Technical Report P

Historic heritage impact assessment

Viva Energy Gas Terminal Project

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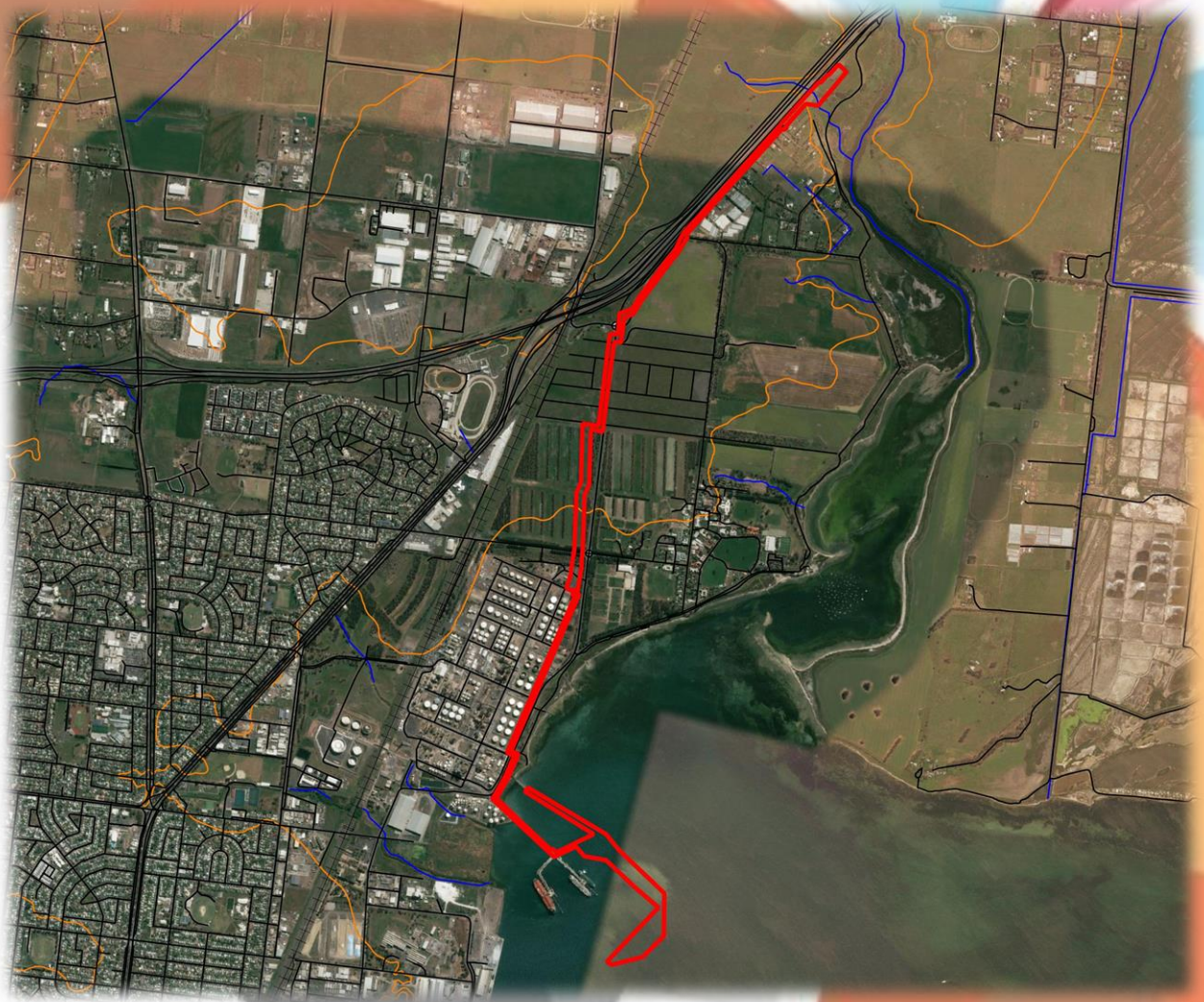
Client: Viva Energy Gas Australia Pty Ltd

Date: 25 February 2022



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DISCLAIMER

The information contained within this report has been compiled from standard government heritage databases and at the time of production is true and correct as far as Jem Archaeology Pty Ltd is aware. While this report contains a summary of information pertaining to the activity area, it does not provide, nor does it intend to provide, a comprehensive summary of all available information. Jem Archaeology Pty Ltd does not take responsibility for errors or omissions in primary or secondary sources cited in this report.

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JEM ARCHAEOLOGY

EXECUTIVE SUMMARY

This technical report provides an historic heritage impact assessment conducted to support the Environment Effects Statement (EES) for the Viva Energy Gas Terminal Project (the project).

In December 2020, the Victorian Minister for Planning determined that the project requires assessment through an EES under the *Environment Effects Act 1978* (Vic). The reasons for the decision were primarily related to the potential for significant adverse effects on the marine environment of Corio Bay and the potential for contributing to greenhouse gas emissions. Secondarily, the EES was required to assess the effects of the project on air quality, noise, land use, Aboriginal and historic heritage, native vegetation, groundwater, traffic, and transport as well as visual amenity.

In January 2021, the project was also determined to require assessment and approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* ('EPBC Act') due to the potential for the project to have a significant impact on wetlands of international importance, listed threatened species and communities, and listed migratory species. The EES process is the accredited environmental assessment process for the controlled action decision under the EPBC Act in accordance with the bilateral agreement between the Commonwealth and Victorian governments.

Overview

Viva Energy Gas Australia Pty Ltd (Viva Energy) is planning to develop a gas terminal using a ship known as a floating storage and regasification unit (FSRU), which would be continuously moored at Refinery Pier in Corio Bay, Geelong. The key objective of the project is to facilitate supply of a new source of gas for the south-east Australian gas market where there is a projected supply shortfall in coming years.

The FSRU would store liquefied natural gas (LNG) received from visiting LNG ships (that would moor directly adjacent to the FSRU), and regasify the LNG as required to meet industrial, commercial and residential customer demand. A 7 kilometre gas transmission pipeline would transfer the gas from the FSRU to the Victorian Transmission System (VTS) at Lara.

The gas terminal would be located adjacent to, and on, Viva Energy's Geelong Refinery in a heavily industrialised setting and would benefit from Viva Energy's experience and capability as an existing Major Hazard Facility (MHF) operator and potential synergies between the two facilities such as reuse of the FSRU seawater discharge within the refinery operations.

Existing conditions

The results of the desktop assessment indicate that no previously recorded historical places are present within the activity area:

The results of the desktop assessment suggest that it is highly unlikely any historical heritage may be present within the onshore component of the activity area and it is unlikely that any historical heritage may be present within the offshore component of the activity area.

A review of relevant heritage registers indicates that there are no registered historical archaeological sites or maritime heritage places located within the activity area and that all historical archaeological sites are located in excess of 200m from any proposed onshore construction works associated with the project.

A review of the land use history of the activity area indicates that it is highly unlikely that unknown and unrecorded historical archaeological sites or maritime heritage places will be present within the activity area or within the immediate proximity of the activity area, as the majority activity area has a long history of substantial disturbance, including land clearance and ploughing from at least the 1850s and the installation of numerous sub surface utilities including high pressure gas and oil pipelines in the past 70 years, as well as likely dredging in Corio Bay. In addition, examination of historical maps and aerial photographs suggests that it is unlikely that any unrecorded historical places will be present, as these sources do not contain any indication of the presence of historical places.

Construction Impact Assessment

The greatest potential impact to historical archaeological sites or maritime heritage places may occur during the construction phase of the project.

There are no known historical archaeological sites or maritime heritage places located within the activity area (either onshore or offshore). This historical heritage assessment has determined that there would be no adverse direct or indirect impacts to any known historical archaeological site or maritime heritage places as a result of the proposed construction activities, as no such places are present within the activity area. Furthermore, the assessment has concluded that it is highly unlikely any historical heritage may be present within the onshore component of the activity area and it is unlikely that any historical heritage may be present within the offshore component of the activity area.

Any ground disturbing works to be undertaken within the activity area may result in direct impact and possible destruction of unknown historical archaeological sites. However, this assessment has determined that it is highly unlikely any historical heritage may be present within the onshore component of the activity area and it is unlikely that any maritime heritage places may be present within the offshore component of the activity area, and any potential impact to such places is considered to be minor to moderate, based on desktop studies.

Operation Impact Assessment

The operation of the project is highly unlikely to impact historical archaeological sites or maritime heritage places, as any impacts would result principally from the construction phase of the project and any and all operational works including maintenance will occur in areas already disturbed by the construction phase of the project.

Decommissioning Impact Assessment

The decommissioning of the project is highly unlikely to impact historical archaeological sites or maritime heritage places, as any impacts would result principally from the construction phase of the project and any and all decommissioning works will occur in areas already disturbed by the construction phase of the project.

Summary of Mitigation Measures and Residual Impacts

This study has assessed the impact to historical archaeological sites and or maritime heritage places during construction of the project on the assets and values to be managed and protected. It is not anticipated that the project will result in any direct or indirect impacts to known historical archaeological sites or maritime heritage places, as none are located within the activity area or within close proximity to the activity area. The review of historical context undertaken by the current assessment has concluded that it is highly unlikely that previously unknown historical archaeological sites or archaeological materials will be present within the onshore component of the activity area and that it is unlikely that any previously unknown maritime heritage places or archaeological materials will be present within the offshore component of the activity area.

Notwithstanding this, it is recommended that the onshore and offshore unexpected finds protocols presented in Appendix A and Appendix B of this report are adopted. The protocols provide additional management measures to provide contingency in the unlikely event that previously unrecorded historical archaeological sites, maritime heritage places or archaeological materials are encountered during the construction, operation and decommissioning phases of the project.

The onshore and offshore unexpected finds protocols include contractor inductions which will demonstrate examples of potential historical archaeological sites, historical archaeological material or archaeological sites that could be found in onshore contexts, and examples of maritime heritage items that could be found in offshore contexts, as well as conservation advice for artefacts removed from the marine environment.

Abbreviations

Abbreviation	Title
AUCHD	Australasian Underwater Cultural Heritage Database
BOM	Bureau of Meteorology
BP	Before Present (1950)
CHMP	Cultural Heritage Management Plan
EES	Environment Effects Statement
EVC	Ecological Vegetation Class
FSRU	Floating storage and regasification unit
HCV	Heritage Council of Victoria
HO	Heritage Overlay
LNG	Liquefied natural gas
MHF	Major Hazard Facility
MLA	Marine loading arm
ROW	Right of way
SLV	State Library of Victoria
SWI	Saltwater intake
SWP	South West Pipeline
VHI	Victorian Heritage Inventory
VHR	Victorian Heritage Register
VTS	Victorian Transmission System

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1 INTRODUCTION

This technical report provides a historic heritage impact assessment conducted to support the Environment Effects Statement (EES) for the Viva Energy Gas Terminal Project (the project).

Viva Energy Gas Australia Pty Ltd (Viva Energy) is planning to develop a gas terminal using a ship known as a floating storage and regasification unit (FSRU), which would be continuously moored at Refinery Pier in Corio Bay, Geelong. The key objective of the project is to facilitate supply of a new source of gas for the south-east Australian gas market where there is a projected supply shortfall in coming years.

The FSRU would store liquefied natural gas (LNG) received from visiting LNG carriers (that would moor directly adjacent to the FSRU) and would convert LNG back into a gaseous state by heating the LNG using seawater (a process known as regasification) as required to meet industrial, commercial, and residential customer demand. A 7 kilometre pipeline would transfer the gas from the FSRU to the Victorian Transmission System (VTS) at Lara.

The project would be situated adjacent to, and on, Viva Energy's Geelong Refinery, within a heavily developed port and industrial area on the western shores of Corio Bay between the Geelong suburbs of Corio and North Shore. Co-locating the project with the existing Geelong Refinery and within the Port of Geelong offers significant opportunity to minimise potential environmental effects and utilise a number of attributes that come with the port and industrial setting.

In December 2020, the Victorian Minister for Planning determined that the project requires assessment through an EES under the *Environment Effects Act 1978* (Vic). The reasons for the decision were primarily related to the potential for significant adverse effects on the marine environment of Corio Bay and the potential for contributing to greenhouse gas emissions. Secondarily, the EES was required to assess the effects of the project on air quality, noise, land use, Aboriginal and historic heritage, native vegetation, groundwater, traffic and transport as well as visual amenity.

In January 2021 the project was also determined to require assessment and approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* ('EPBC Act') due to the potential for the project to have a significant impact on the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site (a wetland of international importance), listed threatened species and communities, and listed migratory species. The EES process is the accredited environmental assessment process for the controlled action decision under the EPBC Act in accordance with the bilateral agreement between the Commonwealth and Victorian governments.

1.1 Purpose

This historical heritage impact assessment identifies, assesses and characterises potential environmental impacts on historical heritage associated with the construction, operation and decommissioning of the project to inform the preparation of the EES required for the project.

The report identifies and recommends mitigation measures to avoid, minimise and manage potential impacts which will inform the development of an Environmental Management Framework (EMF) for the project. The mitigation measures listed in the EMF would be implemented in the approvals and management plans for the project.

1.2 Why Understanding Historical Heritage is Important

Historical archaeological sites, objects and archaeological sites represent both tangible and intangible records of human interactions within their landscape. The daily activities of people are represented in the historical and archaeological record, and these places are significant to both the people of Victoria and the Australian community and are an important part of a sense of place and national identity. As suggested by the Allen Consulting Group Pty Ltd (2005:11), heritage places "engender community involvement and networking, the stories associated with such place develop and reinforce norms".

The identification and conservation of places of historical heritage significance is an important cultural issue in Victoria. Major infrastructure projects in Victoria have the potential to have a physical and visual impact on the fabric, setting or character of heritage places, which in turn may impact on their heritage values. Cultural heritage places are protected by either State or Commonwealth heritage legislation, or a combination of both. In Victoria, all historical and archaeological places are protected primarily under the *Heritage Act 2017 (Vic)*. The *Heritage Act 2017 (Vic)* is administered by Heritage Victoria (HV) and the Heritage Council of Victoria and establishes the Victorian Heritage Register (VHR), the Victorian Heritage Inventory (VHI) and the Heritage Council of Victoria HCV). It is Heritage Victoria's key cultural heritage legislation. As per Section 1 of the *Heritage Act 2017 (Vic)*, its purpose is to re-enact with amendments the *Heritage Act 1995 (Vic)*:

a) to provide for the protection and conservation of the cultural heritage of the State;

b) to establish a Victorian Heritage Register for the registration of places and objects;

c) to establish a Heritage Inventory for the recording of archaeological sites and approved sites of archaeological value;

d) to establish a Heritage Council to perform functions in relation to cultural heritage;

e) to establish a Heritage Fund to provide for the conservation and management of cultural heritage;

f) to provide for the management of places included in the World Heritage List; and

g) to create offences and other enforcement measures to protect and conserve cultural heritage.

1.3 Project Area

The project would be located adjacent to, and on, the Geelong Refinery and Refinery Pier in the City of Greater Geelong, 75 kilometres (km) south-west of Melbourne. The project area is within a heavily developed port and industrial area on the western shores of Corio Bay between the Geelong suburbs of Corio and North Shore. The Geelong central business district is located approximately 7km south of the project.

Corio Bay is the largest internal bay in the south-west corner of Port Phillip Bay and is a sheltered, shallow basin at the western end of the Geelong Arm with an area of 43 square kilometres (km^2). The Point Wilson/Limeburners Bay section of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar site is located along the northern shoreline of Corio Bay approximately one kilometre to the north-east of the project.

The Port of Geelong has been in operation for over 150 years and is the largest industrial bulk cargo port in Victoria attracting over 600 ship visits and handling more than 14 million tonnes of product annually. Geelong's shipping channels extend 18 nautical miles through Corio Bay from Point Richards through to Refinery Pier. Ports Victoria (formerly Victorian Regional Channels Authority) manages commercial navigation in the port waters in and around Geelong and is responsible for the safe and efficient movement of shipping, and for maintaining shipping channels and navigation aids. The channels are man-made having been deepened and widened through periodic dredging to support port trade development.

Refinery Pier is the primary location within the Port of Geelong for movement of bulk liquids. Vessels up to 265 metres in length currently utilise the four berths at Refinery Pier which service Viva Energy refinery operations. The majority of ship visits to the port are to Refinery Pier, with Viva Energy accounting for over half of the trade through the Port of Geelong.

The Geelong Refinery has been operating since 1954 with both the refinery and the co-located Lyondell Basell plant being licensed Major Hazard Facilities (MHFs). A range of industrial activities are situated in the Port environs including wood fibre processing and chemical, fertiliser and cement manufacture.

To the north of the Geelong Refinery along the proposed underground pipeline corridor, the area is predominantly rural. There are several other existing Viva Energy-owned underground pipelines running between the refinery and the connection point to the South West Pipeline (SWP) at Lara. The proposed pipeline route follows already disturbed pipeline corridors, where possible, through a mix of land uses.

The project area is shown in Figure 1.

