Vopak Victoria Energy Terminal

Application Number: **01654** Commencement Date: **09/02/2023** Status: **Locked**

1. About the project

1.1 Project details

1.1.1 Project title *

Vopak Victoria Energy Terminal

1.1.2 Project industry type *

Energy Generation and Supply (non-renewable)

1.1.3 Project industry sub-type

LNG/FLNG

1.1.4 Estimated start date *

1/06/2025

1.1.4 Estimated end date *

31/12/2045

1.2 Proposed Action details

1.2.1 Provide an overview of the proposed action, including all proposed activities. *

Proposed Action

Vopak LNG, a division of the global infrastructure company Royal Vopak NV, proposes to build and operate a floating Liquefied Natural Gas (LNG) import terminal in Port Phillip Bay to ensure energy supply is available to support Victoria's energy transition. The aim of the Project is to provide an infrastructure solution to allow access to a competitive new source of natural gas in the form of LNG (peak rate of 650 terajoules output) for households, businesses and industries across south-eastern Australia. It would underpin energy supply security by providing access to a large international gas market to complement declining local production in south-eastern Australia.

Comprising of the following components:

Offshore Marine berth

The marine area of investigation is approximately 5km² within an existing anchorage area. The marine berth would be a fraction of this area and protected by an exclusion area, estimated at a radius of 500m, restricting access of any vessel other than those required for the Project. The location, size and exclusion area of the marine berth within this area is subject to site investigation, environmental assessment and consultation with Ports Victoria.

Comprising:

- Floating Storage Regasification Unit (FSRU) vessel, nominally 295m in length, 45m wide and 35m high, moored approximately 19km offshore from Avalon. The FSRU would store and convert LNG into gas. In early years of operation, the FSRU would be used as a peak shaver in the winter months. It may be used elsewhere in the summer months until required permanently. Two operating modes (open and/or closed loop) of the FSRU are being investigated.

- Platform(s) adjacent to the FSRU would support the regassification process. Two arrangements are being investigated: two separate platforms comprising of one Gas Pipeline Riser and one Electricity platform; or one Utility platform which combines the Gas Platform Riser and Electricity facilities on one platform
- LNG vessel periodically transferring LNG for storage in the FSRU tanks
- Mooring and berthing dolphins to secure the FSRU at the marine berth. The dolphins comprise of emergency access ladders and lighting. A walkway may be required between the dolphins, platforms and FSRU to allow personnel access to the platforms and associated facilities. The design of mooring system is subject to further site investigations and environmental assessment.

Offshore and onshore

- 27km long high-pressure gas pipeline from the FSRU to the Gas Receiving Station (GRS) supplying gas to the South West Pipeline (SWP). The pipeline would comprise three sections:
  - 18km buried under the Port Philip Bay seabed from the FSRU to a location approximately 1.1km from the shoreline
  - 1.5km within a trenchless shoreline crossing under the shoreline at a depth between 5m – 8m, from 1.1km offshore to an area of farmland approximately 430m inland and bounded by Chirnside Road and Beach Road (pipeline laydown area)
  - 7.5km trenched from the pipeline laydown area to SWP. The pipeline would be contained within a 15m wide permanent easement
- 26.5km electricity cables from the marine berth to the substation. The voltage would likely be either 66kV or 132kV to the offshore Platforms(s) stepping down to a lower voltage as required for the boilers and the FSRU systems. The electricity cables would comprise of two sections:
  - 19.5km subsea and trenchless shore crossing parallel with the gas pipeline. The distance from the gas pipeline would be confirmed following the completion of induction studies
  - 7km of onshore (overhead or underground) cables contained within a 15m wide permanent easement. Three alignments are being considered (Refer Attachment 2 – Project Area Map – Detailed, pp. 2)

Onshore

- GRS approximately 0.06km² (including the proposed substation) located on land adjacent to the Princes Freeway between Point Wilson Road and English Road and comprise of a number of facilities with an estimated height of 30m that ensure the gas complies with AEMO specification
- An electrical substation approximately 0.06km² in area and adjacent to the GRS comprising of a number of power poles, transformers and buildings with an estimated height of 15m. The substation would convert power to a lower voltage for use by the GRS
- 132kV overhead powerline and works to tie in the powerline at the existing Moorabool Terminal Station (MTS). The size of the powerline, location and pole design is subject to site investigations and environmental assessment. The powerline would supply renewable energy for the operation of the Project

Project Area

The Project area is 5270ha comprising of offshore (marine) and onshore (terrestrial) sections. Offshore, the Project extends from an existing anchorage point in Port Philip Bay, approximately 19km from Avalon, then traverses across the littoral zone and shoreline crossing to agricultural land and road reserves of the Western Treatment Plant (WTP). Onshore, the Project area extends south along the Princes Freeway until heading northwest within and adjacent to land reserved for a rail link to Avalon Airport, then west within and adjacent to Peak School Road continuing beyond Bacchus Marsh Road and then south to MTS.

Refer to Attachment 1 – Project Area Map – Overview, pp. all and Attachment 2 – Project Area Map – Detailed, pp. all for a map of the proposed action and Project area.

Overview of impacts associated with proposed activities

The action is anticipated to result in direct and indirect impacts during construction and operation. The potential direct and indirect impacts described and development footprint, disturbance, retention or avoidance area are subject to site investigation and environmental assessment.

Offshore

Direct impacts through construction of the offshore components are:

- Temporary disturbance of benthic communities during pipelaying
- Removal a small area of benthic habitat for construction of the platform(s)
- Underwater noise
- Localised impacts from underwater noise have the potential to affect marine fauna passing through or near to the construction area

Direct impacts through operations of the FSRU are:

- Entrainment (and death) of small marine organisms (phytoplankton and zooplankton, including small fish, drifting eggs and larvae) from seawater intake (open loop only)
- Discharge of cold water with approximately 5 µg/L of residual chlorine that may have a potential effect on the marine biota in close proximity to the point of discharge (open loop only)
- Generation of underwater noise during offloading, regassification and other operational activities disturbing marine fauna
- Light spill from deck lighting on the platform, potentially affecting amenity and fauna behaviour
- Vessel movements (local and international) with risk of marine pest translocation and vessel strike on fauna

Potential indirect impacts through operation of FSRU are:

- Secondary trophic and recruitment impacts arising from plankton entrainment (open loop only)

Onshore

Direct impacts through the construction of the onshore components are:

- Removal of native vegetation through clearing areas for the installation of the gas pipeline, electricity cables, powerline and substation, including for trenching, installation of pylons and for temporary construction areas for boring, pipeline laydown areas, access tracks and construction compounds
- Removal of habitat through trenching of gas pipeline and electricity cables or for the installation of pylons and access tracks

Indirect impacts through construction of the onshore components are:

- Increased construction noise within close proximity to important populations at WTP
- Construction lighting during night works at WTP
- Sedimentation into waterways and aquatic habitats at WTP (including Ramsar listed wetlands) during construction activities and disturbance of topsoil and spoil
- Fragmentation of habitats and prevention of movement of fauna between habitats during construction
- Introduction of weeds and pathogens into sensitive environments at WTP

Indirect impacts through operation of the onshore components are:

- noise, light and air pollution from operation of the GRS
- increased collision risk of birds through the installation of the overhead electricity cables within WTP
- increased collision risk of birds through the installation of powerline and electricity cables (if overhead).

Investigative / Preparatory Works

The following works are proposed to be excluded from the referred action as they are required to prepare relevant approvals and do not require approval under the EPBC Act as they have been determined not to have a direct or indirect impact upon MNES:

- Activities associated with designing and assessing the potential impacts of the Project such as geotechnical and environmental investigations, site surveys and establishing the location and integrity of existing utilities and services
- Pre-licence surveys and land access arrangements as required under the *Pipelines Act 2005.*
- The protection, modification or relocation of utilities and services and associated infrastructure where such activities are comparable in scope and scale to replacement, renewal and/or maintenance and are undertaken in accordance with applicable Victorian planning and environmental approval processes
- Salvage of Aboriginal cultural heritage material and other management actions required to be undertaken in compliance with the Cultural Heritage Management Plan (CHMP) approved under the Victorian *Aboriginal Heritage Act 2006* or other compliance with that Act, and to the satisfaction of the relevant Registered Aboriginal Party for the area
- Site establishment works, including site offices, traffic and environmental controls (e.g. sediment fencing), access points, access ways, temporary car parking, work platforms and hardstand and laydown areas undertaken in accordance with applicable Victorian planning and environmental approval processes
- Vegetation removal to facilitate the above enabling works, where the vegetation removal would not have a potential direct or indirect impact to MNES

1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?

No

1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? *

The construction and operation of the Project requires assessment and approval under Commonwealth and State environmental, planning and heritage legislation.

The Commonwealth and State approvals anticipated to be required for the Project are outlined below. This list is not exhaustive and further approval requirements may present themselves throughout detailed design and later stages of the Project.

Relevant Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act 1999

This referral has been prepared to seek a decision by the Minister for the Environment under the EPBC Act.

An Ecology Impact Assessment (Attachment – 11 – Terrestrial Ecology Impact Assessment, pp. all) and Marine MNES Preliminary Impact Assessment (Attachment – 12 – Marine MNES Preliminary Impact Assessment pp. all) have been undertaken to assess the potential impacts of the Project on ecological values and to support this EPBC Act referral.

Relevant State Legislation

Environment Effects Act 1978

A referral was submitted to the Minister for Planning, via the Department of Transport and Planning Impact Assessment Unit (DTP IAU) on 7 December 2022 and accepted by DTP IAU on the 16 December 2022.

Aboriginal Heritage Act 2006

Mandatory CHMP is required for the Project. The majority of the Project is within the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) Registered Aboriginal Party (RAP) area with two small offshore sections of the Project located within the First People State Relations (non-RAP) area and the Bunurong Land Council Aboriginal Corporation (BLCAC) RAP Area (Attachment 3 – Areas of Cultural Heritage Sensitivity Map (Confidential), pp. all. Attachment 3 will not be made publicly available due to cultural sensitivity reasons).

Three separate CHMPs are being prepared corresponding to the Registered Aboriginal Parties (RAP) boundaries.

The Project has commenced the preparation of a CHMP for the WTOAC RAP area (CHMP No. 19231) with the Notice of Intent lodged on 17 November 2022 (Attachment 4 – Notice of Intent, pp. all).

Further consultation with First People State Relations and BLCAC is underway to confirm the CHMP requirements and approach.

Pipelines Act 2005

The construction and operation of the new high pressure gas pipeline requires approval under the *Pipelines Act 2005*, including the requirements for a pipeline licence, Environmental Management Plan and Safety Management Plan.

On 28 April 2022 Vopak submitted the Vopak Victoria LNG Pipeline Consultation Plan (Vopak, 2022) to the Minister for Energy for assessment under the *Pipelines Act 2005* (Attachment 5 – Approved Pipeline Consultation Plan, pp. all). On 18 May 2022, the Minister for Energy determined the Vopak Victoria LNG Pipeline Consultation Plan (Vopak, 2022) meets the requirements under Section 17 of the Act (Attachment 6 – Pipeline Consultation Plan letter of approval (May 2022), pp. all).

Planning and Environment Act 1987

The GRS, the substation and the powerline require planning approvals for the use, building and works and the removal of native vegetation under the Greater Geelong Planning Scheme.

