

# 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 Impact Assessment Unit (IAU) at the Department of Environment, Land, Water and Planning (DELWP) 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 IAU 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 as they will be published on the Department's website.**

- 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  
GPO Box 2392  
MELBOURNE VIC 3001**

Couriers

**Minister for Planning  
Level 20, 1 Spring Street  
MELBOURNE VIC 3001**

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@delwp.vic.gov.au](mailto:ees.referrals@delwp.vic.gov.au) is required. 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>Level Crossings Removal Authority</b>																																					
<b>Authorised person for proponent:</b>	Adam Maguire																																					
<b>Position:</b>	Project Director, Frankston Line																																					
<b>Postal address:</b>	Level 14, 121 Exhibition Street, Melbourne VIC 3000																																					
<b>Email address:</b>	Adam.maguire@levelcrossings.vic.gov.au																																					
<b>Phone number:</b>	1800 762 677																																					
<b>Facsimile number:</b>																																						
<b>Person who prepared Referral:</b>	Adam Mitchell																																					
<b>Position:</b>	Senior Planning and Environment Specialist																																					
<b>Organisation:</b>	Level Crossing Removal Authority																																					
<b>Postal address:</b>	Level 9, 121 Exhibition Street, Melbourne																																					
<b>Email address:</b>	Adam.mitchell@levelcrossings.vic.gov.au																																					
<b>Phone number:</b>	1800 762 667																																					
<b>Facsimile number:</b>	03 9027 5222																																					
<b>Available industry &amp; environmental expertise:</b> (areas of 'in-house' expertise & consultancy firms engaged for project)	<p>The Level Crossing Removal Authority (LXRA) has extensive 'in-house' expertise in rail and road planning, construction, statutory planning and environmental management.</p> <p>The AECOM-GHD Joint Venture (JV) is engaged to provide technical advisory services, including investigation and assessment of various matters to inform this referral and the development of the project design. Andrew Long and Associates (ALA), and Lovell Chen are engaged by the JV as subconsultants to provide specialist advice on cultural heritage and historic heritage respectively.</p> <p>The technical investigations and assessments undertaken to date have included:</p> <table border="1"> <thead> <tr> <th>Technical study</th> <th>Prepared by</th> <th>Attachment</th> </tr> </thead> <tbody> <tr> <td>Urban design concept and framework</td> <td>JV</td> <td>2</td> </tr> <tr> <td>Contamination/PASS</td> <td>JV</td> <td>3</td> </tr> <tr> <td>Cross drainage</td> <td>JV</td> <td>4</td> </tr> <tr> <td>Groundwater</td> <td>JV</td> <td>5</td> </tr> <tr> <td>Flora and fauna</td> <td>JV</td> <td>6</td> </tr> <tr> <td>Historical heritage site assessment</td> <td>Lovell Chen</td> <td>7</td> </tr> <tr> <td>Aboriginal cultural heritage desktop assessment</td> <td>ALA</td> <td>8</td> </tr> <tr> <td>Landscape and visual impact</td> <td>JV</td> <td>9</td> </tr> <tr> <td>Wetland ecology</td> <td>JV</td> <td>10</td> </tr> <tr> <td>Acoustic</td> <td>JV</td> <td>11</td> </tr> <tr> <td>Air quality</td> <td>JV</td> <td>12</td> </tr> </tbody> </table>		Technical study	Prepared by	Attachment	Urban design concept and framework	JV	2	Contamination/PASS	JV	3	Cross drainage	JV	4	Groundwater	JV	5	Flora and fauna	JV	6	Historical heritage site assessment	Lovell Chen	7	Aboriginal cultural heritage desktop assessment	ALA	8	Landscape and visual impact	JV	9	Wetland ecology	JV	10	Acoustic	JV	11	Air quality	JV	12
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## 2. Project – brief outline

<b>Project title:</b> Edithvale and Bonbeach Level Crossing Removal Projects			
<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>This referral is for two separate projects that are part of the Victoria Government's program to remove 50 level crossings in Melbourne. These two projects are the level crossing removals at Edithvale Road, Edithvale and Station Street/Bondi Road, Bonbeach.</p> <p>The location of the project areas for each project is shown in Attachment 1a as Figures 1 and 2.</p> <p><u>Edithvale</u> The Edithvale project area includes the existing rail reserve bounded by Lochiel Avenue and Elsie Grove. The project area lies parallel between Station Street and Nepean Highway. Smaller pedestrian/cyclists level crossings exist at Fraser Avenue and Berry Avenue. The site resides within the Port Phillip and Westernport catchment.</p> <p><u>Bonbeach</u> The Bonbeach project area includes the existing rail reserve bounded by Glenola Road and Mascot Avenue. The project area also lies parallel between Station Street and Nepean Highway, intersecting at the junction of Bondi Road and Station Street.</p> <p>The bounding coordinates for the project areas are included in Attachment 1b and in Table 1.</p>			
<b>Table 1: Project area coordinates (in MGA)</b>			
<b>Site Name</b>	<b>ID</b>	<b>Latitude (GDA94)</b>	<b>Longitude (GDA94)</b>
Edithvale	1	38 02 03.23887S	145 06 23.69805E
	2	38 02 38.62884S	145 06 44.53228E
	3	38 02 42.11113S	145 06 45.72766E
	4	38 02 42.35783S	145 06 44.92656E
	5	38 02 39.54932S	145 06 42.33017E
	6	38 02 03.82684S	145 06 21.35615E
Bonbeach	1	38 03 25.71097S	145 07 06.78294E
	2	38 03 38.35589S	145 07 11.03990E
	3	38 04 02.74471S	145 07 14.59443E
	4	38 04 18.23510S	145 07 18.97408E
	5	38 04 18.58673S	145 07 16.52120E
	6	38 04 02.97096S	145 07 12.15200E
	7	38 03 38.25383S	145 07 08.53370E
	8	38 03 26.13646S	145 07 04.36857E
<b>Short project description</b> (few sentences):			
<p>The Edithvale and Bonbeach level crossing removals are proposed under the Victorian Government's program of 50 level crossing removals. The removal of these two separate level crossings align with the Victorian Government's aims to improve safety, deliver benefits to the transport network and create thousands of jobs.</p> <p>Various options have been investigated for both projects and have been presented to the community through a comprehensive consultation program (further detailed in Section 10).</p> <p>The <i>rail under road</i> option has been identified as the preferred option at both Edithvale and Bonbeach. This referral therefore relates to the effects of the potential cumulative effects of a <i>rail under road</i> approach for each project.</p>			

### 3. Project description

#### **Aim/objectives of the project** (what is its purpose / intended to achieve?):

The objectives of the Edithvale and Bonbeach level crossing removals are to:

- Remove the level crossings at Edithvale Road, Edithvale and Station Street/Bondi Road, Bonbeach by separation of the roads and the Frankston rail line
- Improve transport safety in the Edithvale and Bonbeach areas
- Reduce transport congestion in the Edithvale and Bonbeach areas
- Generate local jobs and stimulate the local economy
- Facilitate additional train services on the Melbourne-Frankston rail corridor.

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

##### Level Crossing Removal Project

In early 2015, the Victorian Government announced the removal of 50 of the most dangerous and congested level crossings across Victoria.

Level crossings are a key cause of congestion on Melbourne's roads, costing the Victorian economy \$3 billion every year. They are one of the limitations on the number of train services that can operate on each line. The 50 level crossings planned for removal were chosen by assessment of a range of different factors, including safety, congestion and overall rail network benefits.

Removing 50 level crossings, including a number on the Frankston line, is a key step towards transforming Melbourne's public transport system into an international-style metro, with more trains running more often. Removing crossings will improve safety for road users and pedestrians by grade separating rail and road traffic. The removal of all 50 crossings across the metropolitan rail network will create 4,500 jobs.

Three level crossings on the Frankston line have already been removed:

- North Road, Ormond
- McKinnon Road, McKinnon
- Centre Road, Bentleigh.

In November 2015, the Victorian Government announced that work on removing further Frankston line level crossings had commenced. Each of the level crossings listed below are being managed as individual projects within the state wide program of works. These are:

- Charman Road and Park Road, Cheltenham
- Balcombe Road, Mentone
- **Edithvale Road, Edithvale** (*the subject of this referral*)
- **Station Street/Bondi Road, Bonbeach** (*the subject of this referral*)
- Station Street, Carrum
- Eel Race Road, Carrum
- Seaford Road, Seaford
- Skye/Overton Road, Frankston.

##### Frankston Rail Corridor

The Frankston rail corridor serves some of Melbourne's most vital economic centres, as well as vast and growing residential catchments. The corridor currently serves a population of around 250,000 people, which is forecast to grow to around 500,000 people by 2036. It also provides access to the significant industrial precinct and transport gateway at the Port of Hastings, and a key metropolitan activity centre at Frankston. The Frankston Hospital and Monash University campus in Frankston are significant regional employers.

Each weekday well over 200 passenger train services (112 to Melbourne and 122 from Melbourne) pass through the Edithvale and Bonbeach level crossings. Up to six freight trains to and from the Port of Hastings also use the corridor each day, and the regional trains which operate between Frankston and Stony Point periodically travel to the city for maintenance.

Public Transport Victoria (PTV) has forecast a 42 percent growth in train patronage on the Frankston line during the two hour morning peak period between 2015 and 2031; this increase will result in increased disruption/congestion for all road users along this rail corridor. Removing these level crossings will improve safety and services for the forecast increase in patronage on the Frankston line, reduce congestion making travel in the area quicker and easier, and enhance local community facilities.

Across the Frankston line generally, boom gates are currently down for an average of 34 minutes between 7am and 9am, or more than 25 per cent of the morning peak. Delays and congestion will increase with forecast growth.

#### Edithvale and Bonbeach level crossings

More than 13,400 vehicles currently use the Edithvale level crossing and 4,400 vehicles currently use the Bonbeach level crossing each weekday. The boom gates are down for an average of 42 minutes at Edithvale and 44 minutes at Bonbeach between 7am and 9am, or more than 35 percent of the morning peak resulting in congestion and constraining any increases to the number of trains servicing the corridor

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

The following main components of the two projects are described below:

- Grade separation by lowering the rail under the road at Edithvale Road, Edithvale
- Grade separation by lowering the rail under the road at Station Street/Bondi Road, Bonbeach.

#### Edithvale Road, Edithvale

The project involves lowering the Frankston Railway line into a trench under a new Edithvale Road bridge at the current road level. The trench would be approximately 1,000 metres in length and 12 metres wide. The rail track would be approximately eight metres below ground level at its lowest point at Edithvale Station and would include underground infrastructure (below the rail track) to collect and divert rain water from the trench. Where necessary, a combination of barriers, throw screens up to 2.4 metres high and fencing would be erected along the trench to prevent access by vehicles or people. Decking above the rail trench would be required to provide for station car parking and space has been set aside for a future substation in line with Public Transport Victoria's (PTV) long term plans. New pedestrian bridges would be constructed to maintain pedestrian access across the railway line. A new station building would be provided with access to the below-ground platforms.

#### Station Street/Bondi Road, Bonbeach

The project involves lowering the Frankston railway line into a trench under a new Bondi Road bridge at the current road level. The trench would be approximately 1,100 metres in length and 12 metres wide. The rail track would be approximately eight metres below ground level at its lowest point at Bonbeach Station and would include underground infrastructure (below the rail track) to collect and divert rain water from the trench. Where necessary, a combination of barriers, throw screens up to 2.4 metres high and fencing would be erected along the trench to prevent access by vehicles or people. Decking above the rail trench would be required to provide for station car parking and new pedestrian bridges would be constructed to maintain pedestrian access across the railway line. A new station building would be provided with access to the below-ground platforms.

For both projects, existing underground utilities and services will need to be either relocated or diverted.

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

Ancillary components of the projects include those related to (but necessary for) construction associated with the projects, such as temporary site barriers and buildings, laydown areas, access track, road diversions, removal of disused rail infrastructure (such as culverts and poles) and relocation and upgrade of utilities.

The scope and extent of these ancillary components will be subject to detailed design and the final construction methodology.

**Key construction activities:**

Key construction activities include:

- Site establishment
  - Stripping and clearing within the project area
  - Establishment of site fencing, staff facilities and lay down areas
  - Installation of access roads
- Excavation for piling, foundations and the rail trench
- Concrete pouring
- On site waste management
- Transport of spoil and excavated material offsite
- Construction of lowered rail infrastructure
- Removal of existing level crossing infrastructure
- Construction of bridges and decking over the rail trench, including new station infrastructure
- Construction of railways including excavation and installation of ballast and rail
- Dewatering of excavations.

Each level crossing removal would likely result in approximately one to two months of rail occupation and closure of the rail corridor, with intermittent closure of Edithvale Road (for the Edithvale project) and Station Street (for the Bonbeach project). During this time, additional minor road closures and lane closures would likely be required and access along adjacent streets could be restricted. Additional weekend rail shutdowns would likely be required prior to and after the primary one to two month occupation. Construction is expected to be completed within an 18 month period.

**Key operational activities:**

Following the construction of the project, the key operation and maintenance phase activities would include:

- Operation – monitoring, controlling and operation of the asset in accordance with the rail and road network requirements
- Maintenance – routine inspection and monitoring of the condition of the asset, planned routine maintenance and refurbishment work, and unplanned intervention and repair of the asset.

Operation and maintenance activities would be consistent with existing practices and subject to the evolving operational demands of the road and rail networks.

**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).

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

- No  Yes If yes, please identify related proposals.

The Edithvale and Bonbeach projects are part of the Victorian Government program to remove 50 level crossings in Melbourne and are two of an overall program to remove 11 level crossings to be removed on the Frankston line.

Each project is a separate part of this program and are operationally, geographically and physically independent of the other level crossing removal works within the wider program, and will be delivered as separate packages of works.

The Edithvale and Bonbeach projects have been referred together due to the potential for cumulative effects on the Edithvale Wetland, which forms part of the Ramsar-listed Edithvale-Seaford Wetland, which may result from the trench structures proposed for these projects.

#### 4. Project alternatives

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

##### No project option

The strategic need for the project, as discussed in Section 3, is such that 'no project' is not a desirable option.

Without the level crossing removal, delays and congestion in this area are expected to become worse.

##### Level crossing removal options

A number of options for removal of the level crossings were investigated, including:

- *Rail under road*: lowering the rail line into a trench with a road bridge to retain current road levels (the subject of this referral).
- *Rail over road*: building a rail bridge over the existing road
- *Road over rail*: raising the road over the rail line with the existing rail line to remain at grade
- *Road under rail*: building a new road underpass with a rail bridge over the road to retain rail levels
- Closure of Edithvale Road or Station Street/Bonbeach Road
- A number of hybrid options, including realigning roads and crossing points to improve traffic flow and local connections, and changing the grades of both the road and rail.

These options were explored to assess their feasibility. It was found that although technically feasible:

- Closure of roads would significantly increase traffic congestion.
- Changes to the elevation of existing roads (*road over rail*, *road under rail* and hybrid options) were considered to be less desirable than either elevating or lowering the rail line due to requiring changes to road elevations that would result in a complex road geometry, significant land acquisition and negative impacts for the surrounding urban form and local connectivity

The *rail over road* and *rail under road* options were found to be technically feasible and were presented to the community in a series of comprehensive consultation sessions.

The *rail under road* option has been selected for the Edithvale and Bonbeach level crossing removals and is the subject of this referral as a result of technical assessments, environmental considerations and a comprehensive community consultation program.

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

No alternatives are under investigation.



