**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 USB copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. **Individual documents should not exceed 10MB 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 Couriers

**Minister for Planning Minister for Planning**

**PO Box 500 Level 16, 8 Nicholson Street**

**EAST MELBOURNE VIC 8002 EAST MELBOURNE VIC 3002**

In addition to the submission of the hardcopy to the Minister, separate submission of an electronic copy of the Referral via email to ees.referrals@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**

# **Information on proponent and person making Referral**

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| **Name of Proponent:** | **Rail Projects Victoria**  |
| **Authorised person for proponent:**  | Evan Tattersall |
| **Position:****Postal address:** | Chief Executive OfficerLevel 17, 222 Exhibition Street, Melbourne 3000 |
| **Email address:** | evan.tattersall@railprojects.vic.gov.au  |
| **Phone number:****Facsimile number:** | 03 9027 5700n/a |
| **Person who prepared Referral:** **Position:** | Karoline WareDirector Land, Planning & Environment |
| **Organisation:****Postal address:****Email address:****Phone number:****Facsimile number:** | Rail Projects VictoriaLevel 17, 222 Exhibition Street, Melbourne 3000karoline.ware@railprojects.vic.gov.au0418 806 414n/a |
| **Available industry & environmental expertise:** (areas of ‘in-house’ expertise & consultancy firms engaged for project) | Rail Projects Victoria has extensive expertise in rail planning, construction planning and planning and environmental management.The Aurecon Jacobs Mott MacDonald Joint Venture (AJM JV) provides technical advisory services to Rail Projects Victoria, including investigation and assessment of various matters to inform this referral.The following attachments are provided to assist with assessment of the Melbourne Airport Rail Project:* Project Land Map **Attachment 1**
* Bounding Coordinates for Project **Attachment 2**
* Key Feature Map **Attachment 3**
* Planning Zones Map **Attachment 4**
* Planning Overlays Map **Attachment 5**
* Land Tenure Map **Attachment 6**
* Melbourne Airport Rail Link Sunshine Route Strategic Appraisal **Attachment 7**
* Matters of National Environmental Significance Overview (MAR-AJM-PWD-PWD-MAP-XEV-MMN-0490551) **Attachment 8**
* Public Open Space Overview (MAR-AJM-PWD-PWD-MAP-XLP-MMN-0490748) **Attachment 9**
* AJM JV, MAR State Land Terrestrial Ecology Impact Assessment (MAR-AJM-PWD-PWD-REP-XEV-NAP-0001710) **Attachment 10**
* AJM JV MAR State Land Aquatic Ecology and Geomorphology Impact Assessment (MAR-AJM-PWD-PWD-REP-XEV-NAP-0001711) **Attachment 11**
* AJM JV, MAR Historical Heritage Impact Assessment (MAR-AJM-PWD-PWD-REP-XCH-NAP-0001709) **Attachment 12**
* AJM JV MAR State Land Landscape and Visual Impact Assessment (MAR-AJM-PWD-PWD-REP-AUD-NAP-0001898) **Attachment 13**
* MAR State Land Use Planning Impact Assessment (MAR-AJM-PWD-PWD-REP-XLP-NAP-0001712) **Attachment 14**
* MAR State Land Air Quality Impact Assessment (MAR-AJM-PWD-PWD-REP-XEV-NAP-0001721) **Attachment 15**
* MAR State Land Greenhouse Gas Emissions Impact Assessment (MAR-AJM-PWD-PWD-MEM-XEV-NAP-0001722) **Attachment 16**
* MAR State Land Traffic & Transport Impact Assessment (MAR-AJM-PWD-PWD-REP-XTR-NAP-0001724) **Attachment 17**
* MAR State Land Business Impact Assessment (MAR-AJM-PWD-PWD-REP-XLP-NAP-0001720) **Attachment 18**
* MAR State Land Surface Water Impact Assessment (MAR-AJM-PWD-PWD-REP-XLP-NAP-0001723) **Attachment 19**
* AJM JV, MAR State Land Airborne Noise Impact Assessment (MAR-AJM-PWD-PWD-REP-XEV-NAP-0001716) **Attachment 20**
* MAR State Land Contaminated Land Impact Assessment (MAR-AJM-PWD-PWD-REP-XEV-NAP-0001715.docx) **Attachment 21**
* MAR State Land Vibration Impact Assessment (MAR-AJM- PWD-PWD-REP-XLP-NAP-0001719) **Attachment 22**
* MAR State Land Aboriginal Cultural Heritage Existing Conditions Assessment (MAR-AJM-PWD-PWD-REP-XCH-NAP-0001210) **Attachment 23**
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# **Project – brief outline**

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| **Project title: Melbourne Airport Rail** |
| **Project location:** (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)The Melbourne Airport Rail (MAR) Project (the Project) intersects with six local government areas: Moreland, Moonee Valley, Hume, Brimbank, Maribyrnong and Hobsons Bay.The Project alignment extends from a new railway station at Melbourne Airport through to Sunshine station via the Albion-Jacana rail corridor and to the Melbourne CBD via the new tunnels created by the Metro Tunnel Project (separate project currently being delivered by the Project Owner, Rail Projects Victoria). This referral only addresses State land along the Project alignment. All Commonwealth land required to deliver the overall Project, including the new railway station at Melbourne Airport, is subject to a separate approvals process under the Commonwealth *Airports Act 1996*. More specifically the State land alignment includes:* Land between Sharps Road, Tullamarine, and the Albion-Jacana rail corridor, including land crossing the Western Ring Road.
* The existing Albion-Jacana rail corridor, generally between Jacana and Albion Stations.
* Land around Sunshine and Albion Stations, including the existing rail corridor.
* Land required for the Project from Jacana Station in the north-east through to Newport Station in the south-west and Middle Footscray Station in the east.

For the purposes of this referral, the State land will be referred to as the ‘Project Land’ and has been divided into two sections - the Corridor Section and the Sunshine Section (refer to **Attachment 1 and 3** for a map of the Project sections). Refer to Section 3 (Project description) for further detail on the main works proposed within the Project Land.Refer to **Attachment 1** for detailed maps of the Project Land, **Attachment 2** for bounding coordinates of the Project and **Attachment 3** for an overall map of the Project showing its regional context.  |
| **Short project description** (few sentences)**:**The Project is a once-in-a-generation transformation of Victoria’s transport network, connecting Melbourne Airport with a rail service for the first time. The Project will connect people from the airport to where they need to go - be that work, home or Victoria’s major regional centres - and responds to the growth needs of Melbourne’s airport precinct. Trains will run from Melbourne Airport through to Sunshine Station, then into the Metro Tunnel and the heart of Melbourne’s Central Business District (CBD), before continuing on to the Cranbourne and Pakenham lines. By transporting thousands of passengers each day, the Project will improve the performance of critical transport links to Melbourne Airport as well as transport connectivity and capacity through Melbourne’s west.A new rail bridge will be built across the Maribyrnong River to bring trains to the airport for the first time. New dedicated tracks will be constructed along the existing Albion-Jacana freight corridor between Sunshine and Airport West. The tracks will divert off the freight corridor crossing the Western Ring Road and head towards the airport following Airport Drive, before arriving at a new premium train station at Melbourne Airport.The Project is being delivered by Rail Project Victoria (RPV) (previously called Melbourne Metro Rail Authority), an administrative office in relation to the Department of Transport. |

# **Project description**

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| **Aim/objectives of the project** (what is its purpose / intended to achieve?):The Project aims to: * increase the provision of public transport services, optionality and accessibility to and between Melbourne Airport and the CBD / suburbs / regions;
* maximise service offerings to passengers through frequent and reliable services, and passenger amenity;
* integrate the transport service into the urban and transport network to facilitate broader economic and social development goals for Victoria;
* support Victoria’s and Australia’s economic growth by improving access to international and interstate markets;
* address growth pressures in and around Melbourne, including population growth and increasing congestion;
* ensure financial and economic sustainability with consideration given to patronage and precinct development;
* catalyse viable urban and economic development opportunities; and
* maximise other government policy outcomes through options for corridors including with respect to housing affordability, transport mode connections and access to employment.
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| **Background/rationale of project** (describe the context / basis for the proposal, eg. for siting):**Background**The need for, and location of, a rail link to Melbourne Airport has been subject to considerable investigation by the Victorian Government, with various planning studies and panel reports previously undertaken to inform possible corridors for the rail link.These investigations included strategic assessments of a Melbourne Airport rail link alignment and assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Planning and Environment Act 1987* (P&E Act). Previous project proposals and investigations are further detailed in the relevant sections of this referral. In 2018, the Victorian Government released the *Melbourne Airport Rail Link Sunshine Route Strategic Appraisal* (Sunshine Route Strategic Appraisal) (refer to **Attachment** 7), which confirmed that the Sunshine route is the best solution for an airport rail link. The Sunshine route provides superior connections to regional Victoria, Melbourne’s growth areas in the north and west and Melbourne’s south eastern suburbs and can also be delivered sooner and at a significantly lower cost than other route options. Following the Sunshine Route Strategic Appraisal*,* three options for connecting the Sunshine route to the CBD have been reviewed:* The Metro Tunnel – connecting to the CBD via the Sunbury tracks and Metro Tunnel.
* Regional Rail Link – connecting to the CBD via the existing Regional Rail Link track pair to Southern Cross Station.
* Sunshine Tunnel – connecting to the CBD via a new tunnel to Southern Cross Station.

Of these three options, connecting the Sunshine route via the Metro Tunnel was recommended by the Department of Transport (formally Transport for Victorian) and selected by the Victorian Government.The Sunshine route is the subject of this referral.**Rationale**Melbourne Airport handled more than 37 million passenger movements in 2018-19 and by 2038, this figure is projected to almost double to more than 67 million, which is an average growth of 3.2% per annum (the Project Owner notes that this is a pre-CoVid estimation). Access routes to Melbourne Airport are experiencing significant congestion, particularly on the Tullamarine Freeway – the airport’s primary connection to Greater Melbourne and the CBD. Over the last decade, passenger and air freight volumes at Melbourne Airport have grown substantially, underpinned by strong economic and population growth. Within this context, there are two key problems that underpin the need for a rail link to Melbourne Airport.* Limited transport connections to Melbourne Airport constrain passenger access.
* Increasingly congested line to Melbourne Airport limit Victoria’s economic prosperity

Accessibility and connectivity to the airport are the hallmarks of a thriving global city. There is a clear need to build the Melbourne Airport Rail (MAR) Project as an alternative to road-based airport access to provide the connectivity, capacity and reliability needed to meet demand generated by the city’s growing population and economy, and to reduce congestion on the city’s road network. While the COVID-19 pandemic has reduced airport patronage, historical trends suggest air travel demand will likely progressively recover to long-term trends within the next five years. In addition, given that lead times for MAR will likely be longer than the recovery timeframe, the underlying problems the Project aims to alleviate are expected to remain relatively unchanged over the long term.  |
| **Main components of the project** (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):The Project primarily will follow existing rail corridors. Trains will run from Melbourne Airport through to Sunshine Station, then into the Metro Tunnel and the heart of the CBD, before continuing on to the Cranbourne and Pakenham lines.New dedicated tracks will be constructed along the existing Albion-Jacana freight corridor between Sunshine and Airport West. The tracks will divert off this corridor crossing the Western Ring Road and head towards the airport following Airport Drive, before arriving at a new premium train station at Melbourne Airport.Public open space, industrial and commercial land (both public and private) is required for the Project for the purpose of temporary works (construction worksite / laydown areas and access) and permanent works. A number of these parcels of land are covered by an existing Public Acquisition Overlay (PAO7) (introduced as part of the previous Melbourne Airport Rail Link (MARL) planning controls in 2005). Parcels affected by the PAO7 include industrial land, land within the Western Ring Road reserve and land designated for public use associated with Steele Creek North. The remaining properties are largely vacant or earmarked for future redevelopment. Where residentially zoned land has been identified in the Project Land for both temporary and permanent works, these parcels are either currently vacant or earmarked for future redevelopment. Further to this, any permanent acquisition of residential land is either underground (for utility works) or adjacent to the rail corridor (for the Cranbourne Avenue pedestrian overpass). The total area of the Project Land is approximately 586 ha.The main works to deliver the Project has been further divided into two sections – the Corridor Section and the Sunshine Section, with details of both sections described below. **Corridor Section*** Construction of the new MAR tracks, comprising an approximately 8 km dual track railway and associated overhead line equipment (OHLE), combined services route (CSR) and track drainage works, including:
* A 2.3 km long elevated twin track viaduct structure between Sharps Road, Tullamarine and the Albion-Jacana rail corridor, crossing Steele Creek and the Western Ring Road including emergency and maintenance access points.
* New at-grade MAR tracks within the existing Albion-Jacana rail corridor, located on the western side of the existing Australian Rail Track Corporation (ARTC) tracks.
* An elevated twin track viaduct structure across the Maribyrnong River valley, adjacent to the Western side of the existing state significant heritage bridge.
* Slewing of ARTC tracks between Keilor Park Drive and the Calder Freeway.
* Signalling works along the Albion-Jacana rail corridor between Jacana Station and Barwon Avenue, Sunshine North and within the new MAR corridor North of the Western Ring Road.
* Construction of an intake supply substation at Terror Street or the Northeast area of Brimbank Park and two traction substations at Fullarton Road and within the McIntyre Sidings, Sunshine North.
* Construction of two new Digital Train Radio System (DTRS) facilities one North or South of Keilor Park Drive, Keilor East and a second at Airport Drive, Tullamarine.

**Sunshine Section*** Construction of a new 1.8 km long MAR twin track viaduct structure, including associated OHLE and CSR between Sunshine Station and the Albion-Jacana corridor, crossing Anderson Road, Ballarat Road, the Sunbury rail corridor, St Albans Road and Stony Creek.
* Signalling works, including the installation of trackside equipment along the Sunbury line towards Ginifer Station, along the Brooklyn freight corridor towards Newport Station, and along the Western rail corridor to West Footscray Station.
* Modifications to the tracks, formation, drainage, CSR, OHLE and signalling equipment for the MAR, Sunbury and Bendigo tracks from Albion to the beginning of the Jacana freight corridor.
* Modifications to Sunshine Station, including modifications to platforms, the Sunshine Station western car park and the construction of a new concourse.
* Modifications to the existing Sunshine and Sunshine West substations.
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| **Ancillary components of the project** (eg. upgraded access roads, new high-pressure gas pipeline; off-site resource processing):Ancillary works required for the Project include (but are not limited to):* Modifications to the western and eastern Albion Station forecourts and car parks.
* Modifications to existing structures, including structural modifications and strengthening works at Calder Freeway inbound and outbound bridges, Fullarton Road bridge, Western Ring Road on-ramp and off-ramp bridges, Keilor Park Drive and McIntyre Road bridges.
* Replacement of shared use path (SUP) connections at Calder Freeway / Fullarton Road, provision of a new SUP overpass at Cranbourne Avenue, and provision of a Strategic Cycling Corridor link between Western Ring Road and Airport Drive via Steele Creek.
* The provision of retention basins at several locations along the Albion-Jacana rail corridor.
* Protection works associated with the Exxon Mobil jet fuel pipeline along the Albion-Jacana rail corridor.
* Removing, destroying and lopping trees and removing vegetation, including native vegetation.

These works will be delivered as part of the main works package.  |
| **Key construction activities:**Key construction activities for the Project include (but are not limited to):* Implementation of No-Go Zones to avoid or minimise potential impacts to protected flora and fauna and native vegetation (or other values).
* Removing, destroying and lopping trees and removing vegetation, including native vegetation.
* Project wide ground disturbance as a result of construction activities including excavation works, grading, piling, rock breaking, tamping and regulating, ballast stockpiling and vehicle movements.
* Temporary occupation of the rail corridor for construction purposes, including 24/7 occupation at discrete times.
* Temporary closure of Sunshine and Albion Station both partially and entirely for construction purposes.
* Open cut trenching or trenchless methods (boring) for the relocation, removal, and installation of underground utilities and services, including drainage, signalling and CSR.
* Temporary closure of local transport routes and traffic diversions, including overnight closures of major transport routes including the Western Ring Road and Ballarat Road.
* Construction vehicle access, including the transportation of materials (e.g. concrete, precast elements, excavated spoil) to and from worksites utilising the existing road network and rail corridor access, and new temporary vehicle access roads. Minor road modifications will be required on some local roads to allow oversize vehicle access to construction zones.
* Establishment of construction worksite / laydown areas, temporary site offices, worksites and hardstands, including temporary utility installations and vehicle wash stations. This includes site preparation including civil works, particularly at worksites within the Maribyrnong River valley.
* Stockpiling and off-site disposal of excavated materials and importing fill where required.
* Impact on existing road bridges over the rail corridor during structural modification and strengthening works, which may include lane closures and traffic diversions during construction.
* Installation of bridge beams, including incremental launching, conventional lifting with mobile or crawler cranes or gantry launching systems.
* Construction activities by rail train, including transportation of long rails and hi-rail activities within the existing rail corridor.
* On-site stockpiling of construction materials including beams, ballast, sleepers and other related infrastructure elements.
* Compaction activities along the length of the corridor including formation construction, structural backfill, access tracks and ground improvement.
* Construction related drainage run-off and the use of on-site sedimentation basins.
* New above ground structures, including elevated viaducts, SUP overpasses, intruder fencing, noise walls, signalling equipment, overhead line equipment, DTRS towers, station facilities, active transport facilities and substations.
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| **Key operational activities:**The completion of the Project will result in the following permanent operational changes:* New rail infrastructure including Melbourne Airport Rail tracks including viaducts and bridges and associated maintenance access arrangements.
* Realigned ARTC tracks and associated CSR and signalling including changes.
* New SUP and strategic cycling corridor connections.
* Increased frequency of train movements along the MAR corridor with to facilitate a runtime between Sunshine Station and Melbourne Airport Station of around 11 minutes and trains every 10 minutes.
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| **Key decommissioning activities** (if applicable):Not applicable. |
| **Is the project an element or stage in a larger project?**   No **r Yes** If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages).The Project includes two parts: the State Land part (the subject of this referral) and the Commonwealth Land part.The Commonwealth Land part of the Project is subject to a separate approvals process and therefore not considered in this referral. The environmental impacts of the Commonwealth Land part will be assessed through a Major Development Plan under the *Airports Act 1996*.Commonwealth Land defines the land which the project components and construction activities are planned to be contained and generally includes Commonwealth-owned land, leased to Australia Pacific Airports Melbourne Pty Ltd (APAM), between Sharps Road, Tullamarine, and the Melbourne Airport Integrated Terminal Precinct.The main works for the Commonwealth Section are proposed to include:* A new Airport train station at the terminal interface.
* A new elevated track, including (but not limited to) OHLE and CSR starting at the Airport’s long-term car park.
* Line-wide high capacity train control and signalling, traction power and rolling stock solutions that are interoperable with those being incorporated into the Metro Tunnel.
* Construction of two new substations, located along Airport Drive and at the new Airport Station.
* Diversion, relocation and replacement works associated with utilities and underground services.
* Modifications to the existing road network, including road realignments and bridge modifications and replacements.
* A new Shared Use Path from the intersection of Airport Drive and Mercer Drive to the intersection of Centre Road and Terminal Drive.
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| **Is the project related to any other past, current or mooted proposals in the region?**  No **rYes** If yes, please identify related proposals. The need for, and location of, a rail link to Melbourne Airport has been subject to considerable investigation by the Victorian Government with various planning studies and panel reports previously undertaken to inform possible corridors for the rail link.In 2001, the Department of Infrastructure released a Business Case for the proposed MARL and found that the Sunshine/Albion East Link to be the preferred long-term option.In the same year, a referral under the EPBC Act (2001/197) was made to refer the potential environmental impacts of the MARL Albion East and West routes. On 2 April 2001, the Commonwealth Minister for the Environment found MARL to be a Controlled Action. The 2001/197 referral covers a similar alignment to that proposed in this referral, however one of the key differences between the two projects is that the current MAR alignment does not propose to connect to Southern Cross Station. As the current main works for the Project have changed since the time of the 2001/197 referral, this would constitute a ‘new action’ and referral will be put to the Minister for the Environment under Part 3, Division 1 of the EPBC Act.In 2005, planning controls were also introduced to set aside land to allow for the future construction of the MARL. These controls were introduced via a series of Planning Scheme Amendments (PSA), known as the ‘MARL Planning Controls’, into the Maribyrnong (PSA C11), Brimbank (PSA C32) and Moonee Valley (PSA C19) Planning Schemes. The MARL Planning Controls sought to provide a rail link utilising the existing Albion-Jacana freight rail corridor, with the PAO7 applied between the rail corridor and Sharps Road, Tullamarine to deliver the land required to provide a rail connection into Airport land. It also introduced a Development Plan Overlay and Design and Development Overlay along the alignment to guide development. It is noted that the then Minister for Planning had accepted that the preparation of an Environment Effects Statement under the *Environment Effects Act 1978* would not be required for the MARL.In 2018, the Victorian Government released Sunshine Route Strategic Appraisal, which confirmed that the Sunshine route remains the best solution for an airport rail link (the route relevant to this referral). The Sunshine route provides superior connections to regional Victoria, Melbourne’s growth areas in the north and west and Melbourne’s south eastern suburbs and could be delivered sooner and at a significantly lower cost than other route options.While the Sunshine Route Strategic Appraisal and the previous MARL controls (specifically the application of the PAO7) indicate a clear intention for the future use of some of the land in the Project Land, the Project Owner determined that the MARL Planning Controls do not adequately respond to the current scope proposed and therefore, are unable to be utilised for the Project.Following the Sunshine Route Strategic Appraisal*,* three options for connecting the Sunshine route to the CBD were also reviewed: * The Metro Tunnel – connecting to the CBD via the Sunbury tracks and Metro Tunnel.
* Regional Rail Link – connecting to the CBD via the existing Regional Rail Link track pair to Southern Cross Station.
* Sunshine Tunnel – connecting to the CBD via a new tunnel to Southern Cross Station.

