to the east, cut through the lower slopes of the hills east of the Darebin Creek, with part of the creek possibly having to be realigned. It would continue on through the east slope of Quarry Hills to cross Bridge Inn Road in the vicinity of Melrose Farm.

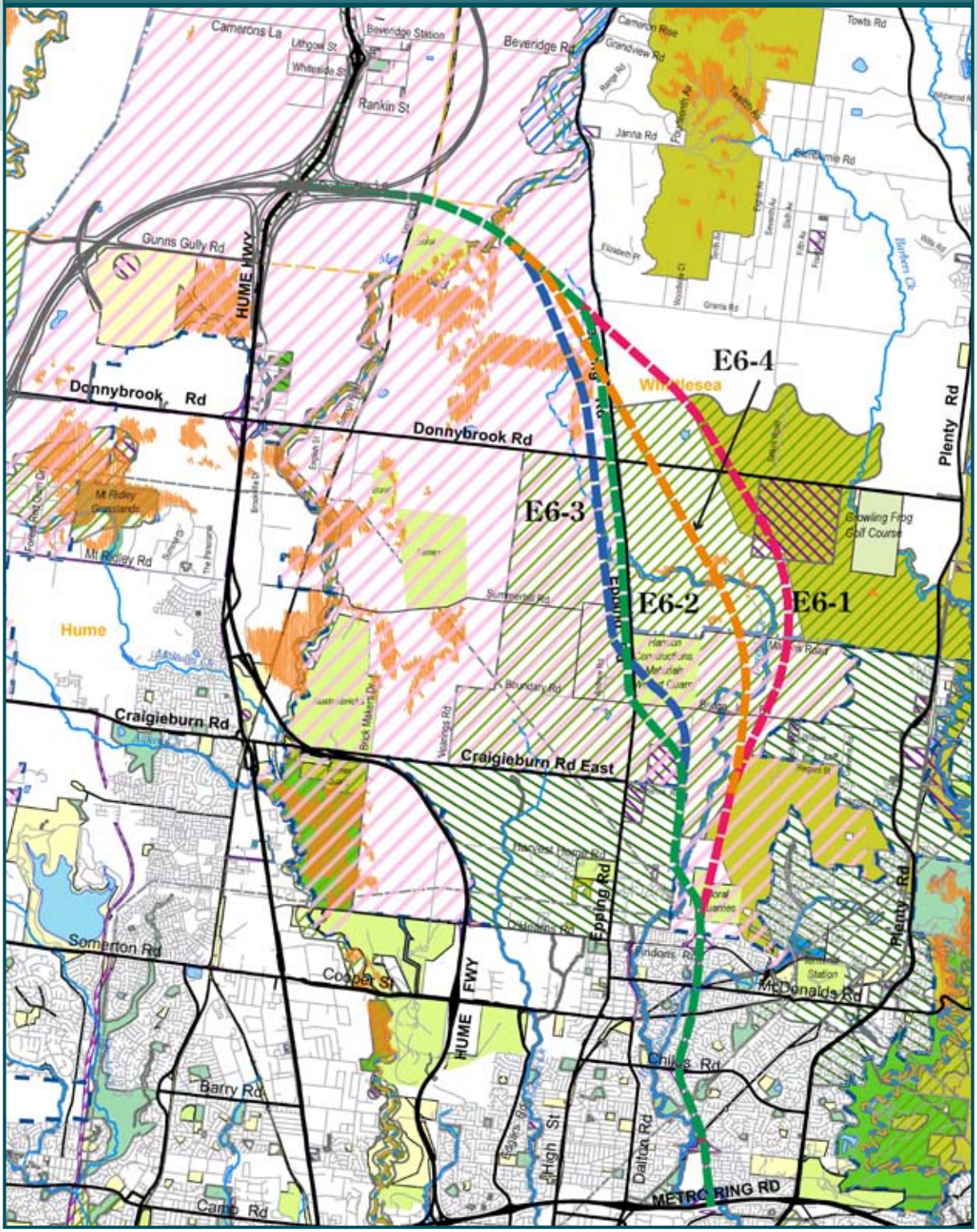
This option would then continue on to the west of Sackville Street and Masons Road to the east of the Darebin Creek, before swinging west to cross Donnybrook Road, west of Selkirk Road. From Donnybrook Road; the corridor would proceed in a north westerly direction through the hills to cross Epping Road just south of Grants Road, then cross Darebin Creek and Merri Creek to join the OMR at the eastern end of the Hume freeway to freeway interchange just north of Bald Hill in the vicinity of Donovans Lane.

Interchanges could be provided with this option at Bridge Inn Road, Masons Road, Donnybrook Road, a new link to Merriang Rd just south of Grants Road and a link to the proposed Donnybrook/Beveridge Interstate Rail Freight Terminal.

The alignment would be predominantly in the City of Whittlesea with a small area in Mitchell Shire. Much of the route is in the Green Wedge Zone. At the southern end, this option would cross a Rural Conservation Zone and a Special Use Zone covering the Boral Wollert quarry and Significant Landscape Overlay (SLO2) covering Quarry Hills. To the north, this option would pass through a second area of Rural Conservation Zone, a long section of Environmental Significance Overlay (ESO) designed to protect the Plains Grassy Woodland, the Merri Creek ESO (ESO3), The Merri and Darebin Creek Rural Floodway Overlays, the Heritage Overlay of Fenwick Stud (HO44) and a small section of Farming Zone in Mitchell Shire west of Merri Creek.

The alignment would pass though environmentally significant Plains Grassy Woodland and a conservation area of the Merri Creek.

FIGURE B2-1: INITIAL CORRIDOR OPTIONS - E6 CORRIDOR



Legend

- Urban Growth Boundary
- Public Acquisition - Roads
- Heritage Overlay
- GAA Investigation Area
- Environmental Significance Overlay
- Vegetation Protection Overlay
- Commonwealth Land
- Municipal Boundary
- Public Conservation & Resource
- Public Park & Recreation
- Rural Conservation
- Special Use
- Public Use
- Highest Native Vegetation Importance (DSE)

Note: Planning Scheme Overlays Data June 08. Simplified overlay descriptions for clarity purposes.

