

# REFERRAL OF A PROJECT FOR A DECISION ON THE NEED FOR ASSESSMENT UNDER THE *ENVIRONMENT EFFECTS ACT 1978*

## REFERRAL FORM

The *Environment Effects Act 1978* provides that where proposed works may have a significant effect on the environment, either a proponent or a decision-maker may refer these works (or project) to the Minister for Planning for advice as to whether an Environment Effects Statement (EES) is required.

This Referral Form is designed to assist in the provision of relevant information in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Seventh Edition, 2006). Where a decision-maker is referring a project, they should complete a Referral Form to the best of their ability, recognising that further information may need to be obtained from the proponent.

**It will generally be useful for a proponent to discuss the preparation of a Referral with the Department of Planning and Community Development (DPCD) before submitting the Referral.**

If a proponent believes that effective measures to address environmental risks are available, sufficient information could be provided in the Referral to substantiate this view. In contrast, if a proponent considers that further detailed environmental studies will be needed as part of project investigations, a more general description of potential effects and possible mitigation measures in the Referral may suffice.

In completing a Referral Form, the following should occur:

- Mark relevant boxes by changing the font colour of the 'cross' to black and provide additional information and explanation where requested.
- As a minimum, a brief response should be provided for each item in the Referral Form, with a more detailed response provided where the item is of particular relevance. Cross-references to sections or pages in supporting documents should also be provided. Information need only be provided once in the Referral Form, although relevant cross-referencing should be included.
- Responses should honestly reflect the potential for adverse environmental effects. A Referral will only be accepted for processing once DPCD is satisfied that it has been completed appropriately.
- Potentially significant effects should be described in sufficient detail for a reasonable conclusion to be drawn on whether the project could pose a significant risk to environmental assets. Responses should include:
  - a brief description of potential changes or risks to environmental assets resulting from the project;
  - available information on the likelihood and significance of such changes;
  - the sources and accuracy of this information, and associated uncertainties.
- Any attachments, maps and supporting reports should be provided in a secure folder with the Referral Form.
- A CD or DVD copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. **Individual documents should not exceed 2MB.**

- A completed form would normally be between 15 and 30 pages in length. Responses should not be constrained by the size of the text boxes provided. Text boxes should be extended to allow for an appropriate level of detail.
- The form should be completed in MS Word and not handwritten.

The party referring a project should submit a covering letter to the Minister for Planning together with a completed Referral Form, attaching supporting reports and other information that may be relevant. This should be sent to:

Postal address

**Minister for Planning  
PO Box 500  
EAST MELBOURNE VIC 3002**

Couriers

**Minister for Planning  
Level 17, 8 Nicholson Street  
EAST MELBOURNE VIC 3002**

In addition to the submission of the hardcopy to the Minister, separate submission of an electronic copy of the Referral via email to [ees.referrals@dpcd.vic.gov.au](mailto:ees.referrals@dpcd.vic.gov.au) is encouraged. This will assist the timely processing of a referral.

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## PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

### 1. Information on proponent and person making Referral

<b>Name of Proponent:</b>	<b>Department of Transport</b>
<b>Authorised person for proponent:</b>	Hector McKenzie
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<b>Person who prepared Referral:</b>	Robert Abboud
<b>Position:</b>	Manager Project Co-ordination
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<b>Postal address:</b>	PO Box 2797 MELBOURNE VIC 3001
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<b>Facsimile number:</b>	03 9095 4096
<b>Available industry &amp; environmental expertise:</b> (areas of 'in-house' expertise & consultancy firms engaged for project)	<p>DoT has staff with extensive relevant experience in rail planning, construction and environmental management. Notwithstanding, a suitably qualified consulting firm has been engaged by DoT to undertake the necessary investigation and prepare the documentation required by the Minister for Planning.</p> <p>The consulting firm has worked under the guidance of DoT and comprised specialists with expertise in all the relevant aspects of the assessment.</p>

### 2. Project – brief outline

<b>Project title:</b>	Regional Rail Link - West Werribee to Deer Park.
<b>Project location:</b> (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context)	<p>The Regional Rail Link – West Werribee to Deer Park is part of the overall Regional Rail Link (from West Werribee to Southern Cross Station) project. The overall Regional Rail Link will separate metropolitan and regional trains in Melbourne's west, providing a massive boost to both networks. For simplicity and consistency the proposal will be referred to as RRL – West Werribee to Deer Park.</p> <p>The RRL – West Werribee to Deer Park will provide a north-south connection between the Ballarat Rail Corridor and Geelong Rail Corridor.</p> <p>The RRL – West Werribee to Deer Park, will cover a distance of 30 kilometres and crosses two municipalities:</p> <ul style="list-style-type: none"> <li>• City of Wyndham</li> <li>• Shire of Melton</li> </ul> <p>Please see Figure 1 (attached) for the location of the project.</p>

**Short project description** (few sentences):

The RRL - West Werribee to Deer Park project will provide for:

- A two-track railway with the potential in the longer term for expansion to a four-track railway for most of the route;
- Stations and associated infrastructure such as car parking;
- Grade separations at road intersections; and
- Train stabling yards.

**3. Project description****Aim/objectives of the project** (what is its purpose / intended to achieve?):

The objectives for the RRL - West Werribee to Deer Park are to:

- Free up capacity for suburban services, especially on the Werribee line;
- Increase the speed and capacity of regional rail services; and
- Provide high-quality public transport services in the growth areas of Wyndham and Melton.

**Background/rationale of project** (describe the context / basis for the proposal, eg. for siting):

The RRL - West Werribee to Deer Park has been identified in the *Victorian Transport Plan (2008)* as a project of nation-building significance and received \$3.2billion Commonwealth funding in the 2009 Budget. The project will upgrade both the regional and suburban railway networks in Melbourne's west by separating regional and suburban trains and unlocking rail network capacity. Furthermore the project will ensure that urban growth areas are served by high-quality public transport infrastructure early on in their development.

The RRL - West Werribee to Deer Park will provide benefits to the community, including:

- Reduced road congestion on the western and south-western metropolitan road corridors;
- Better public transport access to suburban and regional destinations;
- Increased passenger rail capacity for regional and suburban networks;
- Improved rail network reliability, and
- Relieved rail network congestion.

**Main components of the project** (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):

The RRL – West Werribee to Deer Park consists of the following major components:

### **Project corridor**

The project corridor will generally be 60m wide, but will be wider at locations where bridges, stations, car parking, train stabling and other facilities are required. Where the RRL – West Werribee to Deer Park runs through Wyndham Vale, it will share an existing 75m wide transport reservation with the proposed Armstrong Road, which is to be a four lane, two-way arterial road. The design of the project has enabled a four track railway and Armstrong Road can be accommodated in the 75m wide transport reservation.

### **Track arrangement**

Initially the project will require two tracks from West Werribee to Deer Park for Geelong and Warrnambool V/Line regional rail services to use. Depending on urban development in the surrounding areas, a further two tracks will be constructed in stages from north of the Werribee River in Tarneit to near Middle Road, Ravenhall. The extra tracks will accommodate "short-starter" regional rail services operating between Wyndham Vale and Southern Cross. South of Wyndham Vale station, the corridor will accommodate a pair of regional tracks and a pair of suburban tracks for the extension of the Werribee suburban rail service (see below for more detail concerning this extension).

### **Stations**

Upon opening of the railway, stations will initially be located at Wyndham Vale and Tarneit. Depending on future urban growth in the surrounding areas, additional stations can be opened at Dohertys Road in Truganina, Davis Road in Tarneit and near Sewells Road in Tarneit. Detailed design and the final names of all the stations will be confirmed later in the project's development.

### **Road and watercourse crossings**

Bridges will be built to grade separate the project from existing or likely future arterial roads. Most of the bridges will feature the road passing over the railway, which will result in ramps being constructed to achieve the necessary clearance heights. However, where the railway parallels the proposed Armstrong Road in Wyndham Vale between Ballan Road and Lollypop Creek, the bridges would be at natural surface level as the railway will be sunk into a cutting.

The project will require numerous watercourse crossings, most notably over Werribee River, Laverton Creek, Skeleton Creek, Davis Creek, Lollypop Creek and their tributaries. Detailed design of the project will indicate which crossings will require bridges, culverts or other solutions.

### **Levels**

Most of the railway will be constructed at or near natural surface level, however detailed design will refine the exact levels. The project will be partially sunk into a cutting in order to pass under the Deer Park Bypass at Ravenhall. Likewise, the project will be sunk into a cutting where it shares an existing corridor with the proposed Armstrong Road in Wyndham Vale. This results in the RRL – West Werribee to Deer Park and the proposed Armstrong Road fitting within the existing 75m transport reservation without impacting on land for service roads or containing existing dwellings. Where the project crosses waterways, it will be elevated to ensure that 100 year flood events do not close the railway nor adversely affect the flood regimes of waterways.

### **Regional stabling**

Stabling and depot facilities for V/Line trains will be built between Greens Road and Black Forest Road in Wyndham Vale to accommodate "short-starter" services originating or terminating at Wyndham Vale station. Ultimately this would provide stabling, basic cleaning and other minor facilities for five 8-carriage trains. This element is dependant on likely patronage stemming from urban growth in the area and would be constructed at a later stage than the initial railway.

### **Freight**

The project will make provision for construction of two freight tracks between the junction at Deer Park and Truganina for access to a potential intermodal freight terminal in Truganina. However, the project does not propose to reserve land or construct an intermodal terminal because demand from nearby industrial land uses and provision of separate funding will dictate the timing of any development.

### **Extension of Werribee suburban service**

Reservation of the land for the RRL – West Werribee to Deer Park will also include land to extend the existing suburban electric railway service from Werribee to Wyndham Vale. This component can be constructed either simultaneously with the RRL – West Werribee to Deer Park or at a later time. However in order to maximise benefits and facilitate future development it is essential that land to accommodate the Werribee extension is reserved at the same time as the land needed for the RRL - West Werribee to Deer Park. If the extension to Werribee is constructed later than the RRL – West Werribee to Deer Park, connection between Geelong and Werribee will be maintained in the meantime by either bus services between Wyndham Vale and Werribee or a rail shuttle between Geelong and Werribee.

The Werribee service would be extended via the existing Melbourne-Geelong railway corridor before branching northwards to parallel the two-track corridor for V/Line regional railway services, thereby creating a four-track railway corridor between Black Forest Road and Ballan Road, Wyndham Vale. A railway station served only by suburban trains would be constructed at Black Forest Road, Wyndham Vale, to serve future urban development in the surrounding area.

The Werribee extension also requires construction of stabling and depot facilities for suburban trains. The facilities are proposed to be located north of Ballan Road, Wyndham Vale, to allow trains to originate and terminate at Wyndham Vale. Ultimately these facilities would provide stabling and cleaning for thirty 6-carriage trains.

**Ancillary components of the project** (eg. upgraded access roads, new high-pressure gas pipeline; off-site resource processing):

The only ancillary component not considered in this proposal is the required access roads to any properties landlocked as a result of the project.

**Key construction activities:**

The precise construction activities to be undertaken to complete the RRL – West Werribee to Deer Park are not yet known. However, the construction of a new rail line typically consists of six main components. These components include track formation, ballast, sleepers, rail tracks, stations and stabling.

The construction sequence may be as follows:

- Establishment of a site compound
- Provision of access and storage locations
- Removal of exotic and native vegetation, bulk earthworks and compaction
- Installation of a capping layer and track formation
- Construction of drainage works, culvert modifications, bridgeworks and relocation of services
- Supply of track material to site
- Installation of 'bottom' ballast
- Track work, including installation of sleepers and rails
- Rail welding
- Installation of turnouts
- Re-ballasting and tamping up the track to the design level
- Construction of grade separations, stations and associated car parking and train stabling facilities.

**Key operational activities:**

The main operational activity will be rail traffic and ongoing track maintenance consistent with prevailing practices and standards. This may include the maintenance of landscaping, drains, bridges, signals and stations.

**Key decommissioning activities** (if applicable):

Not Applicable.