Of these three options, connecting the Sunshine route via the Metro Tunnel was recommended by the Department of Transport (formally Transport for Victorian) and selected by the Victorian Government.The Sunshine route is the subject of this referral.  |
| **What is the estimated capital expenditure for development of the project?**The Commonwealth and Victorian governments have committed $5 billion each to deliver MAR. The project is expected to cost between $8-13 billion - this is consistent with the figure outlined in the *Sunshine Route Strategic Appraisal*.  |

# **Project alternatives**

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| **Brief description of key alternatives considered to date** (eg. locational, scale or design alternatives. If relevant, attach A4/A3 plans): As described in Section 3, the Victorian Government released the Sunshine Route Strategic Appraisal in 2018 which identified that a heavy rail connection to Melbourne Airport is required and considered four alternative routes, being the Sunshine, Maribyrnong, Flemington and Craigieburn routes. These four routes were previously identified and considered in a study undertaken by Public Transport Victoria in 2012, with this study finding the Sunshine (or ‘Albion’) route to be the best solution for an airport rail link. The Sunshine Route Strategic Appraisal reconfirmed this finding, noting the Sunshine route would provide superior connections to regional Victoria, Melbourne’s growth areas in the north and west and Melbourne’s south eastern suburbs.Following the route selection by the Project Owner for the current Project, alternative siting for the main works and designs have been considered during the planning and design phases. In particular, planning and environmental specialists and design engineers have undertaken an ongoing process of refining the design to avoid, protect and manage potential impacts to environmental values to select the appropriate design solution, having regard to key planning and environmental matters, heritage values and private land interests. This process was undertaken for the Project track alignment and specific site-based design options, including the following: * Track alignment and design response for the Sunshine precinct section of the Project.
* Track alignment and design response between Steele Creek and Airport Drive, Tullamarine.
* Substation locations for the Project.
* Construction access within the Maribyrnong River Valley.
* Design response of the proposed Maribyrnong River Rail Bridge.
* Alignment of the Steele Creek Tributary Reserve SUP.

The design options selected have minimised impacts to native vegetation, ecological values, heritage places and property and community values as far as practicable, acknowledging that existing rail corridors to be utilised by the Project are highly constrained. This is particularly relevant in the Sunshine and Albion section of the Project given the number of existing regional and metro lines and along the Albion-Jacana rail corridor, which is also occupied by the Exxon Mobil jet fuel pipeline. Alternative locations for temporary construction worksite / laydown areas were also considered during the project design phase to facilitate the safe construction of the Project. Site selection for laydown areas prioritised VicTrack land and as such, most of the laydown areas are within land that is currently used for railway activities in the existing railway corridor. Any additional land parcels proposed for use as temporary laydown areas are currently vacant, earmarked for future redevelopment or are public land. These locations have taken into consideration traffic management requirements and public and community interfaces. |
| **Brief description of key alternatives to be further investigated** (if known)**:** |
| No alternatives are under investigation. |

# **Proposed exclusions**

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| **Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:** **Ancillary works - Early Works**Early works are required to prepare the land for the construction of the Project and includes (but is not limited to):* Investigating, testing and surveying land.
* The construction, protection, modification, removal or relocation of utility services, rail signalling, overheads and associated infrastructure utility works.
* Site establishment works, including (but not necessarily limited to) site offices, traffic and environmental controls (e.g. sediment fencing), access points, access ways, temporary car parking, work platforms and hardstand and construction worksite / laydown areas.
* Removal, destruction or lopping of vegetation, including native vegetation where required.

The early works will commence prior to the main works package.**Other projects**There are a number of projects being delivered under Victoria’s Big Build program which are excluded from this referral but have key interfaces. These include:* MAR (Commonwealth Land) - The Project includes a separate package of works on Commonwealth Land to accommodate the dedicated tracks along Airport Drive to the new premium station at Melbourne Airport. All Commonwealth land required to deliver the overall Project is excluded from this referral, including the new railway station at Melbourne Airport, which is subject to a separate approvals process under the Commonwealth *Airports Act 1996*.
* Metro Tunnel Project - The project is delivering a 9-kilometre twin tunnel, five underground stations, high capacity signalling and related rail infrastructure on the Sunshine to Dandenong corridor including infrastructure on the wider Metropolitan Rail Network. MAR connects to the CBD via the Sunbury tracks and Metro Tunnel and therefore is dependent on the full delivery and operation of the Metro Tunnel. This Project is currently in delivery and subject to a separate approval.
* High Capacity Metro Trains (HCMT) - The project is delivering HCMT-7s to operate initially on the Dandenong, Cranbourne and Pakenham services via the Caulfield Loop and upon the opening of the Metro Tunnel, Sunbury services will be included. MAR connects to the CBD via the Sunbury tracks and Metro Tunnel and will also use HCMT-7s. This Project is currently in delivery and subject to a separate approval.
* Sunbury Line Upgrade - The project includes a range of enhancements on the Sunbury Line to take full advance of the extra capacity created by the Metro Tunnel. This Project is currently in delivery and subject to a separate approval.
* Western Rail Plan - the project sets out priority rail infrastructure projects for Melbourne’s west, with the intention of providing a fast, high-capacity rail network to service growing suburbs and regional cities. Under the Western Rail Plan, there are a number of key future rail investments that are currently under planning and investigation.
* Suburban Rail Loop - the project will provide a 90 km orbital rail loop that would connect every major metropolitan train line from Cheltenham to Werribee and link priority growth precincts. The north-east and south-west sections of Suburban Rail Loop between Broadmeadows and Werribee are connected by the Project. This project is currently under planning and investigation.

**Major Road Projects*** Western Ring Road Upgrade - The project will widen the freeway, including the on and off ramps and install a new freeway management system along 38 km of road from Laverton North to Greensborough. The sections of the Western Ring Road Upgrade that intersect with the Project are complete (between the intersection of the Sunbury rail corridor and the Western Ring Road and the intersection of Sharps Road, Tullamarine and Western Ring Road).
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# **Project implementation**

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| **Implementing organisation** (ultimately responsible for project, ie. not contractor)**:**The Project is being undertaken by the Rail Projects Victoria, a division of the Major Transport Infrastructure Authority, which is an administrative office established under the *Public Administration Act 2004* in relation to the Department of Transport. RPV is responsible for the planning and delivery of the Project on behalf of the Victorian Government. |
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| **Implementation timeframe:**Project works are estimated to begin in 2022 and to be completed by 2029. These timeframes are indicative only and may be subject to change as a result of relevant approvals and once the delivery partners have been selected. |
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| **Proposed staging** (if applicable):The staging of construction of the Project will be determined by the Project Owner in consultation with the delivery partner/s. Some work packages may occur concurrently. The following work packages are proposed to deliver the Project:* Sunshine and Albion (State land only)
* Sunshine Station works
* Elevated viaduct between Sunshine Station and the Albion-Jacana corridor
* Track and civil works for the new MAR line
* Rail systems and preparation for high capacity signalling
* Maribyrnong River Bridge (State land only)
* Construction of the new Maribyrnong River bridge
* Corridor (State land only)
* Track and civil works for the new MAR line
* Shared user path and bridge works
* OHLE, wiring and structures
* Viaduct (Commonwealth and State land)
* Elevated viaduct along Airport Drive
* Track and civil works for the new MAR line
* Bridge over Western Ring Road Freeway
* OHLE, wiring and structures
* Airport (Commonwealth land only)
* New station at Melbourne Airport
* Track and civil works for the new MAR line
* OHLE, wiring and structures
* Rail systems (Commonwealth and State land)
* Substation works
* High capacity signalling, communications and rail control systems
* Early works (Commonwealth and State land)
* Utilities protection and relocation
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# **Description of proposed site or area of investigation**

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| **Has a preferred site for the project been selected?**   |
|  No **r**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):  |
| The Project follows a linear alignment along the existing railway line between Jacana Station and Middle Footscray Station, with sections of the Newport and Sunbury rail corridors also included within the Project Land. All land in the rail corridor is held by VicTrack on behalf of the Victorian Government. This land is a combination of freehold and Crown land.The Project also includes land between Steele Creek in Airport West and Sharps Road in Tullamarine, where the proposed MAR tracks would divert from the existing rail corridor to connect with Melbourne Airport. Refer to **Attachment 1** for detailed maps of the Project Land.**Landform and Geology** The project traverses an area that is referred to as the Western Plains. The Western Plains are a low-lying undulating plain formed on volcanic and sedimentary rocks. The project is predominantly underlain by the Newer Volcanics basalt, with a relatively thin, but variable, band of residual highly reactive clay. The thickness of the basaltic rock ranges from greater than 30m towards the Sunshine end of the alignment and around 16m towards the Airport.Where the alignment crosses the Steele Creek Tributary Reserve, sediments of the Brighton Group and variable weathered Older Volcanics can be expected. Additionally, interbedded siltstones and sandstones of the Melbourne Formation can be expected within the base of the Maribyrnong River valley. **Waterways**The project traverses several waterways, identified as follows:* Maribyrnong River – the Project intersects with the 160km Maribyrnong River within the Lower Maribyrnong sub-catchment system, traversing the river channel and associated floodplain. The Maribyrnong River is an actively eroding stream and is considered to have highly variable flows, with long periods of low flows. The Project would traverse the Maribyrnong River channel and associated floodplain in Sunshine North / Keilor East.
* Steele Creek / Steele Creek North - Steele Creek and its main tributary, Steele Creek North, originate at the southern margin of Melbourne Airport and flow south through an airport industrial precinct and cleared land before meandering through urban residential areas to meet the Maribyrnong River at Avondale Heights. Both creeks are characterised by low flows and overall creek condition is poor with a degraded streamside zone. The Project would traverse Steele Creek North in Tullamarine and Steele Creek in Airport West.
* Stony Creek - Stony Creek is an urban waterway that runs through Melbourne’s western suburbs. Stony Creek rises in the Sunshine area and enters the Yarra River at Yarraville, downstream of the confluence with the Maribyrnong River. The Project would intersect Stony Creek which is a concreted watercourse used for drainage purposes in Sunshine North, with the lower reaches of Stony Creek also intersecting with the broader Project Land in Braybrook.
* Moonee Ponds Creek – Moonee Ponds Creek is one of five major north-south flowing tributaries of the Yarra River. Historically the creek at this location is likely to have been drained and straightened. The channel is also likely to have been subject to a high level of engineering works to maintain its form and function in conveying stormwater runoff. The Project would intersect with Moonee Ponds Creek in Glenroy / Strathmore Heights.

**Vegetation Cover** The MAR Project Land is a mostly linear extent that comprises disturbed, urban areas that are devoid of native vegetation. There are however a number of discrete areas of high-quality native vegetation and threatened species habitat. Field assessments undertaken for the Project identified the following native vegetation in the Project Land:* 33.266 hectares of native vegetation in patches (5.6% of the total Project Land area);
* 64 large canopy trees in patches; and
* 86 Scattered Trees (79 small and 7 large).

**Built Structures**Given the main works are centred on an existing rail corridor, there are several railway stations in the Project Land. These include Jacana, Ginifer, Albion, Sunshine, Tottenham, West Footscray, Middle Footscray and Newport Stations. Other key built structures include the road bridges that cross the rail corridor at multiple locations, including those that would be are modified to accommodate the Project. |
| **Site area** (if known): Approximately ……. (hectares) **Route length** (for linear infrastructure) …….. (km) **and width** …… (m) The Project Land, as shown in **Attachment 1**, covers approximately 586 ha. The route length of the new MAR tracks is approximately 10 km. |
| **Current land use and development:**The main works are largely contained within the existing rail corridor between Jacana Station in the north-east, Newport Station in the south-west, Middle Footscray Station in the east and Ginifer Station in the north. These rail corridors accommodate a mixture of passenger and freight services. Some areas of the Project Land would however extend into other land uses, which can be characterised as follows:* Land that forms part of the Sunshine Metropolitan Activity Centre, located in both Sunshine and Albion.
* Industrial land uses located in Tullamarine, Keilor Park, Keilor East and Sunshine North.
* Land in the Public Park and Recreation Zone (PPRZ) provides both passive and active open space opportunities for the local community and includes a sporting field, public parks and recreational open spaces. The majority of public open space included in the Project Land offers passive recreational activities including the Steele Creek Tributary Reserve, Border Drive Reserve, Maribyrnong River Valley Parklands, HV McKay Memorial Gardens, Talmage Street Park and Moyangul Street Park. Barclay Reserve, which contains a formal outdoor sports facility, is the only active open space area in the Project Land.
* Public land including Stony Creek, a Melbourne Water easement located in Keilor Park and land associated with Steele Creek North.
* Local roads throughout Sunshine, Sunshine North, Keilor East, Airport West and Tullamarine.
* Arterial roads, including the Western Ring Road and Calder Freeway.
* A number of discrete parcels of residentially zoned land in Sunshine and Sunshine North (these parcels are either currently vacant or earmarked for future redevelopment).

Table 7.1 below summarises the area and percentage of Project Land that each land use represents (State land only). Table .: Land uses within the Project Land

| Land Use | Area within the Project Land[[1]](#footnote-2) | Percentage of Project Land[[2]](#footnote-3) |
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| **Rail Corridor** (calculations in column 2 and 3 include the following planning zones PUZ4) |  1984 km² | 34 % |
| **Public Land**(calculations in column 2 and 3 include the following planning zones PUZ 1,2,3,5 and RDZ1) | 1707 km² | 29 % |
| **Public Open Space**(calculations in column 2 and 3 include the planning zone PPRZ) | 667 km² | 11 % |
| **Industrial Land**(calculations in column 2 and 3 include the planning zones INZ1 and 2) | 1000 km² | 17 % |
| **Sunshine MAC**(calculations in column 2 and 3 include the planning zone ACZ) | 156 km² | 3 % |
| **Commercial Land**(calculations in column 2 and 3 include the planning zones C1Z and MUZ) | 14 km² | 1 % |
| **Residential Land**(calculations in column 2 and 3 include the following planning zones GRZ, NRZ, RGZZ) | 305 km² | 5 % |

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| **Description of local setting (eg. adjoining land uses, road access, infrastructure, proximity to residences & urban centres):**The Project is primarily located within an existing VicTrack rail corridor. Descriptions of the local setting for key sections of the Project Land are detailed below: * Sharps Road to Western Ring Road (located within Brimbank City Council):
	+ The surrounding road network is characterised by several arterial roads zoned Road Zone Category 1 (RDZ1), including Sharps Road and Airport Drive. The Western Ring Road is a major urban freeway zoned RDZ1.
	+ Industrial land exists either side of the Project Land.
	+ Land north of Sharps Road, Tullamarine is Commonwealth owned land that forms part of Melbourne Airport.
* Jacana Station to Airport Drive (Albion-Jacana freight line) (located within the municipalities of Hume, Moreland, Moonee Valley and Brimbank):
	+ Several elevated roads and paths intersect with the Project Land, including Pascoe Vale Road overpass, Arundel Avenue SUP, Augustine Terrace overpass, Tullamarine Freeway overpass, Melrose Drive overpass and Westfield Drive overpass.
	+ Land adjacent to both sides of the Project Land generally consists of residential land uses, between Jacana Station and Tullamarine Freeway.
	+ Land adjacent to the Project Land between Tullamarine Freeway and Airport Drive consists of large-scale industrial land uses to the north of the rail corridor and commercial uses to the south, including the Westfield Airport West Shopping Centre. A pocket of residential land also occurs to the south.
* Airport Drive to Calder Freeway (Albion-Jacana freight line) (located within Brimbank City Council):
	+ Residential land and the Western Ring Road are located to the east of the Project Land.
	+ Some industrial land exists north-east of the Western Ring Road / Calder Freeway junction.
* Calder Freeway to Keilor Park Drive (Albion-Jacana freight link) (located within the municipalities of Brimbank and Moonee Valley):
	+ The Project Land intersects with the Calder Park Freeway road bridge.
	+ Residential land exists east of the Project Land and industrial land to the west.
* Keilor Park Drive to Albion Junction (Albion-Jacana freight line) (located within the municipalities of Brimbank and Moonee Valley):
	+ The area between Keilor Park Drive and the Maribyrnong River includes Keilor Terminal Station west of the Project Land and residential land west of the Project Land.
	+ Land between Maribyrnong River and McIntyre Road generally consists of industrial land west of the Project Land and vacant industrial land to the east.
	+ Land surrounding the Project Land between McIntyre Road and Albion Junction consists of residential land west of the rail corridor and industrial and residential land to the east.
	+ The rail corridor intersects with several elevated roads and paths including the Keilor Park Drive road overpass, McIntyre Road overpass and St Albans Road overpass, all of which are zoned RDZ1.
* Curtin Street to Albion Junction (Sunbury line) (located within Brimbank City Council):
	+ The Project Land intersects with the Western Ring Road overpass and the Furlong Road overpass.
	+ Land adjacent includes vacant land between Albion Junction and the Western Ring Road, and residential land generally between the Western Ring Road and Curtin Street.
* Albion Junction to Brooklyn Triangle (Sunshine Station) (located within Brimbank City Council):
	+ Land west of the Project Land consists of residential and industrial land uses, as well as an at-grade car park and open drainage associated with Stony Creek.
	+ The Project Land intersects with several elevated roads including Ballarat Road overpass and Anderson Road underpass (both zoned RDZ1).
	+ The Sunshine Metropolitan Activity Centre (Sunshine MAC) immediately adjoins the Project Land through Sunshine and Albion. The Sunshine MAC is a major transport hub, with retail and commercial activity adjoining the Project Land, including the Sunshine Market Place and Sunshine Plaza, centred around Hampshire Road. A smaller scale retail cluster is located south of Sunshine Station, with civic facilities, a government and legal precinct and education facilities also located within the broader Sunshine MAC. Residential land uses also exist west of the rail corridor in the vicinity of Albion Station and to the east and west of Sunshine Station.
	+ The Sunshine MAC is identified as a National Employment and Innovation Cluster (NEIC) and Priority Precinct under *Plan Melbourne 2017 – 2050 Addendum 2019 (DELWP, 2019)* (Plan Melbourne)and is undergoing significant change through work undertaken by the Victorian Planning Authority.
* Brooklyn Triangle to Middle Footscray station (located within the municipalities of Brimbank and Maribyrnong):
	+ Matthews Hill Reserve is located adjacent to the Project Land.
	+ Sunshine Triangle is located adjacent to the Project Land and is an ecological No-Go Zone protected by DELWP and located on Crown land. This site is a key environmental conservation site protected at a Commonwealth, state and local level.
	+ Residential land is located to the north of the Project Land and a mixture of residential and industrial land to the south.
	+ Several roads intersect with the Project Land, including the Dempster Street road underpass and Geelong Road overpass.
* Brooklyn Triangle to Newport station (Brooklyn freight line / Werribee line) (located within the municipalities of Brimbank, Maribyrnong and Hobsons Bay)
* Surrounding land uses generally consist of large-scale industrial facilities west of Project Land, and a mixture of industrial and residential land uses east of the Project Land.
* Several elevated roads intersect with the rail corridor, including the Sunshine Road level crossing, Somerville Road level crossing, Princes Highway road overpass, Francis Street level crossing, West Gate Freeway road overpass, Kernot Street level crossing and Melbourne Road overpasses.
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| **Planning context** (eg. strategic planning, zoning & overlays, management plans):**Context**The Project is located within six (6) municipalities - Moreland City Council, Moonee Valley City Council, Hume City Council, Brimbank City Council, Maribyrnong City Council and Hobsons Bay City Council.The Project is supported by the State and local planning policy and will create a rail link to the Melbourne Airport for the first time. **Planning Policy Framework** The Project implements and supports the following policies of the State Planning Policy Framework (PPF):* Clause 11.01-1S (Settlement)
* Clause 12.01-1S (Protection of biodiversity), Clause 12.01-2S (Native vegetation
* management) and Clause 12.03-1S (River corridors, waterways, lakes and wetlands)
* Clause 13 (Environmental Risks and Amenity)
* Clause 15 (Built Environment and Heritage), Clause 15.03 (Heritage)
* Clause 17.03 (Industry)
* Clause 18 (Transport), Clause 18.01-1S (Land use and transport planning), Clause 18.01-1S (Public Transport)
* Clause 19 (Infrastructure); Clause 19.03-2S (Infrastructure design and provision)

The Project strongly supports the PPF as it carefully balances transport objectives for the State with the management of landscape, biodiversity and heritage values of the Project Land.In accordance with the transport objectives of the PPF, the Project proposes to connect Melbourne Airport’s Integrated Terminal Precinct with a rail service for the first time, enhancing public transport opportunities to job rich areas such as the Sunshine NEIC and Melbourne Airport, likely resulting in long term investment in the area and associated increase in jobs and economic activity.The Project includes upgrades to existing public car parks and Sunshine Station and the creation of a forecourt adjacent to Albion Station. These station upgrades will improve the station facilities and will integrate with surrounding land uses, further contributing to the State’s commitment to invest and develop the Sunshine NEIC.More generally, it is anticipated that the Project could generate job growth during construction. The Project also supports the environmental and heritage objectives of the PPF contained in Clause 12 (Environment and Landscape Values), Clause 13 (Environmental Risks and Amenity), Clause 14 (Natural Resource Management) and Clause 15 (Built Environment and Heritage), which aim to protect and conserve ecological and heritage values. In accordance with these objectives, the Project primarily follows existing rail corridors and the alignment of the PAO7 (introduced as part of MARL Planning Controls, which provide for a previous rendition of the project in 2005). The Project alignment is generally located within the existing rail corridor or within the PAO7 extents where a clear intent for the Project has already been identified. Consequently, impacts to ecological values often located in public open spaces, and heritage values often within existing built environments, are reduced. **Local Planning Policy Framework** The Local Planning Policy Framework (LPPF) across the six municipalities focuses on the key themes of land use, landscape and built environment and transport. Across these municipalities, there are a number of consistent objectives, including the following:* Increase the amenity and use of public and active transport networks.
* Protect and enhance natural landscape characteristics of open spaces with specific consideration of the Maribyrnong River.
* Enhance and conserve cultural heritage.