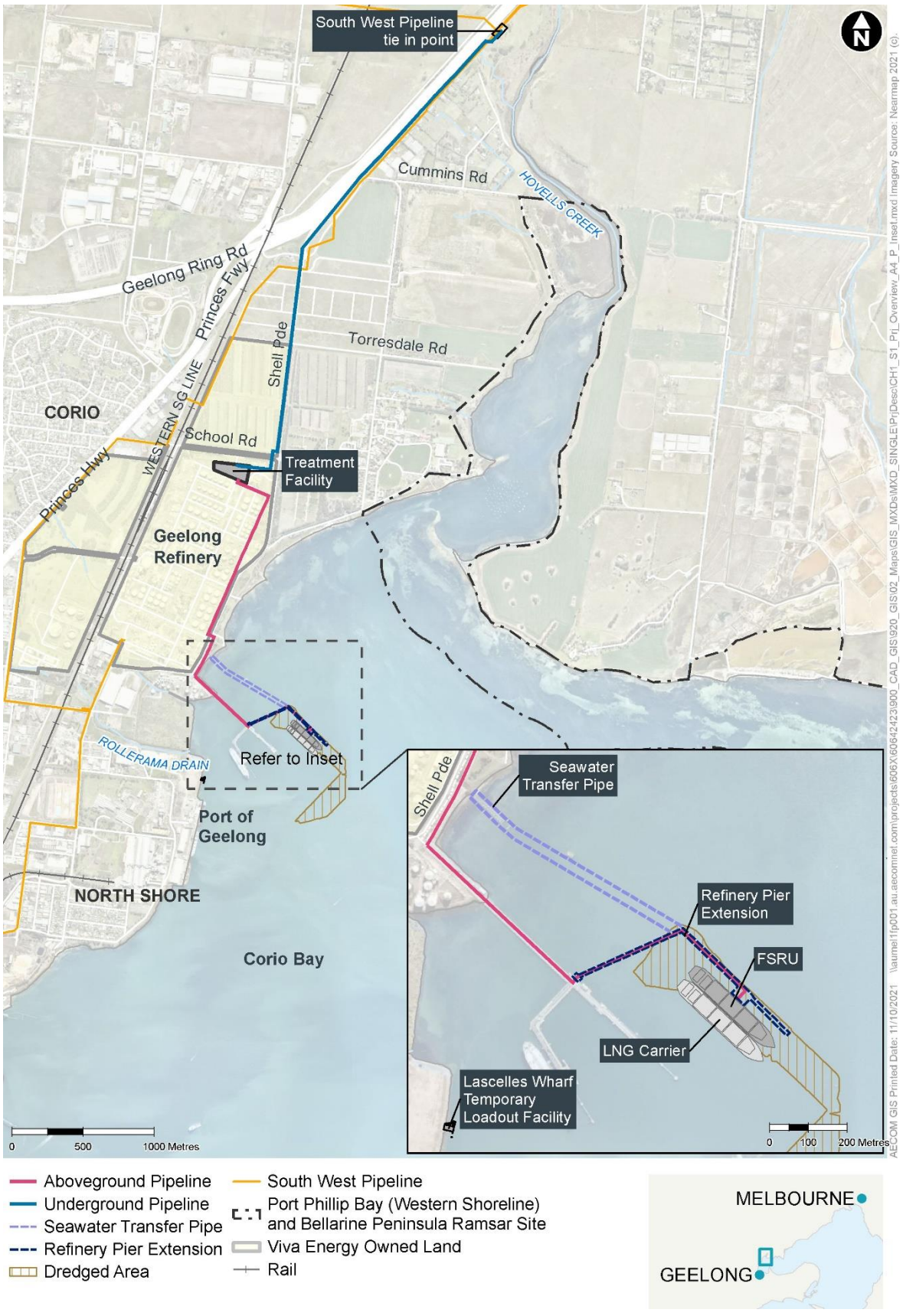

Figure 1: Project overview

1.4 Project Description

This section summarises the project as described in Chapter 4 *Project description*. Key components of the project include:

- extension of the existing Refinery Pier with an approximately 570 metre (m) long angled pier arm, new berth and ancillary pier infrastructure including high pressure gas marine loading arms (MLAs) and a transfer line connecting the seawater discharge points on the FSRU to the refinery seawater intake
- continuous mooring of an FSRU at the new Refinery Pier berth to store and convert LNG into natural gas. LNG carriers would moor alongside the FSRU and unload the LNG.
- construction and operation of approximately 3 km of aboveground gas pipeline on the pier and within the refinery site connecting the FSRU to the new treatment facility
- construction and operation of a treatment facility on refinery premises including injection of nitrogen and odorant (if required)
- construction and operation of an underground gas transmission pipeline, approximately 4km in length, connecting to the SWP at Lara.

The Refinery Pier extension would be located to the north-east of Refinery Pier No. 1. The new pier arm would be positioned to allow for sufficient clearance between an LNG carrier berthed alongside the FSRU and a vessel berthed at the existing Refinery Pier berth No. 1. Dredging of approximately 490,000 cubic metres of seabed sediment would be required to allow for the new berth pocket and swing basin.

The FSRU vessel would be up to 300m in length and 50m in breadth, with the capacity to store approximately 170 000 cubic metres (m^3) of LNG. The FSRU would receive LNG from visiting LNG carriers and store it on board in cryogenic storage tanks at about – 160 °C.

The FSRU would receive up to 140 PJ per annum (approximately 45 LNG carriers) depending on demand. The number of LNG carriers would also depend on their storage capacity, which could vary from 140,000 to 170,000 m^3.

When gas is needed, the FSRU would convert the LNG back into a gaseous state by heating the LNG using seawater (a process known as regasification). The natural gas would then be transferred through the aboveground pipeline from the FSRU to the treatment facility where odorant and nitrogen would be added, where required, to meet Victorian Transmission System (VTS) gas quality specifications. Nitrogen injection would occur when any given gas cargo needs to be adjusted (diluted) to meet local specifications. Odorant is added as a safety requirement so that the normally odourless gas can be smelt when in use. From the treatment facility, the underground section of the pipeline would transfer the natural gas to the tie-in point to the SWP at Lara.

1.4.1 Key construction activities

Construction of the project would occur over a period of up to 18 months. The key construction activities relate to:

- localised dredging of seabed sediments to enable the FSRU and LNG carriers to berth at Refinery Pier and excavation of a shallow trench for the seawater transfer pipe
- construction of a temporary loadout facility at Lascelles Wharf

- construction of the new pier arm and berthing infrastructure, and aboveground pipeline along Refinery Pier and through the refinery
- construction of the treatment facility on a laydown area at the northern boundary of the refinery site
- construction of the buried pipeline
- construction at the tie-in point to the SWP at Lara

There are no construction activities required for the FSRU component of the project. The vessel would be built, commissioned and all production and safety systems verified prior to being brought to site.

An estimated 490,000 cubic metres (m^3) of dredging would be required, over an area of approximately 12 hectares (ha), adjacent to the existing shipping channel to provide sufficient water depth at the new berth and within the swing basin for visiting LNG carriers to turn. Dredging within the new berth would be undertaken to a depth of 13.1 metres and the swing basin would be dredged to a depth of 12.7 metres. The dredging footprint is shown in Figure 1. It is proposed to deposit the dredged material within the Ports Victoria existing dredged material ground (DMG) in Port Phillip to the east of Point Wilson, approximately 26 km from Refinery Pier.

The temporary loadout facility at Lascelles Wharf would be the first construction activity to take place in order to facilitate the Refinery Pier extension. This would involve installation of 10 piles using hydraulic hammers.

Construction of the pier arm would be carried out once dredging was complete, primarily from the water using barge-mounted cranes. Steel piles would be driven into the seabed by cranes mounted on floating barges and pre-cast concrete and pre-fabricated steel components would be transported to site by barge and lifted into position. The installation of pier infrastructure such as the marine loading arms (MLAs), piping from the FSRU to the existing refinery seawater intake (SWI) and aboveground pipeline would also be undertaken from the water using barge-mounted cranes and construction support boats.

Installation of the 3 km above ground pipeline along the pier and through the refinery is anticipated to take 3.5 months to complete. The above ground pipeline would run along the pier to the existing pipe track east of Shell Parade within the pier foreshore compound. It would then pass through a road under-crossing to the existing refinery pipe track. The pipeline would then run north along the existing refinery pipe track to an existing laydown area where the treatment facility would be located.

The treatment facility would be located within an existing laydown area and cover an area of approximately 80m x 120m. Construction of the treatment facility would take approximately 18 months and would be undertaken by specialist crews across distinct phases of work. These would include initial earthworks and civil construction, mechanical installation and electrical and instrumentation works.

The 4km underground pipeline would be installed in stages over a 4 month period within a corridor which has been selected so as to avoid watercourses or other environmental sensitivities, where possible. Firstly, a construction right of way (ROW) would be established, clearly identified and fenced off where required. Typically, this would be between 15 and

20m wide, and minimised where possible to reduce disturbance. Once the construction ROW is established, vegetation would be removed, and a trench excavated to a maximum depth of 2m and a maximum width of 1m for the pipeline to be placed. Following the placement of the pipeline, the construction ROW would be rehabilitated to its pre-existing condition as far as reasonably practicable for the purposes for which it was used immediately before the construction of that part of the pipeline.

Trenchless construction (including thrust boring or horizontal directional drilling (HDD)) would be used to install the underground pipeline in areas that are not suited to open trenching techniques, such as at intersections with major roads. Trenchless construction would involve boring or drilling a hole beneath the ground surface at a shallow angle and then pushing or pulling a welded length of pipe through the hole without disturbing the surface. It is anticipated that the maximum depth of the trenchless section would be 25 m.

The anticipated trenching, HDD and thrust bore segment locations are presented in Figure 2. It is possible that along the northern section of Macgregor Court the pipeline would also be constructed using HDD and this would be confirmed during detailed design.

Construction at the tie-in point to the SWP at Lara would be undertaken by specialist crews across the distinct phases of works, as with the treatment facility.

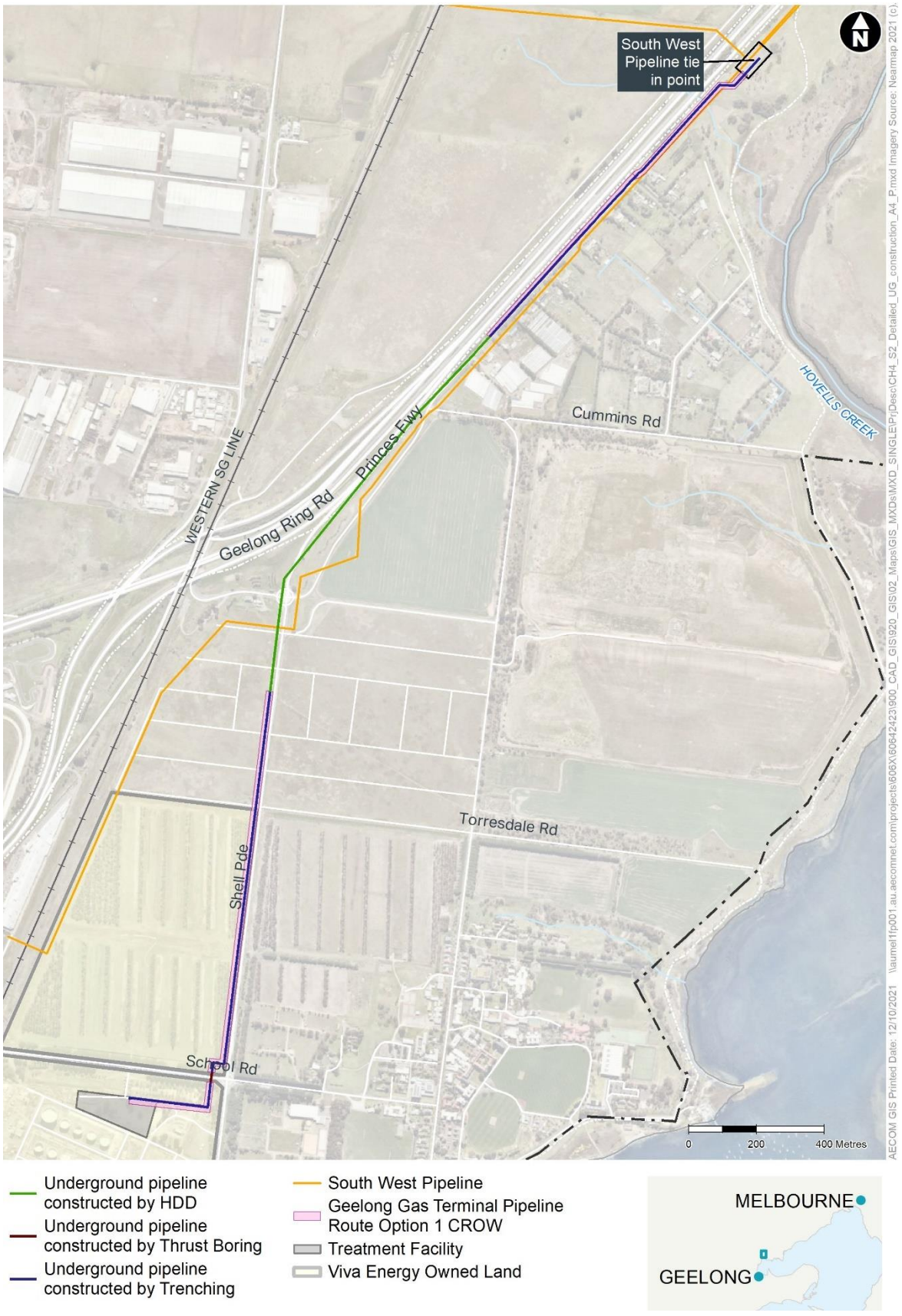

Figure 2: Proposed location of trenching construction techniques for the underground pipeline including open trenching, HDD and thrust boring

1.4.2 Key operation activities

The project is expected to be in operation for approximately 20 years. Key activities relating to project operation include:

- receipt of up to 45 LNG carriers each year at Refinery Pier – the number and frequency of LNG carriers arriving each year would depend on their storage capacity and gas demand
- regasification of LNG onboard the FSRU using seawater as a heat source, which would then be reused within the refinery as cooling water
- injection of nitrogen and odorant into the gas prior to distribution via the VTS
- monitoring and maintenance of the pipeline easement.

1.4.3 Key decommissioning activities

The FSRU, which continues to be an ocean-going vessel throughout the operation of the project, would leave Corio Bay on completion of the project life to be used elsewhere.

It is anticipated that the Refinery Pier berth and facilities would be retained for other port related uses. The underground pipeline would likely remain in situ subject to landholder agreements and either decommissioned completely or placed into care and maintenance arrangements.

Decommissioning activities may be subject to change, subject to legislative requirements at the time and potential repurposing of the infrastructure at the end of the project.

1.4.4 Project activities relevant to the assessment

The following project components are relevant to this historical heritage impact assessment:

- localised dredging of seabed sediments to enable the FSRU and LNG carriers to berth at Refinery Pier and excavation of a shallow trench for the seawater transfer piping
- construction of the temporary loadout facility at Lascelles Wharf
- construction of the new pier arm and berthing infrastructure, and aboveground pipeline along Refinery Pier and through the refinery
- construction of the treatment facility on a laydown area at the northern boundary of the refinery site
- construction of the buried pipeline
- construction at the tie-in point to the SWP at Lara
- and any other excavations which may impact sub surface or submerged historical archaeological sites or maritime heritage places

2 EES SCOPING REQUIREMENTS

The scoping requirements for the EES set out the specific environmental matters to be investigated in the EES. The scoping requirements include a set of evaluation objectives. These objectives identify the desired outcomes to be achieved in managing the potential impacts of constructing and operating the Project.

The following evaluation objective is relevant to the historical heritage impact assessment:

- **Cultural heritage:** To avoid or minimise adverse effects on Aboriginal and historic cultural heritage.

The scoping requirements of relevance to this historical heritage impact assessment (and the related Aboriginal heritage impact assessment, Technical Report O) and where they are addressed in the report are shown in Table 1.

Table 1: Scoping requirements relevant to historical heritage

Aspect	Scoping requirement	Section addressed
Key issues	Potential for adverse effects on Aboriginal and historic (including underwater cultural heritage and archaeology and underwater Aboriginal cultural heritage) cultural heritage values.	Section 6, Section 7 and Section 8 Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Potential for permanent loss of significant heritage values.	Section 6, Section 7 and Section 8
Existing environment	Review land use history, previous studies and registers to identify areas prospective for Aboriginal and historical cultural heritage values.	Section 5.1 Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Identify Aboriginal cultural heritage sites and values (including intangible cultural heritage values) that could be affected by the project, in consultation with the Registered Aboriginal Party (Wadawurrung Traditional Owners Aboriginal Corporation).	Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Identify areas of Aboriginal cultural heritage sensitivity relevant to the project, including consideration of submerged Aboriginal cultural heritage within Corio Bay.	Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Investigate the condition and sensitivity of identified sites and precincts.	Section 5 Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Document known and previously unidentified places and sites of historic cultural heritage significance within and adjoining the project area, in accordance with Heritage Victoria guidelines.	Section 5.3

Aspect	Scoping requirement	Section addressed
Likely effects	Assess potential effects on Aboriginal cultural heritage resulting from the project and alternatives	Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Assess the potential effects on sites and places of historic and cultural heritage significance, having regard to Heritage Victoria guidelines	Section 6, Section 7 and Section 8
Mitigation measures	Describe and evaluate potential and proposed design and construction mitigation methods to address effects on Aboriginal and historic cultural heritage.	Section 9 Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
Performance criteria	Identify further methods proposed to manage risks of effects on Aboriginal and historic cultural heritage values as part of the EMF	Section 9 Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Prepare a cultural heritage management plan (CHMP).	Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*
	Outline and evaluate proposed additional measures to manage risks of effects on sites and places of Aboriginal cultural heritage significance, within the framework of a CHMP, and on sites and places of historic cultural heritage significance, as part of the EMF.	Refer to Technical Report O: *Aboriginal cultural heritage impact assessment*

3 LEGISLATION, POLICY AND GUIDELINES

The key legislation, policy and guidance documents relevant to historical heritage are summarised in Table 2.

Table 2: Key legislation and policy – historical heritage

Legislation/policy	Relevance to historical heritage impact assessment
Commonwealth	
Environmental Protection and Biodiversity Conservation Act 1999 (Cth) ('EPBC Act')	The Commonwealth Minister for Environment determined that the project is a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
World Heritage List National Heritage List Commonwealth Heritage List	Determine whether the project intersects with any listed heritage places of outstanding heritage significance to Australia protected under the EPBC Act.
Underwater Cultural Heritage Act 2018 (Cth) ('UCH Act')	Provides protection for underwater cultural heritage and determines whether the project intersects with any historical shipwrecks or aircraft wrecks.
State	
Pipelines Act 2005 (Vic)	The project requires a Pipeline Licence(s)under the *Pipelines Act 2005 (Vic)* for the construction and operation of the pipeline. The Victorian Minister for Energy, Environment and Climate Change must consider proposed impacts on cultural and Indigenous heritage when considering a Pipeline Licence application
Heritage Act 2017 (Vic)	Determines whether the project intersects with any listed or potential heritage places of heritage significance to the State of Victoria.
Planning and Environment Act 1987 (Vic)	Determines whether the project intersects with heritage places of local significance listed on Heritage Overlays or the Victorian Heritage Register.
Planning schemes and Heritage Overlays (HO)	

3.1 Legislation

3.1.1 Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* ('EPBC Act') details provisions for the protection of Aboriginal and non-Aboriginal cultural heritage places with national heritage value. Places protected under the Act are registered on the National Heritage List, Commonwealth Heritage List or the World Heritage List and include natural, historical and Aboriginal places of outstanding heritage value.

National Heritage List

The National Heritage List is administered by the Australian Government's Department of the Environment. It includes natural, historical and Aboriginal places of outstanding heritage significance to Australia. Places on the list are protected under the EPBC Act, which requires that approval be obtained before any action takes place that could have a significant impact

on the national heritage values of a listed place. The project has been referred under the EPBC Act.