**Is the project an element or stage in a larger project?**

No  Yes If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages).

The RRL –West Werribee to Deer Park is one component of the overall Regional Rail Link project (see Section 2 for discussion of the overall project). There are two sections of the Regional Rail Link.

- **Section 1** of the Regional Rail Link runs from Southern Cross Station to Deer Park, providing an additional two tracks for use by regional rail services from Bendigo (diverging at Sunshine), Ballarat (remaining on existing Ballarat rail corridor) and Geelong (diverging at Deer Park to enter Section 2). This section is yet to be planned in detail although it is known that the route for Section 1 is predominantly along existing rail corridors. Section 1 is unlikely to present significant cumulative effects.
- **Section 2** is the subject of this referral and runs from Deer Park to West Werribee, providing a corridor of four tracks (initially two tracks) for use by regional trains from Geelong. Urban growth pressures in the vicinity of Section 2 (West Werribee to Deer Park) provide urgency to the reservation of the preferred alignment although reducing and addressing environmental, social and economic impacts are key elements in project planning.

Both sections of the overall Regional Rail Link can be developed independently and, while projects are normally referred in their entirety, in this case Section 1 is yet to be planned in detail and therefore detailed assessment of the impacts of Section 1 has yet to be undertaken. Section 1 is not essential to the operation of Section 2.

**Is the project related to any other past, current or mooted proposals in the region?**

No  Yes If yes, please identify related proposals.

The RRL – West Werribee to Deer Park is part of a larger Victorian Government Program that encapsulates the review of the Urban Growth Boundary, strategic environmental assessment of key biodiversity areas and the Outer Metropolitan Ring (OMR) Transport Corridor.

The release of *Melbourne @ 5 million* (the update to *Melbourne 2030*) outlined the implications of recent growth projections for Melbourne's future settlement pattern. Accordingly, the Victorian Government is undertaking an Urban Growth Boundary Review to ensure the projected growth, particularly on the western fringes of Melbourne, can be accommodated. Key to sustainable communities is providing key infrastructure to support basic needs, including mobility and access. Together with the RRL – West Werribee to Deer Park, a high speed 70 km long Outer Metropolitan Ring (OMR) Transport Corridor is intended to link Werribee, Melton, Tullamarine and Craigieburn/Mickleham. It will provide for inter-city travel and connect the metropolitan community to major employment areas and other freeways and highways.

*Melbourne @ 5 million* also identified the need for a strategic assessment of biodiversity values to occur in tandem with the Urban Growth Boundary Review, in recognition of the high biodiversity value of the western grasslands. A key objective of this assessment has been to identify likely areas for reservation and long-term protection of grassland habitats.

The Victorian Government has entered into an agreement with the Commonwealth under section 146 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to conduct a strategic assessment of the broader Program. If successful it is intended that this process will allow the Commonwealth to strategically approve any actions on matters of National Environmental Significance resulting from the Program, thus removing the need for later individual referrals and approvals under the EPBC Act.

The project is also related to development of a potential intermodal freight terminal in the Truganina area. A terminal has been proposed as part of the Victorian Government's *Freight Futures Strategy* (2008) to serve the Laverton North/Truganina industrial node with access to the Port of Melbourne and to state and national road and rail networks. The location, timing and cost of the intermodal terminal will be investigated by the Department of Transport separately to the RRL – West Werribee to Deer Park.

The project is related to development of Armstrong Road (formerly known as Middle Ring Road) through Wyndham Vale. The City of Wyndham is leading the development and design of Armstrong Road, which will ultimately provide a link from the Princes Freeway to Wyndham Vale, where it will share an existing 75m wide transport reservation. North of Ballan Road, Armstrong Road will cross the Werribee River to link with arterial roads in Tarneit. The design of the RRL – West Werribee to Deer Park along the 75m wide transport reservation has taken into account Armstrong Road but this project will not reserve or construct Armstrong Road.

#### 4. Project alternatives

**Brief description of key alternatives considered to date** (eg. locational, scale or design alternatives. If relevant, attach A4/A3 plans):

The process to select the preferred alignment option began with a broad range of options based on high-level engineering and environmental benefits and constraints. Route concepts with the greatest potential to meet the overall project objectives were short-listed. The route concepts included five options north of Leakes Road, Tarneit and six options south of Leakes Road, Tarneit.

Further assessment of the route concepts against preliminary land use planning objectives aimed at ensuring alignment options could support future urban development areas. This process reduced the number of Alignment Options to four north of Leakes Road and one south of Leakes Road (together with two connections to the existing Geelong railway). To determine the option that best met the project objectives, twelve specialist investigations assessed the reduced number of options against a range of environmental, social and economic project objectives and assessment criteria.

Specialist investigations were collated and presented at an alignment selection workshop. The engineering investigation deemed that Alignment Options N1 and N1B were incapable of meeting the operational plan and a refinement of Alignment Option N1 was presented: Alignment Option N1 – HAL02. Although all twelve specialist investigations assessed Alignment Option N1 – HAL02, agreement was reached that four of the specialist areas of investigation (transport planning, social impact, engineering design and land use planning) would be the significant factor to differentiating between it and previous alignment options.

Further refinement of Alignment Option N1 – HAL02 was undertaken that reduced the social impacts whilst not increasing any other impacts, resulting in Alignment Option N1- HAL02A being defined and identified as the alignment option north of Leakes Road that best met the project objectives. South of Leakes Road, Alignment Option S1 was the only alignment investigated by all twelve specialists.

Figure 2 illustrates the various project alternatives considered and the attached *Alignment Selection Overview* (Maunsell AECOM 2009) provides more detail about the process to determine the preferred alignment.

**Brief description of key alternatives to be further investigated** (if known):

Not Applicable.

## 5. Proposed exclusions

**Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:**

It is proposed to exclude Section 1 (Southern Cross to Deer Park) of the Regional Rail Link from this proposal because it has not yet been planned in detail and the impacts are yet to be determined. However, as it is primarily located within existing rail corridors between Deer Park and Southern Cross it is unlikely to have significant cumulative effects.

## 6. Project implementation

**Implementing organisation** (ultimately responsible for project, ie. not contractor):

The Department of Transport (DoT) will be the project implementing agency.

**Implementation timeframe:**

The construction of the RRL – West Werribee to Deer Park is scheduled to begin in 2011 and be completed by 2015.

**Proposed staging** (if applicable):

It is intended to construct the project progressively from Deer Park to West Werribee, although more detailed construction programs to be developed later on will need to confirm this staging.

## 7. Description of proposed site or area of investigation

**Has a preferred site for the project been selected?**

Yes

The RRL – West Werribee to Deer Park will be located between Deer Park and West Werribee in

the south-west of Greater Melbourne, providing a north-south connection between the Ballarat Rail Corridor and Geelong Rail Corridor. See attached Figure 1 for the location of the project.

**General description of preferred site**, (including aspects such as topography/landform, soil types/degradation, drainage/ waterways, native/exotic vegetation cover, physical features, built structures, road frontages; attach ground-level photographs of site, as well as A4/A3 aerial/satellite image(s) and/or map(s) of site & surrounds, showing project footprint):

### **Geology and Soils**

The profile of basalt rock along the proposed alignment is highly variable and pronounced changes in the rock depth generally occur over short distances. The soils of the study area are variable ranging from red friable earths and acidic texture contrast soils (Ferrosols and Kurosols) on the higher fertile plains to scoraceous material in the lower plains. A thick sequence of alluviums and/or colluviums may occur at the Werribee River crossing location.

### **Topography and Landform**

The topography of the RRL - West Werribee to Deer Park consists predominantly of plains derived from Newer Volcanics that are generally flat or gently undulating, with isolated hills at the location of eruption points and ancient lava flows. There are a series of low scarps ranging from two to five metres in height that are surface expressions of lava flows boundaries. With the exception of the Werribee River, the drainage courses in the region are moderately eroded and generally not deeply incised in the volcanic basalts. The Werribee River has been heavily eroded and is deeply incised into the basalts to depths in excess of 10 metres. The deposition of sediments at the base of the valley has formed flat areas that have since been incised along the current water course.

### **Drainage/waterways**

The RRL - West Werribee to Deer Park will intercept with 36 waterways including named and unnamed waterways and dams, within the Skeleton Creek, Laverton Creek, Lollypop Creek and Werribee River Catchments. Waterways along the preferred alignment fall broadly into three waterway categories including 'major waterways', 'discontinuous waterways with remnant pools', 'excavated channels/drains', waterways with 'undefined bed and banks' and unnamed 'dams'. See attached Figure 3 for a map showing waterways. Several waterways enter into a Ramsar wetland along the Werribee coast. The RRL - West Werribee to Deer Park does not cross any Ramsar wetland.

The Werribee River is highly regulated due to the presence of the Melton Reservoir upstream and flows are highly modified from the natural regime of a catchment of its size. The Werribee River has a breakout point upstream of Werribee. In events above the 30-year ARI event flow leaves the Werribee River, some of which rejoins the river further downstream, and some of which is diverted via a floodway into Lollypop Creek. In the 100-year ARI event approximately 170 m<sup>3</sup>/s spills into Lollypop Creek. Flooding (Areas of Inundation 100-year ARI Event Extents) is illustrated within Figure 7a and Figure 7b.

### **Native / exotic vegetation cover**

The majority of vegetation along the RRL - West Werribee to Deer Park is exotic grasslands dominated by pasture species and planted trees or shrubs.

Estimates produced by the Department of Sustainability and Environment based on an updated project footprint including grade separations, station footprints and train stabling areas indicate that a total of **82 hectares** of native vegetation will be impacted.

Prior to these DSE estimates, a preliminary flora and fauna assessment undertaken by Biosis Research noted that most native vegetation in the study area is highly modified and estimated **21.1 hectares** of Plains Grassland (EVC 132) and **0.25 hectares** of Plains Grassy Wetland (EVC 125) would be impacted and a further **23 hectares** of native vegetation (not yet scored) are also likely to be impacted.

The native grasslands of the region form part of the "Natural Temperate Grassland of the Victorian Volcanic Plain" listed under the *Environment Protection and Biodiversity Conservation*

(EPBC) Act 1999. As outlined in the Natural Temperate Grassland of the Victorian Volcanic Plain Policy Statement (Department of the Environment, Water, Heritage and the Arts, 2008), “the grassland supports a variety of nationally threatened animals and more than 20 threatened plants” and may support species of state and regional significance.

### **Built Structures**

The RRL – West Werribee to Deer Park passes adjacent to the Correctional Facility, Dame Phyllis Frost Centre which is adjacent to a large Boral Quarry. The RRL – West Werribee to Deer Park alignment crosses into agricultural lands in the central sections of the study area and will occur adjacent to a number of farm houses and sheds. In the Werribee Racecourse area, the proposed rail corridor crosses existing and future residential areas. These landuses are shown in Figure 4.

### **Roads**

The RRL – West Werribee to Deer Park will cross the Deer Park Bypass in the northern section of the alignment. Additionally the project will cross arterial roads at Robinsons Road, Derrimut road, Tarneit Road and Ballan Road. The remaining roads consist of rural and/or local roads such as Riding Boundary Road, Middle Road, Boundary Road, Dohertys Road, Davis Road, Leakes Road, Sayers Road, Manor Lakes Boulevard, Greens Road, Black Forest Road and Bulbans Road.

**Site area** (if known): Over 310 hectares

### **Route length**

The RRL – West Werribee to Deer Park is 30 kilometres in length.

### **Current land use and development:**

The following land uses have been identified within the RRL – West Werribee to Deer Park alignment:

- Agricultural land
- Rural residential land
- Existing and future residential land
- Public open space
- Department of Justice, Correctional Facility (Dame Phyllis Frost Centre).

**Description of local setting** (eg. adjoining land uses, road access, infrastructure, proximity to residences & urban centres):

The residential suburbs in the southern part of the RRL – West Werribee to Deer Park proposed alignment include the suburbs of Werribee and Hoppers Crossing. Radiating out from these suburbs and growing in a northerly and westerly direction are the newer suburbs of Wyndham Vale and Tarneit. The current position of the Urban Growth Boundary (UGB) limits residential urban expansion to Leakes Road in the north and the extractive industries in the west. The urban growth pressure in the area means future residential development that may be permitted because of changes to the Urban Growth Boundary will potentially jeopardise the proposed alignment of the RRL – West Werribee to Deer Park.