The Project supports the above objectives through enhancing the public transport networks for Melbourne. In particular, the Project will provide a rail link to Melbourne Airport, with connections from the Melbourne CBD and via Sunshine Station, thereby delivering Melbourne’s first rail corridor direct to Melbourne Airport. Locally the Project will provide enhanced active transport benefits, through upgrade works proposed at Sunshine and Albion Stations, as well as works to improve existing bicycle and pedestrian networks to benefit the surrounding local community. Further to this, through design refinement, the Project has sought to minimise impacts to surrounding land uses and to heritage and landscape values where possible. **Other relevant Strategies and Policies**There are a number of state and local strategic planning documents informing the PPF and LPPF which are of relevance to the Project. Of particular importance is Plan Melbourne, which provides guidance on the development and growth of Melbourne to 2050 and is the key strategy for supporting jobs, housing and transport. It also seeks to integrate long-term land use, infrastructure and transport planning. Plan Melbourne strongly supports the Project, identifying it as a key piece of transport infrastructure that is required to both improve Melbourne’s public transport network and future proof for population growth. There are also several broader state transport policies such as the *Western Rail Plan* and *Growing Our Rail Network 2018-2025 (Transport for Victoria, 2018)* which highlight the importance of the Project in increasing the capacity of the public transport network and meeting the growing demand for rail services in Victoria.State and local policy also identifies the Sunshine MAC, which includes Albion as an area of future urban renewal and intensification. This is highlighted by its designation as an NEIC under Plan Melbourne and a Priority Precinct under the *Priority Precincts (Department of Jobs, Precincts and Regions, 2019),* which defines priority precincts as areas of key investment and urban renewal that will support Melbourne’s population and economic growth. The Project aligns with these designations by providing improved public transport connectivity as well as precinct improvements at Sunshine and Albion Stations.State strategic planning documents also highlight the importance of protecting and enhancing biodiversity and cultural and built heritage. In particular, development in the Maribyrnong River Valley Parklands is guided by the *Maribyrnong River Valley Design Guidelines (Department of Planning and Community Development, 2010)*. The Project accords with the objectives of these guidelines through avoiding significant ecological values where possible and adopting a design that is sympathetic to the character of the area, including heritage values.**Zones and Overlays**The Project Land largely follows the existing rail corridor, zoned PUZ4, which accommodates both passenger and freight rail services. The Project Land also includes land outside of the rail corridor which is not currently intended for transport use. Where the Project Land is outside the rail corridor it generally follows the alignment of the previous MARL Planning Controls which support the development of an airport rail link. Land uses within and adjacent to the Project Land include open space, industrial, public and residential land.Refer to **Attachment 4** **and 5** for Zones and Overlays Maps and **Attachment 14** for the MAR State Land Use Planning Impact Assessment. |
| **Local government area(s):**The Project intersects with six (6) local government areas:* Moreland City Council
* Moonee Valley City Council
* Hume City Council
* Brimbank City Council
* Maribyrnong City Council
* Hobsons Bay City Council
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# **Existing environment**

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| **Overview of key environmental assets/sensitivities in project area and vicinity** (cf. general description of project site/study area under section 7):Key environmental assets identified in the Project Land include:* Native vegetation
* EPBC Act Listed Matters of National Environmental Significance
* *Flora and Fauna Guarantee Act 1988* (FFG Act) listed communities, flora and fauna
* Aboriginal cultural heritage
* Historical heritage
* Waterways
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| These environmental assets are discussed in further detail below.  |
| **Native vegetation** Native vegetation in the Project Land was identified and classified into Ecological Vegetation Classes (EVCs), mapped, and subject to Vegetation Quality Assessment (VQA) to quantify the condition of the EVCs against defined DELWP benchmarks described by DSE (2004) in the *Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectare scoring method - Version 1.3*. This information enabled the identification of threatened ecological communities (EPBC Act) and Listed Threatened Communities (FFG Act) and potential threatened species habitat. Native vegetation protected under the *Planning and Environment Act 1987* (P&E Act) was mapped in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017)* as either a patch, scattered tree or other native vegetation. Field assessments undertaken for the Project identified the following native vegetation in the Project Land:* 33.266 hectares of native vegetation in patches (5.6% of the total Project Land area);
* 64 large canopy trees in patches; and
* 86 Scattered Trees (79 small and 7 large).

**Attachment 10** (MAR State Land Terrestrial Ecology Impact Assessment) provides a complete list and mapping of all EVCs present within the Project Land.**EPBC Act listed Matters of National Environmental Significance (MNES)**The Protected Matters Search Tool (PMST) was accessed to identify project relevant MNES and other relevant matters that are required to be protected in accordance with the EPBC Act. A PMST report was generated including a 5 km search buffer of the Project Land. Following assessment of the PMST, vegetation surveys and targeted surveys were undertaken to identify MNES within the Project Land. Six (6) EPBC Act listed threatened MNES (one (1) threatened community, one (1) flora species and four (4) fauna species) were determined to have a moderate to high (or confirmed) likelihood of occurring in the Project Land is provided in Section 12 (Native vegetation, flora and fauna) of this referral.**FFG Act listed communities, flora and fauna**Eight (8) flora and seven (7) fauna species listed under the FFG Act were either recorded or have a moderate to high likelihood of occurring in the Project Land. Further information about FFG Act-listed threatened communities, flora and fauna confirmed or determined likely to occur in the Project Land is provided in Section 12 of this referral.**Aboriginal cultural heritage** The Project Land is within the boundaries of two appointed Registered Aboriginal Parties (RAP):* Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation (Wurundjeri) is the RAP for the Project Land from west of Footscray Station to east of Geelong Road, Seddon and west of Stony Creek South to south of Sharps Road Tullamarine.
* Bunurong Land Council Aboriginal Corporation (BLCAC) is the RAP for the Project Land east of Stony Creek South to west of Geelong Road, Seddon.

It is worth noting that a RAP application was recently approved by the Victoria Aboriginal Heritage Council (VAHC) on 1 July 2021 to vary the RAP boundary of Wurundjeri and BLCAC. Prior to this decision the Wurundjeri RAP boundary ended at Balfour Avenue, Sunshine North and there was no RAP appointed for the area from the Melbourne CBD to Balfour Avenue, Sunshine North.Assessments undertaken to date have identified that the Project Land includes areas of cultural heritage sensitivity (CHS) and identified Aboriginal places as defined under Part 2, Division 3 of the Aboriginal Heritage Regulations 2018. Areas of CHS that intersect with the Project Land are generally clustered around waterways, particularly the Maribyrnong River, Stony Creek and Steele Creek. Cultural Heritage Management Plans (CHMP), CHMP No. 17301 and CHMP No. 16615, are being developed for the Project for approval by statutory authorities. Both CHMPs were commenced prior to 1 July 2021 prior to the variation of the RAP boundaries of Wurundjeri and BLCAC.**Historical heritage** There are six (6) sites listed on the Victorian Heritage Register (VHR) within the Project Land: * VHR H1197 Albion Viaduct
* VHR H1953 HV McKay Memorial Gardens
* VHR H0829 John Darling and Son Flour Mill
* VHR H1966 HV McKay Offices
* VHR H0667 Massey Ferguson Complex
* VHR H1563 Footscray Railway Station Complex

There are two (2) sites listed on the Victorian Heritage Inventory (VHI) within the Project Land: * VHI H7822-0004 Dodds Homestead Ruins/Brimbank Park Ruins
* VHI H7822-0842 Former Tottenham Station

Further information about Aboriginal cultural heritage and historical heritage is provided in Section 15 (Cultural Heritage) of this referral.**Waterways**The Project Land traverses several waterways, including the following:* Maribyrnong River
* Steele Creek / Steele Creek North
* Moonee Ponds Creek
* Stony Creek
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| Further information about the waterways and drainage lines are provided in Section 13 (Water environments) of this referral. |
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# **Land availability and control**

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| **Is the proposal on, or partly on, Crown land?** No **r**Yes If yes, please provide details. All land in the rail corridor is held by VicTrack on behalf of the Victorian Government. This land is a combination of freehold and Crown land.In addition to the rail corridor and road reserves, the Project may also permanently and temporarily impact Crown land managed by DELWP and Parks Victoria in the vicinity of Maribyrnong River in Avondale Heights. |
| **Current land tenure** (provide plan, if practicable):The Project will be predominantly undertaken within the VicTrack rail corridor on land that is managed by a combination of Metro Trains Melbourne (MTM), Australian Rail Track Corporation (ARTC), V/Line and VicTrack. Roads to be used for construction access and road bridges to be modified are managed by either the roads corporation or the local council. Private industrial and commercial land along the proposed MAR alignment may need to be permanently acquired or temporarily occupied by the Project to enable the delivery of the Project. Initial engagement is underway with the owners and occupiers of these properties and early assessments have indicated a conservative estimate of 61 properties may be permanently acquired or temporarily occupied. It is noted that the existing PAO7 under the Brimbank Planning Scheme applies to part or all of 21 of these properties required for permanent or temporary acquisition, with the remaining properties located outside of the PAO7. The Project may permanently or temporarily impact 29 properties owned or managed by public entities, including DELWP, Development Victoria, Parks Victoria, water authorities, roads corporation and councils.The Project may permanently or temporarily impact approximately 35 VicTrack lots leased to third parties. Permanent works, access and temporary construction activities may be required on the surrounding road network for which VicRoads or the relevant councils are the road management authorities under the *Road Management Act 2004*.Refer to **Attachment 6** for map of existing land tenure. |
| **Intended land tenure** (tenure over or access to project land): VicTrack will retain its ‘ownership’ of the rail reserve. Land acquired for permanent infrastructure will be transferred to public land managers (e.g. VicTrack, Councils, roads corporation) as appropriate and agreed between the parties. For temporarily occupied land, ownership of the land will not change, and occupation of the land will be returned to the owner once relevant works are complete. |
| **Other interests in affected land** (eg. easements, native title claims):The Project Land does not intersect with any known native title claims.Properties within the Project Land are commonly subject to encumbrances, including easements, caveats and covenants. Any impacts on these interests will be considered and managed through the design process and, where appropriate, addressed in accordance with the *Major Transport Projects Facilitation Act 2009* and the *Land Acquisition and Compensation Act 1986.* The Project Land interfaces with the following infrastructure: * MTM, V/Line and ARTC operational rail lines
* Existing roads
* Water and drainage infrastructure
* Utilities, including Exxon Mobil jet fuel pipeline. The pipeline is licensed under the *Pipelines Act 2005*. It travels alongside the proposed MAR corridor and has the benefit of a licence from VicTrack (as owner of the rail corridor).
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# **Required approvals**

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| **State and Commonwealth approvals required for project components** (if known): |
| The following approvals are required for the State Land Section of the Project: **Commonwealth***Environment Protection Biodiversity Conservation Act 1999*The Project requires referral to the Commonwealth Minister for the Environment under th*e* EPBC Act on the basis of potential impacts to the EPBC Act-listed threatened species and listed ecological communities. The project is seeking an assessment of the main works on State land through two separate referrals, the Sunshine Section and the Corridor Section.  A decision has not been made on the at time of the writing of this referral. **State***Planning and Environment Act 1987* The Project is within the Moreland, Moonee Valley, Hume, Brimbank, Maribyrnong and Hobsons Bay and is subject to their local planning schemes. The respective planning schemes set out the relevant planning controls which determine whether planning approval is required for the use and/or development of land. These controls include zones, overlays, and particular and general provisions. The P&E Act is relevant to the project as land use planning studies have shown that a variety of approvals are triggered by the proposed main works. There are a variety of pathways via which planning approval may be obtained for rail projects. The planning approval pathway for the project will be confirmed through further consultation with DELWP. *Major Transport Projects Facilitation Act 2009* The Project was declared under the *Major Transport Projects Facilitation Act 2009* (MTPF Act) (other than under Parts 3 and 8) with the Minister for Transport appointed as the Project Minister on 3 June 2021. Declaration of the Project under the MTPF Act activates the delivery power afforded under the MTPF Act and supports a standardised and transparent process for land acquisition and roadworks.*Aboriginal Heritage Act 2006*A mandatory CHMP is required for the Project under the *Aboriginal Heritage Act 2006*. Two CHMPs are being prepared for the project, No. 16615 and No. 17301, based on the statutory authorities prior to 1 July 2021 as the Notice of Intents for both CHMPs were submitted before this date. *Heritage Act 2017*The Project intersects with the registered heritage extent of eight state listed heritage places, including six (6) VHR and two (2) VHI sites. A description of the nature and extent of the works is provided in Section 15 (Cultural Heritage) of this referral. It is noted that a permit/consent for the proposed works within the registered heritage extent of these sites will be sought under the *Heritage Act 2017* if required.**Other State Legislation**The delivery of the Project is anticipated to require the following additional approvals and consents in accordance with the following Acts – permits and approvals will be confirmed on completion of detailed design:* Permits to Take under the FFG Act*.*
* Consent for works within, and the occupation of, roads under the *Road Management Act 2004.*
* Consent for works on Waterways Permit under the *Water Act 1989.*
* Authorisation from DELWP for the management of wildlife encountered during the clearance of vegetation under the *Wildlife Act 1975.*
* Under Section 120 of the *Pipelines Act 2005*, Ministerial consent would be required to construct a building within 3m of a licensed pipeline. Further, under Section 118 of the *Pipelines Act 2005*, authority must also be obtained from the pipeline licensee or notice given to the licensee in accordance with the Pipeline Regulations 2017 to undertake any excavation, bores or open any ground within 3m of the pipeline

N.B. Main works on Commonwealth Land are subject to a separate approval process to the State component of the Project Land. The Commonwealth Land Section will be assessed through a Major Development Plan (MDP) under the *Airports Act 1996*. It is noted that the EPBC Act applies on Commonwealth Land. Any action on Commonwealth Land which is the subject of an MDP does not need to be referred under the EPBC Act by the person proposing to take the action as the MDP is required to be referred to the Minister for the Environment prior to approval. |
| **Have any applications for approval been lodged?** |
| **r** No Yes If yes, please provide details. |
|  |
| **Approval agency consultation** (agencies with whom the proposal has been discussed): |
| Consultation by the Project Owner has been undertaken with the following approval agencies:* First People – State Relations (formally Aboriginal Victoria)
* Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation (Wurundjeri)
* Department of Environment, Land, Water and Planning (DELWP)
* Environment Protection Authority
* Heritage Victoria
* Department of Agriculture, Water and Environment (DAWE)
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| **Other agencies consulted:** |
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| Consultation has been undertaken with the following agencies:* Brimbank City Council
* Moonee Valley City Council
* Moreland City Council
* Hume City Council
* Bunurong Land Council Aboriginal Corporation (BLCAC)
* Department of Transport (formerly Department of Economic Development, Jobs, Transport and Resources)
* Melbourne Water
* Greater Western Water
* Utility providers
* VicRoads
* VicTrack
* Australian Rail Track Corporation (ARTC)
* Melbourne Metro Trains (MTM)
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**PART 2 POTENTIAL ENVIRONMENTAL EFFECTS**

# **Potentially significant environmental effects**

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| **Overview of potentially significant environmental effects** (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties): |
| A number of technical investigations have been undertaken by specialist consultants to address the potential environmental effects of the Project (as outlined in the relevant Project impact assessments at **Attachments 10-22**). Whilst an overview is provided below, a more detailed summary of the key studies is presented in subsequent sections of this referral.**Removal of native vegetation**Desktop and field investigations were undertaken to determine the extent of native vegetation within the Project Land, and the potential for listed flora and fauna species to occur within the Project footprint including the rail corridor, potential stabling locations and temporary laydown areas.Ecological field assessments identified the following native vegetation in the Project Land:* 33.266 hectares of native vegetation in patches (5.6% of the total Project Land area);
* 64 large canopy trees in patches; and
* 86 Scattered Trees (79 small and 7 large).

A list of EVCs impacted by the Project is provided in Section 12 (Native vegetation, flora and fauna) of this referral.A variety of exercises including collaborative, cross-discipline workshops have been held with the aim of avoiding and minimising impacts to native vegetation. Through these exercises the amount of native vegetation proposed to be removed has been reduced to:* 3.889 ha of native vegetation in patches (11.6% of the total native vegetation in patches in the Project Land)
* Six large canopy trees in patches; and
* 37 scattered trees (35 small and 2 large)

It is expected that further refinement of the design and construction methodologies by the delivery partner will enable reductions in the amount of vegetation required to be cleared. Mitigation measures and best practice construction methodologies will also be implemented in accordance with the relevant statutory approvals for the Project so the potential for further adverse effects are minimised.Of note is the possibility to refine the construction footprint around the Maribyrnong River Bridge further to avoid native vegetation including large and scattered trees and habitat for threatened species, where the current proposed native vegetation removal has triggered the requirement of a specific (State) offset for Werribee Blue-box (*Eucalyptus baueriana subsp*. *thalassina*). It is noted that this specific species is not present at this location. Refer to **Attachment 10** for the MAR State Land Terrestrial Ecology Impact Assessment.**Potential effects on EPBC Act-listed threatened communities and species**Several communities and flora and fauna species of Commonwealth significance (six in total) have a moderate to high likelihood of occurrence (or confirmed) within the Project Land. These include:* One (1) threatened community listed - Natural Temperate Grasslands of the Victorian Volcanic Plain (NTGVVP). Impacts to this community are detailed below.
* Four (4) threatened fauna species listed - Growling Grass Frog, Golden Sun Moth, Striped Legless Lizard and Australian Grayling. Impacts to these species are detailed below.
* One (1) threatened flora species listed - Spiny Rice-flower. Impacts to Spiny Rice-flower is outlined below.

A complete list of EPBC Act-listed communities and species within the Project Land is provided in Section 12 of this referral and **Attachment 8** provides an overview map of the MNES within the Project Land. The Project Land comprises of two geographic sections in which the main works have clear differences in their likely impacts on MNES. As such, two separate EPBC Act referrals have been prepared for each geographic section, namely the Sunshine Section and Corridor Section. A breakdown of the proposed impacts to native vegetation across the two sections of the Project is outlined below:* Total proposed removal of 3.889 ha of native vegetation in Project Land, including 0.710 ha in Sunshine Section and 3.179 ha in Corridor Section;
* Total proposed removal of six (6) large canopy trees in patches in Project Land, all in the Corridor Section; and
* Total proposed removal of 37 scattered trees in Project Land, including 22 in Sunshine Section and 15 in Corridor Section.

The Sunshine Section is unlikely to result in a significant impact on any MNES based on the scope and location of construction works. It has been determined that the Corridor Section is likely to result in a significant impact on Striped Legless Lizard, Spiny Rice-flower, Growling Grass Frog and NTGVVP.With the effective implementation of the Threatened Species Management Plans (TSMPs) that have been prepared to accompany the EPBC Act referral for the Corridor and Sunshine Sections of the Project, impacts to MNES within and adjacent to the Project Land will be avoided and minimised. Particularly, the Project will not result in any impacts on the Sunshine Diuris (which occurs adjacent to the Project Land in the Sunshine Triangle Ecological Site) or the Large-fruited Groundsel (which occurs adjacent to the Project Land in Matthews Hill Reserve). Impacts proposed to MNES from the Project are summarised as follows:* **NTGVVP**: Of the 5.960 hectares of NTGVVP recorded in the Project Land, a total of 0.221 ha of NTGVVP will be removed (all of which is within the Corridor Section).
* **Growling Grass Frog**: Growling Grass Frog is known to utilise the Maribyrnong River, Steele Creek/Steele Creek North, and Moonee Ponds Creek. Proposed impacts to Growling Grass Frog include:
* Permanent removal of 0.268 ha of riparian overwintering habitat (including 0.256 ha along the Maribyrnong River and 0.011 ha at Steeles Creek).
* Temporary removal of 0.932 ha of riparian overwintering habitat (including 0.388 ha along the Maribyrnong River and 0.544 ha at Steeles Creek).
* Alteration of aquatic habitat corridors and temporary barriers to dispersal during Maribyrnong River Bridge construction for the estimated 3.5 year construction period.
* Temporary isolation of a stormwater retention basin (the M80 retention basin, known to be utilised by the species for dispersal) from Steele Creek North for the estimated three year duration of the M80 viaduct construction
* Possible intermittent noise-induced changes to calling behaviour, localised to the Maribyrnong River in the vicinity of the Maribyrnong River bridge construction.
* **Golden Sun Moth**: A total of 1.405 ha of Golden Sun Moth occurs within the Project Land. While 0.319 ha of Golden Sun Moth habitat is proposed to be removed from the Project Land (within the Munro Avenue Road Reserve in the south of Solomon Heights), this area is below the 0.5 ha threshold for significant impact specified in the MNES Significant impact guidelines 1.1 (Department of the Environment 2013).
* **Striped Legless Lizard**: A total of 12.105 ha of Striped Legless Lizard habitat occurs within the Project Land. Proposed impacts to Striped Legless Lizard from the Project include:
* Direct removal of 1.148 ha of Striped Legless Lizard habitat, and fragmentation resulting in the isolation of 0.46 ha Striped Legless Lizard habitat, amounting to a significant impact to this species.
* Exacerbation of fragmentation of Striped Legless Lizard Habitat at the M80 North Zone.
* Possible, localised reduction in habitat suitability due to noise and vibration associated with the construction of the M80 viaduct.
* Injury or death of some Striped Legless Lizard individuals is expected during the habitat clearance within the M80 North Zone.
* **Australian Grayling**: This species is assumed to occur in the Maribyrnong River. The dispersal capability of the Australian Grayling will be maintained throughout the project works, and the Project is unlikely to have significant impact on this species.
* **Spiny Rice-flower**: A total of 77 Spiny Rice-flower plants were recorded within the Project Land. Of these, eight Spiny Rice-flower plants will be removed for the Project (in the rail corridor adjacent to the River Valley Estate, and at Munro Avenue in the South of Solomon Heights).