As the construction and operation of the gas pipeline requires a licence to be issued under the *Pipelines Act 2005*, a planning permit under the *Planning and Environment Act 1987* is not required for the pipeline (Section 85 of the *Pipelines Act2005).*

Environment Protection Act 2017

A Development and Operating Licence may be required for the installation and operation of the FSRU under the *Environment Protection Act 2017.*

Marine and Coastal Act 2018

A consent is required for the 'use and development of marine and coastal Crown land,' pursuant to Section 68 of the *Marine and Coastal Act 2018.*

Gas Safety Act 1997

A Gas Safety Case is required to manage the safe operation of the high-pressure gas pipeline under the *Gas Safety Act 1997.*

Occupational, Health and Safety Act 2004

A Major Hazard Facility (MHF) licence is required for the operation of the FSRU under the *Occupational, Health and Safety Act 2004.*

Other State Legislation

The delivery of the Project may require the following additional approvals and consents in accordance with the following Acts – permits and approvals would be confirmed on completion of detailed design, including:

- Hot works permit to use fire in open air, in support of operation of construction equipment in the open air during a total fire ban under the *Country Fire Authority Act 1958*
- Parks Victoria Works Permit for works within the Port Philip Bay under the *Port Management (Local Ports) Regulations 2015*
- A licence for use of the marine berth, mooring the FSRU under the *Port Management Act 1995*
- Permit(s) to take to remove FFG listed species from public land. Public land includes the road reserves under the *Flora and Fauna Guarantee Act 1988*
- Authorisation(s) to translocate threatened wildlife under the *Wildlife Act 1975*
- Permit(s) to take, injure, damage or destroy protected aquatic biota under the *Fisheries Act 1995*
- Management of noxious weeds and pest animals under the *Catchment and Land Protection Act 1994*
- Permit to conduct works on or in a roadway including a Traffic Management Plan under the *Road Management Act 2004*
- A Permit is required for works built over, or near any Melbourne Water assets, easements or waterways (Hovells Creek) under the *Water Act 1989*

1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. *

Vopak recognises the importance of early, consistent and ongoing engagement. The Project's engagement approach has been considered and targeted to develop a credible project that understands and incorporates stakeholder feedback and the social, environmental and cultural sensitivities.

The Project's engagement objectives have been to provide genuine opportunities for stakeholders to be involved and influence the design of the Project.

The first phase of engagement for the Project ran from September 2019 to December 2020. The Project team undertook extensive one-on-one engagement with regulatory bodies, land occupiers/managers, government representatives and Traditional Owners to help identify an appropriate site within Victoria, ascertain project feasibility and develop the business case. By the end of 2020, the Project determined through these engagements and studies that Avalon was the most suitable site.

The second phase of engagement ran from January 2021 to May 2022. The Project team continued one-on-one engagements with stakeholders from phase one, widening its engagement to include government authorities, elected representatives, commercial fishing operators, businesses and special interest groups. The purpose of this engagement was to inform a pipeline route, investigations on the SWP capacity and tie-in locations, and land tenure negotiations.

In July 2022, the Project held the first community information 'pop-up' sessions in Portarlington, Geelong and Werribee. The purpose was to discuss the process and reasons for selecting Port Phillip Bay, explain the approvals process and project timeline, and discuss the relevance of the Project for the Victorian community. The objectives of these consultations were to introduce the Project, seek feedback and understand concerns to inform the Project's development.

In September 2022, the Project held a second round of community information 'pop-up' sessions in Portarlington, Geelong and Werribee. The purpose of the consultation was to provide the community another opportunity to engage with the Project.

The consultations were advertised in The Geelong Times, The Bellarine Times, The Geelong Advertiser, Wyndham Star, Geelong radio (Bay 93.9 and KRock) and through a letter-box drop distributed to residential homes in North Geelong, Norlane, Corio, Portarlington and Werribee.

In November 2022, first contact was made with landholders within or near the powerline corridor to introduce the Project.

Following the submission of the Referral under the *Environment Effects Act 1978* to the Minister for Planning on 7 December 2022, a media release was made to inform and public in addition to direct emails to key stakeholders and regulatory bodies. To explain the complexities of the Project, the team prepared detailed communication materials, including:

- Fact sheets, distributed at the consultations and available on Vopak's website
- Visual perspective maps (printed and videos) showing the distance and line of sight of the floating facility from shorelines in Portarlington, Werribee River, Wyndham Harbour and Beaumaris, displayed at the consultations and available on our website.

Preliminary issues raised by stakeholders through consultation to date has assisted in influencing the Project design and its location. Issues raised by the community at the information sessions, not already considered by the Project, would be incorporated into the development of the design moving forward.

Consultation with Indigenous Stakeholders

The Project has undertaken consultation with the RAPs relevant to the Project area, WTOAC, First People State Relations (non-RAP) and BLCAC, throughout late 2022 and early 2023 to introduce the Project and understand expectations for the CHMPs.

Three separate CHMPs are being prepared corresponding to the Registered Aboriginal Parties (RAP) boundaries.

The Project has commenced the preparation of a CHMP for the WTOAC RAP area (CHMP No. 19231) with the Notice of Intent lodged on 17 November 2022 (Attachment 4 – Notice of Intent, pp. all). WTOAC are invited to participate in Project meetings, field assessments and the establishment of management conditions. This allows an open and transparent process regarding the proposed management of cultural heritage values in Project area.

Further consultation with First People State Relations and BLCAC is underway to confirm the CHMP requirements and approach.

Planned consultation

Engagement over the next twelve months aims to build on established relationships with stakeholders to support the approval processes, promote opportunities for community consultations, and incorporate feedback into the Project design.

1.3.1 Identity: Referring party

Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

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1.3.1.1 Is Referring party an organisation or business? *

Yes

Referring party organisation details

ABN/ACN	659022189
Organisation name	VOPAK VICTORIA ENERGY TERMINAL PTY LTD
Organisation address	2036 NSW

Referring party details

Name	Gary Constantine
Job title	Project Director
Phone	9012 7631
Email	gary.constantine@vopakvicenergy.com.au
Address	

1.3.2 Identity: Person proposing to take the action

1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? *

Yes

Person proposing to take the action organisation details

ABN/ACN	659022189
Organisation name	VOPAK VICTORIA ENERGY TERMINAL PTY LTD
Organisation address	2036 NSW

Person proposing to take the action details

Name	Gary Constantine
Job title	Project Director
Phone	9012 7631
Email	gary.constantine@vopakvicenergy.com.au
Address	

1.3.2.14 Are you proposing the action as part of a Joint Venture? *

No

1.3.2.15 Are you proposing the action as part of a Trust? *

No

1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. *

Yes, Vopak Victorian Energy Terminal PTY LTD has a satisfactory record of responsible environment management. There are no past or present proceedings under any relevant Commonwealth, State or Territory law involving Vopak.

In relation to Vopak's history of environmental management, Vopak owns and operates two terminals in Australia, Vopak Terminal Sydney and Vopak Terminal Darwin.

Vopak Terminal Sydney currently operates from three locations in Port Botany, New South Wales. In 1996 Vopak opened Site B, a refined petroleum product distribution terminal that handles Gasoline, Ethanol, Diesel and Jet Fuel. Vopak Terminal Sydney has progressively expanded since opening with the latest tankage being commissioned in 2021. Vopak Sydney Terminal also operates a Bitumen distribution facility that commenced operations in 2014. Vopak Darwin Terminal in East Arm, Northern Territory commenced operations in 2007 and handles Gasoline, Diesel, Jet Fuel and Sulphuric Acid.

Environmental management is at the forefront of Vopak's management and operations of these projects. For these projects environmental specialists and engineers have worked collaboratively to continually refine the siting, design and construction methods of the projects to avoid, protect and manage potential impacts to environmental values. This process of refinement resulted in the avoidance of any potential impacts to MNES and therefore no requirement for referral under the EPBC Act.

Throughout the lifecycle of these projects Vopak are operating under an ISO 14001-certified Environmental Management System to identify and control the environmental impact of the activities, products and services and to continually improve environmental performance.

In addition, each project implements a site specific Operations Environment Management Plan. These Operations Environment Management Plans drive best practice environmental outcomes by defining clear accountabilities for the delivery and monitoring of any site specific environmental effects of the project.

1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Vopak Victoria Energy Terminal aims to provide world-class infrastructure with value-added services to the Victoria energy market. The promotion of a safe and healthy workplace as well as the protection of the environment are of prime importance to Vopak Victoria Energy Terminal.

Our corporate Health, Safety, Sustainability and Environmental Policy reflects our sincere commitment towards society at large and is our cornerstone for integrity and reliability as professionals in the energy industry. Refer to Attachment 7 – Health, Safety, Sustainability and Environmental Policy, pp. all.

The responsibility and care for safety, health, sustainability and the environment are with each and every one of us. We are fully committed to:

- Create and maintain working conditions to protect the environment, the health and safety of all staff, contractors and all those involved including surrounding communities
- Protect the environment by minimising the impact of construction and operational activities to the lowest level as reasonably practical

- Optimise the security of energy supply while supporting the long-term ecological balance by limiting the impact to the environment and depleting natural resources (sustainability)
- Adherence to our policy by all involved is an integral part of our activities and is essential in achieving performance to the highest standards in society. With passion and agility, we would systematically pursue, implement and monitor:
    - Safe methods and condition of work that identify hazards, mitigate hazards and reduce the risk level to achieve our goals of zero incidents and no damage to the environment
    - Compliance with the governing laws and recognised best practices
    - Proactive reporting, evaluation and incident analysis to encourage continual improvement in all our activities
    - Line management to demonstrate visible commitment, enforcement, and provision of appropriate resources and effective training programs.

Through the life of the Project, Vopak propose to implement an ISO 14001-certified Environmental Management System to identify and control the environmental impact of the activities, products and services and to continually improve environmental performance.

It is anticipated that an Environment Management Framework (EMF) would be prepared during the approval process and would be informed by environmental impact assessments and relevant legislative requirements including Vopak's general environmental duty under the *Environment Protection Act 2017*. The EMF would provide transparent governance of the environmental aspects of design, construction and operation of the Project. The EMF would include the roles and responsibilities for the Project, the environmental management requirements for the approvals, the compliance and monitoring requirements and would provide further information on the relevant sub plans that would need to be prepared.

1.3.3 Identity: Proposed designated proponent

1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? *

Yes

Proposed designated proponent organisation details

ABN/ACN	659022189
Organisation name	VOPAK VICTORIA ENERGY TERMINAL PTY LTD
Organisation address	2036 NSW

Proposed designated proponent details

Name	Gary Constantine
Job title	Project Director
Phone	9012 7631
Email	gary.constantine@vopakvicenergy.com.au
Address	

1.3.4 Identity: Summary of allocation

Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	659022189

Organisation name	VOPAK VICTORIA ENERGY TERMINAL PTY LTD
Organisation address	2036 NSW
Representative's name	Gary Constantine
Representative's job title	Project Director
Phone	9012 7631
Email	gary.constantine@vopakvicenergy.com.au
Address	

Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

Same as Referring party information.

Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

1.4 Payment details: Payment exemption and fee waiver

1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? *

No

1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? *

No

1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?

No

1.4.7 Has the department issued you with a credit note? *

No

1.4.9 Would you like to add a purchase order number to your invoice? *

No

1.4 Payment details: Payment allocation

1.4.11 Who would you like to allocate as the entity responsible for payment? *

Person proposing to take the action

2. Location

2.1 Project footprint

2.2 Footprint details

2.2.1 What is the address of the proposed action? *

2000-2360 Princes Highway Point Wilson 3212

2.2.2 Where is the primary jurisdiction of the proposed action? *

Victoria

2.2.3 Is there a secondary jurisdiction for this proposed action? *

No

2.2.5 What is the tenure of the action area relevant to the project area? *

The offshore section of the Project (marine berth, pipeline and electricity cables) is located within Crown Land managed by Parks Victoria (Standard parcel identifiers 12E\PP3241 and 12F\PP3241) and Department of Energy, Environment and Climate Action (DEECA). The offshore section is within the jurisdiction of Ports Victoria, who is responsible for the management of commercial shipping in Port Phillip, safe navigation in the port waters of the port of Melbourne, waterside emergency and marine pollution response.

The onshore pipeline and electricity cables are located within freehold land managed by Melbourne Water (landowner) and leased to MPH (land manager) for agricultural purposes.

The onshore powerline section of the Project is located within the road reserve, private land and Crown land.

Refer to Attachment 8 – Existing Land Tenure Map, pp. all for a map of the existing land tenure within the Project area.

3. Existing environment

3.1 Physical description

3.1.1 Describe the current condition of the project area's environment.

Offshore, the Project area is located within the north-western sector of Port Phillip Bay, moving onshore through the north western shoreline and littoral zone of Port Philip Bay and the adjacent land that is part of the operating agricultural area within Melbourne Water's WTP. The Project area then extends beyond WTP through the semi-rural areas of Littler River, Lara and Moorabool.