In the established suburbs the existing activity centres are Werribee Town Centre (Principal Activity Centre), Hoppers Crossing (Major Activity Centre) and Werribee Plaza (Major Activity Centre). In the growth areas, Manor Lakes (Major Activity Centre) is beginning to be developed and Rose Grange (Activity Centre) is yet to be constructed. There are a number of smaller centres within the residential areas.

Industrial suburbs include Laverton, Laverton North, Truganina and Deer Park. These industrial suburbs form part of a strategic industrial node of state importance. Heavy industry and transport logistics are key land users within the industrial node, both of which have potential to cause significant amenity issues due to noise, air pollution and traffic movement. This area has large lots and has excellent access to seaports, airports, road and rail infrastructure. Opportunities for future industrial urban growth are limited to the west of Laverton North.

Farming is the dominant land use west of the UGB. The areas to the north and west are used for broad acre cropping and grazing. Within the farming area and on the fringe of the UGB, is a rural living cluster of approximately 150 lots – this cluster is recognised in the Wyndham Planning Scheme as a rural living community. There are several other small groupings of rural living allotments and hobby farms throughout the study area, particularly along Leakes Road and Derrimut Road, but these have not been zoned as a rural living community.

See attached Figure 4 detailing the local setting around the project.

**Planning context** (eg. strategic planning, zoning & overlays, management plans):

The zones and overlays which the RRL - West Werribee to Deer Park alignment passes through are as follows:

- The area from the Mt Derrimut Road to Boundary Road is subject to the Melton Planning Scheme, and passes through the Mixed Use Zone (MUZ) to Robinsons Road. This section also passes through Public Use Zone Transport (PUZ4), Business Zone Three (B3Z), Green Wedge Zone, Special Use Zone 2 (SUZ2), Other Public Use Zone (PUZ7) and Farming Zone (FZ).

This area is subject to five planning overlays which are: DPO1, DPO13 (Development Plan Overlay); LSIO1 (Land Subject to Inundation Overlay); DDO1 (Design and Development Overlay) and PAO1 (Public Acquisition Overlay).

- The area from Boundary Road to Ballan Road is subject to the Wyndham Planning Scheme, and passes through the Green Wedge Zone (GWZ) and the Green Wedge A Zone (GWAZ) at the Davis Road and Leakes Road intersection.

This area is subject to two planning overlays which are: Heritage Overlay (HO39 – Truganina Township and Cemetery) and Environmental Significance Overlay (ESO1) which recognises waterways and riparian areas.

- The area from Ballan Road to Black Forest Road is subject to the Wyndham Planning Scheme, and passes through the Urban Growth Zone (UGZ), Business One Zone (B1Z) and Residential One Zone (R1Z).

This area is subject to four planning overlays which are: DPO5, DPO14, DPO2 (Development Plan Overlay) and Environmental Significance Overlay (ESO1) which recognises waterways and riparian areas.

- The area from Black Forest Road to Bulban Road/Manor Road is subject to the Wyndham Planning Scheme, and passes through the Urban Growth Zone (UGZ), Farming Zone (FZ) and Public Use Zone Transport (PUZ4). This area is not subject to any planning overlays.

- The area from Black Forest Road to Bulban Road is subject to the Wyndham Planning Scheme, and passes through the Urban Growth Zone (UGZ) and the Public Use Zone Transport (PUZ4). This area is subject to one planning overlay: Environmental Significance Overlay (ESO1) which recognises waterways and riparian areas.

See attached Figures 5 and 6 showing the zones and overlays respectively that apply to the area around the project.

**Local government area(s):**

The RRL - West Werribee to Deer Park will cover a distance of 30 kilometres and crosses two municipalities:

- City of Wyndham
- Shire of Melton

## 8. Existing environment

### Overview of key environmental assets/sensitivities in project area and vicinity

(cf. general description of project site/study area under section 7):

From desktop assessments the key environmental sensitivities along the RRL – West Werribee to Deer Park are:

- Significant vegetation community listed as Natural Temperate Grasslands of the Victorian Volcanic Plain under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. Vegetation associated with Ecological Vegetation Class (EVC) 132 – Plains Grassland and EVC 125 – Plains Grassy Woodland. The majority of both EVCs intersected by the project are highly modified.
- Listed flora and fauna species of State and Commonwealth significance. The Spiny Rice Flower is listed as Critically Endangered under the EPBC Act and is listed under the FFG Act. This species was recorded as occurring within the grassland habitats present in the locality and has potential to occur within the RRL – West Werribee to Deer Park alignment.
- Two registered Aboriginal sites along the RRL – West Werribee to Deer Park and a further three Aboriginal Sites within 500 metres of the corridor
- Major waterways including Werribee River, Skeleton Creek, Lollypop Creek that provide habitat for listed species and enter Ramsar Wetlands.
- Proximity to residential areas. The junction for the RRL – West Werribee to Deer Park is within the existing Ballarat railway corridor and adjacent to existing residential areas in Deer Park. The project also uses an existing 75m wide transport reservation through a residential area of Wyndham Vale.

## 9. Land availability and control

### Is the proposal on, or partly on, Crown land?

Yes If yes, please provide details.

Crown land will be affected by the RRL - West Werribee to Deer Park. Four separate crown land parcels will be impacted, these being:

- Werribee River crossing
- Crown reserve off Woods Rd adjoining Skeleton Creek
- Crown land parcels situated east of the Boral quarry in Ravenhall, located parallel to Christies Rd and adjoining Dame Phyllis Frost Facility, and Remand Centre

### Current land tenure (provide plan, if practicable):

There are 68 separate freehold title lots situated along the proposed corridor (excluding the Crown land). In character these include:

- Small acre hobby farms or rural residential lots (say 15% of freehold titles)
- Large conglomerate farm holdings (say 65% of freehold titles)
- Industrial or commercial (15% of freehold titles)
- Roads (mostly to be over/under passed) (say 5% of freehold titles).

### Intended land tenure (tenure over or access to project land):

Once the proposed alignment has been finalised and approved, any land affected by the proposed alignment would need to be acquired and ultimately placed in the ownership of VicTrack which is the State agency responsible for ownership of State rail land.

### Other interests in affected land (eg. easements, native title claims):

The project does not intersect with any native title claims. No other interests will be affected by the project.

## 10. Required approvals

**State and Commonwealth approvals required for project components** (if known):

### Commonwealth Approvals

The Victorian Government has entered into an agreement with the Commonwealth under section 146 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to conduct a strategic assessment of the broader Program. If successful it is intended that this process will allow the Commonwealth to strategically approve any actions on matters of National Environmental Significance resulting from the Program, thus removing the need for later individual referrals and approvals under the EPBC Act.

The Minister for the Environment, Heritage and the Arts is anticipated to release a decision on the Strategic Assessment during 2009.

### State Approvals

Relevant approvals will be sought in due course under the *Flora and Fauna Guarantee Act 1988*, *Planning and Environment Act 1987*, *Heritage Act 1995* and *Aboriginal Heritage Act 2007*.

**Have any applications for approval been lodged?**

No .

**Approval agency consultation** (agencies with whom the proposal has been discussed):

The approvals required for the RRL – West Werribee to Deer Park have been raised in detail with DPCD and DSE.

**Other agencies consulted:**

Consultation has occurred with Aboriginal Affairs Victoria and Melbourne Water as part of this project.

## PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

### 11. Potentially significant environmental effects

**Overview of potentially significant environmental effects** (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties):

The following environmental impacts identified from desktop assessments are considered of state or regional significance under the referral criteria:

- Removal of approximately **82 hectares** of the Plains Grassland EVC. This is the result of estimates produced by the Department of Sustainability and Environment based on an updated project footprint including grade separations, station footprints and train stabling areas.

Prior to these DSE estimates, a preliminary flora and fauna assessment undertaken by Biosis Research noted that most native vegetation in the study area is highly modified and estimated **21.1 hectares** of Plains Grassland (EVC 132) and **0.25 hectares** of Plains Grassy Wetland (EVC 125) would be impacted and a further **23 hectares** of native vegetation (not yet scored) are also likely to be impacted. Biosis Research concluded that this EVC is of Very High Conservation significance although the quality of the Plains Grassland that will be removed was generally found to be poor. Removal of vegetation along the RRL – West Werribee to Deer Park may cause the following indirect effects:

- Loss of habitat areas
- Fragmentation of habitat
- Potential introduction and spread of weeds

These impacts will be short term and the extent and significance of these impacts will be minimised and addressed in an Environment Management Plan and by developing offset measures.

- Loss of FFG and EPBC listed Spiny Rice Flower (*Pimelea spinescens subsp spinescens*). This species is listed under the FFG Act and is listed as Critically Endangered under the EPBC Act. This species was recorded during flora and fauna surveys within the habitats present within the locality of the alignment. However, in the absence of a targeted search it cannot be determined with confidence whether or not a significant proportion of the population of this species will be impacted.
- Two registered Aboriginal sites along the RRL – West Werribee to Deer Park and a further three Aboriginal Sites within 500 metres of the corridor.
- Major waterways including Werribee River, Skeleton Creek, Lollypop Creek that provide habitat for listed species and enter Ramsar Wetlands. Listed species potentially occurring in or around these waterways include:
  - Australian Grayling
  - Yarra Pygmy Perch
  - Australian Mudfish
  - Growling Grass Frog
  - Striped Legless Lizard
  - Australian Painted Snipe
  - Australasian Bittern
- Impacts to local residents through:
  - Increases in noise and vibration. Increases in noise will affect residencies close to the railway line. Vibration and groundborne noise were not considered an issue of concern.
  - Reduction in air quality, particularly from dust during construction. Impacts will be reduced by implementing dust control measures such as stabilising disturbed soil through watering or sowing, undertaking rehabilitation of disturbed areas as soon as

- possible.
- Visual impacts. Impacts can be reduced through landscaping and other measures.
  - Partial or full property severance of 68 properties (or 74 if Crown land etc parcels are included). Impacts will be reduced with an Access Restoration Strategy and regular dialogue with impacted landholders. Once the proposed alignment has been finalised and approved, acquisition would be undertaken in accordance with the requirements of the *Land Acquisition and Compensation Act*.

## 12. Native vegetation, flora and fauna

### Native vegetation

**Is any native vegetation likely to be cleared or otherwise affected by the project?**

Yes If yes, answer the following questions and attach details.

**What investigation of native vegetation in the project area has been done?** (briefly describe)

The following investigations have previously been undertaken in the vicinity of RRL – West Werribee to Deer Park.

- *Growth Areas Authority (2008 – 2009)*. This study mapped the distribution of patches of native vegetation on private property in Melton and Wyndham shires.
- *Flora and Fauna Assessment of Werribee Rail Corridor between Maidstone Street, Galvin and Lollypop Creek, Werribee, Victoria 2006* (Biosis Research). This desktop study identified remnant native vegetation along the Werribee Rail corridor east of Lollypop Creek and scattered degraded remnants of Plains Grassland and wetland vegetation within the rail reserve between Lollypop Creek and Werribee.
- *Flora and Fauna Review Study and Net Gain Assessment for the Proposed Deer Park Bypass: Addendum Report on Option 2005* (Biosis Research). This desktop assessment identified a number of remnants of Plains Grassland south of the Melbourne to Ballarat Railway at Tarneit. The study area boundaries were north of Riding Boundary Road, west of Robinsons Road and east of Hopkins Road.
- *Ravenhall Grasslands: Biodiversity Assessment 2003* (Ecology Australia). A desktop flora and fauna assessment of land owned by the Department of Justice at Ravenhall prior to the construction of the remand centre. This area now includes the Ravenhall Grassland Reserve and an easement owned by the DoT, all of which is managed by Parks Victoria.