Underwater Cultural Heritage Act 2018 (Cth)

The *Underwater Cultural Heritage Act 2018 (Cth)* ('UCH Act') came into effect on 1 July 2019, replacing the *Historic Shipwrecks Act 1976 (Cth)*. The new UCH Act continues to provide protection for historic shipwrecks in Australian waters, expands protection to historic aircraft wrecks within Commonwealth waters, and establishes a register of underwater cultural heritage. Under Part 2, Division 1, Subsection 16, the following articles of underwater cultural heritage are automatically protected:

a) all remains of vessels that have been in Australian waters for at least 75 years;

b) every article that is associated with a vessel, or the remains of a vessel, and that has been in Australian waters for at least 75 years;

c) all remains of aircraft that have been in Commonwealth waters for at least 75 years;

d) every article that is associated with an aircraft, or the remains of an aircraft, and that has been in Commonwealth waters for at least 75 years.

As of 2020, vessels wrecked before 1945, and their associated articles, are automatically protected under the UCH Act. Aircraft are also automatically protected if they are located in Commonwealth waters which start 3 nm from the coast.

Under Part 2, Division 1, Subsection 17 of the UCH Act, shipwrecks, aircraft wrecks and their associated articles, that do not meet the criteria for automatic protection may be granted protection by the Minister.

Furthermore, the Minister may declare other kinds of 'articles' of underwater cultural heritage protected (Subsection 19) if the Minister is satisfied that they may be of heritage significance. Such 'articles' could be interpreted to include submerged terrestrial sites, historic cables and pipelines, or dumped material.

Under the UCH Act, (Subsection 30) it is an offence to directly or indirectly physically disturb or otherwise damage protected underwater cultural heritage or cause the removal of protected underwater cultural heritage from waters or its archaeological context. Part 3, Division 2, Subsections 29 – 40 outline further offences under the UCH Act.

Under Part 3, Division 1, Subsection 23, a person may apply to the Minister for a permit authorising the person, or persons specified in the permit to engage in specified conduct relating to the protected underwater cultural heritage. Such activities would include archaeological excavation and could include removal of the underwater cultural heritage with the implementation of acceptable mitigation.

Under subsection 20 of the UCH Act, the Minister may, by legislative instrument, declare an area containing protected underwater cultural heritage to be a protected zone. Specific conduct within a protected zone may be prohibited.

Engaging in prohibited conduct within a protected zone without a permit, or adversely affecting protected underwater cultural heritage outside of a protected zone, is subject to criminal and civil penalties, including imprisonment.

3.1.2 State legislation

Pipelines Act 2005 (Vic)

The *Pipelines Act 2005 (Vic)* is the primary Act governing the construction and operation of pipelines in Victoria. The *Pipelines Act 2005 (Vic)* covers 'high transmission' pipelines for the conveyance of gas, oil and other substances. DELWP and Energy Safe Victoria are responsible for administering the *Pipelines Act 2005 (Vic)* and the *Pipelines Regulations 2017*.

S49(b) of the *Pipelines Act 2005 (Vic)* states: "In determining an application for a licence, the Minister must consider the following: (b) the potential impact of the proposed pipeline on cultural heritage (including Indigenous cultural heritage)".

Heritage Act 2017 (Vic)

The *Heritage Act 2017 (Vic),* administered by HV, regulates the protection and conservation of places and objects of cultural heritage significance in the state of Victoria. The *Heritage Act 2017* establishes the Heritage Council of Victoria (HCV) and also provides for the registration of such places and objects through two registers: the Victorian Heritage Register (VHR), which is a list of places and objects of cultural heritage significance to the State, as determined by the VHC; and the Victorian Heritage Inventory (VHI), which is a list of all known historical archaeological sites in the State. The *Heritage Act 2017 (Vic)* provides a useful description of what heritage places can encompass, including buildings, gardens, trees, shipwrecks, archaeological sites, precincts, sites and associated land. Monuments and memorials can also be considered whether as heritage places (or as part of a heritage place) or as objects.

The *Heritage Regulations 2017* and the *Heritage (Underwater Cultural Heritage) Regulations 2018* set out the requirements for the operation of the *Heritage Act 2017 (Vic)*.

Under Part 5 of the *Heritage Act 2017 (Vic)*, approvals are required for all VHR places where subdivision or physical works are proposed. Under Part 6 of the *Heritage Act 2017 (Vic)*, consent must be sought from the Executive Director of HV prior to any disturbance of a VHI listed site, and may be applied for under either a 'consent to excavate' (for the purposes of archaeological testing), 'consent to damage' (for disturbance, impact or removal), 'consent to uncover' or a 'consent for all other works'.

All known shipwreck sites 75 years or older are listed on the VHR. In addition, all shipwreck sites 75 years or older are protected by the *Heritage Act 2017 (Vic)* whether they have been found or not and require a Permit to be issued by HV if impacts are proposed.

Under Part 4, Division 2, Section 74 (1) of the *Heritage Act 2017 (Vic)* it is a criminal offence to, without lawful authority, knowingly or recklessly

a) take, destroy, damage, remove, disturb or otherwise interfere with any registered shipwreck, historic shipwreck, registered shipwreck artefact or historic shipwreck artefact; or

b) dispose of a registered shipwreck, historic shipwreck, registered shipwreck artefact or historic shipwreck artefact.

Under Part 6, Division 2, Section 123 (1) of the *Heritage Act 2017 (Vic)* it is a criminal offence to knowingly or negligently (without a consent issued) deface, damage or otherwise interfere with, or carry out an act, likely to endanger either:

a) a site recorded in the Heritage Inventory; or

b) an archaeological site which is not recorded in the Heritage Inventory

Section 5.2 of the current assessment includes all historical archaeological sites relevant to the project. The *Heritage Act 2017 (Vic)* replaced the *Heritage Act 1995 (Vic)*, which established a legislative framework for heritage protection in Victoria, which in turn replaced the *Historic Buildings Act 1981 (Vic)*, *the Historic Shipwrecks Act 1981 (Vic)* and the *Archaeological and Aboriginal Relics Preservation Act 1971 (Vic)* (partial).

Planning and Environment Act 1987 (Vic)

The *Planning and Environment Act 1987 (Vic)* establishes the framework for planning the use, development and protection of land in Victoria in the present and long-term interests of the people of Victoria. For all municipalities in Victoria, the requirements for land-use, development and protection are covered by land-use planning controls prepared and administered by the Victorian Government and councils through planning schemes. Planning schemes under the *Planning and Environment Act 1987 (Vic)* require planning approval for any works in the Heritage Overlays (HO) and Environmental Significance Overlays (ESO Schedule 2). Heritage places in the HOs can include a range of typologies, including buildings, structures, gardens, landscapes and trees, as well as monuments and memorials.

Planning Schemes and HOs

Under *Planning and Environment Act 1987 (Vic)*, municipal councils are required to maintain a register of places of recognised local significance, which are listed for protection in respective planning schemes by HOs. The planning schemes contain standard provisions that are directed at conserving and enhancing places of natural and cultural heritage significance, including historical archaeological sites. HOs are mapped to show the location and extent of heritage controls over heritage places. HOs control works that may include subdivision, demolition, external alterations and additions. As applicable, these controls are identified in the schedule to the HO.

There are two types of HO control, i.e. 'Site-specific HOs' relating to individually significant heritage places, which may be located within or outside heritage precincts and 'Precinct-based HOs', which can extend over larger areas and include multiple individual properties.

Places identified on a HO are not exclusively of local significance, however, and may also include places of a higher level of significance, including those listed on the Victorian Heritage Register (VHR) under the *Heritage Act 2017 (Vic)*. In instances in which items listed

on the schedule of a HO are also listed on the VHR, these places are subject to the requirements of the *Heritage Act 2017 (Vic)*, and not the heritage overlay provisions of the relevant planning scheme. It is noted that HV is the responsible authority for VHR places, with referral requirements to local councils.

3.2 Policy

3.2.1 Commonwealth policy

No Commonwealth policies are relevant to this report.

3.2.2 State policy

State Planning Policy Framework

The State Planning Policy Framework (SPPF) forms part of all Victorian planning schemes and informs planning and responsible authorities of the State's objectives for planning in Victoria. The SPPF falls under the Victoria Planning Provisions, a statutory device developed to ensure that consistent provisions for various matters are maintained across Victoria.

Under Clause 15 (Built Environment and Heritage) of the SPPF, planning provisions should ensure all new land use and development appropriately responds to its landscape, valued built form and cultural context, and protect places and sites with significant heritage, architectural, aesthetic, scientific and cultural value. Heritage conservation is addressed in Clause 15.03-1S, which establishes the following overarching objectives:

- Identify, assess and document places of natural and cultural heritage significance as a basis for their inclusion in the planning scheme;
- Provide for the protection of natural heritage sites and man-made resources;
- Provide for the conservation and enhancement of those places that are of aesthetic, archaeological, architectural, cultural, scientific or social significance;
- Encourage appropriate development that respects places with identified heritage values;
- Retain those elements that contribute to the importance of the heritage place;
- Encourage the conservation and restoration of contributory elements of a heritage place;
- Ensure an appropriate setting and context for heritage places is maintained or enhanced;
- Support adaptive reuse of heritage buildings where their use has become redundant; and
- Consider whether it is appropriate to require the restoration or reconstruction of a heritage building in a Heritage Overlay that has been unlawfully or unintentionally

demolished in order to retain or interpret the cultural heritage significance of the building, streetscape or area.

3.2.3 Local policy

Local Planning Policy Framework

Under Clause 23 of the State Planning Policy Framework, Local Planning Policies for historical heritage are generally considered when determining a planning application associated with a Heritage Overlay. Within the Local Planning Policy Framework, specific local policies can address issues of full or partial demolition of heritage buildings and places, alterations and additions to heritage buildings and places, and provide guidance on sympathetic outcomes. In some cases, the Local Planning Policy Framework will identify relevant documentation that must be considered when assessing a planning application under the Heritage Overlay. Typically, these include place specific citations and can also include building or place 'gradings'. *The Planning Practice Note Applying the Heritage Overlay* (July 2015) identifies that appropriate thresholds are those of State Significance and Local Significance for place grading. In practice, many municipalities do continue to distinguish between places of local significance that are 'contributory' and those that are considered to be 'significant' or 'individually significant'.

3.3 Guidelines

3.3.1 Commonwealth guidelines

The Burra Charter

The International Council on Monuments and Sites (ICOMOS) Burra Charter, 2013 (Burra Charter) is an international industry standard which is frequently referenced as a guide to best practice management of cultural heritage places in both Australia and abroad. The Burra Charter and its accompanying guidelines define the basic principles, processes and practices upon which statutory assessments of heritage significance in Australia are based. In Victoria, it is recognised by HV as a guiding principle of heritage management and conservation.

UNESCO 2001 Convention of the Protection of the Underwater Cultural Heritage

Whilst the UNESCO 2001 Convention of the Protection of the Underwater Cultural Heritage has not been ratified by the Commonwealth, the Convention sets out basic principles for the protection of underwater heritage and Annex A of the Convention provides widely recognised rules for the treatment and research of undertaker cultural heritage which are considered to represent best practice.

3.3.2 State guidelines

Conservation Management Plans

Conservation management plans are generally prepared for heritage places included on the VHR and follow a standard format that is endorsed by HV. A Conservation management plans establishes the nature of heritage significance and are intended to provide guidance and

reference tools to proponents for undertaking development activities for listed heritage places.

Guidelines for Conducting Historical Archaeological Surveys

The Guidelines for Conducting Historical Archaeological Surveys provides advice and guidance on the recording of historical archaeological sites.

Guidelines for Investigating Historical Archaeological Artefacts and Sites

The Guidelines for Investigating Historical Archaeological Artefacts and Sites provides advice and guidance on the investigation of historical archaeological sites when there is a proposal to impact a historical archaeological site.

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4 METHODOLOGY

This section describes how the historical heritage assessment was conducted in order to understand the existing environment and potential impacts of the project on historical heritage. The following sections outline the study methodology.

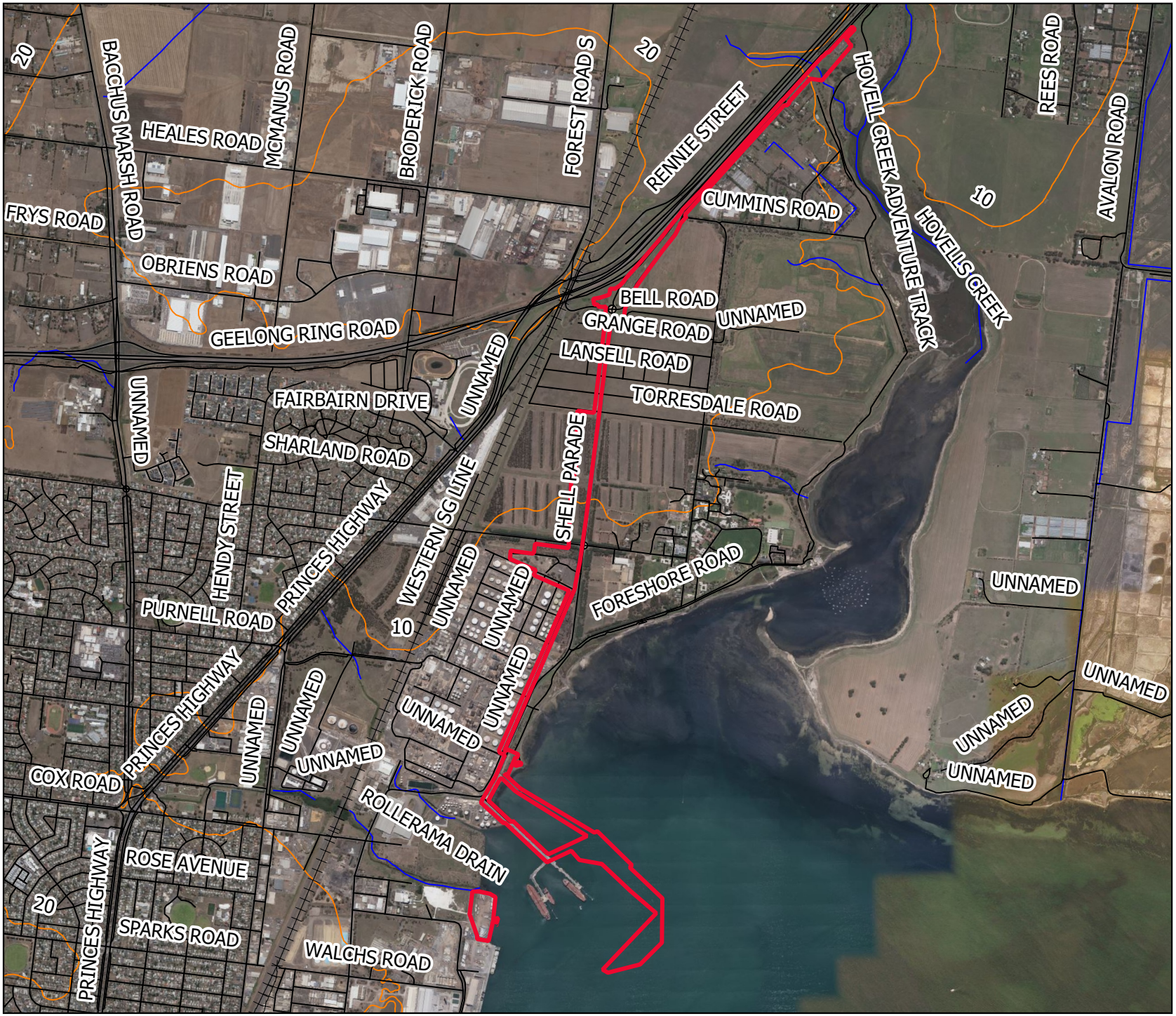
4.1 Existing Conditions Assessment Method

4.1.1 Study Area ('Activity Area')

The study area (hereafter referred to as the 'activity area') is approximately 41.7ha in size and comprises the onshore and offshore components of the project area. The onshore component of the activity area comprises approximately 5.5km of generally linear land onshore in Corio and Lara, Victoria (Greater Geelong City Council), extending between Refinery Pier, Corio, and Lara City Gate pipeline station, Lara (Map 1). The offshore component comprises approximately 1km of the existing pier and proposed new pier arm, proposed berth and turning basin dredged area, the proposed continuously moored FSRU and the proposed seawater transfer pipe from the FSRU to the existing refinery SWI (Map 1). This report has assessed the impacts within this area.

If alternative options for infrastructure or new sections of land are added to the project in the future, these will be subject to the same level of rigorous desktop assessment as undertaken for this impact assessment.

Map 1: Location and Extent of the Activity Area



Legend

- Activity Area
- Road
- Rail
- Watercourse
- Contour

N

0 500 1,000 m

Map 1: Location and Extent of Activity Area (Greater Geelong City Council)

4.1.2 Desktop Assessment

The desktop assessment aimed to identify the known historical and archaeological context of the activity area and within 2km of the activity area.

4.1.2.1 Land Use History

An examination of the land use history of the activity area following European occupation of the region was prepared to develop an understanding of historical land use and occupation patterns within the activity area. The land use history provides information regarding the presence of possible unknown historical archaeological sites and/or maritime heritage places and archaeological material within the activity area.

4.1.2.2 Maritime History

An examination of the maritime history of the offshore component of the activity area following European occupation of the region was prepared to develop an understanding of historical maritime activities within the offshore component of the activity area. The maritime history provides information regarding the presence of possible unknown historical archaeological sites and/or maritime heritage places and archaeological material within the activity area.

4.1.2.3 Heritage Register Searches

A review of the relevant registers is necessary to identify previously registered historical archaeological sites within the activity area and the broader geographic region and to assist in developing a predicative statement regarding the most likely site types and locations that may be present within the activity area.

The following registers were examined:

- National Heritage List (Commonwealth)
- Commonwealth Heritage List (Commonwealth)
- Australasian Underwater Cultural Heritage Database (AUCHD) (Commonwealth)
- Victorian Heritage Register (VHR) (Heritage Victoria)
- Victorian Heritage Inventory (VHI) (Heritage Victoria)
- Heritage Overlay (HO) (Greater Geelong City Council)

The relevant registers were searched on 13 March 2021.

4.1.2.4 Review of Previous Archaeological Reports

A number of previous regional and localised archaeological investigations have been undertaken within the region surrounding the activity area. A review of the most relevant reports was undertaken to provide information regarding previous archaeological investigations within the activity area and within 1km of the onshore component of the activity area and 2km of the offshore component of the activity area to characterise the

likely historical archaeological sites or maritime heritage places that may be present within the activity area.