The intertidal zone and shoreline located within the offshore pipeline and electricity cable Project area, and part of this area is located within the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site (Ramsar site). The Ramsar site overlaps the WTP and supports habitat for many different species of threatened flora and fauna, and large populations of migratory shorebirds and waterbirds. Within the WTP and Ramsar site, the Project area is largely confined to agricultural land subject to cropping and grazing practises, adjacent road reserves and other internal access roads.

The Project area between WTP and MTS is primarily cropping and grazing land adjacent to road reserves and freehold rural areas.

Refer to Attachment 10 – Key Features Map, pp. all for an overview of the Key features within and adjacent to the Project area.

Offshore section

Marine environment

The intertidal zone of the Project area is recognised as an important bird feeding habitat and a habitat feature of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site.

The intertidal zone and nearshore environment of the Project area consists of a mosaic of littoral rock, basalt boulders and sediment. Basalt boulders provide habitat for molluscs, shore crabs and other intertidal species. The littoral sediments are characterised by microphytobenthos, drift algae wrack and intertidal seagrass.

The sublittoral zone in the Project area is predominantly sediment beds which range from coarse to fine sands with areas of subtidal seagrass. The shallow sediment habitats are common in western Port Phillip Bay and are predominantly characterised by ascidians such as Pyura and algae species, such as the green algae *Caulerpa spp*. These habitats are often occupied by sponges, hydroids, gastropods and bivalve molluscs. Infauna (animals that live within the sediment) include polychaetes and crustaceans. Microphytobenthos is also a key component of the sediment ecosystem which contributes to primary production and nitrification processes in the bay. The Project area is in the vicinity of several sublittoral rock habitats including Long Reef, located approximately 1.2km north of the Project area. These rock habitats are severely affected by urchin barrens hat now replace much of the former kelp (*Ecklonia radiata*) dominated macroalgae communities.

In Port Phillip Bay, phytoplankton is mainly composed by diatoms and flagellates and the dominant taxa of zooplankton is the copepod *Paracalanus* spp. The abundance of phytoplankton and zooplankton varies annually and have been observed to be influenced by inflows into the bays from rivers. Copepods have been shown to be the main diet of snapper larvae in Port Phillip Bay.

The Project area typically has low wave and tidal energy. Surface currents are very low and generally flow in a north westerly and northerly direction. Salinity patterns are spatially variable and influenced by freshwater inflows into the Bay. Previous water quality studies show early signs of nutrient enrichment and are reflected in the phytoplankton composition of predominantly diatoms. Water quality is monitored by the Environment Protection Authority Victoria (EPA) at fixed sites in Port Phillip Bay and within the Project area these are Long Reef, offshore from the WTP, and Inner Corio Bay. Water quality at these locations were reported as 'good' in 2019-2020, with the main contaminants of concern being nutrients and water clarity receiving a 'fair' classification in 2018-2019 and 2019-2020.

In summer, EPA water quality is monitored at 36 beaches and the Yarra River in relation to safety for recreational activities. Alerts are issued to the community on the basis of rainfall predictions and their relationship to weekly microbial (enterococci and E. coli) sampling. A number of alerts have issued for the Werribee South after high rainfall events.

Port Phillip Bay also contains two large commercial ports in Melbourne and Geelong and is a popular recreational boating location. As a result, the existing marine ecosystem in Port Phillip Bay is subjected to a levels of underwater noise and vibration from these boating and port activities

The Project area intersects with a historic dredged material ground and is adjacent to the Kirk Point-Werribee Aquaculture Fisheries Reserve, a restored shellfish aquaculture site and abalone reefs.

Onshore section

Pipeline and electricity cable corridor

The onshore pipeline traverses from the GRS south along English Road, east along Beach Road to the proposed pipeline laydown area adjacent to Beach Road where the pipe and electricity cables would be bored under the shoreline.

There are three onshore options being considered for the onshore electricity cables:

- Option 1 is an underground cables running from the pipeline construction laydown area travelling west along Beach Road, north up Chirnside Road, west along Cozen Road, north along Grills Road, west towards the substation and GRS site
- Option 2 is an underground cables running from the pipeline construction laydown area travelling from Beach Road, north along Grills Road, west towards the substation and GRS site
- Option 3 is an overhead cables that travels parallel with the high-pressure gas pipeline along Beach Road and north along English Road to the substation and GSR site.

The onshore pipeline and electricity cables would be routed within the WTP, managed by Melbourne Water and their agricultural partner MPH. The whole property is located within the Werribee/Avalon section of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site.

The onshore pipeline and electricity cables Project area is proposed to be located within the operating agricultural area of WTP, primarily along internal farm roads. These heavily modified roads are used to run cattle and machinery between paddocks. The majority of the internal roads are well-defined with a crushed-rock base and exotic pasture grass dominating the road edges.

The agricultural areas provide a terrestrial buffer to the sites of biodiversity significance, being the wetlands, sublittoral zone and the shoreline. The agricultural land is highly modified with exotic vegetation, mainly crop and pasture species. There are some strips of planted windbreaks of native trees and shrubs along some sections of internal roads. The majority of internal farm roads and adjacent paddocks contain vegetated drains, which contain potential frog habitat.

Adjacent to the agricultural areas are important wetland habitats that are managed for conservation by Melbourne Water. This includes Lake Borrie to the east of the Project area and T-section, Western and Summer Lagoons to the south of the Project area. Recycled water is continually applied to around 0.7km² of decommissioned treatment lagoons, which go through a rotating cycle of water levels to provide suitable habitat for ducks, waders, shorebirds and the Growling Grass Frog (*Litoria raniformis*).

A map of the land uses and key habitat areas within WTP is provided in the Ecology Impact Assessment (Attachment 11 – Terrestrial Ecology Impact Assessment, pp. all).

Powerline corridor

The onshore powerline corridor occurs within the largely agricultural areas between Little River and Lara on the Victorian Volcanic Plain. The area is generally flat open plains and contains a mix of operating farms and rural towns, where the majority of the land is either cropped or grazed. Areas that are grazed appear to have retained some native grassland and habitat for grassland species, though they also often contained noxious weeds and exotic grasses.

The vegetation observed during preliminary field survey was representative of the various land uses and management within each individual land parcel. Vegetation included a variety of crops and pasture grasses, patches of native grassland (which often included exotic pasture species and other environmental weeds) and strips of planted native trees and shrubs around houses, sheds, along fence lines and property boundaries to provide shade for stock or windbreaks.

3.1.2 Describe any existing or proposed uses for the project area.

Existing use

Offshore

The offshore Project area includes areas of Port Phillip Bay. The area has historically been commercially fished but is nowadays limited to recreational fishing, it is primarily designated as an anchorage area by Ports Victoria. The shoreline is located within the Public Conservation and Resource Zone (PCRZ) and is Crown land managed by Parks Victoria.

Onshore

The onshore Project area is located with the Local Government Area of the Greater City of Geelong. The onshore Project area east of the Princes Freeway includes WTP which is owned by Melbourne Water (landowner), a portion of the land required for the Project is currently leased to MPH (land manager) for agricultural cropping and grazing purposes. The Project area follows WTP internal roads including English Road, Beach Road, Grills Road, Cozens Road and Chirnside Road. An area of the shoreline north of Kirk Point is also included within the Project area, which is currently used for public open space (Public Use Zone Schedule 1 – Services and Utility (PUZ1).

The onshore Project area west of the Princes Freeway extends beyond the WTP traversing existing road reserves including the Princes Freeway, Peak School Road, land reserved for a rail link to Avalon Airport and private properties within the farming zone. The majority of this land is located within Farming Zone (FZ), however does pass through other zones including Transport Zone – Schedule 2 – Principal Road Network (TRZ2) at the Princes Highway.

Refer to Attachment 9 – Planning Zones Map, pp. all for a map of the zones affecting the Project area.

Proposed uses

Offshore

Vopak is in the process of securing a seabed lease on crown land from the Victorian Government for the offshore section of the Project to enable the construction of the marine berth and operation of the FSRU, offshore pipeline and electricity cables.

Onshore

The onshore pipeline and electricity cables would require the registration of a 15m permanent easement or licence in Crown Land areas along the alignment to ensure the safety of the pipeline. The easement would include the requirement for other parties to seek approval for the following activities within the easement:

- Replacing or installing fencing
- Any earthworks
- Land levelling or contouring
- Landscaping and planting trees
- Storing material or erecting structures
- Use of explosives
- Use of vibrating machinery
- Transporting heavy machinery or loads.

The onshore powerline would require an easement along the alignment powerline where it is located within private land. A general onshore powerline alignment has been selected; however, the size and precise location are subject to detailed design. Therefore, the final easement is subject to further site investigations and environmental assessment.

3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

Both the offshore and onshore components of the Project area intersect with the western shoreline of Port Philip Bay. The western shoreline is part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site. The Ramsar site covers 226.5km² and comprises six distinct areas; Point Cooke/Cheetham, Werribee/Avalon, Point Wilson/Limeburners Bay, Swan Bay, Mud Islands, and the Lake Connewarre complex. The Project is located in the Werribee/Avalon section of the Ramsar site.

The Werribee/Avalon area of the Ramsar site includes freshwater wetlands, estuaries, intertidal shorelines, sub-tidal beds, inland saline wetlands and WTP, with agricultural areas providing a green break to the sites of biodiversity significance.

Important wetland habitats managed for conservation include Lake Borrie to the east of the Project area and T-section, Western and Summer Lagoons to the south of the Project area. This area is supplemented with recycled water which provides suitable habitat for ducks, waders, shorebirds and the Growling Grass Frog.

The Ramsar site supports large populations of migratory shorebirds and waterbirds, including important populations of Red-necked Stint (*Calidris ruficollis*), Curlew Sandpiper (*Calidris ferruginea*), Sharp-tailed Sandpiper (*Calidris acuminata*), Australian Shelduck (*Tadorna tadornoides*), Grey Teal (*Anas gracilis*), Pacific Black Duck (*Anas superciliosa*) and Australasian Shoveler (*Spatula rhynchotis*).

West of the Princes Freeway, the Project area is located within and adjacent to existing road reserves and rural areas. The closest residential areas are Little River to the north and Lara to the south west. From west to east, directly adjacent and surrounding the Project area unique values are the You Yangs Regional Park, Serendip Sanctuary, Hovells Creek and Barwon Prison.

3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The topography of the Project area is flat to a gently undulating landform consistent with the Western Volcanic Plains and Uplands landscapes of south west Victoria. The elevation is approximately 2m Australian Height Datum across the onshore elements of the Project. The water depth offshore is approximately 16 – 17m at the location of the marine terminal and gradually reduces to be approximately 5m adjacent to Kirk Point and reaching the surface at the pipeline laydown area.

3.2 Flora and fauna

3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

Offshore

Basalt boulders within the intertidal zone and nearshore environment of the Project area provide habitat for molluscs, shore crabs and other intertidal species. The intertidal zone of the Project area is recognised as an important bird feeding habitat and a habitat feature of the Ramsar site.

The sublittoral zone in the Project area has some areas of subtidal seagrass, with shallow sediment habitats predominantly characterised by ascidians and algae species providing habitats are for sponges, hydroids, gastropods and bivalve molluscs. Infauna include polychaetes and crustaceans. The Project area is in the vicinity of Long Reef (sublittoral rock habitat) located approximately 1.2km north of the Project area which is severely affected by urchin barrens.

Some marine mammals which inhabit Port Phillip Bay are expected to transition through the Project area from time to time. Species include the Australian fur seal (*Arctocephalus pusillus*), common dolphin (*Delphinus delphis*) and bottlenose dolphin (*Tursiops truncates*). Gannets (*Morus* spp.), little penguins (*Eudyptula minor*) and bottlenose dolphins are also known to occasionally feed in the Project area. The extent and diversity of fish species in the Project area vary seasonally and include snapper (*Chrysophrys auratus*), gummy shark (*Mustelus antarcticus*) and King George Whiting (*Sillaginodes punctata*).

