

# 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

**Minister for Planning**

**PO Box 500**

**EAST MELBOURNE VIC 8002**

Couriers

**Minister for Planning**

**Level 16, 8 Nicholson Street**

**EAST MELBOURNE VIC 3002**

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

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## PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

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

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<b>Organisation:</b>	Western Water
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<b>Facsimile number:</b>	N/A
<b>Available industry &amp; environmental expertise:</b> (areas of 'in-house' expertise & consultancy firms engaged for project)	<p>This referral has been prepared by Western Water, one of Victoria's thirteen regional urban water corporations established under the <i>Water Act 1989</i>. Western Water provides water, recycled water and sewerage services to 77,487 properties over an area of 3,000 square kilometres and a population of 183,715.</p> <p>Western Water has extensive experience in the development of recycled water schemes and currently operates seven recycled water plants, each treating wastewater and producing recycled water to a Class A, Class B or Class C standard. Recycled water produced from wastewater treated by Western Water is beneficially reused locally for open space irrigation and approved agricultural uses.</p> <p>By working collaboratively with regulators, stakeholders and the community, Western Water has a track record of achieving the best possible environmental outcomes from its water infrastructure projects. Western Water's planning, environmental management and delivery methods have continued to be refined over the years to minimise the environmental impacts of its projects.</p> <p>Western Water has been supported in design and assessment of the Western Irrigation Network (WIN) Scheme – Recycled Water Supply Infrastructure by several consultants, including:</p> <ul style="list-style-type: none"> <li>• <i>CH2M Beca</i> (<a href="https://www.beca.com/about-us/key-partners/ch2m-beca">https://www.beca.com/about-us/key-partners/ch2m-beca</a>), a water &amp; wastewater project alliance</li> </ul>

	<p>drawing on the multi-disciplinary consultancy skills of Beca, together with the engineering, construction and operational experience of Jacobs (formerly CH2M Hill).</p> <ul style="list-style-type: none"> <li>• <i>Ecology and Heritage Partners</i> (EHP) (<a href="http://www.ehpartners.com.au">www.ehpartners.com.au</a>), a consultancy specialising in the assessment, research and management of ecological and cultural heritage.</li> <li>• <i>Pinion Advisory</i> (<a href="http://www.pinionadvisory.com">www.pinionadvisory.com</a>), an agriculture, water and environmental consultancy, services to farm business, agribusiness, industry and government established through the merger of South Australian company Rural Directions, Tasmanian company Macquarie Franklin and Victorian company Sunraysia Environmental.</li> <li>• <i>Tree Wishes</i> (<a href="http://www.treewishes.com.au">www.treewishes.com.au</a>), a landscape management consultancy providing specialist advice, planning and supervision on landscape and nature management.</li> </ul> <p>On 1 July 2021 Western Water and City West Water will integrate to form a new water corporation, Greater Western Water. This referral has been prepared based on relevant regulations and information available to Western Water as at 26 May 2021.</p>
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## 2. Project – brief outline

<p><b>Project title:</b></p> <p>Western Irrigation Network (WIN) Scheme – Recycled Water Supply Infrastructure</p>
<p><b>Project location:</b> (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context)</p> <p>This referral addresses six projects contributing to establishment of the Western Irrigation Network (WIN) Scheme:</p> <ul style="list-style-type: none"> <li>• Melton Recycled Water Plant (RWP) to Bacchus Marsh RWP (M2BM) Interconnector Pipeline</li> <li>• Bacchus Marsh RWP Pump Station</li> <li>• Parwan-Balliang Irrigation District (PBID) Supply Network (pipeline, pump station and balance tank)</li> <li>• PBID Foundation Recycled Water Irrigation Areas</li> <li>• Parwan Recycled Water Storage</li> <li>• Sunbury RWP to Melton RWP (S2M) Interconnector Pipeline.</li> </ul> <p>The six projects are located approximately 35-50 km west of the Melbourne central business district (CBD) in the southern part of Western Water’s service region (see Figure 1). The projects involve infrastructure to connect the Melton, Bacchus Marsh and Sunbury RWPs, and to distribute recycled water for irrigation in the Parwan-Balliang area located south of the Bacchus Marsh RWP. The projects are located in semi-rural to rural areas of the volcanic plains, mostly on the existing RWP sites, and within or adjacent to existing infrastructure corridors (e.g. gas pipelines), with recycled water irrigation areas being located on existing farmland (mostly cropped paddocks).</p>

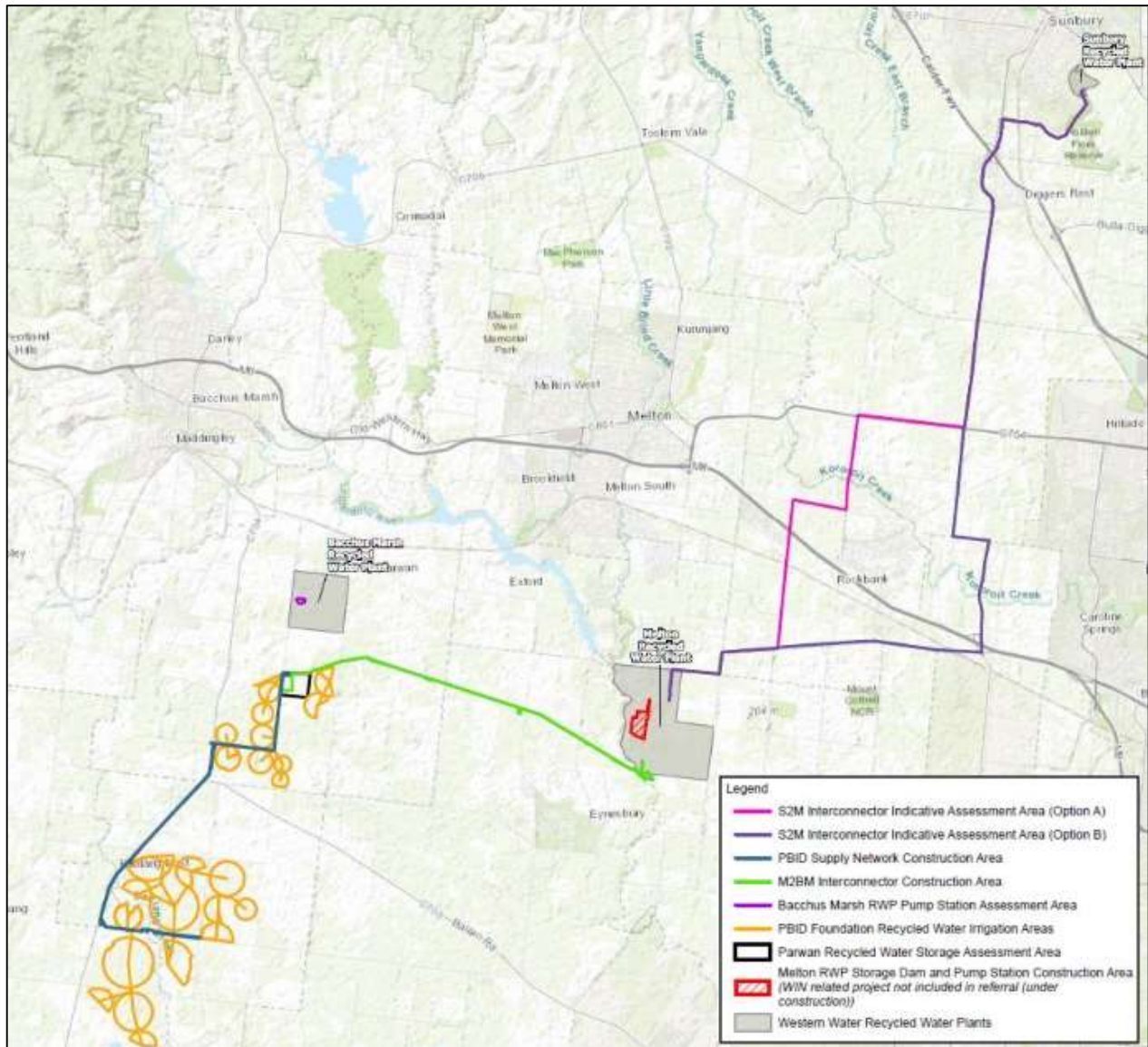


Figure 1. WIN Scheme projects location map

Project infrastructure is primarily located within the City of Melton and Shire of Moorabool local government areas (LGAs). A minor component of the proposed PBID Supply Network pipeline and PBID Foundation Recycled Water Irrigation Area are located in the City of Greater Geelong LGA. The northern end of the S2M Interconnector Pipeline and associated new pump station at Sunbury RWP are located in the City of Hume LGA. The project is located entirely within the Victorian Volcanic Plain bioregion and the Port Phillip and Westernport Catchment Management Authority (CMA) region.

### Melton to Bacchus Marsh (M2BM) Interconnector Pipeline

This project involves the construction of a new subsurface bi-directional pipeline connecting the Melton and Bacchus Marsh RWPs (see Figure 1). The M2BM Interconnector Pipeline would commence at an existing pipe connection at the intersection of Parwan South Road and Nerowie Road, approximately 8 km south east of Bacchus Marsh. Construction of the pipeline would then continue east within the Nerowie Road reserve for approximately 2.6 km before diverting south east through private land for approximately 8.7 km, crossing both Green Hill Road and Eynesbury Road before coming to the Werribee River. The pipeline is then proposed to cross beneath the Werribee River before terminating approximately 600 m to the north east. This project has been subject to detailed design (Attachment 1) and therefore the construction footprint (Attachment 2) is well understood and has been assessed in this referral.

### **Bacchus Marsh RWP Pump Station**

This project involves a new pump station to be constructed on the edge of an existing recycled water storage dam at the existing Bacchus Marsh RWP, located along Parwan South Road, approximately 6 km south east of central Bacchus Marsh (see Figure 1). This project would be constructed on Western Water owned land within the Public Use Zone – Service and Utility (PUZ1). Design work for the Bacchus Marsh RWP Pump Station is currently underway and therefore an indicative assessment area (Attachment 3) has been considered in this referral, based on the latest design information available.

### **Parwan-Balliang Irrigation District (PBID) Supply Network**

This project involves a new pump station and balance tank to be constructed on a site comprising 0.7 ha of cropping/grazing land at the south east corner of Nerowie Road and Parwan South Road, Parwan, approximately 2 km south of the Bacchus Marsh RWP (see Figure 1). Western Water is in the process of seeking to acquire this land through agreement with the current landowner. The proposed site adjoins a small area of land containing an existing Western Water potable water supply tank. This project also involves a new pipeline, extending from the new pump station and balance tank site south along Parwan South Road, west along Schultz Road, south along Geelong-Bacchus Marsh Road including a crossing of Balliang Creek, and east along Ripley Road (paper road) through to Agars Road including a second crossing of Balliang Creek. This project has been subject to detailed design (Attachment 4) and therefore the construction footprint (Attachment 5) is well understood and has been assessed in this referral.

### **PBID Foundation Recycled Water Irrigation Areas**

The PBID Supply Network is designed to supply recycled water to three foundation farming customers in the Parwan-Balliang area east of Geelong-Bacchus Marsh Road. On-farm planning and land capability assessments undertaken by the individual customers have determined that these three foundation customers have sufficient, suitable land to support a total recycled water irrigation area of 1,189 hectares using pivot irrigators (see Figure 1). The foundation customer recycled water irrigation areas are:

- Foundation Customer 1 - 302 hectares (including 58 hectares of existing recycled water irrigation area) – located along Parwan South Road and Schultz Road, Parwan, mostly west and south west of the proposed pump station and balance tank with a small area east of the proposed Parwan Recycled Water Storage, generally bounded by Nerowie Road to the north, Geelong-Bacchus Marsh Road to the west, Springhill Road to the south and Bucklers Road to the east.
- Foundation Customer 2 - 490 hectares – located east and west of Agars Road, Balliang East to the south east of Balliang East Primary School, bounded by School Road to the north, Ripley Road to the south, Geelong-Bacchus Marsh Road to the west and the proposed Western Grasslands Reserve to the east.
- Foundation Customer 3 - 397 hectares – located north and south of Sharkey Road, Balliang with the northern portion bounded by Foundation Customer 2 to the north, Geelong-Bacchus Marsh Road to the west and Agars Road to the east, with the southern portion generally bounded by Geelong-Bacchus Marsh Road to the west, Balliang Creek to the east, and Mt Rothwell Road to the south.

The location of proposed infrastructure required for the Stage 1 (Years 1-10) recycled water irrigation areas (Attachment 6) has been subject to detailed on-farm plan development. Stage 2 (Year 10+) recycled water irrigation areas (Attachment 6) have also been subject to detailed planning but given the long lead time for implementation of Stage 2, further refinements may occur if farming operational needs or recycled water availability change. Indicative construction footprints have been assumed for centre pivot irrigator foundations and irrigation pipeline corridor widths, with final construction footprints dependent on construction methods employed by the foundation customers. Properties containing foundation recycled water irrigation areas are shown in Attachment 7.

### **Parwan Recycled Water Storage**

This project involves construction of an earthen storage dam within a natural depression. The site is currently used for cropping/grazing and is adjoining land to the south and east of the proposed PBID Supply Network pump station and balance tank (see Figure 1). Western Water is in the process of seeking to acquire or lease this land through agreement with the current landowner. A functional design has been prepared (Attachment 8). Refinement of the design and construction footprint may occur during detailed design and therefore an indicative assessment area (Attachment 9) has been considered in this referral.

### **Sunbury RWP to Melton RWP (S2M) Interconnector Pipeline**

The S2M Interconnector Pipeline (including a new pump station at the Sunbury RWP) would convey recycled water from the Sunbury RWP approximately 30 km south west to the Melton RWP (see Figure 1). The S2M Interconnector Pipeline would allow the transfer of additional recycled water to the proposed Parwan-Balliang Irrigation District via the Melton RWP and M2BM Interconnector Pipeline, should future irrigation demand in the Parwan-Balliang Irrigation District exceed the capacity for irrigation of the foundation properties.

The S2M Interconnector Pipeline comprises a future project under the WIN Scheme and is yet to be planned in any detail. Two alignment options are currently being investigated to address priority demands for recycled water supply. These two options share a consistent alignment from the Sunbury RWP to the Plumpton Road / Melton Highway intersection. Option A then turns west to follow the Melton Highway, south along Leakes Road, west along Beattys Road and then south along Paynes Road through to the intersection with Greigs Road. Option B continues south along Plumpton Road, then turns east along Taylors Road, south through Deanside via non-road reserve, before turning west just south of the Western Freeway to connect with Greigs Road, which it follows through to the intersection with Paynes Road. From the Paynes Road / Greigs Rod intersection, the Option A and Option B alignments again share a consistent alignment generally west along Greigs Road, south along Mount Cottrell Road and west along Greigs Road West before turning south into the Melton RWP site.

The final investment decision for the S2M Interconnector Pipeline is dependent on this approach continuing to be the favoured strategic response to manage projected long-term increases in recycled water produced at Sunbury RWP, additional irrigation demand commitments in the PBID materialising and final tender pricing. In this regard, the DELWP Integrated Water Management - Werribee Forum is currently investigating opportunities to supply other irrigation demands such as the Melton urban growth areas and Werribee Irrigation District via a pipeline from the Sunbury RWP to Melton RWP. The S2M Interconnector Pipeline project is currently progressing through an options assessment and functional design process, and no pipeline route has yet been determined. For the purpose of this referral, 12 m wide corridors along the two current alignment options have been utilised as indicative assessment areas (Attachment 10). The 12 m corridor width has been based on a conservative assessment of the anticipated construction corridor, as determined through preliminary engagement with construction contractors. No allowance has been made for construction laydown areas as this stage of the assessment, however given the length of the pipeline (~30km), it is anticipated suitable locations will be available outside areas of native vegetation and Aboriginal cultural heritage significance.

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

The projects involve construction and operation of:

- **Melton RWP to Bacchus Marsh RWP (M2BM) Interconnector Pipeline** – An approximately 13.5 km bi-directional subsurface recycled water pipeline (600 mm diameter) designed to provide Western Water with the ability to transfer water from the Bacchus Marsh RWP to Melton RWP (and vice-versa). While the M2BM Interconnector Pipeline would support other WIN projects, it has its own standalone purpose to enable Western Water to balance increasing recycled water volumes between plants. This project would proceed irrespective of the wider WIN Scheme.



- **Bacchus Marsh RWP Pump Station** – A new pump station at the Bacchus Marsh RWP designed to transfer recycled water between the Bacchus Marsh and Melton RWP, as well as increase pumping capacity to deliver recycled water to the Parwan-Balliang Irrigation District Supply Network via an existing pipeline along Parwan South Road.
- **Parwan Balliang Irrigation District (PBID) Supply Network** – A 14 km subsurface pipeline (typically 675 mm diameter) with offtakes to on-farm irrigation infrastructure, and an associated pump station and 2 ML balance tank designed to connect to the M2BM Interconnector Pipeline and to distribute recycled water to the WIN Scheme’s foundation recycled water irrigation areas.
- **PBID Foundation Recycled Water Irrigation Areas** – On-farm infrastructure and works, including irrigation pipelines and centre pivot irrigators, to distribute recycled water from property offtakes along the PBID Supply Network pipeline for irrigation of mostly existing broadacre cropping land.
- **Parwan Recycled Water Storage** – A 1 GL earthen recycled water storage dam to support demand projections for recycled water from PBID customers, located adjacent to the PBID Supply Network balance tank and pump station.
- **Sunbury RWP to Melton RWP (S2M) Interconnector Pipeline** – An approximately 30 km subsurface recycled water pipeline and associated pump station connecting the Sunbury RWP and Melton RWP enabling the transfer of recycled water from the Sunbury RWP to the proposed Parwan-Balliang Irrigation District via the Melton RWP and M2BM Interconnector Pipeline.

The first three projects, and the Stage 1 PBID Foundation Recycled Water Irrigation Areas, are needed by July 2022, to enable recycled water generated by the Melton and Bacchus Marsh RWPs to be delivered to broadacre (e.g. wheat, barley, canola) farming customers during the September 2022 to April 2023 irrigation season and to maintain EPA compliance at these RWPs. The balance tank constructed as part of the PBID Supply Network provides sufficient balancing storage for the first 2-3 years of foundation recycled water irrigation. The Parwan Recycled Water Storage is required to provide additional balancing storage for the increased volumes of recycled water generated by the Melton and Bacchus Marsh RWPs being discharged for irrigation in the Stage 1 PBID Foundation Recycled Water Irrigation Areas by about 2025. The Stage 2 PBID Foundation Recycled Water Irrigation Areas would be required to discharge the increased volumes of recycled water generated by the Melton and Bacchus Marsh RWPs in about 2032. The need for and timing of the S2M Interconnector Pipeline is dependent on this approach continuing to be the favoured strategic response to manage projected long-term increases in recycled water produced at Sunbury RWP.

### 3. Project description

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

The primary aim of the WIN Scheme, including the projects described in this referral, is to enhance Western Water’s ability to manage the storage and reuse / discharge of increasing volumes of recycled water produced at its Melton RWP and Bacchus Marsh RWP so as to maintain compliance with their current Environment Protection Authority (EPA Victoria) licence under Section 20 of the *Environment Protection Act 1970*.

The projects described in this referral would contribute to achieving these aims by:

- Addressing short term recycled water storage capacity and discharge constraints at Bacchus Marsh RWP by providing a pipeline connection from Bacchus Marsh RWP to Melton RWP to access additional storage capacity (currently under construction) and a temporary licence to discharge to waterways held by Melton RWP.

- Addressing longer term recycled water storage and discharge constraints at the Melton and Bacchus Marsh RWPs by connecting these RWPs to supply recycled water to a new irrigation district in the Parwan-Balliang area (the proposed Parwan- Balliang Irrigation District).
- Address longer term recycled water storage and discharge constraints at Sunbury RWP by connecting this RWP to supply recycled water to a new irrigation district in the Parwan-Balliang area (the proposed Parwan-Balliang Irrigation District).

Further information on compliance requirements and project drivers is provided in the 'Background / rationale of project' section of this referral.

While primarily driven by compliance requirements, as part of the WIN Scheme, these projects would deliver several additional social, economic and environmental benefits, including:

- Contributing to reduced discharges to waterways (e.g. Werribee River and Jacksons Creek) by facilitating an alternative pathway for reuse of recycled water, thereby maintaining downstream beneficial uses such as agricultural water use in the Werribee Irrigation District and water dependent ecosystems and species
- Contributing to unlocking existing dryland cropping/grazing land for higher value irrigated agricultural production by delivering a secure and reliable water supply, which contributes to increased net margins and employment growth both on farm and in supporting industries
- Increasing resilience of local agricultural production to the effects of climate change by delivering a reliable, non-climate-dependent water supply.

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

Western Water provides water, recycled water and sewerage services to a region incorporating Sunbury, Melton, Bacchus Marsh, the Macedon Ranges and surrounds. Rapid population growth across Western Water's service region is increasing the volumes of wastewater being received by Western Water for treatment. The Western Water Corporate Plan 2019/2020 forecasts that over the next decade, the average growth rate of new property connections in its service region will be 6.1% per annum. Approximately 85% of the increased wastewater volume is forecast to be treated at three RWPs (Bacchus Marsh, Melton and Sunbury). Melton RWP is Western Water's largest RWP, while Sunbury RWP is the second largest and Bacchus Marsh RWP the third largest. All are experiencing rapid growth in annual production of recycled water due to development of urban growth areas within their catchments.

Western Water currently produces recycled water by treating urban wastewater to standards set by EPA Victoria. The Melton, Bacchus Marsh and Sunbury RWPs operate under a Section 20 licence under the *Environment Protection Act 1970*, which impose substantial compliance obligations on Western Water in relation to operation of these plants.

A key compliance requirement for the Melton RWP is to provide sufficient on-site recycled water storage capacity and reuse options to manage recycled water volumes up to a 90<sup>th</sup> percentile wet year without discharging to waterways. The Melton RWP currently supplies Class A recycled water to residential growth areas in Melton for non-drinking purposes, and Class B and C recycled water for commercial and agricultural operations such as irrigation of crops on Western Water owned land. Due to unexpected high levels of growth in the Melton area, in 2017 the Melton RWP was granted a temporary licence by EPA Victoria to discharge up to 1,100 ML/day to the Werribee River (subject to a range of conditions on pollutant levels and mixing zones) to temporarily manage excess recycled water volumes in below 90<sup>th</sup> percentile rainfall years. This temporary discharge licence is due to expire in July 2022 and was also subject to a condition that Western Water develops a storage and reuse option for the excess recycled water beyond July 2022. The existing capacity for recycled water users and licensed discharge restrictions mean that Western Water will not be able to meet the demand/increases in recycled water volumes

forecast over the next 40 years, unless additional recycled water uses/users are identified and additional storage capacity is provided.<sup>1</sup>

It is also a key compliance requirement for the Bacchus Marsh RWP to provide sufficient on-site recycled water storage capacity and reuse options to manage recycled water volumes up to a 90<sup>th</sup> percentile wet year. However, as the Bacchus Marsh RWP has no provision (i.e. infrastructure/access) to discharge to waterways even in above 90<sup>th</sup> percentile rainfall years, this RWP currently must have sufficient storage and reuse capacity to manage all recycled water it produces. Class C recycled water produced by the Bacchus Marsh RWP is currently reused for irrigation of land owned or leased by Western Water.

The Sunbury RWP differs to Melton and Bacchus Marsh RWPs in that it is licensed to discharge up to 1,898 ML/year of recycled water to Jacksons Creek, which is a tributary of the Maribyrnong River. This licensed discharge is subject to a range of conditions including limits on the concentration of pollutants (nitrogen, phosphorous and pathogens) in the recycled water; and limits on the extent of the mixing zone (i.e. an area of waterbody where the receiving water environment is detrimentally affected by a waste discharge). Water quality in Jacksons Creek is poor and the waterway therefore has limited ability to naturally absorb further pollutants, which poses an ongoing risk to Western Water's capacity to discharge to this waterway.

Water balance modelling has determined that, by June 2022, without substantial action, both the Melton and Bacchus Marsh RWPs will no longer comply with the requirement to store and reuse recycled water up to the 90<sup>th</sup> percentile wet year, while the Sunbury RWP is projected to exceed its discharge licence limits and become non-compliant by 2026. There has been substantial ongoing communication with the EPA Victoria with regards to the actions required for Western Water to meet its compliance requirements for these RWPs, and the EPA has also put in place legal compliance obligations for Western Water to meet its commitments within a specified timeframe.

In April 2018, Western Water completed a 12-month feasibility study into recycled water reuse options to address future EPA compliance through interconnections to develop an integrated recycled water supply network connecting to new recycled water irrigation customers known as the Western Irrigation Network (WIN) Scheme. The WIN Scheme aims to ensure Western Water can continue to meet environmental compliance obligations for forecast recycled water volumes through to 2050, through staged implementation.

As part of the feasibility study, Western Water sought expressions of interest from agricultural landowners in the Parwan-Balliang area potentially seeking access to Class C recycled water. This area has low rainfall reliability, which impacts on the productive potential of the high-quality soils in the area. The supply of recycled water to dryland farming properties in the Parwan-Balliang area was determined the most feasible option to maintain compliance with EPA licence conditions while accommodating projected population growth. This assessment was based on the scheme representing the lowest price increase for Western Water's urban and rural customers, while also delivering the additional social, economic and environmental benefits described in the preceding section.

The current foundation phase of the WIN Scheme involves establishing the infrastructure and customers needed to enable Western Water to manage projected increases in recycled water volumes produced at the Melton and Bacchus Marsh RWPs for up to about 15 years. Western Water aims to have the proposed M2BM Interconnector Pipeline, Bacchus Marsh RWP Pump Station, PBID Supply Network and Stage 1 PBID Foundation Recycled Water Irrigation Areas constructed and operational by July 2022 to enable recycled water to be delivered to its broadacre (e.g. wheat, barley, canola) farming customers during the September 2022 to April 2023 irrigation season. The balance tank constructed as part of the PBID Supply Network provides sufficient balancing storage for the first 2-3 years of foundation recycled water irrigation.

<sup>1</sup> NB: A new 1.1 GL earthen storage dam on the site of the Melton RWP is currently under construction as outlined in further detail below.

The Parwan Recycled Water Storage is required to provide additional balancing storage for the increased volumes of recycled water generated by the Melton and Bacchus Marsh RWPs being discharged for irrigation in the Stage 1 PBID Foundation Recycled Water Irrigation Areas by about 2025. The Stage 2 PBID Foundation Recycled Water Irrigation Areas would be required to discharge the increased volumes of recycled water generated by the Melton and Bacchus Marsh RWPs in about 2032. The foundation phase does not require completion of the S2M Interconnector Pipeline.

The WIN Scheme has the capacity to be expanded to accept additional recycled water volumes from the Melton and Bacchus Marsh RWPs, and also from the Sunbury RWP to address its compliance requirements, subject to construction of a pipeline connection between Sunbury RWP and Melton RWP (i.e. the S2M Interconnector Pipeline). Future expansion of the WIN Scheme to additional irrigation customers and the establishment of a pipeline connection between Sunbury RWP and Melton RWP, is subject to ongoing investigations, including consideration of alternative pipeline alignments that could provide access to alternative recycled water reuse options (e.g. major sporting fields). Due to the early stage of planning and design for the S2M Interconnector Pipeline, relative to the other projects described in this referral, minimal details are available on the potential environmental effects of the S2M Interconnector Pipeline to include in this referral.

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

### **M2BM Interconnector Pipeline**

This project involves construction of a new subsurface bi-directional glass reinforced plastic pipeline connecting the Melton and Bacchus Marsh RWPs. The M2BM Interconnector Pipeline would commence at the intersection of Parwan South Road and Nerowie Road, approximately 8 km south east of Bacchus Marsh. Construction of the pipeline would then continue east within the Nerowie Road reserve for approximately 2.6 km before diverting south east through private land for approximately 8.7 km, crossing both Green Hill Road and Eynesbury Road before coming to the Werribee River (Crown Land). The pipeline is then proposed to cross beneath the Werribee River before terminating approximately 600 m to the north east.

Construction of the pipeline would involve:

- Approximately 13.3km of open trench construction within a construction corridor ranging from approximately 11m to 5m wide.
- Approximately 158m of micro-tunnelling for pipeline construction under the Werribee River.

The pipeline is mostly located within privately owned cropping land on the southern side of Nerowie Road, except for the following sections:

- Approximately 2.6km of pipeline within the Nerowie Road road reserve, west of the Werribee River.
- Crossings of the Green Hill Road, Eynesbury Road and Telephone Road (unformed) road reserves.
- Crossings of two small parcels of land administered by DELWP (SPI 2008\PP3164 & 2009\PP3431) in the immediate vicinity of the Werribee River.

Four temporary laydown areas have been identified for construction of the pipeline:

- One east of the Werribee River (SPI: A~1\PP3431), accessed via a track from SPI10\PP3431.
- One on either side of the Werribee River (two in total) (SPI: A~1\PP3431 & 18~A\PP3164).
- One on the western side of Green Hill Road, south of Nerowie Road (SPI: 1E\PS543210).

### **Bacchus Marsh RWP Pump Station**

This project involves the replacement of the existing trailer-mounted diesel pump to a permanent dry mount pump station able to pump recycled water from the Bacchus Marsh RWP to the Melton RWP and to the proposed 2 ML storage tank at Parwan (see PBID Supply Network). The new pump station is to be sized to have an initial flow of approximately 58 L/s with future flow of approximately 115 L/s from 2035 with a bypass for flushing the M2BM Interconnector Pipeline. A short section of pipeline would be required from the new pump station to the tie-in point located where the temporary polyethylene main from the diesel pump connects to the existing 450 mm diameter Glass Reinforced Plastic (GRP) recycled water main, which runs along Parwan South Road from the Bacchus Marsh RWP to the corner of Parwan South Road and Nerowie Road.

### **PBID Supply Network (pipeline, pump station, balance tank)**

This project involves construction of the following recycled water supply infrastructure:

- A pump station and 2 ML balance tank, with associated access, drainage and services infrastructure, and connections to the M2BM Interconnector Pipeline. These works would be constructed on a site of 0.7 ha to be acquired by Western Water at the south east corner of Nerowie Road and Parwan South Road. Western Water is in the process of seeking to acquire this land through agreement with the current landowner.
- An approximately 14 km long, typically 675 mm diameter subsurface pipeline, extending from the pump station and balance tank site south along Parwan South Road, west along Schultz Road, south along Geelong-Bacchus Marsh Road including a crossing of Balliang Creek, and east along Ripley Road through to Agars Road including a second crossing of Balliang Creek.
- Pipeline offtakes to service recycled water customers including ten offtakes to service the PBID Foundation Recycled Water Irrigation Areas, and provisions for future connections to the Balliang East Primary School and Country Fire Authority (CFA) facilities.

The proposed infrastructure, including the pump station, balance tank and pipeline, is designed to store recycled water transferred to the Parwan-Balliang area via the M2BM Interconnector Pipeline from the Bacchus Marsh and Melton RWPs, and to distribute this recycled water to interested agricultural landowners within the proposed Parwan-Balliang Irrigation District, specifically, the PBID Foundation Recycled Water Irrigation Areas.

Construction of the pipeline would involve:

- Approximately 12.4 km of open trench construction within a construction corridor ranging from 10 to 20 m wide, with a narrower corridor adopted through or adjacent to mapped native vegetation
- Approximately 100 m of micro-tunnelling for pipeline construction under Ballan Road and 140 m of micro-tunnelling for pipeline construction under School Road and adjacent amenity tree plantings
- Two relatively short sections of horizontal directional drilling (HDD) for future pipeline offtakes under Geelong-Bacchus Marsh Road.
- Approximately 1.1 km of HDD for pipeline construction under the southern crossing of Balliang Creek and adjacent areas of native grassland to avoid impacts to large native trees along the creekline and a relatively large, high quality patch of native grassland
- Approximately 230 m of HDD for pipeline construction along the northern side of Ripley Road near Agars Road to avoid sensitive areas of cultural heritage.

The proposed pipeline is mostly located within existing road corridors, except for the following sections:

- Approximately 740 m of pipeline on privately owned cropping land along the eastern side of Geelong-Bacchus Marsh Road south of Schultz Road. The pipeline has been located outside the road corridor

at this location to avoid ecological values, including larger and higher quality native grassland patches identified in the Geelong-Bacchus Marsh Road corridor.

- Approximately 3.1 km of pipeline on privately owned cropping land along the northern side of the Ripley Road (includes the southern Balliang Creek crossing). The pipeline has been located outside the road reserve at this location due to engineering issues at the creek crossing in the road reserve and to provide increased separation to a large patch of higher quality native grassland located on the southern side of Ripley Road.

Four temporary laydown areas have been identified for construction of the pipeline:

- One on the eastern side of Geelong-Bacchus Marsh Road, south of Schultz Road (SPI: 3\PS315762, 2\PS315762)
- One on the eastern side of Geelong-Bacchus Marsh Road between the Balliang East Primary School and Balliang Creek (SPI: 4\LP12800)
- One in the north east corner of the Geelong-Bacchus Marsh Road / Ripley Road intersection (SPI: 5\LP12800)
- One in the north west corner of the Ripley Road / Agars Road intersection (SPI: 1\TP96216).

#### **PBID Foundation Recycled Water Irrigation Areas**

The PBID Supply Network infrastructure would enable the supply of up to 8,283 ML/year of Class C recycled water for irrigation annually to an initial three foundation customers. These foundation customers have committed to a 20-year supply from the scheme, with water to be supplied to these customers under the terms and conditions of a Customer (Recycled Water) Agreement to be agreed between Western Water and each property owner. The volume of recycled water supply to each customer under these agreements has been determined based on the capacity for their farms to assimilate water and nutrients without resulting in adverse impacts to soil, water and vegetation from runoff, infiltration and waterlogging etc as determined through site-specific land capability assessments. A total recycled water irrigation area of 1,189 hectares (including 58 hectares of existing recycled water irrigation area) has been identified for the foundation phase of the WIN Scheme (see Attachment 6).

To distribute recycled water across the 1,189 hectares of foundation recycled water irrigation area, the property owners (foundation customers) would be responsible for installing the necessary on-farm infrastructure and obtaining all necessary permits and approvals required for on-farm works. Based on the current farm plans developed by the foundation customers (Attachment 6), on-farm infrastructure typically includes the installation of centre pivot irrigators (nominally requiring a 5 m x 5 m foundation at the centre pivot point) and irrigation pipelines (nominally 200-375 mm PVC pipe) connecting to the PBID Supply Network property offtakes and between pivot irrigators, with booster pumps where required to maintain pressure. The siting, size and rotational extent of the pivot irrigators has been designed to maximise irrigation of existing cropped areas while minimising impacts to native vegetation (particularly large paddock trees), and allowing buffers to sensitive areas (e.g. waterways, dwellings, pig farm). The majority of proposed on-farm irrigation pipeline and centre pivot foundations for proposed irrigators would be installed in existing cropped paddocks.

From July 2022, an initial supply of 1,740 ML/year of Class C recycled water is projected to be available to the foundation customers from the Bacchus Marsh and Melton RWPs, with the volume of recycled water available increasing as population growth and associated wastewater generation in the RWP service areas increases. To align with the staged availability of recycled water from increased production at the Bacchus Marsh and Melton RWPs, implementation of the proposed farm plans and associated on-farm infrastructure would also be staged. A summary proposed irrigation areas and associated staging for the PBID Foundation Recycled Water Irrigation Areas is provided in Table 1. The location of pivot irrigators proposed in Stage 1 and Stage 2 is shown on the foundation customer farm plans contained in Attachment 6. As noted above, the location of proposed infrastructure required for the Stage 1 (Years 1-10) recycled water irrigation areas has been subject to detailed on-farm plan development and is unlikely

to change prior to construction. Stage 2 (Year 10+) recycled water irrigation areas have also been subject to detailed planning but given the long lead time for implementation of Stage 2, further refinements may occur if farming operational needs or recycled water availability change.

Table 1. Summary of PBID Foundation Recycled Water Irrigation Areas, Proposed Infrastructure and Staging

Foundation Customer	Total recycled water irrigation area (ha)	Agreed irrigation volume (from Year 10) (ML/year)	Proposed staging	Number of proposed PBID pipeline offtakes	Indicative number/type of proposed pivot irrigators	Approx. length of new on-farm irrigation pipeline (m)
1	302 (58 existing)	2,096	<p><b>1</b> (to Year 10) = 203 ha</p> <p><b>2</b> (to Year 10+) = 99 ha</p>	4	<p>Total = 8 (plus 2 existing)</p> <p>5 span (2 full circle)</p> <p>6 span (3 full circle)</p> <p>7 span (3 full circle, 1 part circle)</p> <p>9 span (1 half circle)</p>	4,030
2	490	3,468	<p><b>1</b> (to Year 10) = 268 ha</p> <p><b>2</b> (Year 10+) = 222 ha</p>	4	<p>Total = 9</p> <p>14 span (1 part circle)</p> <p>10 span (1 full circle, 2 part circle)</p> <p>9 span (2 part circle)</p> <p>8 span (2 part circle)</p> <p>6 span (1 full circle)</p>	7,520
3	397	2,719	<p><b>1</b> (to Year 10) = 244 ha</p> <p><b>2</b> (to Year 10+) = 153 ha</p>	2	<p>Total = 5</p> <p>15 span (1 full circle, 1 part circle)</p> <p>11 span (1 full circle)</p> <p>8 span (2 part circle)</p>	5,450

### Parwan Recycled Water Storage

The Parwan Recycled Water Storage would involve the construction of a 1GL earthen storage basin forming part of the Parwan-Balliang Irrigation District (PBID). The Parwan Recycled Water Storage is proposed to be located on the south east corner of the Nerowie Road/ Parwan South Road intersection and would be constructed within the existing boundary fences. The existing crater depression on the site would be utilised with existing vegetation and topsoil to be removed and subgrade scarified, loosened and recompacted to form a clay liner for the storage basin.

### S2M Interconnector Pipeline

The S2M Interconnector Pipeline (including a new pump station at the Sunbury RWP) is currently proposed as a future stage of the WIN Scheme and would convey recycled water from the Sunbury RWP approximately 30 km south west to the Melton RWP.

The S2M Interconnector Pipeline is currently the preferred adaptive pathway approach to manage excess recycled water produced at the Sunbury RWP by providing access to an alternative discharge option. The S2M Interconnector Pipeline would allow the transfer of additional recycled water to the proposed Parwan-Balliang Irrigation District via the Melton RWP and M2BM Interconnector Pipeline, should future irrigation demand in the Parwan-Balliang Irrigation District exceed the capacity for irrigation of the current foundation properties.

The S2M Interconnector Pipeline is yet to be planned in any detail with two potential alignments currently being investigated to address priority demands for recycled water supply. Any chosen alignment would be subject to further refinement and assessment prior to seeking approvals.

The final investment decision for the S2M Interconnector Pipeline is dependent on the proposal continuing to be the favoured strategic response to manage projected long-term increases in recycled water produced at Sunbury RWP, additional irrigation demand commitments in the PBID materialising and final tender pricing. In this regard, the DELWP Integrated Water Management - Werribee Forum is currently investigating opportunities to supply other irrigation demands such as the Melton urban growth areas and Werribee Irrigation District via a pipeline from the Sunbury RWP to Melton RWP. As such, a pipeline route has not yet been determined, with multiple options still being considered and additional options potentially being identified.

Field design, environmental and cultural heritage investigations have not yet been completed for a pipeline between Sunbury RWP and Melton RWP. Although there is some uncertainty over the alignment of this proposed pipeline, a significant portion of the land between the Sunbury and Melton RWPs falls within the Melton and Sunbury urban growth areas (Melbourne Strategic Assessment area) where land development activities are underway.

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

The key ancillary components of the projects considered in this referral are outlined in the project description above. As each project (and in particular the S2M Interconnector Pipeline) is further developed, detail around the ancillary components of each project would be further refined. Localised relocations of some existing on-farm electricity infrastructure may be required to enable operation of centre pivot irrigators, with the extent of such works to be determined once customer farm plans are finalised.

**Key construction activities:**

A detailed construction methodology has not yet been prepared for the proposed projects. Construction activities are expected to include the following:

- Site mobilisation, including the construction of access tracks and formation of laydown areas
- Removal of vegetation and topsoil, with onsite stockpiling for reuse
- Excavation and placement of clay for the storage dam
- Trenching, laying, backfilling and compaction of pipelines and fittings
- Construction of launch and receival shafts for micro-tunnelled bores
- Horizontal directional drilling of HDPE pipe in some areas
- Civil, Structural, mechanical and electric works associated with the construction and commissioning.

**Key operational activities:**

Given the nature of the proposed developments, limited manual intervention is required for their ongoing operation. Operational activities would include regular inspection and maintenance, together with the ongoing use of the pipelines, pump stations, the balance tank and storage basin, together with on-farm irrigation.

Recycled water irrigation would be undertaken using centre pivots irrigators, which are preferred due to the relatively high level of control they enable over the volume and distribution of water, providing the ability to closely match irrigation to crop/pasture requirements and soil permeability characteristics. Centre pivot irrigators would utilise Variable Rate Irrigation (VRI) control, which enables specific nozzles to be switched off to protect buffer zones in specific areas, and is to be setup by a GIS map within the irrigator control system, such that it doesn't require manual intervention.