## 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:**

Activities related to the projects that are not the subject of this referral include:

#### Investigative and enabling works

The following works and activities do not form part of the action that is being referred:

- Activities associated with designing and assessing project impacts such as geotechnical and environmental investigations, site surveys and establishing the location of existing utilities and services
- The relocation of utilities and services, where such activities are comparable in scope and scale to relocation, renewal and maintenance, and are undertaken in accordance with applicable Victorian planning and environmental approval processes
- Works to maintain the existing rail, road and other infrastructure in the project location.

#### Works to construct the combined services route

The Combined Services Route (CSR) will run for approximately 30 kilometres between Centre Road, Bentleigh to the north and Frankston-Flinders Road, Frankston to the south and contain rail signalling, communications, electrolysis and traction power feeder cables.

The CSR would be 800mm to 1.3 metres wide, and up to 1.2 metres deep, pending the number and size of conduits.

The alignment of the trench is flexible and LXRA has undertaken due diligence surveys demonstrating that the works to construct the trench can avoid significant impacts on aspects of the environment including biodiversity, historic heritage, cultural heritage and contamination of land and/or water. Construction of the trench, within an already predominately disturbed rail corridor, will be managed in accordance with EPA guidelines and industry standard environmental management measures.

## 6. Project implementation

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

LXRA is an administrative office in the Victorian Department of Economic Development, Jobs, Transport and Resources (DEDJTR).

### Implementation timeframe:

The proposed timeframes for procurement, design, construction and operation of the projects subject to this referral are:

- Late 2016 / Early 2017
  - Ongoing community consultation
  - Detailed assessment and design
- 2017
  - Obtain statutory approvals (if no Environment Effects Statement is required under the *Environmental Effects Act 1978*)
- 2018
  - Obtain statutory approvals (if an Environment Effects Statement is required under the *Environmental Effects Act 1978*)
- 2019
  - Commencement of procurement process
  - Commence construction.

Note: both projects would require a one to two month occupation and shutdown of the rail corridor, with a two to four month closure of each train station. All construction activity, including preparatory works and landscaping, would occur over an 18 month period.

### Proposed staging (if applicable):

The staging of construction would be determined by LXRA in consultation with the preferred contractor. Works may or may not occur concurrently.

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

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

No  Yes If no, please describe area for investigation.  
If yes, please describe the preferred site in the next items (if practicable).

**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):

#### Edithvale

- *Project area*  
The Edithvale project area is located predominantly within the existing rail reserve owned by VicTrack. It was established in the early 1880s and has been disturbed by more than a century of rail related activities.

The Edithvale project area is bounded by Lochiel Avenue (to the north) and Elsie Grove (to the south), and by Station Street (to the east), and Nepean Highway (to the west). Refer to Figure 1.

Edithvale Road (which transects the project area and includes the level crossing site) is the extension of Springvale Road and is the only arterial road that connects the beachside

suburbs between Mordialloc and Patterson River to the Mornington Peninsula Freeway and suburbs to the east.

Maps are included at Attachment 1. The 'Edithvale Urban Design Concept Report' (AECOM-GHD JV, 2017a), provides a contextual assessment of the area, including photographs (Attachment 2a).

- *Surrounding area*

Land use immediately surrounding the project area is predominantly residential. To the west, the project area fronts the Edithvale Neighbourhood Activity Centre. This commercial area is on the west side of Nepean Highway extending from Natal Avenue (to the north) and ends between Bank Road and Derrybeg Lane (to the south) – directly opposite the Edithvale Station.

The land in the vicinity of the Edithvale project area has become increasingly urbanised with commercial and residential development surrounding. It is anticipated this area will continue to be developed in accordance with current and developing strategic planning objectives.

- *Environmental conditions*

- *Topography, landform, geology and soils*

Within the vicinity of the Edithvale project area the topography is relatively flat at approximately six metres above sea level. The geological setting of the region is presented on the Geological Survey of Victoria 1:63,360 scale – Cranbourne Mapsheet. The Mapsheet indicates that typically, the Mordialloc to Frankston rail alignment is underlain by Quaternary age aeolian and swamp deposits, which in turn overlie the Pliocene age Baxter Sandstone or Brighton Group sediments.

Geotechnical investigations are ongoing; however a variable thickness of anthropogenic fill material is expected to be found overlying the natural geological materials associated with the construction of local transport and residential/commercial infrastructure. Refer to 'Edithvale Contamination/PASS Desktop Review' (AECOM-GHD JV, 2017b) (Attachment 3a) for further information.

- *Surface water, groundwater and drainage*

The Edithvale project area is within the Port Phillip and Westernport Catchment Management Authority region. There are no known stormwater drainage assets crossing the rail line within the project area, and the site is not subject to any flooding overlays within the local planning scheme.

The rail line through the project area forms a ridge with runoff on the east flowing to the Edithvale Wetlands (approximately 1,300 metres from the level crossing) and runoff on the west side flowing to Port Phillip Bay (approximately 200 metres from the level crossing), both conveyed by council underground drainage networks. Refer to 'Edithvale Cross Drainage Assessment' (AECOM-GHD JV, 2017c) (Attachment 4a) for further information.

Groundwater investigations have commenced and are ongoing. Groundwater depth beneath the project area is inferred to be less than five metres below ground level within the Quaternary Aquifer. Previous mapping suggests that this aquifer is potentially unsaturated at the level crossing. Refer to 'Edithvale Preliminary Groundwater Assessment' (AECOM-GHD JV, 2017d) (Attachment 5a) for further information.

- *Flora and Fauna*

Native vegetation quality within the Edithvale project area is generally of poor quality as a consequence of its historical and continuing land use as an active rail line and the intensification of land use in proximity to the rail corridor. Weed infestations (predominately garden escapes from surrounding residences) as well as regular disturbance from management and maintenance activities within the rail corridor has encouraged the proliferation of introduced species over indigenous vegetation.

Despite this disturbance, 12 patches (0.573 hectares) of native vegetation was recorded and mapped and these are considered to represent two EVCs:

- Coast Banksia Woodland (EVC 2)
- Coastal Dune Scrub (EVC 160).

Three scattered trees were also recorded during the fieldwork.

No flora or fauna species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) or *Flora and Fauna Guarantee Act 1995* (Vic) (FFG Act) were recorded in the project area. Refer to 'Edithvale Flora and Fauna Assessment' (AECOM-GHD JV, 2017e) (Attachment 6a) for further information.

- *European or Historical Heritage*

There are no sites registered on the Victorian Heritage Register (VHR), the Victorian Heritage Inventory (VHI) or subject to any Heritage Overlay (HO) within the Edithvale project area. Refer to 'Edithvale Historic Heritage Site Assessment' (Lovell Chen, 2017a) (Attachment 7a) for further information.

- *Aboriginal Heritage*

While the project area is located within an area of Aboriginal sensitivity (200 metres of Port Phillip Bay high tide mark), ALA (2017a) do not consider the area sensitive on the basis that significant ground disturbance has previously occurred. No registered Aboriginal sites occur within the project area. Refer to 'Aboriginal Cultural Heritage Desktop Assessment' (ALA, 2017a) (Attachment 8a).

### Bonbeach

- *Project area*

The Bonbeach project area is located predominantly within the same historically and disturbed rail corridor, and is bounded by Glenola Road (to the north) and Mascot Avenue (to the south), and by Station Street (to the east), and Nepean Highway (to the west). Refer to Figure 1.

Bondi Road (which transects the project area and includes the level crossing) is a local road managed by the City of Kingston. It provides local access between residences and Nepean Highway.

Maps are included at Attachment 1. The 'Bonbeach Urban Design Concept Report' (AECOM-GHD JV, 2017f), provides a contextual assessment of the area, including photographs (refer to Attachment 2b).

- *Surrounding area*

Land use immediately surrounding the project area is predominantly residential. Commercial activity in the immediate vicinity includes two small commercial areas on the western side of Nepean Highway. The first is between Wimborne Avenue (to the north) and between Chadwell Grove and Shenfield Avenue (to the south). The second is between Newberry Avenue (to the north) and Harding Avenue (to the south).

The surrounding land has become increasingly urbanised with commercial and residential development. It is anticipated this area will continue to be developed in accordance with current and developing strategic planning objectives.

- *Environmental conditions*

- *Topography, landform, geology and soils*

The topography is generally flat within the local area and along the rail corridor with an overall slope to the east toward the Patterson River Country Club (located approximately 650 metres from the level crossing) and west towards Port Phillip Bay (located approximately 200 metres from the level crossing).

Within the vicinity of the Bonbeach project area, the topography is relatively flat, at approximately six metres above sea level. The geological setting of the region is presented on the Geological Survey of Victoria 1:63,360 scale – Cranbourne Mapsheet. The Mapsheet indicates that typically, the Mordialloc to Frankston rail alignment is underlain by Quaternary age aeolian and swamp deposits, which in turn overlie the Pliocene age Baxter Sandstone or Brighton Group sediments. Geotechnical

investigations are ongoing; however a variable thickness of anthropogenic fill material is expected to be found overlying the natural geological materials associated with the construction of local transport and residential/commercial infrastructure.

Refer to 'Bonbeach Contamination/PASS Desktop Review' (AECOM-GHD JV, 2017g) (Attachment 3b) for further information.

○ *Surface water, groundwater and drainage*

The Bonbeach project area is within the Port Phillip and Westernport Catchment Management Authority region. There are no known drainage assets crossing the rail line within the project area apart from at the Patterson River. The level crossing is approximately 2,500 metres southwest of the Edithvale Wetlands and 2,700 metres northwest of the Seaford Wetlands.

The rail line in the vicinity of Bonbeach station forms a ridge with runoff to the east flowing ultimately to the Patterson River via council underground drainage networks and overland flow to discharge locations at The Fairway and the Patterson River Country Club. Runoff on the west flows to Port Phillip Bay via council's underground drainage network. Furthermore, the site is not subject to any flooding overlays within the local planning scheme and there is no indication of surface flows crossing the rail corridor at this location. Refer to 'Bonbeach Cross Drainage Assessment' (AECOM-GHD JV, 2017h) (Attachment 4b) for further information.

Groundwater investigations are ongoing. Groundwater depth beneath the project area is inferred to be less than five metres below ground level within the Quaternary Aquifer. Refer to 'Bonbeach Preliminary Groundwater Assessment' (AECOM-GHD JV, 2017i) (Attachment 5b) for further information.

○ *Flora and Fauna*

As for the Edithvale project area, the vegetation quality within the Bonbeach project area is generally of poor quality as a consequence of the historical and continuing land use as an active rail line and the intensive residential and commercial land uses. Continued disturbance for management and maintenance within the rail corridor has favoured the proliferation of grassy and broad-leaf weed species, whilst suppressing the natural regeneration of native species such as Coast tea-tree *Leptospermum laevigatum*.

16 patches of vegetation were mapped within the Bonbeach project area, representing 0.94 hectares in total. Scattered trees were recorded. The patches of vegetation are considered to represent two Ecological Vegetation Classes:

- Coast Banksia Woodland (EVC 2)
- Coastal Dune Scrub (EVC 160)

Amenity plantings within proximity to the Bonbeach Station and within the nature-strip of surrounding roadways contribute to the amenity of the local area, and such plantings have used species considered indigenous to Victoria such as Giant Honey-myrtle and native to Australia such as Norfolk Island Hibiscus.

No flora or fauna species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) or *Flora and Fauna Guarantee Act 1995* (Vic) (FFG Act) were recorded in the project area.

The streetscape character of the local area is poorly landscaped with limited canopy vegetation, while the rail corridor is planted with canopy tree vegetation and under-story planting, screening views of the corridor from residential and retail/commercial interfaces. Recreational reserves and the Patterson River Country Club also contribute to the green landscape character of the area.

Refer to 'Bonbeach Flora and Fauna Assessment' (AECOM-GHD JV, 2017j) (Attachment 6b) for further information.

○ *European or Historic Heritage*

There are no sites registered on the Victorian Heritage Register (VHR), the Victorian

Heritage Inventory (VHI) or subject to any Heritage Overlay (HO) within the Bonbeach project area. Refer to 'Bonbeach Historic Heritage Site Assessment' (Lovell Chen, 2017b) (Attachment 7b) for further information.

- *Aboriginal Heritage*

While the site is located within an area of Aboriginal sensitivity (200 metres of Port Phillip Bay high tide mark), it is not considered sensitive on the basis that significant ground disturbance has previously occurred. No registered Aboriginal sites occur within the project area. Refer to 'Bonbeach Aboriginal Cultural Heritage Desktop Assessment' (ALA, 2017b) (Attachment 8b) for further information.

**Site area** (if known):

The Edithvale project area is approximately 7.44 hectares.

The Bonbeach project area is approximately 9.94 hectares .

The project areas for both projects includes sites for both permanent and temporary works required for the level crossing removals. Permanent rail infrastructure will generally be within the existing rail corridor (refer to Attachment 1a).

**Current land use and development:**

The project areas are located within Melbourne's Urban Growth Boundary in an area that is substantially developed and which has been part of Metropolitan Melbourne for many decades.

Both project areas are sited predominately within the existing rail reserve which is owned by VicTrack; which has been used as a railway line for over a century. Both project areas also include adjacent roadways (Station Street and Nepean Highway) as shown in Figure 1d.

Temporary access may also be required to public land parcels (owned by VicRoads and the City of Kingston) at road crossings and for ancillary works associated with drainage improvements and road modifications. However, no private land will be required on either a permanent or temporary basis; and all public land required temporarily will be returned to the council and VicRoads on completion of the project.

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

Edithvale

The project area is located between the Edithvale Neighbourhood Centre (consisting exclusively of small one or two storey tenancies with retail shop fronts along Nepean Highway) to the west and residential land to the east. The Edithvale Railway Station has a utilitarian built form, dating to the 1980s, creating a landmark through its prominent location. Beeson Reserve is adjacent to the Edithvale Station, to the west of the station, and links the station to the foreshore and lifesaving club.

Train services at Edithvale Station run at approximately 4-16 minute intervals during the AM peak period and approximately 9-22 minute intervals during the PM peak. The station currently accommodates 34 commuter car spaces to the east and west of the rail reserve. Three connecting bus services located to the east of the station precinct include routes 706, 858 and the 902 SmartBus route. Edithvale Road is an arterial road on a single carriageway, and is the extension of Springvale Road. It is the only arterial road that connects the bayside suburbs between Mordialloc and Patterson River to the Mornington Peninsula Freeway and suburbs to the east. The road caters for significant volumes of general traffic and freight. It is also used by two bus services however these services do not pass through the level crossing.

A number of pedestrian crossings cross the rail corridor, located at Denman Avenue, Berry Avenue, Fraser Avenue and Lochiel Avenue. These crossings are at grade with the railway line and are predominantly aligned with existing beach access points. A signalised pedestrian crossing of Nepean Highway is located at Edithvale Road and Denman Avenue.

### Bonbeach

The project area is located in close proximity to the Bonbeach Neighbourhood Centre, which comprises some retail shopfronts, exclusively with local services and uses ranging from cafes, small shops and personal and professional services. Many shopfronts are currently vacant. The land to the east is predominantly residential land, and there is some car parking areas provided along Station Street.

Scattered vegetation traverses the north and south sides of Bonbeach Station on both Nepean Highway and Station Street. The Bonbeach project area is also in the vicinity of a number of regional recreational destinations including the Port Phillip Foreshore and Patterson River Country Club.