Onshore pipeline and electricity cables

The onshore pipeline and electricity cables Project area is located within the operating agricultural area of WTP, primarily along internal roads. These roads are used to run cattle and machinery between paddocks and have been heavily modified. Most of the internal roads contain a well-defined road with exotic pasture grass dominated areas fringing the road. The exotic pasture is usually Rye-grass (*Lolium* spp.), Wheat (*Triticum aestivum*), Barley-grass (*Hordeum* spp.) or Phalaris (*Phalaris aquatica*), which is often in adjacent paddocks. These areas were mostly occupied by exotic species, mainly European rabbits (*Oryctolagus cuniculus*) and European fox (*Vulpes vulpes*).

Most of the roads contain a roadside drain, that mainly contain the native Marsh Club-rush (*Bolboschoenus caldwellii*) in the submerged channel, with fringing vegetation a mix of mainly exotic species, Phalaris, Twiggy turnip (*Brassica fruticulosa*), Blanketweed (*Galenia pubescens*), Water-buttons (*Cotula coronopifolia*) and Water couch (*Paspalum distichum*). Growling Grass Frog (*Litoria raniformis*) are known to utilise some of these drains to move between wetland habitats to the north and south of the Project area and were identified breeding within a temporary waterbody along beach road during targeted surveys in November and December 2022, with the species observed and recorded along roadsides near the southern end of the Project area. Other frog species, including Spotted Marsh Frog (*Limnodynastes tasmaniensis*) and Common Froglet (*Crinia signifera*) were also heard utilising these drains.

No patches of native vegetation were observed during the field review, however, there were scattered areas of regrowth native grasses amongst exotic pasture, consisting of Common Wallaby-grass (*Rytidosperma ceaspitosum*), Brown-back Wallaby-grass (*R. duttonianum*) and Spear-grass (*Austrostipa bigeniculata*), located in small and limited instances.

Along some stretches of roads, a row of planted, mostly native, trees and shrubs are present. These include Sugar Gum (*Eucalyptus cladocalyx*), Sheoak (*Casuarina glauca*) and Moonah (*Melaleuca lanceolata*). These areas provide habitat, mainly refuge for small birds and roosting and nesting for several raptor species, including Swamp Harrier (*Circus approximans*), Black-shouldered Kite (*Elanus axillaris*), Brown Falcon (*Falco berigora*) and Black Kite (*Milvus migrans*).

The surrounding area of wetlands are known to support habitat for many different species of threatened fauna including Australian Fairy Tern (*Sternula nereis nereis*), Orange-bellied Parrot (*Neophema chrysogaster*) and Australasian Bittern (*Botaurus poiciloptilus*). The site also has a regular presence of large populations of migratory shorebirds and waterbirds, including important populations of Red-necked

Stint, Curlew Sandpiper, Sharp-tailed Sandpiper, Australian Shelduck (*Tadorna tadornoides*), Grey Teal (*Anas gracilis*), Pacific Black Duck (*Anas superciliosa*) and Australasian Shoveler (*Spatula rhynchotis*).

An area of grasslands adjacent to Lake Borrie located approximately 650m northeast of the Project area is also known to support a population of the endangered Spiny Rice-flower (*Pimelea spinescens* subsp. *Spinescens*).

Onshore powerline

The onshore powerline Project area occurs within a largely agricultural area between Little River and Lara on the Victorian Volcanic Plain. The area is generally flat open plains and contains a mix of operating farms and rural living areas, where the majority of the land is agricultural use.

The vegetation observed during preliminary field survey was representative of the various land uses and management within each individual land parcel. Vegetation included a variety of crops and pasture grasses, patches of native grassland (which often included exotic pasture species and other environmental weeds) and strips of planted native trees and shrubs around houses, sheds, along fence lines and property boundaries to provide shade for stock or windbreaks.

Areas that are grazed appear to have retained some native grassland, mainly comprising a mix of Wallaby-grasses (*Rytidosperma* spp.), Spear-grasses (*Austrostipa* spp.), Kangaroo Grass (*Themeda triandra*) and Red-leg Grass (*Bothriochloa macra*). Though most of the grassland areas viewed often contained noxious weeds and exotic grasses, including Rye-grasses (*Lolium* spp.), Phalaris (*Phalaris aquatica*), Serrated Tussock (*Nassella trichotoma*), Blanketweed (*Galenia pubescens*) and Paspalum (*Paspalum dilitatum*).

Fauna within the area is dominated by common bird species that occupy open grasslands and pasture, including Magpie (*Gymnorhina tibicen*), Little Raven (*Corvus mellori*), Little Corella (*Cacatua sanguinea*) and Galah (*Eolophus roseicapilla*). Areas with higher native grass cover are also potential habitat for threatened fauna species, notably Golden Sun Moth (*Synemon plana*) and Striped Legless Lizard (*Delma impar*), although many of these areas appear regularly slashed or cut for hay. There is potential habitat for Growling Grass Frog along Hovells Creek, however, no Growling Grass Frog were identified during targeted surveys in December 2022 and January 2023.

In the Peak School Road reserve, exclusion zones protect the Critically Endangered Spiny Rice-flower (*Pimelea spinescens* subsp. *Spinescens*). The exclusion zones are well signposted and are found on both sides of Peak School Road.

Further detailed ecological surveys are proposed to occur along the powerline Project area to confirm the presence and condition of vegetation.

Refer to Attachment 11 – Terrestrial Ecology Impact Assessment, Sections 2.2 and 3.2, pp. 7 – 24 for further details on the result of onshore field surveys.

3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

Offshore

In the sublittoral zone, the environment is sediment beds that comprise bare muddy sediments in the offshore sections, to sandy sediments in the nearshore sections. Microphytobenthos are major contributors of primary production on these sediments. In the nearshore sector of the Project area seagrass beds occur on sediments. Drift algae beds are a significant feature of sublittoral sediments throughout the north-western sector of Port Phillip Bay.

Onshore

No patches of native vegetation were observed during the field review within WTP, as most of the vegetation was dominated by exotic pasture. No detailed mapping of native vegetation patches has occurred along the onshore powerline Project area as yet, however, reviews of the site conditions indicated that modelled areas of vegetation generally coincide with patches of native vegetation. Notably, Ecological Vegetation Class (EVC) 132 Plains Grassland (Endangered in the bioregion) was confirmed present within the road reserves and in adjacent private land along the powerline corridor. The EVC is also synonymous with the threatened ecological community listed as Natural Temperate Grassland of the Victorian Volcanic Plain under the EPBC Act, and as Western (basalt) Plains Grassland under the FFG Act.

The EVCs modelled as being present along the alignment is predominately EVC 132 Plains Grassland (Endangered), with isolated areas of EVC 68 Creekline Grassy Woodland (Endangered), EVC 125 Plains Grassy Wetland and EVC 55 Plains Grassy Woodland (Endangered).

Confirmation of native vegetation meeting patch definitions and threatened ecological community criteria would be confirmed during detailed ecology surveys of the onshore pipeline, electricity cables and powerline Project areas.

3.3 Heritage

3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

The Project area does not intersect with any Heritage Overlays identified in the Greater Geelong Planning Scheme, Victorian Heritage Register (VHR) or Victorian Heritage Inventory (VHI) protected under the Heritage Act 2017 or Commonwealth Heritage places protected under the EPBC Act.

3.3.2 Describe any Indigenous heritage values that apply to the project area.

The majority of the Project (onshore and offshore) is within the WTOAC RAP area with two small offshore sections of the Project area located within the First People State Relations (non-RAP) area and the BLCAC RAP Area.

The Project area intersects with areas of Cultural Heritage Sensitivity (CHS) associated with:

- being located within 50m of a Victorian Aboriginal Heritage Register (VAHR) place.
- being located within 200m of a declared Ramsar wetland.
- being located within 200m of a waterway (Hovells Creek).
- being located within Crown coastal land.
- being located within the Koo Wee Rup Plain.
- being located within 200m of the high-water mark of the coastal waters of Victoria.

A map of the RAP boundaries Cultural Heritage Sensitivity Areas within the Project area is provided in Attachment 3 – Areas of Cultural Heritage Sensitivity Map (Confidential), pp. all. Attachment 3 will not be made publicly available due to cultural sensitivity reasons.

A search of the VAHR shows that sixteen (16) Aboriginal places occur in, or within, 50m of the Project area with 16 of these places occurring in the Project area.

These places include six artefact scatters, eight Low Density Artefact Distributions (LDADs), one multicomponent artefact scatter/object collection and one multicomponent artefact scatter/earth feature.

As the Project is located within areas of CHS and is considered a ‘high impact activity,’ a mandatory CHMP is required under the *Aboriginal Heritage Act 2006*.

The Project is preparing three CHMPs for each statutory boundary the Project intersects with the WTOAC area, the First Peoples State Relations area and BLCAC area. The NoI to prepare a CHMP for the WTOAC area was lodged on 17 November 2022. The NoIs for the First Peoples State Relations area and BLCAC area are in preparation.

In consultation with the WTOAC, BLCAC and First People State Relations, further assessments and surveys would be undertaken through the CHMP process to understand the presence and potential impacts to cultural heritage.

3.4 Hydrology

3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. *

There are multiple artificial drainage or water transfer channels throughout the agricultural land within the onshore pipeline and electricity cables Project area, Little River is located 800m north of the Project area. The onshore powerline would traverse Hovells Creek. No other waterways are located within the onshore Project area.

A portion of the onshore section of the Project area is located within the Port Phillip Bay (Western Shoreline) and Ramsar Site. Refer to Attachment 10 – Key Features Map, pp. all, for the location of Ramsar Wetlands within the Project area.

4. Impacts and mitigation

4.1 Impact details

Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.

EPBC Act section	Controlling provision	Impacted	Reviewed
S12	World Heritage	No	Yes
S15B	National Heritage	No	Yes
S16	Ramsar Wetland	Yes	Yes
S18	Threatened Species and Ecological Communities	Yes	Yes
S20	Migratory Species	Yes	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	No	Yes
S27B	Commonwealth Heritage Places Overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	No	Yes

4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.1.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project area does not intersect with any world heritage matters.

4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.2.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project area does not intersect with any national heritage matters.

4.1.3 Ramsar Wetland

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Ramsar wetland
Yes	Yes	Port Phillip Bay (Western Shoreline) and Bellarine Peninsula

4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.3.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The intertidal zone and shoreline located within the offshore Project area, and part of the onshore pipeline and electricity cables Project area is located within the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site, which includes the entire WTP and adjacent shoreline and intertidal zone.

The onshore works within the Ramsar site has been specifically located within the modified agricultural area of the Project area to avoid direct impacts to important populations and their habitats. The pipeline and the electricity cables alignments cross the shoreline, however, both components will be bored under the shoreline for 1.5km, from the agricultural area to below the low tide line to avoid the important benthic communities and foraging habitat for migrant waders and other important populations at this location.

Therefore, direct impacts as a result of the Project would only occur to modified and disturbed areas within the Ramsar site extent. These are existing roads and road reserves within WTP that are currently used for agriculture, including moving machinery and stock and grazing and cropping. These locations provide little to no habitat value for important waterfowl and shorebird species. Although these locations do provide a terrestrial buffer around important wetland habitat, however, the works will largely be limited to the side of roads and any potential indirect impacts can be controlled through standard pipeline construction techniques and environmental controls.

There are potential indirect impacts in the marine environment through increased sedimentation during trenching for the gas pipeline. Although trenching will begin approximately 635m away from the Ramsar site, there is potential for sediment plumes to be generated by the works that may alter or impact on the lifecycle of infauna and invertebrates that inhabit the intertidal zone within the Ramsar site. As this area is important foraging habitat, particularly for migratory shorebirds, there may be some disruption to the foraging resources that may impact the species feeding here.