0 1.5 3 6 12

Scale of Kilometers

B2.3.1.2 OPTION E6-2

This option would extend northwards from the Findon Road interchange, curving to the west through the corner of the Boral Wollert quarry, crossing Darebin Creek. It would then swing to the west to cross Bindts Road at the intersection with Harvest Home Rd. It would then run parallel with Bindts Road on the west side, with Bindts Road becoming a service road for residences on the east side.

North of Lehmanns Road the corridor would swing to the west again, passing through part of the Hanson Wollert Quarry, and crossing to the immediate west of Epping Rd through the Bridge Inn Road intersection. Epping Road would become a service road for residences on the east side. This option would continue north following the line of option E6-1 just south of Grants Road. It would then cross Merri Creek to join the OMR at the Melbourne Sydney Railway Line, in the vicinity of Donovans Lane.

Interchanges could be provided with this option at Harvest Home Road, Lehmanns Road, Bridge Inn Road, an extension westward of Masons Road, Donnybrook Road, a new link to Merriang Road just south of Grants Road and a new link to the proposed Donnybrook/Beveridge Interstate Rail Freight Terminal.

The alignment would be predominantly in the City of Whittlesea with a small area in Mitchell Shire. Much of the route is in the Green Wedge Zone. This option would cross Special Use Zones covering the Boral and Hanson Wollert quarries, a Public Park and Recreation Zone (PPRZ) which houses the Country Fire Authority's Fire Station, Heritage Overlay 41 and 39 (Schultz Farm - Pine Grove Farm and Ivy Bank). To the north this option would pass through a long section of Environmental Significance Overlay (ESO) designed to protect the Plains Grassy Woodland, the Merri Creek ESO (ESO3), The Merri and Darebin Creek Floodway Overlays, and a small section of Farming Zone in Mitchell Shire west of Merri Creek. It would also impact on development overlays in relation the precinct structure plan between Harvest Home Road and Lehmanns Rd west of Bindts Road.The alignment would pass though environmentally significant Plains Grassy Woodland and a conservation area of the Merri Creek.

B2.3.1.3 OPTION E6-3

This option would extend northwards from the Findon Road interchange, curving to the west through the corner of the Boral Wollert quarry, crossing Darebin Creek then Harvest Home Road at the intersection with Bindts Road, continuing north to the immediate west of Bindts Road, with Bindts Road becoming a service road for residences on the east side. Just south of Bridge Inn Road the corridor would curve to the west again, through the southern end of the Hanson Wollert Quarry, and then cross over Epping Road between Bridge Inn Road and Masons Road.

The corridor would then run parallel with and about 400m west of Epping Road, swinging north- west to cross Merri Creek in the same location as Option E6-1 to join the OMR at the Melbourne-Sydney railway, in the vicinity of Donovans Lane. Epping Road would become a service road for residences on the east side.

Interchanges could be provided with this option at Lehmanns Road, Bridge Inn Road, an extension westward of Masons Road, Donnybrook Road, a new link to Merriang Road just south of Grants Road and a new link to the proposed Donnybrook/Beveridge Interstate Rail Freight Terminal.

The alignment would be predominantly in the City of Whittlesea with a small area in Mitchell Shire. Much of the route is in the Green Wedge Zone. This option would cross Special Use Zones covering the Boral and Hanson Wollert quarries, a Public Park and Recreation Zone (PPRZ) which houses the Country Fire Authority's Fire Station, Heritage Overlays 41 and 39 (Schultz Farm - Pine Grove Farm and Ivy Bank). To the north, this option would pass through a long section of Environmental Significance Overlay (ESO) designed to protect the Plains Grassy Woodland, the Merri Creek ESO (ESO3), the Merri and Darebin Creek Floodway Overlays, and a small section of Farming Zone in Mitchell Shire west of Merri Creek. It would also impact on development overlays in relation the precinct structure plan between Harvest Home Road and Lehmanns Rd west of Bindts Road.

The alignment would pass though environmentally significant Plains Grassy Woodland and a conservation area of the Merri Creek.

B2.3.1.4 OPTION E6-4

This option was developed to minimise impacts on the rural conservation areas. It would still cross the southern rural conservation area but would avoid the northern rural conservation area. It would cross the Darebin Creek twice, north and south of Masons Road before crossing Epping Road just north of Donnybrook Road where it would cross Darebin Creek once more.

The alignment would be predominantly in the City of Whittlesea with a small area in Mitchell Shire. Much of the route is in the Green Wedge Zone. At the southern end, this option would cross a Rural Conservation Zone and a Special Use Zone covering the Boral Wollert quarry and Significant Landscape Overlay (SLO2) covering Quarry Hills. To the north this option would pass through a long section of Environmental Significance Overlay (ESO) designed to protect the Plains Grassy Woodland, the Merri Creek ESO (ESO3), The Merri and Darebin Creek Floodway Overlays, and a small section of Farming Zone in Mitchell Shire west of Merri Creek.

The alignment would pass though environmentally significant Plains Grassy Woodland and a conservation area of the Merri Creek.

B2.3.2 EVALUATION OF OPTIONS

B2.3.2.1 EVALUATION OBJECTIVES

Options were evaluated according to the overall project objective outlined in Chapter 2 Methodology, 2.1.5 Assessment Objectives.

The evaluation of options against objectives was based on judgement, informed by constraints mapping, verbal communications from various agencies on specific issues and desktop surveys of Cultural Heritage, Geotechnical Issues and Flora and Fauna. The Flora and Fauna surveys were augmented by field inspections of areas of high biodiversity.

B2.3.2.2 PRELIMINARY OPTION EVALUATION

Options E6-1 to E6-3 were assessed against objectives as shown in Table B2-1 Initial Corridor Options Analysis.

B2.3.2.3 OPTION E6-1

Option E6-1 was not supported as it would have major environmental impacts. Officers of the Department of Sustainability and Environment (DSE) advised that options passing through the rural conservation zones in this area would not be acceptable. The City of Whittlesea also advised that there would be construction constraints on the hills to the north of the Boral Quarry, above the 190 metre contour, to protect the landscape and the corridor could not impinge on these.

This option would also be distant from any development within the *Melbourne @ 5 Million* Investigation Area west of Epping Road so would not meet the requirement to support future residential and industrial development. This option would require the acquisition of approximately 5 houses and 58 properties (based on limited design).There would also be minor cultural heritage impacts.

