Appendix N

Contaminated land and acid sulfate soils

Part 1

MARINUS LINK

Marinus Link Project

Contaminated Land and Acid Sulfate Soils Assessment

Tetra Tech Coffey Pty Ltd

Reference: 754-MELEN215878ML_Sub_CSASS_R01

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MARINUS LINK PROJECT

Contaminated Land and Acid Sulfate Soils Assessment

Report reference number: 754-MELEN215878ML_Sub_CSASS_R01

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Statement of Limitations for the Contaminated Land and Acid sulfate soils Assessment of the Marinus Link project is provided in Appendix A

EXECUTIVE SUMMARY[1]

Marinus Link Pty Ltd (MLPL) contracted Tetra Tech Coffey Pty Ltd (Tetra Tech Coffey) to conduct an environmental impact assessment as part of the proposed construction of a high-voltage direct current electricity interconnector between Tasmania and Victoria. This report presents the assessment of Victorian portion of the alignment that comprises a 220 m wide study area centred on the proposed underground project alignment running between Waratah Bay and Hazelwood, and includes two potential converter stations in Driffield and Hazelwood in Gippsland, Victoria.

The objective of the assessment was to identify the potential for contamination and/or acid sulfate soils (ASS) to be present along the proposed underground alignment and converter stations and to assess the risks and residual impacts to the environment and human health posed by the potential contamination. This assessment included a desktop site history review of publicly available information, a site-walkover of selected accessible parcels within the proposed alignment, and analysis of contaminants of potential concern in areas with a higher risk of contamination being present that may impact on how the project manages impacts to the environment.

The assessment did not identify any areas of contamination that potentially represented a risk to human health or the environment and that the risks to the environment identified can be managed via the application of standard construction measures and additional environmental performance requirements.

The impact assessment identified five potential hazards with a low to moderate risk of causing impacts to the environment without the application of additional controls including:

1. Localised wastes in vicinity of proposed project alignment
2. Management of excavated soils
3. Management of routine construction and operational impacts
4. Unexpected areas of contamination; and,
5. ASS.

The environmental performance requirements and likely management and mitigation measures that will be adopted for each of the identified potential environmental hazards are considered appropriate for the purposes of managing the potential risks to human health or the environment, in accordance with the environmental values to be protected for ambient air, land and water. Further activities during the design, construction or operation phases of the project will be required to implement the management and mitigation measures proposed including:

- Inspect sites to avoid or remove buried waste and waste piles to manage impacts to environment (EPR CL01)
- Manage excavated soil, contaminated soils, removed wastes and potential risks to the environment due to contamination during construction. (EPR CL02)
- Develop and implement an acid sulfate soils (ASS) management plan (EPR CL03)
- Develop and implement measures to manage potential contamination impacts in operation (EPR-CL04).

Several land parcels have been identified as having a medium or high potential to be contaminated based on aerial imagery but have not been able to be further assessed due to access constraints. These parcels should be inspected and tested (if required) to confirm the nature and extent of contamination (if any), and appropriate management or mitigation measures developed to address any potential impacts to the environment that may be present.

[1] This executive summary must be read in the context of the full report and the attached limitations.

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition	Acronyms/Abbreviations	Definition
Australian Drinking Water Guidelines	ADWG	Megawatt	MW
Aqueous Film-Forming Foam	AFFF	National Association of Testing Authorities	NATA
Australian Height Datum	AHD	National Electricity Market	NEM
Australian And New Zealand Guidelines for Fresh And Marine Water Quality	ANZG	National Environmental Management Plan	NEMP
Acid Sulfate Soils	ASS	National Environment Protection Council	NEPC
Australian Standard	AS	National Environment Protection (Assessment of Site Contamination) Measure 1999 (As Amended In 2013)	NEPM (ASC)
Contaminants Of Potential Concern	COPC	New Zealand Standard	NZS
Chromium Reducible Suite	CRS	National Health and Medical Research Council	NHMRC
Department of Environment, Water, Land and Planning	DEWLP	Haunted Hills Formation	Nlh
Environment Protection and Biodiversity Conservation Act	EPBC Act	Naturally Occurring Asbestos	NOA
Environmental Impact Statement	EIS	Organochlorine Pesticides	OCP
Liptrap Formation	Dxl	Organophosphate Pesticides	OPP
Ecological Investigation Level	EIL	Per- and Poly- fluoroalkyl Substances	PFAS
Environmental Effects Statement	EES	Personal Protective Equipment	PPE
Environmental Impact Statement	EIS	Thorpdale Volcanic Group	Put
Environment Protection Act	EP Act	Latrobe Valley Group	Pv
Environmental Protection Authority	EPA	Quality Assurance	QA
Environment Reference Standard	ERS	Alluvium	Qa1
Ecological Screening Level	ESL	Alluvial Terrace Deposits	Qa2
Food Services Australia and New Zealand	FSANZ	Quality Control	QC
General Environmental Duty	GED	Colluvium	Qc1
Horizontal Directional Drilling	HDD	Coastal Dune Deposits	Qdl1
Health Investigation Level	HIL	Coastal Lagoon Deposits	Qg
Health Screening Level	HSL	Total Dissolved Solids	TDS
High Voltage Alternative Current	HVAC	Waratah Bay to Hazelwood	WB-HW
High-Voltage Direct Current	HVDC	Limit Of Reporting	LOR
Kilometres	km	Marinus Link Pty Ltd	MLPL
Wonthaggi Formation	Ksw	Kilovolt	kV

1. INTRODUCTION

The proposed Marinus Link (the project) comprises a high voltage direct current (HVDC) electricity interconnector between Tasmania and Victoria, to allow for the continued trading and distribution of electricity within the National Electricity Market (NEM).

The project was referred to the Australian Minister for the Environment 5 October 2021. On 4 November 2021, a delegate of the Minister for the Environment determined that the proposed action is a controlled action as it has the potential to have a significant impact on the environment and requires assessment and approval under the Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) (EPBC Act) before it can proceed. The delegate determined that the appropriate level of assessment under the EPBC Act is an environmental impact statement (EIS).

On 12 December 2021, the former Victorian Minister for Planning under the Environment Effects Act 1978 (Vic) (EE Act) determined that the project requires an environment effects statement (EES) under the EE Act, to describe the project's effects on the environment to inform statutory decision making.

In July 2022 a delegate of the Director of the Environment Protection Authority Tasmania determined that the project be subject to environmental impact assessment by the Board of the Environment Protection Authority (the Board) under the Environmental Management and Pollution Control Act 1994 (Tas) (EMPCA).

As the project is proposed to be located within three jurisdictions, the Victorian Department of Transport and Planning (DTP), Tasmanian Environment Protection Authority (Tasmanian EPA) and Australian Department of Climate Change, Energy, Environment and Water (DCCEEW) have agreed to coordinate the administration and documentation of the three assessment processes. One EIS/EES is being prepared to address the requirements of DTP and DCCEEW. Two EISs are being prepared to address the Tasmanian EPA requirements for the Heybridge converter station and shore crossing.

This report has been prepared for the Victorian jurisdiction as part of the EIS/EES being prepared for the whole project.

1.1 PURPOSE OF THIS REPORT

This study presents the results of the investigation into the potential for contamination and ASS to be present within the study area. The study area is defined as the 90 km long Waratah Bay to Hazelwood proposed underground high-voltage direct current alignment, and a 220 m wide corridor centred on the proposed alignment (which will contain a 20 m wide easement in which the cables will be buried), as well as proposed converter stations located at Driffield and Hazelwood, and around these areas.

The purpose of the study was to:

- Address the evaluation objectives outlined in the Scoping Requirements;
- Investigate the potential for contamination and ASS to be present within the study area
- Where potential contamination or ASS was identified, an appraisal of the risks to human health or the environment that may be posed by the potential contamination or ASS was undertaken during the construction, operation and decommissioning of project infrastructure.
- Develop mitigation measures for the project to avoid or manage project risks and impacts; and
- Evaluate residual risks and impacts of the project once mitigation has been implemented.

1.2 PROJECT OVERVIEW

The project is a proposed 1500 megawatt (MW) HVDC electricity interconnector between Heybridge in northwest Tasmania and the Latrobe Valley in Victoria (Figure 1-1). The project is proposed to provide a second link between the Tasmanian renewable energy resources and the Victorian electricity grids enabling efficient energy trade, transmission and distribution from a diverse range of generation sources to where it is most needed, and will increase energy capacity and security across the NEM.

Marinus Link Pty Ltd (MLPL) is the proponent for the project and is a wholly owned subsidiary of Tasmanian Networks Pty Ltd (TasNetworks). TasNetworks is owned by the State of Tasmania and owns, operates and maintains the electricity transmission and distribution network in Tasmania.

Tasmania has significant renewable energy resource potential, particularly hydroelectric power and wind energy. The potential size of the resource exceeds both the Tasmanian demand and the capacity of the existing Basslink interconnector between Tasmania and Victoria. The growth in renewable energy generation in mainland states and territories participating in the NEM, coupled with the retiring of baseload coal-fired generators, is reducing the availability of dispatchable generation that is available on demand.

Tasmania's existing and potential renewable resources are a valuable source of dispatchable generation that could benefit electricity supply in the NEM. The project will allow for the continued trading, transmission and distribution of electricity within the NEM. It will also manage the risk to Tasmania of a single interconnector across Bass Strait and complement existing and future interconnectors on mainland Australia. The project is expected to facilitate the reduction in greenhouse gas emissions at a state and national level.

Interconnectors are a key feature of the future energy landscape. They allow power to flow between different regions to enable the efficient transfer of electricity from renewable energy zones to where the electricity is needed. Interconnectors can increase the resilience of the NEM and make energy more secure, affordable and sustainable for customers. Interconnectors are common around the world including in Australia. They play a critical role in supporting Australia's transition to a clean energy future.

1.3 ASSESSMENT CONTEXT

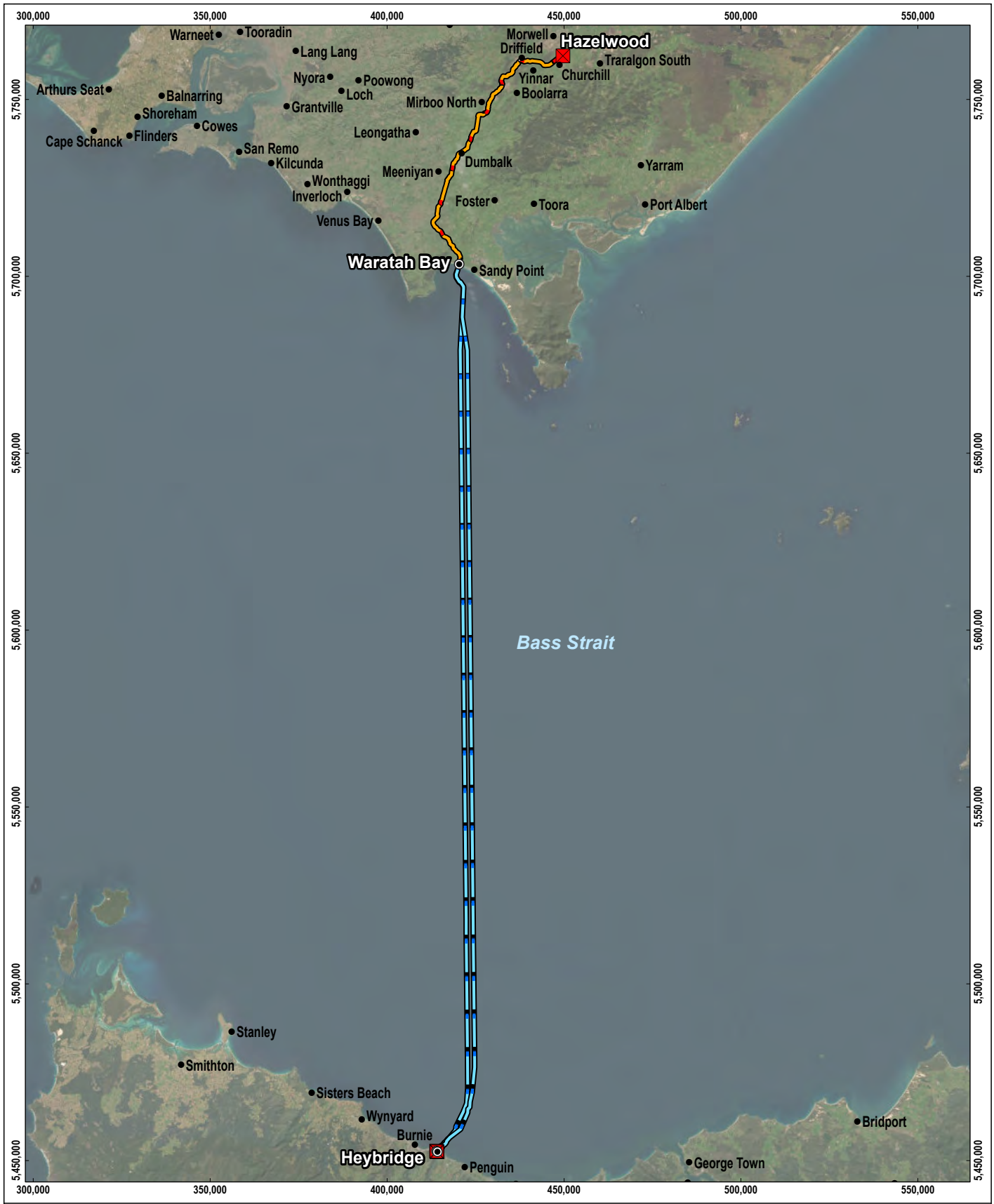
This study assesses the risk of harm to human health and the environment and residual impacts associated with potentially contaminated land from anthropogenic activities, and naturally occurring potential ASS that may be disturbed during the construction, operation and decommissioning phases of the project.

Disturbance of contaminated land due to project activities has the potential to pose risks to the environment and workers during construction/operational maintenance, or through unsuitable conditions for the proposed project land-use. Disturbance of existing contamination may lead to:

- Health risks to workers or site users/occupiers
- Risk to the integrity of structures
- Non-compliance with waste management regulations if contaminated materials are moved off-site without the appropriate approvals, or
- Lead to pollution events if disturbance increases contamination runoff or leaching to groundwater.

ASS or rocks are characterised as containing metal sulfide minerals that oxidise when exposed to air and can result in the release of sulfuric acid in runoff from the soil/rock or acidification of groundwater. The acidic conditions can cause corrosion of metal and concrete that is in direct contact with the acidic soil or water. The acid can also cause direct harm to terrestrial or aquatic flora or fauna via low pH and acid scalding, as well as contribute to the release of metals at concentrations that may be toxic to plants and aquatic animals. The generation of ASS can be attributed to development activities including excavation of large volumes of soil, extracting or lowering groundwater, coastal or inshore dredging and filling land over potential ASS.

This assessment provides an overview of the portions of the study area considered to have an increased risk of encountering contamination, wastes or potential ASS that may be disturbed by the project. The report discusses the risks and residual impacts to the project and relevant receptors to inform the development of environmental performance requirements (EPR) to avoid, mitigate or manage risks and impacts.



LEGEND

- Landfall
- Converter station
- HVDC subsea cable
- Underground HVDC cable
- Cable option not progressing

MARINUS LINK

0 15 30 km

SCALE **1:1,500,000**
PAGE SIZE: **A4**
PROJECTION: **GDA2020 MGA Zone 55**

SOURCE
Proposed route from Tetra Tech Coffey.
Imagery from ESRI Online.

MARINUS LINK PTY LTD

MARINUS LINK
EIS/EES

FIGURE 1-1

Project Overview

TETRA TECH COFFEY

DATE: **08.05.24** PROJECT: **754-MELEN215878ML** FILE: **215878ML_R06_F01-01_GIS**

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2. LEGISLATION, POLICY AND GUIDELINES

This section outlines the assessment guidelines relevant to contamination and ASS and the linkages to other EIS/EES technical studies. A single consolidated EIS/EES is being prepared to address the requirements of all the Commonwealth and Victorian jurisdictions including the requirement for an EES. This report will use the term EIS/EES going forward.

2.1 COMMONWEALTH

DCCEEW have published the following guidelines for the EIS: '*Guidelines for the Content of a Draft Environmental Impact Statement – Environment Protection and Biodiversity Conservation Act 1999* – Marinus Link underground and subsea electricity interconnector cable (EPBC 2021/9053). Table 2-1 summarises the relevant sections of the EIS assessment guidelines being addressed as part of this assessment.

Table 2-1: EIS Assessment guidelines addressed

Aspects to be assessed	Assessment guidelines	Report section
Relevant impacts	• Scientific uncertainty in predictions of impacts and the effectiveness of management must be addressed through appropriate monitoring and management measures during implementation	Section 9
General impacts	• Identify the source of potential impacts (e.g., cable-installation, ship-movements, noise, light) and consider potential impacts throughout the life of the project.	Section 7.2.1
	• Discuss potential impacts which may arise through the transportation, storage and use of dangerous goods (if any), fuels and chemicals, such as accidental spills.	Table 8.6
	• Consider the application of a waste management hierarchy (e.g., reduce, reuse, recycle, treat, dispose) and potential impacts caused by the need for waste disposal and management of emissions, refuse, effluent and hazardous waste (if any).	Table 8.6
	• Assessment of potential direct and indirect impacts to benthic organisms and communities from changes in water quality as a result of sediment dispersal (including potential for release of historical contaminants from sediments), and how this may affect marine ecological integrity and functioning	Section 8

2.2 VICTORIA

The EES Scoping Requirements issued by the Minister for Planning (February 2023) outline the specific matters to be assessed across a number of environmental and social disciplines relevant to the project, and to be documented in the EES for the project.

The EES Scoping Requirements inform the scope of the EES technical studies and define the EES evaluation objectives. The EES evaluation objectives identify the desired outcomes to be achieved and provide a framework for an integrated assessment of the environmental effects of a proposed project.

2.2.1 EES evaluation objective

The EES evaluation object relevant to contaminated land and ASS outlined contained in Section 4.2 of the EES Scoping Requirements is:

Avoid and, where avoidance is not possible, minimise adverse effects on water (including groundwater, surface water, waterway, wetland, and marine) quality, movement and availability.

2.2.2 EES scoping requirements

EES scoping requirements relevant to this report as contained in Section 4.2 of the EES Scoping Requirements are outlined in Table 2-2.

Table 2-2: Contaminated land and ASS scoping requirements

Aspects to be assessed	Scoping requirement	Report section
Key issues	• The potential for disturbance of contaminated, saline, dispersive or acid sulphate soils • Potential effects to environmental values through spills, disturbance or contaminated materials or the introduction of or spread of invasive species	Section 3
Existing environment	• Characterise geology, geomorphology, landforms and soils in the project area and identify potential locations where dispersive, acid sulphate, saline or potentially contaminated soils, or soils with other special characteristics that could be disturbed by the project.	Section 6
Likely effects	• Identify and assess potential effects of the project on soil stability, erosion and the exposure and disposal of contaminated or hazardous soils (e.g., ASS). • Identify potential effects resulting from the generation, storage, treatment, transport and disposal of solid and liquid wastes, including soil. • Describe potential and proposed design options and measures that could avoid or minimise significant effects on soil and land stability and rehabilitation. • Describe available options for the management of the various categories of solid and liquid wastes generated by the project including in relation to the waste hierarchy, that is avoidance, reuse, and then treatment and disposal. •	Section 8
Mitigation	• Identify and evaluate aspects of project works and operations, and proposed design refinement options or measures, that could avoid or minimise significant effects on groundwater, waterway, wetland, estuarine, intertidal and marine waters. • Describe further potential and proposed design options and measures that could avoid or minimise significant effects on	Section 8.1 and Section 10

Aspects to be assessed	Scoping requirement	Report section
	groundwater, waterway, wetland, and marine waters during the project's construction and operation, including response measures for environmental incidents. • Describe potential and proposed design options and measures that could avoid or minimise significant effects on soil and land stability and rehabilitation. • Describe available options for the management of the various categories of solid and liquid wastes generated by the project including in relation to the waste hierarchy, that is avoidance, reuse, and then treatment and disposal.	
Performance	• Describe the framework for monitoring and evaluating the measures implemented to mitigate impacts on water, soils and landforms and contingencies.	Section 9 and Section 10

2.2.3 Environment Protection Act 2017 (Vic)

In October 2017, the *Environment Protection Act 2017* (the EP Act) was passed by the Victorian Parliament, The EP Act (Vic) took effect on July 1, 2021.

The EP Act (Vic) includes a 'General Environmental Duty', which places a duty on all Victorians and Victorian businesses who engage in an activity that may give rise to risks of harm to human health or the environment from pollution or waste to minimise those risks, as far as reasonably practicable. The EP Act (Vic) also includes a Duty to Notify (Section 40) EPA of prescribed notifiable contamination (as detailed in the EP Regulations), and a Duty to Manage (Section 39) contamination. The duty requires that any person(s) in management or control of land known to be contaminated land (refer to EPA Publication 1940) must minimise risks of harm to human health and the environment from the contaminated land so far as reasonably practicable (s 39 EP Act). When MLPL is in management or control of land that is contaminated (either known, suspected or reasonably ought to be known), MLPL must so far as reasonably practicable:

- Investigate and assess contamination;
- Provide and maintain reasonable measures to minimise risks of harm to human health and the environment;
- Provide adequate information to any person that may be affected by contamination arising from the MLPL managed sites; and
- Provide information to any person who may be reasonably expected to become in control of or manage the site.

Further guidance on assessing contaminated land is provided in EPA Publication 1977.1.

Subsequent to the identification of any contamination, where MLPL is in management or control of contaminated land, and if the contamination is 'notifiable contamination' (in accordance with section 40 of the EP Act, 2017 (Vic) and as defined in the Environment Protection Regulations 2021 (Vic) (EP Regulations 2021), MLPL would have a Duty to Notify the EPA (in form approved by the EPA) as soon as practicable after becoming aware of (or reasonably should have become aware of) the notifiable contamination. Further guidance is provided in EPA Publication 2008.2 and 2010.

Subordinate legislation includes Environment Reference Standard and EP Regulations 2021. The Environment Reference Standard (ERS) is established under section 93 of the Act and is designed to support the protection of human health and the environment from pollution and waste by providing benchmarks to assess and report on environmental conditions. The ERS achieves this by:

- Identifying environmental values to be achieved or maintained in the whole or any part of Victoria; and
- Specifying indicators and objectives to be used to measure, determine or assess whether those environmental values are being achieved, maintained or threatened.

Elements of the ERS that should be considered in the whole or any part of Victoria include:

- Ambient air;
- Ambient sound;
- Land; and
- Water (groundwater and surface water).

In the context of appraising contaminated land for the purposes of this assessment, the elements considered include ambient air, land and water (groundwater and surface water). To protect these elements are environmental values which are the uses, attributes and functions of the environment that Victorians value. Further information on each of the elements and their environmental values relevant to this assessment are detailed in the below Section 4.

In the context of construction activities being proposed by the project, where a pollution incident has occurred in the course of construction, MLPL (or delegate who is in control of the land where the spill occurred) has a duty under Section 31 of the EP Act to respond to harm caused by the pollution incident by (so far as reasonably practicable) restoring the affected area to the state it was in before the pollution incident occurred. Where the pollution incident causes (or threatens to cause) material harm (as per Section 5 of the EP Act) to human health or the environment or is a prescribed notifiable incident), MLPL (or delegate) has a duty to notify EPA of the pollution incident under Section 32 of the EP Act.

2.2.4 Acid sulfate soils and rock

There is no specific acid sulfate legislation in Victoria. However, control of related impacts may come under the “general environmental duty” section of the EP Act (2017).

EPA Publication 655.1 (2009) provides guidance identifying, classifying and managing ASS and rock. Ultimately, waste ASS and rock must be managed in accordance with the requirements of the *Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils (VIC BPMG)* October 2010. The National acid sulfate soil sampling and identification methods manual provides details of appropriate investigation methods for appraising acid sulfate soils that builds on the DSE Best practice guideline. Additional guidance is provided at the National Acid Sulfate Soils Management site relating to managing Coastal Acid Sulfate soils, Managing ASS in Inland Aquatic Ecosystems, Laboratory methods for testing for ASS, as well as guidelines for dewatering, dredging and disturbance of ASS and monosulfidic black ooze (MBO).

Generally, the criteria for determining whether soils and rocks have the potential to generate ASS are based on soil texture (for soils only) and chemical measures. If analytical results are in excess of the criteria specified within Appendix 3 of EPA Publication 655.1 (2009) then the material would be classified as ASS.

2.2.5 Waste categorisation and disposal

During construction, operation and decommissioning of the project, waste will be produced. The EP Act defines waste as either:

- Any matter (including solid, liquid, gaseous or radioactive matter) that is deposited, discharged, emitted or disposed of into the environment in a manner that alters the environment;
- A greenhouse gas substance emitted or discharged into the environment;
- Matter that is discarded, rejected, abandoned, unwanted or surplus, irrespective of any potential use or value;
- Matter prescribed to be waste; or
- Matter that is intended for or is undergoing resource recovery.

Consequently, any soils that are surplus to the requirements of the project generated during construction are defined as waste and need to be managed in accordance Section 133 to 142 of the EP Act. The EP Act also establishes duties on the person managing or depositing waste (s133 and s139), transporting waste (s135 and s143), receiving waste (s134), as well as duties to investigate alternatives to waste disposal (s140), and reporting transactions in reportable priority wastes (s142).

Waste materials should be categorised in general accordance with Part 4.2 of the Environmental Protection Regulations (2021) (Vic), as outlined in the following EPA publications:

- EPA Publication 1968.1: Guide to Classifying Industrial Waste (August 2021).
- EPA Publication 1828.2: Waste Disposal Categories – Characteristics and Thresholds (EPA, 2021).
- EPA Publication 1827.2 (March 2021) Waste classification assessment protocol.

Any waste generated during the excavation of soils and construction of the alignment is considered to be industrial waste and may be considered reportable priority waste. Under Section 135 (and Section 139 to 143) of the EP Act 2017 (Vic) these types of industrial waste (including priority and reportable priority wastes) must be classified. In addition to these requirements, in accordance with Regulation 62 of the EP Regulations 2021(Vic) any soils sourced from contaminated land (as defined under the EPA Act) must classified as soon as practicable after excavating the soil.