4.2 Risk assessment method

A risk-based screening approach has been used for the EES assessment in accordance with the requirements outlined in the 'Ministerial guidelines for assessment of Environmental Effects under the Environment Effects Act 1978' (page 14). The risk screening is undertaken to ensure that the level of investigation conducted in each technical study is adequate to inform an assessment of the significance and acceptability of the project's potential environmental impacts.

An environmental, social and economic issues risk screening tool has been used to prioritise and focus the proposed investigations, assessments and approaches to avoiding, minimising or managing potential impacts. The issue screening process involved an evaluation of the potential environmental, social and economic issues associated with the project based on the information collected through a series of initial assessments undertaken into the potential effects of the project.

A risk workshop convened by a qualified risk practitioner and comprising technical specialists from the proponent, project design team and EES team conducted the initial risk screening. The risk screening process utilised knowledge of the project infrastructure and design, existing environment and land use setting to assess potential risks based on the specialised knowledge of the technical experts.

The purpose of the issues screening approach was to assist in identifying:

- Significant issues, uncertainties and/or potential impacts that require more detailed characterisation and/or assessment within the EES
- Matters or potential impacts considered to be already well understood or less significant.

A high, medium, or low screening value was assigned to potential issues to determine the level of assessment required to identify and investigate impacts.

Each potential issue was given a score (1, 2 or 3) against the categories of:

- Community and stakeholder interest
- Significance of assets, values and uses
- Potential impact (spatial, temporal and severity).

The scores were added together, or the highest score across the three contributing categories is used, to give a 'screening value' of high, medium or low, which gives an indication of the level of assessment that is required. Issues that were assigned a screening value of high or medium required detailed assessment in the EES at a level commensurate with them being considered primary level issues.

Issues that were assigned a screening value of low were proposed to be documented and managed with some investigation and assessment in the EES at a level commensurate with them being considered secondary level issues.

4.2.1 Criteria and consequence ratings

Risks, issues, and potential impact pathways were identified for both construction and operation of the project. Table 3 defines the criteria and consequence ratings for each of the three categories that have been used to inform the issues screening. The sum of the scores against each of the three categories gives the 'screening value'.

Table 3: Issues screening criteria and consequence ratings

Rating	Community and stakeholder interest	Significance of assets, values and uses	Potential impact (spatial, temporal and severity)
1	Low interest and perceived impact	Locally significant asset, value or use	Potential for localised, temporary impact
2	Some interest and targeted perceived impacts	Regionally significant asset, value or use	Potential for significant temporary, or localised permanent impact
3	Broad community and stakeholder interest or impacts	State or nationally significant asset, value or use	Potential for significant permanent impact

The screening values are then used to determine the level of assessment required as shown in Table 4.

Table 4: Issue investigation categories

Screening score	Screening value	Potential consequences	Complexity of mitigation	Level of assessment
7, 8 or 9 or the highest rating across any one of the three contributing categories is 3	High	Potential for elevated, longer term impacts, significant assets or values may be affected with enduring changes. Considers both impacts and benefits, or Issue may not be well defined and insufficient information is available for the impact assessment, or High level of community interest.	Stringent management measures may be required	Detailed assessment required
4, 5 or 6 or the highest rating across any one of the three contributing categories is 2	Medium	Potential for moderate level impacts, significant assets or values may be affected over an extended time frame with some resultant changes. Considers both impacts and benefits, or Issue may be moderately understood, and some information is available, however more is required for the impact assessment, or Medium level of community interest.	Standard management measures are available that can be adopted with some modification	Moderate assessment required
3 or the highest rating across any one of the three contributing categories is 1	Low	Potential for short term and localised impact. Asset or values may be temporarily affected but recovery expected, or Issue is well understood and there is enough information available for the impact assessment, or Low level of community interest.	Standard management measures are available.	Some assessment required

Further information about the risk screening process is detailed in Chapter 7 *Assessment framework*.

Outcomes from the risk screening process are outlined in Section 4.2.2 below.

4.2.2 Risk screening results

Table 5 provides the key potential issues related to changes in historic heritage identified as part of the risk screening process for the project and presents the screening value for each issue.

Table 5 Historic heritage issues screening results

Aspect	Issue	Community & stakeholder perceived impacts	Significance of assets, values & uses	Potential impact (spatial, temporal & severity)	Screening Score	Screening Value
Construction						
Historic cultural heritage	Potential impact on known heritage values from construction activities	1	1	1	3	Low
Historic cultural heritage	Potential impact on unknown or previously unrecorded heritage values from construction activities	1	1	2	4	Medium
Operation						
Historic cultural heritage	Potential impacts on **unknown** or previously unrecorded heritage values during operation	1	1	1	3	Low

4.3 Impact Assessment Method

4.3.1 Impact Assessment - Construction

The study has assessed the potential impact to historical heritage during construction of the project on the assets and values to be managed and protected. There are no known historical archaeological sites or maritime heritage places registered on the VHR or the VHI within the activity area. The impacts may occur to previously unregistered historical archaeological sites or maritime heritage places during ground disturbing works associated with the construction phase of the project. A desktop study was the principle method utilised for the current assessment, which aimed to identify the known and unknown historical and archaeological context of the activity area and the surrounding geographic region and known and unknown heritage places, objects and archaeological sites. An analysis of the land use history of the activity area of the European occupation phase of the region was used to establish the presence of potential (unknown) historical archaeological sites or maritime heritage places

4.3.2 Impact Assessment – Operation

It is highly unlikely that historical archaeological sites or maritime heritage places will be adversely impacted during the operation phase of the project, as any potential impacts will occur during ground disturbing works undertaken as part of the construction phase of the project.

4.3.3 Impact Assessment – Decommissioning

It is highly unlikely that historical archaeological sites or maritime heritage places will be adversely impacted during the decommissioning phase of the project, as any potential impacts will occur during ground disturbing works undertaken as part of the construction phase of the project.

4.4 Stakeholder and Community Engagement

Stakeholders and the community were consulted to support the preparation of the project's EES and to inform the development of the project and understanding of its potential impacts.

An extensive engagement and consultation program was undertaken to ensure that the community and interested stakeholders were informed, involved and able to actively contribute to the development of the project and preparation of the EES. No specific issues related to historic heritage were raised by stakeholders and the community.

In accordance with the scoping requirements, a Technical Reference Group (TRG) was convened and chaired by DELWP on behalf of the Minister for Planning. The TRG has provided input throughout the EES process. EES Chapter 6 *Stakeholder and community engagement* provides a summary of the project's key engagement activities.

4.5 Limitations and Assumptions

This historical heritage assessment comprised an investigation of the values and management requirements of historical and archaeological sites in the activity area and surrounds which could be affected by the project. This assessment included a review of existing literature and accordingly, provides recommendations on the basis of these previous assessments. The approach of this assessment has been to review the significance of known historical heritage sites documented in such investigations and provide consistent management recommendations accordingly. No archaeological fieldwork such as visual inspections or surveys were undertaken for this historical heritage assessment.

This historical heritage assessment does not address Aboriginal cultural heritage, which is the subject of a separate assessment (Technical Report O – *Aboriginal cultural heritage impact assessment* and Aboriginal Cultural Heritage Management Plan (CHMP #17816, in prep.). The term 'historical cultural heritage' or 'historical heritage' (the two are used interchangeably) is understood in this report to mean places and objects that are of aesthetic, archaeological, architectural, cultural, scientific or social significance. It does not include places or objects that are of significance only on the grounds of their association with Aboriginal tradition or values specifically. Notwithstanding, it is accepted that 'historical heritage' does not intentionally omit Aboriginal heritage and recognises the interactions of Aboriginal peoples during this phase of Australian history.

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5 EXISTING CONDITIONS

The existing conditions of the assets, values and uses being considered throughout this assessment are described in the following sections. The historical heritage assessment has been undertaken in relation to the project area (the 'activity area'). To obtain an appreciation of regional historical context, searches of historical heritage registers and desktop reviews were undertaken for 2km surrounding the project area (i.e., the activity area). This historical heritage impact assessment primarily considers the impacts associated with the proposed construction works in the activity area that may impact historical archaeological sites or maritime heritage places, as well as assessing the potential to intercept subsurface archaeological deposits (if present). Maps 2 and 3 indicate the activity area and the 2km buffer area.

5.1 Land Use History

In 1824, Hume and Hovell left Appin in New South Wales on an expedition to discover new grazing and pastoral land. Upon reaching in present-day Geelong, their expedition party observed the exceptional landscape and determined that the area would be suitable for European settlement. Hume and Hovell's expedition and discovery of prime pastoral land put in motion events that lead to the signing of the Batman Treaty in 1935 by John Batman and the Wurundjeri traditional owners in Melbourne. That same year, Europeans began to permanently settle along the Yarra River and soon after, pastoralists and graziers and settlements began to spread further around Port Phillip Bay (SLV 2021).

The first European settlers to the Geelong area were Tasmanian pastoralists, who arrived with the intention to depasture their sheep in the 1830s and 1840s, and subsequently established large pastoral runs. The first pastoralist to arrive in the region was John Cowie, an associate of John Batman, who arrived at Cowies Creek in March of 1836 (Victorian Places 2015a). According to Spreadborough and Anderson (1983), the Geelong area was part of the 'Settled Districts' and as such, there is no evidence suggesting that the southern part of the activity area initially formed part of a larger pastoral or squatting run (Spreadborough and Anderson 1983: 257).

The northern part of the activity area, however, lay within the 'Woornyalook Parish/Duck Ponds/Sheep Walk' pastoral run, a 22.5 square mile run selected by Thomas Bates in 1838 before being passed to J.E. and H.A. Bates in 1840 and A. and E. Bates for Executors of the late M. Bates in 1852 (Spreadborough and Anderson 1983: 271; Figure 3). Geelong was formally surveyed in 1839, at which time land sales began to take place.

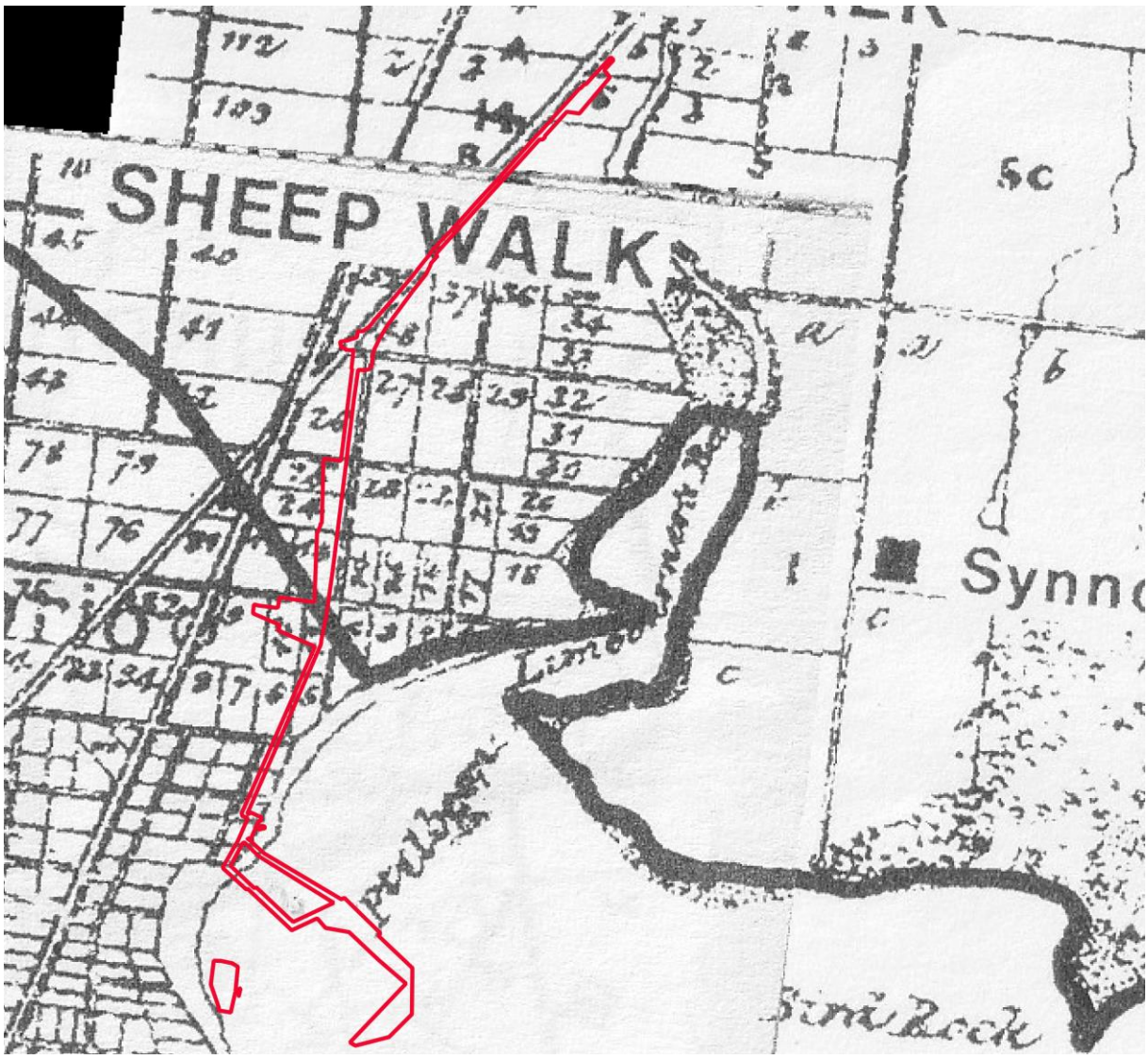


Figure 3: Pastoral runs of the Settled District (Spreadborough and Anderson 1983). General location of the activity area shown in red.

A parish map of the County of Grant dated 1880 indicates that the onshore portion of the activity area extended across two Parish's, namely the Parish of Moranghurk to the north, and the Parish of Moorpanyal to the south (Figures 4 and 5).

Cowrie and Bate were followed by a number of other well known pastoralists, including Robert Muirhead at North Geelong (1858), David Coghill at North Geelong (1860), George Fairbain at Lara (1880) and James Austin at Avalon (c.1896) (Victorian Places 2015a). A parish map of Moorpanyal dated 1854 highlights the land slated to become the Western SG Railway Line (Figure 5), which at that time was yet to be completed: the railway line between Werribee and Geelong did not open until 25 June 1857 (VicSig 2021). The township of Lara, to the northern extent of the activity area, was established on Hovells Creek as part of the construction of the railway line in 1857 (Victorian Places 2015a).

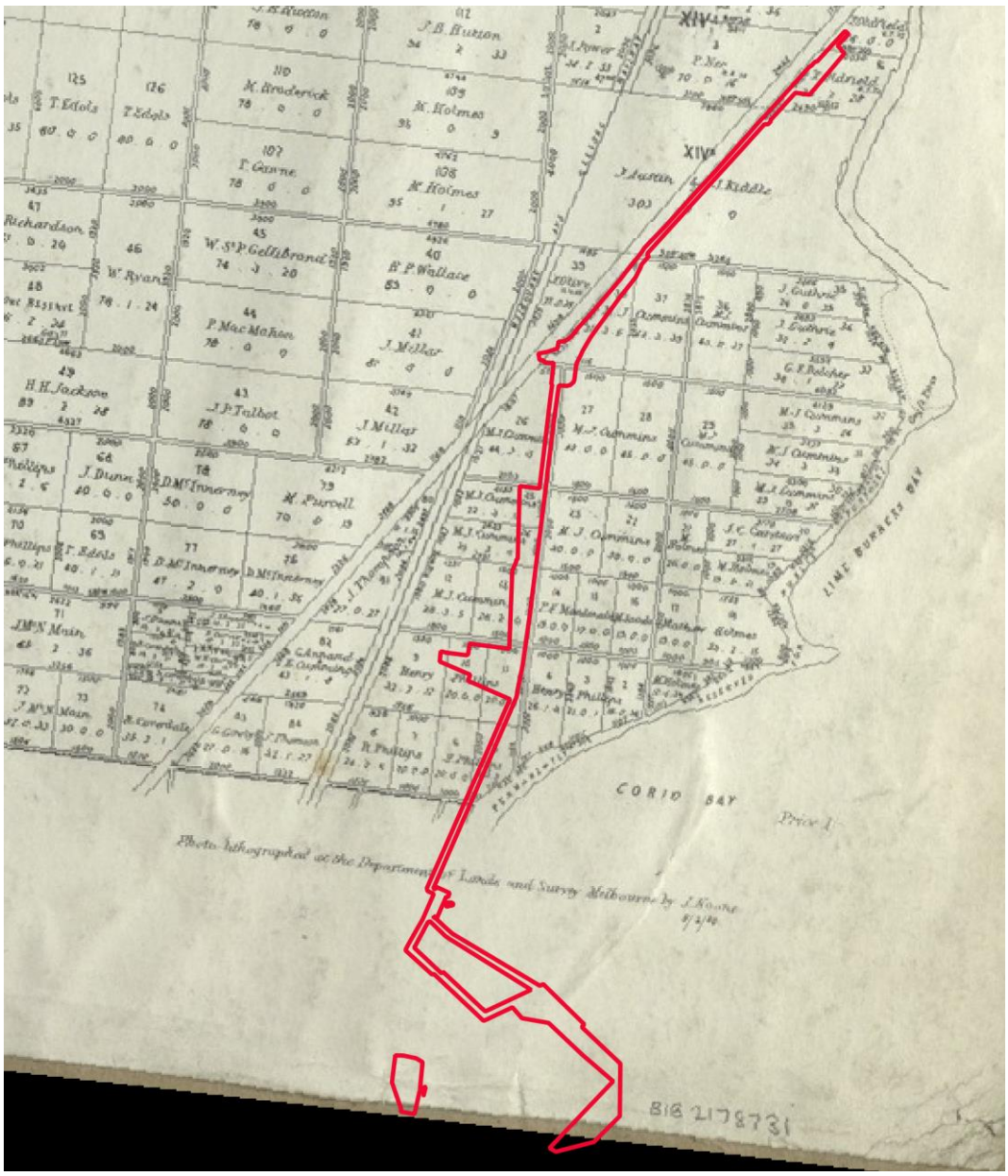


Figure 4: Moranghurk, County of Grant (Noone 1880). General location of the activity area shown in red.