These were all considered to outweigh any road network benefits of having a freeway midway between the two existing arterials of Epping Road and Plenty Road and the lesser impacts on existing residences.

Table B2-1 Initial E6 Corridor Options Analysis (Assessment from Findon Road to OMR link west of Hume Freeway)

Objective Sub objective	Option E6-1		Option E6- 2		Option E6-3		Option E6-4	
	Details	**Rating**	**Details**	**Rating**	**Details**	**Rating**	**Details**	**Rating**
Description	From north of Findon Rd, east of Darebin Creek along edge of Quarry Hills, in a wide arc, route would crossing Masons Rd east of the creek and swinging round through the hills to cross Epping Rd just south of Grants Rd, crossing Merri Creek to join The OMR south of Donovans Lane.		From north of Findon Rd, route would curve west, cross Darebin Creek and Bindts Rd, parallel with Bindts Rd west side , curving west at Lehmans Rd to Epping Rd at Bridge Inn Rd intersection, continuing north and parallel with Epping Rd to just south of Grants Rd, crossing Merri Creek to join The OMR south of Donovans Lane.		From north of Findon Rd, route would curve west, cross Darebin Creek and Bindts Rd, parallel with Bindts Rd west side , curving west at Bridge Inn Rd through the quarry to Epping Rd, continuing north approx 400m from and parallel with Epping Rd to just south of Grants Rd, crossing Merri Creek to join The OMR south of Donovans Lane.		From north of Findon Rd, east of Darebin Creek along edge of Quarry Hills, the route would continue north, crossing Darebin Ck twice, north and south of Masons Rd before crossing Epping Rd just north of Donnybrook Rd crossing Darebin Ck once more, then crossing Merri Creek to join The OMR south of Donovans Lane.	
Objective 1: Serves Key international transport hubs, eg Melbourne and Avalon Airports, Port of Geelong, other Intermodal freight hubs and freight service economy areas								
	Would serve Donnybrook/Beveridge Interstate Rail Freight Terminal	Well	Would serve Donnybrook/Beveridge Interstate Rail Freight Terminal	Well	Would serve Donnybrook/Beveridge Interstate Rail Freight Terminal	Well	Would serve Donnybrook/Beveridge Interstate Rail Freight Terminal	Well
Objective 2: Serves key interstate and major regional destinations								
Route length (from tie in with OMR Hume Freeway interchange to centre Findon Road interchange	19.1km		17.7km		17.4km		17.8 km	
	Would link eastern metropolitan area with north via Metropolitan Ring Rd	Well	Would link eastern metropolitan area with north via Metropolitan Ring Rd	Very Well	Would link eastern metropolitan area with north via Metropolitan Ring Rd	Very Well	Would link eastern metropolitan area with north via Metropolitan Ring Rd	Very Well
Objective 3: Provides better links to residential and employment growth areas to the north and west of Melbourne, eg Werribee, Melton and Mickleham								
	Would not support development in northern growth area as it would be distant from the main development areas west of Epping Rd	Very poorly	Would support development in northern growth area with interchanges at key arterial roads	Well	Would support development in northern growth areas with interchanges at key arterial roads	Well	Would not support development in northern growth area as it would be distant from the main development areas west of Epping Rd	Very poorly
Objective 4: The Project is capable of performing its function								
Provides outer ring road function	1. Would provides strategic ring function but limited freeway access for northern growth areas 2. Better strategic position between two major arterials	Satisfactory	Would provides strategic ring function and provides ready freeway access for northern growth areas	Very Well	Would provides strategic ring function and provides ready freeway access for northern growth areas	Very Well	1. Would provides strategic ring function but limited freeway access for northern growth areas 2. Better strategic position between two major arterials	Satisfactory
To have minimal impact on existing or proposed road infrastructure	Would require extension of local/arterial roads across Darebin Creek	Satisfactory	Would require abandonment of Epping Road (which would become a local access road on east side) plus new link from Merriang Rd to E6 to retain regional function	Poorly	Option would need to be at least 400m away from Epping Rd to provide for interchanges	Very Well	Would require extension of local/arterial roads across Darebin Creek	Satisfactory
Objective 5: The project is technically feasible								
The project is technically feasible	Yes. Not as optimal as E6-2 and E6-3 due to hills.	Well	Yes	Very Well	Yes	Very Well	Yes. Not as optimal as E6-2 and E6-3 due to hills	Well
Technically feasible interchanges	Yes	Very Well	Yes	Very Well	Yes	Very Well	Yes	Very Well
Terrain constraints	Would avoid Darebin Creek crossings, but likely to impact on side of Darebin Creek at southern end. Would cut into hills at southern and northern ends	Poorly	Would cross Darebin Creek 3 times	Satisfactory	Would cross Darebin Creek twice	Satisfactory	Would have some impacts on hills; would have three Darebin Creek crossings, also likely to impact on side of Darebin Creek at southern end. Would cut into hills at southern and northern ends, although lesser impact in north than Option E6-1	Poorly
Objective 6: Avoid as far as possible, minimise where unavoidable and provide offsets for any Biodiversity impacts to achieve net gain								
To protect species and ecological communities listed under the *Flora and Fauna Guarantee Act 1988* (Vic) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and minimise impacts on other indigenous species and ecological communities to the extent practicable	1. Would impact conservation area of Merri Ck 2. Would impact Plains Grassy Woodland (endangered) 3. Potential impact on 3 EPBC listed fauna species and 8 FFG listed fauna species 4. Potential impact on biosite of national and regional significance	Very poorly	1. Would impact on native vegetation (endangered Grassy Woodland) 2. Potential impact on 3 EPBC listed fauna species and 8 FFG listed fauna species 3. Potential impact on biosite of national and regional significance	Poorly	1. Would impact native grassland 2. Potential impact on 3 EPBC listed fauna species and 8 FFG listed fauna species 3. Potential impact on biosites of national and regional significance 4. Impact on ESO 5. Significant impact on environmentally sensitive habitats and species	Very poorly	1. Would impact Merri Creek and rural conservation area 2. Potential impact on 3 EPBC listed fauna species and 8 FFG listed fauna species 3. Potential Impact on ESO 4. Potential impact on biosites of national and regional significance 5. Potential to impact a number of threatened flora and fauna species	Very poorly