The relevant waste category must be identified for priority waste consigned for disposal to landfill or for soil that is priority waste. These are set out in Schedule 6 of the EP Regulations 2021 (Vic). The priority waste categories are:

- Category A waste (prohibited from disposal to landfill).
- Category B waste
- Category C waste
- Category D waste (for soil only)
- Soil containing asbestos only
- Packaged waste asbestos.

Category D contaminated soil is a specific waste category that may be applied to major Victorian projects allowing for soils in this waste category to be retained within the project site. The project site would be required to be defined by EPA Victoria and would form part of a prescribed permitted activity relevant to the project.

2.3 TASMANIA

The assessment of land contamination for Tasmanian components of the project are assessed in a separate technical report.

2.4 LINKAGES TO OTHER REPORTS

This report is informed by the technical studies outlined in Table 2-3, and this report will inform other technical studies as outlined in Table 2-4.

Table 2-3: Technical studies referenced

Technical Study	Relevance to this assessment
Land Use and Planning (Beveridge Williams 2023a)	Historical and proposed land use along the study area
Groundwater (Tetra Tech Coffey 2023)	Hydrogeological setting for baseline characterisation
Surface Water (Alluvium Consulting Pty Ltd (Alluvium) 2023a and 2023b)	Hydrology setting for baseline characterisation

Table 2-4: Technical studies that will reference this report

Technical study	Relevance to report
Cultural Heritage – Victorian Terrestrial Component (Eco Logical Australia, 2023)	The EPRs for managing acid sulfate soils may impact on the management of cultural heritage items where the areas of potential ASS and cultural heritage items overlap
Terrestrial Geomorphology and Geology (Environmental GeoSurveys, 2023)	The EPRs for minimising ground disturbance due to vegetation removal and ASS/PASS reference the proposed mitigation measures outlined in the Contaminated land and acid sulfate soils assessment

2.5 ENVIRONMENT REFERENCE STANDARD

The Environment Reference Standard (ERS) is made under section 93 of the EP Act (2017). The ERS is designed to support the protection of human health and the environment from pollution and waste by providing benchmarks to assess and report on environmental conditions in the whole or any part of Victoria. The ERS achieves this purpose by:

- Identifying environmental values to be achieved or maintained in the whole or any part of Victoria; and
- Specifying indicators and objectives to be used to measure, determine or assess whether those environmental values are being achieved, maintained or threatened.

Elements of the ERS that should be considered in the whole or any part of Victoria include:

- Ambient air;
- Ambient sound;
- Land; and
- Water (groundwater and surface water).

In the context of appraising contaminated land for the purposes of this assessment, the elements considered include ambient air, land and water (groundwater and surface water). To protect these elements are environmental values which are the uses, attributes and functions of the environment that Victorians value. Further information on each of the elements and their environmental values relevant to this investigation are detailed in Sections 4. It is important to note that the primary objective of the ERS is to maintain background levels and that regardless of whether an objective is met or not, it is potentially unlawful to pollute up to a published guidance value. This is because under the general environmental duty (GED) in the Act, any risk of harm must be eliminated or otherwise reduced so far as reasonably practicable.

3. PROJECT DESCRIPTION

3.1 OVERVIEW

The project is proposed to be implemented as two 750 MW circuits to meet transmission network operation requirements in Tasmania and Victoria. Each 750 MW circuit will comprise two power cables and a fibre-optic communications cable bundled together in Bass Strait and laid in a horizontal arrangement on land. The two 750 MW circuits will be installed in two stages with the western circuit being laid first as part of stage one, and the easter cable in stage two.

The key project components for each 750 MW circuit, from south to north, are:

- HVAC switching station and HVAC-HVDC converter station at Heybridge in Tasmania. This is where the project will connect to the North West Tasmania transmission network being augmented and upgraded by the North West Transmission Developments (NWTD).
- Shore crossing in Tasmania adjacent to the converter station.
- Subsea cable across Bass Strait from Heybridge in Tasmania to Waratah Bay in Victoria.
- Shore crossing at Waratah Bay approximately 3 km west of Sandy Point.
- Land-sea cable joint where the subsea cables will connect to the land cables in Victoria.
- Land cables in Victoria from the land-sea joint to the converter station site in the Driffield or Hazelwood areas.
- HVAC switching station and HVAC-HVDC converter station at Driffield or at Hazelwood, where the project will connect to the existing Victorian transmission network.

The HVAC switching stations and the HVAC-HVDC converter stations will comprise a network of switching units to direct the electricity as required by the system, and a series of transformers and converters to transform the AC wave form to a DC current, as well as to adjust the voltages for DC transmission (and vice-versa). The switches, converters and transformers will be contained either in open-air arrays, or housed within a building, depending on the requirements for each facility. The construction will require excavation of soils for footings, and connectivity with the underground cabling as required. Footing depths and designs will be determined based on geotechnical and/or engineering requirements.

A transition Station at Waratah Bay may also be required if there are different cable manufactures or substantially different cable technologies adopted for the land and subsea cables. The location of the transition station will also house the fibre optic terminal station in Victoria. However, regardless of whether a transition station is needed, a fibre optic terminal station will still be required in the same location.

Approximately 255 kilometres (km) of subsea HVDC cable will be laid across Bass Strait. The preferred technology for the project is two 750 megawatt symmetrical monopoles using ±320 kV, cross-linked polyethylene insulated cables and voltage source converter technology. Each symmetrical monopole is proposed to comprise two identical size power cables and a fibre-optic communications cable bundled together. The cable bundles for each circuit will transition from approximately 300m apart at the HDD (offshore) exit to 2km apart in offshore waters.

In Victoria, the shore crossing is proposed to be located at Waratah Bay with the route crossing at the Waratah Bay–Shallow Inlet Coastal Reserve. From the land-sea joint located behind the coastal dunes, the land cable will extend underground for approximately 90 km to the converter station. From Waratah Bay the cable will run northwest to the Tarwin River Valley and then travel to the north to the Strzelecki Ranges. The route crosses the ranges between Dumbalk and Mirboo North before descending to the Latrobe Valley where it turns northeast to Hazelwood. The Victorian converter station will be at either a site south of Driffield or Hazelwood adjacent to the existing terminal station.

The land cables will be directly laid in trenches or installed in conduits in the trenches. A construction area of 20 to 36 m wide will be required for laying the land cables and construction of joint bays. Temporary roads for accessing the construction area and temporary laydown areas will also be required to support construction. Where possible, existing roads and tracks will be used for access, for example, farm access tracks or plantation forestry tracks.

Land cables will be installed in ducts under major roads, railways, major watercourses and substantial patches of native vegetation using trenchless construction methods (e.g., HDD, where geotechnical conditions permit. A larger area than the 36m construction area will be required for the HDD crossings.

The assessment is focused on the Victorian component of the project. This report will inform the EIS/EES being prepared to assess the project's potential environmental effects in accordance with the legislative requirements of the Commonwealth and Victorian governments (see **Figure 3-1**).

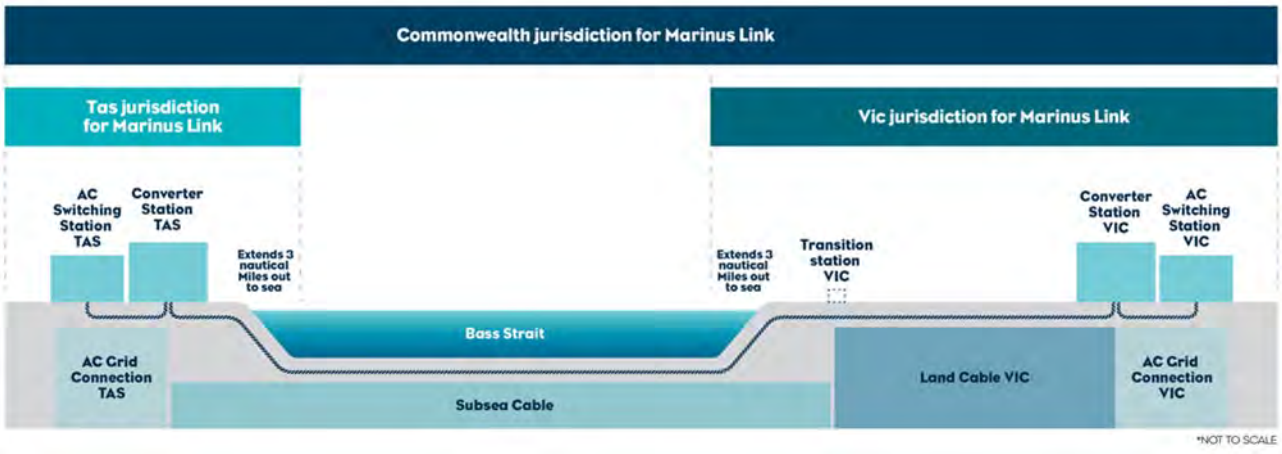

Figure 3-1: Project components under applicable jurisdiction (Marinus Link Pty Ltd 2022).

The project is proposed to be constructed in two stages over approximately five years following the award of works contracts to construct the project. On this basis, stage one of the project is expected to be operational by 2030. The project will be designed for an operational life of at least 40 years.

3.2 CONSTRUCTION

A description of elements of the project during the construction phase that have the potential to impact on environmental values considered within this impact assessment are summarised below.

- **Shore crossing** – Horizontal directional drilling (HDD)
- **Transition station** - Civil works (access road, transition station bench, foundations and hardstand area)
- **Land cables** - Site establishment, topsoil stripping and stockpiling and haul road construction, construction of joint pits, HDD, excavation of trenches, installation of ducts, backfilling, disposal of bentonite slurry wastes and contaminated drill cuttings.
- **Converter stations and Switching stations** - Site preparation, earthworks and civil works

These activities can impact on environmental values through mechanisms such as:

- Localised leaks from chemical containers, batteries, vehicles, underground services or tanks (i.e. fuel or septic) that may present a risk to human health, ecological receptors (terrestrial flora or fauna), or an aesthetic impairment, causing degradation of environment.
- Areas of contamination/ wastes (natural or anthropogenic) uncovered during construction that result in exposure to human or ecological receptors and result in health effects or ecological damage.

- Potential ASS may cause degradation to flora and/or fauna if disturbed due to acidic runoff.
- Where potential ASS exist and are disturbed within the soil profile at similar depths to the groundwater level, acidification of groundwater is a potential risk.

The construction phase will also generate large volumes of soils that will be surplus to the needs of the project. The source of the surplus soil is expected to be from:

- Trenching: The cable trenches will comprise two trenches excavated to an average of 1.5m below the ground surface with an at-depth width of 1m (but up to 2.5 m at the surface to account for battering the walls of the trenches). The trenches will each have two HDPE (or similar) ducts which cables will be installed into, and backfilled with an imported bedding material to a depth of 0.5 m. Warning layer materials (HDPE plastic or concrete) will be installed over the bedding material, and the trenches reinstated with excavated sub-surface soils and the original topsoil reinstated at the surface. It is estimated that the trench excavations will generate approximately 90,000m^3 (banked) of surplus soils (that are displaced by the bedding materials). The surplus soils will require disposal either at a landfill, or reused at another property.
- Haul Roads: Haul roads will be constructed between the cable trenches (to facilitate access, cable and duct laying, excavation and backfilling) for the majority of the alignment. The haul roads will (nominally) comprise imported 40 mm Class 3 (VicRoads Specification) crushed rock laid at a thickness of between 200 and 400 mm up to 7 m wide. At completion of the construction of a section, the material in the haul roads will be removed and the surface rehabilitated with the original topsoil. The haul road materials will (by arrangement) be either provided to the landowners for use (by arrangement), or disposed offsite to landfill or recycling. It is estimated that up to 250,000 m^3 of surplus haul road gravels (banked) will be generated by the construction.

3.3 OPERATION

The following operational project activities have been considered:

- Accidental spills and leaks of transformer oil, lead acid batteries, and diesel fuel stored in above ground tanks at converter or transition stations.
- Accidental spills of fuels, oils or chemicals along the alignment during maintenance activities.

3.4 DECOMMISSIONING

The operational lifespan of the project is a minimum 40 years. At this time the project will be either decommissioned or upgraded to extend its operational lifespan.

Decommissioning will be planned and carried out in accordance with regulatory and landowner or land manager requirements at the time. A decommissioning plan in accordance with approvals conditions will be prepared at least six months prior to planned end of service and decommissioning of the project.

Requirements at the time will determine the scope of decommissioning activities and impacts. The key objective of decommissioning is to leave a safe, stable and non-polluting environment.

In the event that the project is decommissioned, all above-ground infrastructure will be removed, and associated land returned to the previous land use or as agreed with the landowner or land manager. Land use may include re-use for electricity transmission infrastructure, re-use for another purpose or return to previous land use where practicable.

Decommissioning activities required to meet the objective will include, as a minimum, removal of above ground buildings and structures. Remediation of any contamination and reinstatement and rehabilitation of the site will be undertaken to provide a self-supporting landform suitable for the end land use. Decommissioning and demolition of project infrastructure will implement the waste management hierarchy principles being avoid, minimise, reuse, recycle and appropriately dispose. Waste management will accord with applicable legislation at the time.

Decommissioning activities may include recovery of land and subsea cables and removal of land cable joint pits. Recovery of land cables will involve opening the cable joint pits and pulling the land cables out of the conduits, spoiling them onto cable drums and transporting them to metal recyclers for recovery of component materials. The conduits and shore crossing ducts will be left in-situ as removal will cause significant environmental impact.

The concrete cable joint pits will be broken down to at least one metre below ground level and buried in-situ or excavated and removed. Subsea cables will be recovered by water jetting or removal of rock mattresses or armouring to free the cables from the seabed.

A decommissioning management plan will be prepared to outline how activities will be undertaken and potential impacts managed.

4. ENVIRONMENTAL VALUES ASSESSMENT

The assessment considered the elements of the environment, and their associated environmental values to be achieved or maintained in Victoria (ERS, 2021) including:

- Ambient air (section 4.1)
- Land (section 4.2)
- Water (section 4.3).

These environmental values were reviewed to identify the relevant receptors within the study area that may be impacted by disturbance of potential contamination or ASS through project construction and operation. Indicators and objectives were established to assess the potential risks to these receptors, and the pathways by which the receptors may be exposed to the potential sources of contamination.

4.1 ENVIRONMENTAL VALUES - AMBIENT AIR

Ambient air refers to the external air environment (i.e., does not include the air environment inside buildings or structures). The construction of the on-land underground cable has the potential to generate airborne contamination (i.e., dust or vapours) as a result of any residual contaminated soils being excavated, as such ambient air needs to be considered. The environmental values of ambient air applicable to this assessment that are to be achieved are included in Table 4-1.

Table 4-1: Environmental values of the ambient air environment

Environmental Value	Description of Environmental Value	Applicable to this Assessment
Life, health and well-being of humans	Air quality that sustains life, health and well-being of humans	Yes
Life, health and well-being of other forms of life, including the protection of ecosystems and biodiversity	Air quality that sustains life, health and well-being of other forms of life, including the protection of ecosystems and biodiversity	Yes
Local amenity and aesthetic enjoyment	Air quality that supports lifestyle, recreation and leisure	Yes
Visibility	Air quality with low levels of particulate matter and very good visible range	Yes
The useful life and aesthetic appearance of buildings, structures, property and materials	Air quality that does not cause physical and structural damage to buildings, structures, property and materials	No
Climate systems that are consistent with human development, the life, health and well-being of humans, and the protection of ecosystems and biodiversity	Air quality that is not undermined, or at risk, by a warming and drying climate together with increasing population and economic growth	No

In order to appraise potential risks to the environmental values of ambient air, assessment for potential landfill gases, asbestos containing materials or volatile contaminant vapours (such as from soil vapours or groundwater contamination) was considered by this assessment.

4.2 ENVIRONMENTAL VALUES - LAND

Land refers to any soil, fill, rock, weathered rock and sand, the vapour and liquids within these materials. The environmental values of land applicable to this assessment that are to be achieved are included in Table 4-2.

Table 4-2: Environmental values of the land environment

Environmental Value	Description of Environmental Value	Applicable to this Assessment
Land dependent ecosystems and species	Land quality that is suitable to protect soil health and the integrity and biodiversity of natural ecosystems, modified ecosystems and highly modified ecosystems	Yes
Human health	Land quality that is suitable for the specific land use and safe for the human use of that land	Yes
Buildings and structures	Land quality that is not corrosive to buildings, structures, property and materials	Yes
Aesthetics	Aesthetic issues do not adversely impact the use of land. Aesthetic issues include the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity	Yes
Production of food, flora and fibre	Land quality that is suitable for the safe human consumption of food, flora and fibre and that does not adversely affect produce quality or yield	Yes

The land use categories applicable to the relevant environmental values listed in Table 4-3 include:

- Parks and reserves;
- Agricultural;
- Sensitive use (high density);
- Sensitive use (other – lower density);
- Recreation / open space;
- Commercial; and
- Industrial

Table 4-3 Environmental values that apply to land use categories

		Parks and reserves	Agricultural	Sensitive use		Recreation / open space	Commercial	Industrial
				High density	Other			
Land dependent ecosystems and species	Natural ecosystems	✓						
	Modified ecosystems	✓	✓		✓	✓		
	Highly modified ecosystems		✓	✓	✓	✓	✓	✓
Human health		✓	✓	✓	✓	✓	✓	✓
Buildings and structures		✓	✓	✓	✓	✓	✓	✓
Aesthetics		✓		✓	✓	✓	✓	
Production of food, flora and fibre		✓	✓		✓			

Indicators and objectives relevant for each environmental value applicable to this site are listed in Table 4-4**.**

Table 4-4: Indicators and objectives for the land environment

Environmental Value	Indicator	Objective
Land dependent ecosystems and species	Inorganic and organic contaminants set out in Appendix A of Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in 2013)* (NEPM (ASC)) and any other contaminants present at the site as determined by the current use or site history assessed in accordance with the NEPM (ASC)	The objective for each indicator is the ecological investigation or screening level in the NEPM (ASC), unless – a) There is no such investigation or screening level; or b) Due to site specific characteristics the more appropriate objective is: i. The level derived using the risk assessment methodology described in the NEPM (ASC); or ii. The background level determined in accordance with section 36 of the Act, in which case the objective for the indicator is (i) or (ii), as applicable
Human health	Land quality that is suitable for the specific land use and safe for the human use of that land	The objective for each indicator is the health investigation or screening level in the NEPM (ASC), unless – a) There is no such investigation or screening level; or b) Due to site specific characteristics the more appropriate objective is: i. The level derived using the risk assessment methodology described in the NEPM (ASC); or ii. The background level determined in accordance with section 36 of the Act, in which case the objective for the indicator is (i) or (ii), as applicable
Buildings and structures	Land quality that is not corrosive to buildings, structures, property and materials	Land that is not corrosive to or otherwise adversely affecting the integrity of structures or building materials
Aesthetics	Aesthetic issues do not adversely impact the use of land. Aesthetic issues include the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity	Land that is not offensive to the senses of human beings
Production of food, flora and fibre	Land quality that is suitable for the safe human consumption of food, flora and fibre and that does not adversely affect produce quality or yield	The levels specified in the Food Standards Code (Food Standards Australia and New Zealand (FSANZ), as amended 12 August 2022) detected in any food, flora or fibre produced at the site. Levels that do not adversely affect produce quality or yield

4.3 ENVIRONMENTAL VALUES - WATER

4.3.1 Groundwater

Under the ERS, there are seven segments which groundwater can be classified under (according to Total Dissolved Solids (TDS). A review of the background literature identified a varied TDS range across the alignment, ranging from Segment A1 to Segment C. As such, the environmental values that apply to these groundwater segments include:

- Water dependent ecosystems and species;
- Potable water supply;
- Potable mineral water supply;
- Agriculture and irrigation – Irrigation;
- Agriculture and irrigation – Stock watering
- Industrial and commercial use;
- Water-based recreation;
- Traditional Owner cultural values;
- Buildings and structures; and
- Geothermal properties

Indicators and objectives relevant for each environmental value applicable to this site are listed in Table 4-5**.**

Table 4-5: Indicators and objectives for groundwater (ERS, 2021)

Environmental Value	Indicator	Objective
Water dependent ecosystems and species (in surface waters)	For groundwater that discharges to surface water, the indicators are the indicators applicable to the relevant surface water as specified in Division 3 of Part 5 of the ERS	The level that ensures the groundwater does not affect receiving waters to the extent that the level of any indicator in the receiving waters: a) Exceeds the level of that indicator (if specified as an upper limit); or b) Is less than the level of that indicator (if specified as a lower limit), specified for surface water in Division 3 of Part 5 of the ERS.
Potable water supply	Indicators specified in the Australian Drinking Water Guidelines (ADWG), NHMRC, 2017	Health-related guideline value for each indicator specified in the ADWG. Aesthetic guideline value for each indicator specified in the ADWG.
Potable mineral water supply	Indicators specified in the ADWG	Health guideline values for each indicator specified in the ADWG. Aesthetic guideline values for each indicator set out in the ADWG.
Agriculture and irrigation (irrigation)	Indicators specified for irrigation and water for general on-farm use in the Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)	Level of that indicator specified in the ANZG
Agriculture and irrigation (stock watering)	Indicators specified for livestock drinking water quality in the ANZG	Level of that indicator specified in the ANZG

Environmental Value	Indicator	Objective
Industrial and commercial	Indicators specific to the particular industrial or commercial activity and their use of water	Groundwater quality that is suitable for its industrial or commercial use
Water-based recreation	E. coli	10 *E. coli*/100 mL (if no human faecal contamination sources identified) 0 *E. coli*/100 mL (if human faecal contamination sources identified)
	Chemical hazards, aesthetic effects	Level of indicators (where specified) and descriptions in applicable guidance, in the Guidelines for Managing Risks in Recreational Water (NHMRC, 2008)
Buildings and structures	pH, sulfate, chloride, redox potential, salinity or any chemical substance or waste that may have a detrimental impact on the structural integrity of buildings or other structures	Groundwater that is not corrosive to or otherwise adversely affecting structures or building
Geothermal	Temperature between 30 and 70 degrees Celsius	Geothermal properties of groundwater to be maintained for current and future users of the resource

4.3.2 Surface water

Surface water in Victoria comprises of aquatic reserves and other surface waters including rivers and streams, wetlands, estuarine settings and marine settings. These surface waters are divided into several geographic regions. Based on the extent of the alignment to be constructed, the geographic regions that will be intersected include *Central Foothills and Coastal Plains.* Under this setting, the following environmental values applicable are:

- Water dependant ecosystems and species (slightly to moderately modified);
- Human consumption after appropriate treatment (in a special water supply catchment area set out in Schedule 5 of the *Catchment and Land Protection Act* 1994 or in accordance with the *Safe Drinking Water Act* 2003).
- Agriculture and irrigation;
- Human consumption of aquatic foods
- Industrial and commercial
- Water based recreation (primary contact)
- Water based recreation (secondary contact)
- Water based recreation (aesthetic enjoyment)
- Traditional Owner cultural values

Indicators and objectives relevant for each environmental value applicable to this site are listed in Table 4-6**.**

Table 4-6: Indicators and objectives for surface water (ERS, 2021)

Environmental Value	Indicator	Objective
Water dependent ecosystems and species (in surface waters)	For *Rivers and Streams,* the indicators are specified in Tables 5.8 and 5.9 within the ERS (2021)	For *Rivers and Streams*, the indicators are specified in Tables 5.8 and 5.9 within the ERS (2021)
	The indicators for sediment quality in rivers and streams are set out in the 'Indicator or	The level that achieves a low-risk score as set out in the last column (Ranking 1 – low risk) of Table 5.18 in the ERS (2021).

Environmental Value	Indicator	Objective
	segment' column in Table 5.18 of the ERS (2021)	Objectives are determined using the weight of evidence toxicant risk scoring system in Table 5.18.
Human consumption after appropriate treatment	Indicators specified in the ADWG	Health-related guideline value for each indicator specified in the ADWG
Agriculture and irrigation (irrigation)	Indicators specified for irrigation and water for general on-farm use in the ANZG	Level of the indicators specified in the ANZG
Agriculture and irrigation (stock watering)	Indicators specified for livestock drinking water quality in the ANZG	Level of the indicators specified in the ANZG
Human consumption of aquatic foods	For *Rivers and Streams,* the indicators are specified in Tables 5.8 and 5.9 within the ERS (2021)	For *Rivers and Streams*, the indicators are specified in Tables 5.8 and 5.9 within the ERS (2021)
	Indicators specified for metal contaminants, non-metal contaminants, natural toxicants, and mercury in Schedule 19 (Maximum levels of contaminants and natural toxicants) of the Food Standards Code	Level of the indicators in the tissue of aquaculture species specified in Schedule 19 (Maximum levels of contaminants and natural toxicants) of the Food Standards Code.
Industrial and commercial use	Indicators specific to the particular industrial or commercial activity and their use of water	Water quality suitable for its industrial or commercial use.
Water-based recreation	E. coli¸ enterococci **Note** *For freshwater either E. coli or enterococci can be used, but for marine and estuarine water only enterococci can be used.*	Short term and long-term site-specific microbial water quality objectives derived from a risk assessment approach following industry best practice and guidance published or approved by EPA. If there are no such site-specific microbial water quality objectives – a) For long term assessment the microbial water quality objectives are specified in Table 5.19 of the ERS (2021) **Note** *For primary contact, the long-term objective is the water quality grades of 'very good', 'good' or 'fair'. For secondary contact, a microbial assessment category must be no greater than as specified in column D in Table 5.19 of the ERS (2021)* b) *For short term assessment the microbial water quality objectives are specified in Table 5.20 of the ERS (2021)*
Traditional Owner cultural values	Indicators must be developed in consultation with Traditional Owners and may be informed by the process identified in the ANZG for determining cultural and spiritual values	Objectives must be developed in consultation with Traditional Owners and may be informed by the process identified in the ANZG for determining cultural and spiritual values

5. ASSESSMENT METHOD

5.1 STUDY AREA

The study area is a 90 km long and 220 m wide corridor that runs between Waratah Bay in southeast Victoria, which will contain a 20 m wide easement in which the cables will be buried); and the proposed approximately 32 hectare Hazelwood converter station near Traralgon. A second alternative converter station to the south of Driffield comprising an area of approximately 96 hectares has also been included in the study area. The proposed project alignment runs northwest from Waratah Bay to the Tarwin River Valley and follows the valley north to the Strzelecki Ranges. It then crosses the ranges between Dumbalk and Mirboo North before descending to the Latrobe Valley and then northeast to Hazelwood. The study area represents the proposed location of land cables which will be laid 0.5 m apart in trenches with a nominal width of 2 m and a minimum depth of 1.5 m along the route. A map of the study area is included in Figure 1.1, Appendix B.