Before recycled water irrigation can commence, site-specific customer site management plans, detailing irrigation protocols and specific recycled water risk management, are required to be developed by the foundation customers. These CSMPs must comply with Western Water's Health and Environmental



Management Plan (HEMP), which requires approval from EPA Victoria under the Environment Protection Act. Continued supply of recycled water for irrigation by foundation customers is subject to their ongoing operational compliance with these management plans and the conditions of the Customer (Recycled Water) Agreements, including consideration of the results of proposed soil and water quality monitoring.

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

No decommissioning activities are proposed as part of the project. Any future decommissioning activities would be undertaken in accordance with applicable future regulatory requirements.

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

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

Potential future stages of the WIN Scheme include potentially servicing additional recycled water customers in the Parwan-Balliang Irrigation District. The need, location and extent of any additional recycled water irrigation infrastructure or activities within the proposed Parwan-Balliang Irrigation District is currently unknown, and therefore environmental and cultural heritage impacts cannot be determined. The development of additional recycled water irrigation infrastructure is dependent on:

- Recycled water irrigation in this area continuing to be the favoured strategic response to manage projected long-term increases in recycled water produced at the Sunbury RWP
- Securing customer agreements with additional landowners to supply recycled water for irrigation
- The outcome of land capability and other assessments determining the suitability of any proposed on-farm irrigation activities
- A final investment decision for the S2M Interconnector Pipeline (required to supply additional recycled water to meet any additional irrigation demand).

The volume of recycled water covered by the supply agreements with the foundation customers would enable Western Water to meet its compliance requirements for managing increased recycled water production for up to 15 years based on current projections. After this time, if recycled water volumes produced by Western Water's RWPs require additional discharge options, further planning and investigations would be required to identify new customers in the Parwan-Balliang Irrigation District. This would involve development of on-farm infrastructure plans, and completion of land capability assessments, heritage, and biodiversity impact assessments for each potential new property.

Once the suitability of additional properties has been confirmed and recycled water demands determined, additional supply network infrastructure may be required. Similar to the current pipeline, pumping and storage infrastructure proposed for the PBID Supply Network, a design process would be undertaken in conjunction with environmental and cultural heritage investigations to determine the environmental effects once avoidance and minimisation measures have been incorporated into the design.

Based on these assessments:

- Necessary planning, environmental and cultural heritage approvals would then need to be obtained
- Western Water's HEMP developed for the initial reuse scheme within the Parwan-Balliang Irrigation District would need to be updated to include the additional properties for approval by EPA Victoria under the Environment Protection Act.
- The irrigation district declared under the *Water Act 1989* would need to be revised to cover the additional properties.

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

No  Yes If yes, please identify related proposals.

Two projects related to the WIN Scheme have already been approved and are currently under construction:

- Melton RWP Storage – a new 1.1 GL earthen storage dam on the site of the Melton RWP
- Melton RWP Pump Station – a new pump station to allow transfer of recycled water between the new and existing storage dams at Melton RWP.

The primary function of these two related projects is to address the immediate storage capacity constraints at the Melton RWP by increasing on-site capacity to store recycled water produced by the Melton RWP in up to a 90<sup>th</sup> percentile wet year in accordance with EPA licence requirements. The urgent need for additional on-site storage at Melton RWP is being driven by rapid population growth in the Melton RWP wastewater catchment and the pending expiration of a temporary discharge licence in June 2022. In accordance with specific EPA compliance commitments, the Melton RWP Storage and Pump Station need to be constructed by December 2021.

Secondary to their function in addressing the immediate on-site storage capacity needs at Melton RWP, the Melton RWP Storage and Pump Station would also be involved in the storage and pumping of recycled water supply to the proposed Parwan-Balliang Irrigation District via the M2BM Interconnector Pipeline and the PBID Supply Network addressed in this referral.

However, storage for the Melton RWP must be increased to meet EPA 90<sup>th</sup> percentile requirements, regardless of any interconnection with the Bacchus Marsh RWP and regardless of the implementation of the WIN Scheme. For this reason, combined with the small-scale of environmental effects associated with the Melton RWP Storage and Pump Station, these projects have not been included in this referral and are not considered to require a referral under the *Environment Effects Act 1978* in their own right.

CHMP No. 15660 was approved for these projects by Aboriginal Victoria on 6 February 2019, with amendments approved on 13 July 2020.

Construction of the new storage dam requires removal of up to 0.4 ha of native vegetation for which a planning permit was granted by Melton City Council on 19 March 2020, and offsets have been secured in accordance with the Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017). Native vegetation to be removed did not correspond with any threatened communities or contain any threatened flora or important habitat for threatened fauna listed under the EPBC Act or FFG Act. No native vegetation would be impacted for construction of the new pump station. Native vegetation removal associated with these projects is described in relation to cumulative effects in Section 19 of this referral.

**What is the estimated capital expenditure for development of the project?**

\$116 million.

#### 4. Project alternatives

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

**‘Do Nothing’ Scenario**

There is no plausible ‘do nothing’ scenario. Without a solution, under the State Environment Protection Policy, Western Water would breach its licences at Melton, Sunbury and Bacchus Marsh RWPs, and cause environmental degradation resulting from increased treated wastewater discharges. This would contribute to a loss of current beneficial use of Jacksons Creek and Werribee River.

**Western Irrigation Network – Alternatives**

In 2017 a comprehensive assessment of alternatives was undertaken as part of the WIN Business Case. The WIN Business Case considered options to identify one or more end-uses for wastewater collected by Western Water over the next 30 years. Twelve potential response options were identified as a feasible means of resolving the issue of wastewater end-uses either as a standalone response or part of a portfolio of response options.

Following identification of potential response options, Western Water determined that strategic interventions should be consistent with the following Western Water objectives for wastewater management, namely:

- To achieve environmental compliance
- Take into account environmental and customer affordability objectives
- Manage Western Water's reputational risk into the future
- With an aspiration to maximise the beneficial use of recycled water.

The 12 potential response options were then filtered according to the extent which each was capable of delivering the objectives for wastewater management. The filtered response options were then subjected to a strategic options assessment by way of multi-criteria analysis, adopting the analytical framework outlined in the Department of Treasury and Finance Investment Standard and the Guideline for Strategic Options Analysis. On the basis of the strategic options assessment, the Western Irrigation Network, was endorsed by Western Water as the preferred strategic response to deliver the desired benefits. This endorsement was based on the following considerations:

- WIN had the lowest Present Value Cost (PVC)
- WIN would result in the smallest increase to residential water tariffs
- The benefits of WIN were confirmed by demand through an open and transparent expression of interest (EOI) process
- WIN could be delivered within the required timeframes

The WIN was subsequently broken down into separate projects to facilitate financial, design and construction planning.

### **M2BM Interconnector Pipeline - Alternatives**

The location of the M2BM Interconnector Pipeline is constrained by the location of the existing Melton and Bacchus Marsh RWPs. In 2017, six potential route options were investigated utilising a mixture of road reserves and land in private ownership.

Each of the route options was subjected to a desktop analysis of relevant opportunities and constraints considering matters such as ecology, cultural heritage, geotechnical feasibility, land ownership and acquisition, system hydraulics and functionality, pipeline length, approvals risk and development cost. No clear option emerged from the feasibility study, however two options were ultimately taken forward for further consideration by Western Water due to their proximity to an existing gas easement administered by APA group. This siting was considered superior due to:

- The potential for the route to facilitate easement acquisition and reduce impacts to landowners, given it follows existing fence lines and gas infrastructure.
- The potential to avoid and minimise ecological and Aboriginal cultural heritage impacts through the utilisation of already disturbed ground.
- Comparatively low cost, in relation to other routes considered.

In 2018, Western Water commissioned a detailed biodiversity assessment and targeted surveys of the shortlisted route options. This supported the now preferred alignment due to the ability of this alignment to

cross the Werribee River at the same location as other utility services, avoiding additional disturbance to both ecological and cultural values along the river corridor.

Several refinements have since been made to the alignment to further avoid impacts to native vegetation. In late 2020, following a site visit with DELWP, the construction corridor and laydown areas were further reduced in width to avoid potential vegetation impacts.

Western Water has explored opportunities to further reduce the construction corridor and laydown areas, however additional reductions are not considered feasible in light of realistic construction needs. Trenchless construction of the development has also been deemed generally unworkable by Western Water in light of the nature of pipe (600 mm glass reinforced plastic) required to meet the pressure requirements of the pipeline, ranging from PN16 to PN25 along the pipeline's length. Polyethylene pipe is not manufactured to the required combination of pressure rating and size, effectively ruling it out as an option.

While micro-tunnelling is proposed beneath the Werribee River using Mild Steel Cement Lined (MSCL) pipe, trenchless construction in other areas is also constrained by the pipeline's location and proximity to the nearby high-pressure gas main. As the proposed pipeline is primarily located within private property, some distance from the nearest road, additional access tracks across significant vegetation and areas of Aboriginal cultural heritage sensitivity may be required if a continuous access corridor cannot be provided along the pipeline route. Additional laydown areas would also be required to facilitate the construction of launch shafts for each of the trenchless sections.

Given the proximity of the nearby high-pressure gas main, vibration from boring equipment poses a health and safety concern which can be avoided by conducting works via trenching. Restrictions on arc welding (e.g. MIG, TIG welding) also mean the potential to use welded Mild Steel Cement Lined (MSCL) pipe to facilitate trenchless construction is heavily constrained.

Further discussion of design measures implemented to avoid or minimise environmental effects is provided in Section 18.

#### **Bacchus Marsh RWP Pump Station - Alternatives**

The Bacchus Marsh RWP Pump Station is required to be located near the Bacchus Marsh RWP. No alternative locations were considered for this infrastructure. CH2M Beca is currently working with Western Water to identify opportunities to refine the pump station design and construction footprint.

#### **PBID Supply Network (pipeline, pump station and balance tank) - Alternatives**

The location of the PBID Supply Network (pipeline, pump station and balance tank) is constrained by the need to connect to the proposed M2BM Interconnector Pipeline and the existing recycled water main from the Bacchus Marsh RWP at one end, and the need to connect to recycled water customers at the other end. Within these constraints, location of the pipeline within existing road corridors was preferred to minimise impacts on private property containing productive agricultural land. Multiple iterations of the pipeline alignment were considered and refined through the design process, and were informed by stakeholder engagement and staged ecological, cultural heritage, land use planning and geotechnical investigations.

At the concept design stage, a broad preliminary assessment corridor of nominally 100 m wide around the pipeline alignment and encompassing the whole property containing the proposed pump station and balance tank (and future storage dam) was developed to undertake a preliminary ecological assessment, historical and cultural heritage due diligence assessment, and preliminary land use planning and regulatory approvals assessment.

In January 2020, proposed sections of pipeline within the preliminary assessment corridor west of Geelong-Bacchus Marsh Road were removed due to a lack of customer interest and a new section of proposed pipeline was added to the east of Geelong-Bacchus Marsh Road along the general alignment of Ripley Road through to Agars Road to supply land owned by Customer 3. At this time, it was decided to

locate the pipeline along the eastern side of Geelong-Bacchus Marsh Road due to the location of the foundation customer properties and to avoid registered historical heritage places adjoining the western side of Geelong-Bacchus Marsh Road.

Due to engineering constraints at the creek crossing within the Ripley Road corridor, high level consideration was given to creek crossing options outside the road corridor, both north and south. Following preliminary ecological, cultural heritage and engineering site assessments, creek crossing options north of the paper road corridor were identified as preferred for further design development due to the presence of an existing farm track crossing of the creek and in order to increase separation of works to a large patch of higher quality native grassland located on the southern side of Ripley Road.

Four alignment options for a Balliang Creek crossing north of Ripley Road were then developed and presented to the project ecologists and heritage advisors for assessment in March 2020, in conjunction with more detailed ecological and cultural heritage investigations of a refined assessment area encompassing the changes to the pipeline alignment and a narrowing of the width of the preliminary assessment corridor. Detailed ecological and cultural heritage investigations were undertaken for a refined pipeline assessment area of nominally:

- 20 m wide along the northern section of proposed pipeline (south to School Road)
- 40 m wide along the southern section of proposed pipeline within the eastern side of Geelong-Bacchus Marsh Road (south of School Road to Ripley Road)
- 50 m wide along the paper road, with localised widening to accommodate property connections and consideration of multiple alignment options for the second crossing of Balliang Creek.

Detailed ecological and cultural heritage field assessments were undertaken within the refined assessment area and based on this information, along with geotechnical investigations and other engineering considerations, a risk assessment was undertaken of alignment options for the southern Balliang Creek crossing to determine a preferred option. The shortest and most direct pipeline alignment option was preferred on the basis that it enabled under-boring of Balliang Creek and adjacent areas of high quality native vegetation to become more feasible compared to longer pipeline alignments which would require additional entry/exit pits, or a combination of under-bored and open trenched sections, which would involve additional surface disturbance of farming land and native vegetation. The preferred alignment and approach to works in this area provides for maximum avoidance of ecological and cultural heritage values.

Further discussion of design measures implemented to avoid or minimise environmental effects is provided in Section 18.

### **PBID Foundation Recycled Water Irrigation Areas - Alternatives**

The land capability assessments informed the selection of the irrigation application method for the PBID Foundation Users. Centre pivots irrigators would be used to apply recycled water to the PBID Foundation Recycled Water Irrigation Areas. In comparison to other irrigation options (flood irrigation, sprinkler, etc) pivot irrigation has low labour requirements, allows high level of control over the volumes and distribution of water, providing an ability to closely match irrigation to crop/pasture requirements and soil permeability characteristics. Application via low-pressure nozzles, as proposed for the foundation recycled water irrigation areas, is considered best practice for maintaining buffer zones to ensure sensitive receptors are protected from unintentional irrigation spray drift according to the Guidelines for Environmental Management: Use of Reclaimed Water (EPA Victoria, 2003).

Following selection of the irrigation application method, the location of the PBID Foundation Recycled Water Irrigation Areas is constrained by remnant native vegetation, topography/landform, fixed structures/dwellings, drainage/waterways, and buffer zones. Within these constraints, areas of productive agricultural land are preferred to maximise yield potential.

Multiple iterations of irrigation areas and irrigation pipeline alignment were considered and refined through a farm planning process and were informed by agronomical specialists and staged ecological investigations.

### **Parwan Recycled Water Storage - Alternatives**

The proposed site was selected as the preferred location for the Parwan Recycled Water Storage Dam for the WIN Scheme on the basis that it offered a range of site-specific attributes beneficial to minimising the social, economic and environmental impacts of the storage dam and the WIN Scheme generally. These site-specific attributes include:

- The storage dam site contains a natural depression, which allows for construction of a large storage capacity dam with minimal requirement for earthworks, and therefore minimal need for removal and disposal of spoil.
- The natural depression within the storage dam site was formed by a volcanic eruption point or crater at the required elevation in the recycled water supply network, relatively high in the landscape. This presents a unique opportunity to store a large volume of water, with low exposure to surface water inflows, which reduces the need for extensive surface water diversions and reduces the risk of overflows. Being located relatively high in the landscape also reduces energy consumption and emissions associated with pumping recycled water from the storage to end users.
- The storage dam site has been extensively cleared for historical and ongoing agricultural land uses, with native vegetation within the 55 hectare site limited to occurring within a small area in the base of the depression.
- The storage dam site is located in proximity to proposed recycled water customers, including proposed irrigation of cropping land immediately east and west of the site. This proximity provides considerable hydraulic efficiencies and associated cost savings, including reduced energy consumption and emissions from pumping, along with reduced length / diameter and associated impact footprints for transfer mains.
- The storage dam site is located adjacent to and can be consolidated with existing and other proposed Western Water infrastructure situated in the south east corner of Parwan South Road / Nerowie Road, which contributes to minimising potential loss and fragmentation of agricultural land uses.

### **S2M Interconnector Pipeline - Alternatives**

Works forming the S2M Interconnector Pipeline are dependent on the pipeline continuing to be the favoured strategic response to manage projected long-term increases in recycled water produced at Sunbury RWP and additional irrigation demand in the proposed Parwan-Balliang Irrigation District.

As part of the consideration of alternatives, the DELWP Integrated Water Management - Werribee Forum is currently investigating opportunities to supply other irrigation demands such as the Melton urban growth areas and Werribee Irrigation District. As such, a firm location for the pipeline has not yet been determined, although two alignments are under preliminary consideration.

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

No key alternatives are being further investigated for the M2BM Interconnector Pipeline or PBID Supply Network components of the development. Potential alternatives to the S2M Interconnector Pipeline are outlined above. Micro-siting opportunities are currently being explored to further refine the Bacchus Marsh RWP Pump Station design and construction footprint. Design refinements are in process for the Parwan Recycled Water Storage within the identified footprint. No additional properties are being considered for the PBID Foundation Recycled Water Irrigation Areas at this time, however refinements to customer farm plans may occur.

## 5. Proposed exclusions

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

As described in Section 3, the potential for future recycled water supply infrastructure to service additional recycled water customers in the Parwan-Balliang Irrigation District has been excluded from the scope of the project for assessment. This is because:

- Future recycled water supply infrastructure is dependent on additional demand for recycled water irrigation in the Parwan-Balliang Irrigation District and for this area to continue to be the favoured strategic response to manage projected long-term increases in recycled water produced at the Sunbury RWP.
- A final investment decision is yet to be made for the S2M Interconnector Pipeline (required to supply additional recycled water to meet any additional irrigation demand).
- The location and extent of properties seeking to secure additional recycled water irrigation is not yet known and would be subject to Western Water securing customer agreements with additional landowners to supply recycled water for irrigation.
- Land capability and other assessments determining the suitability of proposed on-farm irrigation activities have not been undertaken.
- Additional customers and infrastructure are not essential for the operation and viability of any of the projects included in this referral.

## 6. Project implementation

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

Western Region Water Corporation (Western Water)

On 1 July 2021 Western Water and City West Water will amalgamate to form a new water corporation, Greater Western Water. As such, some components of the WIN Scheme would be delivered by the new amalgamated water corporation, Greater Western Water.

### Implementation timeframe:

A summary of the current scheduled construction timeframes for each of the projects included in this referral is provided in Table 2 below.

Table 2: Implementation timeframes

Project	Planned construction start	Planned construction completion
M2BM Interconnector Pipeline	As soon as all approvals have been obtained.	December 2021
Bacchus Marsh RWP Pump Station	Late 2021	April 2022
PBID Supply Network (pipeline, pump station, balance tank)	Late 2021	August 2022
PBID Foundation Recycled Water Irrigation Areas	Late 2021	August 2022
Parwan Recycled Water Storage	Early 2024	April 2025
S2M Interconnector Pipeline	Q4 2023*	April 2025*

\*NB: as outlined in Section 2 of this referral, a final investment decision for the S2M Interconnector Pipeline is still to be made and is contingent on the S2M Interconnector Pipeline remaining the favoured strategic response to manage projected long-term increases in recycled water produced at the Sunbury RWP.

**Proposed staging** (if applicable):

Proposed staging of the project is as outlined in the implementation table for the WIN Scheme above.

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

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

No  Yes If no, please describe area for investigation.

If yes, please describe the preferred site in the next items (if practicable).

Preferred sites for the M2BM Interconnector Pipeline, PBID Supply Network, PBID Foundation Recycled Water Irrigation Areas, Bacchus Marsh RWP Pump Station and Parwan Recycled Water Storage have been identified.

A preferred location for the S2M Interconnector Pipeline is still to be determined.

**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):

**M2BM Interconnector Pipeline**

Site overview

The preferred site is located in the Parwan area, approximately 8 km southeast of Bacchus Marsh, 60 km north west of the Melbourne CBD. Construction of the pipeline would commence at the intersection of Nerowie and Parwan South Roads. From there, the pipeline would continue east within the Nerowie Road road reserve for approximately 2.6 km before diverting south east through private land for approximately 8.7 km, crossing both Green Hill and Eynesbury Roads before coming to the Werribee River. The pipeline is then proposed to cross beneath the Werribee River before terminating approximately 1800m to the north east of the river.

Ecological context

The project area's ecological context is outlined in detail in the Biodiversity Assessment undertaken by Ecology & Heritage Partners (Attachment 11). The project area is located in the Victorian Volcanic Plain bioregion and is characterised by undulating hills, comprised predominantly of cropped pastureland but also containing areas of remnant native vegetation and a variety of fauna. Further discussion of native vegetation, flora and fauna is provided in Section 12 of this referral. The Werribee River is located at the south eastern extent of the proposed pipeline, within the preferred project area. A small number of intermittent streams are also located within the project area. Further discussion of waterways is provided in Section 13 of this referral.

**Bacchus Marsh RWP Pump Station**

Site overview

This project area is located within the Bacchus Marsh RWP site at 249 Parwan South Road, 43 km north west of the Melbourne CBD. The proposed construction would be located on the eastern part of the RWP site, adjacent to existing storage ponds.

Ecological context



The development is proposed to be located on the existing Bacchus Marsh RWP site. The site is a highly modified environment that has been substantially disturbed as part of the operational RWP use. Further discussion of native vegetation, flora and fauna is provided in Section 12 of this referral.

### **PBID Supply Network (pipeline, pump station, balance tank)**

#### Site overview

The northern end of the proposed pipeline, and the proposed pump station and balance tank site are located in the south east corner of Nerowie Road and Parwan South Road in the rural locality of Parwan, approximately 2 km south of the Bacchus Marsh RWP site, 8 km south east of Bacchus Marsh and 43 km west of the Melbourne CBD. The southern end of the proposed pipeline is located approximately 8.5 km south of the proposed pump station and balance tank, in the rural locality of Balliang.

#### Ecological context

The project area's ecological context is described in the Ecological Impact Assessment prepared by CH2M Beca in March 2021 (Attachment 12). This project area is located in a rural landscape, that has been extensively cleared for historical and ongoing agricultural production. Much of the vegetation that occurs throughout the project area comprises introduced or planted vegetation, and includes cropped paddocks, roadside areas dominated by exotic grasses and weeds, and ornamental plantings of exotic and native species, typically trees and often associated with farm windrows or roadside screen plantings. Some conservation plantings occur along unformed paper roads in the vicinity of the project area in an effort to enhance connectivity across the landscape. Where native vegetation does occur within the project area, it mostly comprises native grasslands of variable quality and condition, which in some areas is likely to provide habitat for threatened species such as Striped Legless Lizard. Large remnant native trees and woodland fragments within the project area are generally limited to occurring along Balliang Creek (near the southern crossing) and in parts of the Ripley Road (paper road) reserve. This project area is located in the VVP bioregion. Further discussion of native vegetation, flora and fauna is provided in Section 12 of this referral. The topography of this project area is characteristic of the VVP bioregion, being mostly on flat to gently undulating plains. The northern part of this project area is located in the Werribee River catchment, while the southern part of the project area is located in the Moorabool River catchment. The southern part of the project area crosses Balliang Creek at two locations, a northern crossing along Geelong-Bacchus Marsh Road and a southern crossing along Ripley Road. At both crossing locations, but particularly the northern crossing, Balliang Creek is in a relatively degraded condition due to current land uses, with limited or no native aquatic vegetation and existing flow barriers in the form of raised access track crossings. The project area does not contain any mapped wetlands. Further discussion of waterways and wetlands is provided in Section 13 of this referral.

### **PBID Foundation Recycled Water Irrigation Areas**

#### Site overview

The foundation recycled water irrigation areas are located in the rural locality of Parwan-Balliang area, approximately 8 to 20 km south of Bacchus Marsh, and 43 to 45 km west of the Melbourne CBD. All foundation recycled water irrigation areas are located east of Geelong-Bacchus Marsh Road. The Parwan-Balliang area is a traditional dryland cropping and pastoral production area, which typically receives less than 500 mm of rainfall annually. Agricultural productivity of the district is highly constrained due to the prevailing low rainfall conditions (Pinion Advisory, 2020).

#### Ecological context

The project area's ecological context is described in the Native Vegetation and Biodiversity Impact Assessments prepared by Tree Wishes (Attachment 13). Ecological values within the recycled water irrigation areas assessed in the native vegetation and biodiversity impact assessments are minimal due to clearing for historical and ongoing use of the land for agricultural production. Within the properties containing proposed recycled water irrigation areas, native vegetation is limited mostly to scattered trees between cropped paddocks, with some scattered patches of remnant native grasslands in uncropped

areas, and some remnant large river red gum trees and woodland fragments generally limited to occurring along Balliang Creek where it passes through these properties. This project area is located in the VVP bioregion. Further discussion of native vegetation, flora and fauna is provided in Section 12 of this referral.

The foundation recycled water irrigation areas are located on flat to gently undulating plains, typical of the VVP bioregion. The proposed irrigation areas for Customer 1 are located in the Werribee River catchment, while the proposed irrigation areas for Customers 2 and 3 are located in the Moorabool River catchment. The proposed irrigation areas for Customer 1 contain two DELWP mapped current wetlands, while the proposed irrigation areas of Customers 2 and 3 are located in proximity to Balliang Creek and associated drainage lines (e.g. Dry Creek) to which a 50 metre buffer zone is proposed. Further discussion of waterways and wetlands in the vicinity is provided in Section 13 of this referral.

## **Parwan Recycled Water Storage**

### Site overview

This project area is located approximately 8 km south east of Bacchus Marsh and 43 km west of the Melbourne CBD. The site contains a large natural depression, formed by a volcanic eruption. The wider land parcel has been historically cleared for grazing, with an existing Western Water potable water storage tank located to the immediate north within a small land parcel held by Western Water (RES1\PS341744).

### Ecological context

The project area's ecological context is described in the Ecological Assessment Memo prepared by CH2M Beca in March 2021 (Attachment 14). The project area is located within the VVP bioregion. Most of the project area has been historically cleared for agricultural practices, with native vegetation limited to the occurrence of planted and remnant scattered native trees surrounding the farm dam at the base of the natural depression. Further discussion of native vegetation, flora and fauna is provided in Section 12 of this referral.

## **S2M Interconnector**

A preferred location for the S2M Interconnector Pipeline is still to be determined and is dependent on:

- The pipeline continuing to be the favoured strategic response to manage projected long-term increases in recycled water produced at Sunbury RWP; and
- Additional irrigation demand in the PBID materialising.

Two potential alignments are currently subject to preliminary consideration. A description of the alignments being considered is outlined below.

### Site overview

The two potential locations being considered for the S2M Interconnector Pipeline lie between the Sunbury RWP and Melton RWP, passing southeast of Melton and west of Caroline Springs. Both alignment options would commence at the Sunbury RWP before continuing south west until they meet Vineyard Road. From there the alignments would continue south, following the alignment of Vineyard Road through Diggers Rest then further south, where Vineyard Road changes name to Plumpton Road.

At the intersection of Plumpton Road and Melton Highway, the two potential alignment options would diverge:

- Option A would continue west along the Melton Highway, before diverting south along Leakes Road, east along Beattys Road and south along Paynes Road through to Greigs Road.
- Option B would continue south from Melton Highway along Plumpton Road, east along Taylors Road and south through private land crossing Reed Court, Kororoit Creek, Neil Road and the Western Freeway, before diverting west and following Greigs Road.

From the intersection of Paynes Road and Greigs Road both alignments would continue west before diverting south along Mount Cottrell Road, west along Greigs Road and South to the Melton RWP.

Both alignments being considered for the S2M Interconnector Pipeline are preliminary and would be subject to further refinement prior to construction, should the S2M Interconnector Pipeline remain the preferred strategic response for increases in recycled water at the Sunbury RWP. Both locations being considered for the S2M Interconnector Pipeline would seek to maximise the use of existing road reserves to minimise potential property impacts.

#### Ecological context

Given the preliminary stage of planning and design for the S2M Interconnector Pipeline, minimal analysis has been undertaken of the site's ecological context. Consistent with the approach adopted for other WIN Scheme projects, native vegetation, flora and fauna values would be investigated, and opportunities to avoid or minimise impacts explored. Further discussion of native vegetation, flora and fauna is provided in Section 12 of this referral, based on preliminary analysis undertaken to date.

**Site area** (if known): Approximately 175 to 178 hectares (WIN Scheme Overall)

A summary of the individual construction footprints for each project, including construction access and laydown areas (based on currently available design information) are summarised in Table 3 below.

Table 3: Project areas and route length / width for linear components

Project	Construction footprint (ha)	Route length (km)	Route width (m)
M2BM Interconnector Pipeline	37.1	~13.5	Variable (typically 11-15)
Bacchus Marsh RWP Pump Station	2.9*	N/A	N/A
PBID Supply Network (pipeline, pump station, balance tank)	31.5	~14	Variable (typically 12-16)
PBID Foundation Recycled Water Irrigation Areas	13.6**	17**	8**
Parwan Recycled Water Storage	54.5*	N/A	N/A
S2M Interconnector Pipeline – Option A	36.1*	30.0*	~12*
S2M Interconnector Pipeline – Option B	38.2*	31.3*	

\* Based on assessment areas subject to refinement through ongoing design processes.

\*\* Approximate based on current farm plans and indicative construction footprints, which may be refined depending on work methods employed by farm customers.

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

##### **M2BM Interconnector Pipeline**

The proposed pipeline would be located primarily within agricultural land in private ownership (1\PS341744, 2\TP745347, 1\TP211534, 1E\PS543210, CP104323, 19~A\PP3164, 18~A\PP3164, A~1\PP3431). However, parts of the pipeline would also traverse the Nerowie, Green Hill, Telephone (unformed) and Eynesbury Road reserves. A small area of unclassified Crown land (2009\PP3431, 2008\PP3164) would be crossed in the immediate vicinity of the Werribee River, together with a site owned by Western Water (10\PP3431) to the east.

On completion of the proposed construction works, all areas of the proposed pipeline, including the construction corridor and temporary accesses, would be reinstated to enable continuation of the current land uses.

##### **Bacchus Marsh RWP Pump Station**

This project would be located on land containing the existing Bacchus Marsh RWP within land owned by Western Region Water Corporation (SPI: PC355723). The proposed pump station would be sited on the edge of an existing recycled water storage dam.

### **PBID Supply Network (pipeline, pump station, balance tank)**

The proposed pump station and balance tank would be located on a small part (0.7 ha) of a large parcel (1\PS341744) of privately owned freehold land within the Farming Zone land that is currently used for cropping.

The proposed pipeline is mostly located within existing road corridors, except for two sections of 740 m and 3.1 km, which are mostly located on privately owned cropping land within the Farming Zone. The longer of these sections includes a crossing of uncropped land along Balliang Creek, which is also in the Farming Zone. In addition to offtakes to the farming land owned by the three foundation customers, the PBID pipeline includes provision for possible future connections to the Balliang East Primary School and CFA facilities located within the Geelong-Bacchus Marsh Road corridor just south of Davis Road, subject to EPA approval of any proposed recycled water use through the HEMP approval process.

Each of the four temporary laydown areas are located on current cropping land within the Farming Zone. Land parcels containing temporary laydown are: SPIs 3\PS315762, 2\PS315762, 4\LP12800, 5\LP12800 and 1\TP96216. A small farm dam is located within the proposed laydown area in the south east corner of Geelong-Bacchus Marsh Road and Schultz Road (SPI: 3\PS315762), and would be filled in for construction of the project in agreement with the landowner.

On completion of construction works, all construction areas associated with the proposed pipeline and associated offtakes, temporary laydown areas and temporary access corridors, would be reinstated to enable continuation of the current land use. No change to current land uses is proposed, other than the proposed acquisition of approximately 0.7 ha of current farming land to contain the proposed pump station and balance tank. Western Water may in future seek to rezone this land from Farming Zone to Public Use Zone (Service & Utility), however no rezoning is proposed at this time.

### **PBID Foundation Recycled Water Irrigation Areas**

The foundation recycled water irrigation areas are all located on properties currently used for farming purposes, mostly broadacre, dryland cropping of wheat, barley and canola, and some grazing.

Foundation Customer 1 – recycled water irrigation is proposed across approximately 302 ha of a 1,080 ha property holding owned by this customer and primarily used for pastoral purposes, predominantly finishing prime lambs and cattle prior to being supplied to a local livestock meat processing facility.

Foundation Customer 2 – recycled water irrigation is proposed across approximately 490 ha of a 1,700 ha mixed farming property holding owned by this customer, including land used for dryland broadacre cropping for production of cereals, legumes, canola, forage brassica crops, and for pastoral use to run a self-replacing breeding sheep flock, finishing prime lambs and trading ewes.

Foundation Customer 3 – recycled water irrigation is proposed across approximately 397 ha of a 1,580 ha mixed farming property holding owned by this customer, which also includes some land leased for a piggery operation (east of Agars Road). The land proposed for recycled water irrigation is currently used for dryland broadacre cropping for production of cereals (wheat and barley), lupins and canola, and for pastoral use to run a self-replacing breeding sheep flock, finishing prime lambs and trading wethers.

According to the site-specific land capability assessments, the land proposed for recycled water irrigation has been significantly modified in terms of an extended history of soil cultivation, de-stoning and the application of fertiliser and soil ameliorants (lime, gypsum and biosolids).

A summary of land parcels proposed to contain recycled water irrigation areas is provided in 'Current land tenure' under Section 9.

### **Parwan Recycled Water Storage**

This project would be located in a natural depression on current privately owned farming land (SPI: 1/PS341744). The base of the depression contains an existing dam surrounded by mostly planted and some remnant native trees. The slopes of the depression are mostly cropped.

### **S2M Interconnector Pipeline**

Based on the preliminary alignments currently under consideration, the proposed pipeline would be located primarily within existing road corridors. The balance of the pipeline would be located across both private and publicly owned land, the majority of which is put to agricultural land uses.

As outlined in the 'Description of local setting' section, both locations currently being considered for the S2M Interconnector Pipeline are located within or in close proximity to a number of existing and proposed Precinct Structure Plan areas developed by the Victorian Planning Authority. Land uses in the assessment area are therefore expected to change significantly prior to proposed construction of the S2M Interconnector Pipeline, assuming the pipeline remains the preferred approach to manage excess recycled water from the Sunbury RWP.

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

### **M2BM Interconnector Pipeline**

#### Adjoining land uses

The site and surrounding land are put to predominantly agricultural land uses. Parts of the proposed project area are also located within the Nerowie, Green Hill, Telephone and Eynesbury Road road reserves. Telephone Road is an unformed (paper) road.

#### Road access

The construction site would be able to be accessed from Nerowie Road, Green Hill Road and via an access track from Western Water's property to the northeast.

#### Infrastructure

A number of existing underground and overground utilities are located in close proximity to the proposed works based on the design report prepared by CH2M Beca (Table 4).

Table 4. M2BM Interconnector Pipeline – Utilities in proximity

Utility operator	Detail
APA Group	<p>APA group operate a 219 mm diameter steel high-pressure gas transmission line through the project area. The pipeline is located within a 20.1 m wide easement passing diagonally through private properties. APA also operate a fenced compound at Eynesbury Road on the north side of their easement, which transfers gas to the distribution pipelines along Eynesbury, operated by AusNet Gas Services.</p> <p>Representatives from CH2M Beca and Western Water met with APA on 13 November 2019 where:</p> <ul style="list-style-type: none"> <li>• APA clarified that no formal approvals are required for the M2BM interconnector pipeline as the works do not encroach on APA's easement.</li> <li>• APA advised that the area of APAs easement should be delineated with temporary fencing to avoid inadvertent encroachment during construction. This requirement would be incorporated as a mandatory component of the contractor's Construction Environmental Management Plan (CEMP).</li> <li>• APA advised conditions for crossing of the gas pipeline, including standard drawing requirements, service proving requirements and commercial agreements. These requirements are reflected in the detailed design for the development.</li> </ul>

Telstra	Telstra own telecommunications cables, including fibre optic cables, within the project area. Offsets from this infrastructure are proposed to be maintained in accordance with the Water Supply Code of Australia (WSA 03 (MRWA edition)). Service proving would be undertaken to verify these offsets on site.
Powercor	Powercor own overground electrical services throughout the project area. The contractor would be required to obtain and follow any conditions of Powercor work permits for works in proximity to Powercor assets.
Western Water	Western Water own a variety of water main and recycled water assets in proximity to the proposed works. Proximity to these assets would be addressed by Western Water's contractor in accordance with requirements specified by Western Water.
Private	A private 50 mm diameter water pipe has been identified in several locations between Greenhill and Nerowie Road. Offsets from this infrastructure are proposed to be maintained in accordance with WSA 03 (MRWA edition).

#### Proximity to residences

The proposed works are located in proximity to the following residential dwellings (Table 5).

Table 5. M2BM Interconnector Pipeline – Residential dwellings in proximity

Address	Proximity to proposed works
52 Bucklers Road, Parwan VIC 3340	~460 m
285 Nerowie Road, Parwan VIC 3340	~230 m
Eynesbury Road, Parwan VIC 3340	~200 m

#### Proximity to urban centres

The project area is located approximately 8 km south east of Bacchus Marsh, approximately 12 km south west of Melton, and approximately 60 km north west of the Melbourne CBD. The small settlement of Eynesbury is located around 2 km to the south.

#### **Bacchus Marsh RWP Pump Station**

##### Adjoining land uses

This project area is currently the site of the Bacchus Marsh RWP. The surrounding land use is predominantly agricultural with the Parwan Motorcross Track located south of the site.

##### Road access

The construction site is proposed to be accessed via a network of existing internal haul roads with access off Parwan South Road, Miles Road and Nortons Road.

##### Infrastructure

An existing 219 mm steel high-pressure gas transmission line, operated by APA group, runs through the south west corner of the RWP site but does not intersect the project area.

##### Proximity to residences

The project area and proposed works are sufficiently located away from nearby residences so as to not pose any significant environmental effects. The closest residence to the site is located approximately ~1 km away at 138 Parwan South Road.

##### Proximity to urban centres

The project area is located approximately 6.5 km south east of Bacchus Marsh, approximately 11 km south west of Melton, and approximately 43 km north west of the Melbourne CBD. The small settlement of Eynesbury is located around 8.5 km to the east.

### **PBID Supply Network (pipeline, pump station, balance tank)**

#### Adjoining land uses

The proposed pump station and balance tank site is currently used for cropping and adjoins a small parcel of land currently owned by Western Water containing an existing potable water tank. The proposed pipeline would be located on land within road reserves or adjacent farming land, mostly used for broadacre cropping. An existing above ground low voltage transmission line crosses the pipeline alignment along Geelong-Bacchus Marsh Road in the vicinity of Ballan Road.

Surrounding land uses comprise mainly dryland cropping and grazing activities, with a low density of dwellings scattered on large rural properties. Slightly smaller rural properties supporting equestrian facilities and rural industries are located in the vicinity of the Bacchus Marsh Airport, which is located approximately 3 km north west of the proposed pump station and balance tank site. Rural residential properties are located to the north east of the Geelong-Bacchus Marsh Road and School Road intersection at Balliang East. Balliang East Primary School is located in the south east corner of the Geelong-Bacchus Marsh Road and School Road intersection. The Balliang East Soldiers Memorial Hall is located on the opposite side of Geelong-Bacchus Marsh Road to the school. The Bacchus Marsh RWP is located approximately 2 km north of the proposed pump station and balance tank site. A motorcross track and rally driving facilities and quarry are located on the northern side of Nerowie Road opposite the proposed pump station and balance tank site.

#### Road access

The construction site would be able to be accessed from Nerowie Road, Parwan South Road, Schultz Road, Geelong-Bacchus Marsh Road, Ripley Road and Agars Road. Existing raised access tracks crossings of Balliang Creek at the northern and southern creek crossings would be utilised during construction. Depending on construction timeframes, pipeline construction may coincide with roadworks occurring along Geelong-Bacchus Marsh Road as part of the current road upgrade project. Western Water would liaise with Regional Roads Victoria to coordinate construction activities and traffic management to minimise traffic disruption and maintain safety.

#### Infrastructure

A summary of existing utilities known to occur within the project area based on the design report prepared by CH2M Beca (March 2021) is provided in (Table 6).

Table 6. PBID Supply Network – Utilities within the project area

<b>Utility operator</b>	<b>Detail</b>
APA Group	No gas utilities assets are known to occur within the project area. APA Group's 219 mm diameter steel high-pressure gas transmission line is located approximately 1.6 km north east of the pump station and balance tank site.
Telstra	Telstra owns telecommunications cables, including fibre optic cables, within the project area, including along Schultz Road and Geelong Bacchus-Marsh Road. Offsets from this infrastructure are proposed to be maintained in accordance with the Water Supply Code of Australia (WSA 03 (MRWA edition)). Service proving would be undertaken to verify these offsets on site.
Powercor	Powercor own overground electrical services within the project area, including along parts of Geelong-Bacchus Marsh Road and crossing Ripley Road. Powercor also owns underground electrical services along parts of Geelong-Bacchus Marsh Road. Offsets from this infrastructure are proposed to be maintained in accordance with the Water Supply Code of Australia (WSA

	03 (MRWA edition)). The contractor would be required to obtain and follow any conditions of Powercor work permits for works in proximity to Powercor assets.
Western Water	Western Water own a variety of water and recycled water assets in proximity to the proposed works, including a water main and recycled water main in Nerowie Road, and a potable water tank adjacent to the proposed pump station and balance tank site. Proximity to these assets would be addressed by Western Water's contractor in accordance with requirements specified by Western Water.
Regional Roads Victoria	Impacts to stormwater drainage infrastructure (culverts) under Geelong-Bacchus Marsh Road would be avoided by the PBID pipeline alignment.
Private	Private irrigation pipelines occur in proximity to the project area, including an existing recycled water irrigation pipeline crossing Parwan South Road and two 50 mm diameter irrigation pipelines across Schultz Road, which would be locally relocated where required to accommodate the PBID pipeline.