To protect catchment values including surface water quality, stream flow, aquatic health and groundwater values, to the extent practicable	Mitigation measures would enable acceptable performance	Satisfactory	Mitigation measures would enable acceptable performance	Satisfactory	Mitigation measures would enable acceptable performance	Satisfactory	Mitigation measures would enable acceptable performance	Satisfactory
Objective 7: Avoid as far as possible, minimise where unavoidable and prepare a Cultural Heritage Management Plan to mitigate any Cultural Heritage Impacts								
Impact on Post settlement cultural heritage sites	Impact 4 Heritage Inventory sites and 1 Heritage Overlay. All sites are of local significance	Satisfactory	Impact 6 Heritage Inventory sites and one Heritage Overlay site. All sites of local significance	Satisfactory	Impact 6 Heritage Inventory sites and one Heritage Overlay site. All sites of local significance	Satisfactory	Impact 4 Heritage Inventory sites and one Heritage Overlay site. All sites of local significance	Satisfactory
Impact on Aboriginal cultural heritage sites	Impact 2 artefact scatter sites. Assume river crossings of high potential significance	Satisfactory	Impact 14 scatter sites. Assume river crossings of high potential significance	Poorly	Impact 14 scatter sites. Assume river crossings of high potential significance	Poorly	Impact 2 earth features and 1 scatter site. Assume river crossings of high potential significance	Satisfactory
Objective 8: Minimise socio-economic impacts in relation to existing and future residential and indistrial development and maximise future urban development								
Industrial development, other uses, utilities, service centres	1. Would cut through current Boral Wollert Quarry 2. Would reduce potential for future development plans 3. Would impact approximately 37 properties many of which would be agricultural enterprises	Satisfactory	1. Mariginal impacts on Boral Wollert quarry 2. Would impact Hansen Wollert quarry and potential future development but lesser impact than E6-3 3. Would impact 112 properties many of which would be agricultural enterprises (114 with variations)	Satisfactory	1. Mariginal impacts on Boral Wollert quarry 2. Would impact Hansen Wollert quarry and sever from potential future development 3. Would impact approximately 58 properties many of which would be agricultural enterprises (75 with variation)	Poorly	1. Would cut through current Boral Wollert Quarry 2. Would reduce potential for future development plans 3. Would impact approximately 45 properties many of which would be agricultural enterprises	Satisfactory
Industrial development Other uses , utilities, service centres, intermodal sites		Well	Would impact CFA site	Poorly		Well		Well
Maximise potential for future development - Findon Road, Epping to Bridge Inn Road, Wollert	1. Would cut through potential development east of Bindts Rd	Very poorly	This option would adversely impact existing development proposal (Villawood) in accordance with approved structure plan within existing UGB	Very poorly	This option would adversely impact existing development proposal (Villawood) in accordance with approved structure plan within existing UGB	Very poorly	Would cut through potential development east of Bindts Rd	Very poorly
Bridge Inn Road, Wollert to Melbourne - Sydney Railway	This option would maximise the available land for future development, which is important due to the many constraints in this Investigation Area; however, there would not be a strong barrier between the residential and rural land	Satisfactory	This option would maximise the available land for future development, which is important due to the many constraints in this Investigation Area	Well	1.This option would reduce the available land for future development, which is important due to the many constraints in this Investigation Area 2. It would also create an area on both sides of Epping Rd that would be subject to undesirable development pressure 3. This could compromise the intended retention of the rural nature of land east of Epping Rd outside the Investigation Area	Poorly	This option would maximise the available land for future development, which is important due to the many constraints in this Investigation Area; however, there would not be a strong barrier between the residential and rural land	Satisfactory
Overall assesment re "Maximise potential for future development"		Very poorly		Satisfactory		Poorly		Very poorly
To protect residents' amenity and well-being, and minimise any dislocation of residents, to the extent practicable	1. Would impact approx 7 houses/business premises 2. Three houses within exisiting PAO south of Findons Road would give total of 10 houses/ businesses	Well	1. Would impact 51 houses/business premises 2. With all accepted variations 53 houses/ businesses 3. Three houses within exisiting PAO south of Findons Road would give total of 56 houses/ businesses	Poorly	1. Would impact 9 houses/business premises 2. With all accepted variations 23 houses/ businesses 3. Three houses within exisiting PAO south of Findons Road would give total of 26 houses/ businesses	Satisfactory	1. Would impact approximately 20 houses/ business premises 2. Three houses within exisiting PAO south of Findons Road would give total of 23 houses/ businesses	Satisfactory
To protect the character of significant landscapes, open space and recreation values, to the extent practicable	Would impact on landscape values of hills, Darebin Creek (particularly in the south) and Merri Ck	Poorly	Would impact on Darebin Creek and Merri Ck	Satisfactory	Would impact on Darebin Creek and Merri Ck	Satisfactory	Would impact on landscape values of hills in south, Darebin Creek (particularly in the south) and Merri Ck	Poorly
Air Quality - to have no exceedances of the SEPP intervention levels for all pollutants	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory
Noise - increase in noise after construction of noise barriers	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory
OVERALL OPTION ASSESSMENT	**Environmental, landscape and future development impacts considered to outweigh engineering advantages and lesser social impacts**	**Very Poorly**	**Would maximise area for future development.Considered to outweigh social impacts which will change with long term future land use and environmental impacts**	**Satisfactory**	**Would not maximise area for future development.Considered to outweigh lesser social impacts which will change with long term future land use. Would have greater environmental impacts**	**Poorly**	**Only partly addresses environmental constraints. Environmental, landscape and future development impacts considered to outweigh engineering advantages and lesser social impacts**	**Very Poorly**

Note: The precautionary principle has been adopted in relation to the assessment of Aboriginal cultural heritage. Most assessments have been rated as "Poorly" as detailed studies are yet to be carried out.

Ratings of Performance: Very well | Well | Satisfactory | Poorly | Very Poorly

EPBC: Environment Protection and Biodiversity Conservation Act 1999 (Australian Government)

FFG: Flora and Fauna Guarantee Act 1988 (Victorian Government)

ESO: Environmental Significance Overlay

PAO: Public Aquisition Overlay

CFA: Country Fire Authority

UGB: Urban Growth Boundary

B2.3.2.4 OPTION E6-2

Option E6-2 was taken forward for further development as it would maximise the developable area within the *Melbourne @ 5 million* Investigation Area compared with Option E6-3.