The desktop assessment undertaken as part of this assessment was a screening desktop soil contamination assessment across the study area. A total of 105 land parcels (freehold and crown land) intersect the study area and are generally utilised for agricultural purposes; however some additional land uses were also identified during the May 2022 site walkover. These land uses are further described in Table 7-1.

Key areas of interest within the study area were identified based on the potential for contamination (e.g., low, medium or high). Where key areas of interest were identified that lay outside of the study area, these were incorporated into the desktop assessment and reviewed (refer to Section 6).

5.2 ASSESSMENT OBJECTIVES

The specific objectives of the contaminated land and ASS assessment were to:

- Undertake a desktop site history and information review to identify areas within the study area that were potentially contaminated and identify the Contaminants Of Potential Concern (COPC) associated with the relevant areas.
- Identify potential areas of contaminated land or ASS resulting from previous and existing land uses within proximity of the project.
- Identify locations where additional intrusive assessment may be warranted (based on the site history and desktop assessment).
- Undertake intrusive assessment of potentially contaminated areas to inform future potential management or mitigation measure that the construction of the project may be required to implement.
- Compare results against published criteria to assess the potential impacts to ecological and human receptors within the study area.
- Undertake a qualitative assessment of the risk that any potentially contaminated area, or contamination identified may present to receptors or the project if disturbed during construction.
- Identify potential mitigation and management measures to control any potentially risks.

5.2.1 Scope of work

In order to meet the above objectives, the following scope of work was undertaken:

- Preliminary screening review of recent aerial photograph images of the alignment to identify areas of potential contamination (Appendix C) to guide the collection of additional desktop information.
- Review of publicly available information for the study area (including several collated summary reports for specific land parcels - provided in Appendix C) to identify any land uses or incidents that may have given rise to contamination. This included a review of:
  - Topographical, geological and hydrogeological settings
  - Victorian EPA records (including priority sites, audit, licence, works approvals)
  - Department of Defence and Air services PFAS programs
  - Landfills and former gas works
  - National and state waste management facilities
  - Drycleaners, motor garages and service stations
  - Historical aerial photographs
- Identification of potential areas within the study area with a risk of either natural or anthropogenically sourced contamination being present (the “targeted areas”).
- Undertake a site walkover of the targeted areas to visually confirm the potential presence or absence of contamination or contaminating activities where access was available.
- Targeted soil assessment of areas that had a potential to contain contamination that may either cause an impact if disturbed, or may require additional management during construction including the collection and analysis of soil samples for contamination and ASS analysis.
- Review of the outcomes of the baseline assessment to verify appropriate interpretation of the desktop and field data and its alignment with regulatory guidance.
- Assessment of potential risks to the environment values (human and ecological receptors) from existing contamination (natural or anthropogenic) identified within the study area, including potential risks that may arise during construction, operation and decommissioning of the project.
- Identification of management and mitigation measures to reduce the potential risks to human health and the environment from any potential contamination identified by the assessment as well as from the construction, operation and decommissioning of the project.

The specific approach to appraising the potential for ASS to be present within the alignment (and assessing the subsequent potential impacts) was based on guidance provided in EPA publication 655.1 *Acid sulfate soil sand rock* (2009).

ASS containing metal sulphides can be present within highly mineralised areas of Victoria, particularly where oxidation of these metal sulphides takes place. This can be through:

- Hydrothermal alteration of metal sulphide-containing rocks and soils;
- Microbial decomposition of organic matter in water-logged soils and sediments containing metal sulphides (usually pyrite);
- Potential ASS generally occurs in soil formations that:
- Contain elevated concentrations of metal sulfides either naturally or due to anthropogenic causes.
- Were originally deposited in shallow marine or estuarine environments, often appearing as soft, black, dark grey or dark greenish-grey muds.
- Are below or above high tide level, but generally between 5 and 20 m AHD.

ASS may also be present as monosulfidic black ooze (MBO) – a soft, black coloured soil, with high organic content, enriched with iron monosulfide (FeS). MBO commonly occurs on the beds of lakes, swamps, drains and channels.

EPA publication 655.1 (2009), provides guidance on the approach to risk-based assessment and classification to determine if ASS maybe present for a particular study area. The assessment process requires that studies consider the following in determining the potential presence of ASS:

1. Potential for the site to be an acid sulfate soil risk area based on:
    - Whether acid sulfate soil has been previously identified at or near the site
    - Whether the site is located in a Prospective Land Zone as indicated by the Coastal Acid Sulfate Soil hazard maps, or
    - Whether the site, or area to be disturbed, is at or below 5 mAHD and the natural ground surface is below 20 mAHD.
2. Geological information and visual inspection for presence of sulfides.
3. Field indicators for soil and water. These are used to assist in the identification of acid sulfate soils.
4. Field soil pH testing.

The desktop appraisal for potential acid sulfate soils has taken this iterative approach to identifying potential ASS within the study area via consideration of mapping data relating to the potential extent of ASS, land-form data (including elevation data), review of geological information for the study area to identify potential sulfide bearing units, observations during site inspections for field indicators, and field pH testing at areas considered to have a higher potential to contain ASS.

5.2.2 Cumulative impact assessment

The EIS guidelines and EES scoping requirements both include requirements for the assessment of cumulative impacts. Cumulative impacts result from incremental impacts caused by multiple projects occurring at similar times and within proximity to each other.

To identify possible projects that could result in cumulative impacts, the International Finance Corporation (IFC) guidelines on cumulative impacts have been adopted. The IFC guidelines (IFC, 2013) define cumulative impacts as those that 'result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones.'

The approach for identifying projects for assessment of cumulative impacts considers:

- Temporal boundary: the timing of the relative construction, operation and decommissioning of other existing developments and/or approved developments that coincides (partially or entirely) with Marinus Link.
- Spatial boundary: the location, scale and nature of the other approved or committed projects expected to occur in the same area of influence as Marinus Link. The area of influence is defined as the spatial extent of the impacts a project is expected to have.

Proposed and reasonably foreseeable projects were identified based on their potential to credibly contribute to cumulative impacts due to their temporal and spatial boundaries. Projects were identified based on publicly available information at the time of assessment. The projects considered for cumulative impact assessment across Tasmania, Bass Strait and Victoria are:

- Delburn Windfarm
- Star of the South Offshore Windfarm
- Offshore wind development zone in Gippsland including Greater Gippsland Offshore Wind Project (BlueFloat Energy), Seadragon Project (Floatation Energy), Greater Eastern Offshore Wind (Corio Generation).

- Hazelwood Rehabilitation Project
- Wooreen Energy Storage System
- North West Transmission Developments
- Guilford Windfarm
- Robbins Island Renewable Energy Park
- Jim's Plain Renewable Energy Park
- Robbins Island Road to Hampshire Transmission Line
- Bass Highway upgrades between Deloraine and Devonport
- Bass Highway upgrades between Cooee and Wynard
- Hellyer Windfarm
- Table Cape Luxury Resort
- Youngmans Road Quarry
- Port Latta Windfarm
- Port of Burnie Shiploader Upgrade
- Quaylink – Devonport East Redevelopment.

Cumulative impacts associated with contaminated land and ASS are not considered to be relevant to this assessment due to the temporary and localised nature of the contamination impacts of the project.

5.3 RISK ASSESSMENT

A qualitative environmental risk analysis has been conducted for the study area to assist in identifying the controls required to avoid and if this is not possible, reduce risks and to identify issues of concern for other technical study to consider both during the impact assessment stage, and for future design phases.

The risk assessment was focussed on potential risks to environmental receptors including construction and maintenance workers undertaking activities within the alignment, recreational human exposure (such as may be considered from recreational bush walking – but also from agricultural worker exposures), as well as potential ecological receptors including flora and fauna and potential risks to groundwater or surface water from contamination disturbance that may occur during construction.

The risk analysis has been based on the risk-based approach from the Australian/New Zealand Standard for risk management (AS/NZS IS0 3100:2018).

The assessment of potential risks was based on the likelihood of the impact to the environment (health or ecological) occurring and the potential consequences (i.e. measure of severity should this occur). The descriptors used to classify the likelihood and consequence are detailed in Table 5-1. Assessment specific consequences have been developed that allow for comparison of analytical results and exceedances of screening criteria and are included in Table 5-1.

The level of risk was then determined by combining the likelihood and consequence to rank the potential risk as very high, high, moderate, low or very low according to the risk evaluation matrix in Table 5-2.

Table 5-1: Descriptors used to classify likelihood and consequence

Descriptor	Description
Likelihood	
Almost certain	A hazard, event and pathway exist and harm has occurred in similar environments and circumstances elsewhere and is expected to occur more than once over the duration of the project activity, project phase or project life.
Likely	A hazard, event and pathway exist and harm has occurred in similar environments and circumstances elsewhere and is likely to occur at least once over the duration of the project activity, project phase or project life.
Possible	A hazard, event and pathway exist and harm has occurred in similar environments and circumstances elsewhere and may occur over the duration of the project activity, project phase or project life.
Unlikely	A hazard, event and pathway exist and harm has occurred in similar environments and circumstances elsewhere but is unlikely to occur over the duration of the project activity, project phase or project life.
Rare	A hazard, event and pathway are theoretically possible on this project and has occurred once elsewhere, but not anticipated over the duration of the project activity, project phase or project life.
Consequence	
Severe	In-situ concentrations of contaminants in soils exceeds NEPM Health Investigation Levels (HILs) / Health Screening Levels (HSLs) and presents an immediate risk to the health of persons accessing the project site. Mitigation measures to manage major impacts are likely to be extensive or complex, requiring a high level of resources and may involve regulatory intervention.
Major	The disturbance of in-situ contamination with concentrations that exceed NEPM HILs / HSLs or Ecological Investigation Levels (EILs) / Ecological Screening Levels (ESLs) and potentially present an acute risk to the health of persons accessing the project site, or which result in the mobilisation of the contaminants within the immediate environment and is sufficient to cause adverse impacts to the local environment and long-term impacts in the receiving environment. Careful management or avoidance can mitigate adverse effects.
Moderate	The disturbance of soil containing environmentally significant levels of one or more contaminants with concentrations that exceed screening criteria for ecological receptors (NEPM ESL / EIL) and human health (HSLs / HILs), which results in the mobilisation of the contaminants within the immediate environment, which is sufficient to cause adverse impacts to the local environment and long-term impacts in the receiving environment. Appropriate management measures can mitigate the potential impacts.
Minor	The disturbance of soil containing environmentally significant levels of one or more contaminants with concentrations exceeding screening criteria for ecological receptors (NEPM ESL / EIL) and highly sensitive human receptors (nominally HIL / HSL A), but are below screening criteria for commercial / industrial land uses (nominally HIL / HSL D), which is sufficient to cause adverse impacts to the local environment and impacts in the receiving environment. Appropriate management measures can mitigate the potential impacts.
Negligible	The disturbance of soil containing isolated occurrences of environmentally significant levels of a contaminant (i.e. exceeding EIL / ESL, but not HSL / HIL), which may result in mobilisation of small amounts of contaminants within the immediate receiving environment. Degradation of the greater receiving environment (being areas outside of the study area) is unlikely with no measurable degradation to the local receiving environment. Monitoring of potential impact may be an appropriate response rather than implementation of mitigation measures.

Table 5-2: Risk evaluation matrix

		Likelihood				
		Rare	Unlikely	Possible	Likely	Almost certain
Consequence	Negligible	Very low	Very low	Very low	Low	Moderate
	Minor	Very low	Low	Low	Moderate	Moderate
	Moderate	Low	Low	Moderate	High	High
	Major	Low	Moderate	High	Very high	Very high
	Severe	Moderate	High	Very high	Very high	Very high

5.4 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations have been made during the assessment

- As a conservative measure, we have assumed that any potential source of contamination within the alignment may be disturbed by the project regardless of the construction methodology or proximity to final disturbance areas.
- The constraints on access to a number of parcels have impacted our ability to adequately assess risk in these areas, and a site inspection may be required during the pre-construction phase to confirm the nature and extent of contamination in these parcels (if any).
- We have assumed areas unable to be accessed contain contaminated materials that warrant further assessment.
- The acid sulfate soil mapping reviewed as a part of this study has a degree of uncertainty in the boundaries and potential that ASS is present within a mapped area. The degree of uncertainty is based on the assumptions used in generating the maps (the National acid sulfate soil maps, Agriculture Victoria mapping and DSE CASS mapping) whereby 'coastal' mapping was based on tidal indicators, ASS indicator vegetation mapping, landform elevations, geological and geomorphological mapping data, and hydrography mapping (Fitzpatrick *et al.*, 2008). The inland component of ASS mapping (that is areas above 20 mAHD) were developed from the combination of national soil type mapping (1:2M scale) and a matrix devised to translate the landscape 'wetness' inferred from 1:250 k topographic hydrography (*ibid*). The resulting map (the Atlas of Australia Acid Sulfate Soils) lists the chance of ASS occurrence with a particular map unit ranging from high (greater than 70 % chance of ASS existing withing the mapped unit), low (6 to 70% chance of ASS existing within the mapped unit), and extremely low (less than 5% chance of ASS existing within the mapped unit). We have adopted these probability estimates (*ibid*) and assumed that based on the minimum 5 % probability for the majority of the mapping, that the maps have an accuracy of 95 % (which is a conservative estimate for the higher probability of ASS occurrences), but also note the granularity of the mapping used to define mapped boundaries is only accurate to a ratio of 1:20 (*ibid*) for the low probability mapped areas, and as a consequence we have assumed a minimum 20 m variance in the mapped ASS boundaries (noting that higher probability occurrences have a much smaller lateral variance depending on the nature of the mapped occurrence). The overall uncertainty in the mapping adopted as a part of this study ensures that the iterative risk-based approach to assessing potential ASS has a level of conservatism with respect to identifying potential ASS, and the subsequent potential impacts and performance requirements for managing potential impacts.
- We have assumed the potential for ASS close to the coastal areas that warrant further assessment prior to construction.
- Our interpretation of contamination risk has been based on limited data sets and sampling points. Whilst these are partially mitigated from the desktop assessment, a level of uncertainty remains along the alignment and in particular between sampling points.

6. EXISTING CONDITIONS

This section describes the existing conditions and values within the study area based on the information obtained from the baseline assessment.

The objective is to document all values that could be affected by the project and to provide context to explain what the baseline conditions mean and why they are important.

The baseline contaminated land and ASS characterisation assessed the following features:

- Topography (Section 6.1)
- Regional geology (including ASS and naturally occurring asbestos (NOA)) (Section 6.2)
- Hydrogeology (Section 6.3)
- Potential contaminating activities and site history (Section 6.4).

6.1 TOPOGRAPHY

The surface elevation of the study area ranges from 0 m above Australian height datum (AHD) at Waratah Bay to around 250 mAHD between Dumbalk and Driffield where the route crosses the Strzelecki Ranges. The topography of the site can be summarised as the per Table 6-1.

Table 6-1: Surface elevation across site route

Section	Lowest Elevation (mAHD)	Highest Elevation (mAHD)	Average Direction of site route	Description
Waratah Bay to Buffalo	0.0	100	NW-SE	A general increase directly to the north of Waratah Bay and then decrease to 50mAHD which plateaus towards Buffalo
Buffalo to Dumbalk	50	50	N-S	A plateau as the site follows the Tarwin Valley to Dumbalk
Dumbalk to Driffield	50	250	NNE-SSW	The highest elevated section, elevation increases to 250 mAHD between Dumbalk and Mirboo North and then fluctuates between 200 mAHD and 250 mAHD before decreasing to 150 m at Driffield.
Driffield to Hazelwood	100	150	E-W	A decrease from 150 mAHD to 100 mAHD with this elevation continuing until Hazelwood.

6.2 REGIONAL GEOLOGY

6.2.1 Geological units

Geological information obtained from the State Government of Victoria is underlain by the geological units described in Table 6-2**.** Geological Units are ordered in prevalence along the study area from most prevalent to least. Mapping of the geological units across the study area are provided in the Land Insight reports in Appendix C.

Table 6-2: Geological units across the study area

Geological Unit	Symbol	Origin	Description	Location	Length across the site
Wonthaggi Formation	Ksw	Fluvial	Early Cretaceous lithic volcaniclastic sandstone, arkose, siltstone, minor conglomerate and coal.	Located throughout most of the central site route from 4 km south of Buffalo up to Dumbalk and interspersed with **Put** and **Qa1** up to Mirboo North.	25 km
Thorpdale Volcanic Group	Put	Volcanic	Palaeocene to Miocene tholeiitic and alkalic basalt; minor nephelinite, basanite, nepheline hawaiite, hawaiite, mugearite, nepheline mugearite, tuff, interbedded sandstone and silcrete.	Interspersed with **Ksw** and **Pv** between Dumbalk and Driffield.	20 km
Haunted Hills Formation	Nlh	Fluvial	Pliocene to Pleistocene sand, silt, gravel: various shades of brown, yellow, red, white; variably sorted; variably rounded; crudely to well-bedded; commonly strongly oxidised with ironstone near the top and also within the formation.	Located throughout the southernmost and northernmost sections of the site between Waratah Bay and Buffalo and between Driffield and Hazelwood (interspersed with **Qa2** and **Qa1**).	17 km
Latrobe Valley Group	Pv	Marine to deltaic	Eocene to Miocene clastic sedimentary rocks: nonmarine to paralic clastics, marine clastics.	Located between Mirboo North and 2 km east of Driffield, interspersed with **Put** and **Nlh**.	11 km
Alluvial Terrace Deposits	Qa2	Alluvial floodplain	Pleistocene to Pleistocene gravel, sand, silt: variably sorted and rounded, generally unconsolidated; dissected to form terraces higher than Qa1.	Located within the southern and northern sections of the site, interspersed with **Ksw**, **Nlh** and **Qa1**.	9 km
Alluvium	Qa1	Alluvial floodplain	Pleistocene to Holocene gravel, sand, silt: variably sorted and rounded; generally unconsolidated; includes deposits of low terraces.	Located within the southern and northern sections of the site, interspersed with **Ksw**, **Nlh** and **Qa1**. It can also be found around Dumbalk, interspersed with **Ksw** and **-Put**.	8 km
Coastal Dune Deposits	Qdl1	Coastal due and swamp	Holocene sand, silt, clay: well sorted, poorly consolidated; coastal dune and beach deposits, some swamp deposits	Located within the southernmost section of the site, along the beach and surrounding area at Waratah Bay	0.5 km
Coastal Lagoon Deposits	Qg	Deltaic	Holocene silt, clay: dark grey to black; variably consolidated.	Located immediately within the southern sections of the site, immediately north of the coastal dune deposits (**Qdl1)**.	2 km
Colluvium	Qc1	Base of slope	Pliocene to Holocene diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting.	Located within the southernmost section of the site interspersed with **Qg, Qa2** and **Nlh.**	1 km
Liptrap Formation	Dxl	Marine	Early Devonian thin-bedded quartz-rich sandstone and siltstone with minor sandstone and gritstone, and rare diamictite which contains chert and limestone pebbles.	This unit could potentially be found for a short stretch of the site just north of Waratah Bay, interspersed with **Nlh.**	0.5 km

6.2.2 Acid sulfate soils

ASS containing metal sulphides can be present within highly mineralised areas of Victoria, particularly where oxidation of these metal sulphides takes place. This can be through:

- Hydrothermal alteration of metal sulphide-containing rocks and soils;
- Microbial decomposition of organic matter in water-logged soils and sediments containing metal sulphides (usually pyrite);

Potential ASS generally occur in soil formations that:

- Contain elevated concentrations of metal sulfides either naturally or due to anthropogenic causes.
- Were originally deposited in shallow marine or estuarine environments, often appearing as soft, black, dark grey or dark greenish-grey muds.
- Are below or above high tide level, but generally between 5 and 20 m AHD.

ASS may also be present as monosulfidic black ooze (MBO) – a soft, black coloured soil, with high organic content, enriched with iron monosulfide (FeS). MBO commonly occurs on the beds of lakes, swamps, drains and channels.

Review of acid sulfate soil mapping was undertaken via review of the National Acid Sulfate Soils Atlas (ASRIS), the Coastal acid sulfate soil hazard – Foster – T8120 mapsheet (DNRE 2002, hosted by Agriculture Victoria), and the DSE (2003) Coastal Acid Sulfate Soil mapping data.

The review indicated that there is a low to extremely low probability that ASS exists within the study area boundaries with the exception of the following:

- Waratah Bay Beach area where there is a high-probability of ASS (Figure 6-1 and Figure 4.1 in Appendix B),
- In the Hazelwood pondage area where the study area crosses Eel Hole Creek between Driffield and Hazelwood where there is a high probability that ASS exist (Figure 6-2 and Figure 4.2 in Appendix B).

The portion of the study area that sits below 20 mAHD comprises the first (approximately) 2,500m of the study area (between Waratah Bay and Fish Creek-Waratah Bay Road), with the remainder of the alignment being above 20 mAHD.

A review of the geomorphological information from the Terrestrial geomorphology and geology(Environmental Geosurveys, 2023) and the geology of the study area did not identify any units with a potential to be sulfide rich that may indicate the present of potential acid sulfate rock or ASS. Only fluvial units in river crossing areas (such as near Hazelwood pondage and the main river crossings) were identified as having potential conditions where ASS may form.

Field walkover inspections at key locations along the alignment did not identify any areas with Actual or Potential ASS indicators (as per EPA Publication 655.1), such as clear or milky surface water, iron staining, jarosite, corrosion of concrete or steel structures, or hydrogen sulfide odours. Areas of potential waterlogged soils were identified at Waratah Bay, which is in an area of already mapped potential ASS.

There was also considered to be a potential that areas of permanently waterlogged soil may contain potential ASS, such as in sediments in streams, flood plains around river systems, wetlands or areas with shallow groundwater, although these areas are not included on published ASS maps. These areas are mapped in the Hydrogeology (Coffey 2023a) and Hydrology (Alluvium, 2023a and 2023b) reports.

The results of the desktop assessment confirmed that the majority of the study area was unlikely to contain ASS or potential ASS in accordance with the mapping provided, with an elevated potential for ASS to be present at Waratah Bay, Hazelwood Pondage (Eel Hole Creek), and the mapped areas of shallow groundwater/stream crossings (Coffey 2023a, Alluvium 2023a, 2023b).

Testing for potential ASS was undertaken close to the Waratah Bay potential ASS mapped area approximately 15 m AHD) to appraise the potential ASS risk in this mapped area.

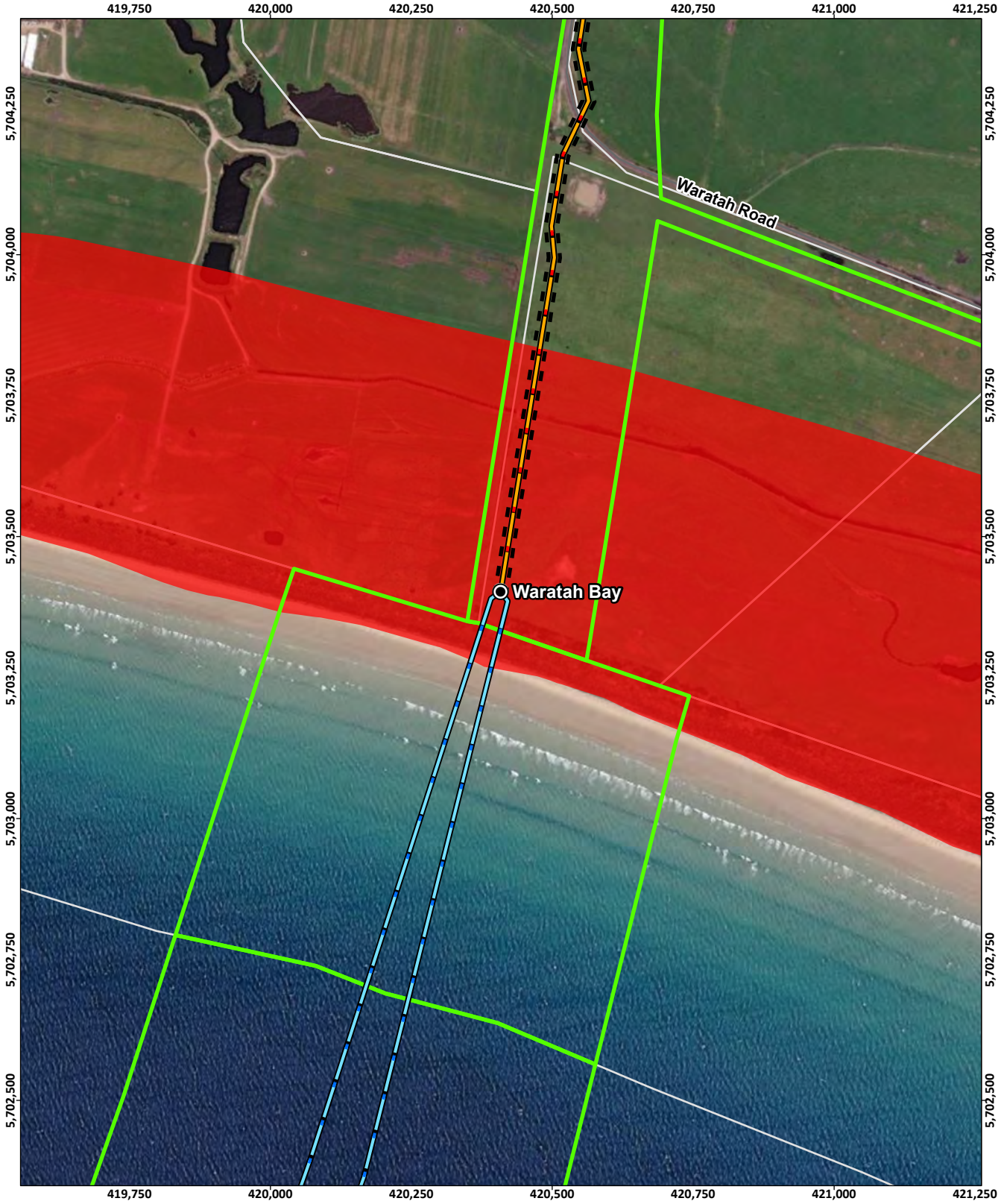

Figure 6.1: Prospective Coastal Acid Sulfate Soils

Legend

Proposed route
- Underground HVDC cable
- HVDC subsea cable
- Marinus Link survey area
- Road
- Cadastre
- Prospective coastal acid sulphate soils

N

Scale: 1:10,000

200 100 0 200 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

TasNetworks has made every effort to ensure this product is free of errors but does not warrant the map or its features are either spatially or temporally accurate or fit for a particular use.