### Proximity to residences

The proposed works are located in proximity to the following residential dwellings (Table 7).

Table 7. PBID Supply Network – Residential dwellings in proximity (within 500 m)

Address	Proximity to proposed works
3573 Geelong-Bacchus Marsh Road, Parwan 3340	~130 m
3539 Geelong-Bacchus Marsh Road, Parwan VIC 3340	~330 m
3493 Geelong-Bacchus Marsh Road, Parwan VIC 3340	~80 m
Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~110 m
3358 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~440 m
3332 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~60 m
3314 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~40 m
3304 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~100 m
3294 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~180 m
3282 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~30 m
3270 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~20 m
3252 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~40 m
13 School Road, Balliang East VIC 3340	~50 m
20 School Road, Balliang East VIC 3340	~450 m
300 Agars Road, Balliang East VIC 3340	~100 m
3105 Geelong-Bacchus Marsh Road, Balliang East VIC 3340	~170 m
2810-2980 Geelong-Bacchus Marsh Road, Balliang VIC 3340	~450 m

### Proximity to urban centres

The northern end of the proposed pipeline, and the proposed pump station and balance tank site are located approximately 8 km south east of Bacchus Marsh, 12.5 km south west of Melton and 43 km west of the Melbourne CBD. The southern end of the proposed pipeline is located approximately 8.5 km south



of the proposed pump station and balance tank, and passes along Geelong-Bacchus Marsh Road adjacent to the western edge of the rural settlement of Balliang East.

### **PBID Foundation Recycled Water Irrigation Areas**

#### Adjoining land uses

The foundation recycled water irrigation areas are all located on properties currently used for farming purposes, mostly broadacre, dryland cropping of wheat, barley and canola, with some grazing. Surrounding land uses are similar to those described for the PBID Supply Network, which connects to each of the recycled water irrigation areas. In addition, the proposed Western Grasslands Reserve (declared area) is located along the eastern boundary of land containing the Customer 2 Stage 2 recycled water irrigation areas. A pig farming operation is located in the north east corner of the Sharkey Road / Agars Road intersection on land owned by Customer 3. Grain handling facilities are located along the northern side of Sharkey Road near Geelong-Bacchus Marsh Road, also on land owned by Customer 3. A church is located at 70 Nerowie Road, adjacent to the Customer 1 recycled water irrigation areas (existing).

#### Road access

The foundation recycled water irrigation areas would be accessed using existing property accesses from roads such as Parwan South Road, Schultz Road, Bucklers Road, Springhill Road, Geelong-Bacchus Marsh Road, Agars Road, Ripley Road, Sharkey Road and Mt Rothwell Road.

#### Infrastructure

Each of the foundation recycled water irrigation areas would be located on existing farming properties, which contain a variety of infrastructure, notably including existing powerlines and irrigation/water pipelines servicing on-farm facilities and activities (e.g. sheds, pumps etc). Localised relocations of some existing on-farm electricity infrastructure may be required to enable operation of centre pivot irrigators, with the extent of such works to be determined once customer farm plans are finalised.

#### Proximity to residences

In accordance with EPA Publication 1911.2: Technical information for the Victorian guideline for water recycling and the buffer distances prescribed in the LCAs, a minimum separation distance of 100 m applies between the recycled water irrigation areas (edge of the wetted area) and existing dwellings, churches and schools. The location of existing dwellings, churches and schools relative to the proposed recycled water irrigation areas and the proposed 100m buffer are shown on the customer farm plans provided in Attachment 6.

#### Proximity to urban centres

The proximity of foundation recycled water irrigation areas would be similar to those distances described for the PBID Supply Network, which connects to each of the recycled water irrigation areas.

### **Parwan Recycled Water Storage**

#### Adjoining land uses

This project area and surrounding land are used for predominantly agricultural purposes. The site is bordered by Nerowie Road to the north and Parwan South Road to the west. The Parwan Motorcross Track is located to the north of the site, on the opposite side of Nerowie Road.

#### Road access

The construction site would be able to be accessed from Nerowie Road, with access also available along Parwan South Road.

Infrastructure

A number of existing underground and overground utilities are located in close proximity to the project area. An existing potable water storage tank is located on a small parcel of land (RES1\PS341744) owned by Western Water, immediately adjacent to the site.

Proximity to residences

This project area and proposed works are sufficiently located away from nearby residences so as to not pose any significant environmental effects. The closest residence to the site is located approximately 900 m away at 52 Bucklers Road.

Proximity to urban centres

This project area is located approximately 8 km south east of Bacchus Marsh, approximately 12.5 km south west of Melton, and approximately 43 km west of the Melbourne CBD. The small settlement of Eynesbury is located around 8.5 km to the east.

**S2M Interconnector Pipeline**Adjoining land uses

The surrounding land is put to predominantly agricultural land uses such as grazing, except for the areas closest to Sunbury, Diggers Rest and Thornhill Park, where residential land uses predominate.

Although the surrounding area is predominantly agricultural land uses, parts of the areas under consideration for the S2M Interconnector Pipeline are within the existing Sunbury South, Diggers Rest, Plumpton, Rockbank, Rockbank North, Paynes Road, Toolern, Kororoit and Mount Atkinson Precinct Structure Plan areas. They are also within/close to the proposed Sunbury West, Warrensbrook, Grangefields, Kororoit Part 2, Warrawee and Rockbank South Precinct Structure Plan areas. It is therefore anticipated that the surrounding land uses would change significantly between now and when the S2M Interconnector Pipeline is ultimately constructed.

Road access

As only preliminary alignments for the S2M Pipeline have been identified, potential road accesses to facilitate construction and maintenance have not yet been analysed in detail.

Infrastructure

Several existing underground and overground utilities are expected to be located in close proximity to the proposed alignments. Further analysis of nearby infrastructure would be required as part of selecting a preferred location for the pipeline.

Proximity to residences

Both alignment options are located close to a number of residential dwellings. As the area is located within existing and proposed Precinct Structure Plan areas being developed by the VPA, the number of residences in the area is expected to increase prior to construction of the S2M Interconnector Pipeline.

Proximity to urban centres

The alignment options currently under consideration for the S2M Interconnector Pipeline are near to the urban centres of the Sunbury, Diggers Rest, Caroline Springs and Melton, as well as the smaller settlements of Aintree, Thornhill Park, Rockbank and Mount Atkinson.

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

**WIN Scheme**

The components of the WIN Scheme included in this referral are located within the local government areas of City of Melton, Shire of Moorabool, City of Hume and City of Greater Geelong. The WIN Scheme

is well-supported by state, regional and local planning policy under the relevant planning schemes, particularly in terms of:

- Supporting the adaptation of the agricultural sector to respond to the potential risks arising from climate change by supplying a non-climate dependent irrigation water supply.
- Supporting diversification and value-adding of agriculture, and facilitating ongoing productivity and investment in high value agriculture through the provision of irrigation water supply infrastructure.
- Supporting rural economies to grow and diversify and contribute to strengthening existing and planned employment areas, including the Parwan Employment Precinct by enhancing capacity for agricultural production requiring supporting agribusiness activities.

Furthermore, the Victorian Government through DELWP, is currently undertaking a strategic planning project aimed at “protecting Melbourne’s green wedges and keeping farms on our urban fringes working and producing for generations to come”. The ‘Planning for Melbourne’s Green Wedges and Agricultural Land’ project is a response to Action 17 of Plan Melbourne 2017-2050 and recognises that “some of Victoria’s most productive agricultural land is within 100 km of central Melbourne and that as our climate changes, the ideal conditions of agricultural land become even more important to Victoria’s food production”. The proposed Parwan Balliang Irrigation District is identified in the Consultation Paper (May 2020) as one of five irrigation areas proposed to be protected by a new planning scheme overlay designed to protect food-producing areas with access to secure water supply and irrigation infrastructure. Also proposed are new regional policy statements and a strengthened role for water authorities in decision-making for applications to use or develop land in protected irrigation districts or in non-urban areas identified as having potential for access to alternative water in the future.

### **M2BM Interconnector Pipeline**

The M2BM Interconnector Pipeline is proposed to be located across two local government municipalities, the City of Melton and Shire of Moorabool.

#### Moorabool Planning Scheme

Works proposed within the Nerowie Road road reserve, west of the intersection with Bucklers Road/Nortons Road are subject to the requirements of the Moorabool Planning Scheme. The following land zoning applies (Attachments 15 to 19):

- Road Zone, Category 2 (Nerowie Road).

No overlays apply to the project area within the Shire of Moorabool.

Pursuant to Clause 36.04-1 of the Moorabool Planning Scheme a permit is not required for any use listed in Clause 62.01, which includes the use of land for a ‘minor utility installation’ (including sewerage and water mains). Similarly, under Clause 62.02-1 of the Moorabool Planning Scheme the construction of a building and the construction or carrying out of works is exempt from the requirement for a permit if the buildings and/or works are associated with a minor utility installation.

Clause 52.17-1 of the Moorabool Planning Scheme specifies that a permit is required to remove, destroy or lop vegetation, including dead native vegetation. 1.23ha of native vegetation is proposed for removal within the Shire of Moorabool, triggering the need for a planning permit. A planning permit application was made to the Moorabool Shire Council on 25 November 2020 but has since been withdrawn pending consideration of this EES Referral by DELWP.

#### Melton Planning Scheme

All works located east of the Bucklers Road/Nortons Road intersection are subject to the requirements of the Melton Planning Scheme. The following zones and overlays apply.

- Green Wedge Zone

- Rural Conservation Zone
- Public Use Zone 1 (Service and Utility)
- Environmental Significance Overlay (Schedule 2 - Wetlands, Waterways and Riparian Strips) (ESO2)
- Environmental Significance Overlay (Schedule 3 - Western Grassland Reserves) (ESO3)
- Environmental Significance Overlay (Schedule 4 - Grasslands Within the Werribee Plains Hinterland) (ESO4)
- Design and Development Overlay (Schedule 2 - Eynesbury Station Rural Area) (DDO2)
- Incorporated Plan Overlay (Schedule 1 - Eynesbury Station) (IPO1)
- Public Acquisition Overlay (Schedule 5 - Western Grassland Reserves) (PAO5).

A planning permit is not required for the 'use' or 'buildings and/or works' component of the development as the proposed development falls within the definition of a 'minor utility installation' pursuant to the Melton Planning Scheme.

A planning permit application has been made to the Melton City Council for the removal of native vegetation (Clause 52.17-1) and removal of native vegetation within Environmental Significance Overlays 2, 3 and 4 (Clause 42.01-2). The application is on hold, pending consideration of this EES referral by DELWP.

#### **Bacchus Marsh RWP Pump Station**

This project is subject to the requirements of the Moorabool Planning Scheme. The following land zoning applies (Attachments 15 to 19):

- Public Use Zone 1 (Service and Utility).

No overlays apply to this project area.

This project area is a highly modified environment that has been previously disturbed as part of the operational RWP use. If, as a result of further investigations or design refinements, native vegetation is required to be removed, the project may require a planning permit from Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation).

No planning permit would be required for use, buildings or works as the proposed use falls within a 'Service and Utility' for which no permit is required pursuant to Clause 36.01-1 of the Moorabool Planning Scheme.

#### **PBID Supply Network (pipeline, pump station, balance tank)**

This project is subject to the requirements of the Moorabool Planning Scheme (pump station, balance tank, pipeline) and the Greater Geelong Planning Scheme (pipeline only). The following zones and overlays apply (Attachments 15 to 19):

- Farming Zone
- Road Zone, Category 2 (Nerowie Road)
- Road Zone, Category 1 (Geelong-Bacchus Marsh Road)
- Public Use Zone 2 (Education)
- Moorabool Design and Development Overlay (Schedule 2 – Visual Amenity and Building Design) (DDO2)
- Moorabool Environmental Significance Overlay (Schedule 2 – Waterway Protection) (ESO2)

- Moorabool Environmental Significance Overlay (Schedule 7 – Grasslands within the Werribee Plains Hinterland) (ESO7)
- Greater Geelong Environmental Significance Overlay (Schedule 4 – Grasslands within the Werribee Plains Hinterland) (ESO4).

A planning assessment has been undertaken and has determined that the project requires:

- A planning permit from Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation); and for removal of native vegetation in ESO7 and any vegetation in ESO2 under Clause 42.02 (Environmental Significance Overlay)
- A planning permit from City of Greater Geelong Council for removal of native vegetation under Clause 52.17 (Native Vegetation) and removal of native vegetation in ESO4 under Clause 42.02 (Environmental Significance Overlay).

As these project components comprise a 'minor utility installation' as defined in the planning schemes, these components are exempt from requiring a planning permit for use, buildings and works under the relevant planning schemes. Consultation with Moorabool Shire Council and City of Greater Geelong Council has been undertaken to confirm the above planning permit requirements (see Section 20 for pre-application meeting dates).

### **PBID Foundation Recycled Water Irrigation Areas**

The foundation recycled water irrigation areas are subject to the requirements of the following planning schemes:

- Customer 1 - Moorabool Planning Scheme
- Customers 2 and 3 – Moorabool Planning Scheme and Greater Geelong Planning Scheme.

The zones and overlays applying to foundation recycled water irrigation areas are listed in Table 8 and shown in Attachments 15 to 19:

Table 8. PBID Foundation Recycled Water Irrigation Areas – Planning zones and overlays

<b>Customer</b>	<b>Moorabool Planning Scheme</b>	<b>Greater Geelong Planning Scheme</b>
1	<ul style="list-style-type: none"> <li>• Farming Zone</li> <li>• ESO7</li> <li>• DDO2.</li> </ul>	N/A
2	<ul style="list-style-type: none"> <li>• Farming Zone</li> <li>• ESO2</li> <li>• ESO7</li> <li>• DDO2.</li> </ul>	<ul style="list-style-type: none"> <li>• Farming Zone</li> <li>• ESO4.</li> </ul>
3	<ul style="list-style-type: none"> <li>• Farming Zone</li> <li>• ESO7</li> <li>• DDO2.</li> </ul>	<ul style="list-style-type: none"> <li>• Farming Zone</li> <li>• ESO4.</li> </ul>

A preliminary review of potential planning permit requirements for on-farm works associated with the foundation recycled water irrigation areas is provided below.

#### Customer 1

If any native vegetation were to be impacted, a planning permit would be required from Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation) and for removal of native vegetation in ESO7 – current assessments by Tree Wishes indicate that no native vegetation is impacted.

If any earthworks are proposed that would change the rate of flow or point of discharge of water across a property boundary, a planning permit would be required under Clause 35.07-4 (Buildings and works) in the Farming Zone. Earthworks of this nature are not anticipated to be required based on the current customer farm plans.

### Customers 2 and 3

The following planning permits would be required:

- A planning permit would be required from Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation); and for removal of native vegetation in ESO7 under Clause 42.02 (Environmental Significance Overlay).
- A planning permit from City of Greater Geelong Council for removal of native vegetation under Clause 52.17 (Native Vegetation); and for removal of native vegetation in ESO4 under Clause 42.02 (Environmental Significance Overlay).

In addition, if Customer 2 proposes to remove any vegetation in ESO2, a planning permit would be required from Moorabool Shire Council under Clause 42.02 (Environmental Significance Overlay).

If Customers 2 and 3 propose any earthworks that would change the rate of flow or point of discharge of water across a property boundary, a planning permit would be required under Clause 35.07-4 (Buildings and works) in the Farming Zone. Earthworks of this nature are not anticipated to be required based on the current customer farm plans.

Planning permit requirements would need to be confirmed by the foundation customers once farm plans have been finalised and the nature and extent of on-farm works is known.

### **Parwan Recycled Water Storage**

This project is subject to the requirements of the Moorabool Planning Scheme. The following zones and overlays apply (Attachments 15 to 19):

- Farming Zone
- Design and Development Overlay (Schedule 2 – Visual Amenity and Building Design) (DDO2).

A planning assessment has been undertaken and has determined that the project requires:

- A planning permit from Moorabool Shire Council for use of the land for a utility installation under Section 2 of Clause 35.07 (Farming Zone)
- A planning permit from Moorabool Shire Council for the buildings and works associated with a Section 2 use of Clause 35.07 (Farming Zone)
- A planning permit from Moorabool Shire Council for the earthworks required pursuant to Clause 35.07 (Farming Zone)
- A planning permit from Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation).

As this project would not be constructed with external walls or roof areas that are clad with reflective materials, a planning permit is not required for the works in DDO2 under Schedule 2 of Clause 43.02-2.

### **S2M Interconnector Pipeline**

The two potential alignment options under preliminary consideration for the S2M Interconnector Pipeline are located across two local government municipalities, the City of Melton and City of Hume.

### Hume Planning Scheme

All works located north of the Calder Freeway for both potential alignments are subject to the requirements of the Hume Planning Scheme. The following zones and overlays apply (Attachments 15 to 19):

- Public Use Zone 1 (Service & Utility)
- Comprehensive Development Zone, Schedule 1
- Public Conservation and Resource Zone
- Urban Growth Zone (Schedule 9 - Sunbury South Precinct Structure Plan)
- Urban Floodway Zone
- Public Use Zone 4 (Transport)
- Road Zone, Category 1 (Calder Freeway and Vineyard Road)
- Environmental Significance Overlay (Schedule 4 - Northern Railway Reservation)
- Development Plan Overlay, Schedule 7
- Incorporated Plan Overlay (Schedule 4 - Sunbury South Precinct Structure Plan and Lancefield Road Precinct Structure Plan)
- Infrastructure Contributions Overlay (Schedule 1 - Sunbury South and Lancefield Road Infrastructure Contributions Plan)
- Public Acquisition Overlay 2 (Council road construction and widening) (PAO2).

As the S2M Interconnector Pipeline would comprise a 'minor utility installation', it would be exempt from requiring a planning permit for use, buildings and works under the Hume Planning Scheme.

A planning assessment has been undertaken and has determined that, based on the preliminary alignments under consideration, the project requires:

- A planning permit from Hume City Council for removal of any native vegetation under Clause 52.16 (Native Vegetation Precinct Plan), Clause 52.17 (Native Vegetation); and for removal of any native vegetation in ESO4 under Clause 42.01-2.
- A planning permit from Hume City Council for use associated with construction of a minor utility installation in the Public Conservation and Resource Zone under Clause 36.03-1.<sup>2</sup>
- A planning permit from Hume City Council for any removal, destruction or lopping of vegetation in PAO2 under Clause 45.01-1.

### Melton Planning Scheme

All works located south of the Calder Freeway for both potential alignments are subject to the requirements of the Melton Planning Scheme.

The following zones and overlays apply to Option A, based on the preliminary alignment (Attachments 15 to 19):

- Road Zone, Category 1 (Calder Freeway, Vineyard Road, Melton Highway and Western Freeway)
- Urban Growth Zone (Schedule 5 - Diggers Rest Precinct Structure Plan)
- Public Park and Recreation Zone

<sup>2</sup> The Public Conservation and Resource Zone is expressly excluded from the exemptions for use pursuant to 62.01 of the Hume Planning Scheme.

- Green Wedge Zone
- Special Use Zone (Schedule 5 - Leakes Road Tourist Precinct)
- Urban Growth Zone
- Farming Zone
- Urban Floodway Zone
- Rural Conservation Zone
- Urban Growth Zone (Schedule 4 - Rockbank North Precinct Structure Plan)
- Urban Growth Zone (Schedule 7 - Rockbank Precinct Structure Plan)
- Public Use Zone 4 (Transport)
- Special Use Zone (Schedule 1 - Earth and Energy Resources Industry)
- Public Use Zone 1 (Service and Utility)
- Environmental Significance Overlay (Schedule 2 - Wetlands, Waterways and Riparian Strips)
- Environmental Significance Overlay (Schedule 1 - Remnant Woodlands, Open Forests and Grasslands)
- Environmental Significance Overlay (Schedule 5 – Rural Conservation Area)
- Heritage Overlay HO64 (Plumpton Park), HO206 (Plumpton Road Wall), HO204 (Greigs Road Dry Stone Wall Precinct), HO200 (Mount Cottrell Dry Stone Wall Precinct) and HO105 (Mount Cottrell Road Stock Yard, Ruins and Dry Stone Walls)
- Development Plan Overlay (Schedule 4 - Tourist Precinct)
- Development Contributions Plan Overlay (Schedule 5 - Diggers Rest Development Contributions Plan)
- Melbourne Airport Environs Overlay, Schedule 2
- Public Acquisition Overlay 3 (Outer Metropolitan Ring /E6 Transport Corridor) (PAO3)
- Development Contributions Plan Overlay (Schedule 7 - Rockbank Development Contributions Plan).

As the S2M Interconnector Pipeline would comprise a 'minor utility installation', Option A would be exempt from requiring a planning permit for use, buildings and works under the Melton Planning Scheme.

A planning assessment has been undertaken and has determined that, based on the preliminary footprint for Option A, the project requires:

- A planning permit from Melton City Council for removal of any native vegetation under Clause 52.16 (Native Vegetation Precinct Plan), Clause 52.17 (Native Vegetation); and for removal of any vegetation in ESO1, ESO2 and potentially ESO5 under Clause 42.01-2.
- A planning permit from Melton City Council for any removal, destruction of lopping of trees required within HO64 or any demolition / alterations to the appearance of a heritage place within HO64, HO206, HO204, HO200 and HO105 under Clause 43.01-1.
- A planning permit from Melton City Council for any removal, destruction of lopping of vegetation in PAO3 under Clause 45.01-1.

The following zones and overlays apply to Option B, based on the preliminary alignment (Attachments 15 to 19):

- Road Zone, Category 1 (Calder Freeway, Vineyard Road, Melton Highway and Western Freeway)



- Urban Growth Zone (Schedule 5 - Diggers Rest Precinct Structure Plan)
- Public Park and Recreation Zone
- Green Wedge Zone
- Urban Growth Zone (Schedule 11 - Plumpton Precinct Structure Plan)
- Urban Growth Zone (Schedule 12 - Kororoit Precinct Structure Plan)
- Rural Conservation Zone, Schedule 3
- Urban Growth Zone, Schedule 9
- Public Use Zone 4 (Transport)
- Urban Growth Zone (Schedule 7 - Rockbank Precinct Structure Plan)
- Urban Growth Zone
- Farming Zone
- Special Use Zone (Schedule 1 - Earth and Energy Resources Industry)
- Public Use Zone 1 (Service & Utility)
- Environmental Significance Overlay (Schedule 1 – Remnant Woodlands, Open Forests and Grasslands)
- Environmental Significance Overlay (Schedule 6 - Rural Conservation Area)
- Heritage Overlay HO64 (Plumpton Park), HO206 (Plumpton Road Wall), HO204 (Greigs Road Dry Stone Wall Precinct), HO200 (Mount Cottrell Dry Stone Wall Precinct) and HO105 (Mount Cottrell Road Stock Yard, Ruins and Dry Stone Walls)
- Incorporated Plan Overlay (Schedule 4 - Kororoit Precinct Structure Plan)
- Land Subject to Inundation Overlay, Schedule 1
- Development Contributions Plan Overlay (Schedule 5 - Diggers Rest Development Contributions Plan)
- Melbourne Airport Environs Overlay, Schedule 2
- Public Acquisition Overlay 3 (Outer Metropolitan Ring /E6 Transport Corridor) (PAO3)
- Infrastructure Contributions Overlay (Schedule 1 - Plumpton and Kororoit Infrastructure Contributions Plan)
- Infrastructure Contributions Overlay (Schedule 3 - Mt Atkinson and Tarneit Plains Infrastructure Contributions Plan)
- Development Contributions Plan Overlay (Schedule 7 - Rockbank Development Contributions Plan).

As the S2M Interconnector Pipeline would comprise a 'minor utility installation', Option B would be exempt from requiring a planning permit for use, buildings and works under the Melton Planning Scheme.

A planning assessment has been undertaken and has determined that, based on the preliminary footprint for Option B, the project requires:

- A planning permit from Melton City Council for removal of any native vegetation under Clause 52.16 (Native Vegetation Precinct Plan), Clause 52.17 (Native Vegetation); and for removal of any vegetation in ESO1 and ESO6 under Clause 42.01-2.

- A planning permit from Melton City Council for any removal, destruction of lopping of trees required within HO64 or any demolition / alterations to the appearance of a heritage place within HO64, HO206, HO204, HO200 and HO105 under Clause 43.01-1.
- A planning permit from Melton City Council for any removal, destruction of lopping of vegetation in PAO3 under Clause 45.01-1.

**Local government area(s):**

Shire of Moorabool, City of Melton, City of Hume, City of Greater Geelong

**8. Existing environment**

**Overview of key environmental assets/sensitivities in project area and vicinity** (cf. general description of project site/study area under section 7):

**M2BM Interconnector Pipeline**Aboriginal cultural heritage

The Wadawurrung Traditional Owners Aboriginal Corporation is the RAP for the area of the M2BM Interconnector pipeline west of the Werribee River. There is currently no RAP for the area of the interconnector pipeline east of the Werribee River. An approved Cultural Heritage Management Plan has been undertaken for the M2BM Interconnector Pipeline (Attachment 20) and has identified three registered Aboriginal Places (VAHR7822-4344, VAHR7822-4496 and VAHR7822-4495), all artefact scatters, in close proximity to the proposed works.

Historical heritage

No Commonwealth or State listed historic heritage places are located within or in close proximity to this project area. The nearest locally listed heritage site, the Former Parwan South (Nerowie) State School No. 4175 & Mechanics' Institute (HO196 Moorabool Shire), is located over 2km from the project area.

Ecological values

The following key ecological values have been identified within this project area based on the detailed Biodiversity Assessment undertaken by EHP between 2018 and early 2021 (Attachment 11) identifies:

- There is suitable habitat within the project area for a variety of flora species of national significance.
- Two nationally significant ecological communities were recorded within the proposed alignment, Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) and Grey Box Grassy Woodlands and Derived Native Grasslands of South Eastern Australia.
- One State significant ecological community Western (Basalt) Plains Grassland was recorded within areas of Low Rainfall Plains grassland.
- The proposed development would impact four large trees are located within patches of Riverina Plains Grassy Woodland.
- One significant fauna species, Golden Sun Moth, was recorded during a field assessment of the development area.
- In total, 8.924ha of native vegetation would require removal to give effect to the proposed M2BM Interconnector Pipeline.

Werribee River

The M2BM Interconnector Pipeline is proposed to cross beneath the bed of the Werribee River, a site of known Aboriginal cultural heritage and ecological significance.

### **Bacchus Marsh RWP Pump Station**

#### Aboriginal cultural heritage

A Cultural Heritage Due Diligence Assessment (Attachment 21) undertaken in September 2020 identified four Aboriginal places listed on the Victorian Aboriginal Heritage Register (VAHR) within the Bacchus Marsh RWP site. Since that report was prepared, the proposed design of the Bacchus Marsh RWP Pump Station has been revised to reduce the construction footprint, and both the irrigation and chicken farm pipeline are no longer proposed as part of the WIN Scheme. As a consequence of refinements to the design, the activity area is not expected to intersect any areas of Aboriginal cultural heritage sensitivity, including registered Aboriginal Places.

#### Historical heritage

No Commonwealth or State listed historic heritage places are located within or in close proximity to this project area. The nearest locally listed heritage site, the Former Parwan South (Nerowie) State School No. 4175 & Mechanics' Institute (HO196 Moorabool Shire), is located over 2km from the project area.

#### Ecological values

The site has been extensively modified as part of the operational RWP use.

### **PBID Supply Network (pipeline, pump station and balance tank)**

#### Aboriginal cultural heritage

The Wadawurrung Traditional Owners Aboriginal Corporation is the RAP for the whole of the PBID Supply Network project area. A Cultural Heritage Due Diligence Assessment (Attachment 22) was undertaken by CH2M Beca in May 2020 for the PBID Supply Network and identified three registered Aboriginal Places within the project area, all comprising low density artefact distributions (LDADs) (VAHR 7722-1130, VAHR 7722-1131, VAHR 7722-1190). The project area contains areas of cultural heritage sensitivity associated with these registered Aboriginal Places, and land within 200 metres of Balliang Creek and Dry Creek. Despite some significant ground disturbance having occurred, the project area was considered to have high sensitivity to contain further Aboriginal cultural heritage. A mandatory CHMP is being prepared for this project and has identified two new Aboriginal Places (one LDAD and one artefact scatter) within the project area during complex assessments. Further discussion of heritage values is provided in Section 15 of this referral.

#### Ecological values

The following key ecological values have been identified within this project area based on detailed ecological assessments undertaken by CH2M Beca between late 2019 and early 2021 (see Attachment 12):

- 1.865 ha of native vegetation patches consisting of four different Endangered EVCs, mostly Plains Grassland (EVC 132)
- Five large scattered native trees, including three River Red Gums *Eucalyptus camaldulensis* and two Yellow Box *Eucalyptus melliodora*
- Two listed threatened ecological communities:
  - 0.253 ha of NTGVVP listed as Critically Endangered under the EPBC Act
  - 0.7109 ha of Western (Basalt) Plains Grassland listed under the FFG Act
- One listed threatened flora species, Flax-lily *Dianella longifolia var. grandis* (VicAdv – vulnerable). Two FFG Act listed threatened flora species also occur in the vicinity but not within the project area: Buloke *Allocasuarina luehmannii* (FFG Act – listed, VicAdv – endangered) and Salt Copperbur *Sclerolaena*

*ventricosa* (FFG Act – listed, VicAdv – endangered). No EPBC Act listed threatened flora species were recorded during targeted surveys.

- 0.0089 ha of medium-high quality habitat for Striped Legless Lizard *Delma impar* (EPBC Act – Vulnerable, FFG Act – listed, VicAdv – endangered), Tussock Skink *Pseudemoia pagenstecheri* (VicAdv – vulnerable) and Fat-tailed Dunnart *Sminthopsis crassicaudata* (VicAdv – near threatened), along with additional areas of low quality habitat within the project area and additional medium-high quality habitat adjoining the project area – none of these species were recorded during targeted surveys but are assumed present in medium-high quality habitat.
- Low quality habitat for Growling Grass Frog *Litoria raniformis* (EPBC Act – Vulnerable, FFG Act – listed, VicAdv – endangered) and Golden Sun Moth *Synemon plana* (EPBC Act – Critically Endangered, FFG Act – listed, VicAdv – critically endangered), neither species were recorded during targeted surveys and are not considered present.

#### Balliang Creek

The proposed pipeline crosses Balliang Creek at two locations. The northern Balliang Creek crossing is highly degraded, dominated by exotic species, such as Water Couch *Paspalum distichum*, with some limited Tall Marsh (EVC 821). The southern Balliang Creek crossing contains some native vegetation, including large trees and patches of Creepline Grassy Woodland (EVC 68). Both Balliang Creek crossings have limited to no aquatic vegetation present, other than some Common Reed present at the northern creek crossing. Physical barriers to movement are present at both Balliang Creek crossings in the form of raised access tracks across the creek bed, both of which would be used during construction.

#### Historical heritage

No Commonwealth or State listed historic heritage places are located within or in close proximity to this project area. Table 9 outlines locally listed heritage sites in relative proximity.

Table 9. PBID Supply Network – Historical heritage places in proximity

Site	Details	Proximity to project area
HO196 (Moorabool Shire)	Former Parwan South (Nerowie) State School No 4175 & Mechanics' Institute	~60 m
HO197 (Moorabool Shire)	Former Thelma Ross Memorial Church – 70 Nerowie Road	~1 km
HO195 (Moorabool Shire)	“Nerowie” Outbuildings – 52 Bucklers Road	~1.5 km
HO98 (Melton City)	House “Nerowie” – 155 Nerowie Road	~1.7 km
HO107 (Melton City)	House – 285 Nerowie Road	~2 km
HO133 (Moorabool Shire)	Dwelling – 3105 Geelong-Bacchus Marsh Road	~50 m
HO134 (Moorabool Shire)	Dry Stone Wall	~50 m

The three local heritage places in closest proximity to this project area, are located on the opposite side of existing major roads to the proposed works. Further discussion of heritage values is provided in Section 15 of this referral.

#### **PBID Foundation Recycled Water Irrigation Areas**

##### Aboriginal cultural heritage

The Wadawurrung Traditional Owners Aboriginal Corporation is the RAP for the area containing each of the foundation recycled water irrigation areas. The foundation recycled water irrigation areas are located on land currently used and developed for agricultural production, mostly consisting of land ploughed for broadacre cropping. A cultural heritage due diligence assessment and VAHR search have not been undertaken for this project. Based on review of publicly available mapping (Attachment 23), areas of

cultural heritage sensitivity have been identified within the foundation recycled water irrigation areas associated with land within 200 metres of waterways such as Balliang Creek and Dry Creek, and ephemeral swamps. One area of cultural heritage sensitivity associated with a registered Aboriginal Place is located within the Customer 2 recycled water irrigation area; along Geelong-Bacchus Marsh Road south of Bluegum Track. Further discussion of heritage values is provided in Section 15 of this referral.

#### Ecological values

Ecological values within the foundation recycled water irrigation areas assessed in the native vegetation and biodiversity impact assessments are minimal due to clearing for historical and ongoing use of the land for agricultural production. Of the eight scattered trees proposed to be removed for the recycled water irrigation areas, five large scattered trees comprise Buloke *Allocasuarina luehmannii*, which is listed under the FFG Act and has a conservation status of endangered under the VicAdv. Further investigations would be required prior to developing Stage 2 of the Customer 2 recycled water irrigation areas to determine the extent of native vegetation and biodiversity impacts in these areas, which are located in proximity to large patches of modelled Plains Grassland (EVC 132) within the property, and adjacent to the proposed Western Grasslands Reserve. Depending on its location, extent and quality, Plains Grassland can be known to support a number of threatened flora and fauna species (e.g. Striped Legless Lizard, Golden Sun Moth, Spiny Rice-flower, Matted Flax-lily, Large-fruit Fireweed, Small Golden Moths, Cover Glycine) and can correspond to threatened ecological communities listed under the EPBC Act (Natural Temperate Grasslands of the Victorian Volcanic Plain) and FFG Act (Western (Basalt) Plains Grassland).

#### Balliang Creek

The proposed irrigation areas of Customers 2 and 3 are located in proximity to Balliang Creek and associated drainage lines (e.g. Dry Creek) to which a 50-metre buffer zone is proposed. The section of Balliang Creek through the project area is rated in Poor condition by DELWP's Index of Stream Condition ISC2010.

#### Historical heritage

No Commonwealth or State listed historic heritage places are located within or in close proximity to this project area. Table 10 outlines locally listed heritage sites in relative proximity.

Table 10. PBID Foundation Recycled Water Irrigation Areas – Historical heritage places in proximity

Site	Details	Proximity to project area
HO196 (Moorabool Shire)	Former Parwan South (Nerowie) State School No 4175 & Mechanics' Institute	~160 m
HO197 (Moorabool Shire)	Former Thelma Ross Memorial Church – 70 Nerowie Road	~380 m
HO195 (Moorabool Shire)	"Nerowie" Outbuildings – 52 Bucklers Road	~260 m
HO98 (Melton City)	House "Nerowie" – 155 Nerowie Road	~370 m
HO107 (Melton City)	House – 285 Nerowie Road	~650 m
HO133 (Moorabool Shire)	Dwelling – 3105 Geelong-Bacchus Marsh Road	~380 m
HO134 (Moorabool Shire)	Dry Stone Wall	~150 m

Further discussion of heritage values is provided in Section 15 of this referral.

### **Parwan Recycled Water Storage**

#### Aboriginal cultural heritage

A Cultural Heritage Due Diligence Assessment (Attachment 22) undertaken in May 2020 identified that there are no currently registered Aboriginal Places or areas of cultural heritage sensitivity within the proposed Parwan Recycled Water Storage site. However, four stone artefacts were found within the site

during the standard assessment for the PBID Supply Network CHMP (No. 17237), which originally included the storage site in the activity area. A CHMP is currently being prepared for the Parwan Recycled Water Storage (CHMP No. 17387) and will include the results of the already completed standard assessment and planned complex assessments. Further discussion of heritage values is provided in Section 15 of this referral.

#### Ecological values

An ecological assessment undertaken in March 2021 (Attachment 14) describes ecological values in this project area as follows:

- Vegetation across the project area is dominated by exotic pasture grasses and weeds, predominantly rye grasses (*Lolium spp.*) and wild oats (*Avena spp.*)
- There are 19 scattered native trees present in the project area, all located around the existing farm dam in the base of the natural depression
- The large trees present in the project area are unlikely to provide important habitat due to the lack of connectivity to significant food sources or habitat within the surrounding landscape.

#### Historical heritage

No Commonwealth or State listed historic heritage places are located within or adjoining the project area. Table 11 outlines locally listed heritage places proximate to the site.

Table 11. Parwan Recycled Water Storage – Historical heritage places in proximity

Site	Details	Proximity to project area
HO196 (Moorabool Shire)	Former Parwan South (Nerowie) State School No 4175 & Mechanics' Institute	~100m
HO195 (Moorabool Shire)	"Nerowie" Outbuildings – 52 Bucklers Road	~1km
HO98 (Melton City)	House "Nerowie" – 155 Nerowie Road	~1km

### **S2M Interconnector Pipeline**

#### Aboriginal cultural heritage

The Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation is the RAP for the area containing the section of the interconnector pipeline north of the Calder Freeway and the pump station proposed at the Sunbury RWP site. There is currently no RAP for the area containing the section of interconnector pipeline south of the Calder Freeway through to the Melton RWP. Both alignments currently under consideration for the S2M Interconnector Pipeline intersect with areas of cultural heritage sensitivity associated with waterways (e.g. Kororoit Creek, Jacksons Creek, Harpers Creek and ephemeral wetlands) and registered Aboriginal Places. It is anticipated that the project would comprise a high impact activity as defined in the *Aboriginal Heritage Regulations 2018*. On that basis, a mandatory CHMP is expected to be required for the project. A search of the VAHR on 26 April 2021 has identified:

- Five registered Aboriginal Places (VAHR 7822-0482, VAHR 7822-0642, VAHR 7822-1864, VAHR 7822-2636, VAHR 7822-4275) comprising six components (four artefact scatters, one LDAD, one quarry site) within the Option A assessment area.
- Ten registered Aboriginal Places (VAHR 7822-0482, VAHR 7822-0642, VAHR 7822-1864, VAHR 7822-2636, VAHR 7822-4275, VAHR 7822-3026, VAHR 7822-3731, VAHR 7822-4000, VAHR 7822-4154, VAHR 7822-4266) comprising 16 components (six artefact scatters, four LDADs comprising nine components and one quarry site) within the Option B assessment area.

Further discussion of heritage values is provided in Section 15 of this referral.

### Ecological values

Due to the early stage of planning and design for this project, ecological investigations for this project used to inform this referral are limited to a high-level review of publicly available mapping and database searches. Based on this high-level desktop review, approximately 7-8 ha of native vegetation (based on modelled EVCs) is predicted to occur within the assessment areas. All EVCs modelled to occur within the assessment areas have a bioregional conservation significance of Endangered, with the majority comprising Plains Grassland (EVC 132).

Based on the modelled EVCs within the assessment area, the following listed threatened communities have been identified as having a moderate or higher likelihood of occurrence within the assessment area:

- EPBC Act listed Grassy Eucalypt Woodland of the Victorian Volcanic Plain (Critically Endangered)
- EPBC Act listed Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered)
- EPBC Act listed Natural Temperate Grassland of the Victorian Volcanic Plain (Critically Endangered)
- EPBC Act listed Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (Critically Endangered)
- FFG Act listed Western (Basalt) Plains Grassland
- FFG Act listed Western Basalt Plains (River Red Gum) Grassy Woodland.

PMST and VBA searches identified 56 listed threatened flora species and 62 listed threatened fauna species as potentially occurring within 5 km of the two current alignment options. A likelihood of occurrence assessment undertaken for these species identified 27 listed threatened flora species and 19 listed threatened fauna species as having a moderate or higher likelihood of occurrence in the assessment areas, including four EPBC Act listed threatened flora (Spiny Rice-flower, Matted Flax-lily, Small Golden Moths, Large-headed Fireweed) and seven EPBC Act listed threatened fauna (Stiped Legless Lizard, Growling Grass Frog, Golden Sun Moth, White-throated Needle-tail, Swift Parrot, Plains-wanderer, Grassland Earless Dragon).

Further desktop and field assessments are proposed to be undertaken to assist in selection of a preferred alignment for this project, to avoid and minimise impacts to identified ecological values.