Option E6-2 with variations would require the acquisition of 54 houses/businesses (including three in existing PAO) and 112 properties. Much of this is due to the fact that the proposed route would be parallel to Epping Road. The reason for this location is to maximise the amount of available land within the *Melbourne @ 5 million* Investigation Area. The land use west of Epping Road will change as development proceeds and the current rural residential use will be confined to the east side of Epping Road. This option would also impact on the CFA Wollert Fire Station and the Tuttle Recreation Reserve. However, such facilities would be replaced in an overall expanded urban area, while property owners would be compensated under the terms of the *Land Acquisition and Compensation Act 1986*.

This was considered to outweigh the disadvantages in terms of the impacts on existing residential development on the west side of Epping Road and elsewhere.

It was also considered to outweigh the impacts on the environment. All options would pass through environmentally sensitive areas which are difficult to avoid. It is proposed to mitigate these impacts under the net gain requirements.

B2.3.2.5 OPTION E6-3

Option E6-3 was developed to allow Epping Road to remain as a functioning arterial road. It would have a greater impact on sensitive biodiversity areas than Option E6-2, being further away from Epping Road. It would also have a greater impact on the Hanson Wollert quarry.

A major consideration in evaluating this option was maximising the developable area within the *Melbourne @ 5 million* Investigation Area. In this regard, Option E6-3 would not perform as well as Option E6-2. This option would also sterilise land between the freeway and the arterial road and would be likely to encourage inappropriate development along Epping Road.

This option would require the acquisition of approximately 12 houses/businesses (including three in existing PAO) and 58 properties.

These considerations were considered to outweigh any benefits in retaining Epping Road as an arterial road parallel with the E6 freeway, and the lesser impact on residences.

B2.3.2.6 OPTION E6-4

This option would only partly address the environmental constraints. It would also involve an additional crossing of Darebin Creek and impact on sensitive areas of Plains Grassy Woodlands. It would still impact on the southern rural conservation zone. It is estimated that it would require the acquisition of approximately 26 houses (including three in existing PAO) and 58 properties (based on limited design).

This variation was not supported for similar reasons to Option E6-1.

B2.4 VARIATIONS TO E6 INITIAL OPTIONS

B2.4.1 DESCRIPTION OF OPTIONS

These variations are shown in Figure B2-2 Variations to Initial Options.

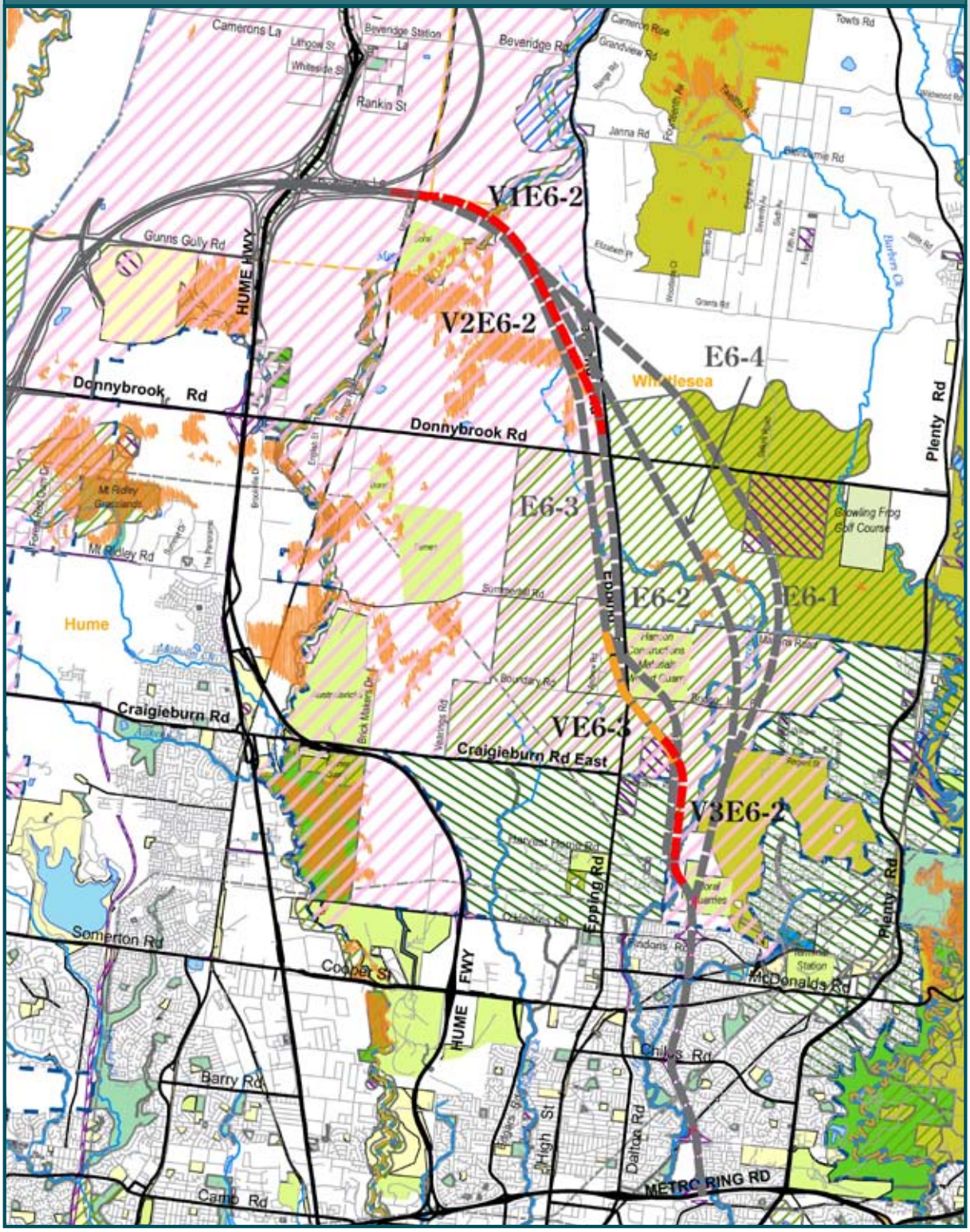
B2.4.1.1 VARIATIONS V1E6-2, V2E6-2 AND V2E6-2 TO OPTION E6-2

There are three variations to Option E6-2. The first variation, V1E6-2, is a slight adjustment of the route northwards between the area roughly adjacent to Grants Road and Merri Creek. This variation is aimed at further minimising environmental impacts. This variation would avoid trees in the conservation area but would still cross an area of grassland. Officers of the Department of Sustainability and Environment (DSE) proposed a route that would deviate in a loop further to the north to avoid the conservation area altogether and bring the corridor south, parallel and close to Merriang Road. This is not feasible due to the proximity of the hills, and the consequential major excavation and filling, and landscape impacts on the hills.