Indirect impacts have potential to occur for the onshore components, predominately through construction activities, with some localised impacts during operation. During construction, there is potential for disruption, including avoidance of areas or changes to foraging or resting behaviour, of bird species that contribute to the character of the Ramsar site, particularly through increased construction noise and lighting during boring of the gas pipeline and electricity cables under the shoreline. However, the shaft location has been sited over 400m from the shoreline habitat to assist in minimising potential indirect impacts to important shorebird populations.

During operation of the Project, the FSRU (open loop mode) seawater intake would entrain plankton. This may have indirect trophic and recruitment impacts but due to the remoteness of the FSRU, this is unlikely to affect the Ramsar site. The closest option for the FSRU is located approximately 11km from the nearest point of the Ramsar site, and approximately 15km away from the intertidal foraging habitat within the WTP near Lake Borrie. During operation of the Project, the FSRU (open loop mode) would discharge cold water with approximately 5 µg/L of residual chlorine. This may have a potential effect on listed marine species in close proximity to the point of discharge, however, is unlikely to affect the Ramsar site as this is located approximately 11km away.

There are also potential indirect impacts from introduction of invasive pest plants and disease pathogens and risk of increased sedimentation into marine areas in close proximity to the FSRU. However, as stated above, this is unlikely to affect the Ramsar site as this is located approximately 10km away.

4.1.3.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

Yes

4.1.3.5 Describe why you consider this to be a Significant Impact. *

Ramsar site potentially significantly impacted by offshore construction works:

During construction of the 18km buried gas pipeline, there is potential for excavation works to significantly impact the Ramsar site through increased sedimentation resulting in downstream impacts to the intertidal zone and the infauna communities and habitat that provide foraging habitat for migratory shorebirds and other waders that form part of the ecological character of the Ramsar site. This potential increase in sedimentation may lead to the habitat and/or lifecycle of invertebrate fauna being impacted, as well as changing the water quality by increasing the pollutant and nutrient load. The adult form of invertebrates are an important food source for migrant waders and other important bird populations which inhabit the Ramsar site.

Sedimentation rates will need to be modelled to determine the full scale of impacts on the Ramsar site and to confirm whether impacts are likely to be significant.

Potential impacts that may increase sedimentation and cause downstream impacts to significant wetlands and habitat would need to be mitigated and managed through best practice environmental management.

Ramsar site unlikely to be significantly impacted by offshore operational and onshore construction and operational works:

As the offshore operational and onshore construction and operational works have been designed and sited to avoid direct impacts to wetlands and provide suitable buffers to minimise indirect impacts, the impacts to the Ramsar site from these works are not expected to be significant. The onshore physical works and direct impacts would occur within land currently operating as a farm, including grazing land and cropped areas or along internal roads, which are used to run machinery and stock.

There is potential for indirect impacts to Ramsar listed values and populations and communities that make up the ecological character of the wetland, however, these would generally be localised and managed during works. Additionally, as the Project area is in an operating farm and sewerage treatment plant, there is regular machinery noise and traffic.

The proposed trenchless shore crossing would be drilled or tunnelled from a shaft approximately 430m inland from the closest shoreline point, which assists in minimising potential disruption and indirect impacts to important shorebird populations during the construction phase.

Regardless, construction activities should be the minimum extent necessary, including minimising noise, for example by turning off machinery and equipment when not in use. Other mitigation methods may also be employed, based on further design of works.

Given the remoteness of the FSRU (closest option is approximately 11km from the Ramsar site), entrainment as a result of the operation of the FSRU (open loop mode) is not expected to affect important populations and species that occupy the Ramsar site. However, there may be some localised avoidance of the facility during any species movements and migrations to the Ramsar site.

Potential indirect impacts from operations of the facility would be localised around the GRS. The permanent GRS has been sited near the boundary of the Project area with the Princes Freeway, which is an existing noise, vibration and air pollution source. The Project is also at a significant distance from wetland values, approximately 2km from the nearest point to Lake Borrie (closest permanent freshwater wetland), and approximately 5km to the nearest shoreline, and is therefore not considered a significant impact.

4.1.3.7 Do you think your proposed action is a controlled action? *

Yes

4.1.3.8 Please elaborate why you think your proposed action is a controlled action. *

The Project has been cognisant and has high regard of the highly significant nature of ecological values within the Ramsar site in the WTP and the significant role it plays in the provision and protection of habitat for threatened fauna and migratory bird species. The offshore construction component of the Project is in the early phases of design development and occurs within less understood marine environments outside of the WTP. Therefore, desktop and database information have been utilised to understand the potential impacts to threatened species and communities.

Based on this information, there are potentially significant indirect impacts to the Ramsar site through increased sedimentation resulting in potential impacts to the invertebrate communities and habitats in the intertidal zone, which are important foraging habitat for migratory birds and other listed bird species. Until the sedimentation rates can be modelled, and the full extent of the impact to the Ramsar site quantified, there is a risk of significant impact.

Therefore, the proposed action is likely to be a controlled action for the offshore construction component of the Project.

4.1.3.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The works have been designed and sited in the operational agricultural area to avoid direct impacts to the Ramsar site and the populations and habitats that make up its ecological character. Notably this includes the following:

- under-boring the gas pipeline and electricity cables for 1.5km under the shoreline
- siting the tunnel shaft for the boring of the gas pipeline and electricity cables over 400m from the shoreline and within a grazed paddock
- locating the GRS within an existing crop paddock and close to the Princes Freeway
- utilising existing road network for pipeline and electricity cables routes and for construction activities.

Best practice environmental management would also be implemented during works to mitigate potential risks associated with indirect impacts, particularly:

- implementing sediment controls to reduce sedimentation into wetland and marine habitats
- implementing hygiene controls to prevent invasive pest plants and disease pathogens entering the site that would risk harm to important populations that make up the ecological character of the Ramsar site, notably chytrid fungus that can impact Growling Grass Frog
- minimising night works and lighting during construction
- construction activities should be the minimum extent necessary, including minimising noise, vibration and light, by turning off machinery and equipment when not in use.

Further impact modelling from sedimentation to fully understand the risk and impacts to Ramsar habitats will be undertaken and further mitigation measures may be designed following these investigations.

4.1.3.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

As noted above, the extent of impacts is still being confirmed. Once detailed marine ecological surveys and sedimentation modelling are completed for the offshore Project area and impacts to listed threatened species are confirmed, the need for offsets would be confirmed based on the residual impact to each matter.

4.1.4 Threatened Species and Ecological Communities

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Threatened species

Direct impact	Indirect impact	Species
No	No	Amphibromus fluitans
No	No	Anthochaera phrygia
No	Yes	Botaurus poiciloptilus
No	No	Caladenia pumila
No	Yes	Calidris canutus
No	Yes	Calidris ferruginea
No	Yes	Calidris tenuirostris
No	No	Callocephalon fimbriatum
No	No	Charadrius leschenaultii
Yes	Yes	Delma impar
No	Yes	Dianella amoena
No	No	Diuris basaltica
No	No	Dodonaea procumbens
No	No	Eucalyptus albens
No	No	Falco hypoleucos
No	No	Galaxiella pusilla
No	No	Glycine latrobeana
No	Yes	Grantiella picta
No	Yes	Hirundapus caudacutus
No	Yes	Lachnagrostis adamsonii
No	Yes	Lathamus discolor
No	No	Lepidium aschersonii
No	No	Lepidium hyssopifolium
No	No	Leucochrysum albicans subsp. tricolor
No	Yes	Limosa lapponica baueri
Yes	Yes	Litoria raniformis
No	No	Nannoperca obscura
No	Yes	Neophema chrysogaster
No	No	Numenius madagascariensis
No	No	Pedionomus torquatus
Yes	Yes	Pimelea spinescens subsp. spinescens

Direct impact	Indirect impact	Species
No	No	Prototroctes maraena
No	Yes	Pteropus poliocephalus
No	No	Pterostylis chlorogramma
No	No	Pterostylis cucullata
No	Yes	Rostratula australis
No	Yes	Rutidosis leptorhynchoides
No	Yes	Senecio macrocarpus
No	Yes	Sternula nereis nereis
Yes	Yes	Synemon plana
No	Yes	Thelymitra epipactoides
No	No	Tympanocryptis pinguicolla
No	No	Xerochrysum palustre

Ecological communities

Direct impact	Indirect impact	Ecological community
No	Yes	Grassy Eucalypt Woodland of the Victorian Volcanic Plain
No	Yes	Natural Damp Grassland of the Victorian Coastal Plains
No	Yes	Natural Temperate Grassland of the Victorian Volcanic Plain
No	Yes	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains
No	Yes	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.4.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

The Ecology Impact Assessment and Marine Matters of National Environmental Significance Preliminary Impact Assessment provides a detailed summary of the Project impacts (Attachment 11 – Terrestrial Ecological Impact Assessment, Section 4, pp. 22-24 and Attachment 12 – Marine MNES Preliminary Impact Assessment, Section 4, pp. 16-20). The Project components that are likely to result in direct and indirect impacts to listed threatened ecological communities and species include:

Floating Storage Re-gasification Unit (FSRU):

- the discharge of cold water with approximately 5 µg/L of residual chlorine that may have a potential effect on listed marine species when in close proximity to the point of discharge (only in the open loop option)
- generation of underwater noise during offloading, regassification and other operational activities disturbing listed marine species
- light spill from deck lighting on the platform, potentially affecting amenity and listed marine fauna behaviour
- vessel movements (local and international) with risk of marine pest translocation and vessel strike on listed marine fauna
- secondary trophic and recruitment impacts arising from plankton entrainment (only in the open loop option).

19km extent of offshore gas pipeline and electricity cables:

- temporary disturbance of benthic communities during pipelaying
- removal a small area of benthic habitat for construction of the platform(s)
- underwater noise
- localised impacts from underwater noise have the potential to affect listed marine species passing through or near to the construction area.

8.5km extent of buried onshore gas pipeline and electricity cables:

- direct removal of potential Growling Grass Frog habitat along roadside drains
- disruption of important populations of listed waterfowl and migratory shorebirds
- sedimentation into waterways and drainage lines that can enter waterways that provide habitat for listed threatened species
- potential introduction of weeds and pathogens, notably chytrid fungus that can impact Growling Grass Frog.

GRS and associated buildings (including substation):

- indirect impacts from operations of the facility on threatened waterfowl

66kV or 132kV electricity cables (either underground (preferred) or overhead):

- sedimentation into waterways and drainage lines that can enter waterways that provide habitat for listed threatened species
- if overhead, potential collision risk for listed large bird species that utilise areas within WTP, particularly when near wetland areas.

132kV powerline and access track, connecting substation to the MTS:

- direct removal of native vegetation communities, predominately native grassland, which is considered Natural temperate grassland of the Victorian volcanic plain and potential habitat for Golden Sun Moth (*Synemon plana*) and Striped Legless Lizard (*Delma impar*)
- direct removal of Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*) individuals
- fragmentation of native grassland communities that is considered Natural Temperate Grassland of the Victorian Volcanic Plain and potential population of Golden Sun Moth (*Synemon plana*) and Striped Legless Lizard (*Delma impar*)
- introduction of weeds that can impact on patches of Natural Temperate Grassland of the Victorian Volcanic Plain and habitat for Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*).

4.1.4.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

Yes

4.1.4.5 Describe why you consider this to be a Significant Impact. *

Ecological communities and listed threatened species potentially significantly impacted:

Natural Temperate Grassland of the Victorian Volcanic Plain

Based on Plains Grassland EVC modelled to be present within Project area, there is a high likelihood that some of these areas qualify as the listed ecological community. Based on the proposed powerline area, there is potential for up to 0.07km² loss, noting that this is a conservative estimate as it is using the EVC modelling.

Considering predicted presence of the community within the powerline area, there is high likelihood of a reduction in extent and fragmentation of patches. Both impacts are considered significant.

However, detailed surveys are required to confirm whether grassland patches meet criteria to qualify as the listed ecological community and confirm whether impacts are likely to be significant.

Spiny Rice-flower (SRF)

The species is known to occur within Peak School Road, with the population estimated to be around 40-50 individuals based on records in the Victorian Biodiversity Atlas database (DELWP 2022a). This population is potentially important for the species based on these numbers. To date, no targeted surveys have occurred in adjacent areas, and there are potentially additional individuals present in suitable habitat within the Project area.