A pedestrian crossing and traffic lights are located along Station Street north of Bondi Road. The pedestrian crossing links with one along Nepean Highway north of Station Street. These pedestrian links provide connectivity between the areas east and west of the Frankston Train line.

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

#### State Policy Context

- *Transport Integration Act 2010*

The *Transport Integration Act 2010* (Vic) (TIA) outlines the vision for transport in Victoria, which is 'to have an integrated and sustainable transport system that contributes to an inclusive, prosperous and environmentally responsible state.' [s.6].

The TIA requires decision makers to have regard to the promotion of inclusive, prosperous and environmentally responsible transport. It requires all Victorian transport agencies to work towards an integrated and sustainable transport system. The level crossing removals at Edithvale and Bonbeach are expected to have a positive impact on the transport system as defined within the Act.

- *Network Development Plan - Metropolitan Rail (PTV, 2012)*

PTV's plan recognises the increasing impact of trains at level crossings on the performance of the road network.

The plan identifies the need to adopt a metro-style rail network for Melbourne. Crucial to the implementation of a metro style system is grade separation of level crossings where increasing train numbers are causing unacceptable traffic delays.

- *Plan Melbourne (Victoria Government, 2014)*

*Plan Melbourne 2014* sets out a long-term framework for the future growth and development of Greater Melbourne, including for a more connected Melbourne. *Plan Melbourne 2014* identifies the strategic removal of level crossings as key to improving connections across Melbourne and transforming the way Melbourne and its people move around. Removal of level crossings is expected to further enhance employment, population growth and reduce traffic congestion within suburbs.

- *Plan Melbourne Refresh Discussion Paper (Victorian Government, 2015)*

The Victorian Government released the Plan Melbourne Refresh Discussion Paper in October 2015. Key aspects included:

- The need to develop a longer-term pipeline of level-crossing removal projects for delivery in the medium-to-long term.
- The need to eliminate level crossings in areas that improve road safety and efficiency and contribute to the objectives of the Strategy
- The rail level crossing removal program is particularly important because it both supports circumferential movement along arterial roads as well as radial rail movements.

#### Kingston Planning Scheme

- *State Planning Policy Framework*

The State Planning Policy Framework (SPPF) is contained within the Kingston Planning scheme. Policies of particular relevance to the Edithvale and Bonbeach level crossing removals include:

- Clause 11 Settlement

<ul style="list-style-type: none"> <li>○ 11.02-2 Planning for growth areas</li> <li>– Clause 12 Environmental Landscape Values</li> <li>– Clause 13 Environmental Risks <ul style="list-style-type: none"> <li>○ 13.01-1 Coastal inundation and erosion</li> <li>○ 13.02-1 Floodplain management</li> <li>○ 13.03-1 Use of contaminated and potentially contaminated land</li> <li>○ 13.03-3 Salinity</li> <li>○ 13.04 Noise and Air</li> <li>○ 13.05 Bushfire</li> </ul> </li> <li>– Clause 14 Natural Resource Management <ul style="list-style-type: none"> <li>○ 14.02-1 Catchment planning and management</li> <li>○ 14.02-2 Water quality</li> </ul> </li> <li>– Clause 15 Built Environment and Heritage <ul style="list-style-type: none"> <li>○ 15.01 Urban Environment</li> <li>○ 15.01-2 Urban Design Principles</li> <li>○ 15.01-3 Neighbourhood and Subdivision Design</li> </ul> </li> <li>– Clause 18 Transport <ul style="list-style-type: none"> <li>○ 18.01-1 Land use and transport planning</li> </ul> </li> <li>– Clause 19 Infrastructure.</li> </ul> <ul style="list-style-type: none"> <li>• <i>Local Policy Context</i> <ul style="list-style-type: none"> <li>○ <i>Local Planning Policy Framework</i> The project areas are both wholly located within the City of Kingston. The Kingston Planning Scheme comprises Local policies as well as applicable land Zones and Overlays and general and particular provisions which set out types of uses and development allowed and any additional requirements for buildings and works on land.  Local policies of particular relevance to the Edithvale and Bonbeach level crossing removals include: <ul style="list-style-type: none"> <li>– Clause 21.04 Vision</li> <li>– Clause 21.09 Environment, Wetlands and Waterways</li> <li>– Clause 21.12 Transport, Movement and Access.</li> </ul> </li> <li>○ <i>Planning scheme zones and overlays: Edithvale Road to Bondi Road</i> The permanent infrastructure for the level crossing removals will be sited within an existing rail reserve zoned Public Use Zone 4 – Transport (PUZ4) and parts of the existing road network zoned Road Zone Category 1 (RDZ1) or General Residential Zone 2 (GRZ2).  There are no overlays that cover the Edithvale project area.  The Bonbeach project area is covered by the Design and Development Overlays – schedules 1 and 7 on the eastern side of Station Street between Mernda Avenue and the Patterson River.  Planning Zone and Planning Overlay maps are provided in Attachment 1 (1d and 1e).</li> </ul> </li> </ul> <p><u>Summary</u> These State and local policies and controls support improved transport outcomes and better access. The projects will enable existing and future services to better deliver these outcomes within a framework that balances these objectives with relevant environmental, landscape and similar considerations.</p> <p><b>Local government area(s):</b> City of Kingston</p>
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## 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):

Both project areas are predominately within an existing rail reserve, and also encompass adjoining road reserves. The rail corridor, within which the permanent level crossing removal infrastructure would be constructed, follows the route of the original Frankston Railway Line, within zoning (Public Use Zone 4) and ownership (VicTrack) that reflects this railway use. The environment within the rail reserve is substantially modified due to its use as an active rail line over more than 100 years.

Key environmental assets identified in the project areas and vicinity are detailed below:

- **Flora and fauna:** There is remnant native vegetation present within the project area, and this is comprised of both patches of vegetation and scattered trees. The Ramsar-listed Edithvale-Seafood Wetlands are located approximately 1,300 metres from the Edithvale level crossing and approximately 2,500 metres from the Bonbeach level crossing
- **Aboriginal cultural heritage:** Two heritage places are located within one kilometre of the Edithvale project area, and there are no previously recorded Aboriginal heritage values within either project area
- **Landscape values and built forms:** The rail corridor is planted with canopy tree vegetation and under-story planting. Land uses immediately surrounding the project areas are predominantly residential in nature, however both project areas are sited within activity centres
- **Surface water and drainage:** The project areas are situated within the Port Phillip and Westernport Catchment Management Authority region. The Patterson River is located approximately 60 metres from the southern end of the Bonbeach project area (and approximately 1,000 metres from the Bondi Road/Station Street level crossing), and it acts as a hydraulic divide to waters south of Patterson River
- **Groundwater:** Groundwater in the project areas is understood to be hydrogeologically connected to the Edithvale Wetland component of the Ramsar-listed Edithvale-Seafood Wetlands. Sensitive aspects of the groundwater environment at the project areas include existing groundwater users (i.e. via groundwater bores), contaminated soil and groundwater from neighbouring sites, existing of natural acid sulfate soils, compactable sediments, naturally shallow groundwater and permeable aquifers, and proximity to marine waters
- **Geology and soils:** a variable thickness of anthropogenic fill material is expected to be found overlying the natural geological materials.

#### Flora and Fauna

Desktop and field assessments were conducted to identify key ecological values in the project areas, see Section 12 of this referral) and Attachment 6a and 6b.

- *Edithvale*  
The field assessment identified 12 patches of remnant vegetation, comprising 0.573 hectares (0.15 habitat hectares) of native vegetation. These patches are comprised of the following EVCs:
  - Coast Banksia Woodland (EVC 2) (Bioregional Conservation Status of Vulnerable),
  - Coastal Dune Scrub (EVC 160) (Bioregional Conservation Status of Depleted)
  - three scattered trees.

No flora, fauna, or vegetation communities that are listed under EPBC Act, FFG Act or included on Victoria's Rare or Threatened Species (VROTS) were recorded in the Edithvale project area, and none were assessed as having greater than a low likelihood of occurrence.
- *Bonbeach*  
The field assessment identified 16 patches of remnant vegetation comprising 0.936 hectares (0.231 habitat hectares) of native vegetation. These patches are comprised of:
  - Coast Banksia Woodland (EVC 2) (Bioregional Conservation Status of Vulnerable)

- Coastal Dune Scrub (EVC 160) (Bioregional Conservation Status of Depleted)
- one scattered tree.

No flora, fauna or vegetation communities that are listed under EPBC Act, FFG Act or included on VROTS were recorded in the project areas and none were assessed as having greater than a low likelihood of occurrence.

The Edithvale and Bonbeach level crossings are located approximately 1,300 metres and 2,500 metres from the Edithvale Wetlands respectively, part of a site listed under the Ramsar Convention on Wetlands of International Importance. The Edithvale-Seaford Wetlands is known to provide habitat for:

- Sharp-tailed Sandpipers (EPBC-Act listed migratory species)
- Australasian Bittern and Curlew Sandpiper (EPBC-Act listed species)
- High diversity of significant avifauna, including 20 species of waterbirds listed under international migratory agreements.

Potential impacts of the ecological values of the project area are described in Section 13 of this referral.

#### Aboriginal Cultural heritage

- *Edithvale*  
The desktop assessment identified two heritage places located within one kilometre of the project area. However, none of these heritage places fall within the project area itself and the project will not have any impact on these places.
- *Bonbeach*  
There are no registered Aboriginal cultural heritage places located within one kilometre of the project area

For further detail, refer to Section 15 of this referral and Attachment 8.

#### Landscape values and built forms

- *Edithvale*  
The Edithvale project area is predominantly within the rail corridor bounded by (and includes) Nepean Highway (to the west) and Station Street (to the east). The rail corridor is planted with vegetation. Land use immediately surrounding the project area is predominantly residential in nature. To the west, the project area fronts the Edithvale Neighbourhood Activity Centre. This commercial area is on the west side of Nepean Highway extending from Natal Avenue (to the north) and ends between Bank Road and Derrybeg Lane (to the south) – directly opposite the Edithvale Station.

The 'Edithvale Landscape and Visual Impact Assessment' (AECOM-GHD JV, 2017k) (Attachment 9a) identified five landscape character zones (LCZ) within 500 metres of the project area:

- *LCZ 1: Infrastructure corridor*  
This LCZ is a linear corridor of land that is flanked by and includes both Nepean Highway and Station Street. The LCZ is highly visible and is lined with intermittent vegetative cover, comprising of low-growing regrowth of endemic shrubs and trees which contribute to the coastal character of Edithvale's streetscapes.
- *LCZ 2: Residential*  
The landform in LCZ 2 is generally flat across the zone and incorporates some scattered remnant vegetation and limited street tree planting in residential streets. Built form ranges from typically single and double storey housing, and up to four storeys in locations within close proximity to the train station and commercial areas.
- *LCZ 3: Commercial*  
This LCZ comprises a small linear commercial centre located along the Nepean Highway. This contains a mix of shops, small businesses and cafes/restaurants located in one or two storey premises. Edithvale Station is visible from this LCZ and acts as a landmark

and gateway for the commercial centre.

- *LCZ 4: Open space*  
LCZ 4 comprises Beeson Reserve, a flat, linear park located between Edithvale Station and the foreshore, situated in the centre of the project area, and Regents Park, situated on the northern boundary of the project area.
- *LCZ 5: Foreshore*  
LCZ 5 comprises a strip of coastal land and associated dwellings. The LCZ comprises low dunes with varying patches of remnant vegetation.

For further detail, refer to Section 14 of this referral and Attachment 9.

- *Bonbeach*

The Bonbeach project area is predominantly within the rail corridor bounded by (and includes) Nepean Highway (to the west) and Station Street (to the east). The rail corridor is planted with canopy tree vegetation and under-story planting. Land use immediately surrounding the project area is also predominantly residential in nature. Commercial activity in the immediate vicinity includes two small commercial areas on the western side of Nepean Highway.

The 'Bonbeach Landscape and Visual Impact Assessment' (AECOM-GHD JV, 2017I) (Attachment 9b) identified four landscape character zones within 500 metres of the project area:

- *LCZ 1: Infrastructure corridor*  
This LCZ is a corridor of land that is flanked by both Nepean Highway and Station Street. The LCZ is highly visible and is lined with intermittent vegetative cover, comprising endemic low-growing regrowth shrubs and trees which contribute to the coastal character of the streetscape.
- *LCZ 2: Residential*  
The landform in LCZ 2 is relatively flat land with scattered remnant vegetation and some street tree planting in the verges. Built form typically comprises single and double storey housing. Planting along the rail corridor provides some visual screening and provides a green backdrop to residential areas.
- *LCZ 3: Commercial*  
This LCZ encompasses a small linear commercial strip on the western side of the Nepean Highway. The commercial strip is generally located in one or two storey premises with ground floor shops with residences above. Bonbeach Station forms a distinctive element within this view and acts as a wayfinding landmark for users of the commercial centre.
- *LCZ 4: Foreshore*  
LCZ 4 comprises of coastal fronting land with residential forming its edge, and is typical of the foreshore from Mordialloc Creek to Frankston. The LCZ comprises low dunes with a variety of remnant vegetation.

For further detail, refer to Section 14 of this referral and Attachment 9.

#### Surface water and drainage

Both the Edithvale and Bonbeach project areas are situated within the Port Phillip and Westernport Catchment Management Authority region. There are no known drainage assets crossing the rail line within the project areas. Neither project area is affected by flooding overlays within the local planning scheme.

Further details in relation to the water environment within the project areas are provided in Section 13 of this referral and Attachment 4.

#### Groundwater

Based on limited site data obtained to date, groundwater levels at Edithvale and Bonbeach are likely to range from three to six metres below ground level, or less than two metres elevation to

the Australian Height Datum.

The groundwater within both project areas is hydrogeologically connected to the Edithvale Wetland component of the Edithvale-Seaford Wetlands. A number of groundwater users are present in the vicinity of the project areas and three Groundwater Dependent Ecosystems (GDEs) are in close proximity, including the Patterson River, the Edithvale-Seaford Wetlands and the Melbourne Water drain.

For further details, refer to Section 13 of this referral and Attachment 5.

Geology and soils

The geology of the project areas feature Coastal and Inland Dune deposits consisting of sand and silt. Geotechnical investigations are ongoing; however a variable thickness of anthropogenic fill material associated with the construction of the local transport and residential/commercial infrastructure is expected to be found overlying the natural geological materials.

The project areas are mapped as 'High Probability, High Confidence' area for potential acid sulfate soils with respect to the CSIRO ASRIS mapping.

For further details, refer to Section 14 of this referral and Attachment 3.

## 9. Land availability and control

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

No  Yes If yes, please provide details.

All land within the rail reserve is owned in freehold by VicTrack on behalf of the Victorian Government.

The proposal is on, or partly on the following Crown land parcels:

Parcel Details for Edithvale (Parish of Lyndhurst):

Crown Description	Standard Parcel Identifier
Allot. 2097	2097\PP3025
Allot. 2075	2075\PP3025
Allot. 2095	2095\PP3025

Parcel Details for Bonbeach (Parish of Lyndhurst):

Crown Description	Standard Parcel Identifier
Allot. 2156	2156\PP3025
Allot. 2152	2152\PP3025
Allot. 2155	2155\PP3025
Allot. 2157	2157\PP3025
Allot. 2097	2097\PP3025
Allot. 2075	2075\PP3025
Allot. 2095	2095\PP3025

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

The permanent railway infrastructure works would be located within the existing rail reserve owned by VicTrack. There may be minor transfers of land between public authorities following the final design and construction of infrastructure.