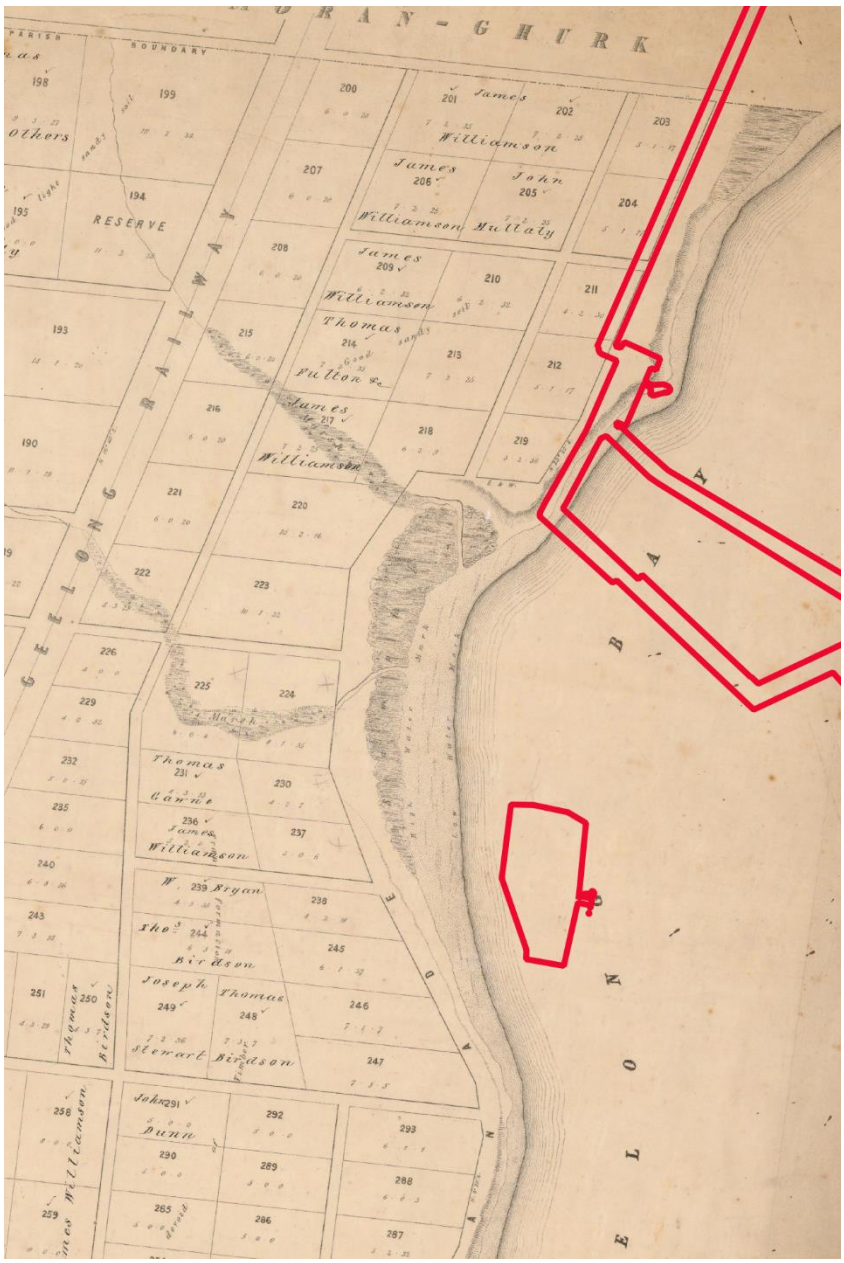


Figure 5: Allotments in the Parish of Moorpanyal, County of Grant (Weston 1854). General location of the activity area shown in red.

From 1864 to 1993 the region formed part of Corio Shire which was initially dominated by agricultural and pastoral pursuits, however; the proximity of the shire to Geelong and the establishment of the railway line led to the region becoming an industrial hub by the early 20th century. A variety of industries were established around the railway line and Corio Bay wharves, such as the Corio meat-freezing works (1909), a woollen mill in North Geelong (1925), the large Ford Motor works (1926), fertilizer and phosphate factories (1923, 1925), a distillery (1928) and the International Harvester factory (1939). In the postwar years most of these industries expanded, the Corio quay grew and the Shell oil refinery, in which the southernmost onshore part of the activity area is located, began operation in 1954 (Victorian Places 2015a).

Lara township was originally known as Duck Ponds, although an 1853 map marks the town as 'Lara'. The railway station at Lara was known as Duck Ponds, and the first school, opening

in 1866, was named Lara Lake. Hovells Creek was so named in 1872 and two years later the village became known once again as Lara. Two nearby villages, Cheddar and Swindham, have been subsumed into Lara. By the early 20th century the township boasted two State schools, several churches, a hotel and shire hall, and was surrounded by extensive grazing properties, dairy farms and agricultural land (Victorian Places 2015c).

In 1949 Shell Australia announced its intention to build a refinery at Corio. By 1952, plans were underway to construct prefabricated housing on 60 acres of land close to the refinery site, and Shell Geelong Refinery opened in 1954 (Viva Energy 2021). During the late 1950s the Housing Commission built the first of its Corio estates. Within about 20 years the Commission built five estates comprising 2500 houses at Corio (Victorian Places 2015b). The refinery catalytic cracking unit was started in 1958 and during the 1960s a number of new plants were opened, including the detergent alkylate plant, the lubricant oil plant, hydrotreater 1, hydrocarbon solvents plant, a third crude distillation unit, a second platformer and the vapona resin formulation plant. Additionally, the following decade saw the establishment of the mogas alkylation plant, polypropylene plant and splitter, as well as a continuous catalytic reformer. During the 1960s and 1970s a number of schools opened, together with shops at Corio Village (1973). The refinery was connected to the State power grid in 1979 and connected to the Barwon Water trade waste system in 1987. A new residue catalytic cracking unit was commissioned in 1992 and during the mid-2000s a hydro-desulphurisation facility and benzene saturation unit were completed. The refinery is now owned and operated by Viva Energy (Viva Energy 2021).

Aerial photography dating to 1947 indicates that the majority of the activity area comprised cleared pastoral land with occasional bisecting roads and lines of trees, and a sandy beach in the far southern onshore portion (Figure 6). There is no evidence of any structures present within the activity area or in close proximity to the activity area in the late 1940s.

A 1966 aerial photograph indicates the extensive development of the southern onshore portion of the activity area, including the construction of Refinery Pier, Shell Refinery and Shell Parade, together with dwellings immediately north of the refinery, one of which is situated within the activity area (Figures 7 and 8). According to the Victorian Heritage Database (VHD 2021a, 2021b), work on Kings Wharf (formerly H7721-0132, now deregistered), within the southern separate section of the activity area, commenced in 1951 and was completed by 1953, however a 1966 aerial indicates that the wharf had not been constructed by that time, however Lascelles Wharf (H7721-0133) can be seen to the south (Figure 8). Examination of other 1966 aerials (not shown) indicates that the central and northern portions of the activity area remained generally the same as that shown in the 1947 aerial photographs.

The Lascelles Wharf complex, including Kings Wharf (formerly H77121-0132, now deregistered) in the southern part of the activity area, was reportedly completed by 1970 (VHD 2021a, 2021b). However, only part of the land upon which Kings Wharf (formerly H77121-0132, now deregistered) is situated on had been reclaimed by 1978 (Figure 9).

From 1984 through to the present time the majority of the activity area remained generally unchanged, with the exception of the completion of land reclamation activities at Kings Wharf (formerly H77121-0132, now deregistered) (Figure 10) and seasonal vegetation changes and general maintenance and upgrades of infrastructure (Figure 11).

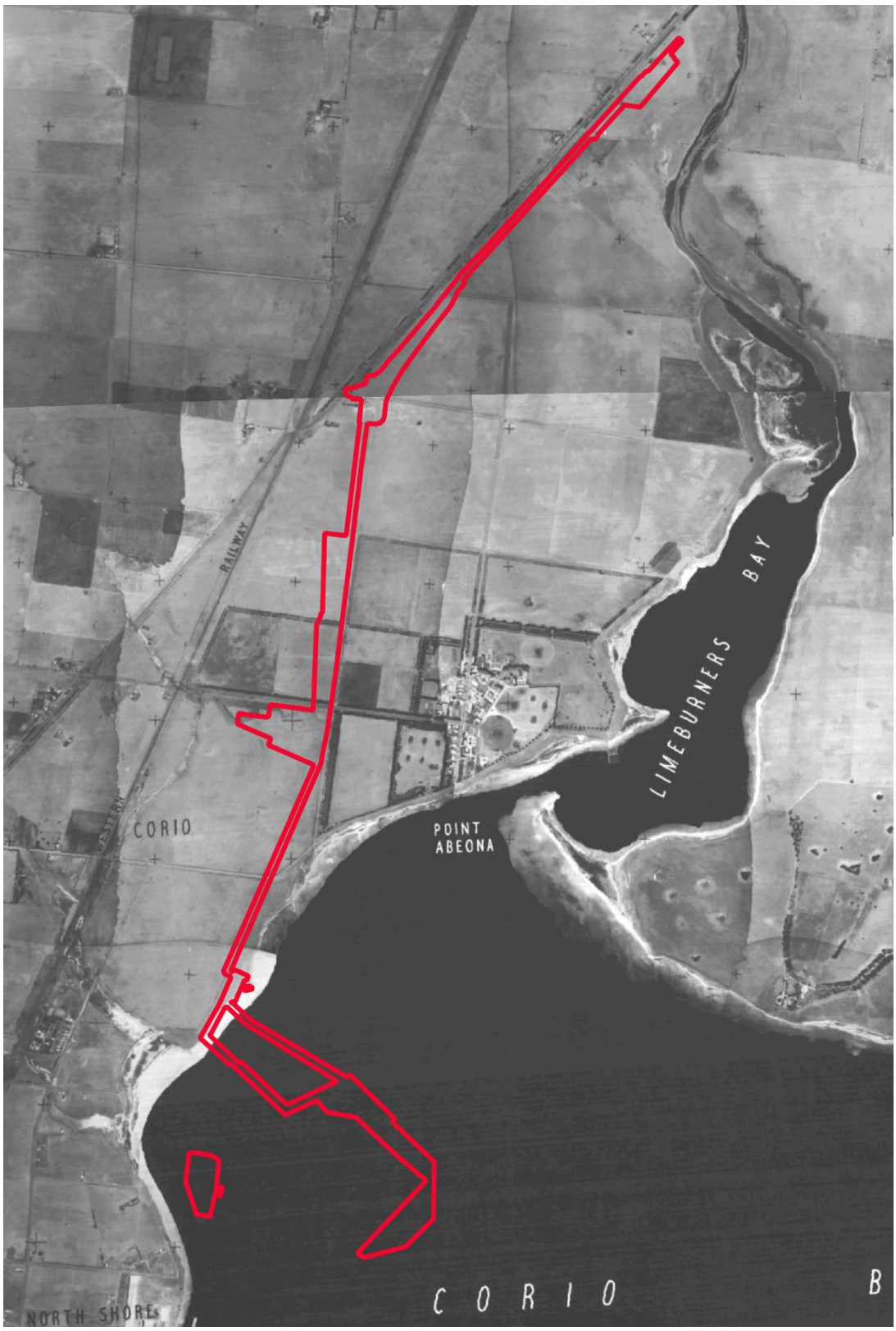


Figure 6: Aerial photograph, 1947 (Aerial Survey of Victoria 1947). General location of the activity area shown in red.

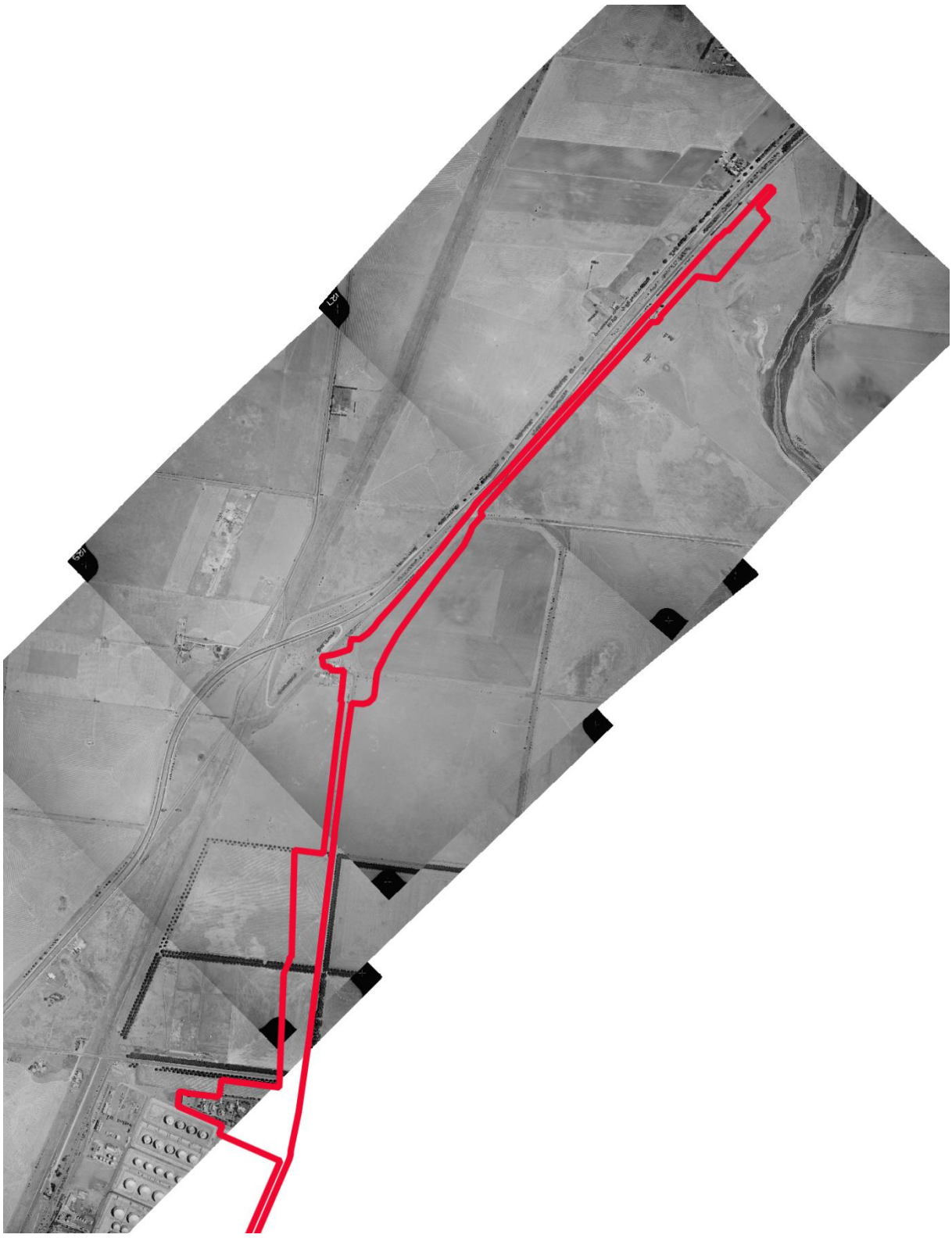


Figure 7: Aerial photograph, 1966 (Aerial Survey of Victoria 1966a). General location of the activity area shown in red.

Figure 8: Aerial photograph, 1966 (Aerial Survey of Victoria 1966b). General location of the activity area shown in red.

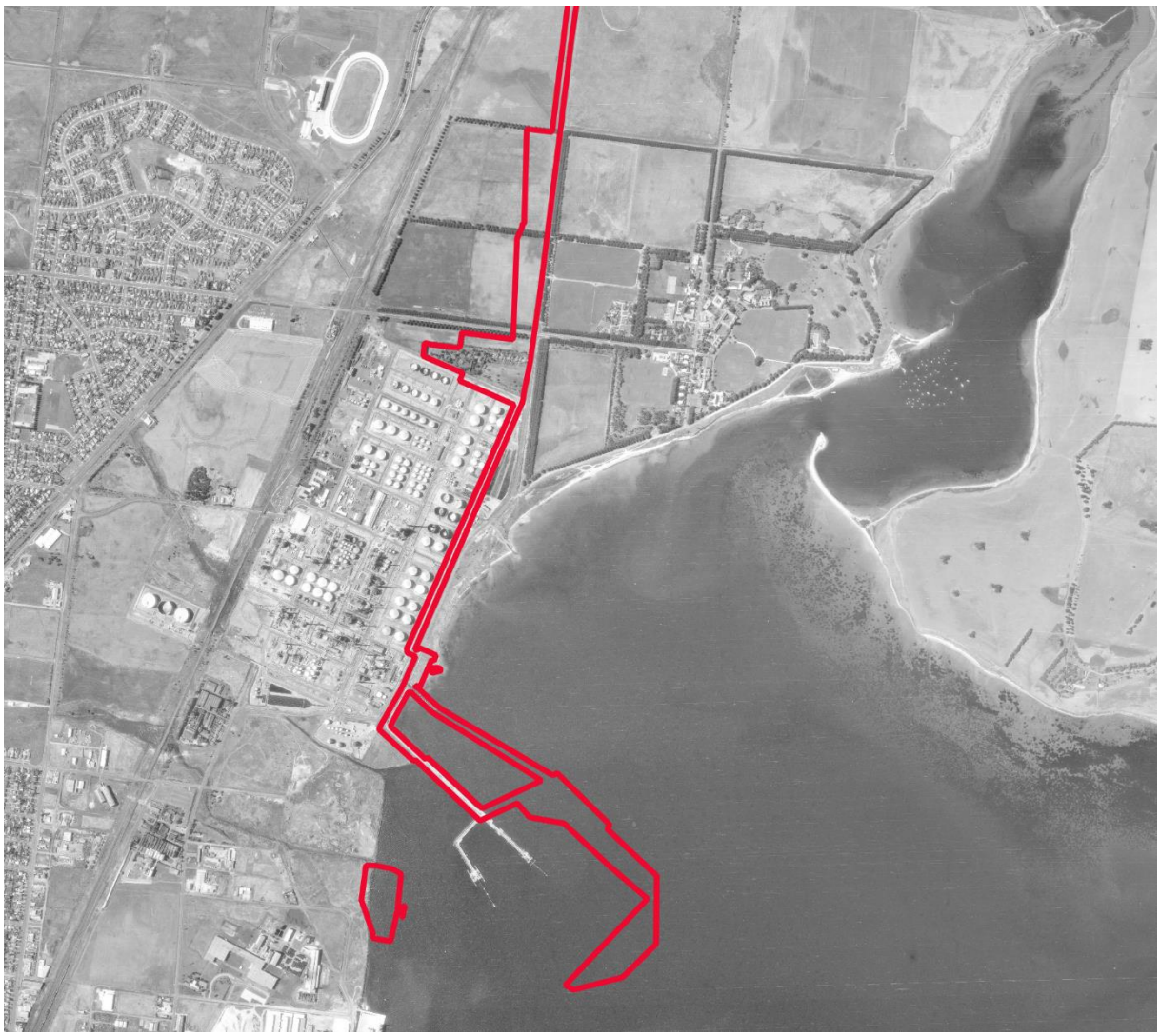


Figure 9: Aerial photograph, 1978 (Aerial Survey of Victoria 1978). General location of the activity area shown in red.