The design of the powerline works can be flexible, including pylon locations, access tracks and temporary construction areas, so that SRF individuals are not impacted. However, due to the known presence of the species within close proximity to the onshore powerline area, there is moderate potential for loss of at least five individuals, which would constitute a significant impact.

Growling Grass Frog (GGF)

A significant population is present within the onshore pipeline and electricity cables area, with the species known to utilise roadside drains. The species was recorded in the Project area, with their distribution being limited to roadside drains south of Centre Road. The species was identified breeding within a temporary waterbody along Beach Road during November 2022. Night-time surveys conducted in December 2022 identified the species utilising a vegetated drain midway between English Road and Grills Road, and a vegetated roadside drain along Beach Road within the Project area.

The construction corridor for the gas pipe and the 66kV or 132kV electricity cables include the roadside drains. There is potential for disruption of movement of the species during breeding season, and indirect impacts, including sedimentation into the aquatic habitat and introduction of pathogens, particularly chytrid fungus.

There is potential for direct impacts to drains that the species utilises to move between wetlands, although this is limited to during construction works only as drain habitat would be reinstated following works.

Environmental management controls would be required to be implemented to minimise impacts to GGF habitat.

Striped Legless Lizard

No targeted surveys have been completed for the species, however, there is potential grassland habitat within the powerline section of Project area, extending from the Geelong rail line to the end of Peak School Road which coincides with modelled grassland. There is a recorded population within the grassland surrounding the MTS.

The species is not considered to have potential habitat within WTP within the onshore pipeline and electricity cables area.

There is potential for a significant impact to the species along the onshore powerline area, particularly with the presence of a population within the MTS Additional individuals or populations may be present in surrounding grassland habitats, which needs to be confirmed through surveys. Works within this area may therefore result in loss of habitat and fragmentation of a population.

Golden Sun Moth

No targeted surveys have been completed for the species, however, within the onshore powerline area, there are concentrations of recent records in an adjacent property along Peak School Road. As noted above, there are modelled patches of native grassland that may provide habitat for the species.

There is potential for a significant impact to the species within the onshore powerline area. However, this needs to be confirmed through surveys. If habitat is found to contain a population of the species, works within this area may result in loss of habitat and fragmentation of a population. Impacts would likely be significant if habitat containing a population cannot be avoided.

Listed threatened species unlikely to be significantly impacted:

Critically endangered (CR) and Endangered (EN)

Six bird species listed as Critically endangered (CR) and Endangered (EN) are known to utilise habitat within the vicinity of the onshore pipeline and electricity cables area within WTP: Australian Bittern (*Botaurus poiciloptilus*), Curlew Sandpiper, Eastern Curlew (*Numenius madagascariensis*), Great Knot (*Calidris tenuirostris*), Orange-bellied Parrot (*Neophema chrysogaster*) and Red Knot (*Calidris canutus*).

Australasian Bittern, Curlew Sandpiper, Eastern Curlew, Great Knot and Red Knot are known to utilise wetlands and waterways and occur in margins with suitable cover. Habitat for the species would not be impacted and threat from indirect impacts is considered low.

Orange-bellied Parrot migrates from Tasmania in warmer months, foraging in saltmarsh within the onshore pipeline and electricity cables area. Saltmarshes are being avoided by the Project, and indirect impacts are being minimised through siting the works through agricultural areas. Further mitigation measures for potential indirect impacts would be investigated and considered during project development (e.g., noise mitigation).

Swift Parrot (*Lathamus discolor*) has a number of records around You Yangs Regional Park. Based on modelled vegetation, the species is not predicted to have any significant habitat loss that would impact the species. However, the erection of powerlines and electricity cables (if overhead) may present an obstacle or collision risk.

Habitats within the onshore pipeline and electricity cables area that are suitable for CE and E species are being avoided by the Project. Indirect impacts would also be managed during works and further mitigation measures for aspects such as noise would be further developed during the Project design.

Impacts to Swift Parrot are limited to the presence of the powerlines and electricity cables (if overhead). Although generally a greater risk to larger birds, there is potential collision risk for the species when migrating, although this is likely to be low.

A number of Endangered marine species have been identified as potentially utilising the offshore area including Subantarctic Fur Seal (*Arctophoca tropicalis*), Leatherback Turtle (*Dermochelys coriacea*), Southern Right Whale (*Eubalaena australis*), Pacific (Olive) Ridley Turtle (*Lepidochelys olivacea*) and Southern Giant-Petrel (*Macronectes giganteus*). For the majority of these species, the Project area is either not considered suitable habitat, is outside the species normal range, or the species is only an occasional visitor to the area.

The Southern Right Whale may occasionally move through the Project area. Potential direct and indirect impacts could occur from the construction of the offshore components, and the operation of the FSRU. Direct impacts during the construction of the offshore components may include impacts on passing whales from underwater noise. There is potential for indirect impacts to the species, including from noise, vibration and collision risk, however, given the Bay is already heavily utilised by recreational boats and shipping, the increased risk as a result of the Project is considered insignificant.

Construction of the offshore pipeline is expected to take 3 months, during this time there would be an increase in underwater noise impacting marine fauna.

Given the Bay has existing shipping and recreation vessels already in operation, noise, vibration and collision risk from the construction of the underwater components and operation of the FSRU is only expected to marginally increase existing levels within the already highly disturbed operating environment. Therefore, the additional noise, vibration, and increased collision risk is not considered to be significant.

Vulnerable (VU)

Two species, Australian Fairy Tern (*Sternula nereis nereis*) and Bar-tailed Godwit (*Limosa lapponica*) are listed as VU and known to occur within the onshore pipeline and electricity cables area.

Both species are primarily waders that most likely occupy the shoreline and littoral zone between Pont Wilson boat ramp south to the Spit Nature Conservation Reserve.

Through the siting of the Project, direct impacts to these species' habitats are being avoided. Indirect impacts, including sedimentation, would be mitigated during works.

Shoreline and other wading habitats within the onshore pipeline and electricity cables area that are suitable for these two species are being avoided by the Project. Indirect impacts would also be managed during works.

Several Vulnerable marine species have been identified as potentially utilising the offshore area including Northern Giant-Petrel (*Macronectes halli*), Southern Humpback Whale (*Megaptera novaeangliae australis*), Southern Elephant Seal (*Mirounga leonine*), Indian Yellow-nosed Albatross (*Thalassarche carteri*), Black-browed Albatross (*Thalassarche melanophris*) and White Shark (Carcharodon carcharias). For the majority of these species, the Project area is either not considered suitable habitat, is outside the species normal range, or the species is only an occasional visitor to the area.

The Southern Humpback Whale and White Shark may occasionally move through the Project area. Potential direct and indirect impacts which could occur to these species are the same as those discussed above for Southern Right Whale.

4.1.4.7 Do you think your proposed action is a controlled action? *

Yes

4.1.4.8 Please elaborate why you think your proposed action is a controlled action. *

The Project has been cognisant and has high regard of the highly significant nature of ecological values at WTP and the significant role it plays in the provision and protection of habitat for threatened fauna and migratory bird species. Design and development have therefore progressed within the onshore pipeline and electricity cables Project area and has included early considerations of ecological values to the design and layout of the Project and proposed construction methodologies. This was primarily through early consultation with stakeholders at WTP to avoid direct impacts to significant habitats, and by siting facilities and construction areas in locations that minimise potential indirect impacts.

There are, however, potentially significant impacts to the population of Growling Grass Frog, including the potential loss of habitat within the roadside drains, which have been noted for use for breeding and facilitating movement.

Other Project components, including the onshore powerline, are in earlier phases of design development and occur within less understood environments outside of the WTP. Therefore, desktop and database information have been utilised to understand the potential impacts to threatened species and communities. Based on this information and without a confirmed alignment and impact area, there are potentially significant impacts to Natural Temperate Grassland of the Victorian Volcanic Plain, Spiny Rice-flower, Golden Sun Moth and Striped Legless Lizard. Until the presence of these species, including the extent of populations and habitat can be confirmed, there is a risk of a significant impact.

Therefore, the proposed action is likely to be a controlled action.

4.1.4.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

As noted above, the development of the powerline scope is in an early phase of development and no detailed ecological surveys have been completed. It is expected that following completion of targeted surveys, a thorough understanding of the presence, location and extent of any listed threatened species or community would be utilised to inform the design, layout and construction method. The following avoidance and mitigation options would be reviewed following collection of ecological data:

- align powerline route away from known locations of threatened species habitat and extent of threatened ecological community
- adjust location and spacing of pylons to avoid extents of threatened species habitat and extent of threatened ecological community
- re-align access track to utilise existing disturbed areas or to avoid threatened species habitat and extent of threatened ecological community
- where possible, avoid known populations of threatened fauna species
- minimise impact to threatened species habitat and extent of threatened ecological community through minimising construction activities within these locations.

Within WTP the works have been designed and sited in the operational agricultural area to avoid direct impacts to threatened species habitat. Notably this includes the following:

- under-boring the gas pipeline and electricity cables for 1.5km under the shoreline
- siting the tunnel shaft for the boring of the gas pipeline and electricity cables over 400 m from the shoreline and within a grazed paddock
- locating the GRS within an existing crop paddock and close to the Princes Freeway
- utilising existing road network for pipeline and electricity cables routes and for construction activities.

Best practice environmental management would also be implemented during works to mitigate potential risks associated with indirect impacts, particularly:

- installation of fauna-proof fencing between areas of Growling Grass Frog habitat and construction corridor within WTP, particularly when trenching for the gas pipeline and electricity cables
- avoid impacting roadside drains within the Growling Grass Frog breeding season (October to March)

- if works are required in Growling Grass Frog habitat during the breeding season, pre-construction checks the night prior are required to remove any frogs from the site
- wildlife handler is to be present during clearing of habitat to remove any frogs
- implement sediment controls to prevent sedimentation into wetland and marine habitats
- implement hygiene controls to prevent invasive pest plants and disease pathogens entering the site that would risk harm to important populations that make up the ecological character of the Ramsar site, notably chytrid fungus that can impact Growling Grass Frog
- minimise night works and lighting during construction
- construction activities should be the minimum extent necessary, including minimising noise, light, vibration by turning off machinery and equipment when not in use.

Further management measures would be investigated in the event that threatened species or their habitat or Natural Temperate Grassland of the Victorian Volcanic Plain are impacted.

4.1.4.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

As noted above, the extent of impacts is still being confirmed. Once detailed and targeted surveys are completed along the entire Project area and impacts to listed threatened species and communities are confirmed, the need for offsets would be confirmed based on the residual impact to each matter.

4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Species
No	Yes	Actitis hypoleucos
No	No	Apus pacificus
No	Yes	Arenaria interpres
No	Yes	Botaurus poiciloptilus
No	Yes	Calidris acuminata
No	Yes	Calidris canutus
No	Yes	Calidris ferruginea
No	Yes	Calidris melanotos
No	Yes	Calidris ruficollis
No	Yes	Calidris tenuirostris
No	Yes	Caperea marginata
No	Yes	Charadrius bicinctus
No	No	Charadrius leschenaultii
No	No	Gallinago hardwickii

Direct impact	Indirect impact	Species
No	Yes	Hirundapus caudacutus
No	Yes	Limicola falcinellus
No	Yes	Limosa lapponica
No	Yes	Limosa limosa
No	No	Motacilla flava
No	No	Myiagra cyanoleuca
No	Yes	Numenius madagascariensis
No	No	Pandion haliaetus
No	Yes	Pluvialis fulva
No	No	Rhipidura rufifrons
No	Yes	Sternula albifrons
No	Yes	Sternula nereis
No	Yes	Tringa glareola
No	Yes	Tringa nebularia
No	Yes	Tringa stagnatilis
No	Yes	Xenus cinereus

4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

Yes

4.1.5.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. *

Onshore

A number of listed migratory bird species frequent areas within the WTP, including Bar-tailed Godwit, Black-tailed Godwit (*Limosa limosa*), Broad-billed sandpiper (*Limicola falcinellus*) , Common Greenshank (*Tringa nebularia*), Curlew Sandpiper, Eastern Curlew, Great Knot, Hudsonian Godwit hybrid (*Limosa haemastica*), Marsh Sandpiper (*Tringa stagnatilis*), Pacific Golden Plover (*Pluvialis fulva*), Pectoral Sandpiper (*Calidris melanotos*), Red Knot, Red-necked Stint, Ruddy Turnstone (*Arenaria interpres*), Sharp-tailed Sandpiper and Wood Sandpiper (*Tringa glareola*).