### Historical heritage

A heritage due diligence assessment has not yet been undertaken for the S2M Interconnector Pipeline due to the preliminary stage of the project. A search of the key heritage databases has confirmed there are no heritage places listed on the VHR, VHI, CHL, NHL or WHL within the indicative assessment areas. However, four heritage places subject to a HO under the Melton Planning Scheme are intersected by the indicative assessment areas:

- Melton HO64 - 'Plumpton Park' (includes the house and setting and cypress trees) – located at 412-518 Plumpton Road – both current alignment options
- Melton HO206 - Plumpton Road Wall – located along the western side of Plumpton Road reserve, extending for approximately 1.6 km south of the Plumpton Road / Holden Road intersection – both current alignment options
- Melton HO204 - Greigs Road Dry Stone Wall Precinct – located at various locations along both sides of Greigs Road (between the Ballarat railway line and Mount Cottrell Road) and along various intersecting roads (e.g. Paynes Road, Leakes Road, Troups Road) and property boundary lines – both current alignment options

- Melton HO200 - Mount Cottrell Dry Stone Wall Precinct – located at various locations along Mount Cottrell Road and Greigs Road, and along various intersecting roads (e.g. Faulkners Road) and property boundary lines – both current alignment options.

One heritage place on the non-statutory RNE intersects the indicative assessment areas, this being the Mount Alexander-Murray Valley Railway Line.

In addition, one VHR listed heritage place, one VHI listed heritage place and two heritage places subject to a HO under the Melton Planning Scheme are identified adjacent to the indicative assessment areas:

- VHR H2278 – Australian Beam Wireless Receiving Station – 653-701 Greigs Road and 703-735 Greigs Road, Fieldstone (within Melton LGA)
- VHI Site H7822-0837 – Vineyard Road Historic Site – located at 62-144 Diggers Rest-Coimadai Road, Diggers Rest (within Melton LGA)
- Melton HO105 – Mount Cottrell Road Stock Yard, Ruins & Dry Stone Walls – located at 1476-1570 Mount Cottrell Road, Mount Cottrell
- Melton HO102 – Glengallon (House) – located at 77-207 Greigs Road West, Mount Cottrell.

Consistent with the approach taken for the other WIN Scheme projects, a heritage due diligence assessment would (as a minimum), be undertaken for the S2M Interconnector Pipeline. Opportunities to avoid and/or minimise impacts through changes to the design or alignment footprint would also be further explored. Further discussion of heritage values is provided in Section 15 of this referral.

## 9. Land availability and control

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

No  Yes If yes, please provide details.

The location of Crown land within the project areas is shown in Attachment 24 and described below.

#### **M2BM Interconnector Pipeline**

This project would be partially located within the Nerowie Road, Green Hill Road, Telephone Road (unformed) and Eynesbury Road road reserves, administered by the Moorabool Shire and Melton City Councils on behalf of the Victorian Government.

The pipeline would also pass beneath a small area of unassigned Crown land (2009\PP3431, 2008\PP3164) in the immediate vicinity of the Werribee River. DELWP is the public land manager of these land parcels.

#### **Bacchus Marsh RWP Pump Station**

This project would be wholly located on the Bacchus Marsh RWP Pump Station site (SPI:355723), freehold land owned by the Moorabool Shire Council.

#### **PBID Supply Network (pipeline, pump station, balance tank)**

The proposed pipeline traverses two parcels of unreserved Crown land associated with the southern crossing of Balliang Creek (2001\PP2049, 2001\PP3201). The Secretary to the DELWP is the Crown land administrator for both Crown land parcels.

The proposed pipeline is also located in the following road reserves:

- Nerowie Road, Parwan South Road, Schultz Road, Ripley Road (east of the southern Balliang Creek crossing) and Agars Road – administered by Moorabool Shire Council on behalf of the Victorian Government



- Ripley Road (west of the southern Balliang Creek crossing) – administered by City of Greater Geelong Council on behalf of the Victorian Government
- Geelong-Bacchus Marsh Road – administered by Regional Roads Victoria on behalf of the Victorian Government.

### **PBID Foundation Recycled Water Irrigation Areas**

This project is not located on Crown land.

A 50 m buffer is provided in the customer farm plans between proposed recycled water irrigation areas and Balliang Creek, which is contained within a corridor of unreserved Crown land. A 50 m buffer is also provided in the customer farm plans between proposed recycled water irrigation areas and public roads (no buffer to Parwan South Road, Schultz Road or Ripley Road, which are not publicly accessible due to being 'paper roads' or roads subject to unused road licences in favour of the adjoining landowners).

### **Parwan Recycled Water Storage**

This project is not located on Crown land.

### **S2M Interconnector Pipeline**

The S2M Interconnector Pipeline is expected to be located partially within Crown land.

Based on the preliminary alignment options identified Option A traverses two parcels of Crown land forming part of the Holden Flora and Fauna Reserve and Kororoit Creek.

Option A is also expected to be located partially within the following road reserves:

- Buckland Way – administered by Hume City Council on behalf of the Victorian Government.
- Vineyard Road, Calder Freeway, Diggers Rest-Coimadai Road, Plumpton Road, Melton Highway and the Western Freeway – administered by Regional Roads Victoria on behalf of the Victorian Government.
- Houdini Drive, Holden Road, Leakes Road, Beattys Road, Paynes Road, Greigs Road and Mount Cottrell Road – administered by Melton City Council on behalf of the Victorian Government.

Based on the preliminary alignment options identified Option B traverses two parcels of Crown land forming part of the Holden Flora and Fauna Reserve and Kororoit Creek.

Option B is also expected to be partially located within the following road reserves:

- Buckland Way – administered by Hume City Council on behalf of the Victorian Government.
- Vineyard Road, Calder Freeway, Diggers Rest-Coimadai Road, Plumpton Road, Melton Highway, Hopkins Road (Melton-Werribee Road) & the Western Freeway – administered by Regional Roads Victoria on behalf of the Victorian Government.
- Houdini Drive, Beattys Road, Opera Boulevard, Taylors Road, Reed Court, Neale Road, Meskos Road, Griegs Road, Troups Road North, Leakes Road, Mount Cottrell Road and Paynes Road – administered by Melton City Council on behalf of the Victorian Government.

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

A summary of current land tenure for each of the proposed projects is provided below:

### **M2BM Interconnector Pipeline**

The M2BM Interconnector Pipeline would be partially located in the road reserves associated with:

- Nerowie Road – managed by Moorabool Shire Council (west of Bucklers Road) and Melton City Council (east of Bucklers Road).

- Telephone Road, Green Hill Road and Eynesbury Road – managed by Melton City Council.

Table 12 contains a summary of land parcels not within road reserve that are intersected by the project area for the M2BM Interconnector Pipeline (see also Attachment 2).

Table 12: Table of land parcels intersected by M2BM Interconnector Pipeline

SPI	Tenure	Address	Landowner / manager	Registered restrictions
1\PS341744	Freehold	Nerowie Road, Parwan VIC 3340	Private	Nil
2\TP745347	Freehold	285 Nerowie Road, Parwan VIC 3340	Private	<ul style="list-style-type: none"> <li>• Easement (ID: E571778) in favour of Gas and Fuel Corporation of Victoria</li> </ul>
1\TP211534	Freehold	155 Nerowie Road, Parwan VIC 3340	Private	<ul style="list-style-type: none"> <li>• Easement (ID: E793499) in favour of Gas and Fuel Corporation</li> </ul>
1E\PS543210	Freehold	1752 Ballan Road, Quandong VIC 3030	Private	<ul style="list-style-type: none"> <li>• Easement (ID: E561537) in favour of Gas and Fuel Corporation</li> </ul>
CP104323	Freehold	N/A	Private	<ul style="list-style-type: none"> <li>• Easement (ID: E586986) in favour of Gas and Fuel Corporation of Victoria</li> <li>• Caveat (ID: AR206691C)</li> <li>• Caveat (ID: AR801056M)</li> <li>• Caveat (ID: AR889011Q)</li> </ul>
19~A\PP3164	Freehold	220-290 Eynesbury Road, Eynesbury VIC 3338	Private	<ul style="list-style-type: none"> <li>• Easement (ID: E586986) in favour of Gas and Fuel Corporation</li> <li>• Easement (ID: F098526) in favour of Gas and Fuel Corporation</li> <li>• Caveat (ID: AR206691C)</li> <li>• Caveat (ID: AR801056M)</li> <li>• Caveat (ID: AR889011Q)</li> </ul>
18~A\PP3164	Freehold	292-342 Eynesbury Road, Eynesbury VIC 3338	Private	<ul style="list-style-type: none"> <li>• Easement (ID: AC395346Q) in favour of GasNet Australia (Operations) Pty Ltd</li> </ul>

2008\PP3164	Crown Land (Uncategorised Public Land)	Griegs Road, Eynesbury, VIC 3338 (Werribee River)	Secretary to the Department of Environment, Land, Water and Planning	Nil
2009\PP3431	Crown Land (Uncategorised Public Land)	Mount Cottrell Road, Mount Cottrell VIC 3024 (Werribee River)	Secretary to the Department of Environment, Land, Water and Planning	Nil
A~1\PP3431	Freehold	1884-1098 Mount Cottrell Road, Melton South VIC 3338	Private	<ul style="list-style-type: none"> <li>Easement (ID: AC379361L) in favour of GasNet Australia Pty Ltd</li> <li>Easement (ID: J558865) in favour of SECV</li> <li>Easement (ID: AG104274J) in favour of Western Region Water Corporation</li> </ul>
10\PP3431	Freehold	1670-1880 Mount Cottrell Road, Mount Cottrell VIC 3024	Western Region Water Corporation	<ul style="list-style-type: none"> <li>Section 173 Agreement (ID: AH064725L) in favour of Melton City Council</li> </ul>

### Bacchus Marsh RWP Pump Station

This project is located wholly within freehold land owned by the Moorabool Shire Council (SPI: PC355723).

Table 13 outlines key title information relating to the site (see also Attachment 3).

Table 13: Title Information for Bacchus Marsh RWP

SPI	Tenure	Address	Landowner / manager	Registered restrictions
PC355723	Freehold	249 Parwan South Road, Parwan VIC 3340	Moorabool Shire Council	<ul style="list-style-type: none"> <li>Easement (ID: E623421) in favour of Gas and Fuel Corporation of Victoria</li> </ul>

### PBID Supply Network (pipeline, pump station, balance tank)

This project is mostly located within road reserves associated with:

- Nerowie Road, Parwan South Road, Schultz Road – managed by Moorabool Shire Council
- Geelong-Bacchus Marsh Road – managed by Regional Roads Victoria
- Ripley Road (between Geelong-Bacchus Marsh Road and Balliang Creek) – managed by City of Greater Geelong Council
- Ripley Road (between Balliang Creek and Agars Road) – managed by Moorabool Shire Council.

Sections of Parwan South Road and Ripley Road within the project area are subject to Unused Road Licences enabling use of land within the road reserve for certain purposes by the licenced adjoining landowner.

Table 14 contains a summary of land parcels not within road reserve that are intersected by the project area for the PBID Supply Network (see also Attachment 5).

Table 14: Table of land parcels intersected by PBID Supply Network

SPI	Tenure	Address	Landowner / manager	Project components	Registered restrictions
1\PS341744	Freehold	Nerowie Road, Parwan VIC 3340	Private	Pump Station, Balance Tank	Nil
2\PS542596	Freehold	3684 Geelong-Bacchus Marsh Road, Parwan VIC 3340	Private	Offtake	Nil
14\LP5327	Freehold	3684 Geelong-Bacchus Marsh Road, Parwan VIC 3340	Private	Offtake	Nil
2\LP138636	Freehold	3684 Geelong-Bacchus Marsh Road, Parwan VIC 3340	Private	Offtake	Nil
4\TP380925	Freehold	3611 Geelong-Bacchus Marsh Road, Parwan 3340	Private	Offtake	Nil
3\PS315762	Freehold	4 Schultz Road, Parwan VIC 3340	Private	Pipeline, Offtake, Laydown Area	Nil
2\PS315762	Freehold	4 Schultz Road, Parwan VIC 3340	Private	Pipeline, Laydown Area	Electricity easement
1\TP389981	Freehold	Balliang East Primary School - 4 School Road, Balliang East VIC 3340	Minister administering the <i>Education and Training Reform Act 2006</i>	Offtake	Nil
4\LP12800	Freehold	285 Agars Road, Balliang East VIC 3340	Private	Offtake, Laydown Area	Nil
5\LP12800	Freehold	3040 Bacchus Marsh Road, Balliang VIC 3340	Private	Pipeline, Access Track, HDD Entry/Exit Pit, Laydown Area	Nil
24\PP049	Freehold	2810-2980 Bacchus Marsh Road, Balliang VIC 3340	Private	Offtake	Nil

2001\PP2049	Crown Land (Uncategorised Public Land)	Balliang Creek - Geelong-Bacchus Marsh Road, Balliang VIC 3340	Secretary to the DELWP	Pipeline	Nil
2001\PP3201	Crown Land (Uncategorised Public Land)	Balliang Creek - Geelong-Bacchus Marsh Road, Balliang VIC 3340	Secretary to the DELWP	Pipeline	Nil
1\TP96216	Freehold	Agars Road, Balliang East VIC 3340	Private	Pipeline, Access Track, HDD Entry/Exit Pit, Laydown Area	Nil
1\TP854791	Freehold	315 Sharkeys Road, Balliang East VIC 334	Private	Offtake	Nil
7\LP12800	Freehold	319 Agars Road, Balliang East VIC 3340	Private	Offtake	Nil

### PBID Foundation Irrigation Properties

Each of the PBID Foundation Irrigation Properties comprise privately owned freehold land consisting of the following parcels (see also Attachment 7):

- Foundation Customer 1 (SPI: 1\PS341744, 1\TP944837, 2\PS542596, 14\LP5327, 2\LP138636, 1\LP138636, 3\PS315762, 2\PS315762, 1\TP142482)
- Foundation Customer 2 (SPI: 4\LP12800, 5\LP12800, 1\TP82580, 1\TP663409, 2\TP663409, 7\LP12800, 1\TP96216)
- Foundation Customer 3 (SPI: 25\PP2049, 24\PP2049, 1\TP379436, 20\PP2049, 21\PP2049, 1\TP955544, 24\LP5411, 1\TP854791, A1\PP2049, 1\TP955538, 2\TP955538, 1\TP15942, 2\TP15942).

These land parcels are not subject to registered encumbrances except for electricity easements on 2\PS315762 and 1\TP142482, and a road easement on 1\LP138636. Farm plans for these properties have been developed to avoid impacts to existing power lines.

### Parwan Recycled Water Storage

This project is located on privately owned freehold land (SPI: 1\PS341744) (see also Attachment 9).

### S2M Interconnector Pipeline

Based on the preliminary alignments identified, S2M Interconnector Pipeline is anticipated to be mostly located within road reserves associated with:

- Option A:
  - Buckland Way – managed by Hume City Council.
  - Vineyard Road, Calder Freeway, Diggers Rest-Coimadai Road, Plumpton Road, Melton Highway and the Western Freeway – managed by Regional Roads Victoria.
  - Houdini Drive, Holden Road, Leakes Road, Beattys Road, Paynes Road, Greigs Road and Mount Cottrell Road – managed by Melton City Council.
- Option B:
  - Buckland Way – managed by Hume City Council.

- Vineyard Road, Calder Freeway, Diggers Rest-Coimadai Road, Plumpton Road, Melton Highway, Hopkins Road (Melton-Werribee Road) & the Western Freeway – managed by Regional Roads Victoria.
- Houdini Drive, Beattys Road, Opera Boulevard, Taylors Road, Reed Court, Neale Road, Meskos Road, Griegs Road, Troups Road North, Leakes Road, Mount Cottrell Road and Paynes Road – managed by Melton City Council.

Several land parcels not within the road reserve are also intersected by the preliminary alignments (refer Attachment 10).

Given the very early stage of planning and design for the S2M Interconnector Pipeline, tenure, ownership and encumbrances affecting privately owned land have not yet been analysed in detail.

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

No change in land tenure is proposed. Where proposed infrastructure is located on unreserved Crown land, Western Water is engaging with DELWP in relation to obtaining necessary licences under the *Land Act 1958*.

Western Water is seeking to purchase by agreement, the required land for the PBID Supply Network (pump station and balance tank) and the Parwan Recycled Water Storage, and to establish easements where the PBID Supply Network (pipeline) and M2BM Interconnector Pipeline traverse private land. Customer agreements would be established between Western Water and the three foundation customers setting out the conditions for the supply and use of recycled water for on-farm irrigation.

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

**Native Title**

There are no registered land use activity agreements under the Victorian *Traditional Owner Settlement Act 2010* applying to land within any of the project areas. There are no native title determinations or Indigenous Land Use Agreements (ILUA) made under the Commonwealth *Native Title Act 1993* applying to land within any of the project areas.

**Easements, covenants and other registered encumbrances**

A review of title searches for each of the land parcels intersected by the project areas has identified no registered easements, covenants or agreements encumbering these land parcels, with the exception of those associated with the M2BM Interconnector Pipeline outlined in Table 12, the Bacchus Marsh RWP Pump Station outlined in Table 13, the PBID Supply Network outlined in Table 14, and the PBID Foundation Recycled Water Irrigation Areas as described above.

## 10. Required approvals

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

**WIN Scheme**

***Environment Protection Act 1970 / Environment Protection Act 2017*** - The WIN Scheme involves an effluent reuse scheme. Under section 11(d) of the current *Environment Protection (Scheduled Premises) Regulations 2017*, a works approval or licence is not required for an effluent reuse scheme provided the scheme complies with specifications acceptable to EPA Victoria, which typically requires implementing a Health and Environmental Management Plan (HEMP) prepared in accordance with EPA Publication 464.2: Guidelines for Environmental Management: Use of Reclaimed Water and approved by EPA Victoria.

The *Environment Protection Amendment Act 2018* comes into effect on 1 July 2021, and will introduce new subordinate legislation, including new Environment Protection Regulations and new Environment

Reference Standards (ERS) to replace the current State Environment Protection Policies. Under the proposed new Environment Protection Regulations, the supply or use of reclaimed wastewater is a prescribed permit activity (Schedule 1, Item 22). As such, EPA Victoria has advised Western Water that the WIN Scheme and HEMP would be assessed as a permit application under the proposed new Environment Protection Regulations. This permit would need to be obtained prior to commencement of recycled water irrigation within the foundation recycled water irrigation areas using the proposed infrastructure.

In addition, construction and operation of all WIN Scheme projects would need to comply with the new ERS relating to ambient air and noise, land and water, and new general environmental duty introduced through the *Environment Protection Amendment Act 2018* from 1 July 2021.

### **M2BM Interconnector Pipeline**

The following State and Commonwealth approvals are required for this project:

***Environment Protection and Biodiversity Conservation Act 1999*** – A referral under the EPBC Act was submitted in September 2018 and was determined to be a controlled action requiring assessment by preliminary documentation in December 2018 (EPBC 2018/8260). EPBC Act approval was ultimately granted on 4 May 2021.

***Planning and Environment Act 1987*** - The project requires a planning permit from the Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation) and a planning permit from the Melton City Council for removal of native vegetation within Environmental Significance Overlays 2, 3 and 4 (Clause 42.01-2) and removal of native vegetation under Clause 52.17 (Native Vegetation).

***Aboriginal Heritage Act 2006*** - A mandatory CHMP is required as the project involves a high impact activity in an area of cultural heritage sensitivity.

***Flora and Fauna Guarantee Act 1988*** – A permit to take would be required for the removal of protected flora on public land (road reserves).

***Land Act 1958*** – Consent (e.g. licence) would be required from DELWP for works on unreserved Crown land along the Werribee River.

***Road Management Act 2004*** – Approval would be required from the Moorabool Shire and Melton City Councils for works within road reserves.

***Water Act 1989*** - A works on waterways permit would be required from Melbourne Water to construct works in the vicinity of the Werribee River.

### **Bacchus Marsh RWP Pump Station**

Consent of the landowner, Moorabool Shire Council, would be required to undertake works on the site. The Bacchus Marsh RWP Pump Station is not otherwise anticipated to require any State or Commonwealth approval for the reasons detailed below.

***Planning and Environment Act 1987*** – The project is not expected to require a planning permit under the *Planning and Environment Act 1987*. If, because of further investigations or design refinements, native vegetation is required to be removed, the project would require a planning permit from Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation).

***Aboriginal Heritage Act 2006*** – The Cultural Heritage Due Diligence Assessment conducted in September 2020 identified that a CHMP would be required for the construction of the Bacchus Marsh RWP Pump Station, together with the then proposed chicken farm pipeline and irrigation pipeline. As outlined in Section 7, the project area has since been further refined and neither the irrigation pipeline nor chicken farm pipeline are proposed as part of the WIN works. Based on the refined project area, the Bacchus Marsh RWP Pump Station is not located within an area of Aboriginal Cultural Heritage sensitivity and a Cultural Heritage Management Plan is not expected to be required.

**PBID Supply Network (pipeline, pump station, balance tank)**

The following State and Commonwealth approvals are required for this project:

**Environment Protection and Biodiversity Conservation Act 1999** – A referral under the EPBC Act was submitted on 24 May 2021 (EPBC 2021/8963) due to the potential for impacts on MNES protected under the EPBC Act, including:

- Threatened ecological communities – proposed removal of 0.253 ha of Natural Temperate Grasslands of the Victorian Volcanic Plain
- Threatened species – proposed removal of 0.0089 ha of medium-high quality habitat for Striped Legless Lizard

**Planning and Environment Act 1987** - The project requires a planning permit from Moorabool Shire Council for removal of native vegetation under Clause 52.17 (Native Vegetation); and for removal of native vegetation in ESO7 and any vegetation in ESO2 under Clause 42.02 (Environmental Significance Overlay). The project requires a planning permit from City of Greater Geelong Council for removal of native vegetation under Clause 52.17 (Native Vegetation) and removal of native vegetation in ESO4 under Clause 42.02 (Environmental Significance Overlay).

**Aboriginal Heritage Act 2006** – A mandatory CHMP is required as the project involves a high impact activity in an area of cultural heritage sensitivity.

**Flora and Fauna Guarantee Act 1988** - A permit to take would be required for the removal of protected flora on public land (i.e. government road, Balliang Creek).

**Land Act 1958** - Consent (e.g. licence) would be required from DELWP for works on unreserved Crown land along Balliang Creek. Western Water is engaging with DELWP Barwon and DELWP Grampians Regions in relation to obtaining a licence to construct the pipeline by boring under the southern crossing of Balliang Creek.

**Road Management Act 2004** – Consent would be required from Regional Roads Victoria (Geelong-Bacchus Marsh Road), Moorabool Shire Council and City of Greater Geelong Council for works within road reserves.

**Water Act 1989** - A works on waterways permit would be required from Melbourne Water to construct works in, on, under or over Balliang Creek (i.e. two pipeline crossings).

**PBID Recycled Water Irrigation Areas**

Each of the foundation customers would be responsible for obtaining necessary approvals for on-farm irrigation infrastructure. This would include as a minimum, a planning permit from Moorabool Shire Council or City of Greater Geelong Council to remove native vegetation and potentially non-vegetation depending on applicable overlays as described above. Although this project would require the removal of five FFG Act listed Buloke, as these trees are located on private land, no permit to take would be required under the FFG Act.

In accordance with the customer agreements, each of the foundation customers would be required to comply with the requirements of Western Water's HEMP under the Environment Protection Act, as applicable to recycled water irrigation activities on their properties. This would include a requirement to prepare and implement a customer site management plan, detailing site-specific recycled water irrigation protocols and risk management, for approval by EPA Victoria prior to commencing recycled water irrigation.

Western Water is seeking to have the Parwan-Balliang Irrigation District, including the foundation recycled water irrigation areas, declared a new irrigation district by the Minister for Water under the *Water Act 1989*.

**Parwan Recycled Water Storage**



The following State and Commonwealth approvals are required for this project:

**Planning and Environment Act 1987** - The project requires a planning permit from Moorabool Shire Council for use of the land for a utility installation under Section 2 of Clause 35.07 (Farming Zone), buildings and works associated with a Section 2 use under Clause 35.07 (Farming Zone), earthworks required pursuant to Clause 35.07 (Farming Zone) and removal of native vegetation under Clause 52.17 (Native Vegetation).

**Aboriginal Heritage Act 2006** - Although no currently registered Aboriginal Places are identified within the Parwan Recycled Water Storage site, four stone artefacts were found within the site during the standard assessment for the PBID Supply Network CHMP (No. 17237), which originally included the storage site in the activity area. Given the known presence of artefacts (submitted for registration) within the storage site, a CHMP (No. 17387) is currently being prepared for the Parwan Recycled Water Storage site.

### **S2M Interconnector Pipeline**

As a preferred location has not yet been identified for the S2M Interconnector Pipeline, an accurate analysis of required State and Commonwealth approvals cannot be undertaken at this time. The following State and Commonwealth approvals may be required for the S2M Interconnector Pipeline, based on the preliminary alignment options being considered:

**Environment Protection and Biodiversity Conservation Act 1999** – referral and/or assessment may be required, should the final alignment be likely to have a significant impact on a matter of national environmental significance. A desktop assessment of potential impacts has not yet been completed given the preliminary stage of planning for the project, however further analysis is planned prior to determination of a preferred alignment for the pipeline.

**Planning and Environment Act 1987** – as outlined in the section ‘Planning context’ planning permits are likely to be required for the S2M Interconnector Pipeline from the City of Melton and City of Hume.

**Aboriginal Heritage Act 2006** – while a cultural heritage due diligence assessment has not yet been undertaken for the S2M Interconnector Pipeline, based on preliminary analysis it is anticipated that a Cultural Heritage Management Plan would be required for the S2M Interconnector Pipeline. This would be confirmed following completion of a cultural heritage due diligence assessment for the preferred alignment.

**Flora and Fauna Guarantee Act 1988** - A permit to take would be required if, based on the final preferred alignment, protected flora is to be removed on public land.

**Land Act 1958** – based on the preliminary alignments consent (e.g. licence) would be required from Parks Victoria for works within the Holden Flora and Fauna Reserve and from DELWP for works on unreserved Crown land along Kororoit Creek.

**Road Management Act 2004** – Approval is likely to be required from Regional Roads Victoria, City of Melton and City of Hume for works within road reserves.

**Water Act 1989** – based on the preliminary alignments, works on waterways permit would be required from Melbourne Water to construct works in, on, under or over Kororoit Creek.

### **All projects**

Other legislative requirements that may apply to the projects include:

- *Catchment and Land Protection Act 1994* – to prevent the spread of noxious weeds and pest animals
- *Heritage Act 2017* – to manage unexpected finds of archaeological sites if encountered during construction
- *Wildlife Act 1975* – to manage the handling of wildlife if encountered during construction.

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

No  Yes If yes, please provide details.

**M2BM Interconnector Pipeline**

The following applications for approval have been lodged for this project to date:

- A referral under the EPBC Act was submitted in September 2018. Approval was ultimately granted on 4 May 2021 (EPBC 2018/8260).
- A planning permit application for removal of native vegetation and removal of native vegetation within Environmental Significance Overlays 2, 3 & 4 was lodged with Melton City Council on 7 July 2020. The application is on hold pending consideration by DELWP of this EES referral.
- A planning permit application for removal of native vegetation was lodged with Moorabool Shire Council on 25 November 2020 and withdrawn on 15 March 2021, pending consideration by DELWP of this EES referral.

**Bacchus Marsh RWP Pump Station**

No applications for approval have been lodged for this project to date.

**PBID Supply Network (pipeline, pump station, balance tank)**

No applications for approval have been lodged for this project to date.

**PBID Foundation Recycled Water Irrigation Areas**

No applications for approval have been lodged for this project to date. Each of the foundation customers would be responsible for obtaining necessary approvals for on-farm irrigation infrastructure.

**Parwan Recycled Water Storage**

No applications for approval have been lodged for this project to date.

**S2M Interconnector Pipeline**

No applications for approval have been lodged for this project to date.

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

- EPA Victoria
- DELWP – Planning
- DELWP – Impact Assessment Unit
- DELWP – Barwon, Port Phillip and Grampians Regions
- Aboriginal Victoria
- Moorabool Shire Council
- Melton City Council
- City of Greater Geelong Council
- Melbourne Water
- Barwon Water
- City West Water
- Southern Rural Water
- DAWE – in relation to the M2BM Interconnector Pipeline only.

**Other agencies consulted:**

Refer to the consultation program summary in Section 20 of this referral.

## PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

### 11. Potentially significant environmental effects

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

#### Summary

The significance of an environmental effect is related to:

- The significance of the environmental assets affected with regard to their character, geographic occurrence and values or importance;
- The potential magnitude, extent and duration of the effects on the assets in the short, medium and long term; and
- The potential for more extended effects in space and time as a result of interactions of different effects and environmental processes affecting environmental assets.

Based on the assessment outlined in the following Sections 12 -16 of this referral, the following potentially significant environmental effects may result from development of the WIN Scheme:

- Loss of native vegetation.
- Impacts on threatened flora and threatened fauna habitat.
- Impacts on Aboriginal cultural heritage values.

Each of these is summarised in more detailed below.

#### ***Loss of native vegetation***

An approximate area of 21 hectares of native vegetation may be impacted by the WIN Scheme covered in this referral. This is comprised of:

- M2BM Interconnector Pipeline: 8.924 hectares, comprised of 8.893 ha of Endangered EVC patches, and five scattered trees
- Bacchus Marsh Pump Station: Nil
- PBID Supply Network (pipeline, pump station, balance tank): 2.108 hectares, comprised of 1.865 ha of Endangered EVC patches, and five scattered trees
- PBID Foundation Recycled Water Irrigation Areas (not including Customer 2 Stage 2 Recycled Water Irrigation Areas): 0.526 hectares, comprised eight scattered trees and 0.002 ha of patches
- Parwan Recycled Water Storage: 0.857 hectares, comprised of 19 scattered trees and no patches
- S2M Interconnector Pipeline: 7.722ha (Option A) / 7.088ha (Option B), comprised of modelled Endangered EVCs.

Further information regarding the potential impacts to native vegetation are outlined in Section 12.

The M2BM Interconnector Pipeline, PBID Supply Network and Stage 1 PBID Foundation Recycled Water Irrigation Areas have been subject to detailed design and therefore the extent of native vegetation that may be impacted by these projects is well understood. Stage 2 PBID Foundation Recycled Water Irrigation Areas, other than for Customer 2, have been subject to detailed planning and field-based native vegetation and biodiversity assessments, and therefore the extent of native vegetation that may be impacted by these projects is also well understood. A variety of siting, design and environmental management measures have been proposed to avoid, minimise and manage the effects of these projects on native vegetation, as outlined in Section 18.

Design work for the Bacchus Marsh RWP Pump Station and Parwan Recycled Water Storage is currently underway. The area affected by the Bacchus Marsh RWP Pump Station is small (~2.9ha) and no native vegetation impacts are anticipated. A field-based native vegetation and biodiversity assessment has been undertaken for the Parwan Recycled Water Storage, and although detailed design is progressing, avoidance of mapped native vegetation is unlikely to be feasible due to its restricted location in the base of the natural depression proposed to store recycled water.

Further investigations, including field assessments, would be required prior to developing Stage 2 of the Customer 2 recycled water irrigation areas, in approximately 10 years' time, to determine the extent of native vegetation impacts in these areas. The preliminary Stage 2 infrastructure layout on the current Customer 2 farm plan (see Attachment 6) has been prepared with consideration of modelled desktop data (e.g. modelled EVCs, location categories, native vegetation condition and strategic biodiversity values) to identify areas most likely to contain native vegetation. Stage 2 infrastructure layouts have been prepared to minimise works in these areas.

The analysis of impacts of the S2M Interconnector Pipeline on native vegetation is based on a high-level review of DELWP Modelled 2005 EVCs within the two indicative assessment areas currently under consideration. This is proposed to be further refined through staged environmental, heritage, land use planning and geotechnical investigations, similar to those undertaken for the M2BM Interconnector Pipeline and PBID Supply Network, assuming the S2M Interconnector Pipeline remains the preferred approach to manage excess recycled water produced at the Sunbury RWP.

#### **Impacts on Flora and Fauna**

The project areas are predicted or confirmed to contain a variety of threatened or migratory species, other species of conservation significance and listed communities. The potential effects are summarised below:

<b>Project</b>	<b>Potential Effect</b>
M2BM Interconnector Pipeline	The M2BM Interconnector Pipeline is expected to require direct removal of 4.961 ha of EPBC Act listed Critically Endangered <i>Natural Temperate Grasslands of the Victorian Volcanic Plain</i> (NTGVVP), 0.266 ha of EPBC Act listed <i>Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia</i> , 10.459 ha of Golden Sun Moth habitat, 1.2394 ha of FFG Act listed Western (Basalt) Plains Grassland. There is also the potential for removal of suitable habitat within the project area for eight species listed or protected under the FFG Act, including Golden Wattle, Varnish Wattle, Common Cassinia, Jersey Cudweed, Nardoo Cotton Fireweed and Fuzzy New Holland Daisy.
Bacchus Marsh RWP Pump Station	Given the highly modified nature of the Bacchus Marsh RWP site it is not expected that the site contains any significant flora and fauna. Therefore, no assessment of potential effects on threatened or migratory species, other species of conservation significance or listed communities has been specifically undertaken of the site.
PBID Supply Network	The PBID Supply Network is expected to require direct removal of 0.253 ha of EPBC Act listed Critically Endangered NTGVVP, 0.7109 ha of FFG Act listed Western (Basalt) Plains Grassland, one individual of the VicAdv listed vulnerable Flax-lily <i>Dianella longifolia var. grandis</i> , direct or indirect impacts (soil compaction) to 0.0089 ha of medium-high quality Striped Legless Lizard Habitat, and removal of individuals from four species of FFG Act protected flora (Common New Holland Daisy <i>Vittadinia cuneata</i> , Woolly New Holland Daisy <i>Vittadinia gracilis</i> , Blackwood <i>Acacia melanoxylon</i> and Sifton Bush <i>Cassinia sifton</i> ). There is also the potential for indirect impacts to retained areas of

	habitat for listed threatened species and indirect impacts on FFG Act and VicAdv listed threatened flora located in proximity to the proposed works as detailed in Section 12.
PBID Foundation Recycled Water Irrigation Areas*	Based on the proposed works and activities within the recycled water irrigation areas assessed to date by Tree Wishes, the removal of five, large scattered FFG Act listed Buloke <i>Allocasuarina luehmannii</i> will be required. No other listed threatened species or communities have been identified in these areas.
Parwan Recycled Water Storage	Based on the findings of a desktop assessment and field assessments undertaken by CH2M Beca in late 2019 / early 2020, the Parwan Recycled Water Storage site does not contain suitable habitat for listed threatened flora or fauna species or listed migratory species. No listed threatened species or communities or listed migratory species were recorded during the field assessments.

\* Not including Customer 2 Stage 2 Recycled Water Irrigation Areas.

Further detail regarding the potential impacts is outlined in Section 12.

Given the M2BM Interconnector Pipeline, Stage 1 PBID Foundation Recycled Water Irrigation Areas, and PBID Supply Network have been subject to detailed design the extent of flora and fauna impacts arising for these projects is well understood. Stage 2 PBID Foundation Recycled Water Irrigation Areas, other than for Customer 2, have been subject to detailed planning and field-based native vegetation and biodiversity assessments, and therefore the extent of flora and fauna impacts is also well understood. A variety of siting, design and environmental management measures have been proposed to avoid, minimise and manage the effects of these projects, as outlined in Section 18.

Design work for the Bacchus Marsh RWP Pump Station and Parwan Recycled Water Storage is currently underway, however these projects are not expected to have a significant impact on threatened or migratory species, other species of conservation significance or listed communities. Further investigations would be required prior to developing Stage 2 of the Customer 2 recycled water irrigation areas, in approximately 10 years' time, to determine the extent of flora and fauna impacts in these areas. The preliminary Stage 2 infrastructure layout on the current Customer 2 farm plan (see Attachment 6) has been prepared with consideration of modelled desktop data (e.g. modelled EVCs, location categories, native vegetation condition and strategic biodiversity values) to identify areas most likely to contain flora and fauna values. Stage 2 infrastructure layouts have been prepared to minimise works in these areas.

Due to the early stage of planning and design for the S2M Interconnector Pipeline, no analysis of potential effects on listed threatened or migratory species, other species of conservation significance, or listed communities has yet been undertaken. An overview of listed threatened species and communities, and listed migratory species potentially occurring in proximity to the current alignment options for this project are described in Section 12.

### **Aboriginal Cultural Heritage Values**

The project areas contain a total of 18 to 23 recorded Aboriginal Places<sup>3</sup> depending on the S2M Interconnector Pipeline alignment option:

- M2BM Interconnector Pipeline: three Aboriginal Places (VAHR7822-4344, VAHR7822-4496 & VAHR7822-4495), all artefact scatters, have been recorded within this project area based on desktop, standard and complex assessments for approved CHMP No. 15867.

<sup>3</sup> The total number of recorded Aboriginal Places assumes the four artefacts found in the Parwan Recycled Water Storage would all be registered as separate places rather than as a single place (artefact scatter) comprising multiple components, which would be confirmed by the Registry during the site card registration process.

- Bacchus Marsh RWP Pump Station – no Aboriginal Places have been recorded within this project area based on a search of the VAHR as part of a cultural heritage due diligence assessment.
- PBID Supply Network – five Aboriginal Places have been recorded within this project area, including three previously registered Aboriginal Places, all low density artefact distributions (LDADs), (VAHR 7722-1130, VAHR 7722-1131, and VAHR 7722-1190) two newly recorded Aboriginal Places (one artefact scatter and one LDAD) identified during complex assessments for draft CHMP No. 17237, which have been submitted for registration.
- PBID Foundation Recycled Water Irrigation Areas – a cultural heritage due diligence assessment and VAHR search have not been undertaken for this project, however based on a review of publicly available mapping, one area of cultural heritage sensitivity associated with a registered cultural heritage place has been identified within this project area, and is located along Geelong-Bacchus Marsh Road south of Bluegum Track; other areas of cultural heritage sensitivity associated with waterways and ephemeral swamps are mapped within this project area.
- Parwan Recycled Water Storage - no Aboriginal Places currently registered on the VAHR have been recorded within this project area, but four stone artefacts were found during the standard assessment and will be submitted for registration following complex assessments that are still to be completed for draft CHMP No. 17387.
- S2M Interconnector Pipeline – five previously recorded Aboriginal Places identified through a search of the VAHR intersect with the Option A alignment and 10 previously recorded Aboriginal Places intersect with the Option B alignment; a cultural heritage due diligence and likely CHMP are still to be completed.

The projects could have a significant impact on some of these places, therefore mandatory or voluntary CHMPs have been / would be prepared for the following projects:

- Approved CHMP No. 15867 – M2BM Interconnector Pipeline
- Draft CHMP No. 17237 – PBID Supply Network
- Draft CHMP No. 17387 – Parwan Recycled Water Storage.

Based on an initial review, the S2M Interconnector Pipeline is also likely to require a mandatory CHMP given the project involves a high impact activity and is unlikely to be able to avoid all areas of cultural heritage sensitivity identified within and surrounding the indicative assessment areas.

Once customer farm plans have been finalised, each of the foundation customers would be responsible for determining any requirement for a CHMP or other mitigation of potential cultural heritage effects in accordance with the customer agreements with Western Water and requirements under the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*.

No CHMP is required for the Bacchus Marsh RWP Pump Station.

## 12. Native vegetation, flora and fauna

### Native vegetation

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

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

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

#### **M2BM Interconnector Pipeline**

Ecology & Heritage Partners (EHP) first undertook an assessment of native vegetation in the project area in February 2018. A habitat hectare assessment was undertaken and vegetation was assessed according

to the habitat hectare methodology described in the Vegetation Quality Assessment Manual. A further vegetation assessment was undertaken on 13 October 2020 to verify the extent of native vegetation in the project area due to seasonal variation and time passed since the initial assessment in 2018.

A copy of the biodiversity assessment, incorporating the findings of both the February 2018 and October 2020 assessments is included as Attachment 11.

### **Bacchus Marsh RWP Pump Station**

Due to the early stage of planning and design for this project, a high-level review of publicly available ecological mapping and database searches has been undertaken to inform this referral. The Bacchus Marsh RWP Pump Station is proposed to be located within the existing Bacchus Marsh RWP site. The site is a highly modified environment that has been previously disturbed as part of the operational RWP use.

A review of the DELWP NatureKit 2.0 database has not identified any 2005 modelled EVCs within the project area, although the presence of Plains Grassland (EVC 132) is modelled within the wider land parcel.

A review of the Department of Agriculture Water & Environment (DAWE) Protected Matters Search Tool (PMST) has also identified five listed threatened ecological communities that may occur within 1 km of the Bacchus Marsh RWP site (Table 15).

Table 15: EPBC Act listed threatened communities modelled to occur within 1 km of the Bacchus Marsh RWP Pump Station site.

<b>Name</b>	<b>EPBC Act status</b>	<b>PMST modelled occurrence</b>
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area
Grey Box ( <i>Eucalyptus microcarpa</i> ) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area
White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Further ecological investigations would be required to determine the extent of native vegetation within the Bacchus Marsh RWP Pump Station site, however the site is a highly modified environment that has been previously disturbed as part of the operational RWP use.