Figure 10: Aerial photograph, 1984 (Aerial Survey of Victoria 1984). General location of the activity area shown in red.

By 2009 (Figure 11) the Lara City Gate SWP station in the far north of the activity area had been constructed. Macgregor Court had been formalised, and a roundabout at the intersection of Macgregor Court, Rennie Street and Shell Parade had been constructed. The dwellings north of the refinery had been demolished and a hardstand area had been established. Conditions within the activity area have remained generally unchanged since that time (Map 1).

The offshore portion of the activity area comprises Corio Bay and the existing Refinery Pier. An existing shipping channel, Corio Channel, is present in this area, which has been dredged to a depth of 12.3m CD (Worley Parsons Services Pty Ltd 2011). The southernmost onshore portion of the activity area comprises a portion of Shell Parade and the refinery. Existing refinery pipe tracks are present along Refinery Pier and the eastern side of the refinery land adjacent to Shell Parade (Viva Energy 2020). To the north of the refinery, north of School Road, the activity area comprises generally undeveloped land. Land between the gazetted but unconstructed Torresdale Road and Rennie Street was subdivided into residential allotments in 1929 however the development of the subdivision never eventuated, and the land now comprises the protected Corio Native Grassland Reserve. North of Rennie Street the activity area aligns with the road and road reserve of Macgregor Court all the way to the northern end of the road, before entering pastoral land, Hovells Creek reserve and terminating at the Lara City Gate SWP station. The majority of the activity area is located within or adjacent to existing pipeline corridors (Viva Energy 2020).

A review of Dial Before You Dig plans indicates that the activity area, is co-located with existing high pressure oil pipeline easements, which run parallel to the proposed underground pipeline corridor along Shell Parade up to the Rennie Street roundabout. Barwon Water pipelines and Telstra assets are present along School Road. The northern part of the activity area, extending from just south of the Shell Parade/Rennie Street/Macgregor Court, Corio, intersection, is co-located with a high pressure APA gas pipeline as well as high pressure oil pipelines. Optus and Telstra telecommunications assets/major optic fibre cables are present along Macgregor Court between Cummins Road, Lara, in the north and Rennie Street, Corio, in the south. Barwon Water utilities are also present along the entire alignment of Macgregor Court.

Figure 11: Aerial photograph, 9 November 2009 (NearMap 2009). Location of the activity area shown in red.

5.2 Maritime History

Corio Bay and, in particular, the Port of Geelong to the south of the activity area, has a long history as an important shipping and trade hub servicing Geelong and Victoria. The port

serves as a base for bulk commodity imports and provides critical trade access (GeelongPort 2018: 5).

A number of maritime activities have been undertaken historically within Corio Bay, many of which continue today. Construction of Queen's Wharf ('Stony Pier') (H7721-0198) at Eastern Beach on the southern side of Corio commenced using convict labour in 1840 and was completed in 1843. The wharf received livestock including cattle and sheep, which previously were unloaded directly from ships into the bay (GeelongPort 2018: 7). A passenger service was established in 1840 at the commencement of the construction of the wharf, with passengers travelling between Melbourne and Geelong on the schooner *Charlotte* (GeelongPort 2018: 7). The port was declared a free warehousing port in 1848, allowing imports without clearance from customs in Melbourne being obtained (GeelongPort 2018: 7). The port became increasingly important during the gold rush era, as Geelong lay closer to the goldfields in Ballarat and central Victoria than Melbourne, and North Channel was surveyed and cut in 1854 (GeelongPort 2018: 8). The historical wharf within the activity area, Kings Wharf (formerly H77121-0132, now deregistered) and other historical wharfs such as Lascelles Wharf (H7721-0133) were established to receive imports of steel, sulphate and phosphate rock, and fertiliser (VHD 2021a, 2021b). Lascelles Wharf was constructed prior to 1929 (Loney 1981: 134) and subsequently extended on reclaimed north until the 1970s, with Kings Wharf forming the northernmost extension of Lascelles Wharf.

Rowing was undertaken in Corio Bay in the early 20th century by members of the Corio Bay Rowing Club (Geelong Advertiser 20 September 1914), two of whom were killed in action two years later (Geelong Advertiser 6 September 1916). A newspaper article from the mid 1920s suggests that fishing was being undertaken in Corio Bay, with the *Geelong Advertiser* reporting on 3 March 1925 that good sized schnapper and whiting were being caught, with garfish and ling expected to be plentiful within the next month (Geelong Advertiser 3 March 1925: 4).

An artificial channel had been cut across the sandbank into Geelong Harbour by 1862, with the *Geelong Advertiser* providing sailing directions and describing the channel as having been "deepened to eighteen feet at low water" and "132 feet wide at the bottom" (Geelong Advertiser 20 May 1862). The new channel allowed the Port of Geelong to grow, boasting four wharves in the 1860s and becoming the ideal location for prospective gold miners to disembark closer to the goldfields in regional Victoria (GeelongPort 2018:9).

The *Weekly Times* reported on a number of dredging proposals for Corio Bay in 1870 and suggests that some dredging had already occurred: it was proposed to "deepen the cut" and reported that "there are two places in the present cutting where banks of silt…have been washed into the channel". Dredging operations were undertaken in the early 1880s, with the *Geelong Advertiser* reporting on the dredging of the Hopetoun Channel:

> …the steam dredge Alligator, at present engaged in cutting the new channel which is to give direct communication between Corio Bay and the deep water on the other side of Point Henry…The Alligator is now working on the shallowest part of the bank which has to be cut through to a depth of 21ft. at low water…The work performed in the month of November was very encouraging, the length cut was 55ft. to a depth of 21ft., at low water, by a width of 80ft. The Alligator started dredging operations in the month of March 1882, and during the 21 months operations the total distance cut is 3300ft. According to plans…the dredge will have

> 4500ft. yet to cut before getting into deep water…The cutting now being executed is, however, only half the width intended… [Geelong Advertiser 14 December 1883].

Hopetoun Channel took 12 years to cut and was officially opened by the Governor and Lady Hopetoun on 20 December 1893 (Geelong Advertiser 23 December 1893). The location of the Hopetoun Channel extending east of the Port of Geelong, the North Channel south of Avalon Beach and the Corio Channel, which services Corio Quay, Lascelles Wharf and Refinery Pier including the southern part of the activity area can be seen on a modern map of the bay (Figure 12). The map also indicates the location of the existing dredge material ground in Corio Bay (Figure 12).

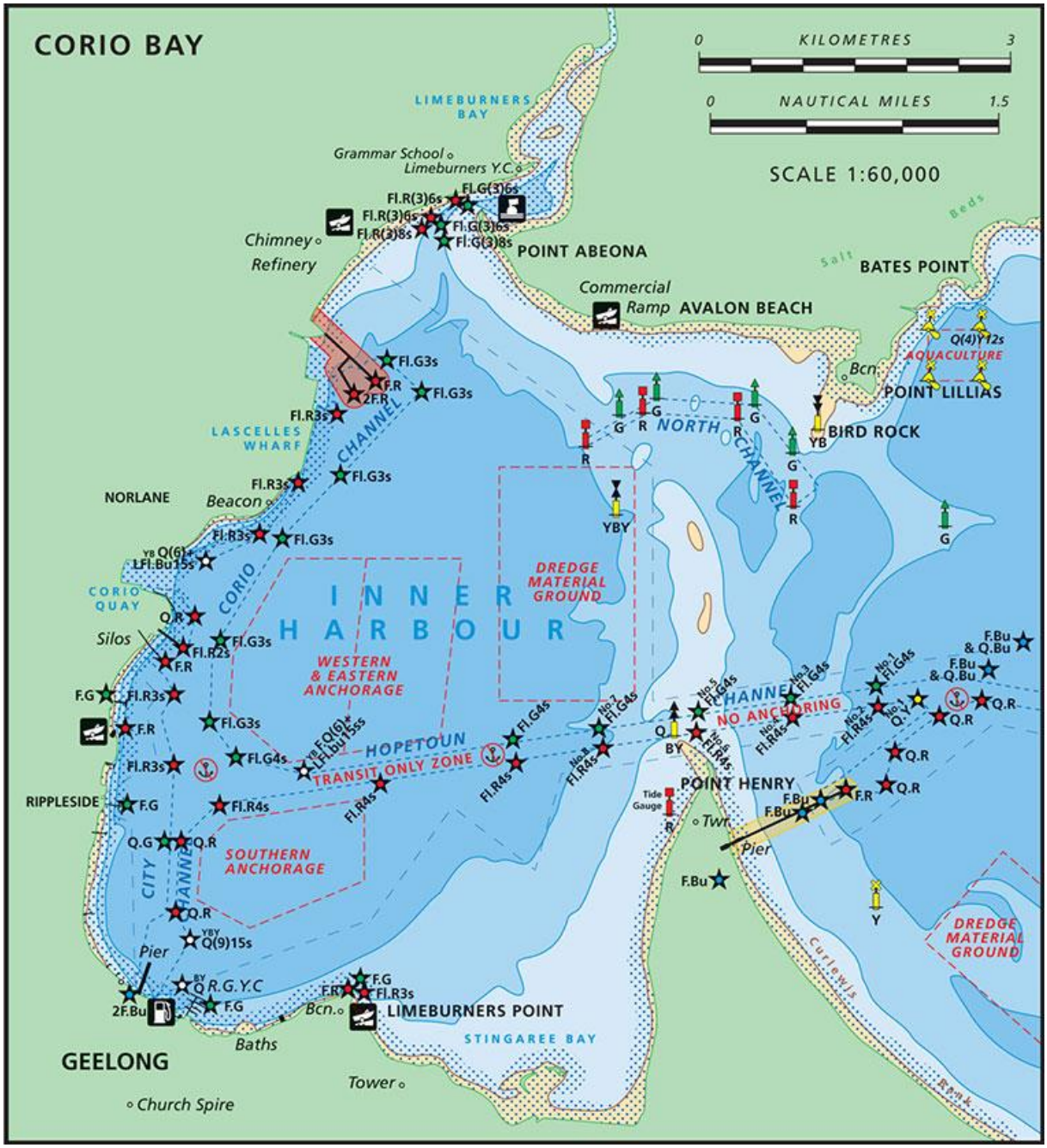


Figure 12: Corio Bay, showing Hopetoun Channel, North Channel and existing dredge material ground (Scuba Doctor 2021).

Refinery Pier, within the far southern portion of the activity area, was established in association with Shell Refinery in 1954, and the Corio Channel was subsequently deepened at Shell's request. The expansion of the channel between Refinery Pier and Pt. Richards was completed in 1958, widening the channel to 91.4m and deepening it to 10.9m. At this time, freighters, tugs and tankers all frequented the area (GeelongPort 2018: 22).

The existing shipping channel in the offshore portion of the activity area, Corio Channel, has been dredged to a depth of 12.3m CD (Worley Parsons Services Pty Ltd 2011). The dredging history of Corio Bay can be summarised as follows:

Shipping channels within the Port of Geelong have been progressively enlarged and modified over a period of approximately 150 years to allow for safe ship access to the port (Worley Parsons 2011). Approximately 20 million m^3 of material has been dredged to create and maintain the shipping channels between 1854 and 1997 (Maunsell 1993).

Dredging works during that period included:

- Capital and maintenance dredging in Lascelles Wharf, Corio Quay and Bulk Grain Pier (1980)
- Capital dredging at Port Henry Channel (1984)
- Maintenance and capital dredging in Corio Quay and Corio Channel (1988)
- Maintenance dredging in Wilson Spit Channel (1991)
- Capital dredging (Channel Improvement Program) in Point Henry, Bulk Grain Pier, Lascelles Wharf and Refinery Pier (1996-1997) – 4.5 million m^3 of dredged material.

More recently the Corio Bay Safety Adjustment Program (CBSAP)was undertaken to make changes to channel alignment and available water depths in the City Bend and at the junction of the Hopetoun and Corio Channels.

The CBSAP dredging works included:

- Geelong Dredging Program 2014 (City Bend / Corio Quay) - 200,000 m^3 of dredged material
- Geelong Dredging Program 2015 (Refinery Pier No. 4) & / Geelong Trial Dredge east of Point Wilson - 240,000 m^3 of dredged material
- Geelong Dredging Program 2017 (eastern side of Corio Channel) - 160,000 m^3 of dredged material

At Lascelles Precinct, which includes Refinery Pier in the southern part of the activity area and Kings Wharf (formerly H77121-0132, now deregistered) in the separate southern portion of the activity area, all berths have been dredged to a depth of 12.3m (Geelong Port 2021a; Figure 13). Berths 1 and 2 were constructed in 1957 and berths 3 and 4 were constructed in 1962. Refinery Pier accepts petroleum products (light fuel), bitumen, bulk chemical, AV gas and crude oil. The onshore component of Refinery Pier is supported by:

- Sewer Reticulation and Holding Tanks
- Water Reticulation, including hydrants, eye wash stations and backflow prevention devices
- Electrical reticulation, including switchboard, LV cabling and lighting

- Security fencing
- Amenities building
- Access walkways and handrail (GeelongPort 2021a).

It is considered reasonably likely that other dredging works have occurred in the remainder of the offshore portion of the activity area. The extent of these works is unknown; however it is likely that the berths have been dredged to a similar depth as that which has occurred elsewhere in Corio Bay.

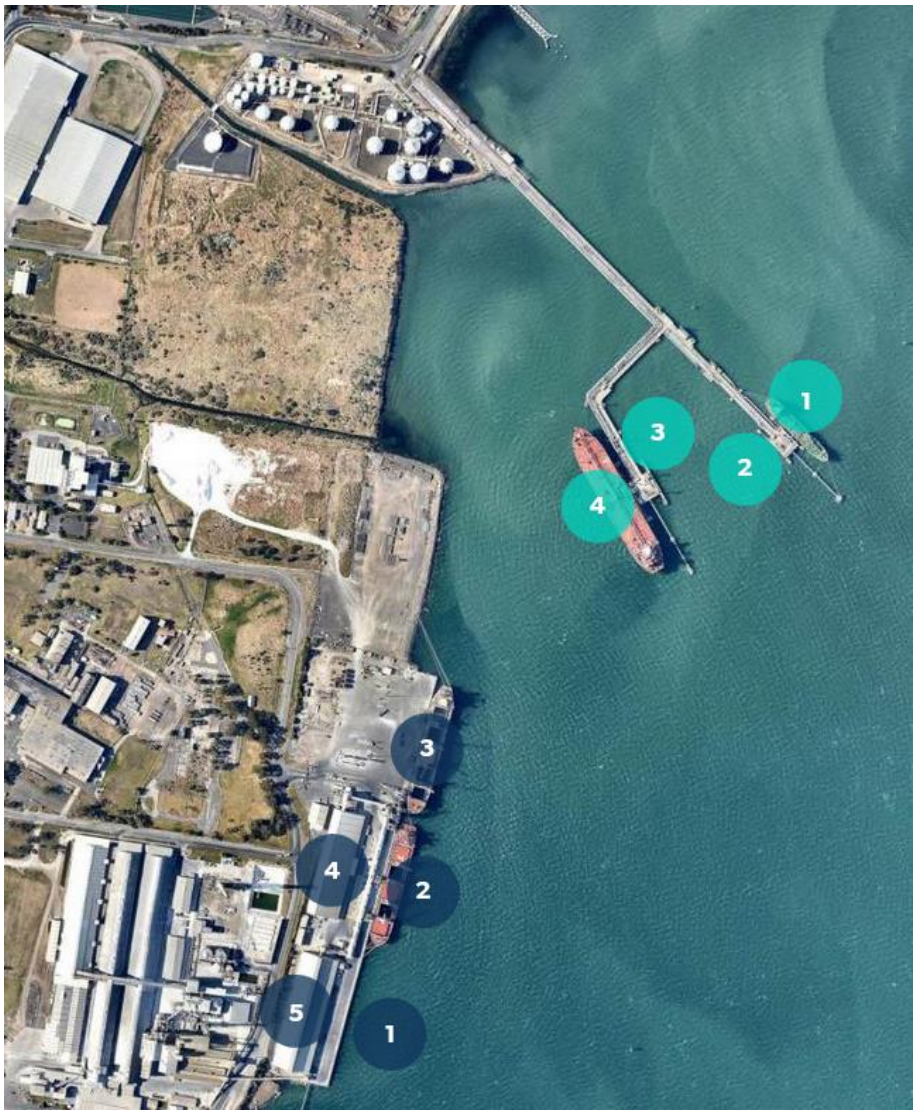


Figure 13: Berth locations at Lascelles Precinct. Berths 1, 2, 3 and 4 at Refinery Pier marked by corresponding numbers in aqua circles (GeelongPort 2021a).

Presently Corio Bay is regularly traversed by bulk carrier ships carrying a variety of cargo, including livestock, steel, paper, timber, crude oil, petroleum, woodchips, fertiliser, cement clinker and general cargo (GeelongPort 2021b). Recreational fishing, diving, swimming and other recreational sports also occur in the bay; however, these occur away from port infrastructure.

5.3 Heritage Register Searches

The National Heritage List, Commonwealth Heritage List, AUCHD, VHR, VHI and Greater Geelong City Council HO were searched on 13 March 2021 by Jem Archaeology Archaeologist/HA Jen Burch. The registers were searched for information relating to previously identified historical archaeological sites within the activity area and within 2km of the activity area. All historical archaeological sites within the activity area and within 2km of the activity area are listed in the tables in this section and shown on Maps 2 and 3.

There are no registered historical archaeological sites listed on the National Heritage List, Commonwealth Heritage List or AUCHD within the activity area or within 2km of the activity area.

5.3.1 Victorian Heritage Register (VHR)

No previously recorded VHR places are present within the activity area. One VHR place is present within 2km of the activity area (Maps 2 and 3). A summary of the single VHR place located within 2km of the activity area is presented in Table 5.

Table 6: Historical place listed on the VHR within 2km of the activity area

VHR Number	Place Name	Address	HO Number (Greater Geelong)	Distance from Activity Area
H1547	Hume & Hovell Monument Lara	Princes Highway, Lara	HO1731	750m northeast

5.3.2 Victorian Heritage Inventory (VHI)

At the time the original search was undertaken, one previously recorded VHI place was present within the activity area:

- Kings Wharf (H7721-0132) (Map 2).