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Source:
Proposed routes from Tetra Tech Coffey.
CASS from DELWP. Roads from VICMAP.
Imagery from ESRI Online.

Date: 30/09/2022 12:35 PM
Prepared by: Helen.Unkovich

TETRA TECH COFFEY

MARINUS LINK

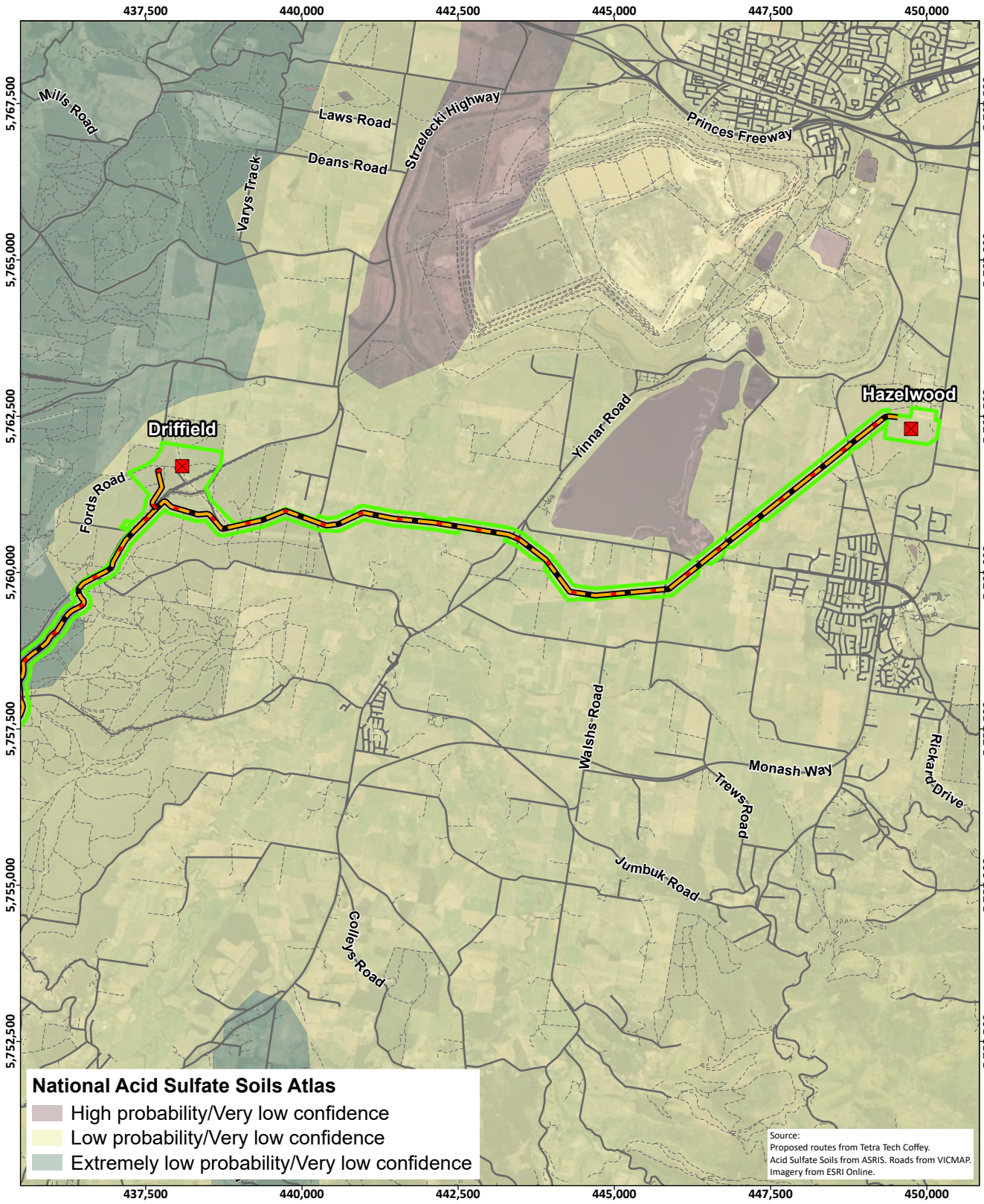

Figure 6.2: Potential acid sulfate soils associated with the Hazelwood power station

Legend

- Potential converter station
- Proposed underground HVDC cable
- Proposed easement
- Marinus Link survey area
- Road
- Track

N

Scale: 1:90,000

1.5 0.75 0 1.5 km

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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Prepared by: Helen.Unkovich

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MARINUS LINK

6.2.3 Naturally occurring asbestos

NOA is generally not encountered within Victorian geology, predominantly due to the largely sedimentary nature of the majority of Victoria's surface geological units. However, some areas of basement rocks and ultramafic (such as serpentinites) volcanic rocks are present in the Victorian Highlands and some limited areas across the state that have the potential to contain naturally occurring asbestiform minerals.

As there are no known ultramafic or basement rocks intersecting the site it is considered that the likelihood of encountering NOA within the study area is very low.

6.3 HYDROGEOLOGY

Hydrogeological information of the sites and surrounding areas listed in Table 6-3 (refer Appendix C) summarises the expected groundwater conditions for sites encountered throughout the study area. A summary of the hydrogeological features (including aquifer type, depth to water, salinity, catchment areas and wetlands) are summarised in Table 6-3 below. The locations of the property IDs are presented on Figure 1.1 (Appendix B).

Table 6-3: Hydrogeological features

Parcel ID	Aquifer Type	Depth to Groundwater (m)	Salinity (mg/L)	Water Catchment/ Wetlands
V0008	Porous, extensive highly productive aquifers	<5 - 20	1,000	N/A
V0018	Porous, extensive highly productive aquifers	10 - 50	500	N/A
V0081	Fractured or fissured, extensive aquifers of low to moderate productivity	10 - 50	3,500	N/A
V0145	Fractured or fissured, extensive aquifers of low to moderate productivity	<5	3,500	N/A
V0175	Fractured or fissured, extensive aquifers of low to moderate productivity	<5 - 50	3,500	N/A
Dumbalk Township, Dumbalk, Vic	Fractured or fissured, extensive aquifers of low to moderate productivity	5 - 50	1,000	Tarwin River (Meeniyan)
V0279	Fractured or fissured, extensive aquifers of low to moderate productivity	5 - 50	3,500	Tarwin River (Meeniyan)
V0199	Fractured or fissured, extensive aquifers of low to moderate productivity	5 - >50	3,500	Tarwin River (Meeniyan)
V0306	Fractured or fissured, extensive aquifers of low to moderate productivity	20 - >50	3,500	Tarwin River (Meeniyan)
V0633	Fractured or fissured, extensive highly productive aquifers	<5 - 20	1,000 – 3,500	Tarwin River (Meeniyan)
V0552	Porous, extensive highly productive aquifers	<5 - 20	1,000	N/A
V0559	Porous, extensive highly productive aquifers	<5 - >50	1,000	N/A

6.4 POTENTIAL CONTAMINATING ACTIVIES AND SITE HISTORY

A review was completed to identify any potentially contaminating activities or sources of contamination on or immediately adjacent/off-site that may impact the works proposed within the study area.

Each information source has been ranked as either having a potential for contamination to be present at or near the study area (i.e. within 500 m) that may impact on the project (a “yes”) or it being unlikely that the source of contamination identified in the site history would impact on the project (a “no”).

How potential contamination sources may impact on the project have been evaluated based on the following three aspects:

- Potential for contamination to be present at or near the study area that may to pose a risk to the health of construction or maintenance workers during or after project works;
- Potential for contamination to be present at or near the study area that may require careful management (such as licensed asbestos removal, etc);
- Potential for contamination to be present at or near the study area in the form of contaminated soils that require expensive off-site disposal or treatment.

Locations where there is a potential for contamination to be present that may impact on the project (via one or more of the above environmental aspects) have been further investigated.

6.4.1 Priority Sites Register

Priority sites are defined as ‘sites for which EPA has issued a clean-up notice pursuant to section 62A or a pollution abatement notice pursuant to section 31A or 31B (relevant to land and/or groundwater) of the EP Act 1970’ and Section 2711, 272, 274 and 275 of the EP Act (2017).Typically, these are sites where pollution of land and/or groundwater presents a risk to human health or to the environment.

A review of the current and former EPA Priority Sites Register was conducted with results reported within 2 km of the study area summarised in Table 6-4.

Table 6-4: Risk Rating for Search Results of Current EPA Priority Sites Register

EPA Priority Site Address	Distance from study area	Notice Number	Notes	Potential contamination that may impact project
Brodribb Rd, Hazelwood	980 m east	90010255, 90010271, 90010272, & 90010273	Former Industrial Site. Requires assessment and/or clean-up.	Yes

6.4.2 PFAS

The potential requirement for further assessment to address per- and poly- fluoroalkyl substances (PFAS) contamination was guided by the requirements of the PFAS National Environmental Management Plan (NEMP) (HEPA, 2018). The NEMP outlines the requirement to assess the likelihood of harm to the environment from the potential mass of PFAS likely to be present at a site. Following this initial assessment, a site can then be assigned a priority rating which informs the recommendations for further assessment.

A review of the following databases was conducted to evaluate whether potential PFAS contamination may be present within the study area and pose a risk to the project:

- EPA PFAS Site Investigations Database;
- Defence PFAS Investigation and Management Program;
- Defence 3 Tier Regional Contamination Investigation Program; and
- Airservices Australia National PFAS Management Program.

No potential PFAS containing sites were identified in the search, however the EPA have issued advice for recreational fishers regarding the consumption of barramundi from the Hazelwood Pondage due to known PFAS found in a review by Food Services Australia and New Zealand (FSANZ).

Country Fire Authority (CFA) sites also have the potential to be impacted by PFAS, where training or testing of equipment may have occurred. For the majority of the study area, there are no CFA fire stations or training areas within 2 km of the alignment. However, the Dumbalk CFA fire station is located approximately 500 m from the alignment. Whilst training may have occurred at the station, given the distance to the proposed alignment, it is unlikely that PFAS would have migrated to the alignment and contaminated soils in the project's area of disturbance.

Landfills such as the Hazelwood Landfill site can act as potential sources of PFAS to groundwater.

PFAS containing aqueous film forming foams were often used to extinguish fires but is generally only used to extinguish liquid fuel fires, and not utilised for grass or forest fire fighting. There is a potential that where vehicle accidents have occurred along roadways, that PFAS containing firefighting foam may have been deployed in these incidents. However, the CFA does not maintain a register of all incidents and locations where foams were deployed.

Other potential sources of PFAS within or near the study area include the Hazelwood Mine fire area where AFFF foams were deployed to assist with extinguishing the coal mine fire. However, the fire occurred in 2014, after the period where PFAS containing foams were withdrawn from use and it is unlikely that the use of foams in this incident has resulted in PFAS impacts to soils. Historic use of PFAS containing foams in training systems at the Hazelwood and Morwell power stations and mine sites may have contributed to PFAS groundwater impacts, however these areas are likely to be greater than 2 km north of the alignment.

All of the potentially PFAS contaminated sites described above were determined to be outside of the project's area of influence, and not considered further in the assessment.

6.4.3 EPA audit reports

A review was undertaken on sites which are currently or have been historically registered as requiring an Auditor to assess site contamination. These sites may represent a source of contamination that may have impacted the soils and/or groundwater within the study area and present a risk to the project.

Audit sites that were reported within 500 m from the study area are summarised in Table 6-5.

Table 6-5: EPA Audit reports

Site Address	Notes	Distance from Site	Potential contamination that may impact project
Delburn Wind Farm Strzelecki Hwy	OSMI Australia Group Delburn Wind Farm site (WEF). Audit Completed 05 May 2021 CARMS 787820-1 Environmental Noise Audit	0 m	No
Power Block, Hazelwood Power Complex, Brodribb Road, Hazelwood	Hazelwood Power Station Audit Completed 6 September 2019 CARMS 59976-3 53V Environment Audit of Risk to the environment posed by the operation of a power station	2,400 m	No
Hazelwood Power Station, Broddribb Road, Hazelwood	Hazelwood power station, cooling pondage, mine site, overburden dump Audit completed 24 February 2006 CARMS 59976-1 Industrial facilities audit. Note, the majority of the audit area is over 1 km from the site, however, the boundary of the audit includes the Hazelwood Pondage which part of the project alignment traverses, but is unlikely to be impacted by contamination.	0 m	No
Hazelwood Power Complex, Brodribb Road, Hazelwood	Environmental Audit: Landfill operations – Hazelwood Power Station Audit Completed 30 June 2017 CARMS 59976-2 53V Audit of Landfill Operations	1,000 m	No
Rural Lot 48, Tramway Road, Morwell	Environmental audit of vacant land for disposal from state ownership Audit completed 1 June 1993 CARMS 17006-1 53X certificate of Audit	1,150 m	No
Former Lurgi Coal Gasification Plant, Tramway Road, Morwell	Environmental Audit of Former Gas Plant Audit Completed 29 September 2008 CARMS 51360-1 53X Statement of Audit and GQRUZ An additional 10 audits have been performed on parts of the Lurgi Gasworks (primarily in the early 1990s) which have not been documented here as they have no potential influence on the study area.	2,200 m	No

6.4.4 Current licensed activities

EPA licences are required for all scheduled premises (as defined in the EP Regulations 2021 and cover the operation of the site, and set operating conditions, waste discharge limits and waste acceptance conditions, as appropriate.

Sites which have an EPA licence may represent a source of contamination that could have impacted the soils and/or groundwater within the study area and present a risk to the project.

Current licenced activities that were reported within 500 m of the study area are summarised in Table 6-6.

Table 6-6: Results of current EPA Licenced Activities

Area	Notes	Distance from Site	Potential contamination that may impact project
Hazelwood	Hazelwood Power Complex Brodribb Rd Hazelwood VIC 3840 – A01 Prescribed Industrial Waste Management A05 Landfills C01 Extractive Industry and Mining	0 m	Yes

Whilst the Hazelwood licensed activities are technically adjacent to the study area, this relates to the portion of the alignment that crosses Eel Hole Creek on Hazelwood Pondage, which forms part of the boundary of the Licensed Activity Area. However, further reviews indicated that all of the listed licensed activities in Table 6-6 are greater than 500 m from the alignment and unlikely to result in contamination of the study area.

A licensed quarry was located in the Driffield area but was located more than 500 m from the study area, and not considered to represent a potentially contaminated site that may impact on the project.

No Former Licensed Activities were identified within 500 m of the study area.

6.4.5 EPA development licences

An EPA Development Licence, replacing the former EPA Works Approval, is required, when the occupier of scheduled premises seeks to increase or alter the emissions or the types of wastes that their premises handle. These premises may represent a source of contamination that could have impacted the soils and/or groundwater within the study area and present a risk to the project.

No EPA Development Licences were reported within 500 m of the study area.

6.4.6 Prescribed Industrial Waste permits

Prescribed Industrial Waste Permits are required for the transport, treatment and/or disposal of prescribed industrial waste within Victoria. These premises/activities may represent a source of contamination that could have impacted the soils and/or groundwater within the study area and present a risk to the project.

No prescribed Industrial Waste Permits were reported within 500 m of the study area.

6.4.7 Landfill register and former gas works

Landfills and former gas works are considered high risk sites for the source of contamination to soil, water and air and have the potential to have impacted the soils and/or groundwater within the study area and present a risk to the project.

No Landfills and/or Former Gas Works were reported within 500 m of the study area.

6.4.8 National and State waste management database

The National Waste Management Facilities Database (Geoscience Australia) and Statewide Waste and Resource Recovery Infrastructure Plan Facilities were reviewed to indicate the presence of any waste facilities in proximity to the site.

Waste Management Facilities are considered high risk sites for the source of contamination to soil, water and air and have the potential to have impacted the soils and/or groundwater within the study area.

No Waste Management Facilities were reported within 500 m of the study area.

6.4.9 Drycleaners, motor garages and service stations

Drycleaners, Motor Garages and Service Stations are considered high risk sites for the source of contamination to soil and water and have the potential to have impacted the soils and/or groundwater within the study area and present a risk to the project.

Drycleaners, Motor Garages and Service Stations that were reported within 500 m of the study area are summarised in Table 6-7.

Table 6-7: Search Results of Dry Cleaners, Motor Garages and Service Stations

Site Address	Notes	Distance from Site	Potential contamination that may impact project
1 Nerrena Rd, Dumbalk	Petrol Station - Operational	400 m	No

The petrol station identified in Dumbalk is approximately 440m east of the alignment at its closest point and given the distances involved, unlikely to have resulted in petroleum contamination of the alignment. There is the potential that the petrol station may have resulted in groundwater impacts, however it is likely that the groundwater in the region flows to the south-east (based on topography) and the petrol station is down-gradient of the alignment and unlikely to result in impacts to groundwater beneath the alignment area.

6.4.10 Historic aerial photography and mapping information

Recent aerial photography from the study area was reviewed to identify potential sources of contamination. Where potential sources of contamination were identified in recent aerial photography, additional historical aerial photographs for the particular land parcels or portions of the study area were obtained for review at approximately 10-year intervals dating back to approximately 1940.

A detailed historical aerial review is provided in Appendix D with historical arial photographs provided in Appendix C. A summary is provided below.

The potential sources of contamination that were considered for additional review included:

- Areas of land/soil disturbance
- Areas of increased soil movements
- Areas of intensive agricultural practices (i.e. potato growing)
- Where the alignment passed close (<500 m) to buildings, shedding, stockyards etc.
- Where tree die-back was observed
- Where wastes were visible in the images
- Where dairy shedding was observed.

The table below lists the land parcels that were identified as having a potential for contaminating activities to have occurred on and historical aerial photograph reviews were undertaken. The locations of the sites (as listed in Table 6-8) are presented in Figure 1.1 (Appendix B).

Table 6-8: Potentially Contaminating Activities in study area

Land Parcel ID	Potentially Contaminating Activities
V0008	• The cattle yards and milking shed in the north-western portion of the parcel, which is partially within the project alignment has been present onsite since at least 1972. This facility underwent a redevelopment between 2019 and 2020.
V0018	• Construction of agricultural shed and cattle yards at the intersection of the two small forests around 1981, with additional structures added periodically. Some miscellaneous farming equipment was present within the cattley yards in 2021. • A cleared area of land in the north-western tree area appeared in the 2000s which appears to have contained at various points small stockpiles and other piles of covered materials, that may include wastes.
V0031	• Disturbed soil areas on the proposed trenching area at the corner where the alignment bends to the west. • A new fill mound appeared in approximately 2013 and may have been removed (or grassed over) by 2019. • A cattle shed was constructed at the far west of the land parcel in the 2000s.
V0033	• Construction of a small shed located in the vacant patch of land bordered by dense forest in 2009. This is located immediately adjacent to the south of the area where current trench alignment is proposed. • A dam was also constructed next to the shed around 2014 and removed by 2020.
V0040	• Intensive farming that commenced from 2014.
V0041	• Logging activities from 1991 to 2009.
V0081	• A residence, large shed, a smaller shed and storage tank located in the northern portion of the parcel since at least 2009. The parcel is known to have been a former trucking company. The sheds may have been used for the storage, maintenance, refuelling, and loading/unloading of trucks. • In 2012 an additional large shed with adjacent storage tanks and access loop were present in the north of the parcel near Moores Road. By 2015 this shed, storage tanks and access loop had been removed.
V0105	• Some minor development and subdivision of land around 1972 to 2009. During this period some logging took place in 1982 and development of some sheds and facilities adjacent to the east of the railway line (east of the current proposed trench alignment). By 1991 a facility (its use is not known) was constructed on the north side of Main Street, Buffalo adjacent to the east of the railway. • A facility was developed adjacent to the rail track south of the township since at least 1985 and removed in 2009.
V0145	• Minor development of the parcel including a farmhouse and shed around 2009 and again 2021 (as well as some objects remaining of the surface of the parcel).
V0152	• Construction of two sheds (potential sheep dippers) in 1975 within the southern parcel (removed by 1981). Some minor development and activity within this area also took place in 2012. • Minor development of a potential agricultural facility within the northern parcel in 2009.
V0175	• Logging between 1985 and 2012. • An agricultural shed and stock yards are present in the alignment, adjacent to the proposed trench area and have been present in this area since 1972, and were re-built between 2009 and 2012.
V0181	• A small agricultural shed is located adjacent to the proposed cable disturbance area and may contain chemicals or wastes.
V0199	• An active petrol station is located 400 m east of the current proposed trench alignment.
V0279	• Development of the area for agricultural purposes in 1972 within the eastern corner of the parcel (within the proposed project alignment). Some minor development to

Land Parcel ID	Potentially Contaminating Activities
	this area appeared to take place around 1991 and again in 2021. Some potential waste was also identified within this area in 2021.
V0290	• Expansion of the agricultural facility in the western portion of the parcel, immediately adjacent to the current proposed trench alignment, between 1978 and 2021. This has included the construction of several sheds, access tracks for heavy machinery and several storage tanks.
V0306	• The area where the current trench alignment is proposed has had an agricultural shed with associated stock yards present since 1967. It appeared to undergo an expansion in 2014, followed by a reduction in size around 2021.
V0326	• The proposed cable disturbance area runs adjacent to several site sheds and buildings with potential storage of fuels or chemicals for farming purposes to be present.
V0633	• The parcel has contained an agricultural facility (inferred to be a poultry farm) in the central portion since 1972, located immediately south of the current proposed trench alignment.
V0353	• The removal of a shed in 2009 and the storage of materials on the surface from 2009 onwards. Potential waste and stockpiling of materials are evident in 2021, along with the construction of a new shed in the same location as the former shed.
V0409	• By 2009, observable planting of crops, construction of sheds and paths had taken place. In 2015, the parcel underwent further development with two new structures being built immediately east of the current proposed trench alignment which are probable stock yards and may include stock dipping areas.
V0552	• Earthworks taking place in the south-eastern portion of the parcel from 2017 onwards and potential emplacement of fill material in 2021.
V0559	• Evidence of activity in the form of white surface disturbance on the surface in 1950, 2009 – 2014, and 2017 – 2021. Two temporary structures were constructed in 1989 within this area and were removed by 2014. These surface markings (potential evidence of a farm waste dump) remain in 2021.
Hazelwood Cooling Pond and Plant	• Some localised developments have taken place, most notably on the eastern side of the intersection to Switchback Road and Frasers Road.

7. MODELLING AND ASSESSMENT

This section provides a summary of further assessment and modelling undertaken to determine the risk of potential impacts, including a site walkover, intrusive sampling, and development of a conceptual site model.

7.1 SITE WALKOVER

A site walkover was conducted at thirteen parcels along the alignment between 19th May 2022 and 20th May 2022. Site walkovers were undertaken to identify potentially contaminating activities and materials in preparation for future works.

The site walkover was conducted by suitably qualified and experienced environmental scientists. The environmental scientists were escorted by a land access manager appointed by MLPL, where the walkover included entry onto private parcels. Due to nature of the land use, some of the parcels were either inaccessible or were subject to restricted access as determined by the landowner. All of the land parcels identified in Table 6-8 have been included in Table 7-1 below for completeness, even where access was not available.

Observations and photographs collected during the walkover are included in Appendix E. A summary of the observations and potentially contaminating activities/sources are summarised in Table 7-1 below and shown in Figures 2.1 to 2.13, Appendix B.