No privately held land would be permanently acquired by the projects.

Access and temporary construction activities would also be required on the surrounding road network for which VicRoads or City of Kingston are the road management authorities under the *Road Management Act 2004* (Vic).

Access may be required to land under the ownership of the City of Kingston. The land may be required temporarily for construction and ancillary works associated with road modifications and drainage improvements.

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

There are no changes in land tenure proposed, apart from potential for minor transfers of land between public authorities following the final design and construction of infrastructure.

VicTrack would retain ownership of the rail reserve.

Any land required temporarily for construction would be reinstated to the same or better than pre-occupation condition and returned to the control of the original owners and/or managers.

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

The Edithvale and Bonbeach project areas do not intersect with any known native title claims.

The project areas contain the following infrastructure:

- Railway
- Existing roads
- Easements for overhead power transmission lines
- Drainage structures and overland flow paths
- Utilities.

Agencies responsible for managing these assets would have an interest in the project, and include (but are not limited to) VicTrack, VicRoads, the City of Kingston and Melbourne Water.

## 10. Required approvals

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

#### Commonwealth

- *Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)*  
The projects warrant a referral to the Minister for the Environment and Energy under the EPBC Act for a decision on whether the projects are 'controlled actions' and require further assessment and approval. The referral is warranted due to the project's potential to impact the Ramsar listed Edithvale-Seafood Wetlands and the associated listed flora and fauna.

#### State

- *Planning and Environment Act 1987 (Vic) (PE Act)*  
LXRA will request that the Minister for Planning considers planning scheme amendments to the Kingston Planning Scheme to facilitate planning approval for the projects in accordance with Part 3 of the PE Act.
- *Aboriginal Heritage Act 2006 (Vic)*  
Cultural Heritage Management Plans (CHMPs) are not mandatory for the Edithvale and Bonbeach projects under the Act, but are currently being prepared voluntarily and in accordance with the Act.
- *Other*  
Other approvals or consents likely to be required for the project include:
  - a permit to clear protected flora under the *Flora and Fauna Guarantee Act 1995 (Vic)*
  - a consent for works within a road reserve under the *Road Management Act 2004 (Vic)*
  - a licence to use groundwater and/or a permit for works on waterways under the *Water Act 1989 (Vic)*
  - a management authorisation to remove any wildlife under the *Wildlife Act 1975 (Vic)*.
  - consent under the *Coastal Management Act 1995 (Vic)*

### Have any applications for approval been lodged?

No  Yes If yes, please provide details.

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

A program of stakeholder consultation has commenced including discussions with the following agencies likely to be required to consider statutory approvals in relation to the project:

- Commonwealth Department of the Environment and Energy
- Department of Environment, Land, Water and Planning
- Aboriginal Victoria
- Melbourne Water
- VicRoads
- Kingston City Council.

### Other agencies consulted:

A program of stakeholder consultation has been undertaken including discussions with the following agencies:

- Department of Economic Development, Jobs, Transport and Resources
- Department of Premier and Cabinet
- Department of Treasury and Finance
- Heritage Victoria

- Public Transport Victoria
- VicTrack
- Metropolitan Planning Authority
- Metro Trains Melbourne
- Wurundjeri Tribe Land and Compensation Cultural Heritage Council
- Boon Wurrung Foundation
- Bunurong Land Council Aboriginal Corporation
- Office of the Victorian Government Architect

An extensive community engagement program commenced in early 2016. A number of activities took place between February and October 2016 including community feedback sessions, meetings and workshops with councils and community groups and direct engagement with homeowners and businesses.

Further details are provided in Section 20.

## 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 studies undertaken for both projects include:

- Contamination/PASS assessment
- Cross drainage
- Groundwater
- Flora and fauna
- Historical heritage site assessment
- Aboriginal cultural heritage desktop assessment
- Landscape and visual impact
- Groundwater impacts - ecological assessment
- Acoustic
- Air quality.

One environmental impact was identified as being potentially significant, being the potential cumulative impact on the Ramsar-listed Edithvale-Seafood Wetlands due to changes to regional groundwater movements.

#### Key potentially significant environmental effects

- *Potential long-term change to the ecological character of a wetland listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia':*  
In accordance with the 'Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978' (DSE, 2006), the need for this referral is based on the potential impacts on the Edithvale component of the Ramsar-listed Edithvale-Seafood Wetlands.

The Edithvale-Seafood Wetlands are listed under the Ramsar Convention and in 'A Directory of Important Wetlands in Australia' is located 1,300 metres and 2,500 metres from the Edithvale and Bonbeach level crossings respectively. The Wetlands consists of two physically distinct and hydrologically and hydrogeologically separated wetland systems – the Edithvale Wetlands and the Seafood Wetlands. One Ramsar listing applies to both systems and is collectively known as the Edithvale-Seafood Wetlands.

The key features of the Edithvale-Seafood Wetlands include:

- A diversity of habitat for a range of flora and fauna species
- Potential habitat for flora species of conservation significance
- High diversity of significant avifauna, in particular:
  - Twenty species of waterbirds listed under international migratory agreements. The site regularly supports eight international migratory waterbirds and two wetland dependent fauna species listed under the Environment Protection and Biodiversity Act 1999 (EPBC Act):
    - Australasian Bittern *Botaurus poiciloptilus* – Endangered
    - Curlew Sandpiper *Calidris ferruginea* – Critically Endangered
  - Swift Parrot *Lathamus discolor* (Seafood Wetlands in 2015) and Orange-bellied Parrot *Neophema chrysogaster* (last recorded in the 1980s), both listed under the EPBC Act
  - Counts above one percent of the estimate population of two species are regularly recorded within the site: Australasian Bittern and Sharp-tailed Sandpiper *Calidris acuminata*.
- Function as an essential component of the regional drainage system and as critical flood storage.

The tanked structures proposed for the Edithvale and Bonbeach projects could create a



hydrogeological barrier impeding groundwater in its natural flow path towards the coast. As a result, the project may affect local and regional groundwater during construction and operation of the infrastructure, potentially causing a long-term change to water level and water quality in the Edithvale-Seaford Wetlands.

The Edithvale Wetland is situated 'up-gradient' to both project areas. Preliminary groundwater modelling indicates that:

- for the Edithvale level crossing removal, groundwater mounding in the order of 0.1 metres could occur at the Edithvale wetland as a result of the trenched 'rail under road' approach
- for the Bonbeach level crossing removal, groundwater mounding in the order of 0.1 metres could occur, however the area that may be affected extends 1,400 metres from the level crossing and does not intersect with the Edithvale Wetland which is located 2,500 metres from the Bonbeach level crossing.

However, subject to further assessment, there is a potential for groundwater change at the wetlands from the cumulative regional impact of the Edithvale and Bonbeach level crossing removal projects.

Changes to water level or quality could have a significant impact on the ecological character of the wetlands, affecting the continued suitability of the site as preferred habitat for a number of significant fauna species.

Potential effects were informed by 'Groundwater Preliminary Impacts – Ecological Assessment (Edithvale & Bonbeach)' report (AECOM-GHD JV, 2017m) (Attachment 10). Potential impacts are further discussed in Section 13.

#### Other localised environmental effects

Other localised environmental effects which are not considered 'significant' that may arise from the project include the following:

- *Flora and fauna:*

No flora or fauna species recognised by the FFG Act and the EPBC Act were recorded within either project area, and no such species were assessed as having a greater than low likelihood of occurrence.

However, any impact to groundwater within the Edithvale-Seaford Wetlands could affect habitat for the following species :

- Sharp-tailed Sandpipers (EPBC Act listed migratory species)
- Australasian Bittern and Curlew Sandpiper (EPBC Act listed species)
- High diversity of significant avifauna, including 20 species of waterbirds listed under international migratory agreements.

- *Surface water and groundwater:*

The proposed trench structures could affect groundwater levels, with drawdown on the west (coastal) side of the projects, and mounding on the east side of the projects. Potential long term impacts of this may include:

- interference with groundwater dependent ecosystems (preliminary modelling suggests that groundwater mounding in the order of 0.1 metres could occur).
- interference with groundwater users (there are two identified existing bores that could be affected at Edithvale and three at Bonbeach)
- interference with potentially contaminated groundwater through altering natural groundwater flow paths (note that groundwater monitoring is underway. If present, contamination could be attributable to a number of businesses such as dry cleaning, mechanics, petrol stations and timber yards in the vicinity of the project areas and which have a higher risk of contaminating groundwater due to the nature of their activities)
- groundwater mounding (groundwater modelling predictions did not show a significant area to be impacted by shallow groundwater levels and hence water logging impacts)
- saline intrusion (There is some potential for migration of marine water into fresh groundwater systems. An assessment of this is provided in attachments 5a and 5b which conclude that although saline intrusion is likely to occur, the consequence of this would be minor.)

- *Native vegetation:*

The potential clearing of native vegetation within the project areas, necessary to facilitate the projects, is well below the DSE (2006) referral trigger of 10 hectares.

For each of the project areas, it is conservatively assumed that the following extent of vegetation would be removed:

- Edithvale: a maximum of 0.57 hectares of native vegetation (approximately 0.15 habitat hectares), comprising Coast Banksia Woodland (EVC 2), Damp Sands Herb-rich Woodland (EVC 3), and Coastal Dune Scrub (EVC 160) and three scattered trees
- Bonbeach: a maximum of 0.94 hectares of native vegetation (approximately 0.23 habitat hectares), comprising Coast Banksia Woodland (EVC 2) and Coastal Dune Scrub (EVC 160) and one scattered tree within the Bonbeach project area may be removed.

Given the constrained nature of the rail corridor, and the significant impact on surrounding land uses that would result from realigning the railway to avoid impacts on native vegetation, there are limited opportunities to avoid these impacts, however, the approach to construction and design of infrastructure will seek to minimise impacts on native vegetation so as to reduce this potential impact. Any native vegetation removed will be offset in accordance with the Victorian Biodiversity Assessment Guidelines.

- *Aquatic, estuarine or marine ecosystems:*

Port Phillip Bay is located approximately 200 metres to the west of both project areas but is not expected to be impacted by the projects. Patterson River flows in an east-west direction approximately 125 metres south of the Bonbeach level crossing removal project area. Although preliminary groundwater modelling suggests that the Patterson River may be impacted by groundwater mounding of approximately 0.1 metres, seasonal and tidal fluctuations are likely to overshadow any effects at Patterson River in the vicinity of the Bonbeach project area.

- *Greenhouse gas emissions:*

The project is predominantly inert infrastructure that does not generate greenhouse gas emissions. The proposed new station buildings will be designed in accordance with the LXRA Sustainability policy and assessed against the Infrastructure Sustainability Council of Australia sustainability scorecard, which includes assessment of greenhouse gas emissions.

- *Landscape values:*

No regionally or state significant landscape character impacts were identified as part of the landscape and visual impact assessments (Attachment 9).

- *Effects on land stability, acid sulphate soils or highly erodible soils:*

Potential for local subsidence (resulting from changes to groundwater) is predicted to be less than 10 millimetres. Waste and spoil will be minimised by using the waste hierarchy of avoidance, reduction, reuse and recycling. There is a high probability of encountering acid sulphate soils during excavation, which will be managed and mitigated through the Environmental Management Framework (EMF) or equivalent document.

- *Displacement of non-residential land use activities:*

There is no permanent acquisition of public or private land required for the project. Temporary construction activity could require the displacement of some non-residential public land uses adjacent to the rail corridor and abutting road reserves. Any sites occupied during construction would be reinstated following completion of works.

- *Displacement of residences or severance of residential access to community resources:*

The project would not displace residences or sever access to community resources.

- *Amenity (visual, noise and traffic):*

- *Noise*

Noise/vibration may occur during construction and would be managed under the EPA guidelines for major construction sites (Publication 480) (EPA, 1996). Operational noise emissions will be assessed in accordance with the Passenger Rail Infrastructure Noise

Policy (PRINP) and EPA Noise Control Guidelines (Publication 1254) (EPA, 2008) for rail operations to determine if noise mitigation measures need to be considered.

Refer to Section 15 of this referral and 'Edithvale Acoustic Assessment' (AECOM-GHD JV, 2017n) (Attachment 11a) and 'Bonbeach Acoustic Assessment' (AECOM-GHD JV, 2017o) (Attachment 11b).

- *Visual*  
Landscape and visual impacts are localised to the immediate area surrounding the projects. Refer to Section 14 of this referral and 'Edithvale Landscape and Visual Impact Assessment' (AECOM-GHD JV, 2017k) (Attachment 9a) and 'Bonbeach Landscape and Visual Impact Assessment' (AECOM-GHD JV, 2017l) (Attachment 9b) for further information.
- *Traffic*  
There will be a temporary increase in traffic during construction. Some short term diversions and road closures will be required during construction. The majority of truck movements will occur during the excavation of the proposed trench, anticipated to take two to three weeks during a one to two month shut down of the rail corridor. Following completion of works, the removal of the level crossing is expected to reduce congestion and associated noise and air emissions within the local area. Refer to Section 15 of this referral for further information,
- *Health or safety hazards resulting from air, water, noise or chemical hazards:*  
Construction impacts associated with projects of this type include noise, vibration, dust, traffic congestion, waste, stormwater and erosion and are expected to be minor (see Section 15).

Long term changes to air and water during operations are expected to be minor and therefore are not expected to result in severe or chronic health or safety hazards. Refer to Attachments 4 (Cross drainage), 11 (Acoustic) and 12 (Air quality) for further information.

- *Aboriginal cultural heritage:*  
Due to the highly modified nature of the rail corridor, most of the project areas contain a high level of previous ground disturbance. There are no registered Aboriginal cultural heritage places within the project areas. Refer to Section 15 of this referral and 'Edithvale Aboriginal Cultural Heritage Desktop Assessment' (ALA, 2017a) (Attachment 8a) and 'Bonbeach Aboriginal Cultural Heritage Desktop Assessment' (ALA, 2017b) (Attachment 8b) for further information.
- *Heritage:*  
There are no Victorian Heritage Register (VHR) or Victorian Heritage Inventory (VHI) sites within the project areas. Refer to Section 15 of this referral and 'Edithvale Historical Heritage Site Assessment' (Lovell Chen, 2017a) (Attachment 7a) and 'Bonbeach Historical Heritage Site Assessment' (Lovell Chen, 2017b) (Attachment 7b) for further information.

Section 18 provides further information on the measures being implemented to avoid, reduce and manage environmental impacts.

## 12. Native vegetation, flora and fauna

### Native vegetation

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

NYD  No  Yes If yes, answer the following questions and attach details.

The Flora and Fauna assessment of the project areas determined that:

- A maximum of 0.57 hectares (accounting for approximately 0.15 habitat hectares) of native vegetation may be cleared to facilitate the Edithvale level crossing removal. This comprises 0.46 hectares of Coast Banksia Woodland (EVC2), and 0.11 hectares of Coastal Dune Scrub (EVC 160). Three scattered trees may also be removed.
- A maximum of 0.94 hectares (accounting for approximately 0.23 habitat hectares) of native

vegetation may be cleared to facilitate the Bonbeach level crossing removal. This comprises 0.90 hectares of Coast Banksia Woodland (EVC 2) and 0.03 hectares of Coastal Dune Scrub (EVC 160). One scattered tree may also be removed.

There is potential for changes to groundwater to impact the vegetation and habitat values of the Edithvale-Seafood Wetlands. Further work is underway to determine the extent of the potential impact. Refer to Sections 13 and 20 for further detail.