Monitoring has identified that at low tide, shorebirds forage on tidal flats, largely between Point Wilson boat ramp and north-east along the shoreline to the 145W outlet, with important areas identified as 145W outlet, Lake Borrie outlet and Beacon Point. At high tide, shorebirds move to high tide roosts, preferably to WTP conservation ponds, provided they have suitable water bodies for foraging.

These habitats are not being impacted by onshore works and no direct impacts to migratory species are proposed. The pipeline, electricity cables and GRS are being sited on operating agricultural areas and within the surrounding road network. The shaft for pipe boring has been located 400 m from the closest shoreline point and gas pipe is located over 500m west of Lake Borrie to minimise the disruption to these important populations and habitat. It is noted that one option for an underground electricity cable does occur in close proximity to Lake Borrie, along Chirnside Road.

Wetland and shoreline habitats in close proximity to the onshore pipeline and electricity cables Project area are likely to be important habitat and contain significant proportions of important populations There is potential for indirect impacts to these populations during construction, primarily due to increased noise and light.

Offshore

A number of marine migratory species were identified as potentially utilising the offshore component of the Project area including whales, sharks, turtles and dolphins. For the vast majority of these species, the Project area is either not considered suitable habitat, is outside the species normal range of distribution, or the species is only an occasional visitor to the area.

Although the Project area is not key habitat for whale species, Southern Right Whale and Southern Humpback whale are expected to occasionally move through the Project area. Potential direct and indirect impacts could occur from the construction of the offshore components, and the operation of the FSRU. Direct impacts during the construction of the offshore components may include impacts on

passing whales from underwater noise. Direct impacts through the operation of the FSRU may include discharge of cold water with approximately 5 µg/L of residual chlorine that may have a potential effect on whales in close proximity to the point of discharge (only in the open loop option), generation of underwater noise potentially affecting the species behaviour, light spill from deck lighting on the platform, potentially affecting amenity and fauna behaviour and vessel movements (local and international) with risk of marine pest translocation and vessel strike on whales.

Construction of the offshore pipeline is expected to take 3 months and during this time, there is likely to be an increase in sedimentation surrounding the works which may have downstream impacts to the intertidal zone and foraging habitat for migratory birds within the Ramsar site, which is located approximately 1.1kms away from the edge of the underwater trenching extent of the pipeline. There is a risk that increased sedimentation impacts the lifecycle of invertebrate fauna communities in the intertidal zone. As migratory bird species rely on this habitat for foraging, increase sedimentation as a result of the construction of the offshore pipeline may reduce or alter foraging resources for migratory shorebirds and is potentially significant.

Additionally, there would be an increase in underwater noise impacting marine fauna. Given the Bay has existing shipping and recreations vessels already in operation, noise, vibration and collision risk from the operation of the FSRU is only expected to only marginally increase existing levels within the already highly disturbed operating environment. Therefore, the additional noise, vibration, and increased collision risk as a result of the operation of FSRU is not considered to be significant.

4.1.5.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? *

Yes

4.1.5.5 Describe why you consider this to be a Significant Impact. *

Migratory species (birds) potentially significantly impacted by offshore construction works:

During construction of the 18km buried gas pipeline, there is potential for excavation works to significantly impact migratory bird species through increased sedimentation resulting in downstream impacts to the intertidal zone and foraging habitat within the marine area of the Ramsar site. Migratory bird species rely on this foraging habitat; therefore, the works may disrupt the lifecycle (feeding behaviour) of migratory bird species by reducing the amount of invertebrate fauna foraging resources, and the increased pollutant and nutrient load may change the water quality and subsequently impact this important habitat.

Sedimentation rates will need to be modelled to determine the full scale of impacts on the migratory bird species habitat within WTP and to confirm whether impacts are likely to be significant.

Potential impacts that may increase sedimentation and cause downstream impacts to significant wetlands and habitat would need to be mitigated and managed through best practice environmental management.

Migratory species (birds) unlikely to be significantly impacted by offshore operational and onshore construction and operational works:

As there are no direct impacts to migratory species or their habitat from offshore operational and onshore construction and operational works, it is unlikely that impacts would meet the significant impact criteria for migratory species, as there is unlikely to be substantial modification of important habitat or introduction of an invasive species that would impact a migratory species or its habitat or seriously disrupt the lifecycle of a significant proportion of a migratory species.

It is noted that there are important populations of migratory species within close proximity to the Project area and that there is potential for indirect impacts to these populations. However, through siting works in operational farming areas and locating the boring location greater than 400m from the shoreline, these indirect impacts are not likely to result in serious or long-lasting impacts, including minor avoidance of locations. As these species migrate long distances and navigate numerous obstacles, it is likely that indirect impacts would be localised and restricted to a short timeframe so that appropriate environmental management can be implemented, and impacts be minimal.

Consideration of the location of the site as part of an operating sewage plant, with Avalon Airport adjacent to the site, the disruption is unlikely to be significant. However, impact of noise needs to be investigated and appropriate mitigation designed with respect to migratory species.

It is noted that some whale species may move through the Project area occasionally. Although the Project is expected to increase noise, vibration and collision risk, the increase is not expected to be significant given the existing shipping and recreational usage of the Bay.

4.1.5.7 Do you think your proposed action is a controlled action? *

Yes

4.1.5.8 Please elaborate why you think your proposed action is a controlled action. *

The Project understands the significant role the surrounding wetland and marine habitats play in the provision and protection of habitat for migratory bird species. The offshore construction component of the Project occurs within less understood marine environments outside of the WTP. Desktop and database information have been utilised to understand the potential impacts to threatened species and

communities. Based on this information, there are potentially significant impacts to migratory bird species through increased sedimentation resulting in potential impacts to the intertidal zone and foraging habitat important for these species. Until the sedimentation rates can be modelled, and the full extent of the impacts to migratory bird species are quantified, there is a risk of significant impact.

Therefore, the proposed action is likely to be a controlled action for the offshore construction component of the Project.

4.1.5.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. *

The works have been designed and sited in the operational agricultural area to avoid direct impacts to migratory species. Notably this includes the following:

- under-boring the gas pipeline and electricity cables for 1.5km under the shoreline
- siting the tunnel shaft for the boring of the gas pipeline and electricity cables over 400 m from the shoreline and within a grazed paddock
- locating the GRS within an existing crop paddock and close to the Princes Freeway
- utilising existing road network for pipeline and electricity cables routes and for construction activities.

Best practice environmental management would also be implemented during works to mitigate potential risks associated with indirect impacts, particularly:

- Implementing sediment controls to prevent sedimentation into wetland and marine habitats
- minimising night works and lighting during construction and employ noise mitigation during any night activities. Further mitigation measures would be investigated and designed during ongoing development of the works and boring method
- construction activities should be the minimum extent necessary, including minimising noise, light and vibration by turning off machinery and equipment when not in use.

Further impact modelling from sedimentation to fully understand the risk and impacts to Ramsar habitats will be undertaken and further mitigation measures may be designed following these investigations.

4.1.5.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. *

As noted above, the extent of impacts is still being confirmed. Once detailed marine ecological surveys and sedimentation modelling are completed for the offshore Project area and impacts to migratory bird species are confirmed, the need for offsets would be confirmed based on the residual impact to each matter.

4.1.6 Nuclear

4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project area does not intersect with any nuclear matters.

4.1.7 Commonwealth Marine Area

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project would not result in a direct or indirect impact with a Commonwealth Marine Area.

The Project area does not intersect with any Commonwealth Marine Areas with the closest Commonwealth Marine Area being approximately 35km directly south from the nearest edge of the Project area. Therefore, the Project would not result in a direct impact to a Commonwealth Marine Area.

LNG vessels delivering LNG to the FSRU would periodically enter and exit Port Phillip Bay via Commonwealth Marine Areas. The purpose of the LNG vessels is to transport LNG for use by the Project, no regasification or other operations would occur on these vessels. In addition, the LNG vessels would travel along designated routes and in compliance with the relevant maritime regulations limiting the risk of collision.

In the unlikely event a collision occurs, an LNG release to the marine environment is unlikely to affect water quality or MNES. LNG is not considered persistent and is unlikely to cause acute toxicity or bioaccumulation effects. Spilled LNG would rapidly vaporise in contact with the sea surface. Following vaporisation, the gas leaves no residual component in seawater. Based on the properties of LNG, including low reactivity, low burning speed and narrow flammability range, the risk of explosion in open air is very low and impacts to fauna transiting through the area at the time of the release are unlikely.

As there are no direct impacts to the Marine Commonwealth area and indirect impacts are highly unlikely, the potential impacts on the Marine Commonwealth area are not considered to be significant.

4.1.8 Great Barrier Reef

4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project area does not intersect with the Great Barrier Reef.

4.1.9 Water resource in relation to large coal mining development or coal seam gas

4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? *

No

4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project area does not intersect with any Water resource in relation to large coal mining development or coal seam gas matters.

4.1.10 Commonwealth Land

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.10.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project area does not intersect with any commonwealth land.

4.1.11 Commonwealth Heritage Places Overseas

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

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4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? *

No

4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. *

The Project area does not intersect with any Commonwealth heritage places overseas.

4.1.12 Commonwealth or Commonwealth Agency

4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? *

No

4.2 Impact summary

Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)

Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth Heritage Places Overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

4.3 Alternatives

4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? *

Yes

4.3.2 Do you have an alternative timeline you are proposing for your proposed action? *

No

4.3.3 Briefly describe why an alternate timeline for your proposed action was not possible. *

No, the options being considered relate to alternative locations and activities and do not tangibly change the timelines for the Project. The timing of the Project is contingent on Victoria's need of a stable and reliable supply of gas until renewable energy supply can bridge this gap through energy transition.

The Australian Energy Market Operator (AEMO) Gas Statement of Opportunities (GSOO) and the Victorian Gas Planning Report Update (VGPR) (AEMO, 2022) provides information about the expected gas supply demand balance over the next five to twenty years for Victoria and the wider east coast of Australia. These reports forecast a gas shortage in Victoria commencing by mid decade due to an expected drop in production from existing gas production sources.

This potential shortage is likely to arise due to the continued decline in nearby Victorian production from legacy fields, such as Bass Strait, as demonstrated in the GSOO. The report also shows the need for other gas supply sources such as LNG imports to close this gap, particularly post 2026. Alternative supply options from the significant reserves in Queensland, whilst identified in the GSOO, are constrained by current pipeline capacity, which would require significant expansion to enable sufficient gas volumes to be transported to Victoria to meet the anticipated supply gap.

The aim of the Project is to assist in providing reliable supply of gas by providing access to a competitive new source of natural gas (peak rate of 650 TJ output) for households, businesses and industries in Victoria and across south-eastern Australia. It would underpin energy supply security by providing access to a large international gas market to complement local production in south-eastern Australia as Victoria transitions to a renewable energy future.

4.3.4 Do you have an alternative location you are proposing for your proposed action? *

No

4.3.5 Briefly describe why an alternative location for your proposed action was not possible. *

The Project siting and area has been selected through a thorough assessment of potential siting locations onshore and offshore. For this reason, there are not proposed alternatives for the Project location. However, the location of the electricity cable are being further investigated.