Table 7-1: Observations across the study area

Land Parcel ID	Observations of Potentially Contaminating Activities / Sources of Contamination	Figure Reference
V0008	No access available, as of May 2022 • However low to medium risk of potential contamination	Figure 1.1
V0013/ V0018	No access available, as of May 2022	Figure 1.1
V0031	No access available, as of May 2022	Figure 1.1
V0033	No access available, as of May 2022	Figure 1.1
V0040	• Private agricultural use for grazing and pasture • Insecticide use noted (drums of methomyl 225 observed) • Pasture related chemical use • Dead trees evident within plantations to east and west of site	Figure 2.1
V0041	• Private agricultural use for grazing and pasture • Remnants of demolished shed, including tyres, wire, black plastic, corrugated iron • Pasture related chemical use	Figure 2.2
V0081	No access available, as of May 2022	Figure 1.1
V0105	• Herbicide use and grading on roadside, with visible vegetation distress • Nearby residential and commercial land use (Incitec Pivot – fertiliser supplier) • Railway to the east	Figure 2.3
V0145	No access available, as of May 2022	Figure 1.1
V0152	• Private agricultural use for grazing, pasture and stockyards • Stockyard activities • Imported gravel fill within graded area • Stock Dam • Pasture related chemicals	Figure 2.4

Land Parcel ID	Observations of Potentially Contaminating Activities / Sources of Contamination	Figure Reference
	• Discarded used tyres • Small rubbish burn-pile (primarily laminated wood and plant material)	
V0158	• Private agricultural use for grazing, pasture, windmill and stockyards • Stockyard activities – heavy use evident • Pasture related chemicals	Figure 2.5
V0174/ V0175	• V0174: Private roadway and roadside pull-out/plantation • V0175: Private agricultural use for grazing, pasture, windmill and dairy • Roadside herbicide use • Imported fill material for roadside pull-out • Pasture related chemical use • Small waste pile/dump in north of parcel (presented in Figure 2.7)	Figure 2.6
V0181	• Private use for agriculture, grazing and pasture • Vehicle sheds • Heavy machinery use • Motor-oil storage • Small burn pile/rubbish dump in southern parcel (V0175) • Pasture related chemicals • Small gravel stockpile • Three shipping containers (unknown contents)	Figure 2.7
V0199	• Petroleum fuels are stored and sold at No. 1 and No. 2 Narrena Road, Dumbalk. Fuel is stored in small underground storage tanks within gravel hardstand areas outside of associated buildings.	Figure 1.1
V0279	• Private use for agriculture, grazing, pasture, dairy and vegetable garden • Old dairy • Small burn-pile/rubbish dump • Imported road fill • Pasture cropping	Figure 2.8
V0283	• Private use for agriculture and dairy with public roadway • Large operational dairy • Imported fill material used for terracing beneath dairy and road fill • Pasture related chemicals	Figure 2.9
V0306	• Leased agricultural grazing and pasture, owned by MLPL • Former dairy • Soil stockpiles • Imported gravel fill • Small rubbish piles • Pasture related chemicals	Figure 2.10
V0326	• Historical residential property with dairy, owned by MLPL • Residential properties (2) containing asbestos • Farm sheds (4) containing asbestos • Historic dairy containing animal carcasses • Large rubbish piles • Underground septic tank/s • Above ground fuel tanks • Live and spent ammunition throughout site • Buried bags of unknown material • Used aqueous film-forming foam (AFFF) fire extinguishers	Figure 2.11

Land Parcel ID	Observations of Potentially Contaminating Activities / Sources of Contamination	Figure Reference
V0353	No access available, as of May 2022	Figure 1.1
V0409	No access available, as of May 2022	Figure 1.1
V0552	• Private use for agriculture, grazing and pasture • Evidence of quarry activities, potentially backfilled with rubbish • Building debris • Pasture related chemicals	Figure 2.12
V0559	• Private use for agriculture, grazing and pasture • Pasture related chemicals • Historical photos indicate former building of which is no longer present	Figure 2.13

The site walkover assessment generally did not identify any areas with odorous soils that may impact on air quality, with the exception of parcel V0326, where an above ground fuel storage tank had a small localised area of staining on the soils that has a minor hydrocarbon odour. The presence of an animal carcass in one of the sheds on this property also had an odour that potentially impacted on air quality in the area surrounding the carcass.

ASS often is associated with a hydrogen-sulfide odour when disturbed. As areas of the alignment potentially contain ASS or Potential ASS, there is a potential that disturbance of these soils may result in air quality impacts (odours)

7.1.1 Data gaps

Several of the parcels were identified as having a potential for contamination to be present and were recommended to be inspected to confirm information presented in the aerial photographs. However, due to land access limitations, these sites were not able to be inspected and may require additional assessment in the future. The potential risks associated with these data gaps are addressed via EPR CL-01.

Parcel ID	Potential contamination	Recommendations
V0008	Aerial photographs identified fill mounds and a dairy milking shed within the study area.	Inspection and testing (if potential contamination identified that cannot be avoided) to confirm the nature and extent of contamination (if any) and assessment of any potential impacts to the project.
V0013/ V0018	Aerial photographs identified several fallen trees, and several areas of potential waste dumping and agricultural shedding (which may be associated with chemical storage).	
V0031	Large soil mound appears and then disappears between successive aerial photographs and may contain buried wastes	
V0033	A small agricultural shed is located within the study area and may have been used for storage or use of agricultural chemicals/fuels.	
V0081	A former trucking business with several sheds was located on this site (subsequently removed) and may be associated with fuel or oil storage	
V0145	Several agricultural sheds are located on this site within the study area where agricultural chemicals or fuels may have been stored or used.	
V0175	Observations made from the road-side identified what appeared to be a small waste pile/dump	

Parcel ID	Potential contamination	Recommendations
	approximately 80 m to the east of the nominal alignment.	
V0353	Aerial photographs indicated that potentially poultry farming may have occurred on this site and that several areas of soil disturbance were noted which may indicate burial of wastes.	
V0409	Observations from aerial photographs identified a small shed associated with what appeared to be a small stock yard. This was considered to potentially be associated with stock dipping activities and was located approximately 30 m east of the nominal alignment.	
V0644/ V0645	These land parcels contain mapped areas of 'high probability' of containing potential ASS	Undertake testing for ASS within study area.

7.2 CONCEPTUAL SITE MODEL

7.2.1 Potential sources of contamination

Based on the results of the site inspection and review of publicly available relevant environmental and historical information potential sources of contamination and their associated contaminants of concern which may have impacted the soil, sediments, surface water and groundwater and within the study area have been summarised in Table 7-2.

Table 7-2: Summary of potential sources of contamination

Sources of Contamination	Associated Contaminants of Potential Concern
Former railway alignment	Metals, petroleum hydrocarbons, asbestos
Agricultural use – heavy machinery	Hydrocarbons
Agricultural use – pasture and cropping	Herbicides, pesticides and PFAS
Agricultural use – grazing	Herbicides, pesticides and PFAS
Waste dumping	Metals, hydrocarbons, pesticides, herbicides, PFAS, asbestos, inert wastes
Burn piles	Hydrocarbons, metals
Imported fill material	Metals, hydrocarbons, pesticides, herbicides, PFAS, asbestos, inert wastes
Septic tanks	Nitrates, phosphorus, ecoli, thermotolerant coliforms,
Aboveground and underground fuel tanks	Petroleum hydrocarbons
Fire fighting	PFAS
Landfills/buried waste	Metals, hydrocarbons, pesticides, herbicides, asbestos, inert wastes, nitrates, ammonia, bicarbonates, PFAS
Potential acid sulfate soil	Acid generation (low pH), metals

The assessment did not identify any potential sources of contamination within the coastal fringe along Waratah Bay (or within 2 km of the coast) that have had the potential to result in contamination of

sediments on the seabed that may be disturbed during construction, operation or decommissioning of the cable. Consequently, no specific testing of seabed sediments for contamination is considered warranted.

7.2.2 Potential exposure pathways

The main exposure pathways that could be considered likely during the construction phase and continued use of land include:

Human Health Exposure Pathways

- Dermal contact with contaminated soil
- Incidental ingestion of soil
- Inhalation of soil/sediment derived dusts (including asbestos fibres), and/or soil vapour
- Volatilisation of contaminants leading to inhalation
- Incidental ingestion or dermal contact with contaminated surface water or groundwater

Ecological Exposure Pathways

- Ingestion of soil by, or direct toxicity to, soil invertebrates
- Uptake and accumulation by, or direct toxicity to terrestrial plants
- Incidental ingestion of soil by fauna foraging
- Migration of contamination via surface run-off result in direct contact with contaminated water and/or sediment by aquatic organisms in receiving surface waters
- Leaching of contamination in soil to groundwater result in impacts to groundwater dependent ecosystems

7.2.3 Potential receptors

The following key current receptors relevant to the study area have been identified in vicinity of the proposed work sites:

Human Health Receptors

- Persons using the facility currently or in the future (including future farm workers and recreational users and visitors) that may come into contact with contaminated soil and/or groundwater or be exposed to airborne contamination, or vapours that emit into indoor or outdoor areas; and
- Construction and maintenance workers conducting works at the site in the event they come into contact with contaminated soil and/or groundwater or are exposed to airborne contamination, or vapours that emit into indoor or outdoor areas.
- Recreational users of impacted surface waterbodies.

Ecological Receptors

- Surface waterbodies and the aquatic ecosystem(s) therein receiving surface water runoff and/or groundwater discharge from contamination associated with the sites and their surrounds.
- Ecological receptors (flora and fauna) that may be exposed to contamination in soils and that may uptake contamination from on-site or off-site water bodies or where contamination may migrate

We note that several sensitive ecological receptors (e.g., growling grass frog), may be present within the study area, however, specific impacts to these receptors are covered in the Terrestrial Ecology Impact Assessment (Eco Logical Australia, 2023).

7.2.4 Summary of preliminary conceptual site model

Based on the desktop assessment and site walkover conducted, a range of potentially contaminating activities and potential contaminants of concern were identified across the study area, incorporating multiple parcels of land. The predominant sources of potential contamination, and associated potential contaminants of concern, are point source contamination and by their nature, localised. Many of the localised potential point sources of contamination identified during site walk-over inspections (such as buried or surface waste dumps) were not selected for sampling as the primary mitigation measure for these areas is to avoid disturbing the areas of waste or contamination via micro-realignment of the cable routing, and obtaining contamination data from areas of known wastes was not considered warranted during this phase of the project in order to inform the potential risks to the environment or the management and mitigation measures from these areas of contamination. Many of these areas are considered to contain wastes or contamination which will require management if disturbed.

Two potential sources of potential contamination were identified that are considered to have a broader potential for impact across the study area including:

- Pesticide and herbicide use in agricultural areas – predominantly the potato growing region near Thorpdale; and
- ASS near Waratah Bay.

These broader potential impacts were considered to warrant testing to confirm whether broad, study-wide scale contamination (or ASS) impacts were present that warranted development of management or mitigation measures.

7.3 TARGETED SOIL SAMPLING

A targeted soil sampling event was conducted on 4 August 2022 and 22 December 2022 to identify the impact of potentially contaminating farming activities including herbicides and pesticides, as well as the presence and extent of potential ASS along the alignment extending from Waratah Bay to Mirboo North.

In order to assess the potential extent of broad application and accumulation of pesticides or herbicides within the study-area, soil sampling locations were focussed on collecting samples from shallow soils within drainage lines, creeks or streams where agricultural chemicals may have been transported and accumulated. The locations were selected to cover a broad portion of the study area where potato growing has occurred (near Thorpdale), where the study area crossed drainage lines and disturbance of any accumulated contamination was more likely to occur.

In order to assess the potential for ASS to be present in the study area, a location was installed close to the Waratah Bay mapped high-probability ASS zone. The location was chosen to be within the ‘low -probability’ region of mapped ASS and up-slope (to the north) of the high-probability zone to inform the potential for the broader ‘low-probability’ zone to contain potential ASS that may be disturbed by the project.

7.3.1 Applicable guidelines

Applicable guidelines and standards for sample collection and analysis include the following:

- ASC NEPM (1999) National Environment Protection (Assessment of Site Contamination) Measure (1999) as amended 2013 (NEPM (ASC)).
- ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines
- Victorian Publication 655.1, Acid Sulfate Soil And Rock, July 2009 (EPA 655.1)
- EPHC & NRMMC 2011, National guidance for the management of acid sulfate soils in inland aquatic ecosystems, Environment Protection and Heritage Council and the Natural Resource Management Ministerial Council, Canberra
- DSE (2010), Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils, Department of Sustainability and Environment (Vic), 2010

7.3.1.1 Assessment criteria

Based on the current land use and proposed use of the study area, screening criteria for pesticides is sourced from:

- NEPM (ASC) for human health for soils and sediment:
  - Health Investigation Guidelines (HIL) D – Commercial/Industrial use for human health impact for soils and sediments
  - Ecological investigation Guidelines (EIL) for terrestrial ecological impact for soils and sediments in terrestrial settings
- EPA 655.1, Table 3 for ASS classification

7.3.2 Sampling methodology

The field assessment methodology is summarised in Table 7-3. Sampling locations are shown in Figure 3, Appendix B.

Table 7-3: Sampling Methodology

Activity	Details
Soil Sampling	Soil samples were collected according to Tetra Tech Coffey Standard Operating Procedures at depths of 0-0.1 m (surface) and half-metre intervals or changes in lithology through out the boreholes. A hand auger was used to collect samples at the nominated depths at each location. Where necessary, a stainless-steel trowel was used to transfer the sample into clean laboratory supplied containers (150 mL glass jar with screw cap lid and 200 mL snap lock bag). This assessment included 2 soil sample types: • Samples undergoing analysis for potential ASS were collected at a depth of 2 metres below ground surface (mbgs) from the nominated location. Samples were immediately sealed within the laboratory provided snap lock bag and frozen to minimise potential effects of oxidation. • Samples collected for pesticides and herbicides with collected from depths of 0.05 m (surface) and 0.5 mbgs at the four nominated locations (ALT-1 to ALT-4). Soil was transferred into a laboratory supplied glass sampling jar and chilled.
Soil Screening	During sampling, soils were assessed for visual and olfactory indications of potential contamination, including observations of vegetation distress, water-logged soils and

Activity	Details
	nearby farming activities. Details of these observations are recorded by samplers in field logs provided in Appendix F.
Decontamination Procedure	Re-used soil sampling equipment was decontaminated using Decon 90 solution and rinsed with potable water and de-ionised water between sampling locations.
Sample Preservation	Samples were placed in laboratory supplied containers with appropriate preservatives where required. Samples were stored on ice (<4°C) in an ice box while on site and in transit to the laboratory and potential ASS samples were frozen (below -8°C) within six hours of collection.
Sample Analysis	Samples were analysed by Eurofins, a National Association of Testing Authorities, Australia (NATA) accredited laboratory for all specified analysis. A copy of the NATA Analytical reports is provided in Appendix G.

7.3.3 Analytical suite

Analysis was conducted in accordance with the COPC identified for the area. Analytical testing was processed as follows.

- **Sample ASS-1**: Chromium Reducible Suite (CRS) for acid sulfate potential (2 m depth)
- **Sample ALT-1:** Organochlorine and Organophosphate Pesticides (OCPs/OPPs) and Phenoxy Acid Herbicides (0.05m and 0.5m depth)
- **Sample ALT-2:** OCPs/OPPs and Phenoxy Acid Herbicides (0.05m and 0.5m depth)
- **Sample ALT-3:** OCPs/OPPs and Phenoxy Acid Herbicides (0.05m and 0.5m depth)
- **Sample ALT-4:** OCPs/OPPs and Phenoxy Acid Herbicides (0.05m and 0.5m depth)

7.3.4 Results

7.3.4.1 Field observations

As part of the sampling works conducted, field observations were made to identify indicators of potential soil impacts or contamination such as vegetation distress, water-logged soils or disturbed earth. A summary of these observations is provided in Table 7-4.

Table 7-4: Field Observations

Sample Location	Observations
ASS-1	Clay with fine grain and brown colour with orange & grey mottling, high plasticity and moist. No observed odour or staining in material.
ALT-1	Clay with fine to medium grain and brown/red colouration, medium to low plasticity, moist. No observed odour or staining.
ALT-2	Clayey Loam with medium grain, brown, slightly moist and no observed staining or odour. Vegetation distress observed in nearby parcel as part of agricultural activities.
ALT-3	Clayey Loam with medium grain and predominantly brown colour with slight red. Low plasticity, slightly moist. No odour or staining. Root system of nearby trees at 0.5 mbgs.

Sample Location	Observations
ALT-4	Loamy Clay with medium grain and brown colour. Moist with low plasticity and no odour or staining. Nearby grass in distress and adjacent to small orchard.

7.3.4.2 Soil analytical results

Soil sample results have been tabulated against the adopted assessment criteria and presented in Appendix H. Laboratory provided analysis certificates and associated documents are provided in Appendix G.

7.3.4.3 Pesticides

All samples reported concentrations of organochlorine and organophosphorus pesticides and phenoxyacid herbicides below the laboratory limits of reporting (LOR) (included in Appendix G) and below the adopted ecological and health based screening criteria.

7.3.4.4 Acid sulfate soils

The sampling of soils at ASS-1 identified a soil profile that was pale brown to pale grey with orange mottling and not indicative of potential acid sulfate soil indicators (such as jarosite, organic matter etc). The moisture through the soil profile indicated wet soils at the surface (as a result of the location being within a road drainage line), and then moist soils to a depth of approximately 1.7 m below the ground at which point soils became wet. One sample from 2m (labelled ASS-1) was selected for analysis based on the clayey soil profile, lack of other potential indicators of ASS, and the likely intersection with the water table at 1.7 m.

Chromium-reducible sulfur analysis for sample ASS-1 provided no indication of acid production potential at the location, reported a concentration of reducible sulfur below the laboratory reporting limit of 0.005 % S. This result was below the EPA 655.1 (Table 3) criteria for classification of ASS and as such is considered not to represent an ASS and pose a low likelihood of impact if the soil is disturbed.

7.3.5 Data quality assessment

Tetra Tech has completed a review of the Quality Assurance (QA) steps and Quality Control (QC) results, according to the following documents.

- NEPC, National Environment Protection (Assessment of Site Contamination) Measure, National Environment Protection Council (1999).
- US EPA Guidance on Environmental Data Verification and Data Validation (2002).
- US EPA Contract Laboratory Program for Organic (1999) and Inorganic (2002) Data Review.

This included examining holding times, laboratory accreditation, sample preservation methods, a review of field QC sample results and a review of laboratory QC sample results. To validate the accuracy and validity of primary soil sampling results, a range of field and laboratory QC samples were collected and assessed during the assessment.

A summary of the reported QC analytical results and data validation report is provided in Appendix I.

NATA certified laboratory certificates of analysis are provided in Appendix G.

Overall, it was considered that the field and laboratory quality procedures and results are acceptable for the purposes of interpreting and verifying the findings of the assessment.

8. RISK ASSESSMENT

The following sections present the contaminated land and ASS risk assessment for the periods of construction and operation (Section 8.1). It is understood that contaminated land and potential ASS are most likely to be encountered and identified during ground disturbance activities associated with the construction phase of the project.

Each minor excavation and ground disturbance of potential impact is discussed with an assessment of risk likelihood and consequence provided. A summary table of risk to human health and ecological receptors have been provided (Table 8-6)

8.1 CONSTRUCTION AND OPERATION

8.1.1 Localised impacts from chemical containers, construction materials and buried waste

Small burials and waste piles were observed across some of the sites along the proposed alignment, with contents including wood, plant material, tyres, building wastes, potentially asbestos containing materials, agricultural chemical containers and general household/agricultural waste material. In addition, several areas of potential contamination were identified in recent and historical aerial photographs that were not able to be inspected on the ground that may be contaminated.

An increased risk of potential contamination may be present for waste material buried at parcel V0326, due to observed presence of AFFF fire extinguishers, live and spent ammunition and chemical containers across the property.

The risks from these wastes are that they currently present an aesthetic risk (and potentially lead to further illegal dumping of wastes), but also may impact on ecological receptors in the vicinity of the wastes where flora and/or terrestrial fauna may come into direct contact with the wastes. There is also a potential that the wastes and/or buried wastes contain contaminants that may present a risk to human health if disturbed (such as concentrated pesticides or asbestos materials).

Where these wastes cannot be avoided via micro-realignments of the project alignmentwithin the study area, and they will be disturbed during construction, operation or decommissioning, these wastes are to be removed (to the extent required) and analytical validation of the soils beneath these areas undertaken to mitigation the potential risks to receptors from these wastes.

Micro-realignment involves small-scale adjustments to the route to avoid localised features such as small areas of wastes or contamination. Micro-realignments are generally limited to cable-route and area of disturbance changes within the current 220 m wide study area, limiting the need to undertake additional assessment of land not included in the current study.

This avoidance/management type approach is outlined in environmental performance requirement EPRs CL01, CL02 and CL04. By removing the wastes where they will be disturbed, this limits the potential for them to cause future impacts, thereby avoiding the hazard.

The removal of these wastes should be included in the project specific construction environmental management plan to be prepared for the project, and validation testing of the soils beneath the removed wastes to confirm that any impacts from the wastes have been removed such that they do not preclude any of the protected environmental values for the site.

The removal of the wastes encountered along the alignment and validation of soils beneath the wastes to confirm that any residual contamination does not preclude any of the protected environmental values for the site would reduce the overall risk of environmental impact from *'low'* to *'very low'.*

The following environmental performance requirements are proposed to minimise the risk of potential impacts.

Table 8-1: Environmental performance requirements: localised impacts from chemical containers, construction materials and buried waste.

EPR ID	Environmental performance requirement	Project stage
CL01	**Inspect sites to avoid or remove buried waste and waste piles to manage impacts to the environment** Prior to commencement of project works: • Inspect properties to be directly disturbed that have a medium or high risk of contamination as identified in the EIS/EES Technical Appendix N: Contaminated Land and Acid Sulfate Soils, and have not been previously accessed to identify risk of potential contamination. The purpose of inspections is to identify areas of potential contamination including buried waste and waste piles to be sampled and tested. • Where practicable, realign the cable route to avoid areas of identified wastes and/or potential contamination. Areas that cannot be avoided should be tested to confirm the presence of contamination as required by EPR CL02.	Design
CL02	**Manage excavated soil, contaminated soils, removed wastes and potential risks to the environment due to contamination during construction** Prior to commencement of project works, prepare a contaminated land management plan in consultation with EPA to manage excavated soils that includes: • A procedure for completing a detailed site investigation (in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure* (2013) (including as a minimum scheduled B1 and B2) prior to any excavation of medium to high risk of being contaminated areas (as identified in the EIS/EES Technical Appendix N) to identify the location, types and extent of contamination. • Measures for the management of all material generated from excavation or trenchless construction methods in accordance with the *Environment Protection Act 2017* (Vic) (EP Act) and Environment Protection Regulations. • Validation testing of soils beneath removed wastes and contaminated soils, and implement measures to remediate or dispose of contaminated soils that present a potential risk to human health and the environment. • Handling, transport, storage and disposal of spoil, excavated or generated wastes in accordance with EM07 to protect human health and the environment. • Management of hazardous substances, excavated soils and asbestos contaminated soils to minimise risks to human health and the environment. • An unexpected finds protocol for contaminated land, acid sulfate soils, asbestos and odour management of excavated soils. • Preventing contamination of soil, surface water and groundwater water during construction activities through: o Chemicals, fuels and hazardous materials being stored and handled onsite in a manner that prevent contamination and in accordance *Australian Standard AS1940 Storage and Handling of Flammable and Combustible Liquids* and with reference to EPA Victoria Publication 1698*: Liquid storage and handling guidelines*. o Contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits. • Document the requirements for the use, handling, storage, transportation and disposal of all substances to minimise the risk of pollution or harm and in	Construction

EPR ID	Environmental performance requirement	Project stage
	accordance with the relevant legislation and guidelines to demonstrate compliance with the General Environmental Duty. The contaminated land management plan must be a sub plan to the CEMP and implemented during construction.	
CL04	**Develop and implement measures to manage potential contamination impacts in operation** As part of the OEMP, develop and implement measures to avoid causing contamination during the operation of the project. The measures should: • Comply with Australian Standard AS1940 Storage Handling of Flammable and Combustible Liquids. • Address requirements of EPA Victoria Publication 1834.1 *Civil construction, building and demolition guide*. Address requirements of EPA Victoria Publication 1698 *Liquid Storage and Handling Guidelines*.	Operation

8.1.2 Management of excavated and surplus soil

The assessment of the study area has not identified areas of contaminated soils or ASS that require specific management, and the majority of soils that are to be excavated during construction may be able to be re-used within the construction site for backfill.

The construction phase will generate large volumes of soils that will be surplus to the needs of the project including soil from the cable trenching that is a result of the use of imported bedding materials around the cable ducts. The surplus spoil from trenching is estimated to be approximately 1 cubic metre (banked) per linear metre of the project – or 90,000 m^3.

Haul and access roads constructed for the project are estimated to require approximately 250,000m^3 (banked) of crushed rock that will be surplus to the project requirements at the completion of the project.

Improper handling and stockpiling of excavated soils can result in impacts to air quality from dust emanation or surface water quality via stormwater run-off and sedimentation. All soils stockpiles should be managed in accordance with EPA guidance (*Publication 1895, Managing Stockpiles)*, and any stockpiles sourced from 'contaminated land' must be contained to limit the potential for migration of contamination through dust dispersion, leaching, or stormwater run-off. Stockpile controls should be documented within the project contaminated land management plan (CL-02).

Where localised impacts from contamination or acid sulfate soils are identified (CL-01 and CL-03) and cannot be avoided, soils excavated from these areas will require separate management. Soil sourced from a contaminated site may present a risk to human health or the environment via leaching of contamination to groundwater or surface water, or ingestion/inhalation from dust or volatile contamination.

In accordance with Regulation 62 of the EP Regulations (2021, Vic), soils sourced from sites that are defined as 'contaminated' (in accordance with the EP Act 2017, Vic), must be classified as soon as practicable.

In accordance with Section 35 of the EP Act, several land parcels within the study area may be classified as 'contaminated land' due to the presence of waste (or asbestos containing materials) on the surface of the site that is above the background level of waste in the area surrounding the land parcel; and creating a potential risk of harm to human health or the environment.

Where areas of waste (either present on the surface of the site or buried) are identified within the project easement (and potentially present a risk of harm to human health or the environment) and will be disturbed, these areas of the project should be classified as ‘contaminated land’. Once the nature and extent of the notifiable contamination has been identified, clarification should be sought from EPA regarding the boundaries of each area of ‘contaminated land’, as EPA consider individual notifications of contaminated land to apply to the land title, rather than portions of the title (such as the project easement).

Where land is considered to be ‘contaminated’ (and the contamination is notifiable contamination) , there is a duty to notify EPA, and any soils sourced from the ‘contaminated land’ must be stockpiled and tested to confirm their classification and managed appropriately.

Where soils are classified as industrial waste, priority waste or reportable priority waste, these soils are to be managed in accordance with the EP Regulations and only transported to a premises authorised by EPA to accept such wastes. Should the soils be classified as Category D contaminated soil, the project may apply to EPA for a permit to retain the soils within the project site.

Given the large volumes of soils that are likely to be surplus to the project requirements (in terms of backfill and crushed rock from haul/access roads), management of the spoil will be required. As the surplus soil and crushed rock is not required by the project, it is classified as industrial waste (as it is generated by an industrial/commercial enterprise and is surplus to requirements). Based on the results of this study, the majority of the waste soils (including haul-road rock) will likely be classified as clean fill material (in accordance with EPA Publication 1828.2). The surplus waste soil (if classified as clean fill) should not be disposed to landfill and alternative re-uses for the soil identified and implemented if practicable. It is recommended that testing of surplus soils to be transported from the site of origin are to be tested in accordance with EPA Publication IWRG702 and classified in accordance with publication 1828.2 and re-use and/or disposal options comply with EP regulations.