This place was deregistered by HV on 19 October 2021, as the examination of land use history indicates that the wharf was not constructed until sometime between 1978 and 1984 (see Section 5.1 above).

Nine VHI places are present within 2km of the activity area (Map 3). A summary of VHI places located within the activity area and within 2km of the activity area is presented in Table 6.

Table 7: Historical places listed on the VHI within 2km of the activity area

VHI Number	Place Name	Address	Distance from Activity Area
H7721-0065	Bluestone Cobbles & Artefact Scatter	Forest Road South, Lara	450m west
H7721-0099	Austin's Jetty and Baths	Avalon Road, Avalon	1.5km northeast
H7721-0112	Montview Road House Site	55 Broderick Road, Corio	1.5km west
H7721-0116	Hovells Creek Bridge Abutment	Railway Line/Hovells Creek, Lara	1.6km north

VHI Number	Place Name	Address	Distance from Activity Area
H7721-0130	Geelong Grammar School Foreshore Precinct	Foreshore Road, Corio	1.1km east
H7721-0131	Duck Ponds Lime Kilns/Limeburners Bay	Foreshore Road, Corio	760m east
H7721-0133	Lascelles Wharf	The Esplanade, North Shore	740m west
H7721-0134	Land Boom Jetty/Pivot Pier	The Esplanade and Sea Breeze Parade, North Shore	920m southwest
H7721-0140	North Shore Baths	The Esplanade, North Shore	1.7km southwest
H7721-0244	Canterbury Road East House Site	705-835 Princes Highway, Lara	690m north

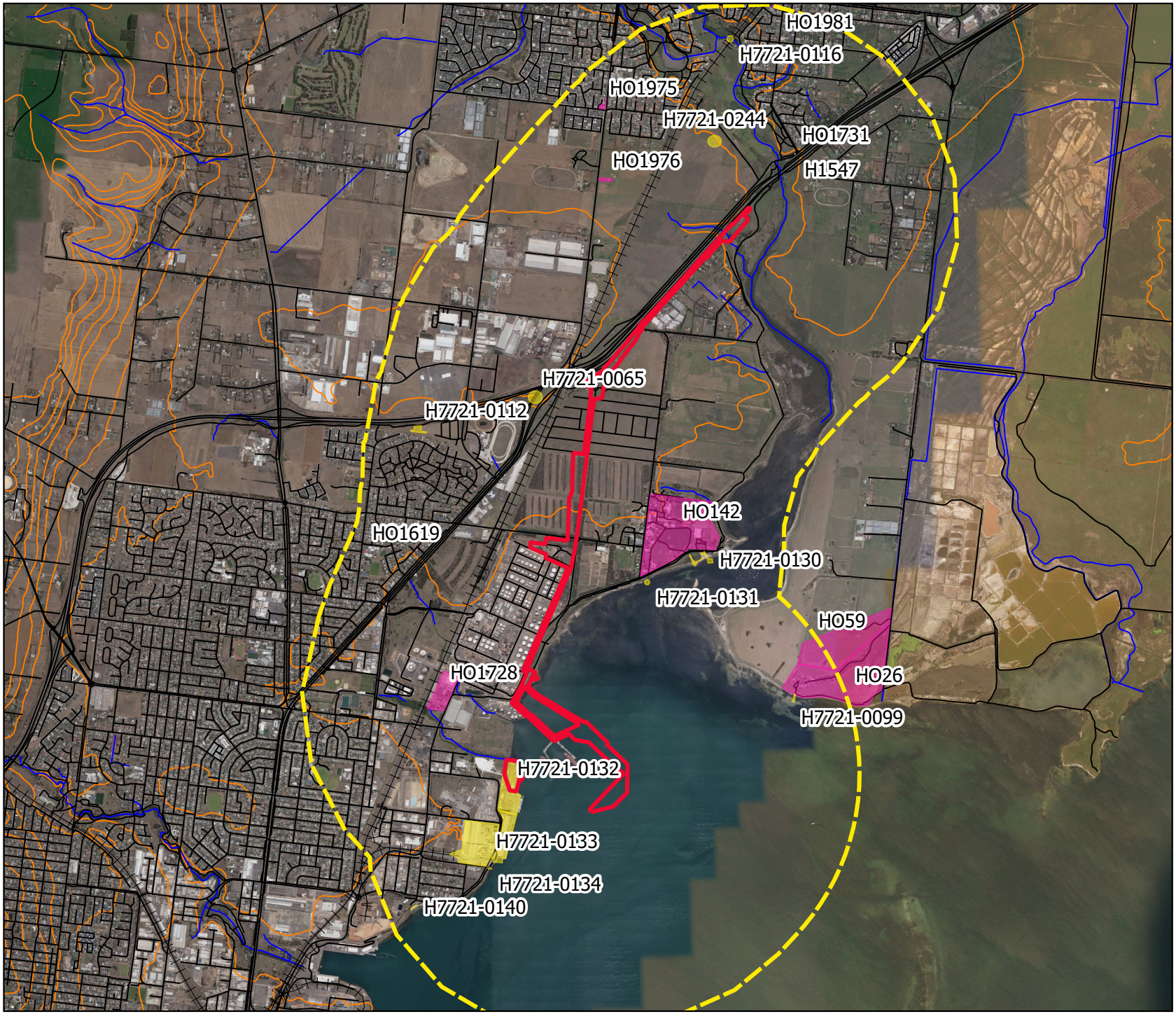
5.3.3 Greater Geelong City Council Heritage Overlay (HO)

No previously recorded HO places are present within the activity area. Nine HO places are present within 2km of the activity area (Maps 2 and 3). A summary of HO places located within 2km of the activity area is presented in Table 7.

Table 8: Historical places listed on the VHI within 2km of the activity area

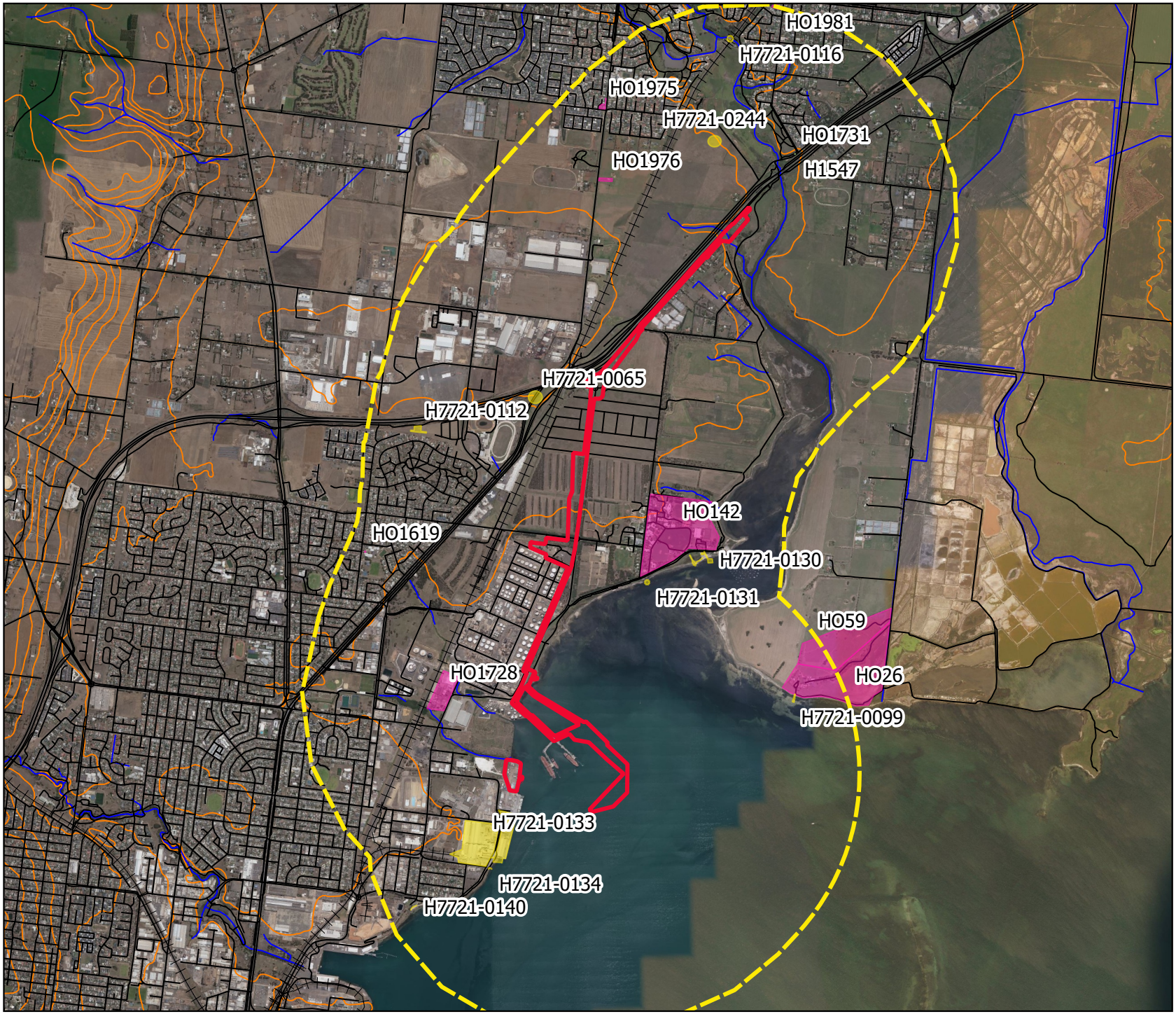
HO Number	Place Name	Address	Distance from Activity Area
HO26	"Avalon", Residence	480 Avalon Road, Avalon	1.5km northeast
HO59	Woolshed	470 Avalon Road, Avalon	1.7km northeast
HO142	Geelong Grammar School original 1912-1913 building complex	50 Biddlecomb Road, Corio	660m east
HO1619	Corio Primary School No 124	38 Hendy Street, Corio	1.9km west
HO1728	Former Corio Distillery Complex (Cheetham P/L) including former workers houses	23 Lowe Street, Corio	600m west
H01731	Hume & Hovell memorial monument	106 Rennie Street, Lara	750m northeast
HO1975	Former Lake Bank Hotel Complex	120 Forest Road South, Lara	1.6km northwest
HO1976	Clover Hill Farm	155 Forest Road South, Lara	1.1km northwest
HO1981	Former Shire Engineer's Residence	8 Rennie Street, Lara	2km north

Map 2: Historical archaeological sites within 2km of the Activity Area (13.03.2021)



Map 2: Historical Heritage Places within 2km of the Activity Area

Map 3: Historical archaeological sites within 2km of the Activity Area (19.10.2021)



Map 3: Historical Heritage Places within 2km of the Activity Area (19.10.2021)

5.4 Previous Archaeological Reports

A historical heritage desktop assessment and brief site inspection for two former proposed alignments of the project was undertaken by Green (2020). Two possible alignments were examined, the first of which is broadly similar to the activity area covered by this report (Option A), and the second of which extends along the eastern side of the Melbourne to Geelong railway line and western side of the Princes Freeway (Option B). The desktop assessment identified one historical place within 250m of the Option B route: Bluestone Cobbles & Artefact Scatter (H7721-0065). The site inspection did not identify any unknown historical archaeological sites within either alignment and concluded that there were no requirements under the *Heritage Act 2017 (Vic)* for any actions in Option A, however advised that should Bluestone Cobbles & Artefact Scatter (H7721-0065) be proposed to be impacted by Option B, a Consent to Disturb would be required to be obtained from HV.

TerraCulture Pty Ltd (2005) undertook an archaeological survey of land north of Refinery Pier and east of Shell Drive, Corio, immediately east of the current activity area. The desktop assessment determined that it was possible that historical archaeological sites may be present along the foreshore, however this possibility was reduced as a result of the low lying swampy nature of the study area. No historical archaeological sites or areas of historical heritage sensitivity were identified during the survey.

Murphy and Atkinson (2003) undertook an archaeological desktop assessment and survey of land on either side of St Georges Road, Corio, south of the refinery and approximately 90m south of the southern offshore portion of the activity area. The desktop assessment concluded that the study area had a low potential for the presence of historical archaeological sites as archival material historical documentation relevant to the study area did not provide any evidence that historical places would be present. No historical archaeological sites or areas of historical heritage sensitivity were identified during the survey.

5.5 Conclusion

The results of the desktop assessment indicate that no previously recorded historical places are present within the activity area. No site survey was undertaken of the activity area, however the results of the desktop assessment suggest that it is highly unlikely that historical heritage or archaeological materials may be present within the activity area. A review of relevant heritage registers indicates that there are no registered historical archaeological sites or maritime heritage places located within the activity area and that all historical archaeological sites are located in excess of 200m from any proposed onshore construction works associated with the project. The most proximal registered historical archaeological site, VHI listed place Lascelles Wharf (H7721-0133) is located 690m west of the offshore component of the project and 210m south of the southern portion of the onshore component of the project.

Whilst it is considered unlikely that historical archaeological sites or maritime heritage places or onshore or offshore archaeological materials or deposits will be present within the activity area, it remains possible that sub surface or submerged historical artefacts and features may be present within the activity area. If unrecorded heritage or archaeological materials are present, these are most likely to consist of scattered glass, ceramic or metal

artefacts, timber posts, footings or foundations, pavements, agricultural infrastructure or pits, drains or cisterns in onshore contexts, or timbers, metal items, unexploded ordinance or general maritime objects in offshore contexts.

A review of the land use history and maritime history of the activity area indicates that it is unlikely that unknown and unrecorded historical archaeological sites, maritime heritage or onshore or offshore archaeological materials or deposits will be present within the activity area or within the immediate proximity of the activity area, as the majority activity area has a long history of substantial disturbance including potential (but unconfirmed) offshore dredging. In addition, examination of historical maps and aerial photographs suggests that it is unlikely that any unrecorded historical places or archaeological materials will be present onshore, as these sources do not contain any indication of the presence of historical places.

6 CONSTRUCTION IMPACTS

The greatest potential impact to historical archaeological sites or maritime heritage places may occur during the construction phase of the project.

6.1.1 Partial or Total Disturbance of Known Historical Archaeological Sites or Maritime Heritage Places

There are no known historical archaeological sites or maritime heritage places located within the activity area (either onshore or offshore). This historical heritage assessment has determined that there would be no adverse direct or indirect impacts to any known historical archaeological sites or maritime heritage places as a result of the proposed construction activities, as no such places are present within the activity area. Furthermore, the assessment has concluded that it is highly unlikely that any unknown historical archaeological sites or maritime heritage places may be present within the onshore component of the activity area.

6.1.2 Partial or Total Disturbance of Unknown Historical Archaeological Sites or Maritime Heritage Places

Any ground disturbing works to be undertaken within the activity area, such as construction of the underground pipeline, may result in direct impact and possible destruction of unknown historical archaeological sites, maritime heritage places or potential archaeological material both onshore and offshore. This includes dredging works proposed to be undertaken at Refinery Pier which may result in direct impacts of unknown maritime heritage places offshore. An estimated 450,000 m^3 of dredged material would be required to be removed adjacent to the existing shipping channel. Dredging would be undertaken to a depth of 13.1 metres and the swing basin would be dredged to a depth of 12.7 metres. As majority of the offshore activity area has a long history of substantial disturbance including offshore dredging, it is unlikely or maritime heritage places would be present.

This assessment has determined that it is highly unlikely that unknown historical archaeological sites will be present within the onshore component of the activity area, and that it is unlikely that unknown or maritime heritage places will be present within the offshore component of the activity area, and any potential impact to such places is considered to be minor to moderate, based on desktop studies.

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7 OPERATION IMPACTS

The operation of the project is highly unlikely to impact unknown historical archaeological sites, maritime heritage places or potential archaeological material both onshore and offshore, as any impacts would result principally from the construction phase of the project and any and all operational works including maintenance will occur in areas already disturbed by the construction phase of the project.

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8 DECOMMISSIONING IMPACTS

The decommissioning of the project is highly unlikely to impact unknown historical archaeological sites, maritime heritage places or potential archaeological material both onshore and offshore, as any impacts would result principally from the construction phase of the project and any and all decommissioning works will occur in areas already disturbed by the construction phase of the project.

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9 RECOMMENDED MITIGATION MEASURES

This study has assessed the impact to historical archaeological sites and maritime heritage places during construction of the project on the assets and values to be managed and protected. It is not anticipated that the project will result in any direct or indirect impacts to known historical archaeological sites or maritime heritage places, as none are located within the activity area or within close proximity to the activity area. The review of historical context undertaken by the current assessment has concluded that it is highly unlikely that previously unknown historical archaeological sites or archaeological materials will be present within the onshore component of the activity area and that it is unlikely that any previously unknown maritime heritage places or archaeological materials will be present within the offshore component of the activity area.

Notwithstanding this, it is recommended that the onshore and offshore unexpected finds protocols presented in Appendix A and Appendix B of this report are adopted. The protocols provide additional management measures to provide contingency in the unlikely event that previously unrecorded historical archaeological sites, maritime heritage places or archaeological materials are encountered during the construction, operation and decommissioning phases of the project.

The preparation of the unexpected finds protocols follows the requirements of the *Heritage Act 2017 (Vic)* and the prescribed guidance of Heritage Victoria's Guidelines for Conducting Historical Archaeological Surveys (2019).

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10 CONCLUSION

10.1 Existing conditions

No known historical archaeological sites or maritime heritage places are present within the activity area and it is considered highly unlikely that unknown historical archaeological sites or archaeological materials will be present within the onshore component of activity area and it is unlikely that unknown or maritime heritage places or archaeological materials will be present within the offshore component of activity area. The majority of the activity area has a long history of disturbance and examination of historical maps and aerial photographs suggests that it is unlikely that any unrecorded historical places or archaeological materials will be present.

10.2 Impact assessment

This study has assessed the impact to historical archaeological sites and maritime heritage places during construction of the project on the assets and values to be managed and protected. It is not anticipated that the project will result in any direct or indirect impacts to known historical archaeological sites or maritime heritage places, as none are located within the activity area or within close proximity to the activity area. The review of historical context undertaken by the current assessment has concluded that it is highly unlikely that unknown historical archaeological sites or archaeological materials will be present within the onshore component of activity area and it is unlikely that unknown or maritime heritage places or archaeological materials will be present within the offshore component of activity area.