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

Remnant vegetation was identified and mapped in April 2016 and January 2017 according to *Victoria's Permitted Clearing of Native Vegetation - Biodiversity Assessment Guidelines* (DEPI, 2013) as part of the flora and fauna Assessments of the Edithvale and Bonbeach project areas (refer to Attachment 6).

All patches of remnant vegetation were subjected to a Vegetation Quality Assessment using the habitat hectares method as described in the *Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method* (DSE, 2004).

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

NYD

Estimated area:

Approximately 0.94 hectares (0.23 habitat hectares) of native vegetation may need to be removed for the Bonbeach project.

Approximately 0.57 hectares (0.15 habitat hectares) of native vegetation may need to be removed for the Edithvale project.

It has been conservatively assumed that all native vegetation within the project areas would be removed. As noted above, because of the constrained nature of the rail corridor, and the significant impact on surrounding land uses that would result from realigning the railway to avoid impacts on native vegetation, there are limited opportunities to avoid these impacts, however, the approach to construction and design of infrastructure will seek to minimise impacts on native vegetation so as to reduce this potential impacts. Any native vegetation removed will be offset in accordance with the Victorian Biodiversity Assessment Guidelines.

**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)

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

The flora and fauna assessments (Attachment 6) identified the following native vegetation within the project area:

	<b>Edithvale</b>	<b>Bonbeach</b>
Patches of native vegetation observed	12	16
Area of native vegetation (ha)	0.57	0.94
• <i>Coast Banksia Woodland (EVC 2)</i>	0.45	0.90
• <i>Coastal Dune Scrub (EVC 160)</i>	0.11	0.03
Habitat hectares (Hha)	0.15	0.23
Scattered trees	3	1

Further descriptions of the EVCs and the flora species within these EVCs are included in Attachment 6.

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

NYD  Yes If yes, please briefly describe.

An Offset Management Strategy would be prepared, identifying requirements for vegetation offsets to account for the proposed removals. Habitat hectare and scattered tree data from the field assessment has been provided to the Department of Environment, Land, Water and Planning (DELWP), and the subsequent Biodiversity Impact and Offset Requirement (BIOR) report would determine both the risk-pathway and offset requirements for the projects. Vegetation offsets would be secured in accordance with State requirements.

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

The information in this section has been informed by AECOM-GHD JV (2017e and j) (Attachment 6).

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)

Flora and fauna assessments of the Edithvale and Bonbeach project areas were undertaken (refer Attachment 6). The assessment included:

- Desktop assessment of databases and previous ecological investigations
- Field assessment (completed in April 2016 and January 2017) including:
  - Remnant vegetation mapping and Vegetation Quality Assessment using the habitat hectares method.
  - Habitat assessment of the suitability of the project areas to support threatened flora and fauna species.
  - Assessment for threatened ecological communities.
- Assessment of likelihood of occurrence of threatened species based on species records, species ecology and habitat assessment of the project areas.
- Consideration of potential impacts and measures to manage and mitigate potential impacts.

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

NYD  No  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.

The database searches (Victorian Biodiversity Atlas) conducted as part of the desktop component of the Flora and Fauna Assessments identified threatened flora and fauna species historically recorded within five kilometres of the Edithvale and Bonbeach project areas. These comprised:

- Within 5 kilometres of the Edithvale project area
  - Twelve threatened flora species including two species listed under the EPBC Act, three listed under the *Flora and Fauna Guarantee Act 1988* (FFG Act) and 12 listed Victorian Rare or Threatened Species (VROTS) advisory list (DEPI 2014).
  - Seventy-three threatened fauna species including 19 species listed under the EPBC Act, 33 species listed under the FFG Act and 70 listed VROTS.
- Within 5 kilometres of the Bonbeach project area
  - Thirteen threatened flora species including two species listed under the EPBC Act, three listed under the FFG Act and 11 listed as VROTS.
  - Seventy-one threatened fauna species including 20 species listed under the EPBC Act, 33 species listed under the FFG Act and 69 listed VROTS.

The field assessment (undertaken April 2016 and January 2017) did not record the presence of any flora or fauna species recognised by the EPBC Act and/or FFG Act.

**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.

A preliminary ecological assessment of the Edithvale-Seafood Wetlands has been undertaken to identify potential impacts of the projects. There are no known potentially threatening processes listed under the FFG Act that could be exacerbated by the projects.

Furthermore, as previously stated there are no FFG Act-listed species or communities within either project area.

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

NYD  No  Yes If yes, please:

- List these species/communities:
- 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.

An assessment was undertaken of the likelihood of species listed as threatened, migratory and/or marine under the EPBC Act and species listed as threatened in Victoria occurring within the project areas as part of the flora and fauna assessments (AECOM-GHD JV, 2017e and 2017j) (Attachment 6a and 6b).

The history of disturbance and modification of land both within and in proximity to the rail corridor has limited the value of most of the project areas for any significant species. No species recognised under the EPBC or FFG Acts were recorded and none were assessed as having a greater than low likelihood of occurrence in the Edithvale or Bonbeach project areas. As such, it was considered that no threatened species or habitat for threatened species would be directly impacted by the projects.

The Edithvale-Seafood Wetlands are located approximately 1,300 metres of the Edithvale Road level crossing and approximately 2,500 metres of the Bondi Road/Station Street level crossing. The preliminary groundwater impact assessment indicates that groundwater mounding may result from the project. Groundwater mounding may change water levels and water quality of the wetlands and therefore may affect the vegetation and habitat provided for the threatened and migratory species that the wetland is known to support.

Changes to groundwater may indirectly impact the Edithvale-Seafood Wetlands which are known to provide habitat for:

- Sharp-tailed Sandpipers (EPBC-Act listed migratory species)
- Australasian Bittern and Curlew Sandpiper (EPBC-Act listed species)
- High diversity of significant avifauna, including 20 species of waterbirds listed under international migratory agreements.

Further investigations are ongoing to understand the relationship between groundwater change and the habitat value provided by the wetland. Refer to Sections 13 and 20 for further information. The further investigations will inform a detailed understanding of the nature and extent of any impacts including any potential for cumulative impacts and assist to identify appropriate avoidance, mitigation and management measures.

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

NYD  No  Yes If yes, please briefly describe.

Ecological and environmental impacts during the construction of the projects would be managed under an Environmental Management Framework (EMF) or equivalent document.

Avoidance and minimisation of potential effects

Potential impacts to the environment would be avoided and/or minimised where practicable during detailed design of the projects and through the delivery approach.

Avoidance, management and mitigation of potential effects

Potential effects would be avoided, minimised or managed through the application of an EMF or equivalent document. This will be an integral part of the detailed design and construction phase of the Edithvale and Bonbeach level crossing removal projects. It will outline the environmental management and governance arrangements required to achieve acceptable environmental performance including a requirement for an Environmental Management System (EMS) to be provided by the contractor appointed to deliver the works with specific policies, plans, procedures, protocols and controls.

Avoidance, minimisation and management of any impacts on the Edithvale – Seaford Wetlands will be informed by further detailed investigations, currently ongoing, to fully understand the nature and extent of impacts as well as the most effective minimisation and management strategies for unavoidable impacts.

Further detail is provided in Section 18.

**Other information/comments?** (e.g. accuracy of information)

The information in this section has been informed by:

- Edithvale Preliminary Groundwater Assessment (AECOM-GHD JV, 2017d) (Attachment 5a)
- Bonbeach Preliminary Groundwater Assessment (AECOM-GHD JV, 2017i) (Attachment 5b)
- Edithvale Flora and Fauna Assessment (AECOM-GHD JV, 2017e) (Attachment 6a)
- Bonbeach Flora and Fauna Assessment (AECOM-GHD JV, 2017j) (Attachment 6b)
- Groundwater Preliminary Impacts – Ecological Assessment (Edithvale & Bonbeach) (AECOM-GHD JV, 2017m) (Attachment 10).

### 13. Water environments

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

NYD  No  Yes If yes, indicate approximate volume and likely source.

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

NYD  No  Yes If yes, specify types of discharges and which environments.

It is not anticipated that either project will result in a significant change to wastewater run off to water environments.

Preliminary cross drainage and groundwater assessments have been undertaken for the project areas (Attachments 4 and 5 respectively). Due to the characteristics of the project areas, in particular the ridge crest location of the existing rail corridor, it is considered that the projects would not have a significant effect on cross flows and consequently flood risk within the surrounding area. Management of the local drainage networks and catchments would continue to be incorporated during the design process.

Construction

The EMF or equivalent document would outline the requirements to manage and monitor construction work in accordance with:

- The requirements of any Works on Waterways Permits and SEPP (Waters of Victoria) and SEPP (Groundwaters of Victoria)
- Guidelines and practices such as the EPA environmental guidelines for major construction sites (Publication 480) (EPA, 1996) in particular:
  - Erosion and sediment control
  - Management of contaminated stormwater
  - Procedures for working in waterways and floodplains.

The groundwater levels at the sites are predicted to be between three and six metres below ground level and are expected to be encountered during excavation. Dewatering during construction is expected to be minimal, as perimeter cut-off walls would be installed around trench excavations. During construction overland water flows would be diverted from construction areas.

Rainfall and groundwater within the construction areas would be tested and the construction contractor would work with local authorities to gain approval for wastewater disposal prior to construction commencing. The method of discharge would depend on the water quality and potential options include stormwater, trade waste or prescribed industrial waste.

Operation

Preliminary hydrology and cross-drainage assessments have been undertaken for both project areas (Attachment 4).

Due to the characteristics of the site, in particular the ridge crest location of the existing rail corridor, it is considered that the project will not have a significant effect on cross flows and consequently flood risk within the surrounding area. As the design progresses, management of the local drainage network and catchments should generally be incorporated into the design and further analysis of major overland flow paths should not be required.

Overland flows would be diverted from the rail structure utilising existing overland drainage. Rainfall within the trench would be collected in a tank located at the lowest point within the trenches. The rainfall containment tank would operate on level control and be pumped into the stormwater system.

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

NYD  No  Yes If yes, specify which water environments, answer the following questions and attach any relevant details.

Waterways, estuaries or marine environments

Most of the existing surface water features present along the Frankston railway corridor between



Cheltenham and Frankston were historically part of the greater Carrum-Carrum Swamp, and naturally did not discharge to Port Phillip Bay. Many of these wetlands and associated drainage lines have been anthropogenically modified or developed to alleviate historic waterlogging.

Anthropogenic surface water features include Patterson Lakes, Patterson River, Kananook Creek and several connected channel features such as Eel Race Drain, Wadsleys Drain and the Seaford Wetlands Drain. Each of these features ultimately discharge to Port Phillip Bay.

- Port Phillip Bay is located 200 metres to the west of the project areas and is not expected to be impacted by the projects.
- Patterson River flows in an east-west direction south of the Bonbeach level crossing removal project area. Although preliminary groundwater modelling suggests that the Patterson River may be impacted by groundwater mounding of approximately 0.1 metres, this is not likely to impact the river given seasonal and tidal fluctuations are likely to overshadow any effects at Patterson River in the vicinity of the Bonbeach project area.

Standard design measures and implementation of the EMF or equivalent document would mitigate these potential impacts on waterways, estuaries and marine environments. Therefore, it is not expected that the project will impact on the waterways, estuaries or marine environments listed above.

#### Wetlands

The Edithvale-Seaford Wetlands is a wetland of international importance listed under the Ramsar Convention on Wetlands Treaty 1971. The Ramsar-listed site comprises two hydrologically and hydrogeologically separate features (Edithvale Wetland and Seaford Wetland), which are hydraulically separated by Patterson River.

The Edithvale-Seaford Wetlands are located approximately 1,300 metres east of the Edithvale Road level crossing and approximately 2,500 metres north east of the Bondi Road/Station Street level crossing. The projects and project areas do not intersect this Ramsar wetland, however, they are connected hydrogeologically with the Edithvale component of the wetlands. These wetlands may potentially be impacted by changes to groundwater movement through the project areas as a result of the projects.

#### Groundwater

The potential environmental impacts on groundwater associated with the trenches are outlined below.

- *Short term impacts*  
Potential short term impacts (on groundwater) associated with the construction phase may include:
  - interference with groundwater users
  - activation of naturally occurring acid sulfate soil
  - local subsidence.

Any groundwater extracted would be disposed of in accordance with Victorian regulations.

Potential for acid sulfate soil activation is discussed further in Section 14.

- *Long term impacts*  
Potential long term impacts (on groundwater) post construction may include:
  - interference with groundwater users
  - interference with existing contaminated groundwater
  - interference with surface water features (such as creeks and wetlands)
  - groundwater mounding
  - activation of naturally occurring acid sulfate soil
  - saline intrusion (migration of marine water into fresh groundwater systems)
  - local subsidence.

These are discussed in more detail in the sections below.

quantify potential impacts and identify management and mitigation opportunities.

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

NYD  No  Yes If yes, specify which water environments.

The Edithvale-Seaford wetlands is known to provide habitat for:

- Sharp-tailed Sandpipers (EPBC-Act listed migratory species)
- Australasian Bittern (EPBC-Act listed species)
- High diversity of significant avifauna, in particular 20 species of waterbird listed under international migratory agreements.

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

NYD  No  Yes If yes, please specify.

The project areas do not intersect this Ramsar wetland, however, they are connected hydrogeologically with the Edithvale component of the Edithvale-Seaford Wetlands Ramsar site. These wetlands may be impacted by changes to groundwater movement through the project areas as a result of the projects. This change is briefly described in Section 11.

The proposed rail trenches are expected to impede the flow of groundwater resulting in higher water levels in the wetlands. Current modelling data indicated the change in groundwater level could be around 10 centimetres at the Edithvale component of the Edithvale-Seaford Wetlands, which is considered to be significant.

The potential change in groundwater level may affect the vegetation structure and habitat value of the site for the endangered Australasian Bittern and the Sharp-tailed Sandpiper, and potentially the general diversity of the wetlands. Potential ecological implications are discussed earlier in the referral. Details of the changes to groundwater and their potential impacts on the wetlands are provided in Attachment 10.

LXRA is undertaking a detailed assessment of the existing groundwater conditions that will be used to verify this finding and inform measures to minimise and manage unavoidable impacts on the wetlands and their ecology. Outcomes from this investigation are expected to be available in late 2017.

The change in groundwater level is called 'mounding' and has the potential to impact the values that underpin each of the Ramsar criteria for listing the Edithvale-Seaford Wetlands as a wetland of international importance. An ecological risk assessment was undertaken to assess potential impacts of groundwater mounding that may result from the project.

The Edithvale-Seaford Wetlands were listed as meeting the Ramsar site Criterion 1, 2 and 6 in 2001. In addition, in 2012 the then Department of Sustainability and Environment considered the wetlands to also meet criterion 3 (refer to Attachment 10). Despite Criterion 3 not being recognised on the formal Ramsar Information Sheet, each of these criteria are acknowledged and detailed below:

- **Criterion 1** – A wetland should be considered internationally important if it contains a representative, rare or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region
- **Criterion 2** – A wetland should be considered internationally important if it supports vulnerable, endangered or critically endangered species or threatened ecological communities
- **Criterion 6** – A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird
- **Criterion 3** – A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.

The Edithvale component of the wetlands are currently managed by Melbourne Water. Consultation with Melbourne Water regarding the potential impacts to the Wetlands and

Melbourne Water's existing management and monitoring of the Wetlands is ongoing. Potential impacts from groundwater mounding at the Edithvale-Seafood Wetlands could depend in part on the ability of wetland managers to control the discharge of water from the wetland system in response to increases in inflows (as a result of mounding impacts).