There may be opportunity to re-use some of the soils or crushed rock at suitable locations on land-owner’s properties where the cable traverses their property. However, this will only be via agreement with the landowners and is unlikely to accommodate all of the surplus soils to be generated by the project. Other areas of the project also have a potential backfilling need (such as the Driffield and Hazelwood converter station sites) and surplus soils could be utilised in these areas if geotechnically suitable. There may also be a potential option to sequentially re-use haul-road crushed rock along the alignment to reduce the quantity of materials required by the project.

Following testing and classification, the surplus soils will likely be classified as Industrial Waste and if they are to be re-used at another premises, then MLPL (or delegate) has a duty to ensure that the receiving premises is authorised to receive industrial waste (in accordance with section 133 of the EP Act 2017). This duty can be discharged via compliance with the EPA Fill Material Determination (Victorian Government Gazette, No S 302 Friday 18 June 2021) or via other permissions.

Preparation of a waste soil management plan will be required to document the sources of waste soil, the testing and reporting requirements to confirm soils are suitable for re-use off the project site (such as in other areas of land-owner’s properties), as well as documenting the plan for managing and disposing/re-using the surplus soil in a sustainable and beneficial manner, as well as documenting MLPLs duties regarding management of waste.

Table 8-2: Environmental performance requirements: management of soil

EPR ID	Environmental performance requirement	Project stage
CL01	**Inspect sites to avoid or remove buried waste and waste piles to manage impacts to the environment** Prior to commencement of project works: • Inspect properties to be directly disturbed that have a medium or high risk of contamination as identified in the EIS/EES Technical Appendix N: Contaminated Land and Acid Sulfate Soils, and have not been previously accessed to identify risk of potential contamination. The purpose of inspections is to identify areas of potential contamination including buried waste and waste piles to be sampled and tested. • Where practicable, realign the cable route to avoid areas of identified wastes and/or potential contamination. Areas that cannot be avoided should be tested to confirm the presence of contamination as required by EPR CL02	Design
CL02	**Manage excavated soil, contaminated soils, removed wastes and potential risks to the environment due to contamination during construction** Prior to commencement of project works, prepare a contaminated land management plan in consultation with EPA to manage excavated soils that includes: • A procedure for completing a detailed site investigation (in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure* (2013) (including as a minimum scheduled B1 and B2) prior to any excavation of medium to high risk of being contaminated areas (as identified in the EIS/EES Technical Appendix N) to identify the location, types and extent of contamination. • Measures for the management of all material generated from excavation or trenchless construction methods in accordance with the *Environment Protection Act 2017* (Vic) (EP Act) and Environment Protection Regulations. • Validation testing of soils beneath removed wastes and contaminated soils, and implement measures to remediate or dispose of contaminated soils that present a potential risk to human health and the environment. • Handling, transport, storage and disposal of spoil, excavated or generated wastes in accordance with EM07 to protect human health and the environment. • Management of hazardous substances, excavated soils and asbestos contaminated soils to minimise risks to human health and the environment. • An unexpected finds protocol for contaminated land, acid sulfate soils, asbestos and odour management of excavated soils. • Preventing contamination of soil, surface water and groundwater water during construction activities through: o Chemicals, fuels and hazardous materials being stored and handled onsite in a manner that prevent contamination and in accordance *Australian Standard AS1940 Storage and Handling of Flammable and Combustible Liquids* and with reference to EPA Victoria Publication 1698*: Liquid storage and handling guidelines*. o Contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits. • Document the requirements for the use, handling, storage, transportation and disposal of all substances to minimise the risk of pollution or harm and in accordance with the relevant legislation and guidelines to demonstrate compliance with the General Environmental Duty. The contaminated land management plan must be a sub plan to the CEMP and implemented during construction.	Construction
CL03	**Develop and implement an acid sulfate soils management plan** Prior to commencement of project works: • Undertake site investigations to characterise potential acid sulfate soils (ASS) prior to construction to confirm the location and extent of potential ASS that could be disturbed by the project (including areas mapped as having a high-probability of containing ASS and areas of waterlogged soils).	Construction

EPR ID	Environmental performance requirement	Project stage
	• Develop an ASS management plan for locations where disturbance intersect potential ASS. The ASS management plan must meet the requirements of *Industrial Waste Management Policy (Waste Acid Sulfate Soils)*, EPA Publication 655.1*: Acid Sulfate Soil and Rock* and the *Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils* (DSE,2010), and include: • The location of potential ASS identified. • Measures to prevent oxidation of ASS identified and acidification of groundwater wherever possible. • Management of potential ASS to limit or treat acid generation. • Identification of appropriate stockpile areas and management measures to prevent release of acid and odours to the environment including lining, covering and runoff collection. • Identification of suitable sites for management, re-use or disposal of any ASS spoil that may be generated in accordance with EPA Victoria requirements. The ASS management plan must be informed by the sub plan developed for EPR GW07 and approved by EPA Victoria. The ASS management plan must be a sub plan to the CEMP and implemented during construction.	

8.1.3 Management of routine construction and operational impacts

There are a range of potential impacts to the environment or human health that are common to most construction sites, and which are routinely addressed by well-established standard operating procedures or guidelines in the construction industry. Examples of these potential impacts considered to be low to negligible but will require management during construction and operation include (but are not limited to):

- Contamination of near surface soils from storage, transportation, and use of small volumes of chemicals, fuels, and other materials.
- Impacts associated with use of subsurface construction materials (sealants, grouts, adhesives etc.)
- Impacts associated with infrastructure construction including roads, drainage areas, concreting, drilling etc.
- Impacts from contaminated drilling fluids
- Impacts from spills or leaks from vehicles, storage tanks, and underground infrastructure.

These impacts are to be managed during the construction, operational and decommissioning phases of the project via the development and implementation of project Environmental Management Plans for the Construction, Operation and Decommissioning phases.

Table 8-3: Environmental performance requirements: management of routine construction and operational impacts

EPR ID	Environmental performance requirement	Project stage
CL02	**Manage excavated soil, contaminated soils, removed wastes and potential risks to the environment due to contamination during construction** Prior to commencement of project works, prepare a contaminated land management plan in consultation with EPA to manage excavated soils that includes:	Construction

EPR ID	Environmental performance requirement	Project stage
	• A procedure for completing a detailed site investigation (in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure* (2013) (including as a minimum scheduled B1 and B2) prior to any excavation of medium to high risk of being contaminated areas (as identified in the EIS/EES Technical Appendix N) to identify the location, types and extent of contamination. • Measures for the management of all material generated from excavation or trenchless construction methods in accordance with the *Environment Protection Act 2017* (Vic) (EP Act) and Environment Protection Regulations. • Validation testing of soils beneath removed wastes and contaminated soils, and implement measures to remediate or dispose of contaminated soils that present a potential risk to human health and the environment. • Handling, transport, storage and disposal of spoil, excavated or generated wastes in accordance with EM07 to protect human health and the environment. • Management of hazardous substances, excavated soils and asbestos contaminated soils to minimise risks to human health and the environment. • An unexpected finds protocol for contaminated land, acid sulfate soils, asbestos and odour management of excavated soils. • Preventing contamination of soil, surface water and groundwater water during construction activities through: o Chemicals, fuels and hazardous materials being stored and handled onsite in a manner that prevent contamination and in accordance *Australian Standard AS1940 Storage and Handling of Flammable and Combustible Liquids* and with reference to EPA Victoria Publication 1698*: Liquid storage and handling guidelines*. o Contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits. • Document the requirements for the use, handling, storage, transportation and disposal of all substances to minimise the risk of pollution or harm and in accordance with the relevant legislation and guidelines to demonstrate compliance with the General Environmental Duty. The contaminated land management plan must be a sub plan to the CEMP and implemented during construction.	
CL04	**Develop and implement measures to manage potential contamination impacts in operation** As part of the OEMP, develop and implement measures to avoid causing contamination during the operation of the project. The measures should: • Comply with Australian Standard AS1940 Storage Handling of Flammable and Combustible Liquids. • Address requirements of EPA Victoria Publication 1834.1 Civil construction, building and demolition guide. Address requirements of EPA Victoria Publication 1698 Liquid Storage and Handling Guidelines.	Operation

8.1.4 Unexpected areas of contamination/waste uncovered during construction

Given the length of the alignment, and that it traverses a mixture of farmland, forestry plantation land and un-developed land/forest, there is a potential that ground disturbance in the study area may uncover areas of waste, heavily mineralised zones, asbestos containing materials or other potential areas of contamination. Such finds could impact on the health of site users (predominantly construction and maintenance workers, but also farm workers or recreational land users such as walkers) or environmental receptors (including terrestrial flora and fauna, as well as surface water ecosystems should contamination disturbance at the location result in discharge to surface water bodies).

In order to address the potential risks to the environment from the project, it is important that an unexpected finds protocol is included in the environmental management plans for the future investigation studies that break ground, as well as the construction environmental management plan for the future construction activities.

The proposed environmental performance requirement (EPR CL02) for managing potential unexpected contamination encountered during assessment and construction activities in the study area reduces the overall risk to the environment from '*moderate*' to '*low*'. This is based on the assumption that the successful implementation of an unexpected finds protocol will identify contamination and contain it prior to it causing harm to the environment, compared with potentially spreading contamination (ASS, asbestos, wastes etc) and potentially causing harm to human health or the environment.

The following environmental performance requirements are proposed to minimise the risk of potential impacts.

Table 8-4: Environmental performance requirements: unexpected areas of contamination/waste uncovered during construction

EPR ID	Environmental performance requirement	Project stage
CL02	**Manage excavated soil, contaminated soils, removed wastes and potential risks to the environment due to contamination during construction** Prior to commencement of project works, prepare a contaminated land management plan in consultation with EPA to manage excavated soils that includes: • A procedure for completing a detailed site investigation (in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure* (2013) (including as a minimum scheduled B1 and B2) prior to any excavation of medium to high risk of being contaminated areas (as identified in the EIS/EES Technical Appendix N) to identify the location, types and extent of contamination. • Measures for the management of all material generated from excavation or trenchless construction methods in accordance with the *Environment Protection Act 2017* (Vic) (EP Act) and Environment Protection Regulations. • Validation testing of soils beneath removed wastes and contaminated soils, and implement measures to remediate or dispose of contaminated soils that present a potential risk to human health and the environment. • Handling, transport, storage and disposal of spoil, excavated or generated wastes in accordance with EM07 to protect human health and the environment. • Management of hazardous substances, excavated soils and asbestos contaminated soils to minimise risks to human health and the environment. • An unexpected finds protocol for contaminated land, acid sulfate soils, asbestos and odour management of excavated soils. • Preventing contamination of soil, surface water and groundwater water during construction activities through:	Construction

	o Chemicals, fuels and hazardous materials being stored and handled onsite in a manner that prevent contamination and in accordance *Australian Standard AS1940 Storage Handling of Flammable and Combustible Liquids* and with reference to EPA Victoria Publication 1698*: Liquid storage and handling guidelines*. o Contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits. • Document the requirements for the use, handling, storage, transportation and disposal of all substances to minimise the risk of pollution or harm and in accordance with the relevant legislation and guidelines to demonstrate compliance with the General Environmental Duty. The contaminated land management plan must be a sub plan to the CEMP and implemented during construction.	

8.1.5 Acid sulfate soils causing degradation to flora and/or fauna if disturbed

The disturbance of acid sulfate soils has the potential to result in oxidation of sulfidic minerals within the soils and create acid, which can cause degradation to the environment including terrestrial and aquatic flora and fauna, as well as cultural heritage items.

The majority of the study area fell within the 'low' probability of ASS mapping category, with only a small section of the study area at Waratah Bay and where the alignment crosses Eel Hole Creek at Hazelwood as having a 'high' probability of potential ASS being present. Areas of waterlogged soils (such as in areas of shallow groundwater, sediments in streams, flood plains around rivers, or wetlands) also can contain potential ASS.

Soil sampling for potential ASS could not be undertaken in the area of mapped potential coastal at Waratah Bay due to access restrictions. A soil sample tested from approximately 1 km north of this area (at approximately 15 m AHD) reported acid sulfate conditions below the laboratory reporting limits (<0.005 % S) and below the EPA Publication 651.1 action criteria (0.03 % S), indicating that the majority of the study area to the north of the Waratah Bay mapped ASS area is unlikely to contain ASS.

There is an increased risk of potential ASS being present in the Waratah Bay ASS mapped area, at the Eel Hole Creek crossing at Hazelwood and in areas with permanently waterlogged soils. There is the potential that ASS are present in these areas (Waratah Creek and Hazelwood pondage) and further ASS assessment should be undertaken and/or a management plan should be implemented should evidence of ASS be realised during construction to ensure that any potential ASS is managed appropriately. Areas of permanently waterlogged soils are mapped in the groundwater and hydrology reports and where the project alignment is proposing to disturb these soils, further ASS testing in these areas should be undertaken to inform management and mitigation measures. A plan of the areas of increased risk of encountering potential ASS due to waterlogged soils and/or shallow groundwater is provided in Appendix D of the Groundwater Impact Assessment (Tetra Tech Coffey 2023a).

All other data collected as a part of this assessment suggests that the risk of contamination being present and presenting a risk to human health or the environment is low.

The majority of soil disturbance areas of the project currently proposed do not traverse areas with an elevated likelihood of encountering ASS. Standard management measures (for example but not limited to: minimising length of time soils are exposed, covering stockpiles to prevent infiltration of water, bunding of stockpiles to prevent runoff) for the project to reduce the risk of environmental impact occurring as a result of disturbance of ASS on the project, will reduce the overall risk of environmental impact from 'low' to 'very low'.

It is understood that areas of the alignment will intersect areas with an increased risk of encountering potential ASS material. Due to limited land access during preliminary assessments, a complete understanding of the presence of potential ASS material in these locations has not been developed. In the absence of being able to access the site, publicly available data and information about other projects along the Gippsland Coast help to inform the conclusion about the risk from potential ASS and approach to manage the risks.

Further testing and assessment is required to inform detailed design and prior to construction to identify potential ASS within these high risk locations (and the broader alignment) so that it can be managed during the construction phase. The approach should be addressed within the contaminated land and ASS management plan (appended to the construction environmental management plan (CEMP)) and implemented prior to and during construction.

The following environmental performance requirements are proposed to minimise the risk of potential impacts.

Table 8-5: Environmental performance requirements: ASS causing degradation to flora and/or fauna if disturbed.

EPR ID	Environmental performance requirement	Project stage
CL03	**Develop and implement an acid sulfate soils management plan** Prior to commencement of project works: • Undertake site investigations to characterise potential acid sulfate soils (ASS) prior to construction to confirm the location and extent of potential ASS that could be disturbed by the project (including areas mapped as having a high-probability of containing ASS and areas of waterlogged soils). • Develop an ASS management plan for locations where disturbance intersect potential ASS. The ASS management plan must meet the requirements of *Industrial Waste Management Policy (Waste Acid Sulfate Soils)*, EPA Publication 655.1*: Acid Sulfate Soil and Rock* and the *Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils* (DSE, 2010), and include: • The location of potential ASS identified. • Measures to prevent oxidation of ASS identified and acidification of groundwater wherever possible. • Management of potential ASS to limit or treat acid generation. • Identification of appropriate stockpile areas and management measures to prevent release of acid and odours to the environment including lining, covering and runoff collection. • Identification of suitable sites for management, re-use or disposal of any ASS spoil that may be generated in accordance with EPA Victoria requirements. The ASS management plan must be informed by the sub plan developed for EPR GW07 and approved by EPA Victoria. The ASS management plan must be a sub plan to the CEMP and implemented during construction.	Construction

8.2 RISK ASSESSMENT SUMMARY

Table 8-6 presents a summary of the risk assessment evaluation undertaken for the project.

Table 8-6: Risk assessment summary

Affected receptors	Potential risk of harm	Project phase	Standard management measures	Initial risk assessment			Environmental performance requirement	Residual risk assessment		
				Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Human health, ecological receptors, aesthetics	Localised impacts from chemical containers, construction material and buried waste that may present a risk to human health, ecological receptors (terrestrial flora or fauna) or an aesthetic impairment, causing degradation of environment or hazards to health	Design, Construction, Operation	Segregate and manage waste in accordance with the waste management hierarchy, i.e., avoid, reduce, reuse, recycle, recover and landfill. Provide appropriate containers for segregated waste.	Unlikely	Minor	Low	CL01,CL02 and CL04 If possible, avoid areas where wastes are present, or remove wastes where they will be disturbed by the project activities and undertake validation of soils to confirm waste removal Unexpected find procedure to notify, classify and remove additional wastes.	Rare	Minor	Very Low
Human health/ ecological receptors	Excavated soils (including contaminated soils) may present a risk to human health or ecological receptors if not contained causing degradation of environment or hazards to health	Construction	Excavated soils are managed to limit erosion via wind or surface water via wetting, stormwater controls, bunding and/or covering.	Unlikely	Major	Moderate	CL02 Soils on 'contaminated sites' are to be tested to confirm suitability for reuse or guide management as a priority waste	Rare	Moderate	Low
Human health/ ecological receptors	Construction/ operational activities lead to generation of wastes, spills or leaks that may cause a risk to human health or ecological receptors if not contained causing degradation of environment or hazards to health	Construction & Operation	Standard industry practice for managing hazards associated with handling chemicals, wastes, and undertaking underground excavations	Possible	Minor	Low	CL02 and CL04 Implement an environmental management plan during construction and operation that includes controls for managing such hazards.	Rare	Minor	Very Low
Human health/ ecological receptors	Unexpected areas of contamination/ wastes (natural or anthropogenic) uncovered during construction that result in exposure to human or ecological receptors and result in health effects or ecological damage	Construction	NIL	Possible	Moderate	Moderate	CL02 Application of an unexpected finds protocol during design studies and construction	Rare	Moderate	Low
Ecological receptors	Potential ASS may cause degradation to flora and/or fauna if disturbed	Construction	Prior to ground disturbance, confirm the location and extent of potential ASS	Unlikely	Minor	Low	CL03 Where soil disturbance areas intersect potential ASS and areas mapped as containing permanently waterlogged soils (as mapped in the groundwater and hydrology reports), undertake further testing for ASS to characterise the extent of ASS present and/or to be disturbed by the project, and develop and implement an ASS management plan to prevent oxidation of ASS wherever possible and to document the management measures for ASS and ASS spoil management.	Rare	Minor	Very Low

9. INSPECTION AND MONITORING

The risk assessment has identified five key hazards that present risks to the environment that require ongoing management to reduce the potential impacts to human health or the environment during construction and operation. In order to demonstrate that the proposed EPRs are effective, monitoring will be required. The inspection and monitoring program will be documented in the contaminated land management plan (EPR CL01, CL02 and CL03). A summary of the proposed inspection and monitoring requirements is included in Table 9-1.

Table 9-1: Inspection and monitoring requirements – contaminated land

Hazard	Inspection/Monitoring Requirements
Localised wastes	Visual inspection that the wastes have been removed and paperwork to confirm that the waste has been disposed to an appropriately licensed waste facility. Validation results confirming that the waste and any associated impacts to soils beneath the wastes do not preclude a protected environmental value.
Management of excavated soils	Daily inspections of stockpiling controls for general excavated soils. Testing of soils excavated from contaminated sites as soon as practicable Weekly inspections of contaminated stockpile containment controls. Testing of soils to be re-used (as required) Documentation of final fate of re-used waste soils
General environmental management	Documentation and reporting of environmental controls and incidents, with corrective actions as required. May include testing of various media, depending on hazards identified during construction planning.
Unexpected finds	Confirmation that an unexpected finds protocol has been incorporated into the relevant environmental management plans for the design studies and construction phases of the project. Confirmation that induction records, and any triggering of the unexpected finds protocol have been recorded by the relevant parties. There is a potential that further inspection/monitoring may be required depending on the nature of the unexpected contamination encountered. However, this will need to be tailored to the particular contamination identified.
Acid sulfate soils	Testing of soils along the project alignment that intersect areas mapped as high-probability of ASS and areas of permanently waterlogged soils to confirm nature and extent of ASS. Where ASS are identified, characterise the extent of ASS that will be disturbed (if it cannot be avoided) prior to excavation. Document the testing results and management measures (and compliance/effectiveness of the measures) to prevent oxidation of ASS as far as practicable. Document the treatment measures of excavated ASS soil to confirm the treated soils have been transported to a premises licensed to accept such wastes.

10. ENVIRONMENTAL PERFORMANCE REQUIREMENTS

The recommended EPRs to reduce the risks to very low and low, are summarised in Table 10-1.

Table 10-1: Environmental Performance Requirements

EPR ID	Environmental Performance Requirement	Project Stage
CL01	**Inspect sites to avoid or remove buried waste and waste piles to manage impacts to the environment** Prior to commencement of project works: • Inspect properties to be directly disturbed that have a medium or high risk of contamination as identified in the EIS/EES Technical Appendix N: Contaminated Land and Acid Sulfate Soils, and have not been previously accessed to identify risk of potential contamination. The purpose of inspections is to identify areas of potential contamination including buried waste and waste piles to be sampled and tested. • Where practicable, realign the cable route to avoid areas of identified wastes and/or potential contamination. Areas that cannot be avoided should be tested to confirm the presence of contamination as required by EPR CL02.	Design
CL02	**Manage excavated soil, contaminated soils, removed wastes and potential risks to the environment due to contamination during construction** Prior to commencement of project works, prepare a contaminated land management plan in consultation with EPA to manage excavated soils that includes: • A procedure for completing a detailed site investigation (in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure* (2013) (including as a minimum scheduled B1 and B2) prior to any excavation of medium to high risk of being contaminated areas (as identified in the EIS/EES Technical Appendix N) to identify the location, types and extent of contamination. • Measures for the management of all material generated from excavation or trenchless construction methods in accordance with the *Environment Protection Act 2017* (Vic) (EP Act) and Environment Protection Regulations. • Validation testing of soils beneath removed wastes and contaminated soils, and implement measures to remediate or dispose of contaminated soils that present a potential risk to human health and the environment. • Handling, transport, storage and disposal of spoil, excavated or generated wastes in accordance with EM07 to protect human health and the environment. • Management of hazardous substances, excavated soils and asbestos contaminated soils to minimise risks to human health and the environment. • An unexpected finds protocol for contaminated land, acid sulfate soils, asbestos and odour management of excavated soils. • Preventing contamination of soil, surface water and groundwater water during construction activities through: o Chemicals, fuels and hazardous materials being stored and handled onsite in a manner that prevent contamination and in accordance *Australian Standard AS1940 Storage and Handling of Flammable and Combustible Liquids* and with reference to EPA Victoria Publication 1698*: Liquid storage and handling guidelines*. o Contingency and emergency response procedures to handle fuel and chemical spills, including availability of on-site hydrocarbon spill kits. • Document the requirements for the use, handling, storage, transportation and disposal of all substances to minimise the risk of pollution or harm and in accordance with the relevant legislation and guidelines to demonstrate compliance with the General Environmental Duty. The contaminated land management plan must be a sub plan to the CEMP and implemented during construction.	Construction

EPR ID	Environmental Performance Requirement	Project Stage
CL03	**Develop and implement an acid sulfate soils management plan** Prior to commencement of project works: • Undertake site investigations to characterise potential acid sulfate soils (ASS) prior to construction to confirm the location and extent of potential ASS that could be disturbed by the project (including areas mapped as having a high-probability of containing ASS and areas of waterlogged soils). • Develop an ASS management plan for locations where disturbance intersect potential ASS. The ASS management plan must meet the requirements of *Industrial Waste Management Policy (Waste Acid Sulfate Soils)*, EPA Publication 655.1*: Acid Sulfate Soil and Rock* and the *Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils* (DSE,2010), and include: • The location of potential ASS identified. • Measures to prevent oxidation of ASS identified and acidification of groundwater wherever possible. • Management of potential ASS to limit or treat acid generation. • Identification of appropriate stockpile areas and management measures to prevent release of acid and odours to the environment including lining, covering and runoff collection. • Identification of suitable sites for management, re-use or disposal of any ASS spoil that may be generated in accordance with EPA Victoria requirements. The ASS management plan must be informed by the sub plan developed for EPR GW07 and approved by EPA Victoria. The ASS management plan must be a sub plan to the CEMP and implemented during construction.	Construction
CL04	**Develop and implement measures to manage potential contamination impacts in operation** As part of the OEMP, develop and implement measures to avoid causing contamination during the operation of the project. The measures should: • Comply with Australian Standard AS1940 Storage Handling of Flammable and Combustible Liquids. • Address requirements of EPA Victoria Publication 1834.1 *Civil construction, building and demolition guide*. Address requirements of EPA Victoria Publication 1698 *Liquid Storage and Handling Guidelines*.	Operation

In addition to the contaminated land EPRs above, the other EPRs that will reduce the potential for impacts due to contaminated land resulting from the project, including:

- Groundwater; and
- Surface water.

A decommissioning management plan will be prepared to outline how activities will be undertaken and potential impacts managed and addressing the items outlined in these geomorphology EPRs. The EPR for the decommissioning management plan is provided in EIS/EES Volume 5, Chapter 2 - Environmental Management Framework.

11. CONCLUSION

The contaminated land and ASS impact assessment undertaken for the Victorian component of the project included the 90 km long survey corridor, nominally 220 m wide, between Waratah Bay and Hazelwood. The assessment did not identify any areas of contamination that potentially represented a risk to human health or the environment. The risks to the environment identified can be managed via the application of standard construction measures and additional environmental performance requirements.

The impact assessment identified five potential hazards with a low to moderate risk of causing impacts to the environment without the application of additional controls including five potential hazards to the environment arising from contamination including:

1. Localised wastes in vicinity of proposed project alignment;
2. Management of excavated soils;
3. Management of routine construction and operational impacts;
4. Unexpected areas of contamination; and,
5. ASS.