The second variation V2E6-2 was developed to avoid the foothills to the west of Merriang Road in the vicinity of Grants Road.

The third variation, V3E6-3, was developed to avoid impacts on land subject to an existing structure plan for residential development between Harvest Home Road and Lehmanns Road. This land is located within the existing Urban Growth Boundary. This variation would bring the freeway northwards along the east side of Bindts Road between Harvest Home Road and Lehmanns Road. Any interchange in this location would be a partial parclo type interchange such that access of the freeway to Lehmanns Road would be from the north side. This arrangement is necessary to ensure no impact on the land within the Urban Growth Boundary on the south east quadrant of Bindts and Lehmanns Roads. The location of the entry/exit ramp would need to conform to the access to the development to the south. This is a matter to be determined between VicRoads, the developer and the City of Whittlesea.

FIGURE B2-2: VARIATIONS TO INITIAL CORRIDOR OPTIONS - E6 CORRIDOR



Legend

- Urban Growth Boundary
- Public Acquisition - Roads
- Heritage Overlay
- GAA Investigation Area
- Environmental Significance Overlay
- Vegetation Protection Overlay
- Commonwealth Land
- Municipal Boundary
- Public Conservation & Resource
- Public Park & Recreation
- Rural Conservation
- Special Use
- Public Use
- Highest Native Vegetation Importance (DSE)

Note: Planning Scheme Overlays Data June 08. Simplified overlay descriptions for clarity purposes.

0 1.5 3 6 12

Scale of Kilometers

B2.4.1.2 VARIATION VE6-3 TO OPTION E6-3

This variation would follow approximately the route of Option E6-2 between Lehmanns Road and Bridge Inn Road.

B2.4.2 EVALUATION OF VARIATIONS

The variations to Options E6-2 and E6-3 were assessed against objectives as shown in Tables B2-2 and B2.3 Variations to Initial Corridor Options Analysis.

B2.4.2.1 VARIATION V1E6-2 TO OPTION E6-2

This variation was supported as it would minimise the impact on the Plains Grassy Woodland in the conservation zone at Merri Creek. It would, however transfer the impacts to an area of Plains Grasslands. It would not require the acquisition of any additional houses/businesses and properties overall.

B2.4.2.2 VARIATION V2E6-2

This variation was supported as it would provide a slightly more direct route to the Hume Freeway and an optimal location for the interchange and link to Merriang Road minimising impacts on the hills. It would not require the acquisition of any additional houses/businesses and properties overall.

B2.4.2.3 VARIATION V3E6-2

This variation would impact on trees on the east side of Bindts Road and two additional existing houses. The area on the west side of Bindts Road has already been through extensive planning processes to rezone the land and develop a structure plan which has been finalised. It would be a significant issue to require this plan to be revisited.

The impacts on the agreed Structure Plan were considered to outweigh the disadvantages of moving the corridor to the east between Harvest Home Road and Lehmanns Road and this variation was supported. This option would require the acquisition of two additional houses/businesses and properties, bringing the total number of houses/businesses affected to 56 (including three in the existing PAO) and properties to 114.

Table B2-2 Variations to Initial E6 Corridor Options Analysis (Assessment Findon Road to OMR link west of Hume Freeway)

Objective Sub objective	**E6-2**		**Variation VIE6-2** **(recommended over E6-2)**		**Variation V2E6-2** **(recommended over E6-2)**		**Variation V3E6-2**	
	Details	**Rating**	**Details**	**Rating**	**Details**	**Rating**	**Details**	**Rating**
Description of Option	From north of Findon Rd, route would curve west, cross Darebin Creek and Bindts Rd, parallel with Bindts Rd west side , curving west at Lehmans Rd to Epping Rd at Bridge Inn Rd intersection, continuing north and parallel with Epping Rd to just south of Grants Rd, crossing Merri Creek to join The OMR south of Donovans Lane		Alignment north of Donnybrook Rd moved to north to avoid treed area in Merri Creek Conservation Zone		Alignment north of Donnybrook Rd moved to west to enable access to/from Merriang Rd		Alignment between Harvest Home Rd and Lehmans Rd moved to east side of Bindts Rd to preserve existing structure planning	
Objective 1: Serves Key international transport hubs, eg Melbourne and Avalon Airports, Port of Geelong, other Intermodal freight hubs and freight service economy areas			Not relevant to this assessment		Not relevant to this assessment		Not relevant to this assessment	
Objective 2: Serves key interstate and major regional destinations			Not relevant to this assessment		Not relevant to this assessment		Not relevant to this assessment	
Objective 3: Provides better links to residential and employment growth areas to the north and west of Melbourne, eg Werribee, Melton and Mickleham			Not relevant to this assessment		Not relevant to this assessment		Not relevant to this assessment	
Objective 4: The Project is capable of performing its function			Not relevant to this assessment		Not relevant to this assessment		Not relevant to this assessment	
Objective 5: The project is technically feasible								
Technically feasible interchanges	1. Yes but interchange and link to Merriang Rd not optimal. 2. Would require abandonment of Epping Road (which would become a local access road on east side) plus new link from Merriang Rd to E6 to retain regional function	Well	No impact on interchanges	Well	V2E6-2 would provide a better link to Merriang Road between hills	Very Well	V3E6-2 would provide a partial parclo (on/off rams in same quadrant) allowing the precinct structure plan area to be avoided	Very Well
Terrain Constraints	Would cross Darebin Creek 3 times	Satisfactory	Slightly into foothills north of Donnybrook Rd	Well	Would avoid foothills and place link road to interchange in a valley	Very Well	Skewed crossing of Darebin Creek	Satisfactory
Objective 6: Avoid as far as possible, minimise where unavoidable and provide offsets for any Biodiversity impacts to achieve net gain								
To protect species and ecological communities listed under the *Flora and Fauna Guarantee Act 1988* (Vic) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and minimise impacts on other indigenous species and ecological communities to the extent practicable	1. Would impact on native vegetation (endangered Grassy Woodland). 2. Potential impact on 3 EPBC listed fauna species and 8 FFG listed fauna species 4. Potential impact on biosite of national and regional significance	Poorly	1. Potential impact on biosite of national and regional significance 2. Plains Grassland is an ecological community of national significance and will require mitigation measures to be put in place through net gain requirements. 3. DSE proposal to deviate further north not viable and more southerly location for route would affect OMR railway line	Satisfactory	1. Potential impact on biosite of national and regional significance 2. Route realigned to provide connection to Merriang Rd	Satisfactory	1. Potential impact on 2 EPBC listed fauna species and 7 FFG listed fauna species 2. Route realigned to east side of Bints Rd between Harvest Home Rd and Lehmans Rd to avoid impacts on existing structure plan and proposed environmental mitigation	Poorly
To protect catchment values including surface water quality, stream flow, aquatic health and groundwater values, to the extent practicable	Mitigation measures would enable acceptable performance	Satisfactory	Mitigation measures would enable acceptable performance	Satisfactory	Mitigation measures would enable acceptable performance	Satisfactory	Mitigation measures would enable acceptable performance	Satisfactory
Objective 7: Avoid as far as possible, minimise where unavoidable and prepare a Cultural Heritage Management Plan to mitigate any Cultural Heritage Impacts								
Impact on Post settlement cultural heritage sites	Impact 4 Heritage Inventory sites and one Heritage Overlay site. All sites of local significance	Satisfactory	Impact 2 Heritage Inventory sites. All sites are of local significance	Well	Impact 2 Heritage Inventory sites. All sites are of local significance	Well	Impact 4 Heritage Inventory sites and 1 Heritage Overlay. All sites are of local significance	Satisfactory
Impact on Aboriginal cultural heritage sites	Impact 14 scatter sites. Assume river crossings of high potential significance	Poorly	No known impact but creeks could be potentially significant areas	Well	No known impact but creeks could be potentially significant areas	Well	Impact 17 scatter sites. and one earth feature. Assume river crossings of high potential significance	Poorly
To ensure rail design standards are met			Not determined at this point					