For this project, Biosis Research were engaged to produce a report known as *Preliminary flora and fauna assessment of alignment options for the Regional Rail Link – West Werribee to Deer Park, Victoria (2009)*. This study uses the *GAA (2008 – 2009)* data, together with additional sources, to assess the alignment options for the project. The *GAA (2008 – 2009)* data was supplemented with information supplied by the Department of Sustainability and Environment. The breakdown of data sources for the *Biosis Research (2009)* report is shown below. Please note that *Biosis Research (2009)* report investigated a 75m wide study area.

Project Section	Hectares - GAA (2008-2009) data	Hectares- DSE Roadside data	Hectares- Not assessed	Total Hectares
N1 – HAL02A	39.98 (34%)	37.11 (32%)	39.16 (33%)	116.25
S1	44.78 (59%)	30 (39%)	0.92 (1%)	75.7
S4	0	0	31.09 (100%)	31.09
S5	8.32 (22%)	20.49 (53%)	9.46 (25%)	38.27
Total	93.08 (36%)	87.6 (34%)	80.63 (30%)	261.31

Since then, development of the project has included additional elements of grade separations, railway stations and train stabling areas to the project footprint. Estimates produced by the Department of Sustainability and Environment based on the updated project footprint indicate that an additional area of approximately 40 hectares of native vegetation would be impacted once those additional elements (plus areas where no information was previously available for the *Biosis Research (2009)* report) are included.

**What is the maximum area of native vegetation that may need to be cleared?**

**Estimated area** The Department of Sustainability and Environment estimates a total of 82.5 hectares to be removed. Prior to this, *Biosis Research (2009)*, assessing a 75m wide study area along the project, estimated a total of 44.7 hectares. The earlier estimate was based on a project footprint that did not include grade separations, railways stations and train stabling areas as these had not been fully developed at that time.

**How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?**

N/A ..... approx. percent (if applicable)

**Which Ecological Vegetation Classes may be affected?** (if not authorised as above)

Preliminary/detailed assessment completed. If assessed, please list.

As described in the *Biosis Research (2009)* report, the vegetation to be impacted by the project consists of 21.1 hectares of Plains Grassland (EVC 132) which translates to a Habitat Hectare Assessment under the *Native Vegetation Management Framework* of 9.59 hectares. Furthermore 0.25 hectares of Plains Grassy Wetland (EVC 125) will be affected, translating to 0.11 Habitat Hectares.

*Biosis Research (2009)* estimates that a further 23.5 hectares of native vegetation will be impacted however to date this has not been scored under the *Native Vegetation Management Framework*. The area affected runs between Derrimut Road, Tarneit and Middle Road, Ravenhall and has not been subject to full flora assessment due to inability to access some properties.

*Biosis Research (2009)* details the following vegetation impacts of the project as shown in the table below.

Project Section	Total Native Veg.	Plains Grassland EVC 132		Plains Grassy Wetland EVC 125		Degraded Treeless Vegetation (DTV)		Native Not Scored
		Ha	HHa	Ha	HHa	Ha	HHa	
N1 – HAL02A	33.16	16.87	7.66	0	0	23.11	NA	16.29
S1	11.52	4.25	1.93	0.25	0.11	48.6	NA	7.27
S4	Not determined (ND)	ND	ND	ND	ND	ND	ND	ND
S5	0	0	0	0	0	8.32	NA	0
Total	44.68	21.12	9.59	0.25	0.11	80.03	NA	23.56

Since then, development of the project has included additional elements of grade separations, railway stations and train stabling areas to the project footprint. Estimates produced by the Department of Sustainability and Environment based on the updated project footprint indicate that an additional area of approximately 40 hectares of native vegetation would be impacted once those additional elements (plus areas where no information was previously available for the *Biosis Research (2009)* report) are included.

Estimates produced by the Department of Sustainability and Environment based on an updated project footprint including grade separations, station footprints and train stabling areas indicate that a total of up to **82 hectares** of EVCs will be impacted.

**Have potential vegetation offsets been identified as yet?**

Yes If yes, please briefly describe.

Offsets will be provided within the grassland reserves to be established as part of the larger Victorian Government Program that encapsulates the review of the Urban Growth Boundary and associated infrastructure projects.

**Other information/comments?** (eg. accuracy of information)

While data is available through the GAA assessment process, a number of properties along the proposed routes could not be inspected directly. However flora and fauna assessment for this project suggests that these areas are unlikely to support significant areas of relatively intact native

vegetation.

The *Biosis Research (2009)* report investigated a 75m wide study area. Since then, development of the project has included additional elements of grade separations, railway stations and train stabling areas to the project footprint. Estimates produced by the Department of Sustainability and Environment based on the updated project footprint indicate that an additional area of approximately 40 hectares of native vegetation would be impacted once those additional elements (plus areas where no information was previously available for the *Biosis Research (2009)* report) are included.

NYD = not yet determined

## Flora and fauna

### What investigations of flora and fauna in the project area have been done?

(provide overview here and attach details of method and results of any surveys for the project & describe their accuracy)

In addition to the studies and assessment above (*GAA (2008 – 2009)*, *Biosis Research (2006)*, *Biosis Research (2005)*, and *Ecology Australia (2003)*) a flora and fauna assessment was undertaken of the RRL – West Werribee to Deer Park alignment in January 2009 (*Biosis Research*).

As well as using the *GAA (2008 - 2009)* data, the *Biosis Research (2009)* assessment included some additional assessment undertaken from public vantage points. The presence of native vegetation was estimated through the use of visual cues and also from available aerial photography. The condition of the vegetation was determined based on what was observed from the road reserve, aerial photography interpretation, and condition assessment of other neighbouring properties.

A detailed flora assessment was undertaken as part of the western region GAA surveys as detailed within the above information, and was conducted between October 2008 and February 2009.

Apart from incidental survey during the GAA survey, no targeted fauna surveys have been conducted and the following information is based on existing database records and the consultant's familiarity with the flora and fauna of the area.

### Have any threatened or migratory species or listed communities been recorded from the local area?

Yes If yes, please:

- List species/communities recorded in recent surveys and/or past observations.
- Indicate which of these have been recorded from the project site or nearby.

### Significant Vegetation Communities

Under the EPBC Act, a significant vegetation community listed as Natural Temperate Grasslands of the Victorian Volcanic Plain has been identified. Under the State framework, communities identified within the proposed corridor consist of Plains Grassland (EVC 132) and Plains Grassy Wetland (EVC 125). No other listed communities are known to occur within the RRL – West Werribee to Deer Park alignment.

### Significant Flora Species

Listed species potentially occurring in the local area are shown in the table below.

Scientific Name	Common Name	EPBC Act Status	FFG Act Status	Occurrence in Local Area
<i>Amphibromus fluitans</i>	River swamp Wallaby Grass	Vulnerable		Unlikely
<i>Carex tasmanica</i>	Curly Sedge	Vulnerable	Listed	Negligible
<i>Dianella amoena</i>	Matted Flax-lily	Endangered		Unlikely
<i>Diuris basaltica</i>	Small Golden Moths	Endangered	Listed	Unlikely
<i>Diuris fragrantissima</i>	Sunshine Orchid	Endangered		Unlikely
<i>Glycine latrobeana</i>	Glover Glycine	Vulnerable	Listed	Unlikely
<i>Pimelea spinescens</i> var <i>spinescens</i>	Spiny Rice Flower	Critically Endangered	Listed	Recorded
<i>Prasophyllum</i>	Maroon Leek-orchid	Endangered	Listed	Unlikely

<i>frenchii</i>				
<i>Prasophyllum suaveolens</i>	Fragrant Leek-orchid	Endangered	Listed	Unlikely
<i>Rutidosia leptorhynchoides</i>	Button Wrinklewort	Endangered		Unlikely
<i>Senecio macrocarpus</i>	Large-fruited Fireweed	Vulnerable		Likely
<i>Austrostipa exilis</i>	Heath Spear-grass			Unlikely
<i>Diuris punctata var punctata</i>	Purple Diuris		Listed	Unlikely
<i>Comesperma polygaloides</i>	Small Milkwort		Listed	Unlikely
<i>Cullen parvum</i>	Small Scurf-pea		Listed	Likely
<i>Cullen tenax</i>	Tough Scurf-pea		Listed	Likely
<i>Dianella sp aff longifolia</i>	Arching Flax-lily			Likely
<i>Diuris palustris</i>	Swamp Diuris		Listed	Unlikely

### Significant Fauna Species

Listed species potentially occurring in the local area are shown in the table below.

Scientific Name	Common Name	EPBC Act	FFG Act	Occurrence in the Local Area
<i>Pedionomus torquatus</i>	Plains Wanderer	Vulnerable	Listed	Likely
<i>Rostratula australis</i>	Australian Painted Snipe	Vulnerable	Listed	Likely
<i>Botaurus poiclotilus</i>	Australasian Bittern		Listed	Likely
<i>Polytelis swainsonii</i>	Superb Parrot	Vulnerable	Listed	Unlikely
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	Critically Endangered	Listed	Unlikely
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Listed	Unlikely
<i>Anthochaera phrygia</i>	Regent Honeyeater	Endangered	Listed	Unlikely
<i>Dasyurus maculatus</i>	Spot-tailed Quoll	Endangered	Listed	Unlikely
<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot	Endangered		Unlikely
<i>Perameles gunnii</i>	Eastern Barred Bandicoot	Endangered	Listed	Negligible
<i>Pteropus poliocephalus</i>	Grey-headed Flying Fox	Vulnerable	Listed	Unlikely
<i>Pseudomys fumeus</i>	Smokey Mouse	Endangered	Listed	Negligible
<i>Delma impar</i>	Striped Legless Lizard	Vulnerable	Listed	Recorded
<i>Tympanocryptis pinguicollis</i>	Grassland Earless Dragon	Endangered	Listed	Unlikely
<i>Litoria raniformis</i>	Growling Grass Frog	Vulnerable	Listed	Recorded
<i>Macquaria australasica</i>	Macquarie Perch	Endangered	Listed	Negligible
<i>Prototroctes maraena</i>	Australian Grayling	Vulnerable	Listed	Likely
<i>Galaxiella pusilla</i>	Dwarf Galaxias	Vulnerable	Listed	Unlikely
<i>Nannoperca obscura</i>	Yarra Pygmy Perch	Vulnerable	Listed	Likely
<i>Synemon plana</i>	Golden Sun Moth	Critically Endangered	Listed	Likely
<i>Turnix pyrrhotorax</i>	Red-chested Button-quail		Listed	Likely
<i>Lewinia pectoralis</i>	Lewin's Rail		Listed	Likely
<i>Porzana pusilla</i>	Bailons Crake		Listed	Likely
<i>Hydroprogne caspia</i>	Caspian Tern		Listed	Unlikely
<i>Sternula nereis</i>	Fairy tern		Listed	Unlikely
<i>Xenus cinereus</i>	Terek Sandpiper		Listed	Unlikely
<i>Calidris tenuirostris</i>	Great Knot		Listed	Unlikely
<i>Egretta garzetta</i>	Little Egret		Listed	Likely
<i>Ardea intermedia</i>	Intermediate Egret		Listed	Unlikely
<i>Ardea modesta</i>	Eastern Great Egret		Listed	Likely
<i>Anseranas semipalmata</i>	Magpie Goose		Listed	Unlikely
<i>Stictonetta naevosa</i>	Freckled Duck		Listed	Unlikely
<i>Aythya australis</i>	Hardhead			Unlikely
<i>Oxyura australis</i>	Blue-billed Duck		Listed	Unlikely
<i>Biziura lobata</i>	Musk Duck			Unlikely
<i>Accipiter novaehollandiae</i>	Grey Goshawk		Listed	Unlikely
<i>Haliaeetus leucogaster</i>	White-bellied Sea-eagle		Listed	Unlikely
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail Bat		Listed	Likely

<i>Pseudophyrne bibronii</i>	Brown Toadlet		Listed	Unlikely
<i>Neochanna cleaveri</i>	Australian Mudfish		Listed	Likely

The following threatened migratory species have been recorded from the local area:

Scientific Name	Common Name	Last record
<i>Chlidonias leucopterus</i>	White-winged Black Tern	1986
<i>Hydroprogne caspia</i>	Caspian Tern	2001
<i>Charadrius bicinctus</i>	Double-banded Plover	2006/#
<i>Limosa limosa</i>	Black-tailed Godwit	2006
<i>Limosa lapponica</i>	Bar-tailed Godwit	1987
<i>Tringa glareola</i>	Wood Sandpiper	1988
<i>Actitis hypoleucos</i>	Common Sandpiper	2003
<i>Tringa nebularia</i>	Common Greenshank	2006
<i>Tringa stagnatilis</i>	Marsh Sandpiper	2006
<i>Xenus cinereus</i>	Terek Sandpiper	1986
<i>Calidris ferruginea</i>	Curlew Sandpiper	2006/#
<i>Calidris ruficollis</i>	Red-necked Stint	2006/#
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	2001/#
<i>Calidris tenuirostris</i>	Great Knot	1982
<i>Calidris alba</i>	Sanderling	1987
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	1986
<i>Gallinago hardwickii</i>	Latham's Snipe	2006/#
<i>Rostratula australis</i>	Australian Painted Snipe	1985/#
<i>Plegadis falcinellus</i>	Glossy Ibis	1997
<i>Ardea modesta</i>	Eastern Great Egret	2005/#
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	2001/#
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	#
<i>Merops ornatus</i>	Rainbow Bee-eater	1988/#
<i>Hirundapus caudacutus</i>	White-throated Needletail	1988/#
<i>Apus pacificus</i>	Fork-tailed Swift	1990/#
<i>Rhipidura rufifrons</i>	Rufous Fantail	2002/#
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	#
<i>Acrocephalus stentoreus</i>	Clamorous Reed Warbler	2007
<i>Anthochaera phrygia</i>	Regent Honeyeater	#
<i>Philomachus pugnax</i>	Ruff	1986
<i>Sterna hirundo</i>	Common Tern	1987
<i>Calidris subminuta</i>	Long-toed Stint	2006
<i>Ardea ibis</i>	Cattle Egret	2005/#
<i>Calidris melanotos</i>	Pectoral Sandpiper	1998

*Biosis Research (2009)* provides a detailed list of all native species recorded within the locality (Appendix 2 and 4).

**If known, what threatening processes affecting these species or communities may be exacerbated by the project?** (eg. loss or fragmentation of habitats) Please describe briefly.

During construction the following impacts have been identified. These have been divided into direct and indirect and are identified below:

#### Direct

- Removal of native vegetation;
- Potential removal of significant flora species;
- Reductions in population size of some regionally significant flora species;
- Reduction in viability of retained vegetation as habitat;
- Removal or modification of habitat (terrestrial and instream) for significant fauna species;

- Localised loss of instream habitat due to placement of temporary or permanent waterway crossing structures (e.g. culverts, pylons);
- Localised loss of instream habitat through removal of riparian vegetation (sources of woody debris), damage to banks and subsequent erosion, sedimentation and smothering of habitat;
- Alteration to drain hydrology (e.g. volume, flow);
- Creation of barriers to fish passage; and
- Disturbance of sediments.

#### Indirect

- Deterioration in water quality (particularly increased sediments, suspended solids, nutrients, organic material, toxicants, litter and bacteria) of waterways traversed and a subsequent alteration in downstream riparian and instream vegetation/habitat. The deterioration of water quality could occur via instream construction activities, runoff, airborne transport of spray or dust, or a spillage event.
- Loss of any vegetation that survives construction process as a result of changed environmental conditions, particularly through weed invasion.
- Loss of populations of some fauna species from the site;
- Accidental loss of or damage to retained vegetation during the construction phase.
- Reduced viability of some fauna species on the site in the longer term due to reductions in population size and reduced habitat area.
- Degradation of habitat values in the local area due to incremental loss of remnant vegetation.

During operation, two threatening processes may affect flora and fauna. These are:

- Movement of weeds or other pests along the rail corridor. This can lead to new infestations in areas previously not affected by particular pest species.
- Train traffic altering current fire management practices. This may lead to changes in fire regimes.

#### Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?

Yes If yes, please:

Species protected under the *Flora and Fauna Guarantee Act* and *Environment Protection and Biodiversity Conservation Act* that may be potentially impacted by the RRL – West Werribee to Deer Park include:

#### Flora

- *Pimelea spinescens var spinescens* (Spiny Rice-flower) (FFG and EPBC listed);
- *Senecio macrocarpus* (Large-fruit Fireweed) (EPBC listed)
- *Cullen parvum* (Small Scurf-pea) (FFG listed);
- *Cullen tenax* (Tough Scurf-pea) (FFG listed);

#### Fauna

- *Delma impar* (Striped Legless-Lizard) (FFG and EPBC listed);
- *Litoria raniformis* (Growling Grass Frog) (FFG and EPBC listed);
- *Synemon plana* (Golden Sun Moth) (FFG and EPBC listed);
- *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail Bat) (FFG listed);
- *Pedionomus torquatus* (Plains Wanderer) (FFG and EPBC listed);
- *Turnix pyrrhotorax* (Red-chested Button Quail) (FFG listed);
- *Lewinia pectoralis* (Lewin's Rail) (FFG listed);
- *Rostratula australis* (Australian Painted Snipe) (FFG and EPBC listed);
- *Botaurus poicilotilus* (Australasian Bittern) (FFG listed);
- *Porzana pusilla* (Bailon's Crane) (FFG listed);
- *Egretta garzetta* (Little Egret) (FFG listed);
- *Ardea modesta* (Eastern Great Egret) (FFG listed);

#### Fish

- *Prototroctes maraena* (Australian Grayling) (FFG and EPBC listed);
- *Nannoperca obscura* (Yarra Pygmy Perch) (FFG and EPBC listed);
- *Nechanna cleaveri* (Australian Mudfish) (FFG listed).

*Biosis Research (2009)* identified that the proposed alignment is also likely to impact on Natural Temperate Grassland of the Victorian Volcanic Plain listed under the EPBC Act. Under the FFG Act this community is listed as the Western (Basalt) Plains Grassland Community.

- *Indicate which species or communities could be subject to a major or extensive impact (including the loss of a genetically important population of a species listed or nominated for listing) Comment on likelihood of effects and associated uncertainties, if practicable.*

*Biosis Research (2009)* identified that the proposed alignment is likely to impact on Natural Temperate Grassland of the Victorian Volcanic Plain listed under the EPBC Act. Under the FFG Act this community is listed as the Western (Basalt) Plains Grassland Community.

Estimates produced by the Department of Sustainability and Environment based on an updated project footprint indicate that an area of approximately 82 hectares of native vegetation will be impacted once additional project elements not available for the *Biosis Research (2009)* report (plus areas where no information was previously available for the *Biosis Research (2009)* report) are included. This represents less than 0.01% of the current known distribution of this community. Therefore the impacts are expected to be very minor over the entire range of the community.

*Biosis Research (2009)* identified that the project will result in the loss of **21.1 ha** of Volcanic Plains Grassland (Plains Grassland (EVC 132)) which translates to **9.59 Habitat Hectares** under the *Native Vegetation Management Framework*. The project will also result in clearance of **0.25 ha** of Plains Grassy Wetland (EVC 125), translating to **0.11 Habitat Hectares**.

#### **Is mitigation of potential effects on indigenous flora and fauna proposed?**

Yes If yes, please briefly describe.

There are a number of options to mitigate potential ecological impacts of the project. Subject to further targeted field surveys the key potential areas for mitigation include:

- Detailed design to minimise vegetation and habitat loss;
- Provision of fauna underpasses or overpasses at key locations;
- Use of best-practice design for crossing waterways and for dealing with runoff; and
- Use of best-practice construction protocols to minimise impacts associated with soil disturbance, spread of weeds and pathogens and incidental damage to retained areas.

Further measures include:

- All waterway crossings (temporary and permanent) must be designed to allow for unimpeded fish passage in accordance with guidelines for fish friendly waterway crossings (Fairfull & Wetheridge 2003). The type of structure used should be based on the specific characteristics of the waterway concerned.
- All waterway crossings (temporary and permanent) should be designed to cater for the full range of flows, flow levels and amount of debris that could be expected at each location;
- All areas of retained native vegetation, including scattered trees, should be protected during construction;
- Follow appropriate hygiene measures are applied for all machinery to ensure environmental weeds are not introduced into new areas;
- Control all noxious and woody environmental weeds arising from the proposed works; and
- Ensure equipment storage and materials stockpiles are not located in areas of adjacent remnant vegetation.
- Use of site indigenous native species for any landscape plantings will enhance any retained natural values of the study area. Plantings should contain species of local provenance and be appropriate for the EVC present in the surrounding environment. If native vegetation is to be removed, seeds could be collected from these plants in advanced and propagated for use in any site rehabilitation works.
- Construction works need to be managed to minimise land disturbance, soil erosion (including dust) and the discharge of sediments and other pollutants to surface waters. Effective management practices that are consistent with guidance from the Environmental Protection Authority, including those provided in *Environmental Guidelines for Major Construction Sites (1996)* as amended and *Construction Techniques for Sediment Pollution Control (1991)* should be implemented. EPA Publication 960 (2004) also provides useful guidance on temporary environmental protection measures applicable to construction sites;

- Where appropriate, threatened species likely to be destroyed within a route approved for construction should be considered for salvage and translocation.

**Other information/comments?** (eg. accuracy of information)

The objectives of the *Biosis Research (2009)* assessment were to provide:

- A description of the ecological values and biodiversity of each of the proposed options based on existing data;
- An appraisal of any implications for each option arising from State and Commonwealth environmental or biodiversity legislation or policy;
- An objective assessment of the potential impacts of the proposed options on terrestrial and aquatic values;
- A indication of opportunities to avoid, minimise or mitigate these potential impacts through design or management; and
- A list of knowledge gaps and any recommendations for additional assessment.

The following qualifications apply to the *Biosis Research (2009)* assessment:

- The assessment was initially a preliminary desktop assessment to identify which of the initial route options provided would have the least ecological impact. While data is available through the GAA assessment process, a number of properties along the proposed routes could not be inspected directly and the presence or absence of native vegetation in these areas is based on aerial photo interpretation and visual inspections from public access points. The assessment investigated basic study area corridors of 75m width for the alignment options. Since then, development of the project has included additional elements of grade separations, railway stations and train stabling areas to the project footprint.
- The assessment includes only vascular flora (ferns, conifers and flowering plants), vertebrate fauna (birds, mammals, reptiles, frogs, fish), decapod crustacea (crayfish, prawns, shrimp, crabs) and threatened invertebrate fauna (e.g. insects). Non-vascular flora (e.g. mosses, liverworts) were not sampled.
- The Victorian Aquatic Fauna (VAF 2005) currently provides data recorded up to December 2003. The Flora Information System (FIS) and the Atlas of Victorian Wildlife (AVW) databases currently provide data recorded up to June 2007. Data submitted since that time is not available.
- Field mapping is conducted using hand-held (uncorrected) GPS units and aerial photo interpretation. The accuracy of this mapping is therefore subject to the accuracy of the GPS units (manufacturer states +/- 15m but generally +/-2 to 5 metres) and dependent on the limitations of aerial photo resolution, rectification and registration. As such, these points should not be relied on for survey grade design purposes.
- For the purposes of this assessment the limit of the resolution for the habitat hectare assessment process is taken to be 0.01 habitat hectares. That is, if native vegetation is present with sufficient cover but its condition and extent would not result in the identification of at least 0.01 habitat hectares then that vegetation will be considered as part of the broader area of predominantly introduced vegetation in which it occurs.

### 13. Water environments

**Will the project require significant volumes of fresh water (eg. > 1 GL/yr)?**

NYD .

Although the amount of water has not yet been determined, the construction phase will require water use during:

- The construction of road bridges,
- Extensive cutting at Wyndham Vale and around the Deer Park Bypass
- Rail bridges over waterways; and
- Water spray down for dust management.