Whilst the Project Land includes one threatened ecological community and provides suitable habitat for several EPBC Act-listed species, the design of the Project has been able to avoid potential impacts through the implementation of No-Go Zones and other mitigation measures such as timing restrictions on works in sensitive locations, which will be enshrined through the implementation of the Sunshine Section TSMP, Corridor Section TSMP and the Environmental Management Framework (EMF) for the Project, prepared and approved in accordance with the relevant planning approval. The Sunshine Section TSMP and Corridor Section TSMP will be incorporated into the Construction Environmental Management Plan (CEMP) prepared for the Project.At a strategic level, the Project shows adherence to the ‘avoid and minimise’ principles as a significant proportion of the Project Land falls within or immediately adjacent to the existing rail corridor and urban road network. A large proportion of these areas are heavily disturbed and void of ecological value due to previous and existing use. By following the existing rail corridor (at least in part), the Project avoids potential impacts to other less disturbed land in the region. Detailed efforts to avoid and minimise impacts to native vegetation and other ecological values have been undertaken during the planning and design process. Following identification of the Project’s route alignment, extensive desktop and field based ecological assessment has been undertaken to identify native vegetation and ecological values within and adjacent to the Project Land. Detailed ecological assessment (including native vegetation and habitat assessments, as well as various targeted surveys for threatened species) has been conducted throughout the Project Land between 2018 and 2021. This assessment has resulted in the identification of various significant ecological values, including high quality native vegetation and the presence of state and Commonwealth listed threatened species and ecological communities. The identification of significant ecological values prompted the initial exclusion of particular key sites from the Project Land (i.e. Matthews Hill Reserve and the Sunshine Triangle Ecological Site) as well as the early recommendation for establishment of No-Go Zones within the Project Land. The recommendations for No-Go Zones has since been discussed in project workshops with designers, planners and ecologists, to allow incorporation of these No-Go Zones into the Project design. Twenty-three (23) No-Go Zones have been incorporated into the design across the Project Land which prioritise the avoidance of impacts to native vegetation and/or habitat which have been identified to support threatened species or communities, particularly MNES listed under the EPBC Act. Specific details of the 23 No-Go Zones that have been incorporated into the design of the Project are provided in **Attachment 10** (MAR State Land Terrestrial Ecology Impact Assessment). This includes key No-Go Zones which protect significant ecological values at Sunshine Railway Linear Reserve, land adjacent to Matthews Hill Reserve and Sunshine Triangle Ecological Site, the Old Sunshine Tip site, St Albans Road Biosites, Solomon Heights, River Valley Estate, Sunshine North Escarpment, Maribyrnong River, Brimbank Park, Steele Creek and M80 North Zone, M80 South Powerline Easement, Moonee Ponds Creek, Luma Estate and Border Drive Reserve. Refer to **Attachment 10** for the MAR State Land Terrestrial Ecology Impact Assessment and **Attachment 11** for the MAR State Land Aquatic Ecology and Geomorphology Impact Assessment. |
| **Potential effects on FFG Act listed threatened communities and species**The following FFG Act listed threatened species and communities were either recorded or have a moderate to high likelihood of occurrence in the Project Land: * One (1) threatened community listed - Western (Basalt) Plains Grassland Community. Of the 8.510 ha of this community recorded in the Project Land, 1.293 ha is proposed to be removed for the Project.
* Eight (8) threatened flora species including:
* Spiny Rice-flower (listed as critically endangered under the FFG Act) (impacts as detailed above under EPBC Act section)
* Arching Flax-lily (listed as critically endangered under the FFG Act) - All (102) individuals of this species recorded in the Project Land will be avoided.
* Austral Tobacco (listed as critically endangered under the FFG Act) – The single (1) individual of this species recorded in the Project Land will be avoided.
* Leafy Twig-sedge (listed as endangered under the FFG Act) – Moderate occurrence in the Project land, however not recorded in targeted surveys where potential habitat intersects the Project footprint, hence no impacts are proposed to this species.
* Pale-flower Crane's-bill (listed as endangered under the FFG Act) – Moderate occurrence in the Project land, however areas of potential habitat will be protected in No-Go Zones, hence no impacts are proposed to this species.
* Fragrant Saltbush (listed as vulnerable under the FFG Act) – 30 plants recorded in Project Land. 11 plants are proposed to be removed including at Luma Estate (4 plants), Brimbank Park (6 plants), and the M80 North Zone (1 plant).
* Rye Beetle-grass (listed as vulnerable under the FFG Act) – Moderate occurrence in the Project land, however areas of potential habitat will be protected in No-Go Zones, hence no impacts are proposed to this species.
* Studley Park Gum (Listed as Critically Endangered under the FFG Act) –One individual of this species has been recorded in the State Project Land north of the Maribyrnong River. This tree falls outside the construction footprint and will be avoided by works. No impacts are proposed to this species

(Note Sunshine Diuris and Large-fruited Groundsel are not included here as they occur outside the Project Land, and do not occur in the Project Land).* Seven (7) threatened fauna species including:
* Striped Legless Lizard (listed as endangered under the FFG Act) (impacts as detailed above under EPBC Act section)
* Growling Grass Frog (listed as vulnerable under the FFG Act) (impacts as detailed above under EPBC Act section)
* Golden Sun Moth (listed as vulnerable under the FFG Act) (impacts as detailed above under EPBC Act section)
* Australian Grayling (listed as endangered under the FFG Act) (impacts as detailed above under EPBC Act section)
* Brown Toadlet (listed as endangered under the FFG Act) – Moderate likelihood of occurrence in seasonally inundated riparian woodland, but unlikely to occur in the project footprint. No impacts are proposed to this species.
* Tussock Skink (listed as endangered under the FFG Act) – Recorded in the Project Land. While the majority of Tussock Skink habitat within the Project Land (36.707 ha) has been avoided, 10.150 ha of Tussock Skink habitat is expected to be removed as a result of construction.
* Platypus (listed as vulnerable under the FFG Act) - Considered to have a moderate likelihood of occurrence within the Maribyrnong River where it intersects with the State Project Land. However, due to a lack of recent records in the downstream sections of the Maribyrnong River, it is considered unlikely that the species is resident in the section of the river that intersects the Project Land. Any occurrence of Platypus through this portion of the Maribyrnong River is likely to be limited to vagrants or dispersing individuals. The small area of riparian habitat to be removed adjacent to the Maribyrnong River (as detailed for Growling Grass Frog) will result in a negligible impact on Platypus.

A complete list of FFG Act-listed communities and species within the Project Land is provided in Section 12 (Native vegetation, flora and fauna) of this referral.Where impacts to FFG Act listed threatened communities cannot be avoided, these impacts will be offset in accordance with the conditions of the planning approval for the Project, as these communities correspond to P&E Act protected native vegetation (refer Table 5.1 of **Attachment 10**). Further, a permit to take for FFG Act listed communities will be sought.Where impacts to FFG Act listed threatened flora and fauna cannot be avoided, the delivery partner will be required to apply for permits to remove these species under the FFG Act.Additional mitigation measures are detailed in Section 12. With these mitigations implemented, no significant effects on listed flora or fauna species or long-term loss of a significant proportion of a threatened species is expected.Refer to **Attachment 10** for the MAR State Land Terrestrial Ecology Impact Assessment and **Attachment 11** for the MAR State Land Aquatic Ecology and Geomorphology Impact Assessment.**Potential effects on surface water**The Project Land traverses several waterways, with the potential for direct impacts to occur at waterway crossings where new infrastructure is being built (Maribyrnong River, Steele Creek, Upper Stony Creek) and more broadly, broadly across several other waterways that may be receiving waterways for stormwater runoff along the rail corridor (Moonee Ponds Creek, Stony Creek, Kororoit Creek).Whilst these waterways occur within the Project Land, no works are proposed to occur within the river channel of any waterways. There will be impacts to the banks of many of these waterways. To further minimise potential impacts to waterways, best practice environmental management, in accordance with EPA Victoria construction guidelines and mitigation measures will be implemented for works in the vicinity of waterways and wetlands.Permanent works will not have any adverse impacts on flow velocities, and any change to the flow regime must satisfy Melbourne Water and adhere to its requirements; and flood risks will be assessed by modelling of the design of works and structures. This includes no significant adverse flood impacts associated with the Project, for a range of events.  |
| Flood modelling assessed the potential for flood impacts on surrounding public safety, property and assets indicates that with some further refinement, sufficient storage and flow control would be provided to offset the loss of floodplain storage, and no downstream impacts are anticipated to occur. Environmental risk management measures will be implemented in the detailed design phase to demonstrate through modelling that the design of permanent infrastructure, which may vary from the reference project assessed, meets the flood level, flow and velocity requirements. Provided these measures to avoid and minimise/mitigate impacts are implemented, no long-term change to the ecological character of a wetland or significant effects on the health or biodiversity of aquatic, estuarine or marine ecosystems is expected.Refer to **Attachment 19** for the MAR State Surface Water Impact Assessment. |
| **Potential effects on Aboriginal cultural heritage places** |
| Parts of the Project are in areas of cultural heritage sensitivity due to the presence of 61 Aboriginal Places and named waterways as defined in the Aboriginal Heritage Regulations 2007. As such, CHMPs are being developed for approval by each statutory authority.Any potential impacts to Aboriginal cultural heritage values will be managed through the CHMP process which is currently underway. It is expected that complex testing for both CHMPs will be completed in Q4 2021 and subsequent approval being sought in Q1 2022.Both CHMPs will include measures to avoid or protect Aboriginal places from inadvertent damage and salvage requirements where impacts cannot be avoided.All works will be undertaken in accordance with these CHMPs to minimise potential effects to areas of Aboriginal cultural heritage and as such no effects are expected.Refer to Section 15 (Cultural Heritage) of this referral for further details on Aboriginal cultural heritage.**Potential effects on historical heritage places**The Project intersects with the registered heritage extent of eight state listed heritage places, including six (6) sites listed on the VHR and two (2) sites listed on the VHI. A description of the nature and extent of the works is provided in Section 15 (Cultural Heritage) of this referral. Heritage values will be protected through compliance with any required heritage permit or consent under the *Heritage Act 2017*.Therefore, any extensive or major effect on cultural heritage places listed on the Heritage Register or the Archaeological Inventory is not expected.Refer to **Attachment 12** for the MAR Historical Heritage Impact Assessment.**Potential effects of construction**Potential impacts associated with a Project of this type may typically include, but not be limited to:* Noise and Vibration
* Dust
* Traffic congestion
* Spillage
* Sedimentation and Erosion

These impacts will be avoided, reduced or managed through best practice environmental management methods. Impacts associated with the construction of the Project are expected to be of a temporary nature and localised.Refer to Section 15 (Social environments) for further details on the Project’s potential effects.**Environmental Management**An Environmental Management Framework (EMF) will be prepared in consultation with relevant stakeholders to provide a transparent and integrated approach to managing the planning, environmental and heritage aspects of design and construction of the works. The EMF will be prepared and approved in accordance with the relevant planning approval. The EMF will outline clear accountabilities for the delivery and monitoring of the Project’s Environmental Management Requirements (EMR), which are a suite of performance-based outcomes that apply to the design and construction of the Project, that must be implemented by the delivery partners. These environmental management documents aim to make sure that environmental effects and hazards are appropriately managed in a consistent manner across the Project and acceptable environmental outcomes are achieved.Refer to Section 18 (Environmental management) of this referral for further details on the Project’s EMF. |
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# **Native vegetation, flora and fauna**

**Native vegetation**

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| **Is any native vegetation likely to be cleared or otherwise affected by the project?** NYD No **r** Yes If yes, answer the following questions and attach details. |
| **What investigation of native vegetation in the project area has been done?** (briefly describe)The ecological values of the Project Land, including native vegetation, fauna and flora, is summarised below. A detailed description of survey methods and results is provided in **Attachment 10**.Extensive desktop and field investigations were undertaken to determine the extent of native vegetation and listed ecological communities, and the potential for listed terrestrial and aquatic flora and fauna species to occur within the Project Land.**Desktop Assessment**The desktop assessment reviewed databases and documents, referenced below, to provide information on native vegetation, threatened ecological communities, and threatened flora and fauna species and their habitats previously identified or modelled to occur within the Project Land.The following databases were reviewed:*Commonwealth Department of Agriculture, Water and the Environment (DAWE) database:* * **Protected Matters Search Tool** (DAWE 2020b): The Protected Matters Search Tool (PMST) highlights Matters of National Environmental Significance (MNES) listed under the Commonwealth EPBC Act that are likely to occur within a 5 km buffer of the Project Land.

*Victorian Department of Environment, Land, Water and Planning (DELWP) Biodiversity databases:* * **Nature Kit** (DELWP 2020a): comprises spatial data of native vegetation across Victoria; including modelled distributions of Ecological Vegetation Classes (EVCs).
* **Victorian Biodiversity Atlas** (DELWP 2020b): comprises historical spatial data records of flora and fauna species from across the state. Records are added opportunistically, as flora and fauna surveys are conducted within Victoria for a variety of purposes.

A 5 km search buffer around the Project Land was used for these database searches to indicate the potential for presence of significant vegetation or threatened species in nearby areas.Available aerial imagery was interpreted to inform the ecological assessment. The desktop assessment also included a review of previous studies within and adjacent to the Project Land.**Field Assessments**Detailed field assessments including mapping of native vegetation and habitat to support threatened flora and fauna was undertaken on the following dates:* 8 and 9 November 2018 (areas between Stony Creek and Melbourne Airport)
* 30 April 2019 (areas in the vicinity of Sunshine)
* 5, 6, 8 and 18 February 2019, and 25 to 27 September 2019 (Public land between Steele Creek and Tullamarine)
* 23 September 2019 (Sunshine Scope)
* 7 July 2020 (Private Property within the M80 North Zone
* 24 July 2020 to 28 July 2020 (Jacana rail corridor between M80 Powerline Easement and Jacana Station)
* 22 and 25 of September 2020 (River Valley Estate and Sunshine North Escarpment private land)
* 18 September and 6 October 2020 (project land extent on the Sunbury line extending West of Albion Station)
* 11 June and 2 July 2021 (Luma Estate and adjacent Stony Creek easement)

Tasks undertaken during the assessment included: * Mapping of native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) (DELWP 2017a) as either a patch or scattered tree.
* Habitat Hectare Assessment of patches of native vegetation in accordance with the Vegetation Quality Assessment Manual v1.3 (DSE 2004).
* Assessing the presence or potential habitat for threatened flora and fauna.
* Assessing the presence of threatened communities in accordance with the listing advice for those communities.

Native vegetation identified in the Project Land was classified into EVCs, mapped, and subject to Vegetation Quality Assessment to quantify the condition of the EVCs against defined benchmarks. This information enables the identification of threatened ecological communities listed under the EPBC Act and/or FFG Act, potential threatened species habitat, and (where relevant), for use in determining mitigative offset requirements for the Project. |
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| **What is the maximum area of native vegetation that may need to be cleared?**  NYD Estimated area 3.889 hectares

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| Extent within project area | Extent of removal |
| 33.266 ha of native vegetation in patches (including 64 large trees in patches) and 86 scattered trees (79 small and 7 large) | 3.889 ha of native vegetation in patches (including six large canopy trees in patches) and 37 scattered trees (35 small and 2 large) |
| 10.685 ha Very High Conservation Significance (of 33.266 ha present) | 0.918 ha Very High Conservation Significance (of total 3.889 ha impacted) |

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| The following native vegetation is required for removal for the project on the Project Land:* 3.889 ha of native vegetation in patches (including six large canopy trees in patches) and
* 37 scattered trees (35 small and 2 large)

The proposed removal of native vegetation on Commonwealth land is separate to this referral and unknown at this stage.Under the Guidelines, all native vegetation removal, including scattered trees is converted into an equivalent hectare area. This is done for scattered trees based on the area of a circle of 15m radius for large trees, and 10m radius for small trees. On this basis the total extent of native vegetation removal as per the DELWP issued Native Vegetation Removal Report (NVRR) equates to 4.711 ha.It is expected that further refinement of the design and construction methodologies will enable reductions in the amount of vegetation required to be cleared. **How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?****🗙** N/A ………………………. approx. percent (if applicable)It is assumed that none of the above extents are authorised under an approved Forest Management Plan or Fire Protection Plan.  |

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| **Which Ecological Vegetation Classes may be affected?** (if not authorised as above) NYD **r** Preliminary/detailed assessment completed. If assessed, please list.The project is anticipated to require the removal of native vegetation from the following Ecological Vegetation Classes:

|  |  |  |  |
| --- | --- | --- | --- |
| EVC | BioregionalConservation Status | Extent ofvegetation withinProject Land(Ha) | Extent ofvegetation to be removed (Ha) |
| 55: Plains Grassy Woodland  | Endangered  | 1.871 | 0.581 |
| 56: Floodplain Riparian Woodland  | Endangered  | 10.661 | 0.840 |
| 125: Plains Grassy Wetland  | Endangered  | 0.170 | 0.111 |
| 132\_61: Heavier-soils Plains Grassland  | Endangered  | 8.510 | 1.293 |
| 821: Tall Marsh  | Endangered  | 0.444 | <0.001 |
| 851: Stream Bank Shrubland  | Endangered | 3.580 | 0.646 |
| 895: Escarpment Shrubland  | Endangered  | 7.964 | 0.419 |
|  | TOTAL | 33.266 | 3.889 |

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| **Have potential vegetation offsets been identified as yet?** NYD **r**Yes If yes, please briefly describe.Offsets will be sought where the removal of native vegetation cannot be avoided in accordance with relevant policy and guidelines. A summary of the offset targets as relevant to the current vegetation removal extent is as follows:

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| **Offset Criterion** | **Offset Requirement** |
| General Offset Amount | 0.811 general habitat units  |
| Vicinity | Port Phillip and Westernport Catchment Management Authority (CMA) or Brimbank City, Maribyrnong City, Moonee Valley City, Moreland City Council  |
| Minimum strategic biodiversity score | 0.239 |
| Large trees | 6 large trees  |

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| --- | --- |
| **Offset Criterion** | **Offset Requirement** |
| Species Offset Amount | 0.764 species units of habitat for Werribee Blue-box, *Eucalyptus baueriana subsp. thalassina*  |
| Large trees | 2 large trees |

This offset target has been provided using surveyed habitat hectare scores recorded by an accredited assessor (rather than using modelled condition data). The planning approval will include conditions which require the offsetting of vegetation removal in accordance with the Guidelines.Searches for offsets on the Native Vegetation Credit Register have been undertaken and General Habit Units required under the Guidelines are available and can be readily purchased via an accredited Offset Broker. Species offsets required for the Werribee Blue Box are less readily available, with none shown as available on the Native Vegetation Credit Register. Further investigation is required to identify land (and landowners) that may be able to provide these offsets. The availability of specific offsets will be investigated with the assistance of specialist native vegetation offset brokers and in consultation with DELWP. |
| **Other information/comments?** (eg. accuracy of information) |
| The extent of vegetation loss was assessed in accordance with the Guidelinesand the Assessor’s handbook: *Applications to remove, destroy or lop native vegetation (DELWP 2018).* The following was assumed: * Patches were considered to be impacted when the Project Land intersected either a patch boundary or the Tree Protection Zone (TPZ) of a mapped tree by more than 10%.
* Where a patch of wooded vegetation with canopy was determined to be impacted, the extent of impact to the patch was determined using the ‘accurate mapping’ method outlined in DELWP (2018). To undertake the ‘accurate mapping’ method, aerial imagery was overlaid with the Project Land and native vegetation mapping. Aerial imagery was used to trace the canopy of any canopy trees considered to be affected by the project impact footprint, thus defining the portion of the patch that was considered lost.
* For native vegetation patches with no canopy, no additional loss buffer has been applied. It is assumed that only the extent of the EVC within the works area is impacted.
* Scattered trees are considered lost when greater than 10% of the TPZ is impacted. The radius of the TPZ is calculated as 12 x the Diameter at Breast Height (DBH) of the relevant tree.
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NYD = not yet determined

**Flora and fauna**

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| **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) |
| The following desktop and field investigations were undertaken to identify existing flora and fauna.**Desktop Assessment**The Desktop Assessment was undertaken as described above in the Native Vegetation section.**Field Assessments**Detailed field assessments including mapping of native vegetation and habitat to support threatened flora and fauna was undertaken as noted above. Based on the outcome of these field investigations, further targeted surveying for threatened flora and fauna was undertaken in areas of suitable habitat within the Project Land. Targeted surveys for threatened species were conducted by AJM-JV ecologists as per the schedule presented in the table below. All assessments were undertaken by qualified and experienced ecologists.

| Assessment type and purpose | Timing |
| --- | --- |
| Spring/summer targeted flora surveysTargeted flora surveys were undertaken between September 2019 and February 2021in patches of native vegetation that were considered to support potential habitat for threatened flora species. Areas of potential habitat were traversed on foot via transects approximately 5 m apart. Any threatened flora species observed were recorded. These surveys mainly targeted threatened flora species in higher-quality patches of Plains Grassland. Targeted surveys were conducted during the known flowering period for the following threatened flora species:* Pale Everlasting (*Corronidium gunnianum*) (flowers February - April)
	+ Munro Avenue road Reserve South of Solomon Heights (3 February 2021)
* Matted Flax-lily (*Dianella amoena*) (flowers November - January); targeted survey areas include:
	+ St. Albans Road Biosites (4 December 2020)
	+ Old Sunshine Tip Site (4 December 2020)
	+ Munro Avenue road reserve south of Solomon Heights (27 January 2021)
	+ Rail reserve Adjacent to Solomon Heights (11 December 2019)
	+ River Valley Estate and adjacent rail corridor (15 December 20 and 11 December 2019 respectively)
	+ M80 North Zone (15 December 2020)
* Small Golden Moths (*Diuris basaltica*) (September - October)
	+ Sunshine Linear Railway Reserve (23 September 2019)
	+ Matthews Hill Reserve (23 September 2019)
	+ St. Albans Road Biosites (18 September 2020)
	+ Old Sunshine Tip Site (18 September 2020)
	+ Munro Avenue road reserve south of Solomon Heights (24 September 2020)
	+ Rail reserve Adjacent to Solomon Heights (27 September 2019)
	+ River Valley Estate and adjacent rail corridor (24 September 2019)
	+ M80 North Zone (7 October 2020)
* Button Wrinklewort (*Rutidosis leptorhynchoides*) (November - January)
	+ Areas and dates surveyed as per Matted Flax-lily
* Large-headed Fireweed (*Senecio macrocarpus*) (August - October).
	+ Areas and dates surveyed as per Small Golden Moths

Suitable habitat for late-spring/summer flowering species, Matted Flax-lily and Button Wrinklewort was also identified within the Sunshine Linear Railway Reserve and Matthews Hill Reserve. Surveying for these species in these two reserves was undertaken in conjunction with targeted Golden Sun Moth surveys which occurred during the flowering time for these species (November - January).  | September 2019 to February 2021 |
| Golden Sun MothTargeted surveys were undertaken for Golden Sun Moth (*Synemon plana*), listed as Critically Endangered under the EPBC Act within the Project Land. Surveys were conducted by two ecologists across two survey seasons, summer 2019-2020 and summer 2020-2021. Surveys were conducted in all areas of potential habitat for the species in the Project Land as identified during fauna habitat assessments, literature review, and analysis of VBA records. Areas surveyed included:Sunshine Railway Linear Reserve2019-2020 survey season (20 November 2019, 25 November 2019, 19 December 2019 and 9 January 2020)Matthews Hill ReserveReserve proper surveyed 2019-2020 survey season (20 November 2019, 25 November 2019, 19 December 2019 and 9 January 2020)Rail corridor adjacent to reserve surveyed 2020-21 survey season (27 November 2020, 4 December 2020, 14 December 2020 and 8 January 2021)St. Albans Road Biosites2020-21 survey season (27 November 2020, 4 December 2020, 14 December 2020 and 8 January 2021) The Old Sunshine Tip Site2020-21 survey season (27 November 2020, 4 December 2020, 14 December 2020 and 8 January 2021) Rail Corridor Adjacent to Solomon Heights2019-2020 survey season (11 December 2019; 19 December 2019, 9 January 2020 and 17 January 2020)River Valley Estate and adjacent rail corridorAdjacent rail corridor surveyed 2019-2020 survey season (11 December 2019; 19 December 2019, 9 January 2020 and 17 January 2020)River Valley Estate Proper surveyed 2020-21 survey season (19 November 2020, 25 November 2020, 15 December 2020, 11 January 2021) M80 South Powerline Easement2019-20 Survey season: (20 November 2019, 25 November 2019, 19 November 2019 and 9 January 2020)M80 North Zone2020-21 survey season (19 November 2020, 25 November 2020, 15 December 2020, 11 January 2021)Surveys were completed in accordance with the published survey guidelines for the species (DEWHA 2009a) when conditions were suitable for male flight (above 20°C, minimal cloud cover and wind). Surveys were conducted during the middle of the day, approximately between 10am and 2pm. The surveys were spaced at least one week apart to capture any variation in emergence patterns. This level of survey effort was considered sufficient to achieve the objective of confirming presence of Golden Sun Moth within the site. The surveys involved walking in transects no greater than 50m apart with the intent of flushing Golden Sun Moth from the grass and observing them in flight. A close reference site, Broadmeadows Valley Park, which is known to support a Golden Sun Moth population, was monitored for activity prior to undertaking surveys in the Project Land. | November 2019 to January 2021 |
| Growling Grass FrogTargeted surveys were undertaken for Growling Grass Frog (*Litoria raniformis*), listed as Vulnerable under the EPBC Act. Surveys were conducted by two ecologists across three survey seasons; 2018, 2019 and 2020. Areas surveyed included:Stony Creek East: 2019 survey season (20 November 2019 and 25 November 2019)Stony Creek West: 2018 survey season (5 December 2018 and 18 December 2018)The Maribyrnong River (upper, middle and lower): 2018 survey season (5 December 2018 and 18 December 2018)Steele Creek: 2018 survey season: (5 December 2018 and 18 December 2018)Steele Creek North: 2019 survey season: (20 November 2019 and 25 November 2019)The M80 retention basin at the M80 North Zone: 2018 survey season: (8 December 2018 and 17 January 2019), 2020 survey season: (14 December 2020 and 16 November 2020)Moonee Ponds Creek: 2020 survey season: (14 November 2020 and 16 November 2020)These surveys were undertaken in accordance with the published survey guidelines for the species (DEWHA 2009b), after sunset, during suitable weather conditions (being warm and with little wind). At the beginning of each survey, 10 minutes was spent listening for frog calls at the water’s edge. Within the last five minutes of the listening period a pre-recorded Growling Grass Frog call was played. The perimeter of the wetlands were then systematically searched by two ecologists using spotlights. | December 2020 |
| Spiny Rice-flowerTargeted surveys were undertaken for Spiny Rice-flower (*Pimelea spinescens subsp. spinescens*), listed as Critically Endangered under the EPBC Act. Surveys were undertaken by three ecologists in the 2019 survey season, and two ecologists during the 2020 survey season. Survey was undertaken within all areas of suitable habitat for the species within Project Land. Areas surveyed included:Sunshine Railway Linear Reserve: 2019 survey season (3 June 2019 and 4 June 2019)Matthews Hill Reserve and adjacent rail corridor: 2019 survey season (3 June 2019 and 4 June 2019)St. Albans Road Biosites: 26 July 2020Old Sunshine Tip Site: 27 July 2020Rail corridor adjacent to Solomon Height: 3 and 4 June 2019Munro Avenue Road Reserve to the south of Solomon Heights: (Spiny Rice-flower records known from previous consultant surveys and validated by AJM on 3 Feb 2021 [outside flowering season]). River Valley Estate: 12 August 2020 and 13 August 2020Rail corridor adjacent to River Valley Estate and adjacent rail corridor: 3 and 4 June 2019M80 North Zone (road reserve): 3 and 4 June 2019 M80 North Zone (private property): 7 July 2020These surveys were undertaken in accordance with the published survey guidelines for the species (DEWHA 2009c). Areas of potential habitat identified within the Project Land were surveyed by groups of either two or three ecologists walking parallel transects 5 m apart. Locations of Spiny Rice-flower were recorded, and the sex of individual plants was determined where possible. | June 2019, July 2020 and August 2020 |
| Striped Legless LizardSurveys were conducted in all areas of potential habitat identified for the species during the fauna habitat assessment, literature review and analysis of VBA records. The methods included:* Each grid contained 50 artificial shelter sites (roofing tiles, ‘French Terracotta’ style with dimensions of 430 mm x 340 mm), used to provide temporary habitat for the species. Tiles were placed in 10 rows of fived tiles or a single row of 50 placed at intervals of 5m apart, labelled and their GPS location recorded.
* The surveys were conducted during appropriate seasonal and daily climate conditions, during the known activity period of the species (DSEWPaC 2011a). Surveys were undertaken from September 2020 until February 2021. The species is most active during morning and early afternoon on days typically with temperatures below 28 degrees where possible.