Objective 8: Minimise socio-economic impacts in relation to existing and future residential and industrial development and maximise potential for future urban development								
To have minimal impact on employment centres, major quarry resources and agricultural enterprises	1. Mariginal impacts on Boral Wollert quarry 2. Would impact 2 fewer properties/ agricultural enterprises from just south of Harvest Home Rd and north of possible interchange with Lehmans Rd		Would not increase the number of properties affected	Satisfactory	Would not increase the number of properties affected		1. Marginal impacts on Boral Wollert quarry. 2. Would impact 2 additional properties/ agricultural enterprises from just south of Harvest Home Rd and north of possible interchange with Lehmans Rd	Satisfactory
Industrial development. Other uses , utilities, service centres	Would impact CFA site and tennis courts on land zoned PPRZ. Alternative site to be proposed	Satisfactory					Would impact CFA site and tennis courts on land zoned PPRZ. Alternative site to be proposed	Satisfactory
Maximise potential for future development - Findon Road, Epping, to Bridge Inn Road, Wollert	This option would adversely impact an existing development proposal in accordance with approved structure plan within existing UGB	Very poorly	Not applicable		Not applicable		1. V3E6-2 would ensure full development of existing structure plan development within current Urban Growth Boundary between Harvest Home Rd and Lehmans Rd	Very Well
Bridge Inn Road, Wollert to Melbourne - Sydney Railway	This option would maximise the available land for future development, which is important due to the many constraints in this Investigation Area	Well	Not applicable		Not applicable		Not applicable	
Overall assessment re "Maximise potential for future development"		Satisfactory	Not applicable		Not applicable		Not applicable	
To protect residents' amenity and well-being, and minimise any dislocation of residents, to the extent practicable	Would impact 56 houses, and 114 properties with V1,2 and 3 E6-2	Poorly	No addition to number of houses affected	Satisfactory	No addition to number of houses affected	Satisfactory	An additional 2 houses/businesses would be affected overall	Satisfactory
To protect the character of significant landscapes, open space and recreation values, to the extent practicable	Would impact on Darebin Creek and Merri Creek	Satisfactory	Would impact on Darebin Creek and Merri Creek. Variations not sufficient to change overall assessment	Satisfactory	Would impact on Darebin Creek. Variations not sufficient to change overall assessment	Satisfactory	Would impact on Darebin Creek. Variations not sufficient to change overall assessment	Satisfactory
Air Quality - to have no exceedances of the SEPP intervention levels for all pollutants	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory
Noise - increase in noise after construction of noise barriers	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory
OVERALL OPTION ASSESSMENT	**Would maximise area for future development. Considered to outweigh social impacts which will change with long term future land use and environmental impacts**	**Satisfactory**	**Variation accepted as would save trees**	**Satisfactory**	**Variation accepted as best solution for link to Merriang Road**	**Well**	**Variation accepted as it would avoid the existing development proposal. This was considered to outweigh the the environmental and social disadvantages**	**Well**

Note: The precautionary principle has been adopted in relation to the assessment of Aboriginal cultural heritage. Most assessments have been rated as "Poorly" as detailed studies are yet to be carried out.