### **PBID Supply Network (pipeline, pump station, balance tank)**

During the concept design phase, a preliminary flora and fauna assessment was prepared by CH2M Beca in April 2020 for a preliminary assessment corridor encompassing the PBID Supply Network (pipeline, pump station, balance tank) along with the Parwan Recycled Water Storage (see below). The preliminary assessment corridor was broad, nominally 100 m wide around the pipeline alignment and encompassing the whole property containing the proposed pump station and balance tank (and future storage dam). The preliminary flora and fauna assessment involved a desktop assessment and preliminary field assessment to identify patches of potential FFG Act or EPBC Act listed threatened communities and threatened species habitat to inform targeted seasonal surveys and design development. Targeted surveys for Striped Legless Lizard *Delma impar* were also undertaken for suitable habitat in the preliminary assessment corridor between October 2019 and April 2020.

The findings of the preliminary flora and fauna assessment combined with other investigations (cultural heritage, engineering) and stakeholder engagement were used to refine an assessment area for more detailed ecological assessments as part of the detailed design phase. Refinement of the assessment area

resulted in a preferred pipeline alignment along the eastern side of Geelong-Bacchus Marsh Road, a narrower 20-50 m wide assessment area along the pipeline alignment (wider in areas containing more ecological values) and a broad assessment area to consider multiple options for the southern Balliang Creek crossing location due to the ecological values in this locality. The detailed flora and fauna assessment involved vegetation quality (habitat hectare) assessments, targeted threatened flora surveys (including for Spring flowering species and seasonal surveys for Spiny Rice-flower) and targeted threatened fauna surveys (including Golden Sun Moth and Growling Grass Frog). A detailed ecological impact assessment report prepared by CH2M Beca in March 2021 and encompassing the findings of the preliminary and detailed flora and fauna assessments is provided in Attachment 12.

### **PBID Foundation Recycled Water Irrigation Areas**

Western Water has engaged Tree Wishes to undertake native vegetation and biodiversity impact assessments for each of the foundation recycled water irrigation areas. These assessments included a desktop assessment and field assessment. No report has been prepared for Customer 1 as no native vegetation was identified by Tree Wishes as impacted during the field assessment. The native vegetation and biodiversity impact assessment reports prepared for Customer 2 and Customer 3 are provided in Attachment 13.

The assessments undertaken by Tree Wishes for Customers 1 and 3 encompassed both Stage 1 and Stage 2 recycled water irrigation areas. The assessments undertaken by Tree Wishes for Customer 2 are limited to the Stage 1 recycled water irrigation areas west of Agars Road. No native vegetation or biodiversity impact assessments have been undertaken by Tree Wishes for the Stage 2 recycled water irrigation areas east of Agars Road at this stage. Further investigations, including field assessments, would be required prior to developing Stage 2 of the Customer 2 recycled water irrigation areas, in approximately 10 years' time, to determine the extent of native vegetation in these areas. The preliminary Stage 2 infrastructure layout on the current Customer 2 farm plan (see Attachment 6) has been prepared with consideration of modelled desktop data (e.g. modelled EVCs, location categories, native vegetation condition and strategic biodiversity values) to identify areas most likely to contain native vegetation. Stage 2 infrastructure layouts have been developed to minimise works in these areas.

### **Parwan Recycled Water Storage**

As noted above, the Parwan Recycled Water Storage project area was included in desktop assessment and preliminary field assessment as part of the PBID Supply Network undertaken by CH2M Beca in late 2019 / early 2020. Additional field surveys (detailed vegetation assessment) were undertaken at the storage site in May 2020. The findings of ecological impact assessments relating specifically to the Parwan Recycled Water Storage are contained in a memo prepared by CH2M Beca dated 19 March 2021 and provided in Attachment 14.

### **S2M Interconnector Pipeline**

Due to the early stage of planning and design for this project, ecological investigations for this project are limited to a high-level review of publicly available mapping and database searches (Attachments 25 and 26). As such, the extent of native vegetation identified as potentially being removed for this project has been determined by the extent of DELWP modelled 2005 EVCs mapped within the indicative assessment area, which comprises a 12 m wide corridor along the current two alignment options being considered for this project.

Desktop and preliminary field assessments are proposed to be undertaken to assist in selection of a preferred alignment for this project. Further detailed ecological assessments, including vegetation quality (habitat hectare) assessments and targeted surveys, would be undertaken for the proposed construction footprint, when determined, following selection of the preferred alignment and completion of the design process.

The majority of the indicative assessment areas are located within the Melbourne Strategic Assessment (MSA) area, except for a short section (approx. 300 m) of alignment through Jacksons Hill Reserve near



the Sunbury RWP site, the section of alignment along Plumpton Road between Diggers Rest-Coimadai Road and Melton Highway (approx. 6.6 km), the section of alignment within the Melton RWP site and the approaching section of alignment along Greigs Road (approx. 1.5 km) and potentially a 3.2 km section of alignment that runs along the Melton Highway, where it forms the boundary of the MSA. Indicative assessment areas within the MSA area are covered by the Biodiversity Conservation Strategy and have therefore been subject to previous ecological investigations, including time-stamped mapping of native vegetation, threatened species surveys, and mapping of biodiversity conservation areas and areas of strategic importance for Growling Grass Frog.

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

**X** NYD                      Estimated area: 21 ha (approx.)

A summary of native vegetation removal for each project, including construction access and laydown areas (where known) is summarised below:

Project	Native vegetation to be removed (hectares)	Level of certainty
M2BM Interconnector Pipeline	8.924 ha (comprised of 8.893 ha of patches, and five scattered trees)	High – detailed assessment completed
Bacchus Marsh RWP Pump Station	Nil	Moderate – modelled data for indicative assessment area only, highly disturbed and cleared operational RWP site
PBID Supply Network (pipeline, pump station, balance tank)	2.108 ha (comprised of 1.865 ha of patches, and five scattered trees)	High – detailed assessment completed
PBID Foundation Recycled Water Irrigation Areas	0.526 ha comprised of: <ul style="list-style-type: none"> <li>Customer 1 - no impacts to native vegetation patches or scattered trees.</li> <li>Customer 2 – impacts to 0.352 ha of native vegetation comprised of five large scattered trees (no patches) in the Stage 1 area west of Agars Road. No field assessment has been undertaken to date in Stage 2 area east of Agars Road but preliminary infrastructure layouts are designed to minimise encroachment into modelled native vegetation.</li> <li>Customer 3 – 0.033 ha of native vegetation comprised of 0.002 ha of patches (comprised of two understorey shrubs) and one small scattered tree within Greater Geelong LGA and 0.141 ha of native vegetation comprised of two large scattered trees and no patches in Moorabool LGA.</li> </ul>	Moderate – desktop and field assessments completed for most of the assessment area (not including Customer 2 land east of Agars Road), some on-farm design changes may occur.
Parwan Recycled Water Storage	0.857 ha (comprised of 19 scattered trees, no patches)	High – detailed assessment completed
S2M Interconnector Pipeline (including areas within and outside the MSA area)	Option A – 7.722 ha of modelled EVCs* Option B – 7.088 ha of modelled EVCs*	Very Low – modelled data for indicative assessment area only

NB: \*the S2M Interconnector Pipeline figures are based on an indicative 12 m construction corridor. This width is a conservative estimate based on preliminary engagement with construction contractors. No allowance has been made for construction laydown areas, however given the length of the pipeline (~30km), it is anticipated suitable locations will be available outside any areas of native vegetation and cultural heritage significance.

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

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

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

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

A summary of EVCs affected by each project, including construction access and laydown areas (where known) is summarised below. All EVCs identified as potentially impacted by the projects are within the Victorian Volcanic Plains (VVP) bioregion and have a bioregional conservation status of Endangered.

Project	EVC	EVC area impacted (ha)
M2BM Interconnector Pipeline	Low Rainfall Plains Grassland (EVC 132_63)	7.785 ha
	Riverina Plains Grassy Woodland (EVC55_62)	0.977 ha
	Floodplain Riparian Woodland (EVC 56)	0.112 ha
	Lignum Swamp (EVC 104)	0.019 ha
Bacchus Marsh RWP Pump Station	N/A	Nil
PBID Supply Network (pipeline, pump station, balance tank)	Plains Grassy Woodland (EVC 55_61)	0.047 ha
	Plains Grassy Wetland (EVC 125)	0.037 ha
	Heavier Soils Plains Grassland (EVC 132_61)	1.756 ha
	Tall Marsh (EVC 821)	0.024 ha
PBID Foundation Recycled Water Irrigation Areas	The two small native vegetation patches assessed as impacted comprise two understorey shrubs only (Tree Violets) with no canopy or ground storey species present. Tree Violets are a medium shrub species that can be associated with Creekline Grassy Woodland (EVC 68).	0.002 ha
Parwan Recycled Water Storage	N/A	Nil
S2M Interconnector Pipeline (Option A) (including areas within and outside the MSA area)	Modelled 2005 EVCs (not ground-truthed):	
	Plains Grassy Woodland (EVC 55)	0.446 ha
	Creekline Grassy Woodland (EVC 68)	0.198 ha
	Plains Grassland (EVC 132)	6.960 ha
S2M Interconnector Pipeline (Option B) (including areas within and outside the MSA area)	Grassy Woodland (EVC 175)	0.118 ha
	Modelled 2005 EVCs (not ground-truthed):	
	Plains Grassy Woodland (EVC 55)	0.446 ha
	Creekline Grassy Woodland (EVC 68)	0.030 ha
S2M Interconnector Pipeline (Option B) (including areas within and outside the MSA area)	Plains Grassland (EVC 132)	6.494 ha
	Grassy Woodland (EVC 175)	0.118 ha

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

NYD  Yes If yes, please briefly describe.

**M2BM Interconnector Pipeline**

Yes. Western Water has identified a State offset requirement for 3.645 general habitat units and four large trees. State offsets are proposed to be met primarily at a first party offset site, Pinkerton Forest, which has the required general habitat units available and the required number of large trees.

Commonwealth offsets are being secured at a third party offset site for Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) and Golden Sun Moth.

### **Bacchus Marsh RWP Pump Station**

No native vegetation offsets are expected to be required for the Bacchus Marsh RWP Pump Station.

### **PBID Supply Network (pipeline, pump station, balance tank)**

Yes. Based on the proposed removal of 1.865 ha of native vegetation patches and five large scattered trees, a Native Vegetation Removal (NVR) Report (EnSym) Scenario Test has determined the following native vegetation offset requirements for this project (Attachment 12):

- 0.631 general habitat units with a minimum strategic biodiversity value (SBV) score of 0.407 within the Port Phillip and Westernport CMA or Moorabool Shire Council / City of Greater Geelong Council areas
- Five large trees.

As only general habitat units of relatively low SBV are required, offsets are likely to be readily available to purchase from an accredited Offset Broker. The required offset would be purchased and allocated to the project, prior to any native vegetation removal taking place.

A referral under the EPBC Act was submitted on 24 May 2021 (EPBC 2021/8963) for this project and may identify additional Commonwealth offsets for impacts to MNES.

### **PBID Foundation Recycled Water Irrigation Areas**

Yes. NVR Reports have determined the following native vegetation offset requirements for these areas (Attachment 13):

- Customer 2 (removal of 0.352 ha of native vegetation in Moorabool Shire LGA):
  - 0.065 general habitat units with a minimum strategic biodiversity value (SBV) score of 0.159 within the Port Phillip and Westernport CMA or Moorabool Shire Council areas
  - Five large trees
- Customer 3 (removal of 0.141 ha of native vegetation in Moorabool Shire LGA):
  - 0.029 general habitat units with a minimum strategic biodiversity value (SBV) score of 0.304 within the Port Phillip and Westernport CMA or Moorabool Shire Council areas
  - Two large trees
- Customer 3 (removal of 0.033 ha of native vegetation in City of Greater Geelong LGA):
  - 0.008 general habitat units with a minimum strategic biodiversity value (SBV) score of 0.320 within the Port Phillip and Westernport CMA or City of Greater Geelong Council areas
  - No large trees.

As only general habitat units of relatively low SBV are required, offsets are likely to be readily available to purchase from an accredited Offset Broker. The required offset would be purchased and allocated to the project, prior to any native vegetation removal taking place. Foundation customers would be responsible for securing required offsets.

### **Parwan Recycled Water Storage**

Yes. Based on the proposed removal of 18 large scattered trees and one small scattered tree, an NVR Report (EnSym) Scenario Test has determined the following native vegetation offset requirements for this project (see Attachment 14):

- 0.184 general habitat units with a minimum strategic biodiversity value (SBV) score of 0.345 within the Port Phillip and Westernport CMA or Moorabool Shire Council areas.
- 18 large trees.

As only general habitat units of relatively low SBV are required, offsets are likely to be readily available to purchase from an accredited Offset Broker. The required offset would be purchased and allocated to the project, prior to any native vegetation removal taking place.

### **S2M Interconnector Pipeline**

Not yet determined. Offsets would be determined following completion of detailed ecological assessments, including vegetation quality (habitat hectare) assessments for the proposed construction footprint when determined following selection of the preferred alignment and completion of the design process. Native vegetation offsets would be provided in accordance with the Guidelines for removal, destruction or lopping of native vegetation (DELWP 2017) for the removal of native vegetation outside the Melbourne Strategic Assessment (MSA) boundary. For the removal of native vegetation and other ecological values within the MSA boundary, environmental mitigation levy payment requirements would be calculated and provided in accordance with the *Melbourne Strategic Assessment (Environmental Mitigation Levy) Act 2020*.

If a referral under the EPBC Act is determined necessary for areas of this project outside the MSA area following further planning, design and ecological investigations, additional Commonwealth offsets for impacts to MNES may be required.

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

## **Flora and fauna**

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

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

#### **M2BM Interconnector Pipeline**

A flora and fauna assessment was undertaken in February 2018 to obtain information on flora and fauna values within the project area. Targeted surveys were subsequently undertaken for Matted Flax-lily *Dianella amoena*, Spiny Rice Flower *Pimelea spinescens* subsp. *spinescens*, Large-headed Fireweed *Senecio macrocarpus*, Button Wrinklewort *Rutidosis leptorhynchoides*, Small Golden Moths *Diuris basaltica*, Striped Legless Lizard *Delma impar*, Growling Grass Frog *Litoria raniformis*, and Golden Sun Moth *Synemon plana*.

A copy of the biodiversity assessment detailing the flora and fauna investigations undertaken is included as Attachment 12.

#### **Bacchus Marsh RWP Pump Station**

Given the highly modified nature of the Bacchus Marsh RWP site and early stage of planning and design for this project, no assessment of flora and fauna in the project area has been undertaken for the Bacchus Marsh RWP Pump Station project.

#### **PBID Supply Network (pipeline, pump station, balance tank)**

As part of the preliminary flora and fauna assessment by CH2M Beca in late 2019 / early 2020, a desktop assessment and preliminary field assessment were undertaken to assess the likelihood of national and

state listed threatened flora and fauna occurring and the location of suitable habitat for threatened species within the preliminary assessment corridor. Targeted surveys for Striped Legless Lizard *Delma impar* were undertaken in areas of suitable habitat along Parwan South Road and Schultz Road (west of the current project area) within the preliminary assessment corridor between October 2019 and April 2020.

As part of the detailed flora and fauna assessments in 2020 and early 2021, the preliminary desktop assessment / likelihood of occurrence for threatened species was updated to reflect the findings of detailed vegetation assessments, and based on these findings, the following additional targeted threatened flora and fauna surveys were undertaken in the refined assessment area:

- Golden Sun Moth *Synemon plana* – targeted surveys conducted in areas of suitable habitat on 27 November 2020, 14 December 2020, 30 December 2020 and 11 January 2021
- Growling Grass Frog *Litoria raniformis* – targeted surveys conducted in areas of marginal dispersal habitat (Balliang Creek) following a heavy rainfall event in January 2021
- Spiny Rice-flower *Pimelea spinescens subsp. spinescens* – targeted surveys conducted in areas of suitable habitat on 24 June 2020 following confirmation of this species flowering at a reference site on 17 June 2020
- Other threatened flora typically associated with native grassland communities of the Victorian Volcanic Plain - targeted surveys conducted in conjunction with condition assessments of potential threatened native grassland patches in October 2020 during their seasonal Spring flowering period. Species targeted included EPBC Act and FFG Act listed Matted Flax-lily *Dianella amoena*, Clover Glycine *latrobeana* and Large-fruit Fireweed *Senecio macrocarpus*. Although assessed as having a low likelihood of occurrence based on the desktop assessment, other EPBC Act and FFG Act listed species previously recorded within 5 km of the assessment area (e.g. Small Golden Moths *Diuris basaltica*) would also have been detectable during these surveys.

Additional Striped Legless Lizard surveys were not undertaken during the detailed flora and fauna assessments due to the extent of previous surveys in the vicinity and the degradation of suitable habitat areas along Geelong-Bacchus Marsh Road observed during detailed vegetation assessments. Where medium to high quality Striped Legless Lizard habitat was identified and no surveys were undertaken, the presence of this species has been assumed and impacts on this species considered in the detailed ecological impact assessment and this referral.

The findings of flora and fauna surveys undertaken for this project by CH2M Beca, are supplemented by the findings of earlier surveys by SMEC (2019), EHP (2017) and Okologie (2017) undertaken within and adjacent to the project area as part of VicRoads' Geelong-Bacchus Marsh Road Upgrade Project.

#### **PBID Foundation Recycled Water Irrigation Areas**

The flora and fauna assessments undertaken by Tree Wishes were limited to collating a list of threatened species potentially occurring in the vicinity of the Customer 2 property. This was based on a search of the Commonwealth Protected Matters Search Tool (PMST) and Victorian Biodiversity Atlas (VBA) (Attachment 13). The limited assessment was deemed appropriate due to the minimal extent of native vegetation impacts, which are limited to removal of scattered trees and avoidance of impacts to native grasslands within the recycled water irrigation areas assessed.

Further investigations would be required prior to developing Stage 2 of the Customer 2 recycled water irrigation areas, in approximately 10 years' time, to determine the extent of native vegetation and biodiversity impacts in these areas, which are located in proximity to large patches of modelled Plains Grassland (EVC 132) within the property, and adjacent to the proposed Western Grasslands Reserve.

#### **Parwan Recycled Water Storage**

Based on the findings of a desktop assessment and field assessments undertaken by CH2M Beca in late 2019 / early 2020, the Parwan Recycled Water Storage site was determined not to contain suitable habitat

for listed threatened flora or fauna species, and no targeted surveys were considered necessary for this project area. Refer to Attachment 14.

### **S2M Interconnector Pipeline**

Due to the early stage of planning and design for this project, ecological assessments for this project are limited to a high-level review of publicly available mapping and database searches. In relation to flora and fauna assessments, this has been limited to a search of the PMST and VBA for a search radius of approximately 5 km around the current two alignment options and a high level likelihood of occurrence assessment for listed threatened flora and fauna species based on modelled EVCs and aerial imagery. Refer to Attachment 25 for a copy of the PMST search result and the high-level likelihood of occurrence assessment for this project, incorporating species identified through the PMST and VBA database searches. Due to the proximity of the current alignment options and the relatively consistent modelled EVCs and VBA species records along the current alignment options, a single likelihood of occurrence assessment has been undertaken.

As noted above, the majority of the indicative assessment areas are located within the MSA area, and have therefore been subject to previous ecological investigations to inform development of the Biodiversity Conservation Strategy, which included time-stamped mapping of native vegetation, threatened species surveys, and mapping of biodiversity conservation areas and areas of strategic importance for Growling Grass Frog.

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

NYD  No  Yes If yes, please:

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

### **M2BM Interconnector Pipeline**

Yes. Two EBPC Act listed and one FFG Act listed threatened ecological communities were identified in the project assessment area during detailed ecological assessments:

- Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) listed as Critically Endangered under the EPBC Act - 4.961ha located in construction corridor and impacted by proposed works.
- Grey Box Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia listed under the EPBC Act – 0.266ha located in construction corridor and impacted by proposed works.
- Western (Basalt) Plains Grassland listed under the FFG Act – 1.2394ha located in the Nerowie Road reserve and impacted by the proposed works.

One FFG Act listed threatened flora species was identified in the Nerowie Road road reserve during detailed ecological assessments:

- Fuzzy New Holland Daisy – approximately 75-100 individuals located in the Nerowie Road road reserve.

No EPBC Act listed threatened flora species were recorded in the project assessment area during targeted surveys.

Suitable habitat for the following nationally significant fauna species was identified in the project area during targeted surveys:

- Growling Grass Frog *Litoria raniformis* – while suitable habitat exists within the study area along the Werribee River, targeted surveys did not identify any individuals.
- Golden Sun Moth *Synemon Plana* – a total of approximately 1000 Golden Sun Moth individuals were recorded within the study area during targeted surveys. 10.459ha of Golden Sun Moth habitat is proposed to be impacted during construction of the pipeline.
- Striped Legless Lizard *Delma impar* – while suitable grassland habitat exists in the study area, targeted surveys did not identify any individuals.

Further discussion of listed threatened species identified as potentially occurring in the vicinity of the project assessment area but not recorded or considered present through detailed ecological assessment, is provided in Attachment 11.

### **Bacchus Marsh RWP Pump Station**

Given the highly modified nature of the Bacchus Marsh RWP site and early stage of planning and design for this project, no assessment of the presence of threatened or migratory species or listed communities has yet been undertaken for the Bacchus Marsh RWP Pump Station.

### **PBID Supply Network (pipeline, pump station, balance tank)**

Yes. One EPBC Act and one FFG Act listed threatened ecological community were identified in the project assessment area during detailed ecological assessments:

- Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) listed as Critically Endangered under the EPBC Act – 0.253 ha located in construction corridor and impacted by proposed works
- Western (Basalt) Plains Grassland listed under the FFG Act – 0.7109 ha located in construction corridor and impacted by proposed works.

Two FFG Act listed threatened flora species and one VicAdv listed threatened species were identified in the project assessment area during detailed ecological assessments:

- Buloke *Allocasuarina luehmannii* (FFG Act – listed, VicAdv – endangered) – not located in construction corridor / not impacted
- Salt Copperbur *Sclerolaena ventricosa* (FFG Act – listed, VicAdv – endangered) – not located in construction corridor / not impacted
- Flax-lily (*Dianella longifolia* var. *grandis*) (VicAdv - vulnerable) – one individual located in construction corridor and impacted by proposed works.

No EPBC Act listed threatened flora species were recorded in the project assessment area during targeted surveys.

Suitable habitat for the following listed rare or threatened fauna species was identified in the project assessment area during detailed ecological assessments:

- Growling Grass Frog *Litoria raniformis* (EPBC Act – Vulnerable, FFG Act – listed, VicAdv – endangered) – not recorded during targeted surveys, marginal dispersal habitat only, not considered present
- Golden Sun Moth *Synemon plana* (EPBC Act – Critically Endangered, FFG Act – listed, VicAdv – critically endangered) – not recorded during targeted surveys, mostly low-quality habitat, not considered present
- Striped Legless Lizard *Delma impar* (EPBC Act – Vulnerable, FFG Act – listed, VicAdv – endangered) – not recorded during targeted surveys, assumed present in medium-high quality habitat areas not

surveyed, approximately 0.0089 ha of medium-high quality habitat in construction corridor and impacted by proposed works

- Tussock Skink *Pseudemoia pagenstecheri* (VicAdv – vulnerable) – not recorded during recent CH2M Beca surveys or previous Striped Legless Lizard surveys along Geelong-Bacchus Marsh Road, but considered moderately likely to occur within medium-high quality grassland habitat
- Fat-tailed Dunnart *Sminthopsis crassicaudata* (VicAdv – near threatened) – not recorded during recent CH2M Beca surveys but recorded during previous Striped Legless Lizard surveys along Geelong-Bacchus Marsh Road, considered moderately likely to occur within medium-high quality grassland habitat.

Further discussion of listed threatened species identified as potentially occurring in the vicinity of the project assessment area but not recorded or considered present through detailed ecological assessments, is provided in Attachment 12.

The PMST modelled 14 listed migratory species as potentially occurring within 5 km of the project assessment area. Due to marginal grassland and woodland habitat present, and the absence of any significant aquatic habitat, the project assessment area is not considered to contain important habitat for listed migratory species and as such, listed migratory species are considered unlikely to be significantly impacted by the proposed works.

#### **PBID Foundation Recycled Water Irrigation Areas**

Yes. Native vegetation removal for the proposed recycled water irrigation areas is limited to removal of eight scattered trees, along with two shrubs assessed as comprising patches of native vegetation. None of the native vegetation proposed to be impacted has been assessed by Tree Wishes as meeting the criteria for any threatened communities listed under the EPBC Act or FFG Act.

Of the eight scattered trees proposed to be removed for the recycled water irrigation areas, five large scattered trees comprise Buloke *Allocasuarina luehmannii*, which is listed under the FFG Act and has a conservation status of endangered under the VicAdv (see Attachment 13). These Buloke trees have a trunk diameter at breast height ranging in size between 51.3 cm and 69.4 cm. No other listed threatened species or habitat for listed threatened species have been identified as being removed for proposed works in the foundation recycled water irrigation areas assessed to date. Ecological values within the recycled water irrigation areas assessed in the native vegetation and biodiversity impact assessments are minimal due to clearing for historical and ongoing use of the land for agricultural production.

Further investigations would be required prior to developing Stage 2 of the Customer 2 recycled water irrigation areas to determine the extent of native vegetation and biodiversity impacts in these areas, which are located in proximity to large patches of modelled Plains Grassland (EVC 132) within the property, and adjacent to the proposed Western Grasslands Reserve. Depending on its location, extent and quality, Plains Grassland can be known to support a number of threatened flora and fauna species (e.g. Striped Legless Lizard, Golden Sun Moth, Spiny Rice-flower, Matted Flax-lily, Large-fruit Fireweed, Small Golden Moths, Cover Glycine) and can correspond to threatened ecological communities listed under the EPBC Act (Natural Temperate Grasslands of the Victorian Volcanic Plain) and FFG Act (Western (Basalt) Plains Grassland). As the siting and design of proposed pivot irrigators and associated pipelines is relatively flexible, it is anticipated that if any listed threatened communities, or any listed threatened species or their habitat is identified, these ecological values would likely be avoidable through design.

#### **Parwan Recycled Water Storage**

No. Based on the findings of a desktop assessment and field assessments undertaken by CH2M Beca in late 2019 / early 2020, the Parwan Recycled Water Storage site was determined not to contain suitable habitat for listed threatened flora or fauna species, or listed migratory species. No listed threatened species or communities, or listed migratory species were recorded during the field assessments. Refer to Attachment 14.



### S2M Interconnector Pipeline

Yes. A search of the PMST identified five EPBC Act listed threatened ecological communities (TECs) as potentially occurring within 5 km of the assessment areas (refer to Table 16 and Attachment 25):

Table 16. EPBC Act listed threatened communities modelled to occur within 5 km of the S2M Interconnector Pipeline assessment area

Name	EPBC Act Status	PMST modelled occurrence	Likelihood of occurrence in assessment area based on modelled EVCs
Grassy Eucalypt Woodland of the Victorian Volcanic Plain	Critically Endangered	Community known to occur within area	<b>Moderate</b> - depending on extent and quality, this TEC can correspond with EVC 55 Plains Grassy Woodland, which is modelled to occur (<0.5 ha) within the assessment area.
Grey Box ( <i>Eucalyptus microcarpa</i> ) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area	<b>Moderate</b> – within the VVP, this TEC typically corresponds with EVC 803 Plains Woodland, which is not modelled to occur within the assessment area by DELWP. However, EVC 803 has been recorded at the Melton RWP site and is mapped along the alignment in the vicinity of the Sunbury RWP in the MSA time-stamped native vegetation dataset. EVC 55 Plains Grassy Woodland and EVC 175 Grassy Woodland, which are modelled by DELWP to occur in the assessment area, can also correspond to this TEC but typically in other bioregions.
Natural Temperate Grassland of the Victorian Volcanic Plain	Critically Endangered	Community likely to occur within area	<b>High</b> – depending on extent and quality, this TEC can correspond with EVC 132 Plains Grassland, which is modelled to occur (approx. 6-7 ha) within the assessment area.
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	Community likely to occur within area	<b>Moderate</b> – this TEC typically corresponds with EVC 125 Plains Grassy Wetland, which is not modelled to occur within the assessment area, but can also be associated with other EVCs in freshwater marsh/meadow wetlands which are mapped in small sections of the assessment area. Small areas of EVC 125 are mapped along the alignment in the vicinity of the Sunbury RWP in the MSA time-stamped native vegetation dataset.
White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	<b>N/A</b> – this TEC is not typically associated with any EVCs of the VVP bioregion in which the assessment area is located, and is more associated with bioregions north of the Divide.

Based on the modelled EVCs within the assessment area, the following FFG Act listed threatened communities have been identified as potentially occurring within the assessment area:

- Western (Basalt) Plains Grassland – depending on extent and quality, this community can correspond with EVC 132 Plains Grassland, which is modelled to occur in the assessment area

- Western Basalt Plains (River Red Gum) Grassy Woodland - depending on extent and quality, this community can correspond with EVC 68 Creepline Grassy Woodland and EVC 55 Plains Grassy Woodland, which are modelled to occur in the assessment area.

PMST and VBA searches identified 56 listed threatened flora species and 62 listed threatened fauna species as potentially occurring within 5 km of the two current alignment options. An assessment of the likelihood of these species occurring within the assessment areas was undertaken based on their habitat preferences, modelled EVCs, and other desktop data (e.g. mapped waterways and wetlands, aerial imagery). The results of the likelihood of occurrence assessment are provided in Attachment 25. Based on these results, 27 listed threatened flora species and 19 listed threatened fauna species were assessed as having a moderate or high likelihood of occurrence in the assessment areas (refer to Table 17).

Table 17. Listed threatened species with moderate-high likelihood of occurrence in S2M Interconnector Pipeline assessment area

Species	Conservation status			Source	Last VBA record	No. of VBA records	Likelihood occurrence
	EPBC	FFG	VicAdv				
<b>Threatened Flora</b>							
<i>Allocasuarina luehmannii</i> (Buloke)		L	en	VBA	27/07/2010	85	High
<i>Cullen parvum</i> (Small Scurf-pea)		L	en	VBA	3/03/2020	33	High
<i>Cullen tenax</i> (Tough Scurf-pea)		L	en	VBA	14/11/2017	36	High
<i>Dianella longifolia</i> var. <i>grandis</i> (Flax-lily)			vu	VBA	3/10/2019	283	High
<i>Pimelea spinescens</i> subsp. <i>spinescens</i> (Spiny Rice-flower)	CR	L	en	VBA, PMST	12/06/2020	208	High
<i>Dianella amoena</i> (Matted Flax-lily)	EN	L	en	VBA, PMST	3/10/2019	25	High
<i>Diuris basaltica</i> (Small Golden Moths)	EN	L	en	VBA, PMST	6/01/2020	305	High
<i>Senecio macrocarpus</i> (Large-headed Fireweed)	VU	L	en	VBA, PMST	30/09/2019	340	High
<i>Amyema linophylla</i> subsp. <i>orientalis</i> (Buloke Mistletoe)			vu	VBA	23/07/2010	12	Moderate
<i>Austrostipa exilis</i> (Heath Spear-grass)			r	VBA	22/11/2018	10	Moderate
<i>Austrostipa hemipogon</i> (Half-bearded Spear-grass)			r	VBA	22/11/2006	2	Moderate
<i>Calotis anthemoides</i> (Cut-leaf Burr-daisy)		L		VBA (Option B only)	17/11/2005	1	Moderate
<i>Comesperma polygaloides</i> (Small Milkwort)		L	vu	VBA	7/12/2003	2	Moderate

<i>Coronidium gunnianum</i> (Pale Swamp Everlasting)			vu	VBA (Option B only)	17/11/2005	3	Moderate
<i>Craspedia sp. 2</i> (Derrinallum Billy-buttons)			en	VBA (Option B only)	30/09/2019	1	Moderate
<i>Diuris behrii</i> (Golden Cowslips)			vu	VBA	10/11/2017	1	Moderate
<i>Eucalyptus baueriana</i> <i>subsp. thalassina</i> (Werribee Blue-box)			en	VBA	3/11/2016	19	Moderate
<i>Eucalyptus leucoxydon</i> <i>subsp. connata</i> (Melbourne Yellow-gum)		R	vu	VBA	13/11/2017	18	Moderate
<i>Geranium sp. 3</i> (Pale-flower Crane's-bill)			r	VBA	20/11/2019	32	Moderate
<i>Nicotiana suaveolens</i> (Austral Tobacco)			r	VBA	10/11/2017	15	Moderate
<i>Podolepis linearifolia</i> (Basalt Podolepis)			en	VBA	20/11/2019	11	Moderate
<i>Pterostylis truncata</i> (Brittle Greenhood)		L	en	VBA	01/01/1770	1	Moderate
<i>Rhagodia parabolica</i> (Fragrant Saltbush)			r	VBA	30/11/2018	53	Moderate
<i>Tripogonella loliiformis</i> (Rye Beetle-grass)			r	VBA	10/11/2017	26	Moderate
<i>Diuris fragrantissima</i> (Sunshine Diuris)	EN	L	en	VBA	10/11/2017	2	Moderate
<i>Rutidosia leptorhynchoides</i> (Button Wrinklewort)	EN	L	en	PMST, VBA (Option B only)	1/05/1900	1	Moderate
<i>Glycine latrobeana</i> (Clover Glycine)	VU	L	vu	VBA, PMST	22/11/2006	4	Moderate
<b>Threatened Fauna</b>							
<i>Delma impar</i> (Striped Legless Lizard)	VU	L	en	VBA, PMST	26/12/2019	294	High
<i>Hieraaetus morphnoides</i> (Little Eagle)		L	vu	VBA	29/07/2017	117	High
<i>Litoria raniformis</i> (Growling Grass Frog)	VU	L	en	VBA, PMST	5/10/2020	222	High
<i>Pseudemoia pagenstecheri</i> (Tussock Skink)			vu	VBA	28/04/2020	38	High
<i>Pyrrholaemus sagittatus</i> (Speckled Warbler)		L	vu	VBA	14/04/2019	181	High

<i>Stagonopleura guttata</i> (Diamond Firetail)		L	nt	VBA	27/04/2019	259	High
<i>Synemon plana</i> (Golden Sun Moth)	CR	L	cr	VBA, PMST	19/12/2016	142	High
<i>Ardea alba</i> (Great Egret)		L	vu	VBA	18/05/2019	28	Moderate
<i>Aythya australis</i> (Hardhead)			vu	VBA	9/06/2019	271	Moderate
<i>Biziura lobata</i> (Musk Duck)			vu	VBA	21/02/2019	37	Moderate
<i>Falco subniger</i> (Black Falcon)		L	vu	VBA	17/02/2019	25	Moderate
<i>Hirundapus caudacutus</i> (White-throated Needletail)	VU	L	vu	VBA, PMST	17/02/2019	9	Moderate
<i>Lathamus discolor</i> (Swift Parrot)	CR	L	en	VBA, PMST	10/04/2019	21	Moderate
<i>Oxyura australis</i> (Blue-billed Duck)		L	en	VBA	21/02/2019	31	Moderate
<i>Pedionomus torquatus</i> (Plains-wanderer)	CR	L	cr	VBA, PMST	13/08/2004	8	Moderate
<i>Spatula rhynchotis</i> (Australasian Shoveler)			vu	VBA	19/05/2019	54	Moderate
<i>Stictonetta naevosa</i> (Freckled Duck)		L	en	VBA	7/07/2019	223	Moderate
<i>Turnix pyrrhotorax</i> (Red-chested Button- quail)		L	vu	VBA	13/08/2004	5	Moderate
<i>Tympanocryptis pinguicollis</i> (Grassland Earless Dragon)	EN	L	cr	VBA, PMST	11/01/1990	1	Moderate

Field assessments have not been undertaken at this stage and would likely refine the habitat types available within the assessment areas, and subsequently reduce the list of threatened species potentially supported by habitats within the assessment areas. Furthermore, it is noted that the majority of threatened fauna identified as potentially occurring are bird species. These bird species are likely to fly over or only occasionally utilise habitats within the assessment area, or are likely to occur at discrete locations such as the Sunbury and Melton RWPs for waterbird species.

Within the MSA area, the indicative assessment areas intersect with several Biodiversity Conservation Areas and Areas of Strategic Importance (ASI) for Growling Grass Frog, including:

- Section of common alignment option within the Sunbury RWP site – located within the Biodiversity Conservation Area (North-Western Growth Corridor: Growling Grass Frog Corridor) and intersecting with 'other terrestrial habitat' and a 'terrestrial habitat buffer to an ASI for Growling Grass Frog and waterway' associated with Jacksons Creek
- Section of Option A alignment along Leakes Road – located within the Biodiversity Conservation Area (Western Growth Corridor: Growling Grass Frog Corridors) at two locations crossing Kororoit Creek

and its tributary, and intersecting with an 'ASI - Buffer around waterbodies', a 'terrestrial habitat buffer to an ASI for Growling Grass Frog and waterway', and an 'ASI - Instream pool'.

- Section of Option B alignment crossing Kororoit Creek – located within the Biodiversity Conservation Area (Western Growth Corridor: Growling Grass Frog Corridors) and intersecting with an 'ASI - Buffer around waterbodies', a 'terrestrial habitat buffer to an ASI for Growling Grass Frog and waterway', and an 'ASI - Instream pool'.

A search of the PMST identified 13 EPBC Act listed migratory species as potentially occurring within 5 km of the assessment areas, including one migratory marine bird species, four migratory terrestrial bird species, and eight migratory wetland bird species (refer to Attachment 25).

**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.

### **M2BM Interconnector Pipeline**

Habitat within the project area has been historically fragmented due to the area's use for agricultural and road reserve purposes. The proposed development may contribute to further fragmentation of known habitat, however given the underground nature of the proposed development, recolonisation of the area by threatened species and listed communities may occur following the completion of construction works. This process of recolonisation has been observed following installation of the adjacent high-pressure gas pipeline.

### **Bacchus Marsh RWP Pump Station**

Given the highly modified nature of the Bacchus Marsh RWP site and early stage of planning and design for this project, no assessment of the presence of threatened or migratory species or listed communities has yet been undertaken.

### **PBID Supply Network (pipeline, pump station, balance tank)**

Much of the vegetation that occurs throughout the project assessment area was determined to be introduced or planted vegetation, including cropped paddocks, areas dominated by exotic grasses and weeds, and ornamental plantings of exotic and native species, typically trees and often associated with farm windrows or roadside areas. Nevertheless, the detailed ecological impact assessment (Attachment 12) identified three FFG Act listed threatening processes that may be exacerbated by this project:

- Invasion of native vegetation by Blackberry *Rubus fruticosus L. agg*
- Habitat fragmentation as a threatening process for fauna in Victoria
- Invasion of native vegetation by 'environmental weeds'.

### **PBID Foundation Recycled Water Irrigation Areas**

The proposed recycled water irrigation area works would result in the removal of five, large FFG Act listed Buloke trees. No other threatening processes affecting listed threatened species or communities have been identified, in the native vegetation and biodiversity impact assessments prepared for the recycled water irrigation areas assessed to date, as likely to be exacerbated by the proposed works and activities.

### **Parwan Recycled Water Storage**

Based on the findings of the desktop and field assessments that the Parwan Recycled Water Storage site was determined not to contain suitable habitat for listed threatened flora or fauna species, or listed migratory species, no threatening processes affecting these habitats/species are expected to be exacerbated by the project.

### **S2M Interconnector Pipeline**

Due to the early stage of planning and design for this project, no analysis of threatening processes affecting listed threatened or migratory species, or listed communities has been undertaken to date.

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

NYD  No  Yes If yes, please:

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

**M2BM Interconnector Pipeline**

Yes. The biodiversity assessment undertaken for this project has identified the following potential impacts to listed threatened species and communities:

- Direct removal of 4.961 ha of EPBC Act listed Critically Endangered Natural Temperate Grasslands of the Victorian Volcanic Plain (NTGVVP).
- Direct removal of 0.266 ha of EPBC Act listed Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.
- Direct impact to 10.459 ha of Golden Sun Moth habitat.
- Direct impact to 1.2394 ha of FFG Act listed Western (Basalt) Plains Grassland
- Direct removal of approximately 75-100 individuals of the FFG Act protected flora species Fuzzy New Holland Daisy.
- Potential removal of suitable habitat within the project area for eight species listed or protected under the FFG Act, including Golden Wattle, Varnish Wattle, Common Cassinia, Jersey Cudweed, Nardoo Cotton Fireweed and Fuzzy New Holland Daisy.

Based on the findings of the Biodiversity Assessment (Attachment 11), the project would not result in the removal of a significant proportion of known remaining habitat or a significant population of a threatened species, or significantly impact on the survival of a threatened ecological community.

**Bacchus Marsh RWP Pump Station**

Given the highly modified nature of the Bacchus Marsh RWP site and early stage of planning and design for this project, no assessment of potential effects on threatened or migratory species, other species of conservation significance or listed communities has been undertaken for the Bacchus Marsh RWP Pump Station site.