Weekly checks were conducted for the first three months between September and November and conducted fortnightly for the second three months between December and February.Areas of potential habitat identified and surveyed during this season not previously included: 2019-20 survey season (September 2019 - February 2020):* Matthews Hill Reserve
* Rail Corridor Adjacent to Solomon Heights and the River Valley Estate
* M80 South Powerline Reserve

2020-21 survey season (September 2020-February 2021):* St Albans Road Biosites
* Old Sunshine Tip Site
* River Valley Estate
* Sunshine North Escarpment
* Brimbank Park
* M80 North Zone
 | September 2019 - February 2021 |

 |
| **Have any threatened or migratory species or listed communities been recorded from the local area?**  NYD No **r** 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.

Five (5) EPBC Act listed threatened species have been identified as occurring within the Project Land. These are discussed below, along with Sunshine Diuris and Large-fruited Groundsel which is known to occur adjacent to the Project Land |
|

| Threatened community | Conservation status | Total extent within Project Land | Location |
| --- | --- | --- | --- |
| Sunshine Diuris(*Diuris fragrantissima*)  | EPBC - Endangered | N/A - Does not occur within Project Land. Limited to Sunshine Triangle Ecological Site (outside Project Land). | Confirmed in:* Sunshine Triangle Ecological Site

Although the above site is located outside the Project Land, the occurrence of this species immediately adjacent to the Project Land means that this species must be considered against potential indirect impacts.Low likelihood of occurrence elsewhere within the Project Land.No impacts are proposed to the Sunshine Diuris from the Project.  |
| Large-fruited Groundsel(*Senecio macrocarpus*) | EPBC - Vulnerable | N/A - Does not occur within Project Land. Known population adjacent to the Project Land within the Matthews Hill Reserve | Confirmed adjacent to the Project Land in Matthews Hill Reserve, outside (adjacent to) the Sunshine Section Project Land. Targeted surveys within areas of suitable habitat in the Sunshine Section of the Project Land did not record this species. This species is therefore unlikely to occur within the Project Land. No impacts are proposed to this species from the Project. |
| Spiny Rice-flower (*Pimelea spinescens subsp. Spinescens*)  | EPBC - Critically Endangered | 77 Spiny Rice-flower plants were recorded in the Project Land. | 77 Spiny Rice-flower plants were recorded within the Project Land. Targeted surveys recorded the species within the Project Land in the following locations:* The rail corridor adjacent to the Sunshine Triangle Ecological Site (12 plants)
* St. Albans Road Biosites (8 plants)
* The Old Sunshine Tip site (1 plant)
* River Valley Estate and adjacent rail corridor (54 plants)
* Solomon Heights, Munro Avenue (2 plants)

In addition, Spiny Rice-flower is known to occur adjacent to the Project Land at two locations:* Within the land adjacent to Matthews Hill Reserve (17 plants recorded during targeted surveys undertaken as part of this assessment).
* Within Solomon Heights

Low likelihood of occurrence elsewhere within the Project Land. Suitable habitat for the species elsewhere within the Project Land has been subject to targeted survey, and the species was not detected. Eight (8) Spiny Rice-flower individuals will be removed in association with the construction of the Maribyrnong River Bridge. |
| Golden Sun Moth(*Synemon plana)*  | EPBC - Critically Endangered |  | 1.405 ha of GSM habitat was recorded within the Project Land. This included 0.411 ha of native vegetation and 0.994 ha of non-native vegetation. GSM Habitat occurs in the following locations in the Project Land:* 0.830 ha at Solomon Heights, including the Munro Avenue road reserve to the south. These areas of habitat are contiguous with the broader area of habitat present within Solomon Heights.
* 0.575 ha at the Luma estate.

Low likelihood of occurrence elsewhere within the Project Land. Also recorded in the Matthews Hill Reserve (outside the Project Land).Removal of 0.319 ha of Golden Sun moth habitat within the Munro Avenue Road Reserve in the south of Solomon Heights is proposed. The removal of 0.319 ha of Golden Sun Moth habitat is below the 0.5 ha threshold for significant impact specified in the significant impact guidelines. |
| Striped Legless Lizard(*Delma impar)*  | EPBC Act - Vulnerable  | 12.105 ha of Striped Legless Lizard habitat was recorded in the Project Land | 12.105 ha of Striped Legless Lizard (SLL) habitat was mapped within the Project Land. This included 3.191 ha of native vegetation and 8.914 ha of non-native vegetation. Habitat considered likely to be utilised by the Striped Legless Lizard within the Project Land is considered to occur in the following locations:* Sunshine Linear Railway Reserve (4.185 ha)
* The Luma Estate (0.575 ha)
* St. Albans Road Biosites (0.770 ha)
* Old Sunshine Tip Site (0.897 ha)
* Solomon Heights (including Munro Avenue in the South and the adjacent rail corridor) (0.885 ha)
* M80 North Zone (presence confirmed through targeted survey) (4.793 ha)

Although no targeted surveys were undertaken within Solomon Heights by this assessment, Striped Legless Lizard are considered highly likely to occur within Solomon Heights. Additional areas within the project land considered likely to support the species, without having undertaken targeted survey include the Old Sunshine Tip Site that supports a known population {O'Shea, 2013 #948}, and Sunshine Linear Railway Reserve, where the species has been recorded recently.Further, one area of potential habitat within the Luma Estate, was not subject to targeted survey as it was added to the Project Land following the completion of artificial shelter surveys. As this location provides suitable habitat for the species and targeted survey has not been carried out, for the purposes of this assessment this location is considered to be Striped Legless Lizard habitat. This location has been designated a No-Go Zones to protect the values present. Elsewhere within the Project Land, the likelihood of occurrence is considered to be low. All additional areas of potentially suitable habitat, characterised by good tussock structure of native and/or introduced species for the species, were subject to targeted survey, with no individuals detected. Those additional areas include:* Sunshine North Escarpment
* The River Valley Estate
* The Jacana rail corridor adjacent to the River Valley Estate and Solomon Heights.
* Brimbank Park
* M80 South Powerline Easement

Proposed impacts to Striped Legless Lizard from the Project include:* Direct removal of 1.148 ha of Striped Legless Lizard habitat, and fragmentation resulting in the isolation of 0.46 ha Striped Legless Lizard habitat, amounting to a significant impact to this species.
* Exacerbation of fragmentation of Striped Legless Lizard Habitat at the M80 North Zone
* Possible, localised reduction in habitat suitability due to noise and vibration associated with the construction of the M80 viaduct
* Injury or death of some Striped Legless Lizard individuals is expected during the habitat clearance within the M80 North Zone.
 |
| Growling Grass Frog*(Litoria raniformis)*  | EPBC Act - Vulnerable  |  | Confirmed in:* The Growling Grass Frog is known to traverse the Project Land via a number of reaches. Those reaches have been classified by their importance to the species.

Reaches of high importance:* Maribyrnong River
* Moonee Ponds Creek

Reaches of low importance:* Elsewhere within the Project Land, including Steele Creek, Steele Creek North and the retention basin at M80 North Zone, is considered to be more sporadically used habitat.

Direct removal of habitat for the species is expected to occur both at the Maribyrnong River (a reach of high importance), and at the Steele Creek North, (a reach of low importance). Impacts to Growling Grass Frog habitat are proposed as follows:* Permanent removal of 0.268 ha of riparian overwintering habitat (including 0.256 ha along the Maribyrnong River and 0.011 ha at Steeles Creek).
* Temporary removal of 0.932 ha of riparian overwintering habitat (including 0.388 ha along the Maribyrnong River and 0.544 ha at Steeles Creek).)
* Alteration of aquatic habitat corridors and temporary barriers to dispersal during Maribyrnong River Bridge construction for the estimated 3.5 year construction period.
* Temporary isolation of a stormwater retention basin (the M80 retention basin, known to be utilised by the species for dispersal) from Steele Creek North for the estimated three year duration of the M80 viaduct construction
* Possible intermittent noise-induced changes to calling behaviour, localised to the Maribyrnong River in the Vicinity of the Maribyrnong River bridge construction.
 |
| Australian grayling (*Prototroctes maraena*) | EPBC Act - Vulnerable | Assumed presence in the Maribyrnong River. | Assumed presence in the Maribyrnong River based on previous records. Most recent record exists from approximately 2.5 km upstream of the proposed crossing location from 2015. Australian Grayling are also known to be present in the Yarra River, of which the Maribyrnong River is a major tributary, joining the Yarra River in its estuary.Based on the implementation of mitigation measures specific to the Australian Grayling (including maintained flows, and avoidance of works during critical breeding and/or migration periods) it is considered the Project will not result in a significant impact on this species.  |

The additional flora and fauna species listed as threatened under the FFG Act were recorded in the Project Land:* Arching Flax-lily (*Dianella longifolia var. grandis*) (listed as Critically Endangered on the FFG Act threatened list) - 102 individuals of this species were recorded within the Project Land in the following locations: Sunshine Triangle Ecological Site; rail corridor adjacent to Matthews Hill Reserve; St Albans Road Biosites; Old Sunshine Tip; River Valley Estate; M80 North Zone. There will be no impacts to this species. All individuals will be avoided.
* Austral Tobacco (*Nicotiana suaveolens*) (listed as Endangered on the FFG Act threatened list) - One (1) individual was recorded on the Sunshine North Escarpment. There will be no impacts to this species. All individuals will be avoided
* Fragrant Saltbush (Rhagodia parabolica) (listed as vulnerable on the FFG Act threatened list) – 30 plants were recorded in the Project Land. 11 plants are proposed to be removed.
* Studley Park Gum (*Eucalyptus* X *studleyensis*) (listed as Critically Endangered on the FFG Act threatened list) – One individual was recorded in the Project Land north of the Maribyrnong River. No impacts are proposed to this species.
* Tussock Skink (*Pseudemoia pagenstecheri*) (Volcanic Plains) (listed as Endangered on the FFG Act threatened list) – 36.707 ha of Tussock Skink habitat was mapped within the Project Land. This included 9.664 ha of native vegetation and 27.043 ha of non-native vegetation. Habitat for Tussock Skink occurs in the following locations in the Project Land: St. Albans Road Biosites (0.769 ha, confirmed presence), Old Sunshine Tip Site (0.897 ha, high likelihood of presence), The Luma Estate (0.575 ha, moderate likelihood of presence), Solomon Heights including adjacent Jacana rail corridor and Munro Avenue (0.907 ha, confirmed presence), The River Valley Estate including adjacent rail corridor (7.669 ha, confirmed presence), Brimbank Park (7.121 ha, confirmed presence), M80 South Powerline Easement (7.559 ha, confirmed presence), M80 North Zone (4.793 ha, confirmed presence), Sunshine Railway Linear Reserve (4.185 ha, moderate likelihood of presence) and Sunshine North Escarpment (2.221 ha, confirmed presence). The Project proposes to remove 10.150 ha of tussock skink habitat.
 |
| **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. |
|

| Threatening Process | Likelihood of Exacerbation of Threatening Process | Mitigation Measures | Residual Likelihood of Exacerbation of Threatening Process |
| --- | --- | --- | --- |
| Degradation of native riparian vegetation along Victorian rivers and streams. | **Moderate**Construction activities to occur alongside waterways to construct the new Maribyrnong River Bridge and viaduct over Steele Creek North | * Avoid and minimise through detailed design phase by contractor
* Adherence to project footprint
* No-Go Zones
* General Construction Measures
* Erosion and Sedimentation Controls
* Revegetation along waterways
 | **Low**Following mitigation measures, including the requirement to re-vegetate along waterways, there is a low likelihood of residual risk to the degradation of native riparian vegetation along Victorian rivers and streams. |
| Habitat fragmentation as a threatening process for fauna in Victoria. | **Moderate**Construction activities and habitat removal could lead to fragmentation of habitat for a range of fauna species within the Project Land. | * Avoid and minimise through detailed design phase by contractor
* Adherence to project footprint
* No-Go Zones General Construction Measures
 | **Moderate**Following mitigation measures, there remains a level of residual risk of habitat fragmentation at the M80 North Zone, where 0.44 ha of grassland supporting the threatened Striped Legless Lizard and Tussock Skink will be fragmented from the broader habitat across the site, which could lead to the potential loss and viability of populations. |
| Increase in sediment input into Victorian rivers and streams due to human activities. | **Moderate**Construction activities along waterways could increase sediment loads into waterways that intersect the Project Land. | * General Construction Measures
* Erosion and Sedimentation Controls
 | **Low**Strict working around waterways mitigation measures including erosion and sedimentation controls will be in place for the project during construction along waterways. |
| Infection of amphibians with Chytrid Fungus, resulting in chytridiomycosis. | **Moderate**Construction activities along waterways have the potential to spread Chytrid Fungus between one waterway to another resulting in the infection of amphibians. | * Avoid and minimise through detailed design phase by contractor
* No-Go Zones
* General Construction Measures
* Growling Grass Frog specific fencing and mitigation
 | **Low**General construction measures and specific Growling Grass Frog mitigation measures for working in high value reaches for the Growling Grass Frog, are unlikely to result in the infection of amphibians with Chytrid Fungus. |
| Input of toxic substances into Victorian rivers and streams. | **Moderate**Construction activities along waterways could result in runoff of toxic substances into waterways that intersect the Project Land. | * General Construction Measures
* Erosion and Sedimentation Controls
 | **Low**Strict working around waterways mitigation measures including erosion and sedimentation controls will be in place for the project during construction along waterways. |
| Invasion of native vegetation by ‘environmental weeds’ | **High**There is a high likelihood of the invasion or establishment of environmental weeds post construction due to the necessary ground disturbance and spread of seeds via vehicle traffic. | * Avoid and minimise through detailed design phase by contractor
* Adherence to project footprint
* No-Go Zones
* General Construction Measures
 | **Moderate**General construction measures and avoidance of areas of native vegetation will reduce the likelihood of invasive weeds spreading across the Project Land. |
| Prevention of passage of aquatic biota as a result of the presence of instream structures. | **Moderate**The construction of the Maribyrnong River Bridge has the potential to cause passage of aquatic biota through the presence of instream structures acting as a barrier to dispersal. | * Avoid and minimise through detailed design phase by contractor
* Adherence to project footprint
* No-Go Zones
* General Construction Measures
* Erosion and Sedimentation Controls
 | **Low**During construction there will be no barriers to dispersal along waterways from the presence of instream structures. Pier 8 of the Maribyrnong River Bridge will be constructed within the flood level of the river but will not block or prevent passage of aquatic biota. |
| The spread of *Phytophthora cinnamomi* from infected sites into parks and reserves, including roadsides, under the control of a state or local government authority. | **Moderate**Construction activities that require significant earthworks, particularly around waterways have the potential to spread *Phytophthora cinnamomi* to parks and reserves within the Project Land. | * General Construction Measures
* Erosion and Sedimentation Controls
 | LowGeneral construction measures and erosion and sedimentation controls during construction activities will reduce the likelihood of spreading Phytophthora cinnamomi to parks and reserves. |
| Use of Phytophthora-infected gravel in construction of roads, bridges and reservoirs. | **Low**Pathogen free material including gravel will be sourced for construction activities. | * General Construction Measures
 | **Low**Pathogen free material including gravel will be sourced for construction activities. |
| Wetland loss and degradation as a result of change in water regime, dredging, draining, filling and grazing. | **High**The M80 North Zone retention basin provides wetland habitat and is likely to be impacted during construction activities, leading to water quality impacts, potential draining and filling from wastewater. | * Avoid and minimise through detailed design phase by contractor
* Adherence to project footprint
* No-Go Zones
* General Construction Measures
* Erosion and Sedimentation Controls
 | **Moderate**General construction mitigation measures and sedimentation controls will reduce the severity of impacts, however the M80 North Zone retention basin is likely to be impacted during construction activities, leading to water quality impacts, potential draining and filling from wastewater. |

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|  |
| **Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?**  NYD No **r** 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.
 |
| The following listed ecological communities were recorded in the Project Land:* Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) (EPBC Act listed)
* Western (Basalt) Plains Grassland (WBPG) (FFG Act listed)

These are detailed further below:A total of 5.960 ha of the EPBC Act listed NTGVVP threatened ecological community was mapped within the Project Land. Areas of NTGVVP recorded were mostly dominated by Kangaroo Grass. NTGVVP was recorded in the following locations within the Project Land:* Sunshine Railway Line Linear Reserve (1.235 ha)
* St Albans Road Biosites (0.369 ha)
* Old Sunshine Tip Site (0.540 ha)
* Solomon Heights and adjacent rail corridor (0.360 ha)
* River Valley Estate and adjacent rail corridor (2.401 ha)
* M80 South Powerline Easement (0.073 ha)
* M80 North Zone (0.290 ha)
* Border Drive Reserve (0.692 ha)

The Project proposes to remove 0.221 ha of this threatened community. This includes removal at:* Solomon Heights (0.131 ha). This removal is the outer edge of the broader complex of NTGVVP at Solomon Heights
* The M80 North Zone to be removed (0.049 ha). This removal is from one patch that is intersected by the Project footprint.
* River Valley Estate and adjacent rail corridor (0.041 ha)

The WBPG was considered to be synonymous with all 8.510 ha of the Plains Grassland mapped in the Project Land. The Project propose to remove 1.293 ha of this threatened community at various locations across the Project Land.  |
| **Is mitigation of potential effects on indigenous flora and fauna proposed?** NYD No **r** Yes If yes, please briefly describe.Yes, potential direct and indirect impacts to threatened flora and fauna are being managed through the implementation of a number of mitigation measures including:* Implementation of No-Go Zones to protect areas of high ecological value.
* Specific measures to manage potential indirect impacts to Sunshine Diuris in the Sunshine Triangle Ecological Site (including weed and pest animal control, limiting adjacent works to outside the flowering period, and other dust management measures). Further detail on the management measures to be implemented is provided in **Attachment 10**.No-Go Zones
* Fauna salvage and translocation protocols (particularly for Striped Legless Lizard where habitat is to be removed, and elsewhere as a contingency measure if any recorded during works).
* General construction measures including hygiene, erosion and sediment control and weed control.
* Specific measures to manage potential impacts to aquatic habitats for Growling Grass Frog (particularly along the Maribyrnong River, Moonee Ponds Creek and Steeles Creek). Further detail on the management measures to be implemented is provided in **Attachment 10.**
* Specific measures to manage potential impacts to Australian Grayling in the Maribyrnong River (including maintained flows, and avoidance of works during critical breeding and/or migration periods). Further detail on the management measures to be implemented is provided in **Attachment 11**.