**Could the project affect streamflows?**

NYD  No  Yes If yes, briefly describe implications for streamflows.

Streamflows would not be affected by the Edithvale project or the Bonbeach project.

Patterson River flows in an east-west direction approximately 125 metres south of the Bonbeach level crossing removal project area. Although preliminary groundwater modelling suggests that the Patterson River may be impacted by the groundwater mounding of approximately 0.1 metres, seasonal and tidal fluctuations are likely to overshadow any mounding or drawdown effects at Patterson River in the vicinity of the Bonbeach project area.

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

NYD  No  Yes If yes, describe in what way.

As discussed above, there is potential for regional groundwater resources to be affected by the projects.

The trench structures could cause groundwater drawdown on the west (coastal) side of the projects, and mounding on the east side of the projects. This could impact availability and quality of groundwater. Further geotechnical investigation and groundwater monitoring and modelling is underway to quantify impacts to regional groundwater resources. Outcomes from this investigation are expected to be available in late 2017.

Interference with groundwater dependent ecosystems

Groundwater levels are predicted to change in response to long term operation of the proposed level crossing removal. Preliminary modelling suggests that groundwater mounding in the order of 0.1 metre could occur.

There are two identified groundwater dependent ecosystems (GDEs) within the inferred area impacted by long term changes to groundwater level:

- Edithvale-Seafood Wetlands (Edithvale and Bonbeach)
- Patterson River (Bonbeach only).

Implications of this impact are the subject of this referral.

Interference with groundwater users

There are two bores of stock and domestic use located 80 and 102 metres from the Edithvale level crossing. Preliminary groundwater modelling, estimates the change in available drawdown to be a loss of 34 and 20 percent respectively in these bores. There are three bores relevant to the Bonbeach level crossing, one for stock and domestic use and two for unknown uses. They are 834, 800 and 993 metres respectively from the Bondi Road/Station Street level crossing and estimated changes in available drawdown are estimated at a loss of 2, 17 and 3 percent respectively. It is unknown if these bores are actively used.

Interference with existing potentially contaminated groundwater

Construction excavations may draw in groundwater from the area surrounding the trench, which may potentially result in interference with existing groundwater contamination sources. A number of high risk land uses occur within the inferred area impacted by long-term groundwater impacts. These include one dry cleaner, one mechanic, one petrol station and a former timber yard in the vicinity of the Edithvale project area and two former petrol stations in the vicinity of the Bonbeach project area.

Any potential interference with existing potentially contaminated groundwater would be managed through the Environmental Management Strategy and generally in accordance with *EPA Publication 480 – Best Practice Environmental Management Environmental Guidelines for Major Construction Sites*.

Groundwater mounding (i.e. water logging)

Groundwater modelling predictions did not show a significant area to be affected by shallow groundwater levels (and hence water logging impacts)

Activation of naturally occurring acid sulfate soil (ASS)

Based on the ASS risk map for the area compiled by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), there is a 'High Probability (High Confidence)' under the National Dataset and 'Probable coastal acid sulfate soils' under DELWP mapping.

Potential for acid sulfate soil activation is discussed further in Section 14.

Saline intrusion (migration of marine water into fresh groundwater systems)

An assessment of potential saline intrusion has been prepared (see attachment 5a and 5b). It assess saline intrusion as of minor consequence, but likely to occur. This results in a medium risk rating in the assessment. It should be noted some movement of the saline wedge is possible, which could potentially impact the existing groundwater quality and beneficial use to existing groundwater users.

Local subsidence

Potential for local subsidence is predicted to be less than 10 millimetres.

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

NYD  No  Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)

Groundwater quality, recognised by the SEPP (Groundwaters of Victoria), could potentially be affected. Due to the projects' proximity to Port Phillip Bay and the coast, there is potential for saline intrusion, particularly on the western (coastal) side of the project areas.

At this stage, the potential and extent of saline intrusion has not been assessed. The development of a numerical groundwater model is underway which will assess the potential for saline intrusion and other impacts on groundwater quality.

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

NYD  No  Yes If yes, describe in what way.

Aquatic ecosystems may be impacted by the projects, including:

- Patterson River. The river flows in an east-west direction south of the Bonbeach level crossing removal project area. Preliminary modelling shows that groundwater mounding of up to 0.1 metres may occur due to the Bonbeach level crossing removal project. However, the Patterson River is not expected to be impacted as seasonal and tidal fluctuations are likely to overshadow the inferred mounding effects in the vicinity of the Bonbeach project area.
- Edithvale wetlands. Preliminary modelling shows that groundwater mounding of up to 0.1 metres may occur due to the Edithvale level crossing removal project. LXRA is undertaking a detailed groundwater impact assessment to provide an improved understanding on the nature of any groundwater changes and their relationship to Edithvale Wetlands.

Estuarine and marine ecosystems are not expected to be affected by the projects.

**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  Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

No extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long term were identified.

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

NYD  No  Yes If yes, please briefly describe.

Hydrology / cross drainage

Given that the proposed works will not impede or impact overland flow paths or existing flood areas no further mitigation is required as a result of the project.

Groundwater

Regional numerical modelling is underway to further assess the potential impacts identified in the preliminary groundwater assessment, and to also assess cumulative impacts that may result from the Edithvale and Bonbeach projects. This model will be informed by the groundwater monitoring program which is also underway. Regional modelling is expected to be completed in late 2017.

Possible mitigation measures designed to minimise impact to ecological values of the Edithvale-Seafood Wetlands would be determined once more detailed modelling has been completed. The degree of impact that the groundwater mounding may have on the Edithvale-Seafood Wetlands would be influenced by the ability, to control the discharge of water from the wetland system in response to increases in inflow. After the construction, LXRA would continue to work with Melbourne Water to monitor impacts on the Edithvale-Seafood Wetlands.

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

The information in this section is based on the following:

- Edithvale Cross Drainage Assessment (AECOM-GHD JV, 2017c) (Attachment 4a)
- Bonbeach Drainage Assessment AECOM-GHD JV, 2017h) (Attachment 4b)
- Edithvale Preliminary Groundwater Assessment (AECOM-GHD JV, 2017d)(Attachment 5a)
- Bonbeach Preliminary Groundwater Assessment (AECOM-GHD JV, 2017i) (Attachment 5b)
- Edithvale Flora and Fauna Assessment (AECOM-GHD JV, 2017e) ((Attachment 6a)
- Bonbeach Flora and Fauna Assessment (AECOM-GHD JV, 2017j) (Attachment 6b)
- Groundwater Preliminary Impacts – Ecological Assessment (Edithvale & Bonbeach) (AECOM-GHD JV, 2017m) (Attachment 10)

## 14. Landscape and soils

### Landscape

<p><b>Has a preliminary landscape assessment been prepared?</b>  <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please attach.</p> <p>A Landscape and Visual Impact Assessment has been prepared. (AECOM-GHD JV, 2017k and I - Attachment 9). The assessment includes the following key tasks:</p> <ul style="list-style-type: none"> <li>• Identifying the key proposal characteristics</li> <li>• Establishing the landscape baseline and visual context</li> <li>• Assessing the landscape effects of the proposed design</li> <li>• Assessing the visual effects of the proposed design</li> <li>• Identifying potential mitigation approaches.</li> </ul>
<p><b>Is the project to be located either within or near an area that is:</b></p> <ul style="list-style-type: none"> <li>• <b>Subject to a Landscape Significance Overlay or Environmental Significance Overlay?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, provide plan showing footprint relative to overlay.</li> <li>• <b>Identified as of regional or State significance in a reputable study of landscape values?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</li> <li>• <b>Within or adjoining land reserved under the <i>National Parks Act 1975</i> ?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</li> <li>• <b>Within or adjoining other public land used for conservation or recreational purposes ?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</li> </ul>
<p><b>Is any clearing vegetation or alteration of landforms likely to affect landscape values?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please briefly describe.</p> <p>The LVIA (AECOM-GHD JV, 2017k and I) (refer to Attachment 9) found that there could be localised impact on street scapes as a result of vegetation clearance along the rail corridor.</p> <p>The LVIA identified five landscape character zones within 500 metres of the project areas. These are listed below and described in Section 8 of this referral:</p> <ul style="list-style-type: none"> <li>• LCZ 1: Infrastructure corridor</li> <li>• LCZ 2: Residential</li> <li>• LCZ 3: Commercial</li> <li>• LCZ 4: Open space (Edithvale only)</li> <li>• LCZ 5: Foreshore</li> </ul> <p>Vegetation clearance is localised within the transport corridor with potential impacts on landscape character ranging from negligible to moderate.</p> <p>The LXRA Urban Design Framework identifies a project requirement to provide high quality landscape outcomes that positively contribute to the local context (refer Attachment 2c). This may comprise a combination of tree planting and high quality hard and soft landscaping. Specific urban design guidelines are being developed as part of these projects which will shape the final design and landscape outcome and guide the project towards better urban design and landscape outcomes including those related to landscape and visual impact.</p>
<p><b>Is there a potential for effects on landscape values of regional or State importance?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Please briefly explain response.</p> <p>There are no identified landscape values of regional or State significance in or adjacent to the project areas.</p>
<p><b>Is mitigation of potential landscape effects proposed?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please briefly describe.</p>

Mitigation measures would be implemented to minimise the level of visual impact during the design development, construction and operation phases. Proposed measures would include:

### Design

Proposed measures will be guided by the LXRA Urban Design Framework. This document outlines the expectations of the State for achieving high quality, context sensitive urban design outcomes at each level crossing removal site.

The document plays a dual role by informing the design process as well as providing a basis for the evaluation of design solutions. The Framework identifies eight key principles inherent to successful level crossing removal projects, which address identity, connectivity, urban integration, sustainability, amenity, vibrancy, safety, and accessibility.

The document also identifies a specific mitigation approaches that need to be considered as projects are developed. These are listed in the table below.

Specified measures	Potential mitigation approaches identified
6.1 Whole of project	Seeks the development of a design response that provides an integrated landscape, architectural and urban design outcome that minimises visual clutter, aligned with local character.
6.2 Train stations	Seeks the development of station designs that provide high quality civic places, enhance local context, are sensitively sited and integrate public area and car parking as part of a high quality landscape design.
6.3 Bridges and elevated structures	Seeks the development of elevated structures that positively contribute to corridor and local identity, provide gateway experiences, are sensitive to the existing context, minimise the visual and spatial impact of services and maximise the amenity of public areas through siting and visual connections.
6.4 Open cuttings (rail trenches)	Seeks the minimisation of disconnection and improvement to visual connectivity, and integration of visually prominent elements such as elevated pedestrian and cycling connections.
6.6 Landscape and natural environments	Seeks the enhancement of the quality of existing landscape s through cohesive landscape design concepts, minimise loss and maximised replanting of trees, integrated landform, planting and water sensitive urban design outcomes.
6.9 Materials and finishes	Seeks the development of materials and finishes palettes that are sensitive to local environments and contribute positively to local identity.
6.12 Integrated Public Art	Seeks the inclusion of integrated public art that responds to the local character of the urban setting and creates a new positive visual landmark.

### Construction

- The EMF or equivalent document will include strategies to address landscape and visual impacts during construction. These strategies will be implemented through specific measures detailed within the Construction Environmental Management Plan to be prepared by the contractor, when engaged.

### Operation

- Ongoing maintenance and repair of constructed elements in accordance with Metro Trains Melbourne lease agreement with the Victorian Government.

- Long term maintenance and replacement of tree planting and landscaping in order to soften the built form of the proposed infrastructure; maintenance of vegetation on railway land in accordance with Metro Trains Melbourne lease agreement with the Victorian Government.

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

The information in this section is based on the following specialist reports:

- Edithvale Preliminary Urban Design Concept Report (AECOM-GHD JV, 2017a) (Attachment 2a)
- Bonbeach Preliminary Urban Design Concept Report (AECOM-GHD JV, 2017f) (Attachment 2b)
- Edithvale Landscape and Visual Impact Assessment (Attachment 9a)
- Bonbeach Landscape and Visual Impact Assessment (Attachment 9b)

**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

**Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?**

NYD  No  Yes If yes, please briefly describe.

The projects have the potential to activate acid sulphate soils.

Based on the ASS risk map for the project areas compiled by the CSIRO, there is a 'High Probability (High Confidence)' under the National Dataset and 'Probable coastal acid sulfate soils' under DELWP mapping.

Environmental soil and groundwater sampling (including ASS testing) is currently being undertaken as part of ongoing geotechnical investigations.

Boreholes will be drilled at each of the Edithvale and Bonbeach project areas with sampling and testing for contamination indicators as well as acid sulfate soil potential indicators to inform management and mitigation measures in accordance with the CASS Guidelines.

Management of acid sulphate soils will be undertaken in accordance with the Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulphate Soils (DSE, 2010) (CASS Guidelines).

Potential acid sulphate soils will be managed by applying the four stage approach set out in the Coastal Acid Sulphate Soils Guidelines. The guidelines set out a detailed and comprehensive methodology, including EPA requirements for soil sampling, surface and groundwater testing. Application of the guidelines is expected to be an effective mitigation with a high likelihood of successfully avoiding, minimising and/or managing potential impacts from acid sulphate soils. Potential acid sulphate soils will be managed in conjunction with the Environmental Management Framework (EMF) or equivalent document.

Design of earthworks, deep excavations, and surface and groundwater drainage for the sites will need to take account of the ground conditions revealed by the investigations with regard to temporary and permanent stability, and erodibility or dispersion of soils. No significant issues have been identified and potential effects on land stability and highly erodible soils within the project areas will be managed through project design.



**Are there geotechnical hazards that may either affect the project or be affected by it?**

NYD  No  Yes If yes, please briefly describe.

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

The information provided in this section are based on:

- Edithvale Contamination/PASS Desktop Review (AECOM-GHD JV, 2017b) (Attachment 3a)
- Bonbeach Contamination/PASS Desktop Review (AECOM-GHD JV, 2017g) (Attachment 3b)

## 15. Social environments

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

NYD  No  Yes If yes, provide estimate of traffic volume(s) if practicable.

### Traffic impacts during construction phase

Traffic impacts in the vicinity of the level crossings are expected during the construction phase of the projects. Both projects would cause temporary disruption to passenger train services and closure of roads and rail within the project areas which will generate additional road traffic. Replacement bus services would be provided during rail closures. Construction works would occur over 18 months for each project with major works during a one to two month period when the railway will be closed to construct the proposed trench.

- *Edithvale*

During construction, the project would likely result in:

- one to two months of rail shutdown, with additional weekend shutdowns likely
- a two week closure of Edithvale Road, and minor road and lane closures
- restricted access along adjacent streets
- closure of railway stations for two to four months with buses replacing trains
- the removal of approximately 50,000 m<sup>3</sup> of soil resulting in a large number of truck movements primarily during the excavation of the trench early in the one to two month rail shutdown.

- *Bonbeach*

During construction, the project would likely result in:

- one to two months of rail shutdown, with additional weekend shutdowns likely
- a two week closure of Station Street, and longer term lane closures on Nepean Highway and Station Street
- Restricted access along adjacent streets
- closure of railway stations for two to four months with buses replacing trains
- the removal of approximately 46,000 m<sup>3</sup> of soil resulting in a large number of truck movements in a large number of truck movements primarily during the excavation of the trench early in the one to two month rail shutdown. .

Refer to Section 3 (Key construction activities) for further detail.