Operation of the project will not require significant volumes of water (>1 GL/yr).

**Will the project discharge waste water or runoff to water environments?**

Yes If yes, specify types of discharges and which environments.

Waterways along the RRL – West Werribee to Deer Park may be affected by construction activities where crossing infrastructure is placed over waterways (such as bridges, culverts and pylons). A number of direct impacts may impact water quality of crossed rivers as a result of construction activities such as:

- Instream construction activities,
- Runoff from construction area,
- Chemical/fuel spill
- Airborne transport of spray or dust.

This could also lead to subsequent alteration in downstream riparian and instream vegetation/habitat. Water volume and flow may be impacted during construction due to placement of temporary or permanent waterway crossing structures (e.g. culverts, pylons).

Increases in impervious areas at stations due to platforms, parking etc have the potential to increase runoff, and generate water quality issues

**Are any waterways, wetlands, estuaries or marine environments likely to be affected?**

- Yes If yes, specify which water environments, answer the following questions and attach any relevant details.

The RRL - West Werribee to Deer Park will intercept with 19 waterways including named and unnamed waterways and dams, within the Skeleton Creek, Laverton Creek, Lollypop Creek and Werribee River Catchments. The named waterways within these catchments include:

- Skeleton Creek
- Forsyth Road Drain
- Doherty's Creek
- Doherty's Drain
- Whiteside Drain
- Clarkes Drain
- Laverton Drain
- Davis Creek
- Werribee River
- Lollypop Creek
- Cherry Creek.

Figure 3 shows waterways along the RRL – West Werribee to Deer Park. The environmental value of Davis Creek has been largely compromised as a result of farm dam construction on the waterway, as well as erosion resulting from over grazing and widespread cultivation of grassland areas that were originally present.

**Werribee River**

The RRL - West Werribee to Deer Park crosses the Werribee River near the intersection of Hobbs Road and Sayers Road, north of Ballan Road. This section of Werribee River is classified as Lower Werribee River, as defined by the Regional River Health Strategy (RRHS). The proposed location of the Lower Werribee River crossing is an incised section of waterway with possible terrace features located on the floodplain.

**Lollypop Creek**

The RRL - West Werribee to Deer Park crosses Lollypop Creek in 2 locations, once on Bulban Road, south of McGrath Road, and additionally slightly south of Broadwater St, Wyndham Vale. Lollypop Creek originates to the North-West of Wyndham Vale, runs adjacent to Werribee River and disperses at the Western Treatment Plant near 145 west main drain. This channel would only discharge to Port Phillip Bay during intense rainfall events where the channel is overtopped.

**Skeleton Creek**

The RRL - West Werribee to Deer Park crosses Skeleton Creek. Skeleton Creek originates in a rural area near Mt Cottrell and passes through urban areas before it flows into Port Phillip Bay. Skeleton Creek is in moderate condition, but it is becoming increasingly urbanised as new developments extend from Hoppers Crossing. Dry Creek joins with Skeleton Creek North east of

the Leakes and Hopkins Roads Road. Dry creek is a tributary of Skeleton Creek The RRL - West Werribee to Deer Park also crosses Dry Creek and Tributaries and Skeleton Creek and Tributaries.

### Ramsar Wetlands

An extensive system of saltmarsh complexes and wetlands occur along the Werribee Coastline. None of these systems will be directly affected by the RRL - West Werribee to Deer Park.

### Are any of these water environments likely to support threatened or migratory species?

Yes If yes, specify which water environments.

Possible Growling Grass Frog habitat has been identified at 6 waterway crossings along the RRL - West Werribee to Deer Park.

Other threatened species that are supported by the local water environments include:

- Australian Grayling
- Yarra Pygmy Perch
- Australian Mudfish
- Striped Legless Lizard – previously been recorded from the study area
- Australian Painted Snipe
- Australasian Bittern

The Tarneit Road Swamp when inundated is likely to support migratory bird species. This wetland may provide potential habitat for the Spiny Riceflower. In the absence of a targeted search it cannot be determined with confidence whether or not a significant proportion of the population of this species would be impacted.

### Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?

No

No Ramsar Wetland will be directly impacted by the RRL - West Werribee to Deer Park. Ramsar Wetlands may be indirectly impacted during construction across waterways that enter the wetland. The following catchments drain into the Werribee Sewage Farm and Western Treatment Plant which is part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar wetland:

- Lollypop Catchment (including Cherry Creek)
- Werribee River Catchment (including Davis Creek)

The area extending between the confluence of Skeleton Creek with Port Phillip Bay and Point Cook is classified as a RAMSAR wetland. Skeleton Creek Catchment including Dry Creek drains to this Ramsar site

### Could the project affect streamflows?

Yes If yes, briefly describe implications for streamflows.

The placement of temporary or permanent waterway crossing structures (e.g. culverts, pylons) has the potential to directly alter the stream hydrology in volume and flow during both the construction and operation phases. All waterways crossed by the RRL – West Werribee to Deer Park are ephemeral except for Werribee River which is a perennial natural waterway.

A railway line has the potential to form a barrier to or conduit for overland flow draining to waterways and waterbodies and thus could alter the catchment boundaries and/or characteristics, which may indirectly affect waterways within the catchment. Rail cuttings could also alter catchment boundaries or characteristics.

The RRL – West Werribee to Deer Park crosses over Doherty's Drain at an oblique angle before running longitudinally along it for a significant distance. This parallel section overlaps for much of its length. Based on this preliminary assessment Doherty's Drain is likely to require realignment further to the east of the currently proposed alignment.

### Flooding

Flooding may be an issue where the rail is overtopped by Lollypop Creek. The Werribee River is highly regulated due to the presence of the Melton Reservoir upstream and flows are highly modified from the natural regime of a catchment of its size. The Werribee River has a breakout point upstream of Werribee. In events above the 30-year ARI event flow leaves the Werribee River, some of which rejoins the river further downstream, and some of which is diverted via a floodway into Lollypop Creek. In the 100-year ARI event approximately 170 m<sup>3</sup>/s spills into Lollypop Creek. Flooding (Areas of Inundation 100-year ARI Event Extents) is illustrated within Figures 7a and 7b.

Crossings over waterways will have a freeboard above the 100-year ARI event to ensure that flood storage and levels will not be affected by the development.

During operation, there is expected to be increases in impervious areas at stations due to platforms, parking which have the potential to increase runoff, and generate water quality issues.

#### Could regional groundwater resources be affected by the project?

No

The RRL - West Werribee to Deer Park will not directly intersect any shallow water groundwater zones. Shallow (less than 4m below the surface) groundwater is likely exist at the following locations in the vicinity of the project:

- 450 metres east of the alignment near Bulban and Ballan Roads, Werribee
- 800 metres south of the alignment near Princes Freeway and Geelong Road, Werribee
- 1 km south of the alignment near Sayers and Morris Roads, Tarneit

Interaction with surface water bodies is likely to occur where the alignment crosses active or temporary streams and lakes. As these surface waters are sitting on Quaternary terrace alluvium and swamp deposits, they are in direct hydraulic connection to local perched aquifer bodies. Any interactions with these perched aquifers below surface water levels would thus involve potential groundwater discharge issues.

#### Could environmental values (beneficial uses) of water environments be affected?

NYD

Water quality objectives listed under the SEPP will be protected during construction and operation to ensure no effect on beneficial uses.

#### Could aquatic, estuarine or marine ecosystems be affected by the project?

Yes If yes, describe in what way.

Construction works across waterways and waterbodies may cause deterioration in water quality from stormwater runoff, airborne transport of spray or dust, or fuel/chemical spills.

This may cause an increase in sediments, suspended solids, nutrients, organic material, toxicants, litter and bacteria, which could subsequently alter downstream riparian and instream vegetation/habitat.

Based upon desktop analysis all sections of waterway crossed by the RRL – West Werribee to Deer Park are ephemeral except for Werribee River which is a perennial natural waterway. Some of the ephemeral waterways appear to maintain water in depressions within the waterway, which may provide suitable refuge habitat for species such as Growling Grass Frog, while others have undefined bed and banks.

#### Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?

No

#### Is mitigation of potential effects on water environments proposed?

Yes If yes, please briefly describe.

Best practice will be implemented to reduce the sediment impacts of construction and operation. Mitigation measures will include:

- Establish appropriate water quality objectives and monitoring requirements with guidance from EPA Victoria and Melbourne Water.
- Employ Water Sensitive Urban Design (WSUD) principles and practices to manage the quantity and quality of runoff generated.
- Ensure construction managers monitor affected surface waters before and during construction to ensure that water quality objectives are being met.
- Minimise unnatural erosion, sediment re-suspension, turbid runoff and other risks to aquatic habitat.
- Ensure that existing and new in situ structures do not pose a barrier to fish movement.
- Minimise the removal of, and rehabilitate native vegetation within or adjacent to surface waters.
- Implementing management measures for activities on or adjacent to surface water systems to minimise risks to environmental values and to protect beneficial uses.
- Where construction activities impinge on surface waters, construction managers will monitor affected surface waters to assess whether beneficial uses are being protected.
- Minimise soil erosion, land disturbance and discharge of sediment and other pollutants to surface waters.
- The design of all waterway crossings (temporary and permanent) will allow for unimpeded fish passage in accordance with guidelines for fish friendly waterway crossings (Fairfull & Wetheridge 2003).
- The type of crossing structure will be based on the specific characteristics of the waterway concerned including the full range of flows, flow levels and amount of debris that could be expected at each location.

An Environment Management Plan will also be developed at the planning stage to ensure that existing and new in situ structures do not pose a threat to the existing streamflows.

**Other information/comments?** (eg. accuracy of information)

The hydrological assessment undertaken as part of this project was based on a desktop analysis of available information. Flood flows, levels and extents had not been previously mapped by relevant authorities and therefore further detailed analysis will be required to confirm the findings.

## 14. Landscape and soils

### Landscape

**Has a preliminary landscape assessment been prepared?**

No

**Is the project to be located either within or near an area that is:**

- **Subject to a Landscape Significance Overlay or Environmental Significance Overlay?**  
 Yes If yes, provide plan showing footprint relative to overlay.

The project intersects three Environmental Significance Overlays in the City of Wyndham where they have been placed along Werribee River, Skeleton Creek and Lollypop Creek to recognise waterway and riparian areas.

- **Identified as of regional or State significance in a reputable study of landscape values?**  
 NYD
- **Within or adjoining land reserved under the *National Parks Act 1975* ?**  
 No
- **Within or adjoining other public land used for conservation or recreational purposes ?**  
 Yes If yes, please specify.

The RRL - West Werribee to Deer Park alignment crosses the Werribee River, which is a popular site for recreation (both on and off-water), as well as a number of other major and minor waterways which are open to public access.

The RRL - West Werribee to Deer Park runs adjacent to the Ravenhall Grassland Reserve

managed by Parks Victoria.
<b>Is any clearing vegetation or alteration of landforms likely to affect landscape values?</b> <input checked="" type="checkbox"/> NYD
<b>Is there a potential for effects on landscape values of regional or State importance?</b> <input checked="" type="checkbox"/> NYD
<b>Is mitigation of potential landscape effects proposed?</b> <input checked="" type="checkbox"/> NYD
<b>Other information/comments?</b> (eg. accuracy of information)

**Note:** A preliminary landscape assessment is a specific requirement for a referral of a wind energy facility. This should provide a description of:

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;
- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;
- Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

### Soils

<p><b>Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?</b> <input checked="" type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please briefly describe.</p> <p>The RRL - West Werribee to Deer Park is located within a region of extremely low acid sulphate probability. Land stability will not be affected by the project as erosion and sedimentation mitigation measures will be employed during and following construction. Any unsuitable soils (including reactive clays) will be removed as appropriate.</p>
<p><b>Are there geotechnical hazards that may either affect the project or be affected by it?</b> <input checked="" type="checkbox"/> No</p> <p>There is a very low likelihood of exposing acid sulphate soils along the RRL - West Werribee to Deer Park. The RRL - West Werribee to Deer Park is located within a region of extremely low acid sulphate probability.</p> <p>Basaltic residual soils cover an extensive area of Melbourne's western and northern suburbs and are present along the full length of the RRL - West Werribee to Deer Park. These soils are often associated with highly reactive (expansive) soils. In areas of highly reactive soils, structures may require the use of stiffer, deeper footings. Highly reactive track subgrades are also more likely to present serviceability problems due to potential for excessive seasonal ground surface movements and reduction in strength when saturated. Effects such as subgrade failure and unacceptable differential ground movements may occur under adverse conditions.</p> <p>Clay materials are generally more susceptible to moisture related shrinkage and swelling resulting in potentially unacceptable ground surface movement due to climatic variance. These seasonal surface movements are also dependant on a number of other factors including:</p> <ul style="list-style-type: none"> <li>• Depth of cover and insulation from surface exposure, where wetting and drying cycles are pronounced</li> <li>• Local drainage conditions</li> <li>• Influence on soil moisture due to surrounding vegetation.</li> </ul> <p>It is expected that much of the clay will be unsuitable for a subgrade due to its properties, requiring subgrade improvement methods to be used.</p> <p>Based upon available knowledge of the project alignment, there does not appear to be any</p>

geotechnical hazards that are likely to affect the project.