**PBID Supply Network (pipeline, pump station, balance tank)**

Yes. The detailed ecological impact assessment for this project (CH2M Beca, 2021) has identified the following potential impacts to listed threatened species and communities:

- Direct removal of 0.253 ha of EPBC Act listed Critically Endangered NTGVVP
- Direct removal of 0.7109 ha of FFG Act listed Western (Basalt) Plains Grassland
- Possible direct impacts (e.g. soil compaction) to 0.0089 ha of medium-high quality Striped Legless Lizard habitat located along the edge of an existing farm track proposed to be used during construction
- Direct removal of one individual of Flax-lily *Dianella longifolia* var. *grandis* which is listed as vulnerable in the VicAdv

- Direct removal of four FFG Act listed protected flora species identified in the proposed construction corridor: Common New Holland Daisy *Vittadinia cuneata*, Woolly New Holland Daisy *Vittadinia gracilis*, Blackwood *Acacia melanoxylon* and Sifton Bush *Cassinia sifton*
- Potential for indirect impacts on retained areas of habitat for listed threatened species, notably areas of medium-high quality grassland habitat considered likely to provide potential suitable habitat for Striped Legless Lizard, Tussock Skink and Fat-tailed Dunnart, and less likely but still possible, suitable habitat for Golden Sun Moth
- Potential for indirect impacts on retained areas of listed threatened ecological communities and potential threatened species habitat through weed invasion and other edge effects
- Potential for indirect impacts on FFG Act and VicAdv listed threatened flora located in proximity to the proposed works, including a small number of (approx. two) Buloke *Allocasuarina luehmannii*.

The project would not result in the removal of a significant proportion of known remaining habitat or a significant population of a threatened species, or significantly impact on the survival of a threatened ecological community.

### **PBID Foundation Recycled Water Irrigation Areas**

Yes. The proposed works and activities within the recycled water irrigation areas assessed to date, would require the removal of five, large scattered Buloke *Allocasuarina luehmannii*, which are listed under the FFG Act and have a conservation status of endangered under the VicAdv. No other listed threatened species, habitat for listed threatened species or listed threatened communities have been identified, in the native vegetation and biodiversity impact assessments prepared for the recycled water irrigation areas assessed to date, as being impacted by the proposed works and activities. Ecological values within the recycled water irrigation areas are minimal due to clearing for historical and ongoing use of the land for agricultural production.

Further investigations would be required prior to developing Stage 2 of the Customer 2 recycled water irrigation areas to determine the extent of native vegetation and biodiversity impacts in these areas, which are located in proximity to large patches of modelled Plains Grassland (EVC 132), which can be known to support a number of threatened flora and fauna species (e.g. Striped Legless Lizard, Golden Sun Moth, Spiny Rice-flower, Matted Flax-lily, Large-fruit Fireweed, Small Golden Moths, Cover Glycine) and can correspond to threatened ecological communities listed under the EPBC Act (Natural Temperate Grasslands of the Victorian Volcanic Plain) and FFG Act (Western (Basalt) Plains Grassland). As the siting and design of proposed pivot irrigators and associated pipelines is relatively flexible, it is anticipated that if any listed threatened communities, or any listed threatened species or their habitat is identified, these ecological values would likely be avoidable through design.

### **Parwan Recycled Water Storage**

No. Based on the findings of a desktop assessment and field assessments undertaken by CH2M Beca in late 2019 / early 2020, the Parwan Recycled Water Storage site was determined not to contain suitable habitat for listed threatened flora or fauna species, or listed migratory species, and no listed threatened species or communities, or listed migratory species were recorded during the field assessments. As such, no impacts on listed threatened species or communities, or listed migratory species are likely to occur. Refer to Attachment 14.

### **S2M Interconnector Pipeline**

Not yet determined. Due to the early stage of planning and design for this project, no analysis of potential effects on listed threatened or migratory species, other species of conservation significance, or listed communities has been undertaken to date.

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

NYD  No  Yes If yes, please briefly describe.

All projects would be required to develop and implement a CEMP, incorporating flora and fauna management measures, for approval by Western Water prior to commencing construction works.

### **M2BM Interconnector Pipeline**

Specific mitigation measures proposed to further avoid or minimise potential impacts to native vegetation, flora and fauna values for this project include:

- All contractors are to be made aware of ecologically sensitive areas to minimise the likelihood inadvertent disturbance to areas marked for retention. Habitat zones (areas of sensitivity) shall be provided to contractors for demarcation and protection.
- Tree Retention Zones (TRZs) shall be implemented within patches of Plains Grassy Woodland and Floodplain Riparian Woodlands where trees are located to prevent indirect losses of native vegetation during construction activities. A TRZ applies to a tree and is a specific area above and below the ground, with a radius 12 x the DBH. At a minimum standard, TRZs should consider the following:
  - A TRZ of trees should be a radius no less than two metres or greater than 15 metres.
  - Construction related activities and encroachment (i.e. earthworks such as trenching that disturb the root zone) should be excluded from the TRZ.
  - Where encroachment exceeds 10% of the total area of the TRZ, the tree should be considered as lost and offset accordingly.
  - Directional drilling may be used for works within the TRZ without being considered encroachment. The directional bore should be at least 600 millimetres deep.
  - The above guidelines may be varied if a qualified arborist confirms the works would not significantly damage the tree (including stags/dead trees). In this case the tree would be retained and no offset would be required.
  - Where the minimum standard for a TRZ has not been met an offset may be required.
- Where possible, construction stockpiles, machinery, roads and other infrastructure should be placed away from areas supporting native vegetation, LOTs and/or wetlands.
- Best practice sedimentation and pollution control measures shall be undertaken in accordance with applicable Environment Protection Authority publications and guidelines current as at the time of construction to prevent offside impacts to waterways and wetlands.
- The CEMP should detail specific species/vegetation conservation strategies, routine monitoring, sedimentation management, site specific rehabilitation plans, weed and pathogen management measures, etc.
- A Significant Species Offset Management Plan should be prepared as part of the EPBC Act approvals for the project.
- An Offset Strategy should be prepared under the DELWP 'Guidelines for the removal, destruction or lopping of native vegetation' (December, 2017).
- A Weed Management Plan should be prepared following the guidelines set out in the *Catchment and Land Protection Act 1994*, and clearly outline any obligations of the project team in relation to minimising the spread of weeds because of the project. This may include a pre-clearance weed survey undertaken prior to any construction activities to record and map the locations of all noxious and environmental weeds.
- A Fauna Management Plan may be required if habitat for common fauna species is likely to be impacted and salvage and translocation must be undertaken to minimise the risk of injury or death to those species.



### **Bacchus Marsh RWP Pump Station**

Given the early stage of planning and design for this project, the need for potential mitigation measures is yet to be confirmed. Consistent with the approach adopted for the other projects, avoidance and minimisation of impacts to native vegetation, flora and fauna values would be investigated and implemented where feasible through an iterative design process informed by ecological investigations.

### **PBID Supply Network (pipeline, pump station, balance tank)**

Specific mitigation measures proposed to further avoid or minimise potential impacts to native vegetation, flora and fauna values for this project include:

- All works (and ancillary activities) are to be contained within the designated construction corridor. Previously cleared or highly disturbed areas are to be utilised for ancillary works, such as stockpiling, laydowns and site offices.
- All required native vegetation offsets, in accordance with the Guidelines, are to be in place prior to removal of native vegetation.
- Where partial patch removal or under-boring are to occur, particularly along Geelong-Bacchus Marsh Road, exclusion fencing is to be erected around the vegetation (planted and native) to be retained, incorporating the Tree Protection Zone (TPZ). These areas are to be signed as 'No-go Zones' and shown on all site maps within the CEMP.
- Where scattered trees or large canopy trees are to be retained within or in close proximity to proposed work areas, tree protection plans are to be prepared by a qualified arborist to ensure that trees proposed to be retained are adequately protected from the impact of construction or related activities, prior to those works being undertaken. Tree protection plans are to be developed in accordance with AS4970-2009 Protection of Trees on Development Sites (Australian Standards 2009) in consultation with key stakeholders. Should the arborist determine that the works cannot proceed without impacting on the survivability of an indigenous tree, the tree would be required to be offset in accordance with the Guidelines. TPZs are to be signed as 'No-go Zones' and shown on all site maps within the CEMP.
- Where EPBC Act and/ or FFG Act listed communities are identified to be retained, high visibility para-web fencing or temporary mesh fencing is to be erected around these areas where located in proximity to the works area. These areas are to be signed as 'No-go Zones' and shown on all site maps within the CEMP.
- Where Striped Legless Lizard habitat has been identified adjacent to the designated construction corridor, high visibility mesh bunting or temporary construction fencing (including erosion fencing if necessary) is to be erected along the boundary of the construction corridor. Adjacent habitat areas are to be signed as 'No-go Zones' and shown on all site maps within the CEMP. Fencing should be sufficient to prevent vehicular and pedestrian access into retained habitat, and designed to allow lizard movement between areas of retained habitat where possible, while excluding lizard movement into work areas.
- Wherever possible, surface and/or embedded rocks, or other refuge sites (e.g. logs) are to be retained within the works area. Where removal of these habitat features is unavoidable, appropriate surface refuges or cover is to be reintroduced to augment existing habitat.
- Appropriate Golden Sun Moth exclusion mesh fencing is to be installed for sections of construction corridor boundary fences adjoining retained medium-high quality Golden Sun Moth habitat (e.g. along Ripley Road and Geelong-Bacchus Marsh Road south of Bluegum Track, and along the access track through habitat east of Balliang Creek), to prevent potential flight of this species into the works area. Fencing is not required to be erected along the stone wall south of Ripley Road as the stone wall provides an existing barrier.

- An ecologist or wildlife handler holding the appropriate authorisation under the *Wildlife Act 1975* is to be present during tree felling, particularly for removal of hollow-bearing trees, to minimise the risk of injury or harm to fauna. All necessary authorisations are to be obtained prior to removing native fauna.
- Where native vegetation is to be cleared and an ecologist determines that fauna may be displaced along Geelong-Bacchus Marsh Road, all works are to be supervised by an ecologist or wildlife handler to minimise the risk of fauna species displaced by the works straying onto adjacent roads causing injury or death. Staged construction fencing to avoid fauna dispersal onto Geelong-Bacchus Marsh Road is recommended. It is also recommended that speed limits be reduced where works are occurring.
- To prevent the spread of declared weeds and pathogens:
  - Vehicles and machinery are to access the construction corridor through defined entry and exit points
  - Construction stockpiles, machinery, roads, and other infrastructure are to be placed away from areas supporting native vegetation and waterways; and placed in previously cleared or hardstand areas
  - Standard Chytrid Fungus controls are to be implemented where works to connected waterbodies or waterways are occurring.
- Works in, on, under and adjacent to Balliang Creek are to be undertaken in accordance with Melbourne Water requirements and any necessary works on waterways permits obtained prior to commencing works.
- Works are to be undertaken so as not to cause an adverse change in current water quality or a reduction in the current suitability of fish passage of any waterway, particularly Balliang Creek.
- For open trenching works proposed at the northern Balliang Creek crossing, it is recommended that works are undertaken during no/low flow periods and revegetation of the creek bed and banks is to occur following construction.
- Erosion and sediment control measures are to be implemented in accordance with applicable EPA Victoria construction guidelines as at the time of construction.
- High visibility para-web fencing or temporary mesh fencing is to be erected to prevent vehicular and pedestrian access to Balliang Creek, other than where required within the construction corridor for open-trench pipeline construction at the northern creek crossing and to provide access across the creek via an existing track at the southern creek crossing.
- During removal / filling of the existing farm dam south of Schultz Road, an ecologist or wildlife handler is to be present, in accordance with the Wildlife Act, to minimise the risk of injury or harm to aquatic fauna, such as Snake-necked Turtle (*Chelodina longicollis*). Any fauna removed is to be relocated to the nearest suitable waterbody.

#### **PBID Foundation Recycled Water Irrigation Areas**

In accordance with the customer agreements with Western Water, each of the foundation customers is required to avoid or minimise impacts to native vegetation during construction and operation of on-farm works associated with recycled water irrigation. This includes siting and design of centre pivot irrigators to avoid irrigation of native grasslands and to minimise removal of scattered paddock trees, providing a 15 m buffer zone between irrigated land and retained native vegetation patches, and locating irrigation pipelines to avoid removal of native vegetation. Where impacts to native vegetation are unavoidable, each of the foundation customers is responsible for obtaining all necessary permits and approvals, and for securing required offsets under the Guidelines prior to commencing works.

The relationship between customers and Western Water is currently governed by the Western Water Regional Environment Improvement Plan for Recycled Water Schemes (REIP). The REIP is currently in

the process of being replaced by Western Water's Health and Environmental Management Plan (HEMP), which requires approval from EPA Victoria under the Environment Protection Act.

### Parwan Recycled Water Storage

This project would require removal of all identified native vegetation within the project area, which comprises large scattered trees, but does not contain habitat likely to support listed threatened species. As such, standard flora and fauna management measures are likely to be sufficient. This would include a requirement for an ecologist or wildlife handler holding the appropriate authorisation under the *Wildlife Act 1975* to be present during tree felling, particularly for removal of hollow-bearing trees, to minimise the risk of injury or harm to fauna. Where feasible, design for the Parwan Recycled Water Storage will be amended to avoid impacts.

### S2M Interconnector Pipeline

Due to the early stage of planning and design for this project, no specific measures have yet been developed to avoid or minimise impacts to native vegetation, flora and fauna values. However, consistent with the approach adopted for the other projects, avoidance and minimisation of impacts to native vegetation, flora and fauna values would be investigated and implemented where feasible during selection of the preferred alignment, and through an iterative design process informed by the proposed ecological investigations. The effectiveness of this iterative design process is illustrated by the PBID Supply Network project, where more than 85% of ecological values identified within the assessment area for the preferred pipeline alignment were able to be avoided by the final construction corridor.

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

n/a

## 13. Water environments

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

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

None of the projects contributing to the WIN Scheme would require significant volumes of freshwater.

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

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

The purpose of the WIN Scheme is to facilitate the irrigation of Class C recycled water produced from treated wastewater to existing cropping/pastoral land within the proposed Parwan-Balliang Irrigation District. The WIN Scheme would therefore contribute to reducing wastewater discharges to waterways (e.g. Werribee River and Jacksons Creek) by facilitating an alternative pathway for reuse of recycled water, thereby maintaining downstream beneficial uses such as agricultural water use in the Werribee Irrigation District and water dependent ecosystems and species.

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

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

The majority of the project areas are located within the Werribee River catchment, including all of the M2BM Interconnector Pipeline, the Bacchus Marsh RWP Pump Station and the Parwan Recycled Water Storage, along with the portion of the S2M Interconnector Pipeline south of the Calder Freeway, the northern portion of the PBID Supply Network and the Foundation Customer 1 recycled water irrigation areas. The southern portion of the PBID Supply Network, south of about Ballan Road, and the Foundation Customer 2 and 3 recycled water irrigation areas, are in the Moorabool River catchment. The northern

portion of the S2M Interconnector Pipeline, north of the Calder Freeway, is in the Maribyrnong River catchment. No project areas are located within or upstream of any designated special water supply catchment areas.

No project areas are located within or adjacent to any wetlands listed under the Ramsar Convention or in A Directory of Important Wetlands in Australia (DIWA). Balliang Creek, which is crossed by the PBID Supply Network (pipeline) at two locations and is located in proximity to a number of foundation recycled water irrigation areas, flows into Little River. Little River is located upstream of the Ramsar listed Port Phillip Bay (Western Shoreline) and Bellarine Peninsula wetlands. The Werribee River, which is crossed by the M2BM Interconnector Pipeline at one location, is also located upstream of the Ramsar listed Port Phillip Bay (Western Shoreline) and Bellarine Peninsula wetlands. The PBID Supply Network, the foundation recycled water irrigation areas and M2BM Interconnector Pipeline project areas are located more than 25 km upstream of the Ramsar listed wetlands and associated DIWA listed Werribee-Avalon Area wetlands.

Given the separation distances and proposed under-boring of the Werribee River crossing and one of the Balliang Creek crossings, these projects are not likely to adversely affect these listed wetlands provided the water quality controls described in this referral are implemented during construction and operation of the projects. Rather, by facilitating additional recycled water reuse for irrigation, the proposed infrastructure, as part of the WIN Scheme, would reduce discharges of recycled water to the Werribee River from the Melton RWP, with associated potential benefits for downstream beneficial uses.

Further information on waterways and wetlands within and in proximity to each of the projects is provided below and shown in Attachment 27:

### **M2BM Interconnector Pipeline**

The M2BM Interconnector Pipeline would transit beneath the bed of the Werribee River. In this area, the pipeline is proposed to be micro-tunnelled, limiting impacts to one temporary 6 m x 6 m maximum and one temporary 7 m x 7 m maximum construction shafts and associated laydown areas as shown in the plans included as Attachment 1.

Sedimentation and pollution control measures undertaken in accordance with the applicable EPA publications and guidelines as at the time of construction would be detailed in the contractor's Construction Environmental Management Plan (CEMP) and employed throughout construction to manage the potential for sediment runoff into the Werribee River.

A small number of intermittent watercourses would also be crossed during construction of the M2BM Interconnector Pipeline. These are proposed to be reinstated to match the existing invert level following completion of construction.

No other impacts to waterways, wetlands, estuaries or marine environments are anticipated.

### **Bacchus Marsh RWP Pump Station**

No waterways or wetlands are mapped within the Bacchus Marsh RWP site. The nearest DELWP mapped wetlands are located 0.8 km north west (Wetland 70074), 1.0 km north west (Wetland 70075) and 1.4 km south west (Wetland 70071 – Bingham's Swamp). The nearest waterways are the Werribee River (Melton Reservoir) located 3.0 km north east and Parwan Creek located 3.3 km north west of the project area. Given the small scale of the proposed works and available separation distances, no adverse effects on these waterways and wetlands are likely to occur.

### **PBID Supply Network (pipeline, pump station, balance tank)**

There are no waterways or wetlands mapped within the proposed pump station and balance tank site. The nearest DELWP mapped wetland is Bingham's Swamp (Wetland 70071) located 0.9 km north west of the pump station and balance tank site.

The proposed pipeline crosses Balliang Creek at two locations. The section of Balliang Creek through the project area is rated in Poor condition by DELWP's Index of Stream Condition ISC2010. Little River

downstream of its junction with Balliang Creek is rated in Very Poor condition through to its outlet to Port Phillip Bay via the Ramsar and DIWA listed wetlands.

The location of the northern Balliang Creek crossing is highly degraded, dominated by exotic species, such as Water Couch (*Paspalum distichum*), with some limited Tall Marsh (EVC 821), and having an existing access track across the creek; this section of pipeline would be constructed by open trenching. The location of the southern Balliang Creek crossing contains some native vegetation, including large trees and patches of Creepline Grassy Woodland (EVC 68), and has less disturbed bed and banks; this section of pipeline would be constructed by under-boring. Both Balliang Creek crossings have limited to no aquatic vegetation present, other than some Common Reed present at the northern creek crossing. Physical barriers to movement are also present at both Balliang Creek crossings in the form of raised access tracks across the creek bed, both of which would be used during construction. Two farm dams are located either side of Geelong-Bacchus Marsh Road at the northern Balliang Creek crossing. Both dams lack aquatic vegetation.

The proposed pipeline also crosses Dry Creek at one location; this section of pipeline would be constructed by open trenching. This crossing is also highly degraded, with native vegetation within the proposed construction footprint limited to a small patch of Plains Grassy Wetland (EVC 125) adjacent to the existing road embankment, which is approved for removal by VicRoads for the Geelong-Bacchus Marsh Road Upgrade Project.

The proposed pipeline does not intersect any DELWP mapped wetlands. The nearest wetlands are Wetland 70072 (300 m west of the pipeline along Parwan South Road), Wetland 70067 (50 m south of the pipeline along Schultz Road), Wetland 70109 (along Dry Creek, 300 m east of the pipeline along Geelong-Bacchus Marsh Road) and Wetland 70106 (along Balliang Creek, 50 m west of the pipeline along Geelong-Bacchus Marsh Road).

The proposed pipeline would be subsurface, with existing access tracks across the creeks utilised for construction purposes. Sections of Balliang Creek and Dry Creek crossed by the proposed works flow infrequently and where feasible, open trenched construction is proposed to occur during no/low flow periods. On completion of open trenching construction works, the creek beds are proposed to be reinstated to match the existing invert level and revegetated. Erosion and sediment controls would be detailed in the contractor's CEMP and employed throughout construction to manage the potential for sediment runoff into Balliang Creek, Dry Creek and nearby wetlands. Based on implementation of these measures, no adverse impacts on waterways or wetlands are likely to occur as a result of this project.

#### **PBID Foundation Recycled Water Irrigation Areas**

The proposed irrigation areas of Customers 2 and 3 are located in proximity to Balliang Creek and Dry Creek. A 50 m buffer zone is proposed between the recycled water irrigation areas and these waterways in accordance with the Guidelines for Environmental Management: Use of Reclaimed Water (EPA Victoria, 2003). An un-named minor drainage line passes through an existing cropped paddock proposed to be used for recycled water irrigation near Mt Rothwell Road (Customer 3). No buffer is proposed to this drainage line, which contains existing cropping activities, no modelled EVCs and no native vegetation identified during a field assessment by Tree Wishes.

No DELWP mapped wetlands are located within the proposed recycled water irrigation areas for Customers 2 and 3. Two of the proposed centre pivot irrigation areas for Customer 1 are located within DELWP mapped wetlands, including Wetland 70072 (300 m west of Parwan South Road) and Wetland 70067 (50 m south of Schultz Road). Both wetlands are described as temporary freshwater marshes or meadows. Wetland 70072 is located in an existing cropped paddock that is already being irrigated with recycled water from the Bacchus Marsh RWP. This mapped wetland does not contain any modelled EVCs, and no native vegetation was identified in this area during a field assessment by Tree Wishes. Wetland 70067 is also located in an existing cropped paddock. This mapped wetland is modelled to contain an area of Plains Grassy Wetland (EVC 125), however no native vegetation was identified in this area during a field assessment by Tree Wishes.

Due to relatively flat topography of the recycled water irrigation areas, the risk of unintentional off-site movement of irrigated recycled water is low. Provided recycled water irrigation is undertaken in accordance with the management controls and measures described in the land capability assessments (see Attachment 28), which would be updated to align with EPA Publication 1910.2: Victorian guideline for water recycling (March 2021) and EPA Publication 1911.2: Technical information for the Victorian guideline for water recycling (March 2021), and reflected in the Western Water's HEMP and the customer site management plans requiring EPA approval; no adverse impacts on waterways or wetlands are likely to occur as a result of this activity.

### **Parwan Recycled Water Storage**

This project involves works to utilise a natural depression containing an existing farm dam for recycled water storage. There are no waterways or wetlands mapped within the project area. The nearest DELWP mapped wetlands are Wetland 70072 located 0.8 km south west of the project area in a cropping area and Bingham's Swamp (Wetland 70071) located 0.9 km north west of the project area.

A stormwater runoff drainage system is proposed to prevent contamination of the Class C recycled water by stormwater, which has the potential for livestock contaminants. Three diversion drains are currently proposed around the storage perimeter directing runoff to two stormwater detention basins, sized for the 10% AEP (1 in 10 year) 6-hour storm event.

Normal freeboard is expected to be required to prevent overtopping due to wind generated waves above full supply level (i.e. normal operating level for the highest sustained winds that could reasonably occur at the site). During detailed design, a detailed freeboard calculation will be undertaken to confirm the minimum freeboard value.

### **S2M Interconnector Pipeline**

The proposed pump station and the northern end of the S2M Interconnector Pipeline are located within the Sunbury RWP site, which adjoins Jacksons Creek to the east. The Sunbury RWP holds a current EPA licence that allows discharge of up to 1,898 ML/year of recycled water to Jacksons Creek subject to a range of conditions including limits on the concentration of pollutants (nitrogen, phosphorous and pathogens) in the recycled water; and limits on the extent of the mixing zone (i.e. an area of waterbody where the receiving water environment is detrimentally affected by a waste discharge). This project would not increase recycled water discharge to Jacksons Creek and may contribute to decreased discharge to Jacksons Creek by connecting the Sunbury RWP to additional recycled water uses. According to DELWP's Index of Stream Condition ISC2010, Jacksons Creek is rated in Very Poor condition upstream of the Sunbury RWP and Poor condition downstream of the Sunbury RWP through to its junction with the Maribyrnong River just downstream of Organ Pipes National Park.

The common shared alignment of the S2M Interconnector Pipeline options crosses Harpers Creek just south of the Sunbury RWP. Harpers Creek drains east to Jacksons Creek, which drains into the Maribyrnong River. Harpers Creek is unrated in DELWP's Index of Stream Condition ISC2010. Both current alignment options being considered for the S2M Interconnector Pipeline cross Kororoit Creek, but at different locations. Kororoit Creek drains into Port Phillip Bay near Jawbone Coastal Reserve west of Williamstown. According to DELWP's Index of Stream Condition ISC2010, Kororoit Creek both upstream and downstream of the pipeline crossing options is rated in Moderate condition through to Altona when it is downgraded to Poor condition.

Due to the early stage of planning and design for this project, construction methods for the proposed creek crossings are not yet known. However, these works would be designed and constructed in accordance with Melbourne Water's requirements as the waterway management authority for these designated waterways under the *Water Act 1989*. Kororoit Creek and a tributary of Kororoit Creek (possibly named Bonnie Brook) crossed by the current alignment options are identified as Biodiversity Conservation Areas and ASI for Growling Grass Frog under the MSA's Biodiversity Conservation Strategy (BCS). As such, it is likely that DELWP (responsible for implementing the MSA / BCS) and Melbourne Water would require these creek crossings to be under-bored. Land within the Sunbury RWP, which would contain a new pump

station and a section of the S2M Interconnector Pipeline, is also identified as a Biodiversity Conservation Area and ASI for Growling Grass Frog under the MSA's BCS. As such, it is likely that DELWP would also have specific mitigation requirements for works in the vicinity of Jacksons Creek.

Several intermittent watercourses would also likely be crossed during construction of the S2M Interconnector Pipeline. It is anticipated that these works would be designed and constructed to enable reinstatement of the waterway bed to match the existing invert level following completion of construction.

The Option A alignment intersects or directly adjoins three DELWP mapped wetlands, including:

- Wetland 70457 – located along Paynes Road – temporary freshwater marsh or meadow
- Wetland 70454 (North Swamp) – located along Paynes Road – episodic freshwater swamp
- Wetland 70453 – located along Paynes Road – temporary freshwater marsh or meadow.

The Option B alignment intersects or directly adjoins two DELWP mapped wetlands, including:

- Wetland 72308 – located along Plumpton Road – temporary freshwater marsh or meadow
- Wetland 70650 – located along Taylors Road – temporary freshwater marsh or meadow.

It is anticipated that erosion and sediment controls would be detailed in the contractor's CEMP and employed throughout construction to manage the potential for sediment runoff into waterways and wetlands.

Further assessment of potential impacts to waterways, wetlands, estuaries or marine environments would be undertaken for the proposed construction footprint when determined following selection of the preferred alignment and completion of the design process.

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

NYD  No  Yes If yes, specify which water environments.

#### **Werribee River**

The Biodiversity Assessment undertaken by EHP (Attachment 11) for the M2BM Interconnector Pipeline identified that sections of the Werribee River affected by the project provide suitable habitat for Growling Grass Frog (EPBC Act – Vulnerable, FFG Act – Listed, VicAdv – endangered) and that they are known to occur within the river corridor. However, targeted surveys did not identify any individuals within the assessment area.

#### **Balliang Creek**

A number of ecological assessments (CH2M Beca 2021, EHP 2017, Okologie 2017, SMEC 2019) have determined that sections of Balliang Creek within and adjacent to the PBID Supply Network project area do not provide important habitat for any listed threatened or migratory species. Balliang Creek through the project area has been described as potentially providing marginal dispersal habitat for Growling Grass Frog (EPBC Act – Vulnerable, FFG Act – Listed, VicAdv – endangered), although limited suitable waterbodies are available in the surrounding area to attract dispersal of this species and no individuals have been recorded during previous targeted surveys. Given the degraded extent of Balliang Creek throughout the landscape, artificial barriers along the creekline and historical agricultural land use, including cropping and pesticide use, Growling Grass Frog are not expected to persist within the project area or wider local area.

#### **Jacksons Creek / Kororoit Creek / Harpers Creek**

These waterways are potentially affected by the S2M Interconnector Pipeline, including the new pump station at Sunbury RWP. Due to the early stage of planning and design for this project, only very limited assessment of listed threatened and migratory species likely to be supported by these waterways has been undertaken to date. However, as a minimum, assessments to date have indicated that Jacksons Creek and Kororoit Creek may support Growling Grass Frog (EPBC Act – Vulnerable, FFG Act – Listed,

VicAdv – endangered). As noted earlier, the indicative assessment areas for this project intersect with a number of ASI for Growling Grass Frog, including:

- Section of common alignment option within the Sunbury RWP site – located within the Biodiversity Conservation Area (North-Western Growth Corridor: Growling Grass Frog Corridor) and intersecting with 'other terrestrial habitat' and a 'terrestrial habitat buffer to an ASI for Growling Grass Frog and waterway' associated with Jacksons Creek
- Section of Option A alignment along Leakes Road – located within the Biodiversity Conservation Area (Western Growth Corridor: Growling Grass Frog Corridors) at two locations crossing Kororoit Creek and its tributary, and intersecting with an 'ASI - Buffer around waterbodies', a 'terrestrial habitat buffer to an ASI for Growling Grass Frog and waterway', and an 'ASI - Instream pool'.
- Section of Option B alignment crossing Kororoit Creek – located within the Biodiversity Conservation Area (Western Growth Corridor: Growling Grass Frog Corridors) and intersecting with an 'ASI - Buffer around waterbodies', a 'terrestrial habitat buffer to an ASI for Growling Grass Frog and waterway', and an 'ASI - Instream pool'.

Desktop and preliminary field assessments are proposed to be undertaken to assist in selection of a preferred alignment for this project. Further detailed ecological assessments, including vegetation quality (habitat hectare) assessments and targeted surveys, are proposed to be undertaken following selection of the preferred alignment and completion of the design process. These assessments may identify additional listed threatened or migratory species potentially supported by these waterways.

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

NYD  No  Yes If yes, please specify.

The project areas are located more than 25 km upstream of the nearest wetlands listed under the Ramsar Convention or in A Directory of Important Wetlands in Australia.

**Could the project affect streamflows?**

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

All pipeline crossings of waterways (with the exception of those with intermittent flows) would be subsurface, and constructed by under-boring of permanent waterways such as the Werribee River so as not to interfere with streamflows. On completion of any works causing disturbance to the bed of a waterway, the bed would be reinstated to match the existing invert level so as not to interfere with streamflows.

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

NYD  No  Yes If yes, describe in what way.

The geotechnical investigations undertaken for the M2BM Interconnector Pipeline, PBID Supply Network and Parwan Recycled Water Storage have not identified any likely impacts on regional groundwater resources.

According to the land capability assessments undertaken for the PBID Foundation Recycled Water Irrigation Areas (see Attachment 28):

- The recycled water irrigation areas are located within the Western Port Phillip groundwater catchment, defined as an upper basalt aquifer that flows in a southerly direction towards Port Phillip Bay.
- The depth of the upper aquifer at each property is expected to be greater than 5 m below ground level, with groundwater salinity (TDS) ranging from 2,000-10,000 mg/L (Visualising Victoria's Groundwater, 2020), significantly higher than the proposed recycled water supply.



- The risk of nutrient leaching into the groundwater from recycled water irrigation is considered to be low, due to:
  - Irrigation planning is designed as deficit irrigation – this practice ensures that the opportunity for soil waterlogging is minimised.
  - The nutrient budget indicates that the nutrient load to be applied from recycled water is low relative to the nutrient removal of lucerne and grass pasture (Customer 1), or wheat and lucerne pasture (Customers 2 and 3).
  - The clay nature of the red sodosol soils are not considered susceptible to leaching, being characterised by soil phosphorous buffer index (PBI) values ranging from low/moderate to very high (Customer 1) and moderate to very high (Customers 2 and 3).
  - The basalt geology of the district forms a relatively impermeable layer, protecting groundwater from surface activity.

Geotechnical investigations for the S2M Interconnector Pipeline and Bacchus Marsh Pump Station are yet to be undertaken given the preliminary stage of planning and design for these projects.

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

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

The project areas are located in the following surface water segments prescribed in Schedule 1 of the SEPP (Waters):

- Central Foothills and Coastal Plains
- Urban (relevant to areas of S2M Interconnector Pipeline within the Melbourne urban growth boundary).

The following beneficial uses are identified in Table 3 of the SEPP (Waters) as relevant to the above surface water segments:

- Water dependent ecosystems and species – slightly to moderately modified (Central Foothills and Coastal Plains).
- Water dependent ecosystems and species – highly modified (Urban).
- Agriculture and irrigation.
- Human consumption of aquatic foods.
- Aquaculture (where environmental quality is suitable and aquaculture licences have been approved).
- Industrial and commercial.
- Water-based recreation (primary contact).
- Water-based recreation (secondary contact).
- Water-based recreation (aesthetic enjoyment).
- Traditional owner cultural values.
- Cultural and spiritual values.

Some small parts of the project areas associated with the small number of DELWP mapped wetlands described as occurring in the project areas above, could fall within the Wetlands segment.

Under the SEPP (Waters), groundwater segments are based on salinity range, which is likely to be variable across the large expanse of the project areas.

Provided the mitigation measures described in this referral are implemented, the projects are not likely to adversely affect the beneficial uses of water environments. Rather, by facilitating additional recycled water reuse for irrigation, the proposed infrastructure, as part of the WIN Scheme, would reduce discharges of recycled water to the Werribee River from the Melton RWP and potentially also from Jacksons Creek from Sunbury RWP, with associated potential benefits for downstream beneficial uses.

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

NYD  No  Yes If yes, describe in what way.

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

No  Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

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

NYD  No  Yes If yes, please briefly describe.

**All projects**

For each of the proposed projects, a CEMP in accordance with relevant EPA Publications and Environmental Reference Standard, would need to be developed and implemented by the contractor. To mitigate potential effects on water environments, the CEMP must include measures to address:

- Erosion and sediment control.
- Works in waterways, including consideration of risks associated with water quality, flow barriers, dewatering.
- Weed and biosecurity controls, including consideration of risks associated with the introduction or spread of weeds, and pathogens such as Chytrid Fungus.
- Storage and handling of wastes and hazardous substances.

**PBID Foundation Recycled Water Irrigation Areas**

To mitigate potential effects on water environments, proposed recycled water irrigation operations would be undertaken in accordance with Western Water's HEMP and site-specific customer site management plans, which would require approval from EPA Victoria under the Environment Protection Act prior to commencement of irrigation.

Key mitigation measures relating to potential effects on water environments, include:

- Only recycled water complying with the following water quality objectives is to be supplied by Western Water and used for irrigation:
  - *E. coli* <1,000 organisms/100 mL (median)
  - pH 6 – 9 (90<sup>th</sup> percentile)
  - Suspended Solids <30 mg/L (median)
  - Biochemical Oxygen Demand (BOD) <20 mg/L (median)
  - Electrical Conductivity <1,250 (µS/cm) (maximum), 750 (µS/cm) (median).
- A minimum 50 m buffer zone is to be maintained between land subject to recycled water irrigation and waterways, including Balliang Creek and Dry Creek.

- Centre pivots irrigators are to be used to apply recycled water due to the relatively high level of control they enable over the volume and distribution of water providing the ability to closely match irrigation to crop/pasture requirements and soil permeability characteristics.
- No end guns are to be fitted to the centre pivots due to the high risk of irrigation water spray drift and associated unwanted off-site movement of recycled irrigation water.
- Variable Rate Irrigation (VRI) control is to be used to enable specific nozzles to be switched off to protect buffer zones in specific areas, and is to be setup by a GIS map within the irrigator control system, such that it doesn't require manual intervention.
- Deficit irrigation practices are to be adopted – the amount of recycled water applied is to be relative to crop water usage and weather conditions, such that it would be used immediately by the plants, thereby limiting potential for soil waterlogging and surface water runoff.
- Centre pivots are to be designed and operated to apply recycled water irrigation at an application rate that is commensurate with the soil permeability.
- Annual monitoring of soil sodicity is to be undertaken to ensure that soil permeability is not compromised by excessive sodium accumulation.
- Anemometer controllers are to be installed to shutdown centre pivot irrigators under a combination of excessive wind speed and specific wind directions.

These measures would be reviewed and updated (if required) to align with the recently released EPA Publication 1910.2: Victorian guideline for water recycling (March 2021) and EPA Publication 1911.2: Technical information for the Victorian guideline for water recycling (March 2021), and reflected in the Western Water's HEMP and the customer site management plans prior to seeking approval from EPA Victoria under the Environment Protection Act.

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

## 14. Landscape and soils

### Landscape

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

No  Yes If yes, please attach.

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  Yes If yes, provide plan showing footprint relative to overlay.

#### M2BM Interconnector Pipeline

This project area is located within the following relevant overlays as shown in Attachment 26:

Overlay	Environmental objectives
Melton Environmental Significance Overlay (Schedule 2 – Wetlands, Waterways & Riparian Strips)	<p>To protect and conserve wetlands and to discourage inappropriate use and development.</p> <p>To protect and conserve the riparian habitat, native vegetation and associated escarpment and to discourage inappropriate development.</p> <p>To maintain the topography and vegetation of waterways as dominant visual elements in the landscape.</p>

	<p>To protect views of waterways.</p> <p>To provide an appropriate landscape setting for waterways, incised valleys and gorges.</p> <p>To ensure that buildings and structures respond to the character and significance of the surrounding landscape.</p> <p>To increase indigenous planting to provide linkages between sites and habitat corridors.</p>
<p>Melton Environmental Significance Overlay (Schedule 3 – Western Grassland Reserves)</p>	<p>To facilitate the establishment of a reservation for at least 15,000 hectares of grassland (nature conservation reserve or National Park) outside the Urban Growth Boundary in Melbourne’s west.</p> <p>To provide interim management of the western grassland reserves before they are acquired, achieved by assisting landholders to manage threats and strengthening regulation to prevent degradation.</p> <p>To introduce a management regime to ensure that the grassland areas are not degraded in the period prior to acquisition of the land for the grassland reserves.</p> <p>To manage the areas as a conservation reserve or National Park for a range of particular vegetation and species requirements.</p> <p>To protect and enhance significant landscape and habitat areas of threatened species.</p> <p>To ensure that any development does not impact on the environmental significance of the land or the ability of the land to be managed as a contiguous conservation reserve or National Park in the future.</p> <p>To ensure that any use, development or management of land within and adjacent to areas of environmental significance are compatible with their long-term maintenance, conservation and management (e.g. ecological burning) and will not have detrimental impacts on biodiversity values.</p> <p>To prevent degradation of sites of environmental significance.</p> <p>To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity in areas of environmental significance in the long term.</p> <p>To maintain and enhance the integrity of sites of environmental significance.</p> <p>To maintain and enhance habitat connectivity for National and State listed threatened species.</p> <p>To encourage ecological restoration, regeneration and revegetation of areas of degraded habitat and areas which currently have no habitat value due to historical or current land management practices.</p> <p>To manage buffer areas to reduce the impact of land uses adjoining the Western Grassland Reserves and to ensure appropriate management of the reserve does not adversely impact on surrounding land uses.</p> <p>To provide for the long term preservation of the flora and fauna of environmentally significant areas</p>
<p>Environmental Significance Overlay (Schedule 4 – Grasslands Within the Werribee Plains Hinterland)</p>	<p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat of the Victorian Volcanic Plain.</p> <p>To enhance the environmental and landscape values of the area.</p> <p>To avoid the fragmentation of contiguous areas of native vegetation or native fauna habitat.</p> <p>To ensure that any use, development or management of the land is compatible with the long-term conservation, maintenance and enhancement of the grasslands.</p>

To avoid the destruction of habitat for native fauna resulting from the modification of land form and disturbance of surface soils and rocks.

To enable areas of environmental significance, due to their native vegetation or habitat values, to be identified.

No Significant Landscape Overlays apply to this project area.

### **Bacchus Marsh RWP Pump Station**

This project area is not located within any Significant Landscape Overlays or Environmental Significance Overlays.

### **PBID Supply Network (pipeline, pump station, balance tank)**

This project area is located within the following relevant overlays:

<b>Overlay</b>	<b>Environmental objectives</b>
Moorabool Environmental Significance Overlay (Schedule 2 – Waterway Protection) (ESO2)	<p>To protect the habitat significance of vegetation.</p> <p>To provide for appropriate development of land within 100 metres of either side of a waterway.</p> <p>To prevent pollution and increased turbidity of water in natural waterways.</p> <p>To prevent increased surface runoff or concentration of surface water runoff leading to erosion or siltation of waterways.</p> <p>To conserve existing flora and fauna habitats close to waterways and to encourage generation and regeneration of habitats.</p>
Moorabool Environmental Significance Overlay (Schedule 7 – Grasslands within the Werribee Plains Hinterland) (ESO7)	<p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat of the Victorian Volcanic Plain.</p> <p>To enhance the environmental and landscape values of the area.</p> <p>To avoid the fragmentation of contiguous areas of native vegetation or native fauna habitat.</p> <p>To ensure that any use, development or management of the land is compatible with the long-term conservation, maintenance and enhancement of the grasslands.</p> <p>To avoid the destruction of habitat for native fauna resulting from the modification of landform and disturbance of surface soils and rocks.</p> <p>To enable areas of environmental significance, due to their native vegetation or habitat values, to be identified</p>
Greater Geelong Environmental Significance Overlay (Schedule 4 – Grasslands within the Werribee Plains Hinterland) (ESO4).	<p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat of the Victorian Volcanic Plain.</p> <p>To enhance the environmental and landscape values of the area.</p> <p>To avoid the fragmentation of contiguous areas of native vegetation or native fauna habitat.</p> <p>To ensure that any use, development or management of the land is compatible with the long-term conservation, maintenance and enhancement of the grasslands.</p> <p>To avoid the destruction of habitat for native fauna resulting from the modification of landform and disturbance of surface soils and rocks.</p> <p>To enable areas of environmental significance, due to their native vegetation or habitat values, to be identified.</p>

No Significant Landscape Overlays apply to this project area.