### Operation

The removal of the level crossings at Edithvale and Bonbeach are expected to reduce road congestion and improve the operation of the Frankston rail line for many decades during operation. The new infrastructure will be managed as part of Melbourne's broader road and rail network.

**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.

### Construction

The projects will have locally significant impacts during construction, however, these are likely to be short term in nature as major construction works will occur in a one to two month closure of the railway.

The majority of the project area is abutted by roads, including the Nepean Highway which is a major arterial road, with residential, commercial and public open space adjacent to these roads.

- *Dust and odours*

The project would not cause significant impacts to the amenity of residents from dust or odour during construction. Dust from earthmoving activities and odour from mechanical plant may occur during construction but is readily managed by applying standard practices used through

the construction industry. An Environmental Management Framework or equivalent document will require measures to be put in place to manage air quality including a monitoring regime and process for escalating and eliminating any unacceptable emissions to air.

- *Visual amenity*  
The project would not cause significant impacts to the amenity of residents from changes in visual amenity during construction. The EMF will require potential visual impacts during construction to be managed. Refer to Section 14 above.
- *Noise*  
The project may cause short term impacts to the amenity of residents from changes to noise during construction. Mitigation measures including scheduling noisy activities during the day and potential relocation of residents during noisy periods will be put in place in accordance with an Environmental Management Plan or equivalent document. Noise and vibration from earthmoving activities and other associated construction works may occur during construction (refer to Attachment 11). These will be managed in accordance with the EPA guidelines for major construction sites (Publication 480).
- *Traffic*  
There would be a temporary increase in traffic during construction. Replacement buses would run during the rail closure period. Temporary road diversions or closures and mobilisation of heavy equipment to and from the site will occur and will be managed under a traffic management plan.
- *Work hours*  
The approach to construction is likely to involve night work to minimise the length of time that the railway needs to be closed for excavation and construction.

#### Operation

- *Dust and odours*  
Upon completion of the level crossing removal projects there are expected to be no impacts to the amenity of residents from dust or odour.
- *Visual amenity*  
Both projects will put in place high quality, modern rail infrastructure in accordance with the LXRA Urban Design Framework.

In some areas, the project may improve visual amenity by replacing the existing rail station and old infrastructure with a modern architecturally designed building and new infrastructure.

The project will include a safety barrier potentially up to 2.5 metres at the top of the trench to prevent vehicles or people accidentally entering the trench. The barrier will require a suitable urban design and landscape solution to mitigate its potential impact on visual amenity.

Vegetation in the rail corridor will need to be removed resulting in a moderate landscape impact within the transport corridor.

The LVIA (refer to Attachment 9) assessed the change to visual amenity from nine viewpoints at Edithvale and nine viewpoints at Bonbeach. The location of these viewpoints reflects key locations that have sensitive visual receptors and/or a relatively high number of potential viewers. Most viewpoints were less than 25 metres from the rail corridor and all viewpoints were within 150 metres.

For most viewpoints, the visual effect ranged from low to moderate.

- *Noise*  
An assessment of potential changes in noise emissions will be undertaken for each project. Upon completion of the level crossing removal projects, noise from trains would comply with the Passenger Rail Infrastructure Noise Policy.

<ul style="list-style-type: none"> <li><i>Traffic</i> The removal of the level crossings would result in significant improvements to local traffic flow, public safety, network reliability and reduce traffic congestion.</li> </ul>
<p><b>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?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe the hazards and possible implications.</p>
<p><b>Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe potential effects.</p>
<p><b>Are non-residential land use activities likely to be displaced as a result of the project?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe the likely effects.</p>
<p><b>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?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe the potential effects.</p> <p>Impacts to local businesses within commercial areas adjacent to the project areas are expected to be temporary during construction periods only. Business owners have been and will continue to be directly engaged to ensure impacts to local businesses are minimised. Consultation with business owners will continue in order to manage any impacts during the construction phase of the project.</p> <p>There are not expected to be significant effects on specific social groups or industries.</p>
<p><b>Is mitigation of potential social effects proposed?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please briefly describe.</p> <p>Extensive community and stakeholder engagement has been undertaken to inform and shape the removal for both the level crossing removal projects at Edithvale and Bonbeach. The intent of this consultation was to inform the design options and to introduce the community to potential positive and negative impacts of the project. This engagement has provided invaluable information as to the views of those most impacted by the project.</p> <p>LXRA will continue to actively engage with the community during the design, approvals and construction phases to ensure that the community are well-informed of various activities and the potential disruptions and effects that may be experienced. In addition to consultation, specific measures to manage and mitigate potential social effects would include:</p> <ul style="list-style-type: none"> <li>Ensuring adequate access to services (for example access to public transport, road networks, and commercial areas)</li> <li>Improved access for people with reduced mobility</li> <li>Improved access to sections of Edithvale east and west of the rail corridor</li> <li>Improved access to sections of Bonbeach east and west of the rail corridor.</li> </ul> <p>While there will be disruption to traffic movements and connectivity during the construction period, due to the temporary closure of the train station and sections of local roads, alternative public transport means and trafficable routes are readily available. The Environmental Management Framework or equivalent document would implement measures to manage social impacts such as traffic disruptions, impacts to local businesses, and maintenance of public safety through appropriate separation from works.</p>
<p><b>Other information/comments?</b> (eg. accuracy of information)</p> <p>This section has been informed by the following specialist reports:</p> <ul style="list-style-type: none"> <li>Edithvale Landscape and Visual Impact Assessment (AECOM-GHD JV, 2017k) (Attachment 9a)</li> <li>Bonbeach Landscape and Visual Impact Assessment (AECOM-GHD JV, 2017l) (Attachment 9a)</li> </ul>

9b)

- Edithvale Acoustic Assessment (AECOM-GHD JV, 2017n) (Attachment 11a)
- Bonbeach Acoustic Assessment (AECOM-GHD JV, 2017o) (Attachment 11a)

## 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.  
 Yes If yes, list the organisations so far consulted.

The Victorian Aboriginal Heritage Council (VAHC) has not appointed any Registered Aboriginal Parties, nor are there any current Registered Aboriginal Party applications before the VAHC for the land within the project area.

However there are three Aboriginal groups with an interest in the land affected by the projects:

- Bunurong Land Council Aboriginal Corporation (BLCAC),
- Boon Wurrung Foundation Ltd (BWF), and
- Wurundjeri Tribe Land and Compensation Cultural Heritage Council Incorporated (WTLCCHCI).

The VAHC acknowledges that the BLCAC, BWF and WTLCCHC represent traditional owner groups for the areas and has indicated that these groups would be consulted in relation to cultural heritage matters.

The BLCAC, BWF and WTLCCHCI have been formally notified and accompanied LXRA's Cultural Heritage Advisor during the Standard Assessment walkover undertaken as part of preparing a Cultural Heritage Management Plans for each project. They will continue to be consulted as the assessment proceeds to complex assessment.

### 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 desktop assessment and standard assessment has been undertaken (refer Attachment 8).

A voluntary Cultural Heritage Management Plan is underway for each project in accordance with the requirements of the *Aboriginal Heritage Act 2006* (Vic).

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

NYD  No  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

A search of the Victorian Aboriginal Heritage Register (VAHR) covering the project areas and wider geographic region was conducted on 24 August 2016.

#### Edithvale

Two registered Aboriginal cultural heritage places located within one kilometre of the project area were identified. These include:

- VAHR 7921-1520 (an LDAD comprising one stone artefact)
- VAHR 7921-1530 (an LDAD comprising three stone artefacts)

None of these registered Aboriginal heritage places fall within the project area itself.

#### Bonbeach

There are no registered Aboriginal cultural heritage places located within one kilometre of the project area.

Both project areas have been mostly cleared of native vegetation and subject to agricultural, residential, industrial and rail uses probably since the 1840s. Due to the highly modified nature of the rail corridor, a large proportion of each project area has been disturbed due to its use as a transport corridor.

The high level of historical ground disturbance affects the likelihood of identifying intact Aboriginal

cultural heritage material in the project areas. Many of the areas adjacent to the rail corridor contain residential housing estates, and activities such as scraping and levelling have been undertaken across this land, further impacting the potential to locate intact Aboriginal cultural heritage.

The Edithvale and Bonbeach project areas do not require the mandatory preparation of a CHMP for the removal of the level crossings on the basis that significant ground disturbance has previously occurred within the activity area, thereby removing the project area from the area of cultural heritage sensitivity. Despite this, voluntary CHMPs will be prepared for both the Edithvale and Bonbeach projects.

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

NYD  No  Yes If yes, please list.

There are no cultural heritage places listed on the Heritage Register or the Archaeological Inventory within the project areas.

A desktop assessment and site visit has been undertaken of the project areas.

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

NYD  No  Yes If yes, please briefly describe.

To manage the risk that unknown cultural and historic heritage is discovered during construction a contingency plan will be developed and managed according to the Environmental Management Framework or equivalent document.

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

This section is based on the following specialist reports:

- Edithvale Historical Heritage Site Assessment (Lovell Chen, 2017a) (Attachment 7a)
- Bonbeach Historical Heritage Site Assessment (Lovell Chen, 2017b) (Attachment 7b)
- Edithvale Aboriginal Cultural Heritage Desktop Assessment (ALA, 2017a) (Attachment 8a)
- Bonbeach Aboriginal Cultural Heritage Desktop Assessment (ALA, 2017b) (Attachment 8b)

## 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. Please describe.

Please add any relevant additional information.

#### Construction

Some energy use would occur during the construction phase resulting from the use of vehicles and equipment, such as generators.

#### Operation

The infrastructure associated with the projects are inert. Electricity use from trains is attributed to the operation of the broader rail network rather than these projects.

### 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. Describe briefly.
- Other. Describe briefly.

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

Waste would be generated only during construction, not during the operation of the completed project. The types of waste generated during construction would include:

- Steel rail tracks
- Wooden and/or concrete sleepers
- Overhead wiring
- Signalling equipment and structures
- Ballast
- Excavated soil including contaminated soil
- Groundwater (where dewatering is required)
- Surface water run-off

Edithvale would require the removal of approximately 50,000 m<sup>3</sup> of soil. Bonbeach would require the removal of approximately 46,000 m<sup>3</sup> of soil.

The design and construction approach will seek to minimise the removal of soil as a result of the project. Opportunities will also be investigated to maximise the beneficial reuse of excavated materials.

Disposal of waste, including any acid sulfate soils, generated by the project will be managed through the EMF or equivalent document and in accordance with the 'Victorian Best Practice Guideline for Assessing and Managing Coastal Acid Sulphate Soils' (DSE, 2010) (Coastal Acid Sulphate Soils Guidelines). LXRA will ensure measures are in place to achieve compliance with relevant EPA guidelines and policies and the Coastal Acid Sulphate Soils Guidelines.

In particular, potential acid sulphate soils will be managed by applying the four stage approach set out in the Coastal Acid Sulphate Soils Guidelines. The guidelines set out a detailed and comprehensive methodology, including EPA requirements for soil sampling, surface and groundwater testing. Application of the guidelines is expected to be an effective mitigation with a high likelihood of successfully avoiding, minimising and/or managing potential impacts from acid sulphate soils.

Excavation of the trench structure is not anticipated to require significant dewatering because of the watertight 'tanked' structure that is required due to the shallow water table in both project areas (See section 3.1 of attachment 5a and 5b). This construction approach will limit the risk that significant volumes of groundwater will need to be disposed of offsite. This also reduces the risk that any significant quantities of contamination present in groundwater removed by the projects



will need to be managed.

**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.

As discussed above, emissions associated with the operation of trains are attributable to the operation of the overall rail network rather than the infrastructure associated with the level crossing removal.

Improved traffic conditions and reduced congestion will likely result in a reduction of vehicle emissions.

## 17. Other environmental issues

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

- No  Yes If yes, briefly describe.

Climate change may over time lead to increases in rainfall intensities and increases in sea level, which in turn could affect future flood risk at the site. Climate change has been considered in the hydrology and cross-drainage assessments and it is considered that the effects of climate change do not create any need for new cross drainage infrastructure.

## 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

The siting of both projects is constrained by the location of the existing level crossings. Permanent infrastructure will be within the rail corridor which is already disturbed and appropriately zoned for ongoing use as a railway.

The precise alignment and location of project infrastructure within the rail corridor will be decided during the detailed design phase to minimise adverse effects to the environment. However, the rail corridor is highly constrained and therefore opportunities for avoiding, minimising and managing impacts through the location of infrastructure are limited. The location of the existing level crossings is also a constraint on the location of the proposed works.

Relocation of the railway outside the existing rail reserve would likely result in major and unacceptable impacts to the local community and environment, including significant land acquisition, relocation of critical road and other civil infrastructure and significantly increase the footprint of the proposed works.

- Design: Please describe briefly

As part of delivery, the design of both projects will be subject to ongoing development and refinement to maximise the benefits of the project and avoid and minimise potential impacts. The designs will be informed by ongoing technical assessments and stakeholder and community consultation.

The design of both projects will take into account a range of factors including geology, hydrogeology, topography and surrounding landscape values.

The design of both projects will be in accordance with the LXRA Urban Design Framework, developed by LXRA and the Office of the Victorian Government Architect for the State's level crossing removal program, and specific urban design project requirements that provide detailed guidance relating to the local context and project objectives.

Mitigation of specific impacts is discussed further in sections 12, 13, 14 and 15.

✘ Environmental management: Please describe briefly.

Environmental management will be an integral part of the detailed design and construction of the Level Crossing Removal Program and its operation as part of the broader Melbourne rail network.

#### LXRA responsibilities

- *Environmental Management Framework*

An Environmental Management Framework (EMF) or equivalent document will provide an overarching framework that will be used to translate the commitments and management measures into the planning, design and construction of each project and its integration into the existing environmental requirements governing the operation of the Melbourne rail network.

The EMF or equivalent document will outline the environmental management and governance arrangements required to achieve acceptable environmental performance including specific, policies, plans, procedures, protocols and other controls to be implemented by LXRA and the construction partner for each of the projects.

It will describe requirements for:

- governance, including roles and responsibilities
- risk and impact assessment
- performance requirements
- an ISO 14001 accredited environmental management system (EMS) and preparation and implementation of environmental management documentation (by the construction partner)
- performance management.

The EMF or equivalent document will be maintained by LXRA and updated to respond to continuous improvement opportunities and to ensure it provides effective guidance to the procurement, design and delivery of the works.

The EMF or equivalent document will set out review and approval mechanisms for key documents including the construction environment management plan or equivalent documents and appropriate review and sign off procedures to ensure the plans will be effective.

#### Construction partner responsibilities

- *Environmental Management System (EMS)*

The construction partner for each project will be required to provide an ISO14001 certified Environmental Management System (EMS).

The EMS will set out processes and responsibilities for:

- reviewing and updating the environmental management plan or equivalent document
- consulting with stakeholders and obtaining all relevant authorisations
- the development, implementation, onsite review and maintenance of specific, plans, procedures, protocols and other controls required as part of the EMS.
- verification and auditing of the plans, procedures, protocols and other controls required as part of the EMS and compliance with authorisations, including monitoring and documenting compliance
- reporting and investigation of environmental incidents or complaints relating to environmental issues
- an adaptive approach for the review and update of the plans, procedures, protocols and other controls required as part of the EMS as works progress and/or following non-conformances, complaints, or previously unidentified issues

- after hours response including arrangements for containing environmental damage and attendance on site in the event of an emergency.