**Other information/comments?** (eg. accuracy of information)

The profile of basalt rock along the alignment is highly variable within the area and pronounced changes in the rock depth generally occur over short distances. The presence of shallow floaters and/or continuous basalt bedrock can lead to construction difficulties and often require extensive use of ripping/tying or hydraulic rock breakers to effectively excavate. It may be preferable to use explosives if large scale excavations are required and if regulations allow.

A thick sequence of alluvium and/or colluvium may occur at the Werribee River crossing location. The composition and consistency of this material may affect the design and construction methodology of bridge foundations.

Where grade separation is required between road and rail it is considered likely that any bridges will be founded on basalt of suitable strength and thickness. If the preferred method of grade separation is via the construction of underpasses, it is expected that considerable effort will be required when excavating the basalt rock which is generally found at shallow depth.

## 15. Social environments

**Is the project likely to generate significant volumes of road traffic, during construction or operation?**

NYD

Road traffic volumes during construction and operation are yet to be determined.

During construction, it is likely that there will be an increase in truck movements for the delivery and removal of materials associated with the construction.

Once the rail corridor is operational, it is likely to contribute to the reduction of road traffic due to modal shift from private vehicle travel.

**Is there a potential for significant effects on the amenity of residents, due to emissions of dust or odours or changes in visual, noise or traffic conditions?**

NYD  No  Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.

During construction the following amenity impacts are likely to be felt by residents

- Noise and vibration nuisance due to construction. Impacts will be reduced by meeting EPA Guidelines for Noise during Construction.
- Reduction in air quality, mainly in relation to dust during construction. Impacts will be reduced by implementing dust control measures such as stabilising disturbed soil through watering or sowing, undertaking rehabilitation of disturbed areas as soon as possible, limiting works on days that dust is likely to be a significant problem and the use of defined haul routes.
- Traffic disruption and traffic control. Traffic disruption will be minimised as far as practicable and detailed traffic plans will be put in place during construction which will include advance warning of traffic management measures causing temporary inconveniences.
- Visual impacts during construction are also likely, and if necessary, screening could be considered in some areas.

During operation, the following amenity impacts could be felt by residents:

- Noise nuisance to residents as a result of passing trains where:
  - fewer trains passed by before
  - no trains passed by before
  - where houses that interface with an existing rail corridor no longer block out the noise as some trains now use a grade separated bridge which is higher than the roofline

Modelled daytime and night-time noise will increase in many existing residences close to the railway line. Currently many of these houses are subject to levels of noise from road traffic and barking dogs. Many of the residences included in modelling are close to the existing railway

corridors (either at Deer Park or Werribee) where there are already passing trains. Modelled groundborne vibration did not exceed the criteria and is not expected to be an issue.

- Visual impacts associated with bridge structures.  
Overlooking into private properties as a result of rail/rail and rail/road grade separations.

**Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport?**

NYD  No  Yes If yes, briefly describe the hazards and possible implications.

Emissions to air and noise during construction and operation will be thoroughly investigated during the detailed design and construction management plan phase. Appropriate measures to meet accepted standards will be put in place for both the construction and operation phases.

**Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?**

NYD  No  Yes If yes, briefly describe potential effects.

The RRL - West Werribee to Deer Park proposed alignment will directly intersect with 74 properties (68 private properties plus 6 Crown land etc parcels), although in most cases it will partially intersect with individual properties.

The proposed alignment would dislocate residents of 5 farm dwellings and 5 rural living dwellings and sever the land of 30 farms and 12 rural living properties. 4 properties within the Residential 1 Zone will be impacted by land needed for grade separations of the project, although no dwellings in those properties are directly affected. Access arrangements to potentially severed properties will be managed as more detailed design of the project progresses.

Where the project traverses through Wyndham Vale, it will be located in an existing 75m wide transport reservation shared with the proposed Armstrong Road. The project will not displace any residences through this section, and will largely be located in cutting between Lollypop Creek and Ballan Road, reducing visual, noise and severance impacts to the existing urban community.

The project may sever residential access to community infrastructure in the following locations and ways:

- Deer Park – a proposed pedestrian path crossing the Ballarat Rail Corridor is to be built to connect residents south of the corridor to Bon Thomas Reserve and other community infrastructure north of the corridor. The grade separation of the Ballarat and RRL – West Werribee to Deer Park corridors will require detailed design to resolve restricts the opportunity for an overpass and it is yet to be confirmed that an underpass can be constructed.
- Linear parkland along Lollypop Creek in Wyndham Vale – detailed design will need to ensure continued access across the corridor.
- Residents outside of the Urban Growth Boundary (UGB) – the majority of community services are located inside of the UGB, residents outside of the UGB are likely to be reliant on their cars to access community infrastructure and are therefore unlikely to be significantly impacted by the project as road access can be maintained.
- Residents inside the UGB - the majority of community services are located inside of the UGB. Residents' access community infrastructure inside the UGB is unlikely to be impacted, until such time that the UGB is shifted and community infrastructure expands to the other side of the UGB. In this case, residents will not be affected as strong road, pedestrian and cycle links are catered for in the design.

**Are non-residential land use activities likely to be displaced as a result of the project?**

NYD  No  Yes If yes, briefly describe the likely effects.

The RRL - West Werribee to Deer Park will directly intersect with 74 properties, most of which are not residential.

Non-residential land uses that are intersected by the project include:

- 30 farms, although many of these have been acquired by land developers or have options over the land subject to the expansion of urban development

- 6 business properties, including four properties recently rezoned, but not yet developed upon
- 6 Crown Land properties
- Part of 1 public open space site used as horse riding course by a local Pony Club
- 7 land parcels that are zoned Urban Growth Zone, but where urban development is yet to occur.

Specific groups that may be affected include:

- Farmers
- Members of the Pony Club located to the south-east of Dohertys and Woods Road

No community facilities eg. medical, educational etc will be intersected by the alignment.

In many cases the project will not dislocate the land use activities, although there will potentially be disruption to some activities. Urban growth pressures will displace many activities within the next twenty years.

**Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?**

NYD  No  Yes If yes, briefly describe the potential effects.

Investigations indicate that there are likely to be the following impacts:

- Severance of existing roads, public transport, walking and cycling networks to community facilities and properties, retail precincts and access to properties during construction.
- Noise, dust and fumes, visual intrusion, light, aesthetics, vibration and landscaping impacts during construction.
- Impact on local social networks, community patterns and linkages during construction.
- Property acquisition (agricultural, residential, commercial, public space)
- Noise, visual intrusion and landscaping impacts during operation.
- Potential impact of the route on sites of European and Aboriginal Cultural Heritage and the public's enjoyment of these spaces.

It is recognised that the project traverses an area with significant urban growth pressures that will cause more widespread changes to existing activities.

**Is mitigation of potential social effects proposed?**

NYD  No  Yes If yes, please briefly describe.

Mitigation measures will be considered during the detailed design process and may include:

- Implement a Construction Environment Management Plan to minimise negative impacts on local communities caused by noise, dust, light, odours, social severance, construction traffic and any other adverse impacts
- Construct grade separations (including pedestrian paths) at crossings of current and future arterial roads
- Restoring links to severed properties or parcels guided by an overall Access Restoration Strategy that identifies how best to restore access to properties or parcels
- Adequate shared pathway crossings at frequent (less than 1.5km) intervals to limit community severance
- Ensure that the proposed pedestrian crossing of the Ballarat Rail Corridor connecting residential estates to the south to Bon Thomas Reserve can be constructed.
- Investigate, during detailed design, design outcomes of the railway that can reduce potential noise impacts eg. putting rail below natural surface level where it does not compromise the operational or drainage performance of the railway.
- Encouraging appropriate future urban land uses to buffer noise impacts and ensuring development of sensitive uses near the project contain adequate noise attenuation measures.
- Construct a 3m wide shared pathway along the length of the RRL – West Werribee to Deer Park connecting to activity centres, public open spaces and other community infrastructure.

- Implement an urban design program that links in with the detailed design of the rail corridor to deal with visual amenity impacts and physical access barriers at key locations where road and / or rail bridges impact on private and public spaces – especially at activity centres, heritage sites and dwellings.
- Investigate opportunities to mitigate the impacts on the public open space located to the south-east of Dohertys and Woods Road. This space is presently used by the local Pony Club

**Other information/comments?** (eg. accuracy of information)

Nil.

## Cultural heritage

**Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?**

No If no, list any organisations that it is proposed to consult.

The RRL - West Werribee to Deer Park crosses over several territories of Kulin Nation tribes. These tribes are the *Wada wurrung*, the *Bun wurrung* and the *Woi wurrung* tribes. These tribes will be consulted during the development of the Cultural Heritage Management Plan (CHMP). Consultation has already begun with Aboriginal Affairs Victoria (AAV). AAV advise that a Cultural Heritage Management Plan (CHMP) is the best mechanism to identify and manage all impacts and that a CHMP should be started as soon as practicable.

**What investigations of cultural heritage in the project area have been done?**

(attach details of method and results of any surveys for the project & describe their accuracy)

A preliminary assessment was completed on both the Aboriginal and non-Aboriginal (historic) cultural heritage values (*Dr Vincent Clark and Associates 2007*). This assessment was based on the length of each alignment of 75m study area width and a 250m wide corridor either side to allow for the extent of potential railway stations. This work involved a desktop assessment of local and state cultural heritage registers and the heritage overlays of the relevant planning schemes. In addition, a brief field inspection of accessible land was completed.

**Is any Aboriginal cultural heritage known from the project area?**

Yes If yes, briefly describe:

- Any sites listed on the AAV Site Register
- Sites or areas of sensitivity recorded in recent surveys from the project site or nearby
- Sites or areas of sensitivity identified by representatives of Indigenous organisations

The desktop assessment identified that a total of two registered Aboriginal sites are situated on the RRL - West Werribee to Deer Park and a further three Aboriginal sites lie within the sections of 500m corridor. All these Aboriginal sites are surface scatters of stone artefacts. However very little of the RRL - West Werribee to Deer Park has been the focus of previous archaeological investigations, which may account for the small number of recorded sites.

The majority of the project area lies outside an area of 'cultural heritage sensitivity' as defined by the Aboriginal Heritage Regulations 2007. However, land within 200 metres of Dohertys Creek (approx. 250m) and Skeleton Creek (approx. 400m) are areas of protected Aboriginal Sensitivity.

**Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the project area?**

Yes If yes, please list.

The study identified that there are six sites on the Archaeological Heritage Inventory situated along the project, and one further site situated within the 500m study area corridor. These sites include three buildings, and four dry stone walls, one of which is a delisted site.

**Is mitigation of potential cultural heritage effects proposed?**

Yes If yes, please briefly describe.

Mitigation methods are to be resolved in discussion with specialist consultants, relevant authorities and the aboriginal representatives.

A CHMP will be prepared before any construction within the activity area takes place. Measures to avoid harm or to minimise harm to Aboriginal cultural heritage would be addressed by the CHMP.