Siting Background

Planning and environmental specialists and design engineers have undertaken an interactive process of site selection guided by the following considerations:

- Engagement with key stakeholders including landholders, regulators, interest groups and government to understand the regional and local context including key features, environmental constraints and future masterplans for the area.
- Safety in relation to general marine navigation of Port Philip Bay, exclusion zones of vessels travelling to and from the FSRU and flight paths associated with the adjacent Avalon Airport.
- Minimising the environmental impacts and area of the Project including proximity of proposed infrastructure to existing or future urban areas, the Ramsar site and associated sensitive habitats, avoiding dredging in Port Philip Bay and disruption to commercial and recreational marine activities.
- Technical practicality of the Project in relation to construction methodologies, operational feasibility and integration with the existing Victorian Transmission System.

The site was preferred for the following reasons:

- Avoidance of dredging to accommodate the FRSU marine berth increasing potential marine effects.
- Reduced impact to existing Western Treatment Plant operations including processing facilities, conservations areas, farmland and proposed expansion.
- Avoidance of conflict between onshore infrastructure including Avalon Airport flight paths and development proposed in the approved Avalon Airport Master Plan (Avalon Airport, 2015).
- Greater buffer areas from sensitive environmental areas of habitat in the Western Treatment Plant and the shoreline such as the Spit W. R Reserve, Lake Borrie and Little River.
- Increased safety with compliant exclusion zones from the proposed pipeline and nearby defence sites.
- Reduce impact to existing and future land uses.

Offshore – Location and Arrangement

Location of the marine berth

The Project area includes a 510ha area for the marine berth (area containing the FSRU, LNG vessel and platforms). The location area and exclusion zone of the marine berth is subject to site investigation, environmental assessment and consultation with Ports Victoria.

Arrangement of offshore platforms

Offshore, two platform arrangements are being considered for the Project; one option being separate platforms (Gas Pipeline Riser and Electricity platform) and a second option being one Utility platform which combines the former. The selection of either arrangement is subject to the design of the FSRU, however does not influence the operational mode of the FSRU.

The platforms would be constructed by driving or auguring the piles into the seabed using a piling barge. Underwater noise from piling would be expected to create a temporary, localised continuous noise source which could affect marine fauna such as fish and marine mammals. The level of underwater noise is not expected to differ for each option.

Two separate platforms (Gas Pipeline Riser and Electricity platform)

This platform arrangement would require two platforms with separate purposes, a Gas Pipeline Riser and an Electricity platform. The Gas Pipeline Riser would include facilities to transfer gas and pipeline maintenance, the Electricity platform would include facilities to convert electricity to a lower kV. This platform arrangement would have the three boilers contained on the FSRU (unlike the utility platform).

One Utility Platform containing all facilities

This platform arrangement would combine all the facilities on the Gas Pipeline Riser and Electricity platform (described above) in addition to the three boilers.

Mooring arrangement

Mooring and berthing dolphins would stabilise the FSRU in position. The dolphins would include emergency access ladders and lighting. A walkway may be required between the dolphins, platforms and FSRU vessel to allow personnel access to the platforms an associated facilities. The mooring arrangement is subject to further site investigations and environmental assessment.

Like the platforms, the dolphins would be constructed using by driving or auguring the piles into the seabed using a piling barge. The difference in underwater noise for each option is considered negligible.

Onshore – Electricity Cables Location

Three alignments and two configurations (overhead or underground) are being considered for the Project (Refer to Attachment 2 – Project Area Map – Detailed, pp. 2). The selection of a preferred alignment and configuration is depended on further consultation with Melbourne Water (landowner), MPH (land manager) and other interested parties as well as induction and ecological investigations.

A key difference in potential impacts between the underground and overhead options are the potential impacts to terrestrial ecology values. Both overhead and underground would result in the clearing of vegetation and potential impacts to Growling Grass Frog (Litoria raniformis).

The overhead solution may impact wetland and migratory bird species as a collision and electrocution risk, particularly larger birds with significant wingspans, such as ducks, ibis, pelicans, egrets, herons and bitterns. Locations of overhead wires and poles are greater risk to birds when in close proximity to wetland habitats.

4.3.6 Do you have alternative activities you are proposing for your proposed action? *

Yes

4.3.3 Alternatives: Activities

4.3.3.1 Describe how the impacts and mitigation measures are different for your alternative activities.

Alterative Activities

Two methods for regasification are being investigated for the Project – open loop and closed loop. The FSRU vessel may operate one or both modes meaning it may be able to switch between each mode or it may also operate one mode. Both operational modes (open or closed) would be powered using onshore renewable energy. The FSRU would operate using electrical steam boilers (power from onshore), instead of gas fired boilers, which would avoid the greenhouse gas emissions associated with using gas.

The selection of either or both methods is dependent upon various factors including, potential for significant effects to the marine environment (likely higher with open loop), contribution to greenhouse gas emissions (likely higher with closed loop) climatic conditions, throughput capacity, energy efficiency and commercial viability.

Open Loop

An open loop system on the FSRU uses seawater to heat the LNG. Seawater is continuously drawn in via intakes, passes once through a heat exchange system and is then returned directly to the sea at temperatures of between 5 and 7 ºC below ambient water temperature. Seawater is generally used as a heat source for warming and vaporising the LNG.

The regasification system would be capable of delivering 400 – 600 mmscf/d of gas at high reliability depending on future market requirement. The seawater intake volume of up to 13,000 m3/hr is based upon the regasification rate of 650 TJ. Anticipated seawater flow-through rate would be lower in accordance with a lower regasification rate.

Closed Loop

A closed loop system would use electrical steam boilers to heat a closed loop circulating a mix of water and glycol within the FSRU as an intermediate heating medium for heat exchange in the LNG regasification trains. Around 500 m3 of water would be required to fill the FSRU heat exchange piping. Instead of being regularly discharged from the FSRU as per open loop mode, the water is continually circulated in the process. The water-glycol mix would only be discharged when maintenance is required but would be treated onshore and not discharged back into the marine environment. The water-glycol mix would be transported via a vessel to a local treatment facility for treatment. Following confirmation of the preferred operational mode, the location of the treatment facility would be confirmed.

The regasification system would be capable of delivering the same amount of gas as the open loop mode (400 – 600 mmscf/d) depending on future market demand.

The closed loop facilities would be located on a platform adjacent to the Gas Pipe Riser and the FSRU.

Potential impacts

The operation of an open loop FSRU has the potential to cause an effect on the marine environment through the entrainment of small marine organisms and the discharge of cold water withapproximately 5 µg/L residual chlorine. Further detailed assessment of the impact pathways and receiving marine environment is required to determine the extent and magnitude of the potential effects from the open loop FSRU on the marine environment and to determine relevant mitigation measures.

Entrainment

During operation, an open loop FSRU may entrain smaller marine organisms (such as small fish, zooplankton and phytoplankton, drifting eggs and larvae) that are present in the water column adjacent to the intake. These marine organisms once entrained as part of the intake water from the FSRU would not be expected to survive the mechanical processes of the FSRU.

Publicly available data from other FSRU projects suggests that entrainment levels as a percentage of overall populations may be very low, noting however, that each location has unique characteristics such as water depth, currents and species presence that require local baseline data and modelling.

The extent and magnitude of the potential effects on marine fauna species as a result of the entrainment of smaller marine organisms from the operation of the open loop FSRU would require further detailed assessment. Further assessment would include hydrodynamic modelling and marine ecology assessments.

Residual chlorine in seawater discharge

During operation of the open loop FSRU, the regasification process would take on seawater as part of the exchange process to turn LNG into a gas. Chlorine is expected to be used to control biofouling in the pipes, pumps and heat exchangers. Seawater discharged from the FSRU would approximately 5 µg/L of short-lived residual chlorine which may have a potential effect on the marine biota in close proximity to the seawater discharge.

Further hydrodynamic and ecotoxicity modelling of the potential impacts on the marine environment would be undertaken as part of the studies to support the approvals process.

Cold water discharge

During operation of the open loop FSRU, cold water may be discharged from the FSRU into the marine environment as part of the regasification process. A cold water plume may have a potential effect on the marine biota in close proximity to the cold water discharge.

The extent and magnitude of the potential effects on marine biota as a result of cold water with approximately 5 µg/L residual chlorine discharged from open loop FSRU would require further detailed assessment. Further assessment would include hydrodynamic modelling and marine ecology assessments.

4.3.4 Alternatives: Impact and mitigation

4.3.4.1 Do these alternatives have a different impact, avoidance, or mitigation measure compared to what you have already provided? *

No

4.3.5 Alternatives: Considered alternatives

4.3.5.1 Do you have any other alternative actions, including not taking the action, that you have considered but are not proposing as part of this referral? *

No

5. Lodgement

5.1 Attachments

1.2.1 Overview of the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 1 - Project Area Map - Overview Map providing an overview of the Project area	29/11/2022	No	High
#2.	Document	Attachment 2 - Project Area Map - Detailed Map detailing the Project area	29/11/2022	No	High

1.2.6 Commonwealth or state legislation, planning frameworks or policy documents that are relevant to the proposed action

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 11 – Terrestrial Ecology Impact Assessment A report assessing the potential impacts of the project on terrestrial ecology values.	16/01/2023	No	High
#2.	Document	Attachment 12 – Marine MNES Preliminary Impact Assessment A report summarising potential impacts to marine MNES.	23/03/2023	No	High
#3.	Document	Attachment 3 – Areas of Cultural Heritage Sensitivity Map (Confidential) A map of areas of Cultural Heritage Sensitivity	30/11/2022	Yes	High
#4.	Document	Attachment 4 – Notice of Intent Completed notice of intent form	17/11/2022	Yes	High
#5.	Document	Attachment 5 – Approved Pipeline Consultation Plan Pipelines consultation approved under the Pipelines Act 2005	01/05/2022	No	High
#6.	Document	Attachment 6 – Pipeline Consultation Plan letter of approval (May 2022) Letter from DELWP approving the pipelines consultation plan	18/05/2022	No	High

1.2.7 Public consultation regarding the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 4 – Notice of Intent Completed notice of intent form	17/11/2022	Yes	High

1.3.2.17 (Person proposing to take the action) Proposer's history of responsible environmental management

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 7 - Health, Safety, Sustainability and Environmental Policy Vopak's Health, Safety, Sustainability and Environmental Policy	19/11/2022	No	High

2.2.5 Tenure of the action area relevant to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document				

Attachment 8 – Existing Land Tenure Map Map of the existing land tenure within the Project area		01/12/2022	No	High

3.1.1 Current condition of the project area's environment

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 10 – Key Features Map A map of key features within and surrounding the Project area	30/11/2022	No	High

3.1.2 Existing or proposed uses for the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 9 – Planning Zones Map Map of planning zones within and surrounding the Project area	30/11/2022	No	High

3.3.2 Indigenous heritage values that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 3 – Areas of Cultural Heritage Sensitivity Map (Confidential) A map of areas of Cultural Heritage Sensitivity	30/11/2022	Yes	High

3.4.1 Hydrology characteristics that apply to the project area

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 10 – Key Features Map A map of the key features within and surrounding the Project area	30/11/2022	No	High

4.1.4.2 (Threatened Species and Ecological Communities) Why your action has a direct and/or indirect impact on the identified protected matters

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 12 – Marine MNES Preliminary Impact Assessment A report summarising potential impacts to marine MNES.	22/03/2023	Yes	High

4.3.5 Why an alternative location for your proposed action was not possible

	Type	Name	Date	Sensitivity	Confidence
#1.	Document	Attachment 2 - Project Area Map - Detailed Map detailing the Project area	29/11/2022	No	High

5.2 Declarations

Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

ABN/ACN	659022189
Organisation name	VOPAK VICTORIA ENERGY TERMINAL PTY LTD
Organisation address	2036 NSW
Representative's name	Gary Constantine
Representative's job title	Project Director
Phone	9012 7631
Email	gary.constantine@vopakvicenergy.com.au

Address

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ By checking this box, I, **Gary Constantine of VOPAK VICTORIA ENERGY TERMINAL PTY LTD**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

Same as Referring party information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Gary Constantine of VOPAK VICTORIA ENERGY TERMINAL PTY LTD**, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

☑ Check this box to indicate you have read the referral form. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *

☑ I, **Gary Constantine of VOPAK VICTORIA ENERGY TERMINAL PTY LTD**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. *

☑ I would like to receive notifications and track the referral progress through the EPBC portal. *