### **PBID Foundation Recycled Water Irrigation Areas**

As per PBID Supply Network.

### Parwan Recycled Water Storage

This project area is not located within any Significant Landscape Overlays or Environmental Significance Overlays.

### S2M Interconnector Pipeline

The potential alignments under consideration for the S2M Interconnector Pipeline are located within the following relevant overlays:

Overlay	Environmental objectives	OA*	OB**
Hume Environmental Significance Overlay (Schedule 4 – Northern Railway Reservation)	To protect and enhance the endangered and vulnerable flora species and habitat value of this site of national significance.	x	x
Melton Environmental Significance Overlay (Schedule 1 – Remnant Woodlands, Open Forests and Grasslands)	To protect and conserve remnant native woodlands, open forests, grasslands and discourage inappropriate use and development. To retain and enhance the natural vegetation character of the forested areas. To retain forested areas as important features of the landscape. To carefully manage the interface between urban and rural areas. To emphasise the importance of topography and indigenous vegetation within the Uplands landscape. To minimise the impact of buildings and structures on open pastoral areas and the forested areas of the Uplands. To recognise areas of high fire hazard and to ensure all development acknowledges any potential risk.	x	x
Melton Environmental Significance Overlay (Schedule 2 - Wetlands, Waterways & Riparian Strips)	To protect and conserve wetlands and to discourage inappropriate use and development. To protect and conserve the riparian habitat, native vegetation and associated escarpment and to discourage inappropriate development. To maintain the topography and vegetation of waterways as dominant visual elements in the landscape. To protect views of waterways. To provide an appropriate landscape setting for waterways, incised valleys and gorges. To ensure that buildings and structures respond to the character and significance of the surrounding landscape. To increase indigenous planting to provide linkages between sites and habitat corridors.	x	

<p>Melton Environmental Significance Overlay (Schedule 5 – Rural Conservation)</p>	<p>To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity.</p> <p>To enhance the environmental and landscape values of the area.</p> <p>To ensure that any use, development or management of land within and adjacent to areas of biological significance are compatible with their long-term maintenance and conservation and will not have detrimental impacts on biodiversity values.</p> <p>To encourage ecological restoration, regeneration and revegetation with indigenous species within the site.</p> <p>To maintain and enhance habitat connectivity for listed threatened species.</p> <p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat.</p> <p>To ensure that the siting and design of any buildings and works maintains the environmental integrity of the land.</p> <p>To maintain and enhance the integrity of sites of environmental significance.</p> <p>To provide for the long term preservation of the flora and fauna and associated habitat of environmentally significant areas</p>	<p>x</p>	
<p>Melton Environmental Significance Overlay (Schedule 6 – Rural Conservation)</p>	<p>To protect and improve the viability of habitats, ecological communities, flora and fauna and genetic diversity.</p> <p>To enhance the environmental and landscape values of the area.</p> <p>To ensure that any use, development or management of land within and adjacent to areas of biological significance is compatible with their long-term maintenance and conservation and will not have detrimental impacts on biodiversity values.</p> <p>To encourage ecological restoration, regeneration and revegetation with indigenous species within the site.</p> <p>To maintain and enhance habitat connectivity for listed threatened species.</p> <p>To prevent a decline in the extent and quality of native vegetation and native fauna habitat.</p> <p>To ensure that the siting and design of any buildings and works maintains the environmental integrity of the land.</p> <p>To maintain and enhance the integrity of sites of environmental significance.</p> <p>To provide for the long term preservation of the flora and fauna and associated habitat of environmentally significant areas.</p>		<p>x</p>

\* Option A | \*\* Option B

No Significant Landscape Overlays apply to either of the potential alignments currently under consideration

• **Identified as of regional or State significance in a reputable study of landscape values?**

NYD  No  Yes If yes, please specify.

• **Within or adjoining land reserved under the *National Parks Act 1975*?**

NYD  No  Yes If yes, please specify.

• **Within or adjoining other public land used for conservation or recreational purposes?**

NYD  No  Yes If yes, please specify.

A summary of public land use for conservation or recreational purposes adjoining the project areas is provided below:

Project	Adjoining public land used for conservation / recreational purposes
M2BM Interconnector Pipeline	No. This project does not adjoin public land used for conservation or recreational purposes.
Bacchus Marsh RWP Pump Station	No. This project does not adjoin public land used for conservation or recreational purposes.
PBID Supply Network (pipeline, pump station, balance tank)	No. This project does not adjoin public land used for conservation or recreational purposes.
PBID Foundation Recycled Water Irrigation Areas	No. This project does not adjoin public land used for conservation or recreational purposes.
Parwan Recycled Water Storage	No. This project does not adjoin public land used for conservation or recreational purposes.
S2M Interconnector Pipeline	Yes. Option A and Option B both adjoin the following public land used for conservation or recreational purposes: <ul style="list-style-type: none"> <li>• Holden Flora &amp; Fauna Reserve</li> <li>• Diggers Rest Recreation Reserve</li> </ul>

The location of public land in proximity to the project areas is shown on the mapping provided in Attachment 24.

**Is any clearing vegetation or alteration of landforms likely to affect landscape values?**

NYD  No  Yes If yes, please briefly describe.

**Is there a potential for effects on landscape values of regional or State importance?**

NYD  No  Yes Please briefly explain response.

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

NYD  No  Yes If yes, please briefly describe.

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

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

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;
- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;



- Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

**Soils**

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

NYD  No  Yes If yes, please briefly describe.

None of the proposed project areas are located within an Erosion Management Overlay or Salinity Management Overlay under the applicable planning schemes.

According to the CSIRO’s Atlas of Australian Acid Sulphate Soils available on the Australian Soil Resource Information System (ASRIS), the project areas are all located in areas of ‘Extremely Low Probability’ of occurrence of acid sulphate soils (see Figure 2).

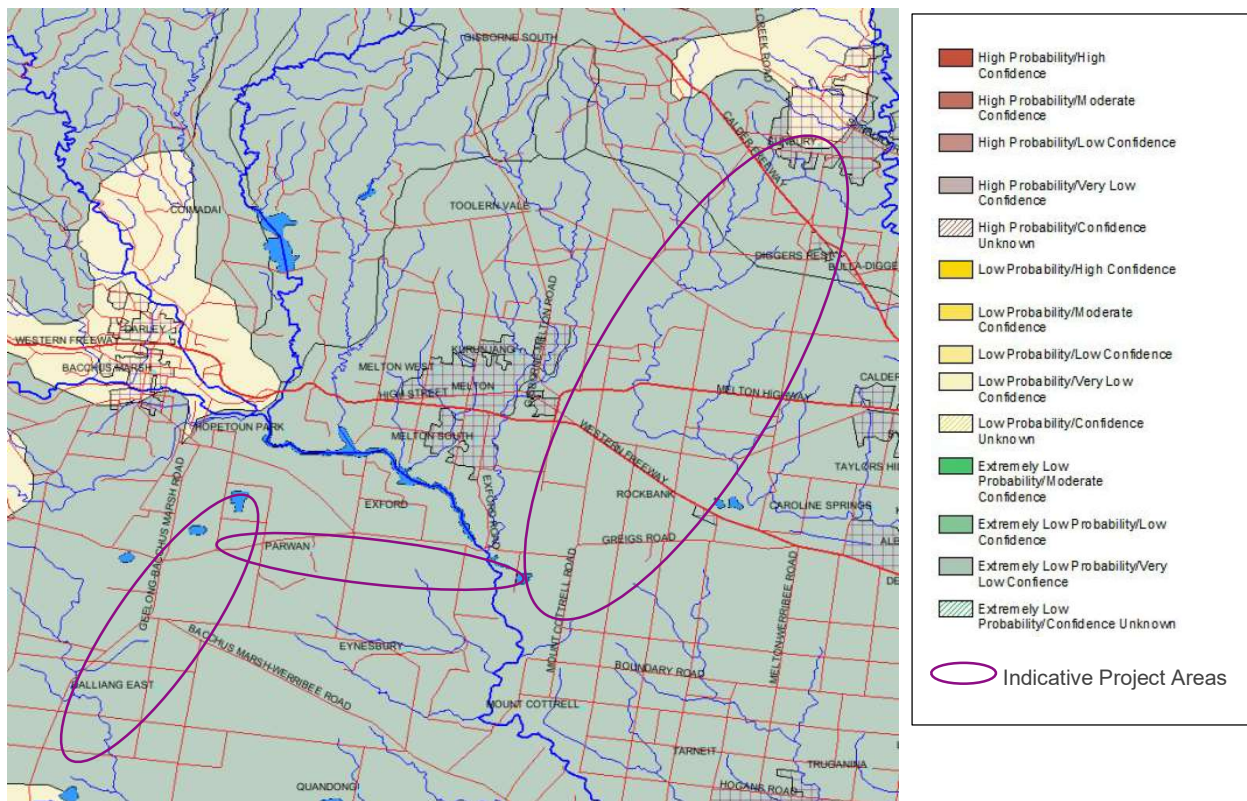


Figure 2. Extract of CSIRO’s Atlas of Australian Acid Sulphates Soils (ASRIS, 2021)

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

NYD  No  Yes If yes, please briefly describe.

Geotechnical investigations have been undertaken for the M2BM Interconnector Pipeline, PBID Supply Network (pipeline, pump station, balance tank) and Parwan Recycled Water Storage. Geotechnical conditions have been considered in the design and determined suitable for construction of the proposed infrastructure, with no significant geotechnical hazards identified.

Backfilling of all pipe trenches will be undertaken in accordance with Melbourne Retail Water Agencies (MRWA) Specification 04-03.1 which includes requirements relating to backfill density.

No geotechnical investigations have been undertaken to date for the S2M Interconnector Pipeline but are proposed as part of the suite of investigations to inform the design.

**Parwan Recycled Water Storage**

Geotechnical investigations were undertaken in October 2020 and identified that subsurface conditions at the site consist of topsoil overlying stiff to hard residual soil comprising predominantly silty clay of high plasticity, overlying variably weathered basalt encountered at depths varying from 0.3m to 11.5m below existing ground. The onsite clay material is considered generally suitable for use in the construction of a clay liner.

Soil dispersion testing using the Emerson Classification returned an Emerson Class Number 2 for all soil samples tested within the storage dam area. Pinhole dispersion testing ranged from ND2 to D1. A chemical test was subsequently undertaken on a sample of the silty clay material. The sodium adsorption ratio (SAR) was 4.6 and the Exchangeable Sodium Percentage (ESP) was 25%.

Based on the laboratory test results it was concluded that the silty clay material at the site is dispersive. The implication of this is that a clay liner would be prone to erosion when exposed to running water and an embankment would have a risk of piping failure without proper specifications and controls during construction. Dispersive soils are also prone to erode into open fractures in rock foundations that could lead to undermining of clay cut-offs.

To mitigate the risk, foundation treatment and inspection during construction is proposed. Onsite clay liner materials used for the storage construction are proposed to be treated using either gypsum or lime. **PBID Foundation Recycled Water Irrigation Areas**

Site-specific LCAs have been prepared for each of the foundation recycled water irrigation areas and included assessment of soil suitability for recycled water irrigation, including consideration of soil permeability, nutrient levels and assimilation capacity, and sodicity. Each of the properties are described as being covered by red sodosol soils. Sodosols are texture contrast soils (duplex) which have lighter textured surface A horizon (e.g. sandy loam or clay loam) overlying a clayey sodic subsoil B horizon, typically an acidic A horizon soil that becomes more alkaline at depth and frequently include calcium carbonate precipitates.

The nutrient status of the soils indicates they have a low (Customer 1) to moderate (Customers 2 and 3) levels of fertility. The A horizon of these red sodosols are moderately well drained and the permeability of these soils is estimated to be approximately 15-20 mm/day (or 0.6-0.8 mm/hour). The clay nature of the B horizon would constrain the drainage capacity of the soil at depth.

The LCA's indicate that accumulation of sodium in the soil A horizon of the profile could result in impairment of the soil's drainage capacity and may be exacerbated by excessive, inappropriate irrigation and/or the application of recycled irrigation with an elevated sodium content, which could result in soil waterlogging. The LCAs identify measures to mitigate this risk, including requirements for the quality of recycled water to be irrigated (sodium levels), monitoring of soil sodicity and application of gypsum where necessary to mitigate soil sodicity affecting drainage capacity.

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

## 15. Social environments

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

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

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

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

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

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

The proposed irrigation of Class C recycled water has some potential for human exposure to bacteria and pathogens contained in the recycled water. Class C recycled water supply to foundation customers would comply with the water quality objectives specified in Table 1 of EPA Publication 1910.2:Victorian guideline for water recycling as follows:

- *E. coli* <1,000 organisms/100 mL (median)
- pH 6 – 9 (90th percentile)
- Suspended Solids <30 mg/L (median)
- Biochemical Oxygen Demand (BOD) <20 mg/L (median).

Recycled water complying with these water quality objectives is described in EPA Publication 1910.2:Victorian guideline for water recycling as being suitable for the following purposes:

- Urban (non-potable): uses with controlled public access
- Agricultural: for example, human food crops cooked/processed, grazing/fodder for livestock
- Industrial: systems with no potential worker exposure.

In accordance with the customer agreements between Western Water and the foundation customers, the supply of recycled water to foundation customers for irrigation would cease if levels of *E. coli* exceed 1,000 organisms/100 mL

In order to minimise the risk of human exposure to recycled water, the current farm plans developed by the foundation customers (see Attachment 6) incorporate the following buffers to sensitive uses:

- Buffer to dwellings / schools / churches = 100 m
- Buffer to public roads / external property boundaries (not adjoining other recycled water irrigation areas) = 50 m
- Buffer to pig farming area = 200 m (Customer 3)
- Buffer to grain handling facilities = 100 metres (Customer 3).

In addition, customer site management plans would include conditions requiring that:

- No end guns are to be fitted to the centre pivot irrigators to minimise the risk of spray drift off-site or into sensitive areas
- Anemometer controllers are to be installed to shutdown centre pivot irrigators under a combination of excessive wind speed and specific wind directions that are deemed to increase the risk of spray drift off-site or into sensitive areas

Subject to implementation of these and any other controls required by EPA Victoria for approval of Western Water's HEMP and the customer site management plans, the project is not likely to pose a significant human health risk. The EPA's risk identification and mitigation requirements are well understood by Western Water, which currently operates seven similar recycled water irrigation schemes across this service region, with over 100 Class B and C recycled water customers (including irrigation for agriculture, vineyards, golf courses, sporting grounds, schools, parks and gardens, and nurseries).

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

NYD  No  Yes If yes, briefly describe potential effects.

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

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

Western Water is seeking to acquire by agreement, approximately 55 ha of land in the south east corner of Nerowie Road / Parwan South Road for the establishment of the PBID Supply Network pump station and balance tank site, and the Parwan Recycled Water Storage. This land is currently used for agricultural land uses (pastoral) and would no longer be available for agricultural land uses once the proposed recycled water infrastructure is established.

Some temporary displacement of agricultural land uses may occur during construction of pipelines and associated laydown areas on current cropping/pastoral land for the PBID Supply Network (pipeline) and M2BM Interconnector Pipeline. However, current land uses will be able to continue in these areas following completion of construction.

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

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

Although establishment of the PBID Supply Network pump station and balance tank site, and the Parwan Recycled Water Storage would result in the loss of approximately 55 ha of land from agricultural production, this loss to the agricultural sector is expected to be outweighed by the social and economic benefits of the WIN Scheme for the agricultural sector and local communities. These benefits include:

- Contributing to unlocking existing dryland cropping/grazing land for higher value irrigated agricultural production by delivering a secure and reliable water supply, which contributes to increased net margins and employment growth both on farm and in supporting industries
- Increasing resilience of local agricultural production to the effects of climate change by delivering a reliable, non-climate-dependent water supply.

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

NYD  No  Yes If yes, please briefly describe.

As noted above, Western Water's HEMP and the customer site management plans would include a range of controls to mitigate potential for human exposure to pathogens in recycled water.

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

n/a

## Cultural heritage

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

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

Yes If yes, list the organisations so far consulted.

**M2BM Interconnector Pipeline**

Yes. A CHMP (No. 15867) has been prepared for the M2BM Interconnector Pipeline and was approved by the Wadawurrung Traditional Owners corporation on 12 April 2021. As part of preparing the CHMP, consultation was undertaken with the Wadawurrung Traditional Owners Aboriginal Corporation, Bunurong Land Council Aboriginal Corporation, Boon Wurrung Land and Sea Council and Wurundjeri Woi-wurrung Cultural Heritage Aboriginal Corporation.

#### **Bacchus Marsh RWP Pump Station**

No consultation has been undertaken with Indigenous organisations in relation to this project. Following refinement of the project area and removal of the irrigation pipeline and chicken farm pipeline from the WIN scope of works, no works are proposed within an area of known Aboriginal Cultural Heritage significance and therefore a CHMP is not required.

#### **PBID Supply Network (pipeline, pump station, balance tank)**

Yes. A CHMP (No. 17237) is currently being prepared for the PBID Supply Network, including pipeline, pump station and balance tank. As part of this process, consultation has been undertaken with the Registered Aboriginal Party (RAP) for the project area, which is the Wadawurrung Traditional Owners Aboriginal Corporation.

#### **PBID Foundation Recycled Water Irrigation Areas**

In accordance with the customer agreements with Western Water, each of the foundation customers are responsible for undertaking necessary assessments and consultation, and securing all necessary statutory approvals, including any requirements under the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*.

No consultation has been undertaken with Indigenous organisations specifically in relation to the development of on-farm irrigation infrastructure to date. However, Western Water engaged with various traditional owner groups including during development of the Business Case for the WIN Scheme as discussed in Section 20 of this referral. It is noted that the Wadawurrung Traditional Owners Aboriginal Corporation is the RAP for the area containing each of the foundation recycled water irrigation areas. The Wadawurrung Traditional Owners Aboriginal Corporation has been and continues to be engaged in relation to preparation of the CHMPs for the PBID Supply Network infrastructure (CHMP No. 17237) and the Parwan Recycled Water Storage (CHMP No. 17387).

#### **Parwan Recycled Water Storage**

Yes. A CHMP (No. 17387) is currently being prepared for the Parwan Recycled Water Storage (also known as PBID Basin). As part of this process, consultation has been undertaken with the RAP for the project area, which is the Wadawurrung Traditional Owners Aboriginal Corporation.

#### **S2M Interconnector Pipeline**

No. Due to the early stage of planning and design for this project, no consultation with Indigenous organisations has been undertaken specifically for this project to date. However, Western Water engaged with various traditional owner groups during development of the Business Case for the WIN Scheme as discussed in Section 20 of this referral. The Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation is the RAP for the area containing the section of the interconnector pipeline north of the Calder Freeway and the pump station proposed at the Sunbury RWP site. There is currently no RAP for the area containing the section of interconnector pipeline south of the Calder Freeway through to the Melton RWP.

Refer to Attachment 23 for mapping of RAP boundaries for each of the project areas.

#### **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)

#### **M2BM Interconnector Pipeline**

***Aboriginal Cultural Heritage:***

A background review (desktop assessment), field survey (standard assessment) and subsurface excavation (complex assessment) were undertaken to ascertain Aboriginal Cultural Heritage in the M2BM Interconnector Pipeline project area. As part of that assessment, three Aboriginal places, all artefact scatters, were identified: Artefact Scatter – VAHR 7822-4344 Artefact Scatter – VAHR 7822-4496 Artefact Scatter – VAHR 7822-4495

Refer Attachment 20 for a copy of the approved CHMP which details the desktop, standard and complex assessments undertaken for the project.

***Historic Heritage:***

A discussion of investigations into the presence of historical heritage in the study area is outlined in subsequent sections of this referral.

**Bacchus Marsh RWP Pump Station****Cultural Heritage Due Diligence Assessment**

A Cultural Heritage Due Diligence Assessment, including Aboriginal cultural heritage and historical heritage, was prepared for the Bacchus Marsh RWP Pump Station by CH2M Beca dated 22 September 2020. The project area assessed in this due diligence assessment encompassed a larger area than is required for construction of the proposed pump station and also covered two new pipelines (chicken farm pipeline and irrigation pipeline) that are no longer proposed as part of the WIN works. A copy of the Bacchus Marsh RWP Pump Station Cultural Heritage Due Diligence Assessment is provided in Attachment 21.

The due diligence assessment included:

- Searches of the following registers: Victorian Aboriginal Heritage Register (VAHR), Victorian Heritage Register (VHR), Victorian Heritage Inventory (VHI), Moorabool Planning Scheme Heritage Overlay (Moorabool HO), Melton Planning Scheme Heritage Overlay (Melton HO), Commonwealth Heritage List (CHL), National Heritage List (NHL), World Heritage List (WHL), and the non-statutory Register of the National Estate (RNE)
- Review of previous Aboriginal cultural heritage and historical heritage assessments, and other background literature to develop a contextual ethno-history and historical background for the project area
- Review of aerial imagery and geomorphology
- Preparation of predictive statements for Aboriginal cultural heritage and historical heritage based on findings of the above investigations.

***Aboriginal Cultural Heritage:***

As the currently proposed project area for the pump station and transfer pipeline is not located in an area of cultural heritage sensitivity as defined by the *Aboriginal Heritage Regulations 2018*, and the formerly proposed Irrigation Pipeline that intersected an area of cultural heritage sensitivity is no longer part of this project, a mandatory CHMP is not required for this project.

***Historic Heritage:***

Refer to the following sections for key historic heritage findings and recommendations from the Bacchus Marsh RWP Pump Station Cultural Heritage Due Diligence Assessment.

**PBID Supply Network (pipeline, pump station, balance tank)****Cultural Heritage Due Diligence Assessment**

A Cultural Heritage Due Diligence Assessment, including Aboriginal cultural heritage and historical heritage, was prepared for PBID by CH2M Beca dated 20 May 2020. The project area assessed in this due diligence assessment encompassed the pipeline, pump station and balance tank, as well as the property containing the proposed Parwan Recycled Water Storage. A copy of the PBID Cultural Heritage Due Diligence Assessment is provided in Attachment 22.

The due diligence assessment included:

- Searches of the following registers: VAHR, VHR, VHI, Moorabool HO, Greater Geelong Planning Scheme Heritage Overlay (Greater Geelong HO), CHL, NHL, WHL, and the non-statutory RNE
- Review of previous Aboriginal cultural heritage and historical heritage assessments, and other background literature to develop a contextual ethno-history and historical background for the project area
- Review of aerial imagery and geomorphology
- Preparation of predictive statements for Aboriginal cultural heritage and historical heritage based on findings of the above investigations.

Key findings of the PBID Cultural Heritage Due Diligence Assessment are:

- Three registered Aboriginal Places are situated within the project area (VAHR 7722-1130, VAHR 7722-1131, and VAHR 7722-1190).
- The project area contains three areas of cultural heritage sensitivity as defined by the *Aboriginal Heritage Regulations 2018*, these being the registered Aboriginal Places, land within 50 m of the registered Aboriginal Places and land within 200 m of Balliang Creek and Dry Creek.
- While not located within the project area, there is an intact and very rare example of a stone ceremonial ring located in the vicinity of the project area (Binghams Swamp Cultural Landscape), which contains a stone arrangement of 130 partially collapsed basalt rocks circling an earth ring (an eroded irregular mound) and associated stone artefacts.
- While there has been some significant ground disturbance in the project area along existing roadways such as Geelong-Bacchus Marsh Road, the amount of Aboriginal cultural heritage material identified in this road reserve and within nearby paddocks, indicates that the project area has high potential to contain further Aboriginal cultural heritage, particularly at the northern end of the project area.
- A mandatory Cultural Heritage Management Plan (CHMP) is required for this project.

#### *Historic Heritage:*

Refer to the following sections for key historic heritage findings and recommendations from the PBID Cultural Heritage Due Diligence Assessment.

#### Draft Cultural Heritage Management Plan

A CHMP (No. 17237) is currently being prepared for the PBID Supply Network, including pipeline, pump station and balance tank. Investigations completed to date include a desktop assessment, standard assessment and complex assessment. The desktop assessment identified three previously recorded Aboriginal Places (consisting of 105 components) within the project area: VAHR 7722-1130, VAHR 7722-1131, and VAHR 7722-1190. A total of 63 surface artefacts were identified during the standard assessment, four of which were identified in the Parwan Recycled Water Storage site, which originally formed part of the activity area for this CHMP.

The complex assessment included excavation of five test pits, 52 (2 m x 1 m) mechanical test pits, five (50 cm x 50 cm) shovel test pits (one of which was subsequently expanded to 1 m x 1 m upon finding artefacts) and 96 radial test pits to test the extent of identified sites. The complex assessment identified an additional 37 artefacts in 18 of the 158 excavations. Two new Aboriginal Places were identified in the

activity area. Ten of the 67 newly identified surface artefacts were recorded as components of VAHR 7722-1130, an existing VAHR site. Most of the artefacts identified during the CHMP investigations were made from silcrete, with quartz, quartzite, and tachylyte, making up the remainder of the assemblage.

Management conditions are currently being drafted in consultation with the RAP to manage Aboriginal Places found within the project area, with finalisation of the CHMP pending confirmation of Aboriginal Place record numbers from the registry. Draft management conditions include specific measures such as RAP compliance inspections (general and for specific work activities), protective fencing, controls on laydown area establishment, avoidance by under-boring of specified artefact locations, and salvage at some specified artefact locations, along with general conditions relating to cultural heritage training.

### **PBID Foundation Recycled Water Irrigation Areas**

No Aboriginal cultural heritage and historical heritage due diligence assessments have been undertaken for this project to date. To inform this referral:

- A high-level review of publicly available mapping of areas of cultural heritage sensitivity has been undertaken to identify areas of cultural heritage sensitivity intersected by the proposed pivot irrigators and associated pipelines Refer to mapping provided in Attachment 23.
- A search has been undertaken of the following registers to identify registered historical heritage places in proximity to the proposed pivot irrigators and associated pipelines: VAHR, VHR, VHI, Moorabool HO, Greater Geelong HO, Melton HO, CHL, NHL, WHL, and the non-statutory RNE Refer to mapping provided in Attachment 29.

The results of these searches are described in the following sections.

In accordance with the customer agreements with Western Water, each of the foundation customers are responsible for undertaking necessary assessments and consultation, and securing all necessary statutory approvals, including any requirements under the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*, or the *Heritage Act 2017*.

### **Parwan Recycled Water Storage**

#### Cultural Heritage Due Diligence Assessment

Assessment of the Parwan Recycled Water Storage site was included in the Cultural Heritage Due Diligence Assessment prepared for PBID by CH2M Beca dated 20 May 2020. The key findings for Aboriginal cultural heritage described above for the PBID Supply Network can generally be applied, except that no currently registered Aboriginal Places are identified within the Parwan Recycled Water Storage site. The findings for historical heritage are described in the following sections.

#### Draft Cultural Heritage Management Plan

Although no currently registered Aboriginal Places are identified within the Parwan Recycled Water Storage site, four stone artefacts were found within the site during the standard assessment for the PBID Supply Network CHMP (No. 17237), which originally included the storage site in the activity area. Given the known presence of artefacts (submitted for registration) within the storage site, a CHMP (No. 17387) is currently being prepared for the Parwan Recycled Water Storage site.

A decision was made to prepare separate CHMPs for the PBID Supply Network (pipeline, pump station and balance tank) and the Parwan Recycled Water Storage due to the different design and construction programs for these components, which means that the level of design required to inform the complex assessments for the storage site would not be available until after an approved CHMP is required to enable construction of the pipeline, pump station and balance tank.

Investigations completed to date as part of the CHMP (No. 17387) for the storage site include a desktop assessment and standard assessment (completed in conjunction with CHMP No. 17237), with planning for the complex assessment currently being progressed in consultation with the RAP.



### S2M Interconnector Pipeline

Due to the early stage of planning and design for this project, no Aboriginal cultural heritage or historical heritage due diligence assessments have been undertaken for this project.

To inform this referral:

- A high level review of publicly available mapping of areas of Aboriginal cultural heritage sensitivity has been undertaken to identify areas of cultural heritage sensitivity intersected by the indicative assessment area, which comprises a 12 metre wide corridor along the current two alignment options being considered for this project. Refer to mapping provided in Attachment 23.
- A search has been undertaken of the VAHR to identify registered Aboriginal Places in proximity to the indicative assessment area.
- A search has been undertaken of the following registers to identify registered historical heritage places in proximity to the indicative assessment area: VHR, VHI, Hume HO, Melton HO, CHL, NHL, WHL, and the non-statutory RNE. Refer to mapping provided in Attachment 29.

The results of these searches are described in the following sections.

A cultural and historical heritage due diligence assessment is proposed to assist in selection of a preferred alignment for this project. In the likely event that a CHMP is required for this project, further desktop and field assessments would be undertaken in accordance with the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018* for the proposed construction footprint, when determined following selection of the preferred alignment and completion of the design process.

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

NYD  No  Yes If yes, briefly describe:

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

### M2BM Interconnector Pipeline

Prior to European arrival, the area of the proposed M2BM interconnector pipeline was known to be occupied by Aboriginal people belonging to several separate language groups of the Eastern Kulin Nation: Wadawurrung (Wadawurrung), Woi wurrung (Wurundjeri) and the Boon (Bun) wurrung (Bunurong and Boon Wurrung). As part of the CHMP prepared for the project (Attachment 20), the four Aboriginal communities consulted during preparation of the CHMP have defined the known Aboriginal cultural heritage significance of their own terms.

Section 10.3 of the CHMP (Attachment 20) provides an assessment of the significance of the project site in terms of the *Aboriginal Heritage Regulations 2018*. Notably, three Aboriginal Cultural Heritage sites (VAHR 7822-4344, VAHR 7822-4496 and VAHR 7822-4495), all artefact scatters, are located in close proximity to the proposed pipeline. Potential impacts to these sites are proposed to be mitigated by way of conditions, as outlined in the CHMP.

### Bacchus Marsh RWP Pump Station

No registered Aboriginal Places or areas of cultural heritage sensitivity are located within the project area for the Bacchus Marsh RWP Pump Station.

### PBID Supply Network (pipeline, pump station, balance tank)

The project area for the PBID Supply Network intersects three previously registered Aboriginal Places (VAHR 7722-1130, VAHR 7722-1131, and VAHR 7722-1190) and two newly recorded Aboriginal Places. These Places comprise: surface and subsurface low-density artefact distributions and one surface and subsurface artefact scatter as described in the preceding section discussing findings of the CHMP

investigations. Impacts to one of these Aboriginal Places (Agars Rd AS) would be avoided by under-boring, while the remaining Aboriginal Places would be partially impacted with impacts minimised through measures such as, surface salvage, reduced trench width and under-boring, protective fencing and ground disturbance restrictions in other locations.

### **PBID Foundation Recycled Water Irrigation Areas**

Based on the latest customer farm plans (March 2021), the following areas of cultural heritage sensitivity are intersected by the proposed pivot irrigation system and/or recycled water irrigation areas

- Land within 200 metres of a waterway (Reg 26):
  - Customer 1 – An area of cultural heritage sensitivity comprising an ephemeral swamp area located south of Schultz Road is intersected by a proposed irrigation area.
  - Customer 2 – An area of cultural heritage sensitivity associated with Dry Creek is intersected by a proposed centre pivot foundation, pipeline and irrigation area, while an area of cultural heritage sensitivity associated with Balliang Creek contains an irrigation area only.
  - Customer 3 - An area of cultural heritage sensitivity associated with Balliang Creek is intersected by an irrigation area and possibly a centre pivot foundation.
- Land within 50 metres of a registered cultural heritage place (Reg 25):
  - Customer 2 – An area of cultural heritage sensitivity associated with a registered cultural heritage place is mapped along Geelong-Bacchus Marsh Road south of Bluegum Track and is intersected by a proposed irrigation pipeline connection to the PBID Supply Network pipeline offtake.

### **Parwan Recycled Water Storage**

As noted above, no currently registered Aboriginal Places are identified within the project area for the Parwan Recycled Water Storage. However, four stone artefacts were identified within the project area for the Parwan Recycled Water Storage during the standard assessment and have been submitted to the registry for registration as Aboriginal Places. As indicated by the PBID Cultural Heritage Due Diligence Assessment, there is a high potential for the project area to contain further Aboriginal cultural heritage and a CHMP is being prepared for the project.

### **S2M Interconnector Pipeline**

The indicative assessment area for the current two alignment options being considered for this project intersects with a number of areas of cultural heritage sensitivity as defined in the *Aboriginal Heritage Regulations 2018*. Areas of cultural heritage sensitivity intersected by the indicative assessment areas, include, but may not be limited to:

- Land within 200 metres of a waterway (Reg 26) – mapped areas of cultural heritage sensitivity occur along Jacksons Creek, Harpers Creek and Kororoit Creek, and some ephemeral swamp areas within the indicative assessment area
- Land within 50 metres of a registered cultural heritage place (Reg 25) – mapped areas of cultural heritage sensitivity likely to be associated with a registered cultural heritage place occur at a relatively high density along the northern section of the interconnector pipeline (from Sunbury RWP south to Diggers Rest-Coimadai Road), and around Rockbank and Deanside. It is expected that this higher density is reflective of the larger number of cultural heritage investigations likely to have previously been undertaken in these areas for development of various major infrastructure and urban growth precincts, along with the proximity of these areas to major creeks and swamps.

A search of the VAHR on 26 April 2021 has identified:

- Five registered Aboriginal Places (VAHR 7822-0482, VAHR 7822-0642, VAHR 7822-1864, VAHR 7822-2636, VAHR 7822-4275) comprising six components (four artefact scatters, one LDAD, one

quarry site) within the Option A assessment area. An additional 14 registered Aboriginal Places are located within 50 metres of the Option A assessment area.

- Ten registered Aboriginal Places (VAHR 7822-0482, VAHR 7822-0642, VAHR 7822-1864, VAHR 7822-2636, VAHR 7822-4275, VAHR 7822-3026, VAHR 7822-3731, VAHR 7822-4000, VAHR 7822-4154, VAHR 7822-4266) comprising 16 components (six artefact scatters, four LDADs comprising nine components and one quarry site) within the Option B assessment area. An additional nine registered Aboriginal Places are located within 50 metres of the Option B assessment area.

It is anticipated that the project would comprise a high impact activity as defined in the *Aboriginal Heritage Regulations 2018*, given it would involve the construction of works for the purpose of a utility installation comprising a pipeline of more than 500 metres length (Regulation 46(1)(b)(xxvii)(B)). On the basis that the project involves a high impact activity and is likely to occur in an area of cultural heritage sensitivity, a mandatory CHMP is expected to be required for this project. However, this assessment would need to be confirmed following completion of a cultural heritage due diligence assessment for the preferred alignment.

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

NYD  No  Yes If yes, please list.

The *Heritage Act 1995* has now been replaced by the *Heritage Act 2017*, under which heritage places may be listed on the Victorian Heritage Register or the Victorian Heritage Inventory.

The location of registered historical heritage places in the vicinity of the project areas is shown in Attachment 29.

**M2BM Interconnector Pipeline**

A search of the following registers and databases has been undertaken as part of the preparation of this EES Referral:

- Victorian Heritage Register (VHR)
- Victorian Heritage Inventory (VHI)
- Moorabool Planning Scheme Heritage Overlay (Moorabool HO)
- Melton Planning Scheme Heritage Overlay (Melton HO)
- Commonwealth Heritage List (CHL)
- National Heritage List (NHL)
- World Heritage List (WHL)
- Register of the National Estate (RNE – now repealed)

No registered historical heritage places were identified within this project area. The nearest registered historical heritage places are:

- Moorabool HO196 - Former Parwan South (Nerowie) State School No 4175 and Mechanics' Institute - located in the north east corner of Parwan South Road and Nerowie Roads, 60m to the north of the proposed M2BM Interconnector Pipeline, on the opposite side of Nerowie Road.
- Melton HO107 – House – located at 285 Nerowie Road, east of Bucklers Road, more than 140 m away from the project site.
- Melton HO104 – Moloney's Farm Site & Water Reserve (including underground tank remains, dry stone walls and two peppercorn trees) – located east of the Werribee River, more than 500 m to the south of the project site.

- VHI H7822-0115 Former Yallock Homestead – located east of the Werribee River, more than 150 m north west of the project site
- VHI 7822-0102 Former Mount Cottrell Market Garden Site – located east of the Werribee River, more than 500 m to the north of the project site.

The site is also within the Werribee River Area, an indicative heritage place under the former Register of the National Estate under the *Australian Heritage Commission Act 1975* (now repealed).

Given the nature of the proposed works and distance from the nearest registered heritage sites, no adverse impacts on the listed sites are anticipated. No assessment of the potential for previously unidentified historical heritage or archaeological sites has been undertaken for this project. All historical archaeological sites in Victoria whether on the VHI or not are protected by the *Heritage Act 2017*.

### **Bacchus Marsh RWP Pump Station**

A search of the following registers and databases was undertaken as part of the Bacchus Marsh Pump Station Cultural Heritage Due Diligence Assessment (see Attachment 21): VHR, VHI, Moorabool HO, Melton HO (site is within 500 m of the Melton LGA boundary), CHL, NHL, WHL and the non-statutory Register of the National Estate (RNE).

No registered historical heritage places were identified within or adjacent to this project area. The nearest registered historical heritage places are located more than 1.5 km from this project area.

Based on a review of previous historical heritage assessments and available aerial imagery, the Bacchus Marsh Pump Station Cultural Heritage Due Diligence Assessment concluded that:

- A background history and review of heritage studies indicated historical heritage in the Bacchus Marsh and Parwan areas would be associated with the early pastoral runs, agricultural practices after subdivision, and early development of the area.
- The project area has been subject to land clearance, ploughing, grazing, and the construction of the Bacchus Marsh RWP.
- The potential for previously unidentified historical archaeological sites to occur in this project area is low.
- No further historical heritage assessment is recommended.

### **PBID Supply Network (pipeline, pump station, balance tank)**

A search of the following registers and databases was undertaken as part of the PBID Cultural Heritage Due Diligence Assessment (see Attachment 22): VHR, VHI, Moorabool HO, Greater Geelong Planning Scheme Heritage Overlay (Greater Geelong HO), CHL, NHL, WHL and RNE.

No registered historical heritage places were identified within this project area. The nearest registered historical heritage places comprise three heritage places listed on the Moorabool HO:

- Moorabool HO196 - Former Parwan South (Nerowie) State School No 4175 and Mechanics' Institute - located in the north east corner of Parwan South Road and Nerowie Roads, to the north of the proposed pump station and balance tank site on the opposite side of Nerowie Road.
- Moorabool HO133 - Dwelling - located at 3105 Geelong-Bacchus Marsh Road on the opposite (western) side of the road to the proposed pipeline.
- Moorabool HO134 - Dry Stone Wall - located in the north west corner of Geelong-Bacchus Marsh Road and Swamp Road on the opposite (western) side of Geelong-Bacchus Marsh Road to the proposed pipeline where it deviates to the east along Ripley Road.

Based on a review of previous historical heritage assessments and available aerial imagery, the PBID Cultural Heritage Due Diligence Assessment concluded that:

- The most likely site type in the project area would be places associated with past rural land use activities, however it is unlikely that other remnants of agricultural use (such as homesteads) would be present in the project area, due to the restricted linear nature of the project, and the lack of apparent structures in the historical aerial imagery outside the project area where it follows Geelong-Bacchus Marsh Road.
- It is unlikely that the structures identified within and adjoining the project area along Geelong-Bacchus Marsh Road, other than nearby Dwelling (HO133) and Dry Stone Wall (HO134), comprise significant historical heritage sites due to the extensive nature of the heritage studies already undertaken within the region. The project is unlikely to impact on current or former buildings/structures associated within HO133 and HO134 as they are situated outside the project area.
- There is low potential for sub-surface archaeological features to be associated with past rural land where the project area enters rural properties.
- No further historical heritage assessment is recommended.

Dry stone walls are known to occur in the vicinity of this project area, including along Ripley Road where a small section of dry stone wall would be removed to construct an offtake and then reinstated. It is noted that Clause 52.33 (Post Boxes and Dry Stone Walls) of Victoria Planning Provisions, which seeks to conserve historic dry stone walls in specified locations, does not apply to land within the project area under the Moorabool or Greater Geelong Planning Schemes.