UGB: Urban Growth Boundary

EPBC: Environment Protection and Biodiversity Conservation Act 1999 (Australian Government)

FFG: Flora and Fauna Guarantee Act 1988 (Victorian Government)

CFA: Country Fire Authority

PPRZ: Public Park and Recreation Zone

Ratings of Performance: Very well | Well | Satisfactory | Poorly | Very Poorly

Table B2-3 Variations to Initial E6 Corridor Options Analysis

Objective Sub objective	Option E6-3		Variation VE6-3 (recommended over E6-3)	
	Details	**Rating**	**Details**	**Rating**
Description of Option	From north of Findon Rd, route would curve west, cross Darebin Creek and Bindts Rd, parallel with Bindts Rd west side , curving west at Bridge Inn Rd through the quarry to Epping Rd, continuing north approx 400m from and parallel with Epping Rd to just south of Grants Rd, crossing Merri Creek to join The OMR south of Donovans Lane		Alignment between South of Bridge Inn Rd and midway between Masons Rd and Bridge Inn Rd moved to E6-2 alignment between Lehmans Rd and Boundary/Bridge Inn Rd to provide a better interchange location and minimise impacts on existing quarry	
Objective 1: Serves Key international transport hubs, eg Melbourne and Avalon Airports, Port of Geelong, other Intermodal freight hubs and freight service economy areas			Not relevant to this assessment	
Objective 2: Serves key interstate and major regional destinations			Not relevant to this assessment	
Objective 3: Provides better links to residential and employment growth areas to the north and west of Melbourne, eg Werribee, Melton and Mickleham			Not relevant to this assessment	
Objective 4: The Project is capable of performing its function			Not relevant to this assessment	
Objective 5: The project is technically feasible				
Technically feasible interchanges	Yes overall, however in this section skewed crossing of Epping Rd in this section may create difficulties for any potential interchange at Summerhill/Masons Roads	Well	Yes - Would provide more direct connection to Boundary Rd and Bridge Inn Rd as a potential future arterial road and overcome issues at potential interchange site further north	Very Well
Objective 6: Avoid as far as possible, minimise where unavoidable and provide offsets for any Biodiversity impacts to achieve net gain				
To protect species and ecological communities listed under the *Flora and Fauna Guarantee Act 1988* (Vic) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and minimise impacts on other indigenous species and ecological communities to the extent practicable	1. Would impact native grassland 2. Potential impact on 3 EPBC listed fauna species and 8 FFG listed fauna species 3. Potential impact on biosites of national and regional significance 4. Impact on ESO 5. Significant impact on environmentally sensitive habitats and species	Very poorly	1. Potential impact on native vegetation 2. Impact on ESO	Satisfactory
Objective 7: Avoid as far as possible, minimise where unavoidable and prepare a Cultural Heritage Management Plan to mitigate any Cultural Heritage Impacts				
Impact on Post settlement cultural heritage sites	Would impact 1 Heritage Inventory site and 1 Heritage Overlay site all of local significance	Satisfactory	Would impact 5 Heritage Inventory sites and 1 Heritage Overlay site all of local significance	Satisfactory
Impact on Aboriginal cultural heritage sites	Impact 14 scatter sites. Assume river crossing of high potential	Poorly	No known aboriginal sites this area	Well
Objective 8: Minimise socio-economic impacts in relation to existing and future residential and industrial development and maximise potential for future urban development				
To have minimal impact on employment centres, major quarry resources and agricultural enterprises	1. Major Impacts on Hanson Wollert quarry 2. Would impact 17 fewer properties/agricultural enterprises from north of possible interchange with Lehmans Rd and south of Masons Rd 3. Total property impact E6-3 - 58 properties	Poorly	1. Significantly less impact on Hanson Wollert quarry 2. Would impact 17 additional properties/agricultural enterprises from north of possible interchange with Lehmans Rd and south of Masons Rd 3. Total property impact E6-3 with variation - 75 properties	Poorly
Industrial development. Other uses , utilities, service centres, intermodal sites	No known impacts	Well	Would impact CFA site and tennis courts on land zoned PPRZ. Alternative site to be proposed	Satisfactory
Maximise potential for future development	Not a deciding factor in this area		Not a deciding factor in this area	
To protect residents' amenity and well-being, and minimise any dislocation of residents, to the extent practicable	1. Would impact 9 houses / businesses 2. Three houses within existing PAO south of Findons Road would give total of 12 houses	Satisfactory	1. Would impact an additional 14 houses, from north of possible interchange with Lehmans Rd and south of Masons Rd 2. Total with this variation 23 houses/businesses, 26 with PAO	Poorly
To protect the character of significant landscapes, open space and recreation values, to the extent practicable	Would impact on Darebin Creek and Merri Creek	Satisfactory	Would impact on Darebin Creek. Variations not sufficient to change overall assessment	Satisfactory
Air Quality - to have no exceedances of the SEPP intervention levels for all pollutants	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory
Noise - increase in noise after construction of noise barriers	Acceptable (with suitable mitigation)	Satisfactory	Acceptable (with suitable mitigation)	Satisfactory
OVERALL OPTION ASSESSMENT	**Would not maximise area for future development.Considered to outweigh lesser social impacts which will change with long term future land use. Would have greater environmental impacts**	**Poorly**	**Variation accepted as would provide better interchange solution and minimise impacts on quarry. These aspects considered to outweigh social impacts. However overall assessment of E6-3 would not change as a result**	**Satisfactory**

Note: The precautionary principle has been adopted in relation to the assessment of Aboriginal cultural heritage. Most assessments have been rated as "Poorly" as detailed studies are yet to be carried out.

Ratings of Performance: Very well | Well | Satisfactory | Poorly | Very Poorly

ESO: Environmental Significance Overlay
SEPP: State Environment Protection Policy
PAO: Public Acquisition Overlay
CFA: Country Fire Authority
EPBC: Environment Protection and Biodiversity Conservation Act 1999 (Australian Government)
FFG: Flora and Fauna Guarantee Act 1988 (Victorian Government)

B2.4.2.4 VARIATION VE6-3 TO OPTION E6-3

This variation was intended to provide a better location for the two potential interchanges at Bridge Inn Road and Summerhill Road. The crossing point at Epping Road would result in technical difficulties, particularly with the more northerly interchange. The Bridge Inn Road interchange would have been too far east of Epping Road, while the Masons Lane interchange would have been located on too sharp a curve. This variation would require the acquisition of an additional 14 houses/businesses (including the CFA's Fire Station) and a further 17 properties. The variation would also minimise the impact on the Hanson Wollert quarry. This variation was supported for technical reasons.

Option E6-3 with variation VE6-3 is estimated to required the acquisition of 26 houses (including three in the existing PAO) and 75 properties overall. While this would be a lesser impact than E6-2, the future land use impacts were considered to outweigh this advantage.

B2.5 CONCLUSION

Option E6-2 with its variations V1E6-2, V2E6-2 and V3E6-2 was considered to be superior to all other options and is the preferred option for this transport corridor.