These mitigation measures have been outlined in the Threatened Species Management Plans which have been prepared for both the SUN and COR Sections of the Project. |
| **Other information/comments?** (eg. accuracy of information)Potential impacts from the Project on significant wetlands has also been considered as part of the MAR State Land Aquatic Ecology and Geomorphology Impact Assessment (refer to **Attachment 11**). Specifically, the assessment considered potential impacts on the Port Phillip Bay (western shoreline) and Bellarine Peninsula Wetlands Ramsar site. As the closest section of this Ramsar site (Point Cook) is located on the shoreline of Port Phillip Bay in a separate catchment to the Project Land, it is not likely to be impacted by the proposed main works. Appropriate sediment and erosion controls to be implemented for the project will further reduce the risk of any indirect impacts to this significant wetland. |
|  |

# **Water environments**

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| --- |
| **Will the project require significant volumes of fresh water (eg. > 1 Gl/yr)?** NYD **r** No Yes If yes, indicate approximate volume and likely source.Construction and operation of the Project will not require significant volumes of freshwater. |
| **Will the project discharge waste water or runoff to water environments?** NYD No **r** Yes If yes, specify types of discharges and which environments.Construction of the Project will not require significant discharge of wastewater or runoff to water environments. There are construction activities in areas that will be in close proximity to waterways with potential for offsite discharges of construction impacted water runoff during construction, however impact will be mitigated through the development of a CEMP (and other environmental plans) by the delivery partner.Operation of the Project will not result in discharge of wastewater to the environment. Permanent works will result in additional run-off in some areas. However, runoff will not have any adverse impacts on flow velocities, and any change to the flow regime must satisfy Melbourne Water and adhere to its requirements; and flood risks will be assessed by modelling of the design of works and structures. Refer to **Attachment 19** for the MAR State Land Surface Water Impact Assessment, which provides further detail on surface water run-off and the mitigation measures proposed to manage impacts on waterways. |
| **Are any waterways, wetlands, estuaries or marine environments likely to be affected?**  NYD **r** No Yes If yes, specify which water environments, answer the following questions and attach any relevant details.No wetlands, estuaries or marine environments will be affected. Direct impacts to waterways could occur at waterway crossings (Maribyrnong River, Steele Creek, Upper Stony Creek) where new infrastructure is being built and more broadly across a number of other waterways that may be receiving waterways for stormwater runoff along the rail corridor (Moonee Ponds Creek, Stony Creek, Kororoit Creek). An assessment of the designs for waterway crossings (pier locations), construction methods, stormwater drainage principles and operations has shown that risks to aquatic habitats, threatened species and water quality are all likely to be low.Mitigation measures will be implemented to minimise potential any impacts. These include application of Water Sensitive Urban Design (WSUD) measures, retaining or replacing water quality treatment assets, maintaining existing surface water flows, construction of bed control and bank protection, erosion/ sediment controls, and flood mitigation measures. Refer to **Attachment 11** (MAR State Land Aquatic Ecology and Geomorphology Impact Assessment) and **19** (MAR State Land Surface Water Impact Assessment) for further detail on the mitigation measures proposed to manage impacts on waterways. |
| **Are any of these water environments likely to support threatened or migratory species?**  NYD No **r** YesIf yes, specify which water environments.As detailed in the MAR State Land Aquatic Ecology and Geomorphology Impact at **Attachment 11,** waterways in the Project Land support a range of ecological values, including the threatened Australian Grayling in the Maribyrnong River. The Australian Grayling (*Proctotroctes mareana*) is listed as Vulnerable under the EPBC Act and endangered under the Victorian FFG Act. Within the Project Land, Australian grayling have been recorded in the Maribyrnong River at several locations and as recently as 2015 approximately 2.5 km upstream of the existing rail crossing and considered of having a high likelihood of occurrence in the Maribyrnong River, and low likelihood in other waterways within the Project Land. Platypus (listed as vulnerable under the FFG Act) is considered to have a moderate likelihood of occurrence within the Maribyrnong River where it intersects with the Project Land. However, due to a lack of recent records in the downstream sections of the Maribyrnong River, it is considered unlikely that the species is resident in the section of the river that intersects the Project Land.The Murray Cod (*Maccullochella peelii*) and Dwarf Galaxias (*Galaxiella pusilla*) have a low likelihood of occurrence within the Project Land.  |
| **Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?**  NYD **r** No Yes If yes, please specify.There are no Ramsar wetlands, Directory of Important Wetlands in Australian or mapped DELWP wetlands in the Project Land, or in the vicinity of the Project Land. The nearest downstream Ramsar wetland is the Port Phillip Bay (western shoreline) and Bellarine Peninsula Wetlands Ramsar site. This wetland is hydrologically isolated from waterways potentially impacted by Project and would not be impacted by the Project. |
| **Could the project affect streamflows?** NYD **r** No Yes If yes, briefly describe implications for stream flows.Flood impact modelling has been undertaken for the project based on the permanent works design and does not show any significant adverse impacts on flow velocities/ regimes. Refer to **Attachment 19** for flood impact modelling completed for the project.Permanent works will be designed to minimise adverse impacts on flow velocities, and any change to the flow regime must satisfy Melbourne Water and adhere to its requirements. Flood impacts will be assessed by modelling of the design of works and structures. This includes no significant adverse flood impacts associated with the project, for a range of events up to and including the ‘1% Annual Exceedance Probability (AEP) plus climate change’ flood event. Waterway crossings will be designed with piers located outside of the river channel so that there will be no temporary or permanent change to the waterway itself, including no new instream structures that could result in the loss of habitat or block fish passage.Construction methods will be designed to limit direct impacts on waterways and hydraulic modelling shows that there is no significant increase in water levels, velocity or stream power (either during construction or operation) that would increase the risk of unacceptable erosion or scour of stream bed and banks. |
| **Could regional groundwater resources be affected by the project?** NYD **r** No Yes If yes, describe in what way.The Project does not involve deep excavation, and generally will consist of shallow earthworks occurring above the groundwater table. There will be some deeper excavation, such as piling, below the groundwater table. However, the delivery partner will be required to develop a piling methodology and management controls that maintain groundwater levels where groundwater is expected to be encountered. Piling is generally a short duration impact with each (bored) pile typically being constructed within 24 hours minimising any groundwater movement. Therefore, impacts to regional groundwater resources are not expected to occur.Groundwater interaction with surface water bodies (if any) is not likely to be impacted. Adequate mitigation measures for the prevention of construction works impacting surface water bodies will lower any impacts of surface water-groundwater migration should any spills occur. |
| **Could environmental values (beneficial uses) of water environments be affected?**  NYD No **r** Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)Direct impacts to waterways will occur at waterway crossings (Maribyrnong River, Steele Creek, Upper Stony Creek) where new infrastructure is being built and potentially across a number of other waterways that may be receiving waterways for stormwater runoff along the rail corridor (Moonee Ponds Creek, Stony Creek, Kororoit Creek).An assessment of the designs for waterway crossings (pier locations), construction methods, stormwater drainage principles and operations has shown that potential impacts to aquatic habitats, threatened species and water quality are all likely to be low. Specifically: * Waterway crossings will be designed with piers located outside of the river channel so that there will be no temporary or permanent change to the waterway itself, including no new instream structures that could result in the loss of habitat or block fish passage.
* Construction methods will be designed to limit direct impacts on waterways and hydraulic modelling shows that there is no significant increase in water levels, velocity or stream power (either during construction or operation) that would increase the potential impacts of unacceptable erosion or scour of stream bed and banks.
* Stormwater drainage designs will be in accordance with best practice management guidelines and to the approval of relevant authorities such that water quality during the operations phase will not pose increased potential impacts to aquatic values.

These impacts have been modelled during the design phase and are mitigated through design and construction planning where possible. There is a well-established planning approvals process applied by the relevant statutory authorities which has been applied to a large number of similar infrastructure projects. On this basis the Project will be designed and constructed to comply with the requirements stipulated by the Catchment Management Authority (Melbourne Water) and local Council requirements. This includes compliance with the Water Quality Objectives in the *Best Practice Environmental Management Guidelines for Urban Stormwater* (CSIRO, 1999) and maintain waterway objectives in Environmental Reference Standard (ERS). This will protect beneficial uses of waterways and mitigate any significant impact to a human community from adverse water quality. |
| **Could aquatic, estuarine or marine ecosystems be affected by the project?** NYD **r** No Yes If yes, describe in what way.No estuarine or marine environments will be affected by the Project. Waterways in the Project Land support a range of ecological values. Direct impacts to waterways could occur at waterway crossing (Maribyrnong River, Steele Creek, Upper Stony Creek) where new infrastructure is being built and more broadly across a number of other waterways that may be receiving waterways for stormwater runoff along the rail corridor (Moonee Ponds Creek, Stony Creek, Kororoit Creek). An assessment of the designs for waterway crossings (pier locations), construction methods, stormwater drainage principles and operations has shown that potential impacts to aquatic habitats, threatened species and water quality are all likely to be low. Specifically: * Waterway crossings will be designed with piers located outside of the river channel so that there will be no temporary or permanent change to the waterway itself, including no new instream structures that could result in the loss of habitat or block fish passage.
* Construction methods will be designed to limit direct impacts on waterways and hydraulic modelling shows that there is no significant increase in water levels, velocity or stream power (either during construction or operation) that would increase the potential impacts of unacceptable erosion or scour of stream bed and banks.
* Stormwater drainage designs will be in accordance with best practice management guidelines and to the approval of relevant authorities such that water quality during the operations phase will not pose increased potential impacts to aquatic values.
 |
| **Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?** **r** No Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.Although the Project may have some minor impacts to water quality, aquatic species and habitat, these impacts would not be extensive or major. Waterways relevant to Project include the Maribyrnong River, Steele Creek North, Steele Creek, Stony Creek, Moonee Ponds Creek, Kororoit Creek and associated tributary Jones Creek. The Albion / Sunshine Viaduct would intersect with Upper Stony Creek, which is a highly modified waterway environment. The works required at this location are relatively minor, with minimal interface with the waterway expected. Minimal interface is also expected with Moonee Ponds Creek and Kororoit Creek (and its tributaries). Through the implementation of standard sediment, erosion and water quality control measures, there is a low risk to environmental values in these locations.The Project would intersect with Steele Creek and Steele Creek North, which has been identified as a highly modified and degraded creek environment. An assessment of the design for waterway crossings (pier locations), construction methods, stormwater drainage principles and operations has shown that risks to aquatic habitats, threatened species and water quality at Steele Creek and Steele Creek North are likely to be low. As noted above, standard sediment and erosion control measures would however be implemented to minimise potential impacts. Main works would directly interface with the Maribyrnong River, with a new rail bridge to be constructed through the valley. The Maribyrnong River has been identified as providing suitable habitat for the Australian Grayling, which is listed as vulnerable under the EPBC Act and endangered under the FFG Act and has been assumed present. The Project poses some potential impacts to water quality, aquatic species and habitat in the Maribyrnong River, including from construction activities and the ongoing presence of bridge pier structures in the river channel. These impacts have been assessed and mitigation measures recommended. Assuming the appropriate design and mitigation measures are implemented, risks can be adequately controlled and impacts to the aquatic ecology of the river are expected to be relatively minor. In particular, the construction of instream structures will be timed to avoid critical migration periods for the Australian Grayling (April to June and September to November). Additionally, a CEMP will be prepared for the Project, outlining surface water management measures to minimise, to the fullest extent practicable, the potential impacts on surface water and meet the requirements of relevant legislation (i.e. the *Environment Protection Act 2017* and Environmental Protection Regulations 2021; this includes the Environmental Reference Standard (ERS) and Catchment Management Authority (Melbourne Water) and local council requirements. |
| **Is mitigation of potential effects on water environments proposed?** NYD No **r** Yes If yes, please briefly describeThe delivery partner will be required to implement mitigation measures for potential impacts to water environmental during the detailed design (impacts during operational) phase and construction phases. Risks to water quality during the construction phase will be mitigated through the development and implementation of a CEMP (and other environmental plans) by the delivery partner that will be managed in accordance with relevant best practice guidance and any specific requirements, including: * EPA Publication 1834: Civil Construction, building and demolition guide; including:
* Erosion and sediment control.
* Management of contaminated stormwater/ groundwater.
* Procedures for working in waterways and floodplains.
* Chemical storage and handling; spill response and clean-up.
* Management of wastes.
* Requirements of any Works on Waterways Permits (as specified by the Catchment Water Authority – Melbourne Water).

To mitigate impacts during the operational phase, the delivery partner will be required to implement Water Sensitive Urban Design (WSUD) measures that achieve compliance with *Best Practice Environmental Management Guidelines for Urban Stormwater* (CSIRO, 1999) and maintain waterway objectives in Environmental Reference Standard (ERS). This will include any other specific requirements outlined by the Catchment Management Authority (Melbourne Water) and/ or local council. Where objectives cannot be achieved for any reason, agreement with the relevant authority must be obtained. A Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software (or similar) will be used to simulate rainfall and pollution for the detailed design to determine if WSUD are adequate to achieve the Water Quality Objectives.Flood impacts have been assessed by modelling of the design of works (during the design phase) and structures to demonstrate that the Project meets Melbourne Water (statutory authority) nominated flood level, flow and velocity requirements. Flood modelling assessed the potential for flood impacts on surrounding public safety, property and assets and indicates that with some further refinement, sufficient storage and flow control would be provided to mitigate any effects of the project. Flood impact modelling has been undertaken for the project based on the permanent works design and does not show any significant adverse impacts on flow velocities/ regimes. Refer to **Attachment 19** for flood impact modelling completed for the project.Minimal, if any, upstream and downstream impacts are therefore anticipated to occur. It is anticipated that environmental risk management measures will be implemented in the detailed design phase to demonstrate, through modelling, that the design of permanent and temporary infrastructure, which may vary from the design assessed (during the design phase), meets the flood level, flow and velocity requirements and there are no outstanding risks. All works on the waterways will be undertaken to the requirements of Melbourne Water in consultation with relevant local councils.  |
| **Other information/comments?** (eg. accuracy of information) |
| N/A  |

# **Landscape and soils**

**Landscape**

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| **Has a preliminary landscape assessment been prepared?**  No **r** Yes If yes, please attach.A Landscape and Visual Impact Assessment has been prepared for the Project. Refer to **Attachment 13**. |
| Is the project to be located either within or near an area that is: * **Subject to a Landscape Significance Overlay or Environmental Significance Overlay?**

 NYD No **r** Yes If yes, provide plan showing footprint relative to overlay.The following Environmental Significance Overlays (ESO) intersect with the Project Land:**Brimbank Planning Scheme*** ESO Schedule 3 – Baldwin Ave/Solomon Heights Environmental Significance Area (ESO3) affects the Solomon Heights area and aims to protect Nationally, State and Regionally significant flora. Temporary construction access is proposed within ESO3 where the overlay intersects with the existing maintenance access track. Further to this, the site is earmarked as a future employment cluster in the ‘Draft Sunshine NEIC Framework Plan’ (VPA, 2017). This assumes that vegetation removal would be required to facilitate the future use and development of the land and therefore, any proposed vegetation removal proposed as part of the Project accords with the future strategic direction of the site.
* ESO Schedule 5 – Maribyrnong River Valley and Environs (ESO5) affects the Maribyrnong River Parklands and aims to conserve and maintain its ecological values. A new Rail Bridge is proposed to be constructed across the Maribyrnong River which requires earthworks to create heavy vehicle access within the ESO5.
* ESO Schedule 6 – Sites of Known Biological Significance (ESO6) affects land adjacent to Steele Creek North and aims to protect and enhance the viability and connectivity of ecosystems, species and genetic diversity. The new Tullamarine Viaduct is proposed within ESO6.

**Moonee Valley Planning Scheme*** ESO Schedule 3 – Upper Maribyrnong River, Maribyrnong River Escarpment and Steele Creek Escarpment (ESO3) affects the Maribyrnong River Parklands and aims to protect and enhance ecological values. A new Rail Bridge is proposed to be constructed across the Maribyrnong River which also requires earthworks to create heavy vehicle access within the ESO3.

**Moreland Planning Scheme*** ESO Schedule 2 – Moonee Ponds Creek and Environments (includes Melville Creek) (ESO2) affects the Moonee Ponds Creek Parklands and aims to protect ecological values and recreational opportunities. CSR, signalling and utility works are proposed within the ESO2.

Planning and environmental specialists and design engineers have undertaken an ongoing process of refining the design to avoid, protect and manage potential impacts to environmental values. This process has involved an optioneering to select the appropriate design solution, having regard to key planning and ecological values. This process was undertaken for the MAR track alignment and specific site-based design options has resulted in areas being removed from the Project Land and reconfiguration of the design.The Project has been designed to minimise vegetation removal where possible. Significant ecological values such as MNES under the EPBC Act, are protected through the designation of No-Go Zones. The removal of weed species and the revegetation of impacted areas at the conclusion of construction will ensure that the landscape will not be extensively impacted over the long term. Refer to **Attachment 10** for the MAR State Land Terrestrial Ecology Impact Assessment for further details. |
| * **Identified as of regional or State significance in a reputable study of landscape values?**

 NYD **r** No Yes If yes, please specify.The Maribyrnong River Valley is affected by an ESO5 under the Brimbank Planning Scheme, which identifies the Maribyrnong River as a major feature of the regionally significant Brimbank Park and adjoining council owned park, recreation and trail network. Additionally, the Maribyrnong River Valley Design Guidelines, identified as a reference document to the ESO5, detail the landscape characteristics of the Maribyrnong River across the Brimbank, Hume, Maribyrnong, Melbourne and Moonee Valley local government areas that need to be conserved, repaired or enhanced. On this basis, it is considered that the Maribyrnong River and open space network it traverses are of regional significance, with its value derived from its natural and remote landscape setting.Details on the proposed works at Maribyrnong River Valley and avoidance and mitigation measures are described below (Section ‘Is there a potential for effects on landscape values of regional or State importance?’). |
|  |
| * **Within or adjoining land reserved under the *National Parks Act 1975*?**

 NYD **r** No Yes If yes, please specify. |
| * **Within or adjoining other public land used for conservation or recreational purposes?**

 NYD No **r** Yes If yes, please specify.The Project Land includes and adjoins the following areas of public land used for conservation or recreation purposes:* HV McKay Memorial Gardens (Public Park and Recreation Zone (PPRZ)
* Barclay Reserve (PPRZ)
* Talmage Street Park (PPRZ)
* Sunshine Energy Park (PPRZ)
* South West to North East Transmission Line Easement and Conservation Reserve (PPRZ)
* Maribyrnong River Valley / Brimbank Park (PPRZ)
* Moyangul Street Park (GRZ1)
* Border Drive Reserve (PPRZ)
* Steele Creek Tributary Reserve (PPRZ)
* Keilor Park Recreation (PPRZ)
* Keilor Botanic Gardens (PPRZ)
* Kingsford Smith Ulm Reserve (PPRZ)
* Djirri Djirri Park (PPRZ / Neighbourhood Residential Zone – Schedule 1 (NRZ1)
* Matthews Hill Reserve (PPRZ)
* JR Parsons Reserve (PPRZ)
* Rupert Street Reserve (PUZ4)
* Lions Park (PPRZ)
* Footscray Railway Reserve (ACZ)
* Edwards Reserve (PPRZ)
* The Avenue Reserve (PPRZ)
* Paine Reserve (PPRZ)
 |
| **Is any clearing vegetation or alteration of landforms likely to affect landscape values?** NYD **r** No Yes If yes, please briefly describe. |
| No alterations of landforms are proposed as part of the Project, however there will be some clearing of vegetation required. Areas with landscape value that are likely to be impacted by vegetation removal are located at Steele Creek Tributary Reserve and the Maribyrnong River Valley. At Steele Creek Tributary Reserve, there is a discreet area that is affected by an ESO6 under the Brimbank Planning Scheme which seeks to protect sites of biological significance. The Steele Creek Tributary Reserves landscape character is therefore defined by the presence of ecological values. Small areas of native vegetation are proposed for removal within the ESO6. Within the Steele Creek Tributary Reserve, ecological assessment has identified that most remnant patches of vegetation are small and fragmented, and surrounded by extensive areas dominated by introduced vegetation. It is also noted that key ecological values in the area are proposed as being included in a No-Go Zone. Given this context, the vegetation removal as a result of the Project is not considered to significantly impact landscape values, noting much of the area will be reinstated following construction. The Maribyrnong River Valley is discussed in further detail below. |
| **Is there a potential for effects on landscape values of regional or State importance?** r NYD No **r** Yes Please briefly explain response.Under the *Maribyrnong River Valley Design Guidelines (Department of Planning and Community Development, 2010)* (Maribyrnong River Guidelines), the Maribyrnong River has been divided into seven ‘lengths’, each with a preferred character type. The Project would intersect with the Brimbank and Steele Creek lengths of the Maribyrnong River, with the landscape character of these lengths characterised under the Maribyrnong River Guidelines as follows: * The Brimbank length has a remote character, with its natural features being its most valued asset.
* The Steele Creek length also has a remote character, with the river flowing through a steep valley with significant vegetation along the banks.