#### **PBID Foundation Recycled Water Irrigation Areas**

A full historical and cultural heritage due diligence assessment has not been undertaken for the PBID Recycled Water Irrigation Areas. However, a search of the following registers and databases was undertaken to inform this referral: VHR, VHI, Moorabool HO, Melton HO, Greater Geelong HO, CHL, NHL, WHL and RNE.

No heritage places listed on the VHR, VHI, CHL, NHL, WHL or RNE are identified on or adjoining any of the properties containing proposed recycled water irrigation areas. No heritage places subject to a HO under the Moorabool, Melton or Greater Geelong Planning Schemes are located in areas subject to proposed recycled water irrigation or on-farm infrastructure development.

The nearest registered historical heritage places are:

- Moorabool HO196 - Former Parwan South (Nerowie) State School No 4175 and Mechanics' Institute - located in the north east corner of Parwan South Road and Nerowie Roads, more than 160 m away from the nearest pivot irrigation area (Foundation Customer 1)
- Moorabool HO195 - "Nerowie" Outbuildings – located at 52 Bucklers Road, more than 260 m away from the nearest pivot irrigation area (Foundation Customer 1)
- Melton HO98 - House "Nerowie" – located at 155 Nerowie Road, more than 370 m away from the nearest pivot irrigation area (Foundation Customer 1)
- Moorabool HO197 - Former Thelma Ross Memorial Church – located at 70 Nerowie Road, more than 380 m away from the nearest pivot irrigation area, which comprises an existing recycled water irrigation area (Foundation Customer 1)
- Melton HO107 - House – located at 285 Nerowie Road, more than 650 m away from the nearest pivot irrigation area (Foundation Customer 1)
- Moorabool HO133 - Dwelling - located at 3105 Geelong-Bacchus Marsh Road, more than 380 m away from the nearest pivot irrigation area (Foundation Customer 2)
- Moorabool HO134 - Dry Stone Wall - located in the north west corner of Geelong-Bacchus Marsh Road and Swamp Road, more than 410 m away from the nearest pivot irrigation area (Foundation Customer 2) and more than 150 m away from the nearest pipeline offtake (Foundation Customer 3).

No assessment of the potential for previously unidentified historical heritage or archaeological sites has been undertaken for this project. All historical archaeological sites in Victoria whether on the VHI or not are protected by the *Heritage Act 2017*.

Dry stone walls are known to occur in the vicinity of this project area. It is noted that Clause 52.33 (Post Boxes and Dry Stone Walls) of Victoria Planning Provisions, which seeks to conserve historic dry stone walls in specified locations, does not apply to land within the project area under the Moorabool or Greater Geelong Planning Schemes.

### **Parwan Recycled Water Storage**

As the Parwan Recycled Water Storage site is fully contained within the area assessed in the PBID Cultural Heritage Due Diligence Assessment, similar findings to those described for the PBID Supply Network can be applied. That is:

- No registered historical heritage places were identified within this project area. The nearest registered historical heritage place comprises:
  - Moorabool HO196 - Former Parwan South (Nerowie) State School No 4175 and Mechanics' Institute - located in the north east corner of Parwan South Road and Nerowie Roads, to the north of the proposed storage dam site on the opposite side of Nerowie Road.

Based on a review of previous historical heritage assessments and available aerial imagery, the PBID Cultural Heritage Due Diligence Assessment concluded that:

- The most likely site type in the project area would be places associated with past rural land use activities, however it is unlikely that other remnants of agricultural use (such as homesteads) would be present in the project area.
- There is low potential for sub-surface archaeological features to be associated with past rural land where the project area enters rural properties.
- No further historical heritage assessment is recommended.

Dry stone walls are known to occur in the vicinity of this project area. It is noted that Clause 52.33 (Post Boxes and Dry Stone Walls) of Victoria Planning Provisions, which seeks to conserve historic dry stone walls in specified locations, does not apply to land within the project area under the Moorabool Planning Scheme.

### **S2M Interconnector Pipeline**

A full historical and cultural heritage due diligence assessment has not been undertaken for the S2M Interconnector Pipeline. However, a search of the following registers and databases was undertaken to inform this referral: VHR, VHI, Hume HO, Melton HO, CHL, NHL, WHL and RNE.

No heritage places listed on the VHR, VHI, CHL, NHL or WHL are identified within the indicative assessment areas. Four heritage places subject to a HO under the Melton Planning Scheme are intersected by the indicative assessment areas:

- Melton HO64 - 'Plumpton Park' (includes the house and setting and cypress trees) – located at 412-518 Plumpton Road – the indicative assessment area for both current alignment options along Plumpton Road intersects the eastern edge of this heritage place
- Melton HO206 - Plumpton Road Wall – located along the western side of Plumpton Road reserve, extending for approximately 1.6 km south of the Plumpton Road / Holden Road intersection – the indicative assessment area for both current alignment options along Plumpton Road intersects this heritage place
- Melton HO204 - Greigs Road Dry Stone Wall Precinct – located at various locations along both sides of Greigs Road (between the Ballarat railway line and Mount Cottrell Road) and along various intersecting roads (e.g. Paynes Road, Leakes Road, Troups Road) and property boundary lines – the

indicative assessment area for both current alignment options intersects this heritage place at multiple locations

- Melton HO200 - Mount Cottrell Dry Stone Wall Precinct – located at various locations along Mount Cottrell Road and Greigs Road, and along various intersecting roads (e.g. Faulkners Road) and property boundary lines – the indicative assessment area for both current alignment options intersects this heritage place.

One heritage place on the non-statutory RNE intersects the indicative assessment areas, this being the Mount Alexander-Murray Valley Railway Line.

No heritage places listed on the CHL, NHL, WHL or RNE are identified adjacent to the indicative assessment areas (other than the RNE place intersected). One VHR listed heritage place, one VHI listed heritage place and two heritage places subject to a HO under the Melton Planning Scheme are identified adjacent to the indicative assessment areas:

- VHR H2278 – Australian Beam Wireless Receiving Station – 653-701 Greigs Road and 703-735 Greigs Road, Fieldstone (within Melton LGA)
- VHI Site H7822-0837 – Vineyard Road Historic Site – located at 62-144 Diggers Rest-Coimadai Road, Diggers Rest (within Melton LGA)
- Melton HO105 – Mount Cottrell Road Stock Yard, Ruins & Dry Stone Walls – located at 1476-1570 Mount Cottrell Road, Mount Cottrell
- Melton HO102 – Glengallon (House) – located at 77-207 Greigs Road West, Mount Cottrell.

In addition to the above, the following registered historical heritage places are located within 200 m of the indicative assessment areas:

- Hume HO305 – Springvale Winery (ruins) – located at Harker Street, Sunbury (within the Sunbury RWP site)
- Hume HO 368 – Asylum Water Supply (ruins) – located along Jacksons Creek, Sunbury (within the Holden Flora Reserve)
- VHI Site H7822-0094 - Caloola Industrial School Pump House Ruins – located 250 m north east of Hammersmith Court, Sunbury, along Jacksons Creek, Sunbury (within the Holden Flora Reserve) (within Hume LGA)
- VHI Site H7822-0093 - Caloola 1 Dump – located at 115 Watsons Road, Sunbury, near the junction of Harpers Creek and Jacksons Creek (within Hume LGA)
- VHI Site H7822-0123 - Langi Kal Survey (Pottery Dump) – located at 60 Fox Hollow Drive, Sunbury, along Harpers Creek (within Hume LGA)
- VHI Site H7822-0835 - Davis Road Farm Site – located at 85 Davis Road, Diggers Rest (within Melton LGA)
- Melton HO56 – Gollars Court (House) – located at 1366-1496 Melton Highway, Plumpton (within Melton LGA)
- Melton HO205 – Selection Wall – located along a property boundary line perpendicular to and south of Beattys Road
- Melton HO122 – House – located at 2341-2421 Western Highway, Rockbank
- Melton HO113 – Payne’s Cottage – located at 638-688 Greigs Road East, Rockbank
- Melton HO108 – Former Australian Beam Wireless Receiving Station – located at 653-701 Greigs Road and 703-735 Greigs Road

- Melton HO203 – Mount Aitkinson Dry Stone Wall Precinct – located along a property boundary line perpendicular to and south of Greigs Road
- Melton HO112 – House & Outbuilding – located at 65-543 Greigs Road East
- VHI Site H7822-2334 – Cobbled Roadway, Greigs Road – located at Meskos Road, Rockbank (within Melton LGA).

No assessment of the potential for previously unidentified historical heritage or archaeological sites has been undertaken for this project. All historical archaeological sites in Victoria whether on the VHI or not are protected by the *Heritage Act 2017*.

Dry stone walls are known to occur within and in proximity to the indicative assessment areas, with many of these walls covered by the Melton HO. It is noted that Clause 52.33 (Post Boxes and Dry Stone Walls) of the Victoria Planning Provisions, which seeks to conserve historic dry stone walls in specified locations, does not apply to any land within the assessment areas under the Melton Planning Scheme but applies to all land within the assessment areas under the Hume Planning Scheme. In addition, dry stone walls in these assessment areas may also be afforded protection under the various precinct structure plans that apply to land within the urban growth areas.

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

NYD  No  Yes If yes, please briefly describe.

#### **Aboriginal cultural heritage**

Separate CHMPs have been / are being prepared in accordance with the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018* for the following projects:

- Approved CHMP No. 15867 – M2BM Interconnector Pipeline
- Draft CHMP No. 17237 – PBID Supply Network
- Draft CHMP No. 17387 – Parwan Recycled Water Storage (aka PBID Basin).

Each of these projects would be managed in accordance with the conditions of the approved CHMPs to mitigate potential effects on Aboriginal cultural heritage.

Based on an initial review, the S2M Interconnector Pipeline is also likely to require a CHMP in accordance with the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018* given the project involves a high impact activity and is unlikely to be able to avoid all areas of cultural heritage sensitivity identified within and surrounding the indicative assessment areas.

Once customer farm plans have been finalised, each of the foundation customers would be responsible for determining any requirement for a CHMP or other mitigation of potential cultural heritage effects in accordance with the customer agreements with Western Water and requirements under the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*.

No CHMP is required for the Bacchus Marsh RWP Pump Station. A procedure for managing unexpected discoveries of Aboriginal cultural heritage, similar to the procedure for historical archaeological sites described below, would be included in the CEMP.

#### **Historical heritage**

Except for possibly the S2M Interconnector Pipeline, no registered historical heritage places would be impacted by the proposed works. Further historical heritage assessments are proposed for the S2M Interconnector Pipeline project, which would inform measures to avoid and/or minimise impacts to heritage places, including HO places identified within the indicative assessment areas, along with HO, VHR and VHI places identified adjacent to the indicative assessment areas as described in the preceding section. This would include selection of a preferred pipeline alignment that avoids impacts to registered



heritage places or other design and construction measures to minimise impacts where avoidance is not feasible.

In addition, for all projects, mitigation of potential effects on unregistered / unidentified historical heritage would include:

**Heritage induction training:**

Historical heritage awareness training would be completed as part of the site induction for Western Water personnel and/or contractors prior to the commencement of construction works to ensure understanding of potential heritage items that may be impacted during the project, and the procedure required to be undertaken in the event of discovery of historical heritage material, features or deposits, or the discovery of human remains.

**Managing unexpected discoveries of historical archaeological sites:**

The following procedure would be implemented in the event of an unexpected discovery of historical archaeological sites during construction of the projects:

STOP

- Stop any activity which may impact on the discovery
- Ensure that other people working in the area are aware of it and have also stopped work in the area
- Protect the artefacts or site by erecting temporary fencing or other suitable barrier.

ADVISE

- A supervisor, or the cultural heritage consultant must be consulted if they are on site
- Supervisors are to contact Western Water to advise of the discovery
- Supervisors are to advise Heritage Victoria where the discovery was made and provide a description or photograph of the discovery.
- The discovery of human remains or potential human remains will require notification to Victoria Police and Aboriginal Victoria.

MANAGE

- Heritage Victoria, the on-site heritage consultant or supervisor will advise on how to manage the discovery
- Management of the discovery may involve protection, recovery, recording or removal of the artefacts or features and is likely to require Consent to Damage from Heritage Victoria. Re-commencement of project works will not occur in the vicinity of the discovery until this process is concluded.

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

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

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

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

Please add any relevant additional information.

Western Water estimates that the WIN Scheme would require approximately 5,200 megawatt hours per annum to operate, with this energy requirement primarily associated with operation of the proposed WIN pump stations at Melton RWP, Bacchus Marsh RWP and Sunbury RWP, and the proposed PBID Supply Network pump station at Parwan.

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

- Wastewater. Describe briefly.
- Solid chemical wastes. Describe briefly.
- Excavated material. Describe briefly.
- Other. Describe briefly.

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

Wastes would primarily be generated during the construction phase of the project and would mostly comprise of excavated spoil material. While estimated spoil quantities are not available for all projects at this time, as an example, approximately 23,000 cubic metres of spoil is likely to be generated during construction of the PBID Supply Network and would be disposed to authorised facilities where it is unable to be reused on-site.

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

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

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

Western Water estimates that operation of the WIN Scheme may generate approximately 5,600 tonnes of CO<sub>2</sub> equivalent emissions per annum. These emissions are primarily associated with energy consumption for operation of the proposed WIN pump stations at Melton RWP, Bacchus Marsh RWP and Sunbury RWP, and the proposed PBID Supply Network pump station at Parwan.

Western Water would seek to offset CO<sub>2</sub> emissions from the WIN Scheme through participation in Zero Emissions Water, the Victorian water sector's large-scale Purchasing Power Agreement, which is financing construction of the Kiamal Solar Farm. The Kiamal Solar Farm is already constructed and is awaiting connection to the grid, and would provide Western Water with Large-scale Generation Certificates which would be used to help meet Western Water's emissions reduction target.

## 17. Other environmental issues

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

- No  Yes If yes, briefly describe.

## 18. Environmental management

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

- Siting: Please describe briefly
  - Design: Please describe briefly
  - Environmental management: Please describe briefly.
  - Other: Please describe briefly
- Add any relevant additional information.

### **Siting and Design**

#### **M2BM Interconnector Pipeline**

The M2BM Interconnector Pipeline route alignment was chosen with a view to minimising potential environmental effects. The proposed route is located in close proximity to an existing gas pipeline and was sited deliberately to maximise the use of previously disturbed land, mitigating potential ecological and cultural heritage impacts.

Multiple iterations of the pipeline alignment were considered through the design process to avoid or minimise environmental effects, and were informed by stakeholder engagement, ecological and cultural heritage investigations.

Key siting and design measures to avoid or minimise environmental effects for this project include:

- Ongoing refinement of the construction corridor, including further reductions to the construction footprint following engagement with DELWP in late 2020.
- Avoidance and mitigation of impacts in the vicinity of the Werribee River through the use of micro-tunnelling to prevent significant aquatic impacts.
- Exploration of the possibility of utilising trenchless construction methods to further minimise vegetation impacts. This has been deemed impracticable by Western Water due to the nature of pipe (600mm glass reinforced plastic) required for the development.

#### **Bacchus Marsh RWP Pump Station**

The Bacchus Marsh RWP Pump Station is located within the existing Bacchus Marsh RWP site which has been substantially disturbed as part of the operational RWP use. The project area has been refined since the project was initially proposed to avoid potential impact on areas of known Aboriginal Cultural Heritage Significance to the west of the proposed location.

#### **PBID Supply Network (pipeline, pump station, balance tank)**

The proposed pump station and balance tank are sited to enable consolidation of land with other existing and proposed water utility installations, including an existing potable water tank and proposed Parwan Recycled Water Storage, so as to minimise fragmentation of productive agricultural land. The proposed pipeline is sited to connect to the proposed M2BM Interconnector Pipeline and an existing recycled water main from Bacchus Marsh RWP via the proposed pump station and balance tank at one end, and to connect with foundation recycled water irrigation areas at the other end. Location of the pipeline within existing road corridors was preferred to minimise impacts on private property containing productive agricultural land.

As discussed in Section 4, multiple iterations of the pipeline alignment were considered and refined through the design process to avoid or minimise environmental effects, and were informed by stakeholder engagement, and staged ecological, cultural heritage, land use planning, and geotechnical investigations.

Key siting and design measures to avoid or minimise environmental effects for this project, include:

- Directional boring approximately 1.1 km of pipeline under the southern crossing of Balliang Creek and adjacent areas of native grassland to avoid impacts to large native trees along the creekline and a relatively large, high quality patch of native grassland

- Utilising existing access tracks for construction access across both the northern and southern Balliang Creek crossings, and through the high-quality patch of native vegetation east of the southern Balliang Creek crossing
- Aligning the northern Balliang Creek crossing adjacent to an existing access track across the creek to minimise overall disturbance footprint
- Directional boring sections of pipeline under two crossings of Geelong-Bacchus March Road and Ballan Road to minimise traffic disruption and impacts to newly constructed roadway / roundabout
- Directional boring 140 m of pipeline under rows of planted screening trees in front of Balliang East Primary School to minimise amenity impacts on school users
- Directional boring 230 m of pipeline in private property along the northern side of Ripley Road near Agars Road to avoid areas of cultural heritage sensitivity identified during CHMP investigations
- Locating the pipeline along the western side of Parwan South Road to avoid a patch of NTGVVP (and more extensive/larger patches of non-EPBC Act quality native grassland) on the eastern side of the road
- Negotiating with landowners to realign a section of pipeline outside the Geelong-Bacchus Marsh Road corridor onto private cropping land south of Schultz Road to avoid a large patch of EPBC Act listed NTGVVP and other large, contiguous patches of native grassland identified in the road corridor
- Where full avoidance through realignment or under-boring were not feasible, impacts to native vegetation have been minimised by preferencing location of the pipeline along the edge of native vegetation patches and / or localised narrowing of the construction corridor (to a minimum of 10-12 m), compared to the more efficient construction footprint width of 16-20 m allowed along other sections of the pipeline.

Through the iterative design process, impacts to medium-high quality native grasslands and habitat areas most likely to support threatened flora and fauna species have been largely avoided, while impacts to listed threatened ecological communities have been significantly reduced. The design approach has resulted in:

- More than 85% of the EPBC Act listed NTGVVP identified within the project assessment area being retained
- More than 85% of the FFG Act listed Western (Basalt) Plains Grassland identified within the project assessment area being retained
- More than 95% of low-quality Growling Grass Frog habitat identified within the project assessment area being retained
- More than 99% of medium-high quality Striped Legless Lizard and Golden Sun Moth habitat identified within the project assessment area being retained
- More than 60% of low quality Striped Legless Lizard and Golden Sun Moth habitat identified within the project assessment area being retained
- More than 85% of scattered trees identified within the project assessment area being retained.

#### **PBID Foundation Recycled Water Irrigation Areas**

The foundation recycled water irrigation areas were initially identified through an EOI process undertaken by Western Water to identify property owners interested in being supplied with Class C recycled water for irrigation of their broadacre farming properties. The landholdings of interested property owners were then subject to the following investigations to determine their suitability for recycled water irrigation:

- Land capability assessments (LCAs) (see Attachment 28), which included:

- Assessment of current and historic land use
- Assessment of the landscape capability for use of recycled water
- Calculation of the 10th, 50th and 90th percentile irrigation requirements and summarising of the total water demand for the proposed irrigation design
- Assessment of the nutrient leaching risk associated with recycled water
- Assessment of the salinity risk associated with the application of recycled water

The LCAs were informed by a site visit, soil pit survey, a water quality review and landowner interviews.

- Native vegetation and biodiversity impact assessments (see Attachment 13), which included:
  - Desktop review – database and mapping searches
  - Field survey – mapping of native vegetation patches and scattered trees

Customer farm plans (see Attachment 6) were then developed to identify the location of proposed pivot irrigators and associated on-farm irrigation pipelines according with the recommendations contained in the LCAs, and the native vegetation and biodiversity impact assessments. Specifically, this included siting and design of irrigation infrastructure to comply with required buffers to sensitive areas and to maximise avoidance of native vegetation. Farms plans were developed by the foundation customers in consultation with Western Water, which contributed to a number of refinements including reconfiguring the Customer 2 farm plan to avoid impacts to several large remnant eucalypts located in the south eastern part of the Stage 1 area, and reconfiguring the Customer 3 farm plan to avoid impacts to several large remnant eucalypts in the north east, south and south east of the property.

In accordance with recommendations from the LCAs, farm plans have been designed to use centre pivot irrigators only to apply recycled water. Compared to other irrigation options, pivot irrigation has low labour requirements and allows for high level control over irrigation volumes and distribution, providing the ability to closely match irrigation to crop/pasture requirements and soil permeability characteristics, and thereby minimising risks of waterlogging or surface runoff. Centre pivot irrigators would utilise VRI control, which enables specific nozzles to be switched off to protect buffer zones in specific areas, and is to be setup by a GIS map within the irrigator control system, such that it doesn't require manual intervention.

### **Parwan Recycled Water Storage**

As discussed in Section 4, the proposed site for the Parwan Recycled Water Storage Dam was selected because it offered a range of site-specific attributes beneficial to minimising the social, economic and environmental impacts of the storage dam and the WIN Scheme generally.

Design work for the Parwan Recycled Water Storage is ongoing and may identify additional opportunities to avoid or minimise environmental effects.

### **S2M Interconnector Pipeline**

This project is in the very early stages of planning and design, and would be subject to further refinement of alignments and design, which would be informed by staged environmental, heritage, land use planning and geotechnical investigations similar to the process undertaken for the M2BM Interconnector Pipeline and PBID Supply Network projects described above. Refer to Section 20 for a list of investigations proposed to inform the siting and design of this project.

### **Environmental Management (Construction)**

For each of the projects in this referral, the construction contractor would be required to prepare a CEMP for approval by Western Water prior to commencing works and to maintain compliance with the CEMP through the duration of construction activities. The CEMP would be required to incorporate the mitigation measures described throughout this referral, and other requirements as necessary to comply with

conditions of the project-specific approvals. Measures contained in the CEMP would also need to demonstrate how the construction contractor would meet its general environmental duty and comply with the relevant Environmental Reference Standard under the Environment Protection Act. It is noted that EPA Victoria is currently updating a range of publications relating to environmental management of construction activities, however it is anticipated that the CEMP would consider the following EPA Publications:

- EPA Publication 1820: Construction – Guide to preventing harm to people and the environment (October 2020)
- EPA Publication 1834: Civil construction, building and demolition guide (November 2020)
- EPA Publication 275: Construction Techniques for sediment and pollution control (May 1991).

For the following projects included in this referral, construction activities would also need to be undertaken in accordance with an approved CHMP:

- M2BM Interconnector Pipeline (CHMP No. 15867 – approved)
- PBID Supply Network (pipeline, pump station and balance tank) (CHMP No. 17237 – currently being drafted)
- Parwan Recycled Water Storage (CHMP No. 17387 – currently being drafted).

Based on an initial review, the S2M Interconnector Pipeline is also likely to require a CHMP in accordance with the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018* given the project involves a high impact activity and is unlikely to be able to avoid all areas of cultural heritage sensitivity identified within and surrounding the indicative assessment areas.

Once customer farm plans have been finalised, each of the foundation customers would be responsible for determining any requirement for a CHMP or other mitigation of potential cultural heritage effects in accordance with the customer agreements with Western Water and requirements under the *Aboriginal Heritage Act 2006* and *Aboriginal Heritage Regulations 2018*.

### **Environmental Management (Operation)**

Operation of recycled water transfer and supply infrastructure (pipelines, pump stations, storages) would be managed in accordance with Western Water's IS14001-aligned Environmental Management System, EPA Corporate Licence and a HEMP approved by EPA in accordance with the Environment Protection Act. Western Water has been operating recycled water schemes for decades and currently manages these activities in accordance with its Class B and C HEMP (2017). The current HEMP is being updated to integrate the WIN Scheme and to align with the requirements of the new Environment Protection Act, EPA publications and guidelines.

In accordance with the customer agreements with Western Water, each of the foundation customers is required to conduct irrigation using recycled water in accordance with Western Water's HEMP. Amongst other things, the HEMP requires that foundation customers manage irrigation rates to:

- Avoid runoff of recycled water from irrigation areas
- Avoid waterlogging of soils within and adjacent to irrigation areas
- Prevent seepage of nutrients and pathogens from recycled water into groundwater and surface water
- Prevent deterioration of soil condition within recycled water irrigation areas due to salinity.

Before recycled water irrigation can commence, a customer site management plan detailing irrigation protocols and specific recycled water risk management, is required to be developed by each customer in accordance with Western Water's HEMP, and approved by Western Water and EPA Victoria. Customer site management plans would address, amongst other things:

- Irrigation protocols – based on deficit irrigation practices where water is applied to crops and pasture such that it would be immediately used by the plants to minimise potential for water logging and surface runoff
- Inspections and monitoring - to detect pipe leakages or failure that could result in inappropriate irrigation rates
- Soil monitoring – to detect potential for excessive sodium accumulation which can impact soil permeability. This would include establishing representative soil sampling transects across each of the proposed recycled water irrigation areas and conducting baseline monitoring prior to commencing recycled water irrigation, and conducting annual soil monitoring during operation of recycled water irrigation activities to test for nutrient status, pH, salinity and sodicity levels
- Soil management – to effectively manage and match nutrient application with crop demand (e.g. fertiliser and biosolids application) and ameliorate sodicity (e.g. gypsum application)
- Nutrient budget reconciliation and management – informed by the soil monitoring program, and including review of nutrient inputs (fertiliser and recycled water) and removal (pasture and crop yields and phosphorus sorption impact), to determine the potential for unnecessary soil nutrient accumulation.

## 19. Other activities

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

NYD  No  Yes If yes, briefly describe.

Consistent with its role as the water and sewerage provider for the region, Western Water is undertaking a programme of capital works projects in the general vicinity of the project area.

Based on discussions between Western Water and DELWP – Natural Environment Program in November 2020, it is understood that DELWP has identified a large amount of development by others currently proposed around Bacchus Marsh, and that these developments have the potential to result in cumulative effects, including cumulative effects on biodiversity. In addition to the WIN Scheme, the DELWP – Natural Environment Program specifically identified projects in the following urban growth areas as potentially contributing to cumulative effects on biodiversity in the Bacchus Marsh area:

- Parwan Employment Precinct (approx. 2,500 ha) – located between Nerowie Road in the south, Exford township in the east, Parwan Creek in the west and Bacchus Marsh town centre to the north; to the immediate north of the PBID Supply Network (pump station and balance tank), Parwan Recycled Water Storage, and western end of the M2BM Interconnector Pipeline, and surrounding the Bacchus Marsh RWP to the north, south and west – biodiversity assessment and other background studies currently being prepared/finalised.
- Parwan Station Precinct Structure Plan (approx. 500 ha) – located south east of Bacchus Marsh town centre, north of the Parwan Employment Precinct through to the Werribee River; approximately 4 km north of the PBID Supply Network (pump station and balance tank), Parwan Recycled Water Storage, and western end of the M2BM Interconnector Pipeline – biodiversity assessment and other background studies currently being prepared/finalised.
- Merrimu Precinct Structure Plan (approx. 850 ha) – located north east of Bacchus Marsh town centre; approximately 8 km north of the PBID Supply Network (pump station and balance tank), Parwan Recycled Water Storage, and western end of the M2BM Interconnector Pipeline – biodiversity assessment and other background studies currently being prepared/finalised.

- Hopetoun Park North Precinct – located east of Bacchus Marsh town centre; approximately 6 km north, north east of the PBID Supply Network (pump station and balance tank), Parwan Recycled Water Storage, and western end of the M2BM Interconnector Pipeline – background studies not yet commenced.

Other known projects occurring or proposed in proximity to the WIN Scheme projects included in this referral with a potential for cumulative effects, include:

- Geelong-Bacchus Marsh Road Upgrade Project – adjacent to and partially overlapping the project area for the PBID Supply Network (pipeline) – currently under construction – survey findings and biodiversity impacts of this project were considered in the ecological assessment prepared for PBID Supply Network (see Attachment 12)
- Western Victorian Transmission Network Project – area of interest for this project overlaps all of the Bacchus Marsh RWP Pump Station and Parwan Recycled Water Storage sites, the northern part of the PBID Supply Network and PBID Foundation Recycled Water Irrigation Areas, and most of the M2BM Interconnector Pipeline and S2M Interconnector Pipeline project areas – EES currently being prepared, preferred corridor within area of interest not yet confirmed.
- The Bacchus Marsh Eastern Link Road – located west of the project area. Public consultation as to potential route options has been recently undertaken by Regional Roads Victoria. All route options currently under consideration are outside the WIN project areas.

The majority of the S2M Interconnector Pipeline is located in the MSA area, which is being developed for urban purposes. The potential for cumulative biodiversity effects between the S2M Interconnector Pipeline and urban development activities in these areas are already accounted for through the MSA Biodiversity Conservation Strategy and biodiversity losses compensated for through the environmental mitigation levy framework.

## 20. Investigation program

### Study program

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

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

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

No  Yes If yes, briefly describe.

#### **M2BM Interconnector Pipeline**

No further environmental or heritage investigations are proposed.

#### **Bacchus Marsh RWP Pump Station**

Further investigations proposed for the Bacchus Marsh RWP Pump Station include:

- Native vegetation and biodiversity impact assessments.
- Updates to the cultural heritage due diligence assessment to reflect the amended design footprint.

#### **PBID Supply Network (pipeline, pump station and balance tank)**

No further environmental or heritage investigations are proposed.

#### **PBID Foundation Recycled Water Irrigation Areas**

Further investigations proposed for the PBID Foundation Recycled Water Irrigation Areas, include:



- Native vegetation and biodiversity impact assessments for Stage 2 irrigation areas – planning permits would likely not be sought for development of these areas for about 10 years and would require more current native vegetation data at that time. This applies to Stage 2 irrigation areas not already assessed (Customer 2) and Stage 2 irrigation areas already assessed (Customers 1 and 3) if planning permits to remove native vegetation are not sought within the timeframes for native vegetation data age validity under the Guidelines
- Cultural and historical heritage due diligence assessment - to confirm any requirements under the *Aboriginal Heritage Act 2006* and *Heritage Act 2017*
- Baseline soil monitoring within proposed irrigation areas prior commencing recycled water irrigation.

### **Parwan Recycled Water Storage**

Cultural heritage field investigations (complex assessment) are proposed to be undertaken in May 2021 to inform preparation of the CHMP for this project.

No further environmental investigations are proposed at this time. However, this would be informed by the ongoing design process.

### **S2M Interconnector Pipeline**

Staged environmental and heritage investigations are proposed to inform the planning and design of this project. Studies currently proposed, include:

- Cultural heritage due diligence assessment (including register searches and background history for Aboriginal cultural heritage and historical heritage) for alignment options assessment areas to assist in selection of a preferred alignment.
- Preliminary ecological assessment (including desktop assessment, and preliminary field assessment) for alignment options assessment areas to assist in selection of a preferred alignment.
- Preliminary land use planning assessment for alignment options assessment areas to assist in selection of a preferred alignment.

Based on the findings of these preliminary investigations and following selection of a preferred alignment, further detailed ecological assessments (e.g. vegetation quality (habitat hectare) assessment, targeted surveys), Aboriginal cultural heritage and historical heritage assessments, and land use planning assessments would be undertaken (as required) for the preferred alignment to refine design and construction footprints, and assess impacts. The requirement for other studies may also be identified during preliminary environmental, heritage and design investigations.

## **Consultation program**

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

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

### **WIN Scheme**

More than 40 stakeholders, comprising groups and individuals, were engaged in developing the WIN Business Case in 2018/19 with the objectives being:

- To identify significant potential demand for recycled water out to 2050
- To understand the policy, planning, approvals and regulatory constraints of relevance and applicable to an Adaptive Pathways approach

- To gain a thorough understanding of community perceptions regarding the management of recycled water.

Key stakeholders involved in developing the WIN Business Case included:

- Potentially affected landowners
- Existing and potential Western Water customers, including current dryland farmers and recycled water irrigation farmers
- Federal and state government agencies (National Water Infrastructure Development Fund, DELWP, Department of Economic Development, VPA, Jobs, Transport and Resources, EPA Victoria, Regional Development Victoria, Department of Treasury)
- Local councils (Moorabool Shire Council, City of Melton)
- Water corporations (Melbourne Water, City West Water, Barwon Water, Southern Rural Water, internal Western Water staff)
- Traditional owner groups (Wurundjeri Elders Council, Boon Wurrung Foundation, Bunurong Land Council, Wada Wurrung)
- Agricultural industry groups (Victorian Farmers Federation, AusVeg Victoria).

Many of these stakeholders were engaged through the establishment of a Stakeholder Reference Group (SRG), which held regular meetings between March 2018 and April 2019.

A report on findings from focus groups and deliberative forums prepared by Market Solutions Pty Ltd (2018) and summarised in the WIN Business Case, found that:

- Western Water customers view recycled water as a valuable resource and an important element of sustainable water management; and they have a strong preference for beneficial reuse of recycled water rather than disposal to the upstream water environment of Port Phillip Bay. Agricultural use of recycled water is supported, particularly if achieved locally.
- EPA reiterated that the project represents a sound strategy for compliance with RWP licence conditions.
- Moorabool Shire Council and Melton City Council are supportive of the WIN Project and noted that the project aligns with existing strategies, and supports development of the proposed Parwan Employment Precinct.

A summary of specific engagement with Moorabool Shire Council in relation to the WIN Project is provided below:

- Moorabool representatives were included in development of the WIN Feasibility Study and WIN Business Case (via SRG)
- Councillor briefings: April 2018, March 2020, and April 2021
- Moorabool Growth Management Committee Meeting Paper: December 2019
- Presentations to Moorabool Strategic Planning Team: November 2018, March 2019, December 2019
- Regular key stakeholder email updates.

With only relatively minor infrastructure and only one foundation customer within the City of Greater Geelong, engagement with Council in relation to the WIN Project has been less extensive than in Moorabool Shire.

### **M2BM Interconnector Pipeline**

Specifically in relation to the M2BM Interconnector Pipeline, combined meetings with DELWP – Grampians and Port Phillip Region, Moorabool Shire Council and Melton City Council were undertaken on the following dates:

- 21 January 2021
- 10 February 2021.

These meetings were held with a view to reviewing the findings of the biodiversity assessment and confirming the need for an EES referral for the M2BM Interconnector Pipeline project in combination with the other WIN Scheme projects now detailed in this referral.

A CHMP has also been prepared for the project in consultation with the Wadawurrung Traditional Owners Aboriginal Corporation as the RAP for the project area.

### **Bacchus Marsh RWP Pump Station**

No specific consultation has been undertaken in respect of the Bacchus Marsh RWP Pump Station.

### **PBID Supply Network (pipeline, pump station, balance tank)**

Specifically in relation to the proposed PBID Supply Network, pre-application meetings have been held with:

- Moorabool Shire Council on 22 July 2020
- City of Greater Geelong Council on 13 November 2020.

These meetings were attended by Council's strategic and statutory planners, environment and engineering officers, and included provision of information by Western Water on the project drivers, objectives and design; an overview of environmental and heritage studies undertaken to date; and discussion of planning approval requirements.

A meeting was held with DELWP – Grampians Region on 27 November 2020 also to provide information on the project drivers, objectives and design; and an overview of environmental and heritage studies undertaken to date; along with discussion of the findings of recent biodiversity mapping work undertaken by DELWP – Grampians Region for the Bacchus Marsh area, including the project area.

A presentation was provided the Grow West Project via the Port Phillip and Westernport Catchment Management Authority (CMA) to provide information on the project drivers, objectives and design; and an overview of environmental studies undertaken to date. Discussion on opportunities to work together,

A CHMP is being prepared for the project in consultation with the Wadawurrung Traditional Owners Aboriginal Corporation as the RAP for the project area.

### **PBID Foundation Recycled Water Irrigation Areas**

Refer to stakeholder engagement and consultation undertaken for the WIN Scheme.

Broad consultation with local producers in the Parwan and Balliang area was undertaken during the business case development phase, including multiple information sessions were held in the Balliang Hall.

Extensive consultation has continued with the local producers who choose to enter into agreements to become Foundation Customers of the scheme, including information sessions with commercial advisers, agronomical specialists, farm planning and recycled water specialists.

In addition, the PBID Foundation Recycled Water Irrigation Areas are all located within the area of the proposed Parwan-Balliang Irrigation District, which is identified in DELWP's 'Planning for Melbourne's Green Wedges and Agricultural Land' Consultation Paper (May 2020) as one of five irrigation areas proposed to be protected by a new planning scheme overlay designed to protect food-producing areas with access to secure water supply and irrigation infrastructure. This Consultation Paper was available for community feedback on EngageVictoria from 26 November 2020 to 5 February 2021.

### **Parwan Recycled Water Storage**

As above for the PBID Supply Network. This project component was addressed in the same Preliminary Regulatory Approvals Assessment as the PBID Supply Network, which was presented to the relevant Councils for discussion purposes at the pre-application meetings.

Separate CHMPs are being prepared for the PBID Supply Network and Parwan Recycled Water Storage, however both are being prepared in consultation with the Wadawurrung Traditional Owners Aboriginal Corporation as the RAP for the project area.

### **S2M Interconnector Pipeline**

Due to the early stage of planning and design for this project, no specific consultation has been undertaken other than through stakeholder engagement for the WIN Scheme generally.

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

NYD  No  Yes If yes, briefly describe.

Western Water will remain in control of all communication and engagement with landholders, the community and stakeholders throughout the project. The WIN Communication and Engagement Plan of the project will be continually updated as individual project elements progress from design to implementation phase.

Individual project engagement plans will be developed for each project element. These will focus on interactions with landowners, potential impacts on the local community and stakeholder approvals.

The following future consultation activities are expected to be undertaken on the project:

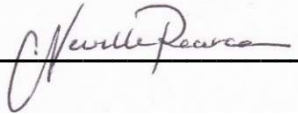
- Ongoing meetings with federal, state and local government authorities
- Ongoing one-on-one landowner and foundation customer meetings
- Project updates to local residents within proximity of the project and other interested parties
- Online materials to be retained on Western Water's website over the lifecycle of the project and updated as required
- Phone calls and emails to the project specific phone number and email address on the WIN Project web-page will be monitored and responded to over the lifecycle of the WIN Project.

## **21. References**

Nil.

**Authorised person for proponent:**

I, Neville Pearce (full name), General Manager Infrastructure & Water Resources (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature  \_\_\_\_\_

Date 27 May 2021

**Person who prepared this referral:**

I, Warren Price (full name), Western Irrigation Network (WIN) Project Manager (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature  \_\_\_\_\_

Date 27 May 2021

## List of Attachments

- Attachment 1\_M2BM Interconnector Pipeline\_Design Plans
- Attachment 2\_M2BM Interconnector Pipeline\_Property\_Mapbook
- Attachment 3\_Bacchus Marsh RWP Pump Station\_Property\_Mapbook
- Attachment 4\_PBID Supply Network\_Design Plans
- Attachment 5\_PBID Supply Network\_Property\_Mapbook
- Attachment 6\_PBID Foundation Customer Farm Plans
- Attachment 7\_Foundation Recycled Water Irrigation Areas\_Property\_Mapbook
- Attachment 8\_Parwan Recycled Water Storage\_Design Plans
- Attachment 9\_Parwan Recycled Water Storage\_Property\_Mapbook
- Attachment 10\_S2M Interconnector Pipeline\_Property\_Mapbooks
- Attachment 11\_M2BM Interconnector Pipeline\_Biodiversity Assessment
- Attachment 12\_PBID Supply Network\_Biodiversity Assessment
- Attachment 13\_Foundation Recycled Water Irrigation Areas (Customers 2 and 3)\_Biodiversity Assessment
- Attachment 14\_Parwan Recycled Water Storage\_Biodiversity Assessment
- Attachment 15\_Planning Zones\_Mapbook
- Attachment 16\_Planning Overlays\_Environment&Landscape\_Mapbooks
- Attachment 17\_Planning Overlays\_Heritage&BuiltForm\_Mapbooks
- Attachment 18\_Planning Overlays\_LandManagement\_Mapbooks
- Attachment 19\_Planning Overlays\_Other\_Mapbooks
- Attachment 20\_M2BM Interconnector Pipeline\_Approved CHMP\_NOT FOR PUBLIC DISPLAY
- Attachment 21\_Bacchus Marsh RWP Pump Station\_Cultural Heritage Due Diligence Assessment\_NOT FOR PUBLIC DISPLAY
- Attachment 22\_PBID Supply Network & Parwan Recycled Water\_Cultural Heritage Due Diligence Assessment\_NOT FOR PUBLIC DISPLAY
- Attachment 23\_Areas of Cultural Heritage Sensitivity & RAP Boundaries\_Mapbook
- Attachment 24\_Public Land Tenure\_Mapbooks
- Attachment 25\_S2M Interconnector Pipeline\_PMST Search Results and Likelihood of Occurrence Assessment for Threatened Species
- Attachment 26\_S2M Interconnector Pipeline\_\_Modelled EVCs and MSA Data Mapbook
- Attachment 27\_Wetlands and Waterways\_Mapbook
- Attachment 28\_PBID Foundation Customer Land Capability Statements
- Attachment 29\_Registered Historical Heritage Places\_Mapbook