The environmental performance requirements and likely management and mitigation measures that will be adopted for each of the identified potential environmental hazards are considered appropriate for the purposes of managing the potential risks to human health or the environment, in accordance with the environmental values to be protected for ambient air, land and water should they be implemented appropriately. Further activities during the design, construction or operation phases of the project will be required in order to implement the management and mitigation measures proposed including:

- Inspect sites to avoid or remove buried waste and waste piles to manage impacts to environment (CL01)
- Manage excavated soil, contaminated soils, removed wastes and potential risks to the environment due to contamination during construction (CL02)
- Develop and implement an acid sulfate soils (ASS) management plan (CL03)
- Develop and implement measures to manage potential contamination impacts in operation (CL04)

12. REFERENCES

Other Guidelines and Reports

Alluvium (2023a), *Marinus Link – Waterway crossing assessment,* Alluvium Consulting Pty Ltd, July 2022,

Alluvium (2023), *Marinus Link – Victorian Surface Water Impact Assessment,* Alluvium Consulting Pty Ltd, March 2023,

AS/NZS (2018) *Australian/New Zealand Standard for risk management*, Australian Standards/ New Zealand Standards

ANZECC (2000). '*Australian and New Zealand guidelines for fresh and marine water quality*', National Water Quality Management Strategy Paper No 4, Australian & New Zealand Environment and Conservation Council & Agriculture and Resource management Council of Australia and New Zealand, October 2000.

ANZG (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.

APHA (2005). *'Standard Methods for the Examination of Water and Wastewater*', 19th edn, publ by American Public Health Association (APHA), American Water Works Association, Water Pollution Control Federation.

Berkman, D.A. (1989) *'Field Geologists Manual - Third Edition'*, The Australasian Institute of Mining and Metallurgy, ISBN:0949106186, 1989

Beveridge Williams (2022), *Draft Planning Scheme Amendment: Strategic Assessment Report ,* Beveridge Williams, 30 November 2022

DCCEEW (2020), *PFAS National Environmental Management Plan,* Department of Climate Change, Energy, the Environment and Water

DNRE (2002), *Coastal Acid Sulfate Soil Hazard Map – Foster T8120*, Department of Natural Resources and Environment (Agriculture Victoria), July 2002.

DSE (2010) *Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils*, Department of Sustainability and Environment (Vic), 2010.

EPHC & NRMMC (2011), National guidance for the management of acid sulfate soils in inland aquatic ecosystems, Environment Protection and Heritage Council and the Natural Resource Management Ministerial Council, Canberra

EPA Publication 655.1 (2009), *Acid Sulfate Soil And Rock*

EPA Publication 1940 (2021), *Contaminated land: Understanding section 35 of the Environment Protection Act 2017*

EPA Publication 1968.1 (2021), *Guide to Classifying Industrial Waste*.

EPA Publication 1977**.1 (2022)**, G*uide to the duty to manage contaminated land.*

EPA Publication 1827.2 (2021), *Waste classification assessment protocol.*

EPA Publication 1828.2 (2021), *Waste Disposal Categories – Characteristics and Thresholds*.

EPA Publication 1895 (2020), *Managing stockpiles*

EPA Publication 2008.2 **(2022),** *Guide to the duty to notify of contaminated land*

EPA Publication IWRG702 (2009) *Soil Sampling*

EPBC (2021), '*Guidelines for the Content of a Draft Environmental Impact Statement – Environment Protection and Biodiversity Conservation Act 1999 – Marinus Link underground and subsea electricity interconnector cable,* EPBC 2021/9053.

FSANZ (2021). *'Australia New Zealand Food Standards Code'*, Food Standards Australia New Zealand, 2021

Fitzpatrick, Rob; Powell, Bernie; Marvanek, Steve (2011): *Atlas of Australian Acid Sulphate Soils. v2.* CSIRO. Data Collection. https://doi.org/10.4225/08/512E79A0BC589

NEPC (2013) *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as amended in 2013, National Environment Protection Council.

NHMRC (2008). *'Guidelines for Managing Risks in Recreational Water'*, National Health and Medical Research Council (NHMRC), 2008.

NHMRC (2017). *National Water Quality Management Strategy*, *Australian Drinking Water Guidelines*, National Health and Medical Research Council and National Resource Management Ministerial Council

Standards Australia (2005). '*Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil - Part 1: Non-Volatile and Semi-Volatile Compounds*', Australian Standard AS4482.1-2005, Standards Australia, 2005

State Government of Victoria (2021),*EPA Fill Material Determination*, Victorian Government Gazette, No S 302 Friday 18 June 2021,

State Government of Victoria (2021), *Environment Protection Regulations 2021*,

State Government of Victoria (2021), *Environment Reference Standard,* Victorian Government Gazette, No S245, 26 May 2021.

Sullivan, L, Ward, N, Toppler, N and Lancaster, G (2018), *National Acid Sulfate Soils guidance: National acid sulfate soils sampling and identification methods manual,* Department of Agriculture and Water Resources, Canberra ACT.

Tetra Tech Coffey (2023), *Groundwater Impact Assessment – Victoria,* May 2023

Visualising Victoria's Groundwater (2013), Centre for eCommerce and Communications, University of Ballarat, http://vvg.org.au/

APPENDIX A - STATEMENT OF LIMITATIONS

IMPORTANT INFORMATION ABOUT YOUR TETRA TECH COFFEY ENVIRONMENTAL REPORT

Introduction

This report has been prepared by Tetra Tech Coffey for you, as Tetra Tech Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Tetra Tech Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Tetra Tech Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

Your report has been written for a specific purpose

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

Limitations of the Report

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Tetra Tech Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Tetra Tech Coffey should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

Interpretation of factual data

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Tetra Tech Coffey would be pleased to assist with any investigation or advice in such circumstances.

Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Tetra Tech Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Tetra Tech Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Tetra Tech Coffey prepared the report and has familiarity with the site, Tetra Tech Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and Tetra Tech Coffey disowns any responsibility for such misinterpretation.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

Responsibility

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

APPENDIX B - FIGURES

Figure 1.1: Areas of interest
Figure 2.1: CSASS site inspection V0040 (19-20 May 2022)
Figure 2.2: CSASS site inspection V0041 (19-20 May 2022)
Figure 2.3: CSASS site inspection V0105 (19-20 May 2022)
Figure 2.4: CSASS site inspection V0152 (19-20 May 2022)
Figure 2.5: CSASS site inspection V0158 (19-20 May 2022)
Figure 2.6: CSASS site inspection V0174 (19-20 May 2022)
Figure 2.7: CSASS site inspection V0181 (19-20 May 2022)
Figure 2.8: CSASS site inspection V0279 (19-20 May 2022)
Figure 2.9: CSASS site inspection V0283 (19-20 May 2022)
Figure 2.10: CSASS site inspection V0306 (19-20 May 2022)
Figure 2.11: CSASS site inspection V0326 (19-20 May 2022)
Figure 2.12: CSASS site inspection V0552 (19-20 May 2022)
Figure 2.13: CSASS site inspection V0559 (19-20 May 2022)
Figure 3.1: ASS sampling locations
Figure 3.2: Targeted soil sampling locations
Figure 4.1: Prospective Coastal acid sulfate soils
Figure 4.2: Potential acid sulfate soils associated with the Hazelwood power station

Figure 1.1: Areas of interest

Legend

- Landfall
- Proposed converter station

Proposed route

- HVDC subsea cable
- Proposed underground HVDC cable
- Road
- Sites of interest
- Sites assessed (19-20 May 2022)

N

Scale: 1:325,000

6 3 0 6 km

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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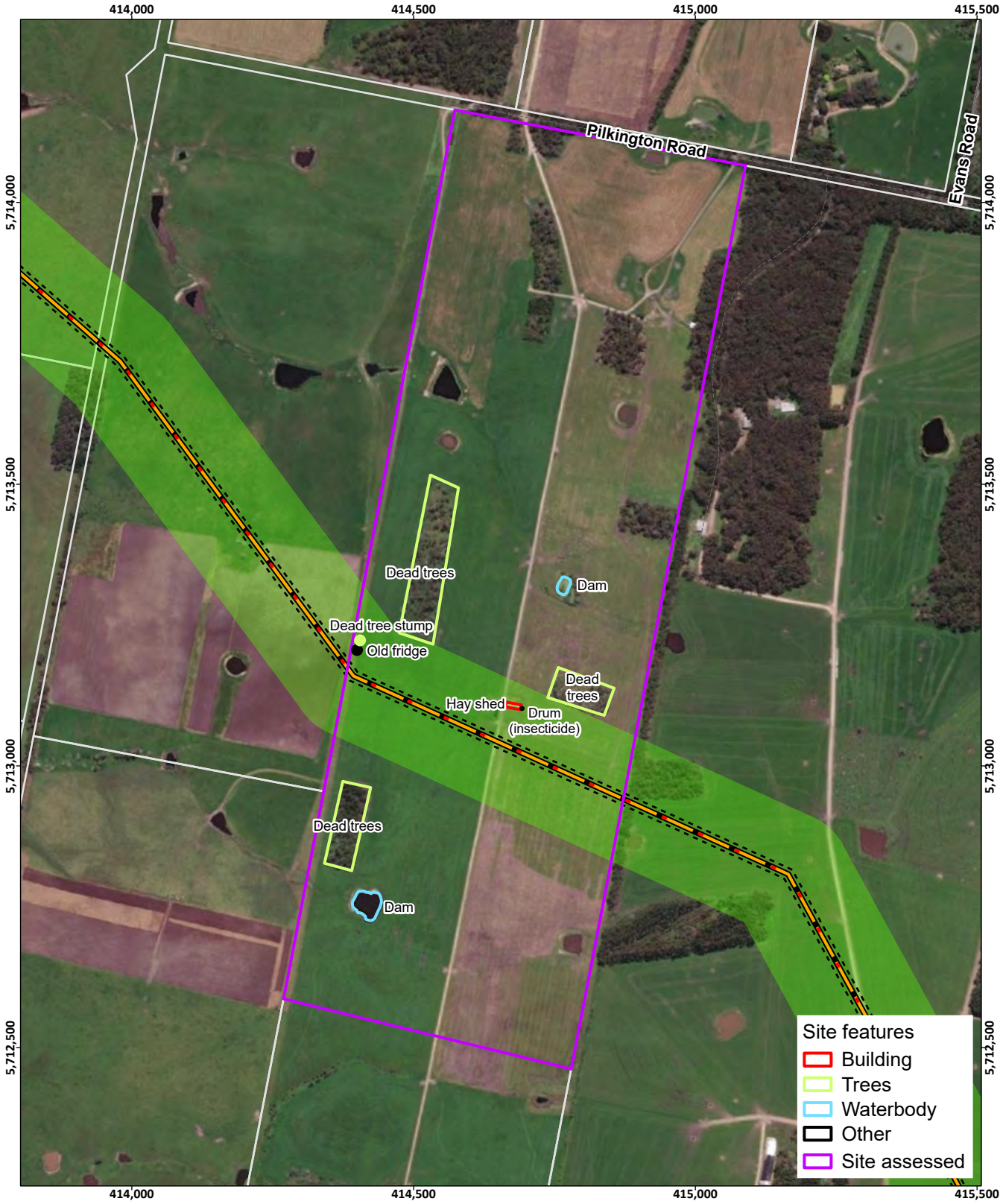

Figure 2.1: CSASS site inspection V0040 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Track

Cadastre

N

Scale: 1:10,000

200 100 0 200 m

Coordinate System: GDA2020 MGA Zone 55
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Roads from VICMAP.
Imagery from ESRI Online.

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Figure 2.2: CSASS site inspection V0041 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Track

Cadastre

N

Scale: 1:7,500

150 75 0 150 m

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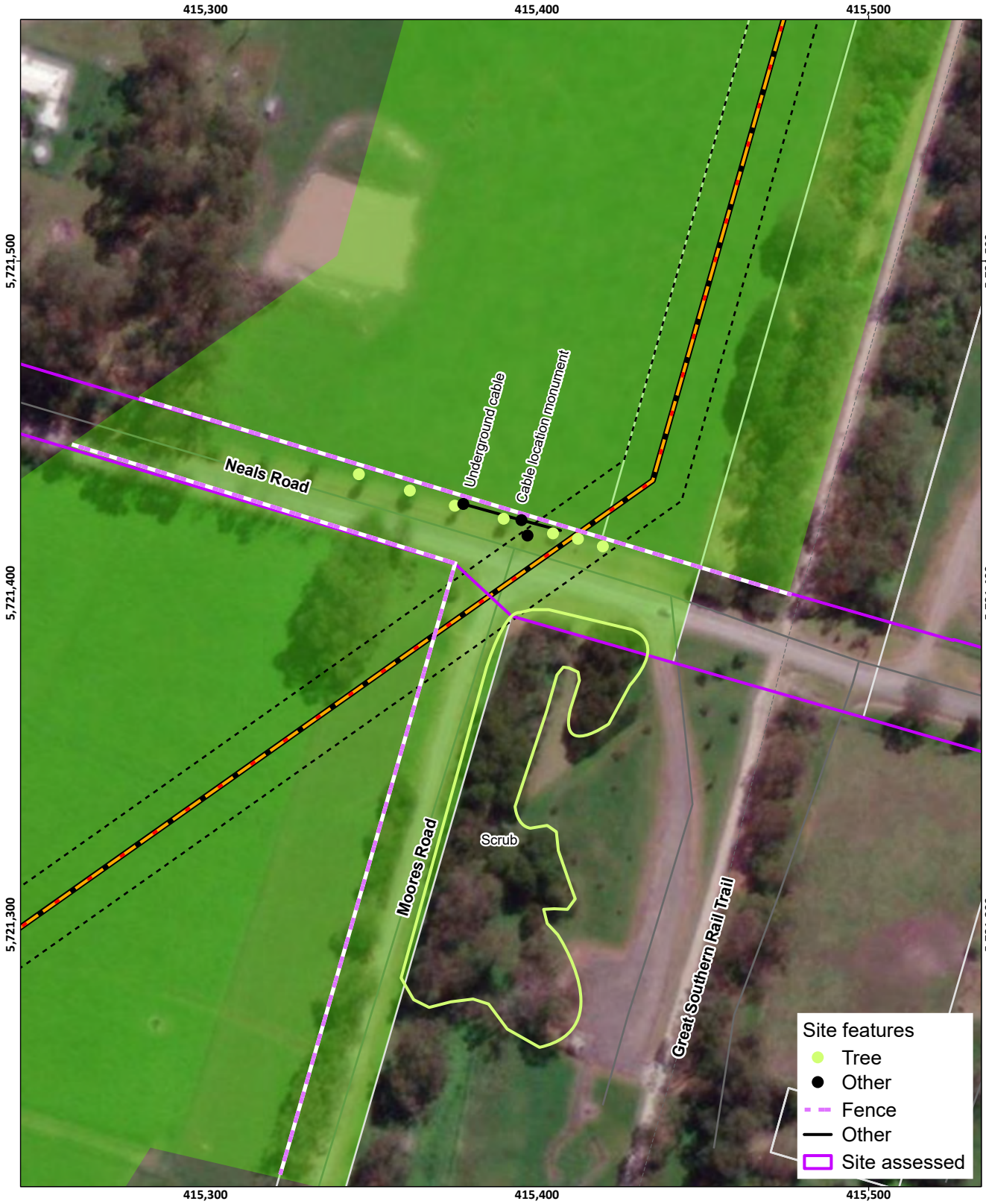

Figure 2.3: CSASS site inspection V0105 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Track

Cadastre

N

Scale: 1:1,700

30 15 0 30 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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Figure 2.4: CSASS site inspection V0152 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Cadastre

N

Scale: 1:2,500

50 25 0 50 m

Coordinate System: GDA2020 MGA Zone 55
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Figure 2.5: CSASS site inspection V0158 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Cadastre

N

Scale: 1:2,000

40 20 0 40 m

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Figure 2.6: CSASS site inspection V0174 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Track

Cadastre

N

Scale: 1:2,500

50 25 0 50 m

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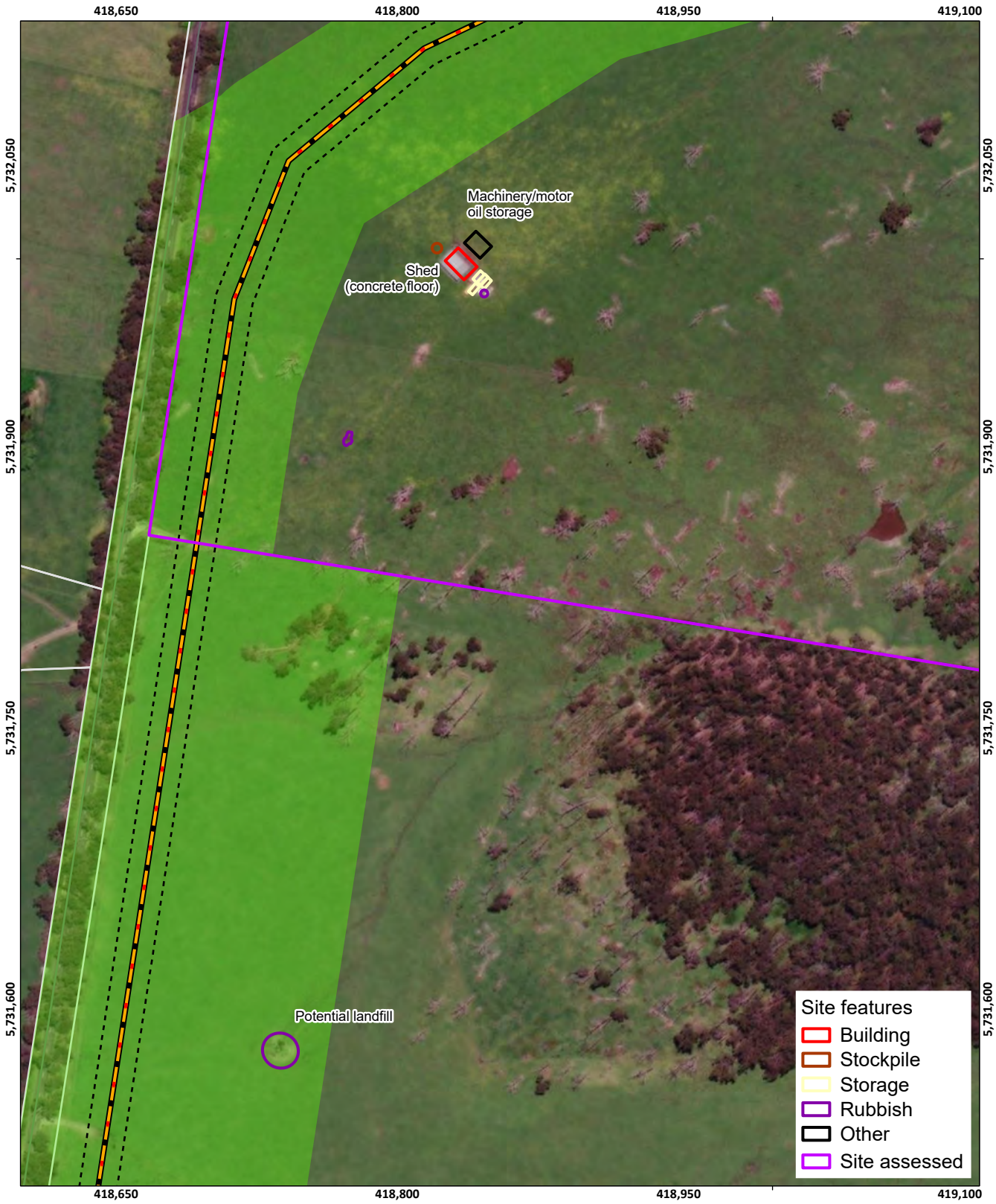

Figure 2.7: CSASS site inspection V0181 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Cadastre

N

Scale: 1:3,000

60 30 0 60 m

Coordinate System: GDA2020 MGA Zone 55
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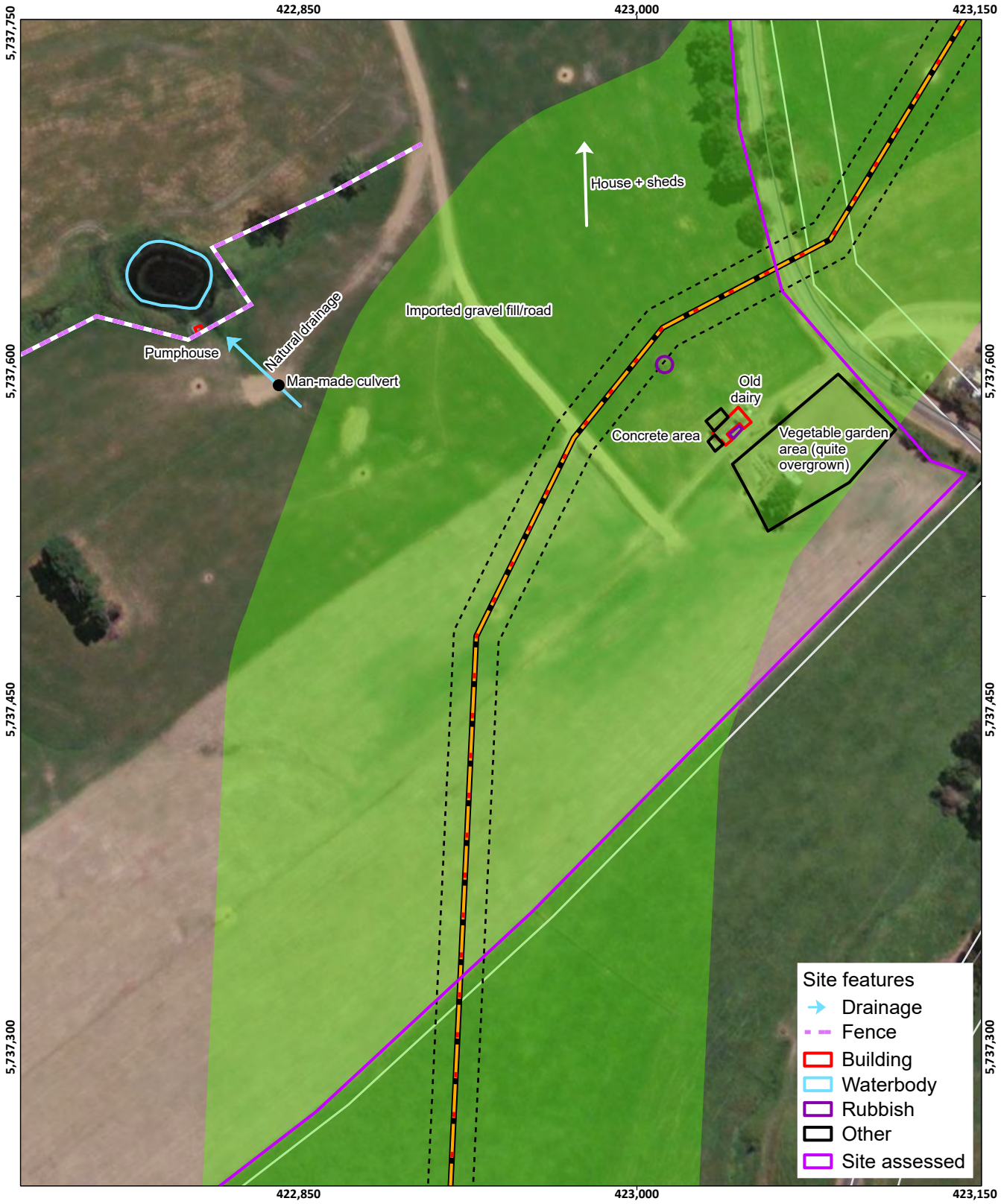

Figure 2.8: CSASS site inspection V0279 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Road

Cadastre

N

Scale: 1:2,500

50 25 0 50 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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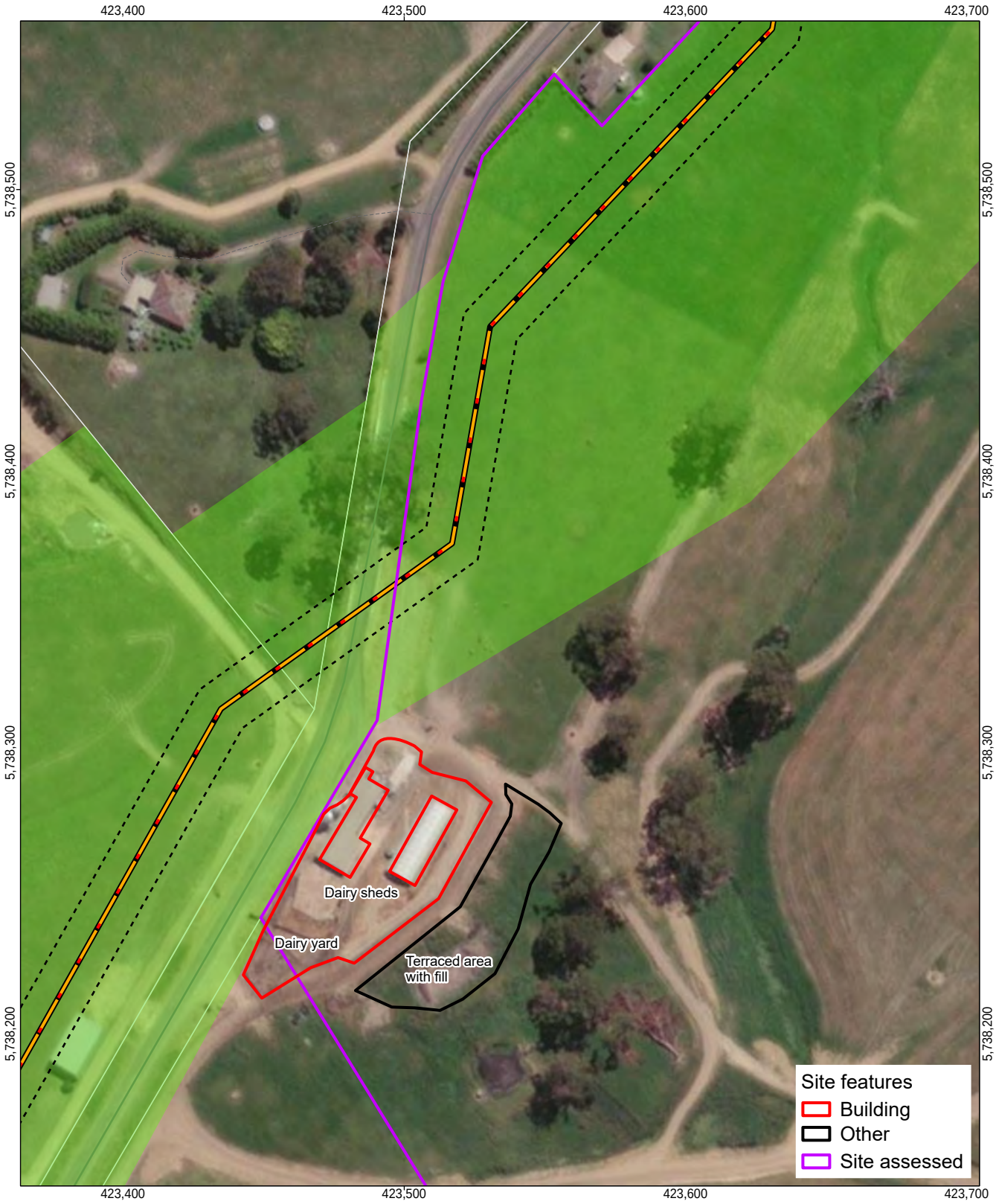