If disturbance to a Heritage Inventory site is unavoidable, then a consent to disturb would need to be obtained from Heritage Victoria, conditions attached to any consent would assist in the mitigation of effects.

Appropriate management strategies for any sites listed under heritage overlays that may be affected by the works will be discussed with the Shire of Melton and Wyndham City Council.

**Other information/comments?** (eg. accuracy of information)

Limitations to knowledge include:

- The study included a desktop assessment and a brief field inspection of accessible land;
- The majority of the activity area has not been the focus of previous archaeological investigations.

**16. Energy, wastes & greenhouse gas emissions**

**What are the main sources of energy that the project facility would consume/generate?**

- Electricity network. If possible, estimate power requirement/output .....
- Natural gas network. If possible, estimate gas requirement/output .....
- Generated on-site. If possible, estimate power capacity/output .....
- Other. Diesel Trains .

Please add any relevant additional information.

**What are the main forms of waste that would be generated by the project facility?**

- Wastewater. Describe briefly.
- Solid chemical wastes. Describe briefly.
- Excavated material. – from the extensive cutting in the Wyndham Vale vicinity of Manor Lake station and the vicinity near Deer Park Bypass and Riding Boundary Road.
- Other. Describe briefly.

Please provide relevant further information, including proposed management of wastes.

The cutting impacts need to be explored along with the potential to reuse all excavated material as fill. Contaminated soil assessments, via sampling and lab analysis, would be undertaken where soil was required to be deposited off-site. Any soils found to be contaminated would be transported and disposed of in accordance with EPA regulations.

**What level of greenhouse gas emissions is expected to result directly from operation of the project facility?**

- Less than 50,000 tonnes of CO<sub>2</sub> equivalent per annum
- Between 50,000 and 100,000 tonnes of CO<sub>2</sub> equivalent per annum
- Between 100,000 and 200,000 tonnes of CO<sub>2</sub> equivalent per annum
- More than 200,000 tonnes of CO<sub>2</sub> equivalent per annum

Please add any relevant additional information, including any identified mitigation options.

Preliminary estimates indicate the project will emit approximately 32, 000 tonnes of CO<sub>2</sub> equivalent per annum. Once emissions savings from increased public transport usage and reduced vehicle usage are taken into account, the project will save approximately 57,000 tonnes of CO<sub>2</sub> equivalent per annum.

**17. Other environmental issues**

**Are there any other environmental issues arising from the proposed project?**

- No

**18. Environmental management**

**What measures are currently proposed to avoid, minimise or manage the main potential adverse environmental effects?** (if not already described above)

- ✗ Siting: Please describe briefly

Siting would aim to avoid key environmental features wherever practicable.

- ✗ Design: Please describe briefly

Design will aim to avoid key environmental features wherever practicable.

- ✗ Environmental management: Please describe briefly.

Specialist investigations have recommended a range of mitigation measures to minimise identified environmental impacts. The overall approach is to develop a Construction Environment Management Plan that co-ordinates the following measures:

<b>Flora and Fauna Impacts</b>
Mitigation measures
<p>Primary mitigation measures include:</p> <ul style="list-style-type: none"> <li>• Detailed design to minimise vegetation and habitat loss;</li> <li>• Provision of fauna underpasses or overpasses at key locations;</li> <li>• Use of best-practice design for crossing waterways and for dealing with runoff; and</li> <li>• Use of best-practice construction protocols to minimise impacts associated with soil disturbance, spread of weeds and pathogens and incidental damage to retained areas.</li> </ul> <p>Further measures include:</p> <ul style="list-style-type: none"> <li>• All waterway crossings (temporary and permanent) must be designed to allow for unimpeded fish passage in accordance with guidelines for fish friendly waterway crossings. The type of structure used should be based on the specific characteristics of the waterway concerned.</li> <li>• All waterway crossings (temporary and permanent) should be designed to cater for the full range of flows, flow levels and amount of debris that could be expected at each location;</li> <li>• All areas of retained native vegetation, including scattered trees, should be protected during construction;</li> <li>• Follow appropriate hygiene measures are applied for all machinery to ensure environmental weeds are not introduced into new areas;</li> <li>• Control all noxious and woody environmental weeds arising from the proposed works; and</li> <li>• Ensure equipment storage and materials stockpiles are not located in areas of adjacent remnant vegetation.</li> <li>• Use of site indigenous native species for any landscape plantings will enhance any retained natural values of the study area. Plantings should contain species of local provenance and be appropriate for the EVC present in the surrounding environment. If native vegetation is to be removed, seeds could be collected from these plants in advanced and propagated for use in any site rehabilitation works.</li> <li>• Construction works need to be managed to minimise land disturbance, soil erosion (including dust) and the discharge of sediments and other pollutants to surface waters. Effective management practices that are consistent with guidance from the Environmental Protection Authority, including those provided in <i>Environmental Guidelines for Major Construction Sites (1996)</i> as amended and <i>Construction Techniques for Sediment Pollution Control (1991)</i> should be implemented. EPA Publication 960 (2004) also provides useful guidance on temporary environmental protection measures applicable to construction sites.</li> <li>• Where appropriate, threatened species likely to be destroyed within a route approved for construction should be considered for salvage and translocation.</li> </ul>
<b>Water Impacts</b>
Mitigation measures
<p>Best practice will be implemented to reduce the sediment impacts of construction and operation. Mitigation measures will include:</p>

- Establish appropriate water quality objectives and monitoring requirements with guidance from EPA Victoria and Melbourne Water.
- Employ Water Sensitive Urban Design (WSUD) principles and practices to manage the quantity and quality of runoff generated.
- Ensure construction managers monitor affected surface waters before and during construction to ensure that water quality objectives are being met.
- Minimise unnatural erosion, sediment re-suspension, turbid runoff and other risks to aquatic habitat.
- Ensure that existing and new in situ structures do not pose a barrier to the existing streamflows and to fish movement.
- Minimise the removal of, and rehabilitate native vegetation within or adjacent to surface waters.
- Implementing management measures for activities on or adjacent to surface water systems to minimise risks to environmental values and to protect beneficial uses.
- Where construction activities impinge on surface waters, construction managers will monitor affected surface waters to assess whether beneficial uses are being protected.
- Minimise soil erosion, land disturbance and discharge of sediment and other pollutants to surface waters.
- The design of all waterway crossings (temporary and permanent) will allow for unimpeded fish passage in accordance with guidelines for fish friendly waterway crossings (Fairfull & Wetheridge 2003).
- The type of crossing structure will be based on the specific characteristics of the waterway concerned including the full range of flows, flow levels and amount of debris that could be expected at each location.

#### Soil Impacts

##### Mitigation Measures

Land stability will not be affected by the project as erosion and sedimentation mitigation measures will be employed during and following construction. Any unsuitable soils (including reactive clays) will be removed as appropriate.

#### Social Impacts

##### Mitigation Measures

Mitigation measures will be considered during the detailed design process and may include:

- Ensure the Construction Environment Management Plan minimises negative impacts on local communities caused by noise, dust, light, odours, social severance, construction traffic and any other adverse impacts
- Construct grade separations (including pedestrian paths) at crossings of current and future arterial roads
- Restoring links to severed properties or parcels guided by an overall Access Restoration Strategy that identifies how best to restore access to properties or parcels
- Adequate shared pathway crossings at frequent (less than 1.5km) intervals to limit community severance
- Ensure that the proposed pedestrian crossing of the Ballarat Rail Corridor connecting residential estates to Bon Thomas Reserve can be constructed.
- Investigate, during detailed design, design outcomes of the railway that can reduce potential noise impacts eg. putting rail below natural surface level where it does not compromise the operational or drainage performance of the railway.
- Encouraging appropriate future urban land uses to buffer noise impacts and ensuring development of sensitive uses near the project contain adequate noise attenuation measures.
- Construct a 3m wide shared pathway along the length of the RRL – West Werribee to Deer Park connecting to activity centres, public open spaces and other community infrastructure.
- Implement an urban design program that links in with the detailed design of the rail corridor to deal with visual amenity impacts and physical access barriers at key locations where road and / or rail bridges impact on private and public spaces –

<p>especially at activity centres, heritage sites and dwellings.</p> <ul style="list-style-type: none"> <li>Investigate opportunities to mitigate the impacts on the public open space located to the south-east of Dohertys and Woods Road. This space is presently used by the local Pony Club</li> </ul>
<b>Cultural Heritage Impacts</b>
<p>Mitigation Measures</p> <p>A CHMP will be prepared before any construction within the activity area takes place. Measures to avoid harm or to minimise harm to Aboriginal cultural heritage would be addressed by the CHMP.</p> <p>If disturbance to a Heritage Inventory site is unavoidable, then a consent to disturb would need to be obtained from Heritage Victoria, conditions attached to any consent would assist in the mitigation of effects.</p> <p>Appropriate management strategies for any sites listed under heritage overlays that may be affected by the works will be discussed with the Shire of Melton and Wyndham City Council.</p>
<p><input checked="" type="checkbox"/> Other: Please describe briefly</p> <p>Add any relevant additional information.</p>

**19. Other activities**

<p><b>Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?</b></p> <p><input checked="" type="checkbox"/> No</p>
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**20. Investigation program**

**Study program**

<p><b>Have any environmental studies not referred to above been conducted for the project?</b></p> <p><input checked="" type="checkbox"/> No</p> <p>No. However, a number of other studies covering transport planning, location of physical services etc have been prepared to ensure the project meets overall project objectives.</p>
<p><b>Has a program for future environmental studies been developed?</b></p> <p><input checked="" type="checkbox"/> Yes If yes, briefly describe.</p> <p>As part of the next stage of the project development, an Environmental Management Plan covering planning, construction and operation of the project will be developed to cover all relevant environmental studies.</p> <p>The DoT has made allowance for further environmental studies to meet the requirements of relevant legislation including the <i>Flora and Fauna Guarantee Act 1988</i>, <i>Aboriginal Heritage Act 2006</i>, <i>Flora and Fauna Guarantee Act 1988</i> and others. Further development of this program will be conducted in conjunction with DPCD and DSE following finalisation of the location of the updated Metropolitan UGB and Outer Metropolitan Ring Transport Corridor to ensure consistency across these major projects.</p>

**Consultation program**

<p><b>Has a consultation program conducted to date for the project?</b></p> <p><input checked="" type="checkbox"/> Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.</p> <p>A Project Reference Group (PRG) was established in mid-2008 to provide advice and input into the development of the preferred alignment and the issues and opportunities surrounding the</p>
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project. The consultation and information sharing of the PRG provided invaluable input in the preparation of the project. The members of the PRG included:

- Department of Transport;
- Department of Planning and Community Development;
- Department of Sustainability and Environment;
- Growth Areas Authority;
- Wyndham City Council;
- Melton Shire Council; and
- VicRoads.

The PRG has met on a number of occasions at various project milestones and continues to meet to guide the project before the implementation phase.

The Growth Areas Authority, Wyndham City Council and Melton Shire Council remain key agencies in this project as the RRL – West Werribee to Deer Park project is of significant strategic importance, particularly to the future development and growth of the City of Wyndham and the Shire of Melton.

Additionally, DoT has conducted a number of meetings with key landholders in the vicinity of the preferred alignment to ascertain their input and visions for longer-term development of the area surrounding the corridor.

**Has a program for future consultation been developed?**

Yes If yes, briefly describe.

This project will be incorporated in the consultation program set up by DPCD for the proposed expansion to the Metropolitan UGB, the Outer Metropolitan Ring Transport Corridor and the Regional Rail Link – West Werribee to Deer Park.

This program will be a comprehensive consultation process aimed at incorporating the views of affected local communities and individuals, government agencies, local councils, advocacy groups and peak bodies. The program will include a range of meetings and briefings, focus groups, notices in local and metropolitan newspapers and online information.

**Authorised person for proponent:**

I, .....(full name),

.....(position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature \_\_\_\_\_

Date

**Person who prepared this referral:**

I, .....(full name),

.....(position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature \_\_\_\_\_

Date