In addition to the above, it is noted that the VHR listed Albion Viaduct is located on the interface of the Brimbank and Steele Creek lengths. Heritage values, including post-contact heritage and Aboriginal heritage, are also acknowledged as contributing to the areas landscape character. Main works would introduce a new rail bridge into the Maribyrnong River Valley, adjacent to the existing VHR listed Albion Viaduct. While there may be some visual modification from existing viewpoints in the area, the new Maribyrnong River Rail Bridge would be the third bridge in the local area, alongside the existing rail bridge (Albion Viaduct) and the EJ Whitten Bridge located approximately 400 metres west of the site. This highlights that bridges and elevated structures are familiar along the Maribyrnong River and a new bridge would not be out of context in this setting. Further to this, design refinement has been undertaken to develop a suitable design response that has regard to the values associated with this location, including heritage values. In particular, the new Maribyrnong River Rail Bridge has been designed to match the height and length of the existing rail bridge (Albion Viaduct). The new bridge piers would also be aligned with every second pier of the existing rail bridge to minimise any potential visual impacts to the surrounding landscape. Consultation has also been undertaken with Heritage Victoria to inform the design response and in particular, the interface with the Albion Viaduct. It is also noted that the natural features of the Maribyrnong River Valley, including existing vegetation, is a key part of its landscape value. As noted above, some vegetation removal will be required as a result of the Project. While vegetation removal may slightly modify the character of the Maribyrnong River Valley, through the establishment of No-Go Zones, minimisation of vegetation removal where possible, removal of weed species and the revegetation of impacted areas at the conclusion of construction, it is not expected that the existing landscape character would be extensively impacted over the long term. |
| **Is mitigation of potential landscape effects proposed?** NYD No **r** Yes If yes, please briefly describe.Potential impacts to landscape values will be managed through: * An Urban Design Strategy (UDS) has been prepared to guide Project design. The UDS provides a common vision, key directions to achieve the design, and a suite of design objectives to ensure the delivery of a high quality, context sensitive urban design outcome for the Project, including for elevated structures. This will seek to mitigate impacts to the local landscape. The UDS will form part of the delivery partner’s contractual requirements that will be used to assess designs during project procurement and design delivery phases.
* Management measures in the EMF for planning the design of permanent and temporary works in consultation with relevant local councils to comply with the UDS, with specific consideration given to maintaining landscape character and heritage values.
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| **Other information/comments?** (eg. accuracy of information) |
| N/A |

**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 **r** Yes If yes, please briefly describe.The majority of Project works require construction of rail infrastructure within an operating rail corridor. As such, the extent of excavation, and therefore minimal potential impacts of extensive or major effects on land stability, acid sulfate soil (ASS) or highly erodible soils. Mitigation and management of ASS is a common and generally well-understood requirement of large infrastructure projects. Bridge piling and associated minor excavation for piling rig working pads at existing rail bridge locations and elevated structures (notably the new Maribyrnong River Rail Bridge) are proposed as part of the Project. The geological materials identified were reviewed for potential acid sulfate soil and acid sulfate rock properties. Acid sulfate soil and rock contain iron sulphides which, when oxidised through excavation or dewatering, can result in acid leachate impacts on the built and natural environment. The surficial geological materials identified within the project include the Newer Volcanics basalt and minor colluvium associated with creeks or rivers. Both geologic units present a low risk of acid sulfate generation, although colluvium may include organic materials with some potential to contribute to acidity. Overall, acidic soil conditions were not identified from sampling in near surface soils that would result in acid sulfate generation, consistent with the understanding of the geological setting as based on published maps of soil acidity. Actual acid sulfate soil (AASS) or potentially acid forming (PAF) conditions were generally encountered in deeper samples. These boreholes were located within identified areas of deeper excavation, and therefore may be encountered during piling works. Due to the nature of piling excavation, low volumes of excavated material with these conditions can be expected. Material can be reasonably managed with standard construction techniques and management processes. Provided that the nature and extent of ASS within the Project Land is assessed in accordance with EPA Publication 655.1, and appropriate mitigation and management measures are put in place through the design and delivery phases of the Project, potential extensive or major effects on ASS are unlikely.There is potential for effects on land stability and erosion as a result of the project, however these will be mitigated and managed through design and delivery. The Maribyrnong River is an actively eroding stream, with some sections being more susceptible to erosion because of high stream powers, high and steep banks, low width/depth ratio, confinement of floods and poor riparian vegetation cover. The river has been described as having a low geomorphic condition. It is categorised as having a medium catchment level stress level given the urban development in the catchment. Main works in the Maribyrnong River Valley will include the construction of a rail bridge, and hydraulic modelling has been undertaken to understand potential geomorphological impacts. Based on this assessment, there is no increased risk in bed or bank erosion. Construction methods will be designed to limit direct impacts on waterways and hydraulic modelling shows that there is no significant increase in water levels, velocity or stream power (either during construction or operation) that would increase the potential impacts of unacceptable erosion or scour of stream bed and banks.All works on waterways will be undertaken to minimise the potential for erosion and to the requirements of the Catchment Management Authority (Melbourne Water), in consultation with relevant local councils. The preparation and implementation of a Surface Water Management Plan specifying the required mitigation measures, as well as drainage asset condition assessments before and after construction works, would avoid or minimise adverse effects on bank stability. Mitigation measures to address the potential impact discussed above will be outlined in the delivery partners CEMP. Overall, the Project is unlikely to cause any extensive or major effects on land stability, ASS or highly erodible soils impacts land stability, acid sulfate and erodible soils are not expected. |
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| **Are there geotechnical hazards that may either affect the project or be affected by it?**  NYD **r** No Yes If yes, please briefly describe.The topography of the Project Land is generally flat and large scale landslips are not considered likely to occur. There are some elevated viaduct structures that will require the construction of piers requiring piling (including Maribyrnong River Rail Bridge, Tullamarine Viaduct, Albion / Sunshine Viaduct. Several geotechnical interpretive reports have been undertaken for the Project to develop a geological model of the Project to identify any geotechnical hazards and inform design to mitigate any impacts. |
| **Other information/comments?** (eg. accuracy of information) |
| Refer to **Attachment 20** for the MAR State Contaminated Land Impact Assessment and **Attachment 11** Aquatic Ecology & Geomorphology.  |

# **Social environments**

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| **Is the project likely to generate significant volumes of road traffic, during construction or operation?** NYD **r** No Yes If yes, provide estimate of traffic volume(s) if practicable.Road traffic generation during the construction phase of the Project will be typical of construction of a linear project and will occur over a period of 7 years, noting the duration of construction activities will vary across the Project Land. Construction vehicles for the Project will access the rail corridor at discrete locations via the existing road network or existing access tracks.Significant earthworks are proposed as part of the main works scope along certain parts of the alignment and the amount of truck traffic will therefore be greater along parts of the Project alignment. A Traffic Management Plan will be prepared as per requirements under the EMF prepared for the Project, in consultation with local councils. Temporary road diversions or closures and mobilisation of heavy equipment to and from the site will occur and will be managed under the Traffic Management Plan.Rail works will occur in the rail corridor.The only planned closure for both Albion and Sunshine Stations will be during rail occupations. Where this is required, replacement bus services will be arranged. During live train works, all stations will remain open as per normal. The Project is intended to encourage a reduction in car use by commuters in the region once operation commences.Overall it is considered that the Project will deliver a number of benefits to the transport network, including providing a rail-based option to access Melbourne Airport and that the main works associated with the Project will have no significant long term impact on the transport network.Refer to **Attachment 17** for the MAR State Traffic and Transport Impact Assessment for further details on proposed mitigation measures. |
| **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 **r** No Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.Temporary impacts to the amenity of residents are anticipated during the construction phase of the Project. These include temporary land use change as a result temporary occupation, access changes, traffic disruption, increased noise, vibration and dust emissions and visual impacts. **Access and traffic changes**The MAR State Land Traffic and Transport Impact Assessment (**Attachment 17**) identifies that access and connectivity changes are anticipated due to increased construction traffic and trucks along a number of key routes, lane and road closures, relocation and diversions of shared user paths and changes to public transport services. The major construction impact of the Project is expected to result from road disruptions and closures which are required to facilitate access to works areas, including the need to locate large plant and to provide suitable clearance to works area, particularly bridges. Construction activity will peak across the Project from the end of 2023 through to the start of 2025. It is expected that such changes and disruptions would be temporary in nature and not impact the ongoing use of land for residential purposes once the Project is completed. Additionally, appropriate diversion route and traffic management strategies will be developed to manage disruptions, alongside a CEMP addressing construction zones and roads, public transport and active transport network impacts. For this reason, it is not expected that residents will experience extensive or major long-term traffic impacts.**Visual amenity**The MAR Landscape and Visual Impact Assessment (**Attachment 13**) identifies that while some residential properties will experience a change in permanent views, for the majority of residents, the visual change that would be experienced is considered low. This is because project infrastructure is generally commensurate with the existing site context and / or would be screened by intervening built form or landscaping treatments. High visual impacts are however likely to be experienced by approximately 70 residential properties as a result of permanent works across the Project Land, based on the level of visual sensitivity identified and the degree of visual modification likely to be experienced. Potential impacts are discussed in further detail below. The addition of the Albion / Sunshine Viaduct to an existing at-grade rail corridor and elevated road four-lane carriageway will be visible for some residential properties along Derrimut Street and Talmage Street, Albion, with approximately five residential properties likely to experience a high visual impact. However, these existing residential properties would not have a direct abuttal to the Albion / Sunshine Viaduct, with the closest residential properties located more than 20m from the viaduct structure. Further, the urban setting of the Project features several intervening elements, including the Ballarat Road overpass, existing rail gantries and pedestrian overpasses, as well as street trees that will be retained and provide partial screening, and is considered to comfortably accommodate the proposed height of the structure. Some residential properties in Sunshine and Keilor East are located adjacent to the rail corridor, with noise walls proposed to be installed along the corridor. Where proposed, it is noted that the height of the noise walls will generally be consistent with the height of typical boundary fencing and therefore, considered to be a low-level visual modification to the residential setting. Approximately 33 residential properties in Sunshine North and one property in Keilor East are however expected to experience a high visual impact. Noise treatments, including noise wall extents, will be refined as detailed design progresses and consultation is undertaken with stakeholders, landowners and occupiers. In particular, the Project will employ design measures, such as the use of transparent materials where possible, to mitigate potential impacts. These design measures will also seek to ensure that daylight to existing private open space areas is not significantly reduced by the installation of noise walls. The introduction of noise walls elsewhere in the project will not impact residential properties. Residential properties located in Keilor East, to the east of Maribyrnong River Valley, will have distant permanent views of the Maribyrnong River Rail Bridge; however view lines from residential properties located in Keilor East and Avondale Heights contain intervening elements including the existing VHR-listed Albion Viaduct, fencing and vegetation, as well as the nearby EJ Whitten bridge. Given these factors and the geographic distance to these elements, a low level of visual modification is expected.Some residential properties in Keilor Park may also experience a visual change as a result of the Tullamarine Viaduct, with approximately eight residential properties expected to experience a high level of visual change. It is however noted that within the existing site context, large structures are an existing influence and includes the existing rail corridor, the Western Ring Road and large transmission towers. The new Tullamarine Viaduct will not contrast greatly to this existing setting. It is also noted that other Project infrastructure, including the Cranbourne Avenue Pedestrian Overpass and the up-end concourse at Sunshine Station, would occur in close proximity to a small number of residential properties. The Cranbourne Avenue Pedestrian Overpass to the end of Cranbourne Avenue is likely to interrupt views across the existing rail corridor of approximately 10 residential properties. Existing rail infrastructure such as gantries are however not unfamiliar within this setting and the works are generally commensurate with existing infrastructure. The improvement works at Sunshine Station, including the provision of an up-end concourse, would occur in close proximity to approximately 20 residential properties. While the proposed improvement works at Sunshine Station are generally commensurate with the existing station structures, the scale of the new up-end concourse and proximity to dwellings is likely to result in a visual change, noting however that this would only affect a small number of residents.Both the Cranbourne Avenue Pedestrian Overpass and concourse at Sunshine Station will provide functional and safe options for the carriage of pedestrians and public transport users across the rail corridor.Overall, it is not expected that the Project will result in a significant impact to visual amenity or impact the ongoing use of residential land. There are several residential properties that may have direct views of sites to be temporarily occupied for use as construction worksite / laydown areas, as well as construction works more generally. While such visual changes may be perceived as a temporary change to the character of the area, the modification would not impact the ongoing use of residential properties. This includes lighting at the construction worksite / laydown areas to undertake works at night (if needed) to ensure the safety of workers and the community.Impacts associated with the construction of the main works would be temporary in nature and localised within the Project Land. Any construction worksite / laydown areas would be reinstated following the completion of the Project. Potential mitigation opportunities are further explored in the MAR Landscape and Visual Impact Assessment (**Attachment 13**). **Noise and Vibration**Operational rail noise will be the primary long-term noise generated from the Project which may have some impact on residential properties (refer to **Attachment 20 and 22)**. Operational rail noise has been assessed in accordance with the requirements of the Victorian Government’s *Passenger Rail Infrastructure Noise Policy* (State of Victoria, 2013) (PRINP) and ‘best fit’ mitigation solutions included in the design. Vibration from the operating railway has also been assessed and will be mitigated as required to comply with appropriate guidelines (as per other major infrastructure projects). As such, it is not expected that noise and vibration from the Project will have a significant impact on the amenity of residents. It is also acknowledged that residential properties located proximate to the rail corridor in Sunshine, Sunshine North, Keilor East and Airport West may experience noise and vibration from construction works as the construction movements along the alignment, as well as intermittent dust and odour generation. Any such impacts will be temporary and will therefore not cause extensive or major, long term changes to the amenity of residents. The construction methodology will seek to mitigate potential noise and vibration impacts through a range of measures, such as using smaller construction equipment and alternative rolling techniques to minimise impacts from vibration. It is also expected that construction work will predominantly be undertaken during normal working hours as required by Environment Protection Authority (EPA) Civil Construction Building and Demolition Guide Publication 1834. Normal working hours are 7am to 6pm Monday to Friday and 7am to 1pm Saturday. Additionally, impacts of construction noise and vibration will be carefully mitigated and managed by the Project Contractor using a comprehensive Construction Noise and Vibration Management Plan (CNVMP). As noted above, in parts of Sunshine and Keilor East, the Project will introduce noise walls to the rear boundaries of residential properties located along the rail corridor as a mitigation measure to reduce potential permanent noise issues at these locations. The design of the proposed noise walls will be guided by the Project’s Urban Design Strategy to ensure noise walls respond to the site context. **Air quality**For the Project, air discharges are only associated with activities occurring during construction, with the key air pollutant relevant to construction of the project being particulate matter (also interchangeably referred to as dust).The key air pollutant relevant to construction of the project is particulate matter, including the fine fractions PM10 and PM2.5 which have the potential to impact human health, and total settleable dust which has the potential to cause nuisance impacts through dust deposition (refer to the MAR State Land Air Quality Impact Assessment at **Attachment 15**).Dust from earth moving activities and odour from mechanical plant may occur during construction. However, through the implementation of standard good practice mitigation measures, including dust containment and wind sheltering measures at construction sites via a CEMP, impacts are not expected to be significant or have extensive or major effects on the amenity of residents. During construction of the Project, the delivery partner will be required to undertake construction works in accordance with a CEMP, informed by the EMF and EMRs, and associated sub-plans.After construction is completed, main works are unlikely to result in ongoing emissions to air. The MAR trains will be electrified and therefore, will not create emissions associated with combustion of fuel such as in diesel-fired train engines.Given the role of MAR in providing an alternative transport mode and reducing the reliance on road transport, is not expected that the operation of MAR will facilitate any extensive or major changes to existing air emissions; to the contrary, it will contribute to a reduction of PM10 and PM2.5 emissions into the Melbourne airshed due to reduced numbers of passengers relying on road transport to travel to Melbourne Airport.  |
| **Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport?** NYD **r** No Yes If yes, briefly describe the hazards and possible implications. |
| The potential dust, water, noise and air emissions expected during construction will be typical of a construction project and managed in accordance with applicable regulatory requirements and the CEMP and relevant sub-plans.The use, storage and management of chemical hazards will be undertaken in accordance with relevant regulations, standards and best practice guidance to avoid any exposure to the health and safety of the community and environment.During construction of the Project, the delivery partner will be required to undertake construction works in accordance with the EMF prepared for the Project, including the requirement to develop and implement a CEMP and associated sub-plans. This will include waste and spoil management prepared in accordance with relevant regulations, standards and best practice guidance and may include:* Spill kits available on site with all personnel instructed in their use.
* Any containers storing hydrocarbons or chemicals will be stored on bunded pallets or in fully bunded areas at all time.
* Refuelling of mobile plant and equipment should be undertaken, where feasible, on designated hardstand areas or provided with temporary bunding to contain any spills.
* Dust management measures (particularly where there contaminated soils) to control dust emissions to workers and the general public.
* Work instructions shall be prepared and issued to cover tasks and activities which may involve the discharge of hazardous materials (e.g. oil change of engines, gear boxes, high voltage transformers, etc). The instructions shall specifically address:
* The appropriate method for discharging these materials.
* Actions to be taken in the event of unplanned discharge to drains and waterways.
 |
| **Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?** NYD **r** No Yes If yes, briefly describe potential effects. |
| Where residentially zoned land has been identified in the Project Land for both temporary and permanent works, these parcels are either currently vacant or earmarked for future redevelopment. Further to this, any permanent acquisition of residentially zoned land is either underground (for utility works) or adjacent to the rail corridor (for the Cranbourne Avenue pedestrian overpass).Construction activities will not cause any long-term or permanent severance of residential access to community resources as the Project will predominantly be within an existing railway corridor. |
| **Are non-residential land use activities likely to be displaced as a result of the project?**  NYD No **r** Yes If yes, briefly describe the likely effects.While the Project is predominantly located within the existing VicTrack rail corridor, the Project will result in the displacement of non-residential land use activities, primarily through the impact of temporary occupation and land acquisition.**Temporary occupation**Site selection for construction worksite / laydown areas has prioritised VicTrack land and as such, sites are primarily located on land that is currently used for railway activities in the existing railway corridor. The Project will however temporarily occupy approximately seven public open space areas for the purposes of construction worksite / laydown areas as well as providing vehicle access (refer to **Attachment 9** for an overview of public open space within and adjoining the Project Land and the MAR State Land Use Planning Impact Assessment at **Attachment 14**, Section 5.2, for an assessment of temporary impacts to public open space). The Project has however sought to minimise potential impacts by limiting temporary occupation to discrete areas of parkland at Steele Creek Tributary Reserve, Sunshine Energy Park, Border Drive Reserve, Maribyrnong River Valley Parklands, HV McKay Memorial Gardens, Barclay Reserve and Talmage Street Park.The Project also proposes to temporarily occupy (in part or full) privately-owned industrial and commercial land. Generally, these sites have been identified as they are either vacant or earmarked for future redevelopment, noting the occupation of these areas will only be temporary. There may however be some existing businesses that will be temporarily displaced due to construction works. Where necessary, the design and construction approach will continue to be developed by delivery partners’, in conjunction with refinement to the site selection for construction worksites / laydown areas following discussions with landowners, tenants and statutory authorities. Reinstatement of affected areas will also occur in consultation with community and Councils following the conclusion of project works.**Land acquisition** Where non-residential land is required for permanent acquisition for the Project, the land is predominantly either vacant and/or identified by the previous MARL Planning Controls for acquisition for rail purposes, signalling a clear intent for these properties to be acquired for the purposes of a rail link to the Airport for over a decade. There are however a small number of businesses that will be affected by either partial or whole permanent acquisition. Ongoing consultation is being undertaken with affected businesses.As part of the Project planning phase, directly affected landowners and occupiers have been identified and are currently being engaged with about potential impacts to their land.Refer to **Attachment 18** for the MAR State Business Impact Assessment. |
| **Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?** NYD **r** No Yes If yes, briefly describe the potential effects.**Temporary works**There will be some disruption to residential access to community resources, including as a result of temporary occupation. As noted above, there are approximately seven public open spaces that will be temporarily occupied for the purposes of construction worksite / laydown areas as well as providing vehicle access (refer to **Attachment 9** for an overview of public open space within and adjoining the Project Land). The Project has sought to minimise potential impacts by limiting temporary occupation to discrete areas of public open space. For example, while the majority of Border Drive Reserve is required for a worksite / laydown area, some facilities, including playground equipment, have been specifically excluded from the Project Land so that these facilities remain available to the community. It also noted that where a significant portion of parks within residential areas are temporarily required for the Project, there are several other parks within the surrounding area that can be used during the occupation period by the local community, minimising the extent of potential impacts.One formal outdoor sports facility, being the south eastern section Barclay Reserve, is likely to be temporarily occupied for the purposes of the Project. The north western portion of Barclay Reserve, which contains the baseball field, is not proposed to be occupied and can therefore continue to operate as a reserve for community use. It is however acknowledged that the operations of this facility for outdoor sporting activities may be disrupted over the short term, including as a result of temporary impacts from construction activities, such as increased noise levels and dust. In consultation with relevant stakeholders, appropriate mitigation and management measures including potential opportunities to relocate public open space will be implemented.In addition to the above, construction activities are likely to disrupt existing shared user paths within the Maribyrnong River Valley Parkland. Temporary occupation will only affect part of the broader Maribyrnong River Valley Parkland, noting some areas of proposed occupation are not currently accessible to the public. With regards to shared user paths, the disruption to access would be limited to the construction phase of the Project and specific sections of the Maribyrnong River Trail only, noting this trail is understood to be a recreational trail rather than linking key destinations.Any changes to non-residential land use activities as a result of temporary works (noise, access, traffic and dust) will have construction management measures applied to minimise disruption to the surrounding community. **Permanent works**With respect to permanent works, the majority of land has previously been identified by the previous MARL Planning Controls for acquisition for rail purposes or is currently vacant with no existing land use activity associated. There are some discrete areas of public open space that would be acquired for the Project; however, the location of project works has sought to minimise the total area required and would generally allow the existing land use to continue. As such, it is not anticipated that the Project will cause any long-term adverse effects to local resident, communities, social groups or industries.Refer to **Attachment 18** for the MAR State Business Impact Assessment. |
| **Is mitigation of potential social effects proposed?** NYD No **r** Yes If yes, please briefly describe. |
| The Project is a transformational public transport project connecting Melbourne Airport with a rail service for the first time. The Project responds to the growth needs of Melbourne’s airport precinct and provides long-term capacity for connections to and from the airport for all Victorians and visitors to the State, allowing Melbourne to be better connected.To investigate potential social effects and to inform design and planning controls for the Project, a program of community and stakeholder engagement has been undertaken by RPV. A detailed community engagement framework outlining activities over the life of the Project has been developed to guide the program, this has included:* A program of engagement with key stakeholders, relevant community groups, local residents and train passengers through a range of communication channels to provide information to the community and enable contact with RPV including websites, social media channels, e-newsletters, letterbox drops and newsletters and animations.
* On-line surveys and virtual information sessions to gather feedback on travel behaviours, communication preferences and issues and topics of interest.
* Face-to-face meetings.

Refer to Section 20 of this referral for further details.RPV has consulted with approval agencies including relevant Registered Aboriginal Parties (RAP), DELWP, DAWE, EPA and Heritage Victoria. RPV will continue its stakeholder and community program as design develops and then into construction. This will involve tailoring measures to mitigate impacts on surrounding communities. The environmental impacts of the Project will also be managed through a CEMP or similar management sub-plans required to be developed. These documents will address the potential social effects which may include:* Development and implementation of a Community and Stakeholder Engagement Plan.
* Air quality in accordance with Civil Construction, Building and Demolition Guide (EPA, 2020b).
* Airborne noise and vibration impacts may include measures to:
* limit night works, restrict works to normal construction hours (as far as practicable),
* notify residences in advance of works
* provide residents with a contact number for complaints / comments.
* provision of respite or alternative accommodation.
* Traffic operations and disruptions through the preparation of Traffic Management Plan(s).
* Development and implementation of a Business Disruption Plan.
* Replacement and relocation of impacted areas of public open space.
 |
| **Other information/comments?** (eg. accuracy of information) |
| N/A |

# **Cultural heritage**

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| **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. As part of the CHMP process for the Project, consultation has occurred with the following RAPs:* BLCAC
* Wurundjeri

First People – State Relations has also been consulted as the Notice of Intents for both CHMPs were submitted before the statutory authorities changed on 1 July 2021  |
| **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)The Project Land is within the boundaries of two appointed RAPs:* Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation (Wurundjeri) is the RAP for the Project Land from west of Footscray Station to east of Geelong Road, Seddon and west of Stony Creek South to south of Sharps Road Tullamarine.
* Bunurong Land Council Aboriginal Corporation (BLCAC) is the RAP for the Project Land east of Stony Creek South to west of Geelong Road, Seddon.