- *Construction Environmental Management Plan*

The construction contractor would be required to prepare and implement a construction environmental management plan or equivalent document covering construction activities for each project. The management plan will be updated progressively through the delivery of the works to ensure it is capable of responding to the needs of specific aspects of construction.

The EMP or equivalent document will be required to include specific measure to address all relevant environmental aspects including (but not limited) to:

- ecological values (protected flora and fauna)
- the Ramsar-listed wetlands
- Aboriginal cultural heritage
- historic heritage
- noise
- contamination
- landscape and visual impact
- air quality (dust, odour, particulates)
- groundwater
- hydrology
- urban design
- traffic/traffic management
- geotechnical
- energy consumption and greenhouse gas emissions.

Other: Please describe briefly

#### Sustainability

- *Sustainability Policy*

In 2015, LXRA adopted a Sustainability Policy to ensure the principles of environmental, social and economic sustainability were included in all level crossing removal projects. LXRA has become a member of the Infrastructure Sustainability Council of Australia and is requiring LXRA projects to obtain an independent Infrastructure Sustainability Rating. In doing this, the project would:

- be undertaken by contractors that have accreditation to ISO 14001 (Environment), ISO 9001 (Quality) and AS/NZS 4801 (OH&S) and who regularly monitor their performance;
- undertake a climate change risk assessment and respond to any extreme or high priority climate change risks
- reduce Greenhouse Gas Emissions by 15-25 percent
- minimise the use of potable water wherever possible
- minimise waste by using the waste hierarchy of avoidance, reduction, reuse and recycling.

To achieve this Sustainability Vision, the Level Crossing Removal Authority is committed to:

- Optimising the project's design to ensure it is delivered to operate sustainably
- Managing resources efficiently through embedding energy, water and material saving initiatives into the design, construction and operation of the project
- Avoiding, minimising and offsetting harm to the environment and the loss of biodiversity;
- Protecting and conserving the natural environment
- Preparing for the challenges presented by climate change.

- *Sustainability Rating*

LXRA has adopted the ISCA and GBCA sustainability rating tools to enable measurement of sustainable outcomes and setting of mandatory targets.

The ISCA Infrastructure Sustainability (IS) framework is a rating system designed to enable the measurement of sustainability related performance across the design, construction and

operation of infrastructure projects, as well as assist in comparing relative performance between projects.

For the project, LXRA has mandated at least an 'Excellent' IS rating (>50), certified by ISCA for both Design and As Built rating types, with a target score of 65 or higher.

The project must address minimum requirements against select criteria (i.e. credits) in the ISCA IS Tool to ensure that matters considered non-negotiable by LXRA are given priority by contractors. The select criteria include:

- a requirement for internal and external environmental and sustainability audits
- a climate change risk assessment
- implementation of climate change adaption measures for high and medium priority risks
- monitoring, modelling and reduction of Greenhouse Gas emissions
- non-use of potable water for construction purposes or other purposes where it is not economically or environmentally feasible
- assess contamination and undertake sustainable remediation
- waste tracking and management
- diversion of waste from landfill, where practical opportunities for re-use are identified.

## 19. Other activities

**Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?**

NYD  No  Yes If yes, briefly describe.

The level crossing removal project will remove 50 of Melbourne's most dangerous level crossings. The current program will remove 12 level crossing the Frankston Line. Three level crossings have been removed thus far: North Road, Ormond, McKinnon Road, McKinnon and Centre Road Bentleigh. A further nine along the Frankston Line will be removed. These are:

- Charman Road and Park Road, Cheltenham (rail trench)
- Balcombe Road, Mentone (rail trench)
- **Edithvale Road, Edithvale** (*the subject to this referral*, rail trench)
- **Station Street/Bondi Road, Bonbeach** (*the subject to this referral*, rail trench)
- Station Street, Carrum (elevated rail)
- Eel Race Road, Carrum (elevated rail)
- Seaford Road, Seaford (rail hybrid bridge)
- Skye/Overton Road, Frankston (rail bridge).

### Potential positive cumulative effects

The cumulative effect of removing the 12 level crossings will be improved transport safety, reduced transport congestion and stimulation of the local economy within the bayside region. It will also facilitate additional train services on the Melbourne-Frankston rail corridor to meet growing population demands.

### Potential negative cumulative effects

There is potential for cumulative effects from the Edithvale and Bonbeach trench structures that could affect groundwater resulting in a change in water levels and potentially water quality at the Ramsar listed Edithvale Seaford Wetlands.

Five of the 50 level crossing removals are in proximity to the Ramsar listed Edithvale-Seaford Wetlands. These sites are the two sites subject to this referral (Edithvale and Bonbeach), as well as:

- Station Street ,Carrum
- Eel Race Road, Carrum,
- Seaford Road, Seaford

The design solution at Seaford Road is a rail bridge over road hybrid solution, and design options presented to the community during consultation for Eel Race Road and Seaford Road include elevating the rail. These solutions will not have a hydrogeological impact on the Edithvale-Seaford Wetlands.

## 20. Investigation program

### Study program

**Have any environmental studies not referred to above been conducted for the project?**

No  Yes If yes, please list here and attach if relevant.

**Has a program for future environmental studies been developed?**

No  Yes If yes, briefly describe.

Planning and environmental investigations have informed the project's design.

Investigations continue to be developed to inform statutory approval and during the delivery phase, including:

- Regional groundwater model and impact assessment.
- Coastal acid sulphate soils risk assessment and management plan in accordance with the Coastal Acid Sulphate Soils Guidelines
- Visual impact assessment
- Noise modelling and impact assessment
- Air quality impact assessment
- Requirements of the ISCA and GBCA programs

Based on the results of the Groundwater Preliminary Impact Assessment the following tasks will be undertaken to quantify potential impacts to the Edithvale - Seaford Wetlands:

- Undertake further geotechnical and hydrogeological site investigations to characterise subsurface conditions, particularly in regard to developing the understating of
  - ground conditions,
  - aquifer properties (levels, quality and yield),
  - potential groundwater contamination from existing sites,
  - potential ASS activation,
  - potential for saline intrusion and
  - potential impacts to existing users and the environment.

This investigation program involves the drilling and installation of over 100 groundwater monitoring bores across the Frankston Rail Line (between Cheltenham and Frankston). A total of 15 groundwater monitoring sites are being installed around the Edithvale area, and a further 16 groundwater monitoring sites are being installed around Bonbeach. Groundwater monitoring sites have also be installed at locations close to the wetlands. Groundwater monitoring is currently underway.

- The groundwater monitoring network will monitor baseline conditions and future changes in groundwater levels, quality and yields, and evaluate changes against those predicted. This is currently underway.
- Undertake regional numerical modelling to further assess the risks identified in this referral, and assess cumulative impacts that may result from the Edithvale and Bonbeach rail under road trench structures. This model will be informed by the geotechnical and hydrological site investigations and the groundwater monitoring program which is currently underway.

### Consultation program

**Has a consultation program conducted to date for the project?**

No  Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.

#### Engagement Principles

LXRA is committed to engagement and consultation with stakeholders and the community. A communications and stakeholders engagement approach has been developed and is being implemented to guide engagement with stakeholders in order to build trust, gather information about community values, and encourage public participation in the development of the level crossing removals.

The approach is based on the following principles:

- Establish a clear, fair and inclusive process and explain opportunities for involvement
- Commence engagement early
- Support stakeholder participation as a way to assist decision making
- Be clear about what is negotiable and what is not
- Develop high quality visual materials to demonstrate project impacts
- Cultural and Linguistically Diverse (CALD) and minority groups

Community and stakeholder consultation and engagement has been undertaken in a phased approach, linked to the development process.

#### Phases

Engagement commenced in late-2015 and is currently ongoing, effectively in six phases as follows:

- Phase 1: Register your interest. Initial engagement commenced November/December 2015. This consultation consisted of community pop-up sessions, trader drop-ins, engagement of key stakeholders in the development of Urban Design Principles, Council CEO Briefings, MP Briefings and Council Briefings.
- Phase 2: Design Development: Tell us what is important to you. Phase 2 was run between February and April 2016. This consultation consisted interactive community information sessions, community newsletters and emails, trader meetings engagement with special interest groups, the use of an online Social Pinpoint to map input across the eight level crossings, media briefings, council briefings, MP briefings, resident door knocks, resident and owner letters and surveys.
- Phase 3: Project Update and Feedback. Phase 3 ran between September 2016 and October 2016. This engagement took various forms, including 12 interactive community sessions and pop-up sessions, community newsletters and email, trader meetings, special interest groups and media, council and MP briefings.
- Phase 4: Design Refinement and Pre-Procurement. Phase 4 is scheduled for early 2017. This phase will involve community workshops/community newsletters and email, traders and special interest group consultation, media releases and council and MP briefings.
- Phase 5: Tender Process. This phase is planned to occur in 2017 and the purpose of this phase is to keep the community informed throughout the tender process.
- Phase 6: Construction. This phase is planned to occur between 2018 and 2022. The purpose of this phase is to communicate the ongoing construction process to all key stakeholders.

The community engagement approach will be modified if a decision is made that an Environment Effects Statement is required for either of the projects that are the subject of this referral.

#### Summary of Engagement

The community and stakeholder engagement for the Frankston line level crossing removals phase 1 and phase 2 resulted in:

- 10 community pop-ups at stations and a shopping centre
- 9 community feedback sessions, more than 4,000 hand written pieces of feedback
- Over 4,500 pieces of online feedback on Social Pinpoint
- 65,000 newsletters distributed – first edition to residents and businesses
- 20,000 flyers distributed to raise awareness of the project
- 20 Council meetings and workshops
- More than 1,000 businesses doorknocked across seven locations in late 2015 and early 2016
- Seven workshops with community groups
- Nearly 3,000 people participated in the Community Sentiment Survey
- Over 1,600 homes door knocked.

During phase 3 for Edithvale there were:

- 3,930 visits to the 'Your level crossing' Edithvale specific website
- 501 survey responses
- 348 online forum comments
- 7,657 video views
- 365 people in attendance at community sessions.

During phase 3 for Bonbeach there were:

- 3,140 visits the 'Your level crossing' Bonbeach specific website
- 320 survey responses
- 194 online forum comments
- 9,686 video views
- 345 people in attendance at community sessions.

The feedback collected through the community consultation process has informed design.

#### Key stakeholders

The projects have attracted and will continue to attract interest from a broad cross section of the Victorian community, particularly people who live, work, own land and travel through the project areas and stakeholders with an interest in transport. The communications and stakeholders engagement approach was designed to target these and broader categories of stakeholders as detailed in Section 10.

Key stakeholders include:

- Commonwealth Department of the Environment and Energy
- Department of Environment, Land, Water and Planning
- Melbourne Water
- Aboriginal Victoria
- Melbourne Water
- VicRoads
- Kingston City Council

Each of these key stakeholders have been engaged and will continue to be actively involved as the project planning further develops.

#### Key engagement tools

A range of communication methods have been adopted to provide information and updates including: a community survey, online discussion forum, project hotline, community workshops and pop-up hubs (which sought community views on issues such as use of the rail network) and public submissions.

Stakeholder and community feedback has informed the project, and will continue as design develops and into construction.

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

NYD  No  Yes If yes, briefly describe.

LXRA will continue its stakeholder and community program as design develops and then into construction. As the phases of consultation progress (phases 4-6) this will include:

- Ongoing meetings with key stakeholders
- One on one meetings with any owners or occupiers of properties affected by the project that have expressed particular concerns
- Periodic community updates



The successful Contractor will be required to develop and implement a comprehensive Community and Stakeholder Engagement Plan that includes:

- 24 hour hotline
- Regular community updates
- Face to face engagement with stakeholders
- Clear processes for informing stakeholders, road users, transport users, residents and businesses of upcoming works and potential disruption
- Complaints resolution process.

## Attachments

No.	Attachment	Reference
<b>1</b>	<b>Maps</b>	
1a	Project Areas	
1b	Project Area Bounding Coordinates	
1c	Key Feature Map	
1d	Planning Zones	
1e	Planning Overlays	
<b>2</b>	<b>Urban design</b>	
2a	Edithvale Preliminary Urban Design Concept Report	AECOM-GHD JV, 2017a
2b	Bonbeach Preliminary Urban Design Concept Report	AECOM-GHD JV, 2017f
2c	Urban Design Framework	LXRA, 2016
<b>3</b>	<b>Contamination/PASS</b>	
3a	Edithvale Contamination/PASS Desktop Review	AECOM-GHD JV, 2017b
3b	Bonbeach Contamination/PASS Desktop Review	AECOM-GHD JV, 2017g
<b>4</b>	<b>Cross drainage</b>	
4a	Edithvale Cross Drainage Assessment	AECOM-GHD JV, 2017c
4b	Bonbeach Cross Drainage Assessment	AECOM-GHD JV, 2017h
<b>5</b>	<b>Groundwater</b>	
5a	Edithvale Preliminary Groundwater Assessment	AECOM-GHD JV, 2017d
5b	Bonbeach Preliminary Groundwater Assessment	AECOM-GHD JV, 2017i
<b>6</b>	<b>Ecology</b>	
6a	Edithvale Flora and Fauna Assessment	AECOM-GHD JV, 2017e
6b	Bonbeach Flora and Fauna Assessment	AECOM-GHD JV, 2017j
<b>7</b>	<b>Historical heritage</b>	
7a	Edithvale Historical Heritage Site Assessment	Lovell Chen, 2017a
7b	Bonbeach Historical Heritage Site Assessment	Lovell Chen, 2017b
<b>8</b>	<b>Cultural heritage</b>	
8a	Edithvale Aboriginal Cultural Heritage Desktop Assessment	Andrew Long and Associates, 2017a
8b	Bonbeach Aboriginal Cultural Heritage Desktop Assessment	Andrew Long and Associates, 2017b
<b>9</b>	<b>Landscape and visual impact</b>	
9a	Edithvale Landscape and Visual Impact Assessment	AECOM-GHD JV, 2017k
9b	Bonbeach Landscape and Visual Impact Assessment	AECOM-GHD JV, 2017l
<b>10</b>	<b>Groundwater Preliminary Impacts – Ecological Assessment (Edithvale &amp; Bonbeach)</b>	<b>AECOM-GHD JV, 2017m</b>
<b>11</b>	<b>Acoustic</b>	
11a	Edithvale Acoustic Assessment	AECOM-GHD JV, 2017n
11b	Bonbeach Acoustic Assessment	AECOM-GHD JV, 2017o
<b>12</b>	<b>Air quality</b>	
12a	Edithvale Air Quality Assessment	AECOM-GHD JV, 2017p
12b	Bonbeach Air Quality Assessment	AECOM-GHD JV, 2017q

## References

- Department of Sustainability and Environment. 2006. Ministerial guidelines for the assessment of environmental effects under the Environment Effects Act, 1978 (7th edition).
- EPA, 1996. Publication 480 - Environment Guidelines for Major Construction Sites.
- EPA, 2008. Publication 1254 – EPA Noise Control Guidelines.
- Public Transport Victoria, 2012. Network Development Plan – Metropolitan Rail.
- Victorian Government, 2014. Plan Melbourne.
- Victorian Government, 2015. Plan Melbourne Refresh Discussion Paper.
- Department of Sustainability and Environment, 2010, Victorian Best Practice Guideline for Assessing and Managing Coastal Acid Sulphate Soils.

**Authorised person for proponent:**

I, Bradley Smits, Acting Project Director, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature BS

Date 6/3/2017

**Person who prepared this referral:**

I, Adam Mitchell, Senior Planning and Environmental Specialist, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature AM

Date 6/3/2017