10.3 Residual impacts

This historical heritage assessment has determined that there is potential for minor residual impacts to unknown historical archaeological sites or maritime heritage places and values as a result of the project and associated activities after the implementation of mitigation measures. Residual impacts to partial or total destruction of previously unknown historical archaeological sites or maritime heritage places that may be encountered during the project activities would be minor to moderate, although it is highly unlikely that these impacts would occur. As discussed in Section 9, this report has presented an unexpected finds procedure (Appendix A) which provides protocols to manage previously unknown historical heritage resources in order to mitigate or minimise this potential impact. Impacts to historical heritage would be managed in accordance with the procedure and relevant legislative requirements.

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APPENDIX A: UNEXPECTED FINDS PROTOCOL - ONSHORE

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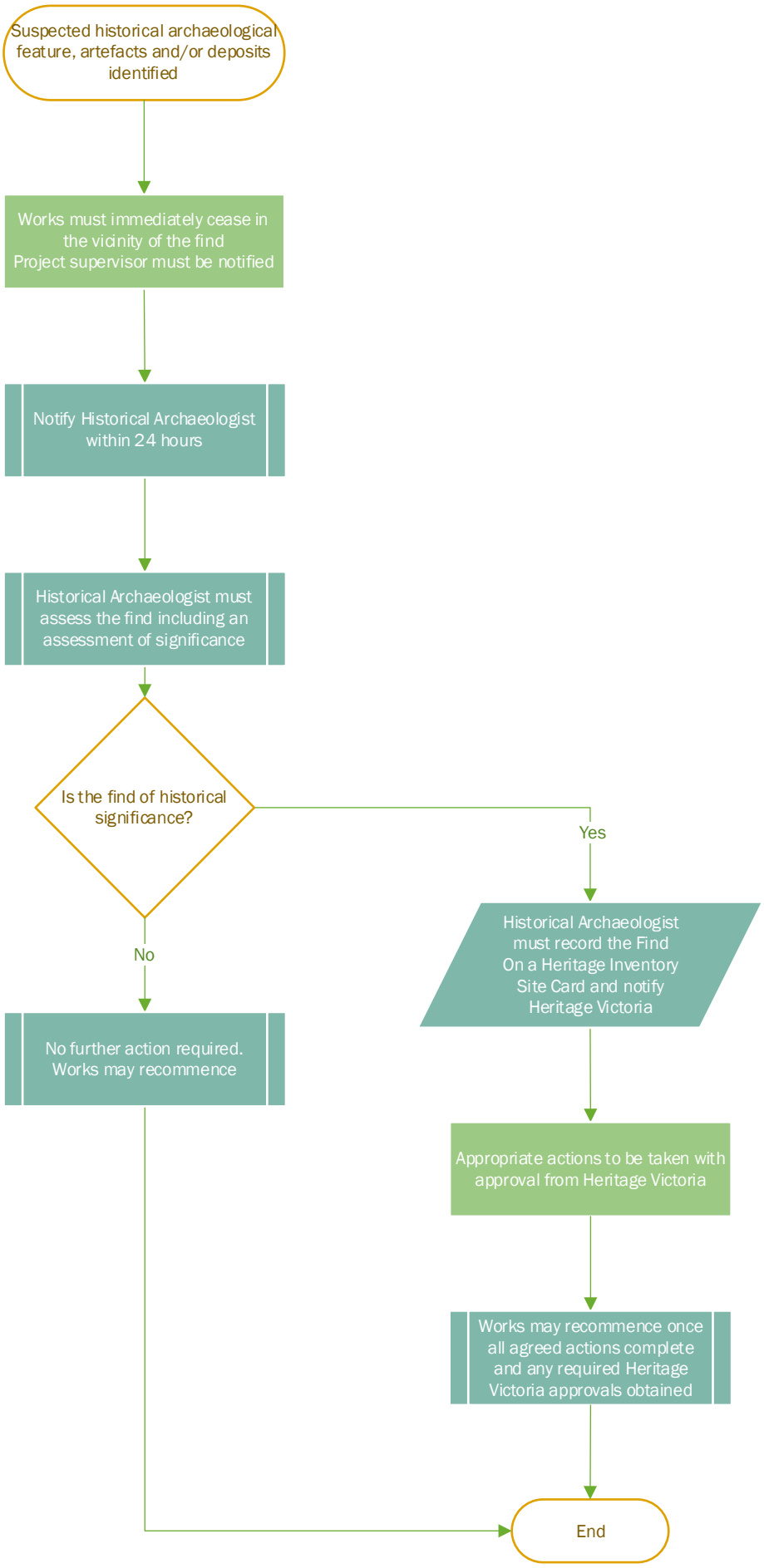
The purpose of this unexpected finds protocol is to allow for appropriate assessment and management of unexpected finds during onshore excavation works associated with the project. This procedure has been developed as a framework to provide a consistent method for managing unexpected historical archaeological historical archaeological features, artefacts and/or deposits during these works. This document has been prepared under the requirements outlined in the *Heritage Act 2017 (Vic)*, relevant guidelines and procedures to manage activities in the unlikely event that archaeological sites are encountered. If unexpected historical archaeological features, artefacts and/or deposits are encountered, works must immediately cease within the vicinity of the find location. In particular, reference to accordance with Section 127 (2) of the *Heritage Act 2017 (Vic)* indicates that, *if an archaeological site is discovered in the course of any construction or excavation on any land, the person in charge of the construction or excavation must as soon as practicable report the discovery to the Executive Director*.

An archaeology induction will be given by a historical archaeologist to all staff and contractors involved in ground or sub surface works that result in ground disturbance prior to their commencement of works. The induction will demonstrate examples of potential historical archaeological features, artefacts and/or deposits that could be found.

This protocol and the requirement for inductions regarding historical heritage has been prepared to allow on site Project Managers and/or their delegates to make informed decisions during construction works if an unexpected historical archaeological features, artefacts and/or deposits is found. The following information outlines potential finds that could be exposed during the proposed project works and what appropriate action needs to be undertaken. Failure to follow the following protocols may result in a breach of the *Heritage Act 2017 (Vic)*. Significant penalties exist for breaches of the listed legislation as a result of actions that relate to unauthorised impacts on heritage items.

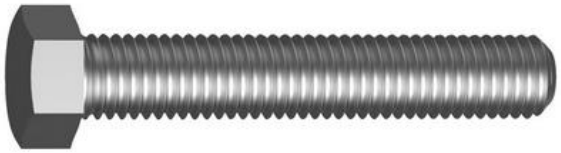
A decision tree is provided below to show the steps involved if an unexpected find is encountered during any stage of the construction phase of the project. Upon discovery of suspected historical archaeological features, artefacts and/or deposits, works in the vicinity of the find site must immediately cease and the Project Supervisor is to be notified immediately. The Project Supervisor will use the information provided below to make an informed decision regarding if an appropriate qualified and experienced Archaeologist should be contacted to assess the find. If a find is assessed as possible historical archaeological features, artefacts and/or deposits, an appropriately qualified and experienced Archaeologist must be contacted, following the steps outlined below. The Archaeologist will determine if it is necessary to contact HV and prepare a site card for the find. Section 131 of the *Heritage Act 2017 (Vic)* requires that anyone who discovers historical archaeological features, artefacts and/or deposits must record and report that site. If the site is added to the Heritage Inventory prior to the continuation of ground disturbing works/sub surface works then a Consent must be sought and issued by Heritage Victoria and all works must be conducted in accordance with the issued Consent. This document may be updated over the course of this project.


Suspected historical archaeological feature, artefacts and/or deposits identified
Works must immediately cease in the vicinity of the find
Project supervisor must be notified
Notify Historical Archaeologist within 24 hours
Historical Archaeologist must assess the find including an assessment of significance
Is the find of historical significance?
Yes
No
Historical Archaeologist must record the Find On a Heritage Inventory Site Card and notify Heritage Victoria
No further action required. Works may recommence
Appropriate actions to be taken with approval from Heritage Victoria
Works may recommence once all agreed actions complete and any required Heritage Victoria approvals obtained
End

Archaeological Find – Requires Assessment		Not Archaeological – No Assessment Required	
Agricultural and related infrastructure, including yard areas, fencing, water troughs, pipes etc		Modern structures, modern fencing, above ground pipes	

Archaeological Find – Requires Assessment		Not Archaeological – No Assessment Required	
Structural footings	 	Modern concrete footings, kerb and channel	

Archaeological Find – Requires Assessment		Not Archaeological – No Assessment Required	
Open pits, drains and conduit infrastructure (particularly bluestone, brick or sandstone) Brick wells/cisterns	 	Modern drains, concrete pipes	
Macadam road/path pavement		Bitumen road pavement Concrete slabs	

Archaeological Find – Requires Assessment		Not Archaeological – No Assessment Required	
Metal items – nails, bolts, hooks Coins or medallions	 	Modern metal items, e.g. bolts, nuts, nails, hooks	

Archaeological Find – Requires Assessment		Not Archaeological – No Assessment Required	
Timber posts (particularly in sub surface contexts)		Modern timber – e.g standing posts, treated pine, merbau etc	
Glass – whole bottles or fragments		Modern glass – bottles or fragments	

Archaeological Find – Requires Assessment		Not Archaeological – No Assessment Required	
Ceramic – whole or fragments		Modern ceramic	

APPENDIX B: UNEXPECTED FINDS PROTOCOL - OFFSHORE

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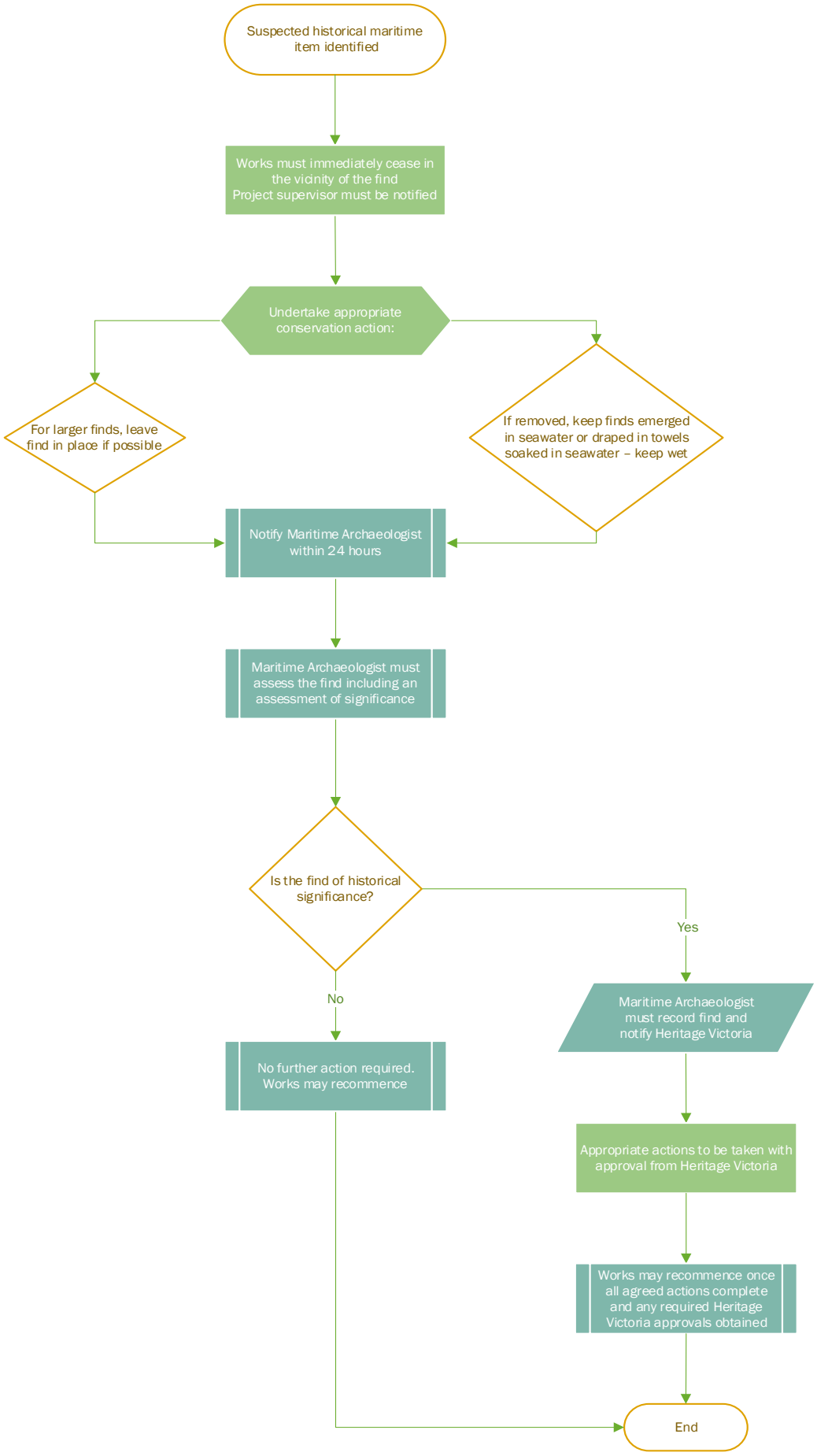
The purpose of this unexpected finds protocol is to allow for appropriate assessment and management of unexpected finds during offshore excavation works associated with the project. This procedure has been developed as a framework to provide a consistent method for managing unexpected maritime heritage items during these works. If unexpected maritime heritage items are encountered, works must immediately cease within the vicinity of the find location. This document has been prepared under the requirements outlined in the *Heritage Act 2017 (Vic)* and the *Underwater Cultural Heritage Act 2018 (Cth)*. In particular, reference to accordance with Section 80 of the *Heritage Act 2017 (Vic)* which indicates that a person who finds a shipwreck or shipwreck artefact in state waters must inform the Executive Director of the find within seven days, and Subsection 40 of the *Underwater Cultural Heritage Act 2018 (Cth)* which indicates that if a person finds an article of underwater cultural heritage, appearing to be of an archaeological character, in Australian waters, that person must give a written notice to the Minister within 21 days. Notice must include a description of the artefact and a description of the location sufficient to enable the relic to be located.

A maritime archaeology induction will be given by a maritime archaeologist for all staff and contractors involved in disturbance to the seabed prior to the commencement of works. The offshore induction will demonstrate examples of potential maritime heritage items that could be found as well as including specific actions regarding the potential discovery of shipwreck material as well as conservation advice for artefacts removed from the marine environment.

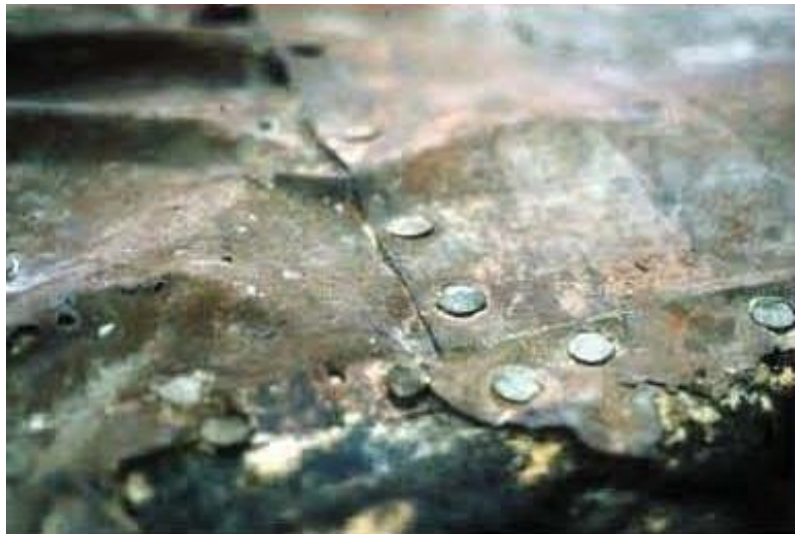
This procedure has been prepared to allow on site Project Managers and/or their delegates to make informed decisions during construction works if an unexpected historical heritage item is found. The following information outlines potential finds that could be exposed during the proposed project works and what appropriate action needs to be undertaken. Failure to follow the following protocols may result in a breach of the *Heritage Act 2017 (Vic)* and the *Underwater Cultural Heritage Act 2018 (Cth)*. Significant penalties exist for breaches of the listed legislation as a result of actions that relate to unauthorised impacts on heritage items.

A decision tree is provided below to show the steps involved if an unexpected find is encountered during any stage of the construction phase of the project. Upon discovery of suspected historical archaeological material, works in the vicinity of the find site must immediately cease and the Project Supervisor is to be notified immediately. The Project Supervisor will use the information provided below to make an informed decision regarding if an appropriate qualified and experienced Archaeologist should be contacted to assess the find. If a find is assessed as a possible historical archaeological material, an appropriately qualified and experienced Maritime Archaeologist must be contacted, following the steps outlined below. The Maritime Archaeologist will determine if it is necessary to contact HV and prepare a site card for the find. Section 131 of the *Heritage Act 2017 (Vic)* requires that anyone who discovers an archaeological site must record and report that site. This document may be updated over the course of this project.


Suspected historical maritime item identified
Works must immediately cease in the vicinity of the find
Project supervisor must be notified
Undertake appropriate conservation action:
For larger finds, leave find in place if possible
If removed, keep finds emerged in seawater or draped in towels soaked in seawater – keep wet
Notify Maritime Archaeologist within 24 hours
Maritime Archaeologist must assess the find including an assessment of significance
Is the find of historical significance?
Yes
No
Maritime Archaeologist must record find and notify Heritage Victoria
No further action required. Works may recommence
Appropriate actions to be taken with approval from Heritage Victoria
Works may recommence once all agreed actions complete and any required Heritage Victoria approvals obtained
End

Maritime Find – Requires Assessment		Not Heritage – No Assessment Required	
Wooden timbers – worked, cut or shaped		Fibreglass, asbestos sheet	 

[1] Images in this table taken from McBrian and Coroneos (2020) and/or DELWP

Maritime Find – Requires Assessment		Not Heritage – No Assessment Required	
Copper alloy – Muntz metal or brass, including sheeting and fastenings	 	Modern tools or appliances	 

Maritime Find – Requires Assessment		Not Heritage – No Assessment Required	
Ferrous metal including anchors		Flexible steele wire rope	
Concreted iron		Poly rope	

Maritime Find – Requires Assessment		Not Heritage – No Assessment Required	
Aluminium – frames, sheets, manifolds, air intakes etc – likely associated with aircraft		Modern aluminium, e.g. cans	
Other	-	Plastics, bouys, fenders etc.	   

Maritime Find – Requires Assessment		Not Heritage – No Assessment Required	
Glass – whole bottles or fragments		Modern glass – bottles or fragments	
Ceramic – whole or fragments		Modern ceramic