It is worth noting that a RAP application was recently approved by the VAHC on 1 July 2021 to vary the RAP boundary of Wurundjeri and BLCAC. Prior to this decision the Wurundjeri RAP boundary ended at Balfour Avenue, Sunshine North and there was no RAP appointed for the area from the Melbourne CBD to Balfour Avenue, Sunshine North.Two CHMPs are being prepared for the project, No. 16615 and No. 17301, based on the statutory authorities prior to 1 July 2021 as the Notice of Intents for both CHMPs were submitted before this date. Both CHMPs will be completed in Q4 2021 and subsequent approval being sought in Q1 2022.**Desktop Assessment**At the commencement of each CHMP, the Project Owner submitted the appropriate notifications to the Victorian Aboriginal Heritage Register (VAHR).A Desktop Assessment of relevant background information was undertaken in compliance with Aboriginal Victoria's relevant practice notes and guidelines and in accordance with the Aboriginal Heritage Regulations 2018.The desktop assessment identified the existing occurrence of Aboriginal cultural values within the Project Land and identified areas that may contain unknow Aboriginal values that require further investigation. The desktop assessment for both CHMPs is complete.**Standard Assessment**The Standard Assessment is a ground survey of the entire Project Land to identify surface Aboriginal cultural heritage material and confirm landforms of archaeological potential. The Standard Assessments complied with Aboriginal Victoria's relevant practice notes and guidelines and were in accordance with the Aboriginal Heritage Regulations 2018.The standard assessment for both CHMPs is complete.**Complex Assessment**Complex Assessments included the following tasks:* Targeted subsurface testing
* Sampling subsurface testing
* Record subsurface conditions, including stratigraphy and disturbance
* Record Aboriginal places.
* Compare the results with the prediction model

The CHMP No. 17301 area has undergone extensive archaeological assessment during previous rail projects and has been assessed as having been heavily disturbed. The complex assessment is focusing on areas not previously assessed and likely to be less disturbed.For CHMP No. 16615, complex assessment is required in many areas to test if Aboriginal cultural material occurs outside the mapped extents of Aboriginal places. This is particularly required around the Maribyrnong River as previous complex assessment has been minimal.    |
| **Is any Aboriginal cultural heritage known from the project area?**  NYD No r 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

Two CHMPs are being prepared for the Project.**CHMP No. 17301** There are areas of cultural heritage sensitivity (CHS) associated with Stony Creek, 16 Aboriginal Places within the defined geographic region of the non-RAP section of the Project Land and four (4) Aboriginal places within 200 m of the non-RAP section of the Project Land. No previous registrations occur within the Project Land. One (1) Aboriginal place was recorded during the complex assessment. This is a single stone artefact found within topsoil dressing of fill material.  **CHMP No. 16615** There are areas of CHS associated with the Maribyrnong River and Steele Creek and 45 Aboriginal Places unevenly distributed, mainly clustered around the waterways. Reports prepared within the RAP area highlight both waterways contain significant deposits of Aboriginal cultural material that are in the process of being assessed for significance values and any likely impacts to these values. During the standard assessment, most of these Aboriginal places were reinspected and Aboriginal cultural material belonging to these Aboriginal places was relocated. Complex assessment is required in many areas to test if Aboriginal cultural material occurs outside the mapped extents of these Aboriginal places. This is particularly required around the Maribyrnong River as previous complex assessment has been minimal.     |
| **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 **r** Yes If yes, please list.There are six (6) sites listed on the VHR within the Project Land:* VHR H1197 Albion Viaduct
* VHR H1953 HV McKay Memorial Gardens
* VHR H0829 John Darling and Son Flour Mill
* VHR H1966 HV McKay Offices
* VHR H0667 Massey Ferguson Complex
* VHR H1563 Footscray Railway Station Complex

There are two (2) sites listed on the VHI within the Project Land:* Former Tottenham Station (H7822-0842)
* Dodds Homestead Ruins/Brimbank Park Ruins H7822-0004
 |
| Works are proposed along the Project alignment, both temporary and permanent in nature. Temporary works include land used for the purpose of construction worksite / laydown areas and construction vehicle access paths. Permanent works include:* Track and civil works including a new viaduct at Tullamarine and Albion/Sunshine, as well as a new rail bridge across the Maribyrnong River Valley.
* Rail works including signalling and CSR works.
* Drainage and utility works.
* Improvements to Sunshine and Albion Stations.

Refer to Section 3 of this referral for a detailed outline of the proposed scope of works along the Project alignment.The following section outlines where the Project may affect existing heritage places.* VHR H1197 Albion Viaduct

A new 500m long elevated rail bridge is proposed adjacent to the existing Albion Viaduct. The new bridge will be constructed within the VHR registration and works would require a permit under the *Heritage Act 2017*.Ground and deck level works (civil and utility works as well as track works) are expected to be required to the Albion Viaduct. The MAR Historical Heritage Impact Assessment **(Attachment 12)** has assessed these works and deemed that they will not affect significant fabric of the heritage place. The key heritage impact to the Albion Viaduct are the potential for views from surrounding land to be altered as a result of the new elevated bridge structure; however views are not referenced in the VHR statement of significance and are not considered to be of heritage value. **Attachment 12** (MAR Historical Heritage Impact Assessment) outlines the recommended mitigation measures to protect the prominence of the heritage place, including measures to address the potential risk of structural damage as a result of vibration associated with Project construction works occurring adjacent to the heritage place.* H7822-0004 Dodds Homestead Ruins/Brimbank Park Ruins

A new construction vehicle access path will intersect with part of the VHI boundary for the site. Potential impacts to this site include the use of heavy vehicles within and around the VHI boundary. A VHI Consent to Damage is required under the *Heritage Act 2017* for the works within the VHI boundary.**Attachment 12** (MAR Historical Heritage Impact Assessment) outlines the recommended mitigation measures to protect the heritage place.* VHR H1953 HV McKay Memorial Gardens

Temporary works (construction worksite / laydown area and associated access) are proposed at the northern end of the heritage place. The establishment of the laydown area may require the removal of vegetation and installation of hardstand and vehicle access points.Permanent works (rail works) are also proposed along the eastern edge the heritage place both within the extent of the VHR registration and the adjoining rail corridor (owned by VicTrack). Within the heritage registration extent, there may be potential impacts to significant trees through the pruning of tree canopies and impacts to the root zone of trees from works along the north-eastern edge of the Gardens. It is noted that the ‘Straight Six’ pathway and cultivated vegetation located on the north-eastern edge of the Gardens are located outside the legal extent of the VHR registration and fall within VicTrack land; however, are these elements considered to be of heritage value. There may be some potential impacts to this location during construction, however it is anticipated that this area can be remediated at the conclusion of projects works. The impact of the works could therefore be mitigated over time and there would be minimal long-term impact on heritage values.All works within the VHR registration will require approval under the *Heritage Act 2017.* **Attachment 12** (MAR Historical Heritage Impact Assessment) outlines the recommended mitigation measures to protect the heritage place, including reinstatement landscaping works.* VHR H0829 John Darling and Son Flour Mill

Outside the VHR registration extent, immediately to the east of the John Darling and Son Flour Mill, works are proposed within the rail reserve including track and civil works and a new 2km long elevated viaduct.No direct physical impacts are anticipated on the VHR site and no works are proposed within the extent of registration (land associated with the place). The key heritage impact to the John Darling and Son Flour Mill is the potential change to the broader setting of the heritage place and aspects of its presentation, particularly views towards the heritage place from commercial land directly to the east of the rail reserve, as well as distant views from residential land further east.Any works that fall within the VHR registration will require approval under the *Heritage Act 2017.***Attachment 12** (MAR Historical Heritage Impact Assessment) outlines the recommended mitigation measures to protect the heritage place, including design recommendations to ensure that the proposed viaduct integrates with the adjacent heritage place, including: * VHR H1966 HV McKay Offices
* VHR H0667 Massey Ferguson Complex
* VHR H1563 Footscray Railway Station Complex
* Former Tottenham Station (H7822-0842)

Although the Project Land intersects with the VHR / VHI registration of the above four heritage places, no works are proposed at these locations. |
|  |
| **Is mitigation of potential cultural heritage effects proposed?** NYD No **r** Yes If yes, please briefly describe.Potential impacts to heritage will be managed through a CEMP, informed by EMRs and EMF.Requirements during construction may include, but not be limited to:* Compliance with any applicable CHMPs approved under the *Aboriginal Heritage Act 2006* and prepared in accordance with the Aboriginal Heritage Regulations 2018.
* Cultural heritage protection zones designated in a CHMP or a permit granted under the *Aboriginal Heritage Act 2006,* must be clearly delineated from construction activity by a highly visible, fence/barrier with signage.
* Obtaining VHI Consents to Damage under Section 124 of the *Heritage Act 2017* prior to any site establishment or construction works that may directly or indirectly affect a site listed under the VHI.
* Protective barrier fencing must be erected around all VHI and VHR sites within or intersecting the Project Land prior to any site establishment or construction works
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| **Other information/comments?** (eg. accuracy of information) |
| N/A |

# **Energy, wastes & greenhouse gas emissions**

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| **What are the main sources of energy that the project facility would consume/generate?** |
| **r** 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. |
| Electricity use from trains and station operations during operation will be attributed to the operation of the broader rail network rather than the Project.  It is estimated that the annual electricity consumed will be 53,446 MWh/ year - the majority from the traction power to supply of the electrified rail network.  Minimal energy usage will be associated with the construction of the Project, including the use of vehicles, plant and equipment, such as generators.Refer to the MAR Greenhouse Gas Emission Impact Assessment (**Attachment 16**) |
| **What are the main forms of waste that would be generated by the project facility?** |
|  Wastewater. Describe briefly. |
|  Solid chemical wastes. Describe briefly. |
| **r** Excavated material. Describe briefly. |
|  Other. Describe briefly. |
| Please provide relevant further information, including proposed management of wastes. |
| Bulk excavations and limited options for direct reuse in a constrained rail corridor will likely result in excess excavated material (spoil) being generated on the project. Investigations to date show that there is potential for low level contamination in areas along the alignment, however a majority of material will be suitable for reuse. The project will seek to manage excavated materials in accordance with EPA Victoria’s waste hierarchy, prioritising avoidance of generating wastes, before investigating reuse and treatment options and limit disposal to landfill. Measures for spoil management, including reuse and treatment opportunities will be identified with the CEMP and/or relevant sub-plan.Other waste will be generated during the construction of the Project, that are typically expected with any similar project of this nature (general waste, packaging waste, timber, metal, concrete, etc). However, the CEMP will address the management of these wastes in accordance with EPA Victoria’s Hierarchy to minimise disposal to landfill.  |
| **What level of greenhouse gas emissions is expected to result directly from operation of the project facility?** Less than 50,000 tonnes of CO2 equivalent per annum**🗙** Between 50,000 and 100,000 tonnes of CO2 equivalent per annum Between 100,000 and 200,000 tonnes of CO2 equivalent per annum More than 200,000 tonnes of CO2 equivalent per annum |
| Please add any relevant additional information, including any identified mitigation options.Total annual operational GHG emissions are conservatively estimated to be 52,378 tCO2-e p.a. |
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# **Other environmental issues**

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| **Are there any other environmental issues arising from the proposed project?****r** No Yes If yes, briefly describe. |
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| No other material environmental issues have been identified that are relevant to this referral.  |

# **Environmental management**

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| **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**🗙** Design: Please describe briefly**🗙** Environmental management: Please describe briefly**🗙** Other: Please describe brieflySiting |
| The proposed siting of the Project design is mostly located within the existing rail corridor which is already disturbed and appropriately zoned. This presents significant advantages such as:* Limiting ecological impacts to native vegetation historically disturbed by the rail use.
* Minimising Aboriginal cultural heritage impacts by utilising an area disturbed by the rail use.
* Avoiding and minimising residential and commercial land acquisition by utilising the existing VicTrack corridor and land in the existing reservation under the PAO.
* Supporting the orderly use and development of land by utilising land that is already used for the purpose of a railway.

For construction areas that are not in the existing rail corridor, alternative project alignments were considered (including environmental impacts) during the planning and design phases.  |
|  |
| **Design**The project alignment proposes to largely utilise existing rail corridors, noting that these corridors are highly constrained through the Sunshine and Albion precincts and along the Albion-Jacana rail corridor. This is due to the existing rail network which includes a number of regional and metro lines and a number of utilities including the Exxon Mobil jet fuel pipeline which is located within the rail reserve. While managing these constraints, the Project has sought to minimise impacts to native vegetation, ecological values, heritage places and property and community values as far as practicable. Potential design solutions have gone through an optioneering process to select the appropriate design solution, having regard to key planning and environmental matters. This process was undertaken for the MAR track alignment and specific site-based design options, including the following: * Track alignment and design response for the Sunshine precinct section of the Project.
* Track alignment and design response between Steele Creek and Airport Drive, Tullamarine.
* Substation locations for the Project.
* Construction access within the Maribyrnong River Valley.
* Design response of the proposed Maribyrnong River Rail Bridge.
* Alignment of the Steele Creek Valley Shared User Path (SUP).

No-Go Zones for ecological and heritage values have been identified by the planning and environmental specialists. Project Engineers confirmed through the design process that activities planned for sites with known ecological constraints identified had been configured to avoid No-Go areas. For these sites, further mitigation measures will be implemented in Project EMRs to avoid impacts to ecological values.Refer to **Attachment 10** for further detail on the location of the No-Go Zones (MAR State Land Terrestrial Ecology Impact Assessment). |
| **Environmental Management** Environmental management will be an integral part of the detailed design, construction and operation of the Project; and a robust approach to managing environmental impacts and EMF development for implemented mitigation measures in the detailed design and delivery phases. Environment, heritage, amenity and human health impacts are a key consideration for the planning and delivery of the Project. Impacts identified through the impact assessments are mitigated through a variety of project obligations and contractual conditions and through the development of the EMF. The EMF will provide a transparent and integrated governance framework to manage the environmental aspects of the Project identified through, the impact assessments and any approval obligations for the Project. The purpose of the EMF is to ensure that works are planned and performed so that the adverse effects on the environment are either avoided or minimised and are carried out in accordance with the approved EMRs (a suite of performance-based outcomes that apply to the design and construction of the Project, that must be implemented by the delivery partners). The EMF will include: * A set of EMRs that must be achieved during the design and construction of the main works to reduce environmental and amenity effects;
* A statement of all environmental commitments for the Project;
* The process and timing for the preparation of a Construction Environment Management Plan (CEMP) and any additional management plans/ processes that may be required to be developed for the project;
* Performance monitoring and reporting processes, including auditing to ensure environmental and amenity

The EMRs will set standards to be met to achieve and mitigate environmental impacts to an acceptable level and are developed to mitigate potential impacts. The EMRs will require delivery partners to prepare and implement documentation including a Construction Environmental Management Plan (CEMP), Site Environmental Implementation Plans (SEIPs) and other management plans that address specific environmental aspects. These documents will govern the management of contractor activities to meet all environmental requirements including environmental legislation, approvals, approval conditions and the requirements of this EMF and EMRs.The CEMP will outline an audit program, including details of frequency, methods, responsibilities, planning requirements and reporting, with reference made to any Independent Environmental Auditor (IEA) requirements. When establishing the audit schedule and scope, the environmental risk and the results of previous audits and the key audit outcomes will be considered. Non-conformances identified in the audits will be recorded in a management system, where the recording of actions to close-out items will be maintained. The records will be included in the reports to the Project Owner by the delivery partner. |
| Other |
| An IEA will be appointed by the Project that will be responsible for auditing compliance with the EMF, and any approved plans required under the EMRs for relevant works. This will likely involve both site inspections and office based site reviews of documentation and processes.  |

# **Other activities**

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| **Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?** NYD No **r** Yes If yes, briefly describe.The planning of the Project has taken into account other Victorian transport priorities and network planning. There projects are subject to standalone approvals under the relevant legislation, including the P&E Act. The majority of projects being delivered under Victoria’s Big Build program will have similar EMFs to mitigate impacts.Projects with key interfaces to the Project for this referral are: * MAR (Commonwealth Land) - The Project includes a separate package of works on Commonwealth Land to accommodate the dedicated tracks along Airport Drive to the new premium station at Melbourne Airport. All Commonwealth land required to deliver the overall Project is excluded from this referral, including the new railway station at Melbourne Airport, which is subject to a separate approvals process under the Commonwealth *Airports Act 1996*.
* Metro Tunnel Project - The project is delivering a 9-kilometre twin tunnel, five underground stations, high capacity signalling and related rail infrastructure on the Sunshine to Dandenong corridor including infrastructure on the wider Metropolitan Rail Network. MAR connects to the CBD via the Sunbury tracks and Metro Tunnel and therefore is dependent on the full delivery and operation of the Metro Tunnel. This Project is currently in delivery and subject to a separate approval.
* High Capacity Metro Trains (HCMT) - The project is delivering HCMT-7s to operate initially on the Dandenong, Cranbourne and Pakenham services via the Caulfield Loop and upon the opening of the Metro Tunnel, Sunbury services will be included. MAR connects to the CBD via the Sunbury tracks and Metro Tunnel and will also use HCMT-7s. This Project is currently in delivery and subject to a separate approval.
* Sunbury Line Upgrade - The project includes a range of enhancements on the Sunbury Line to take full advance of the extra capacity created by the Metro Tunnel. This Project is currently in delivery and subject to a separate approval.
* Western Rail Plan - the project sets out priority rail infrastructure projects for Melbourne’s west, with the intention of providing a fast, high-capacity rail network to service growing suburbs and regional cities. Under the Western Rail Plan, there are a number of key future rail investments that are currently under planning and investigation.
* Suburban Rail Loop - the project will provide a 90km orbital rail loop that would connect every major metropolitan train line from Cheltenham to Werribee and link priority growth precincts. The north-east and south-west sections of Suburban Rail Loop between Broadmeadows and Werribee are connected by the Project. This project is currently under planning and investigation.

**Major Road Projects**Western Ring Road Upgrade - The project will widen the freeway, including the on and off ramps and install a new freeway management system along 38km of road from Laverton North to Greensborough. The sections of the Western Ring Road Upgrade that intersect with the Project are complete (between the intersection of the Sunbury rail corridor and the Western Ring Road and the intersection of Sharps Road, Tullamarine and Western Ring Road). Each of the above projects will be subject to its own respective planning and environmental approvals process. Through these processes, impacts and recommended mitigation measures will be established and formally managed through a project specific EMF.  |

# **Investigation program**

**Study program**

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| **Have any environmental studies not referred to above been conducted for the project?****r** No Yes If yes, please list here and attach if relevant. |
| Additional assessments related to the environment have been undertaken to inform Project design including geotechnical factual interpretive reports and interference assessments. However, it is considered that these assessments are not relevant to this referral.  |
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| **Has a program for future environmental studies been developed?****r** No Yes If yes, briefly describe.It is anticipated that further environmental investigations may be required in the detailed design phase. The Project Scope and Technical Requirements (contractual arrangement between the Project Owner and the delivery partner) and the EMF (including the EMRs) prepared for the Project will outline any requirements for additional environmental investigations and/ or studies that will be required to support the detailed design phase. Several environmental assessments are ongoing as part of the planning and design phase, including contaminated land investigations to further inform requirements for the detailed design and delivery phases.  |

**Consultation program**

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| **Has a consultation program conducted to date for the project?** No **r** Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted. |
| RPV acknowledges that effective engagement is critical throughout planning and development of the Project to keep community members and stakeholders informed and involved. |
| RPV recognises that Project progress and decisions can be enhanced through dialogue with communities, interested parties and stakeholders and has developed a program of engagement with regulatory stakeholders, local councils, Registered Aboriginal Parties, key institutions, community groups and local residents that has been underway since 2018. The purpose of engagement was to build public awareness and understanding of the main works scope, the timeframe for the Project and to gather feedback about potential issues, opportunities, benefits and impacts related to the Project. Reflecting RPV’s commitment to ongoing engagement, the following core principles were reflected in the approach to consultation:* Open engagement: engage in a way that is open and transparent throughout planning and delivery of projects
* Timely communication: communicate regularly, giving people time to digest information, understand the project and ask questions
* Meaningful engagement: clearly define elements of the projects that can be influenced by the community and stakeholders, and how the feedback will be used
* No surprises: engage early to gain understanding of interests, concerns, requirements and preferred outcomes and close the loop by showing how feedback has been considered
* Be inclusive: seek to identify and involve a broad range of stakeholders, take into account the needs of diverse communities and remove barriers for participation

A range of communication channels have been established to provide information to the community and enable contact with the Project Owner, including:* Victoria’s Big Build website
* Melbourne Airport Rail website
* Social media channels
* E-newsletters
* Letterbox drops and newsletters
* Animations
* Stakeholder briefings (Online and in person)
* Virtual information sessions
* Online surveys
* Face to face meetings
* Pop up sessions.

A program of engagement with stakeholders, local communities and train users commenced in 2018. RPV engaged in an ongoing program with a range of stakeholders about the Project including: * Brimbank City Council
* Maribyrnong City Council
* Hobson Bay City Council
* Melbourne City Council
* First People – State Relations (formally Aboriginal Victoria)
* BLCAC
* Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation
* Department of Environment, Land, Water and Planning
* Department of Transport (formerly Department of Economic Development, Jobs, Transport and Resources)
* Department of Agriculture, Water and the Environment
* Environment Protection Authority
* Heritage Victoria
* Melbourne Water
* Greater Western Water
* Utility providers
* VicRoads
* VicTrack
* ARTC
* MTM
* V/Line.

**Registered Aboriginal Parities***CHMP No. 16615* Wurundjeri are the formal RAP for CHMP No. 16615.Field assessment for this CHMP has commenced and Wurundjeri have been involved in consultation activities and providing field representatives.*CHMP No. 17301* Wurundjeri and BLCAC are the formal RAPs for CHMP No. 16615.It is noted that the Notice of Intent for this CHMP was submitted prior to the RAP boundary amendment decision on the 1 July 2021 and therefore will be submitted to First Peoples-State Relations for approval.All Aboriginal groups who have connection to the land within the First People – State Relations CHMP activity area (above) are invited to participate in project meetings, field assessments and the establishment of management conditions. This allows an open and transparent process regarding the proposed management of cultural heritage values in the Corridor Section Project Land. Field assessment for this CHMP has commenced. Wurundjeri and BLCAC have been involved in consultation activities and providing field representatives for CHMP No. 17301.**Directly affected landowners and occupiers**As part of the Project planning phase, directly affected landowners and occupiers have been identified and about potential impacts to their land. Landowners and occupiers provided with a dedicated RPV contact to discuss the requirement for their land and the acquisition process. Feedback from this engagement process will be captured and addressed in planning documentation, and engagement will continue with landowners throughout the planning, design and delivery of the Project. |
| **Has a program for future consultation been developed?** **NYD No r Yes** If yes, briefly describe. |
| **Planned community consultation**In line with MAR milestones, additional phases of community consultation have been planned.These consultation phases will be related scope being delivered as part of MAR, as well as potential construction and operational impacts of the Project.Feedback reports for planned community engagement will be publicly available upon completion of the related consultation.Further to this, the appointed delivery partner(s) will be required to develop and implement a Community and Stakeholder Engagement Plan that includes:* 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
* Engagement to inform the detailed design process.
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**Authorised person for proponent:**

I, Peter Wilkinson (full name),

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

**Signature \_\_\_\_\_****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 Date 28/09/2021

**Person who prepared this referral:**

I, Karoline Ware (full name),

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

**Signature \_**  **\_\_\_\_\_**

 Date 28/9/202

1. Calculations are rounded to the whole number [↑](#footnote-ref-2)
2. [↑](#footnote-ref-3)