Figure 2.9: CSASS site inspection V0283 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Track

Cadastre

N

Scale: 1:2,000

40 20 0 40 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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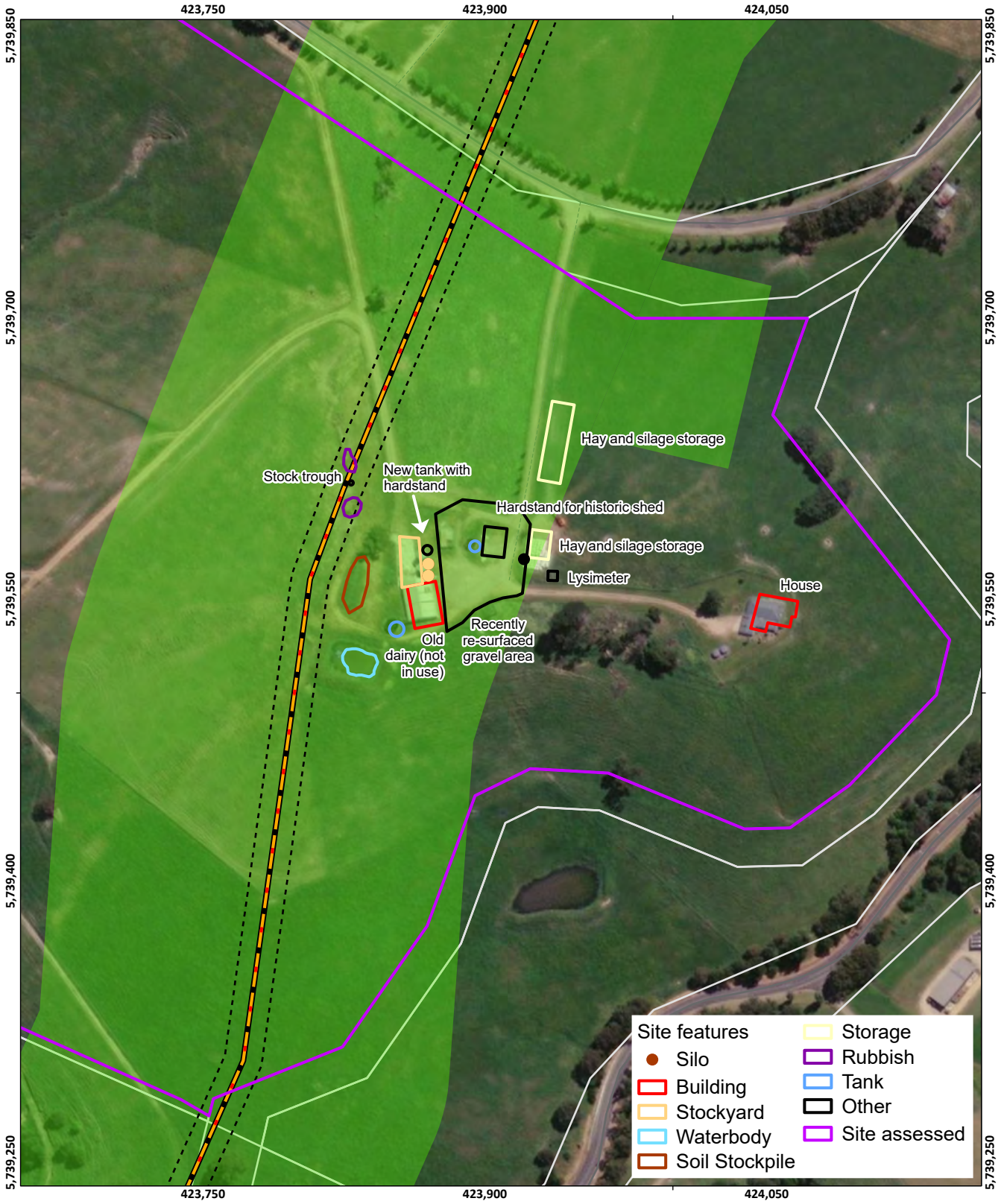

Figure 2.10: CSASS site inspection V0306 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Road

Track

Cadastre

N

Scale: 1:3,000

60 30 0 60 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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TETRA TECH COFFEY

MARINUS LINK

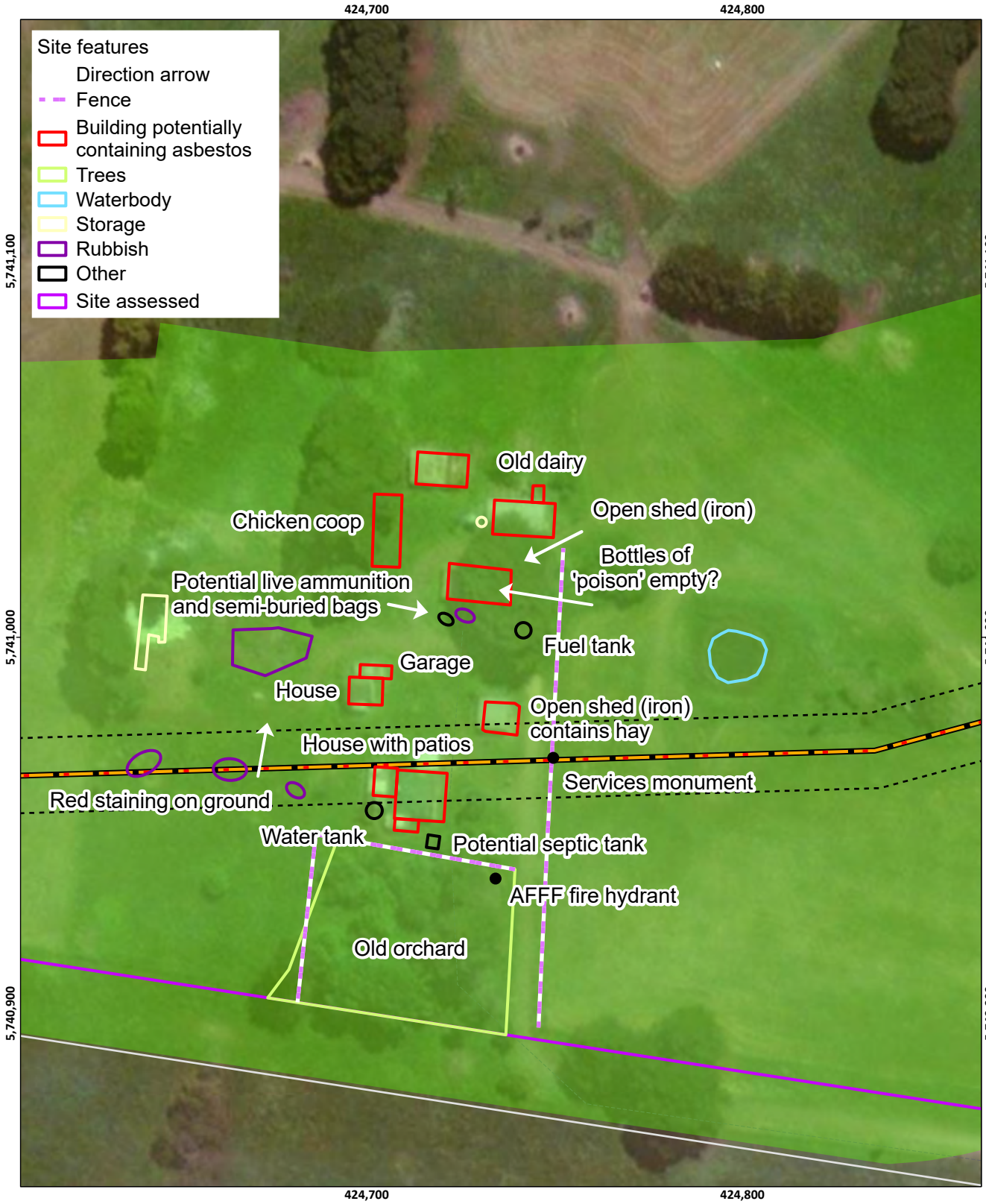

Figure 2.11: CSASS site inspection V0326 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Track

Cadastre

N

Scale: 1:1,500

30 15 0 30 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
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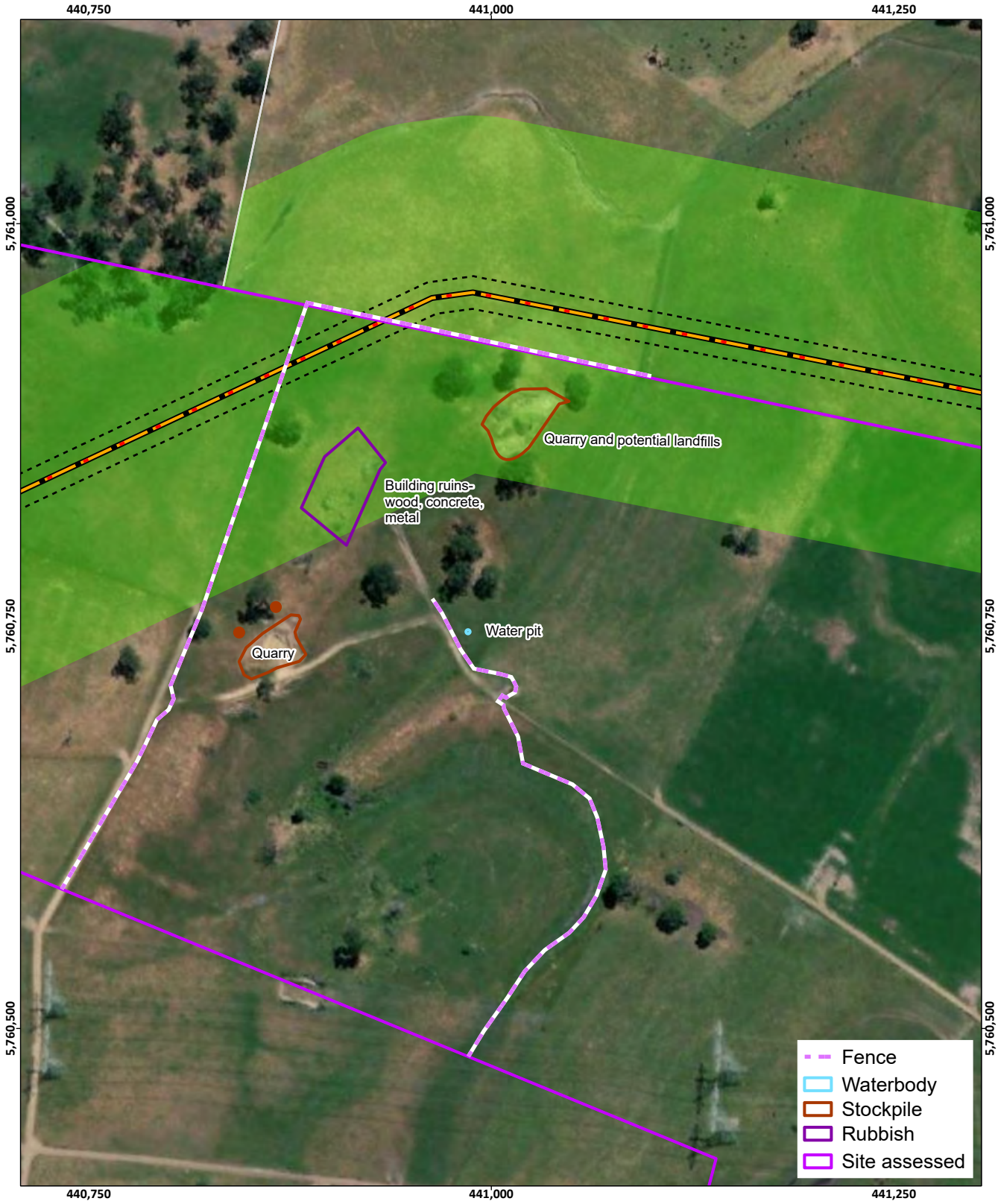

Figure 2.12: CSASS site inspection V0552 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Cadastre

N

Scale: 1:3,500

70 35 0 70 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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MARINUS LINK

Figure 2.13: CSASS site inspection V0559 (19-20 May 2022)

Legend

Proposed route

Proposed underground HVDC cable

Proposed easement

Marinus Link survey area

Track

Cadastre

N

Scale: 1:3,500

70 35 0 70 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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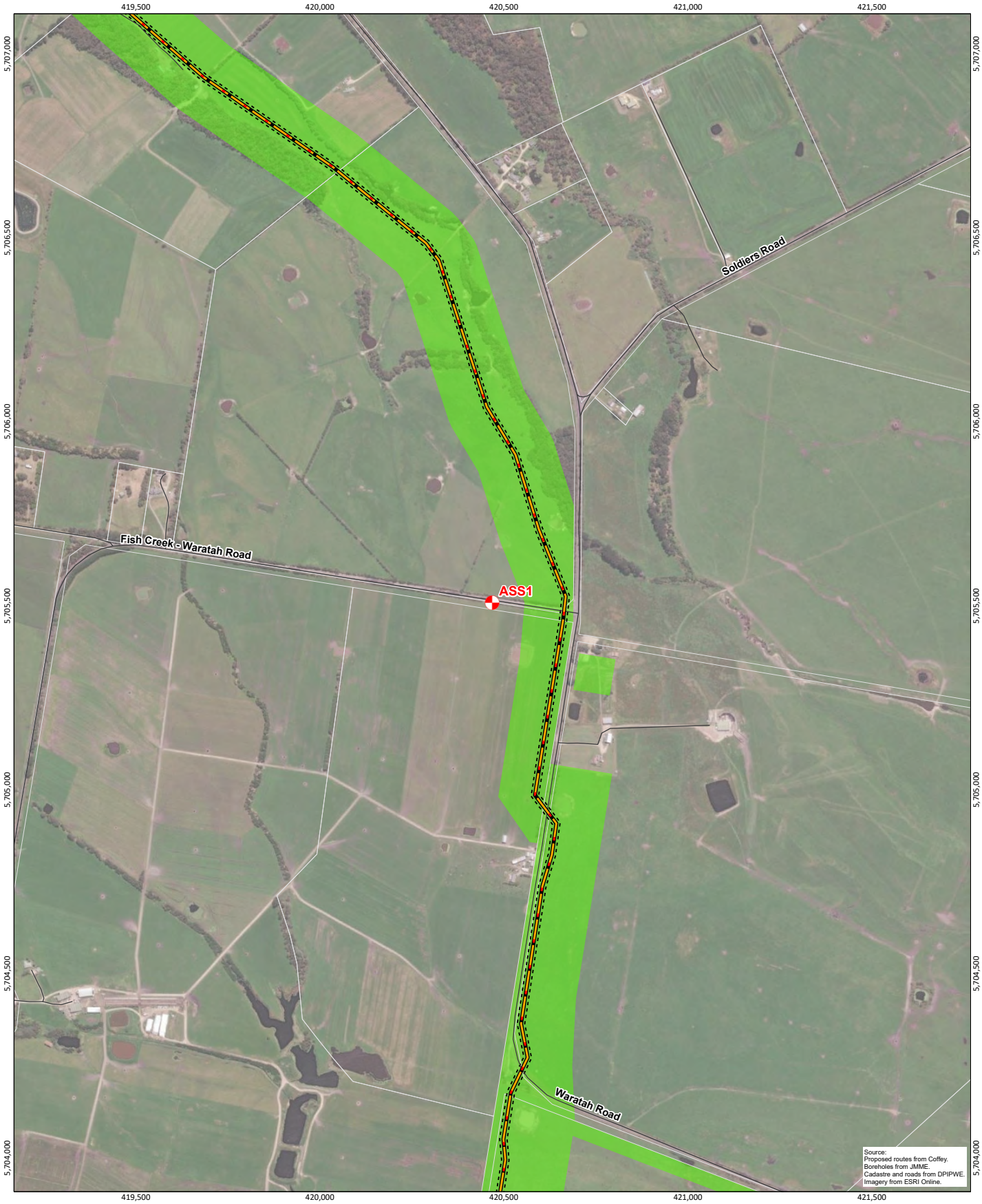

Figure 3.1- ASS sampling locations

Legend

- ASS sampling loation
- Proposed route
- Proposed underground HVDC cable
- Road
- Proposed easement
- Survey area
- Cadastre

N

Scale: 1:10,000

200 100 0 200 m

Coordinate System: GDA2020 MGA Zone 55
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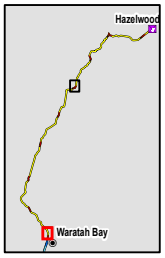

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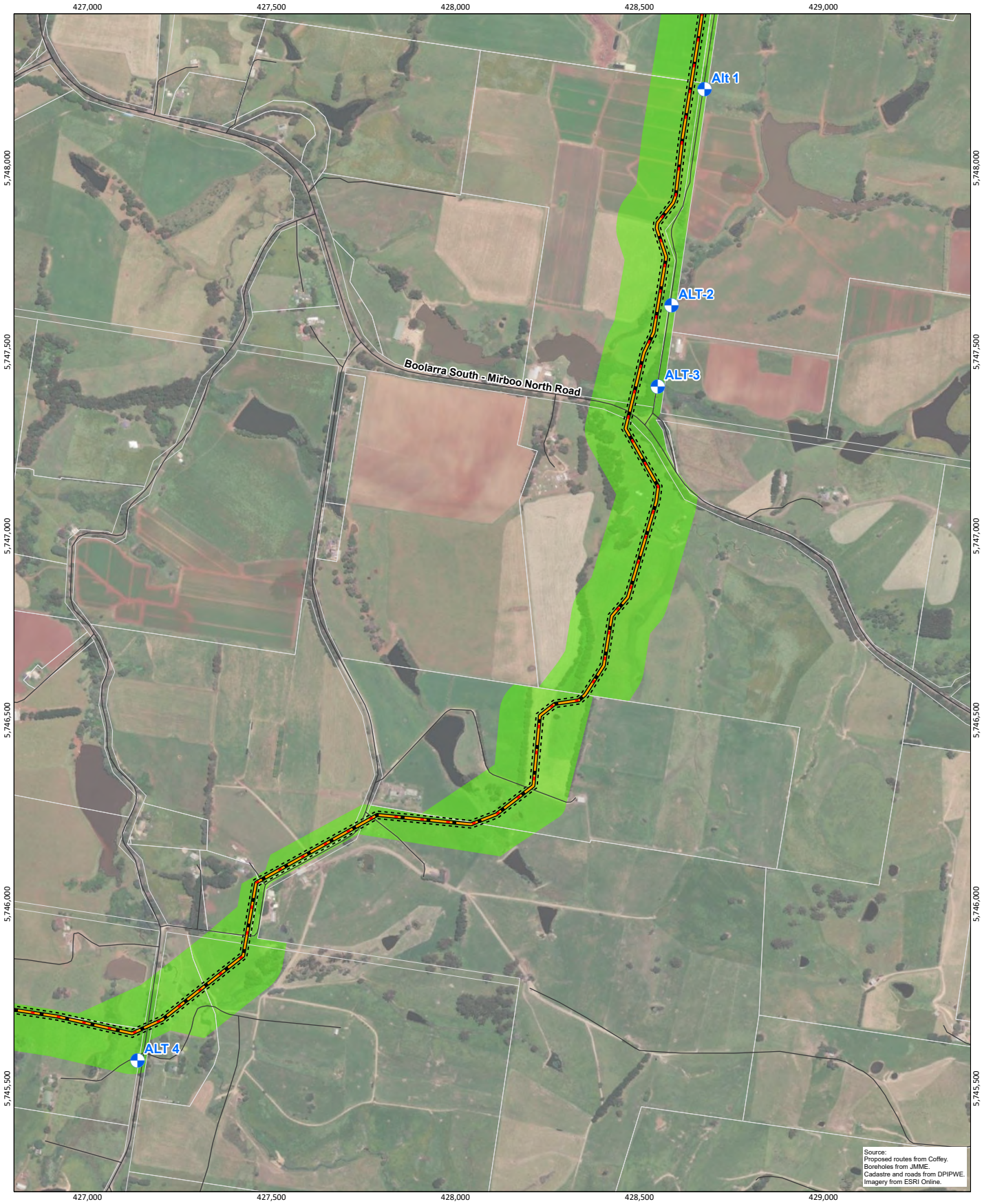


Figure 3.2- Targeted soil sampling locations

Legend

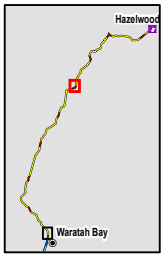
- Contaminated land sampling locations
- Proposed route
- Proposed underground HVDC cable
- Road
- Proposed easement
- Survey area
- Cadastre

N

Scale: 1:10,000

200 100 0 200 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020



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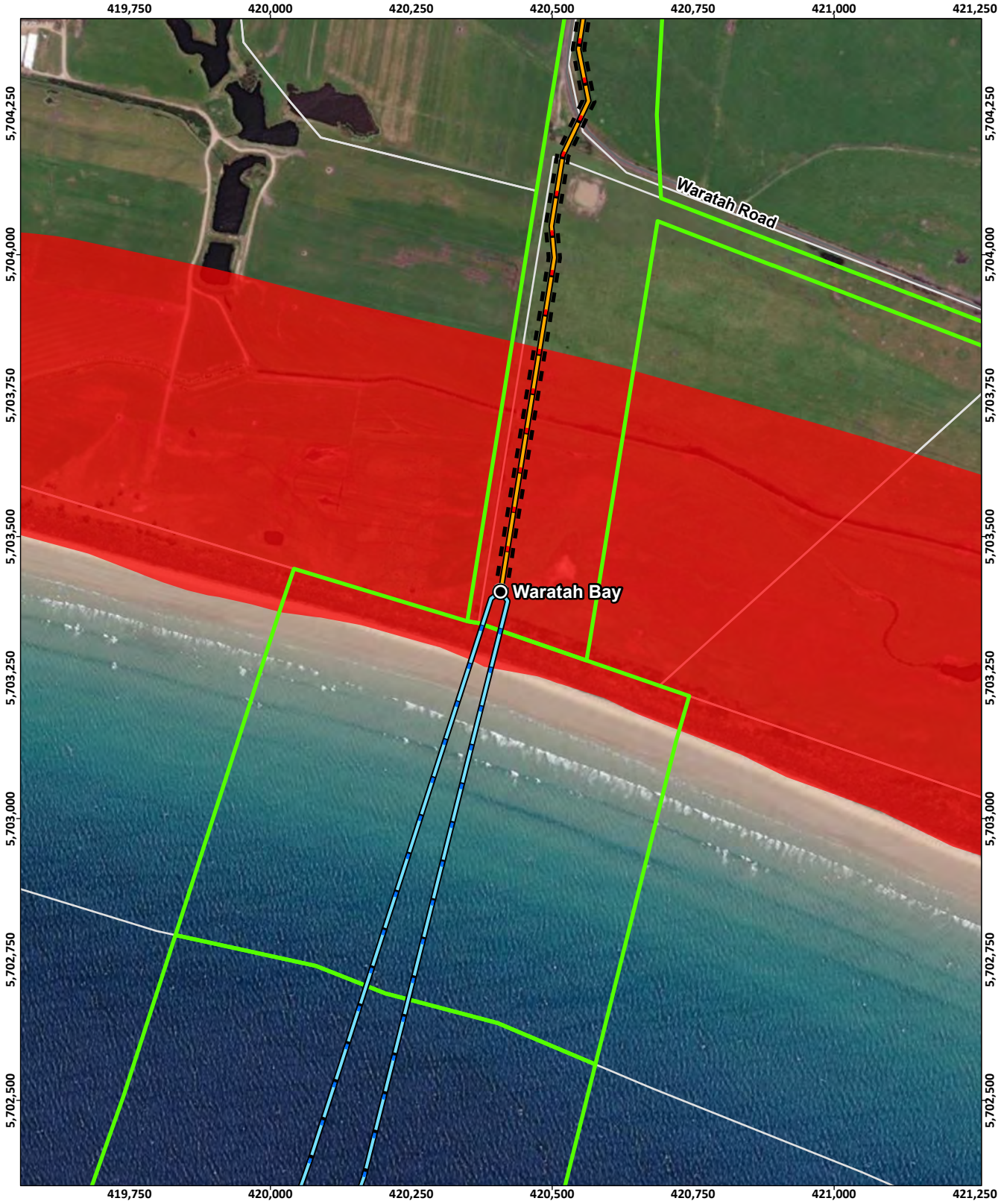

Figure 4.1: Prospective Coastal Acid Sulfate Soils

Legend

- Proposed route
- Underground HVDC cable
- HVDC subsea cable
- Marinus Link survey area
- Road
- Cadastre
- Prospective coastal acid sulphate soils

N

Scale: 1:10,000

200 100 0 200 m

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA2020

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Source:
Proposed routes from Tetra Tech Coffey.
CASS from DELWP. Roads from VICMAP.
Imagery from ESRI Online.

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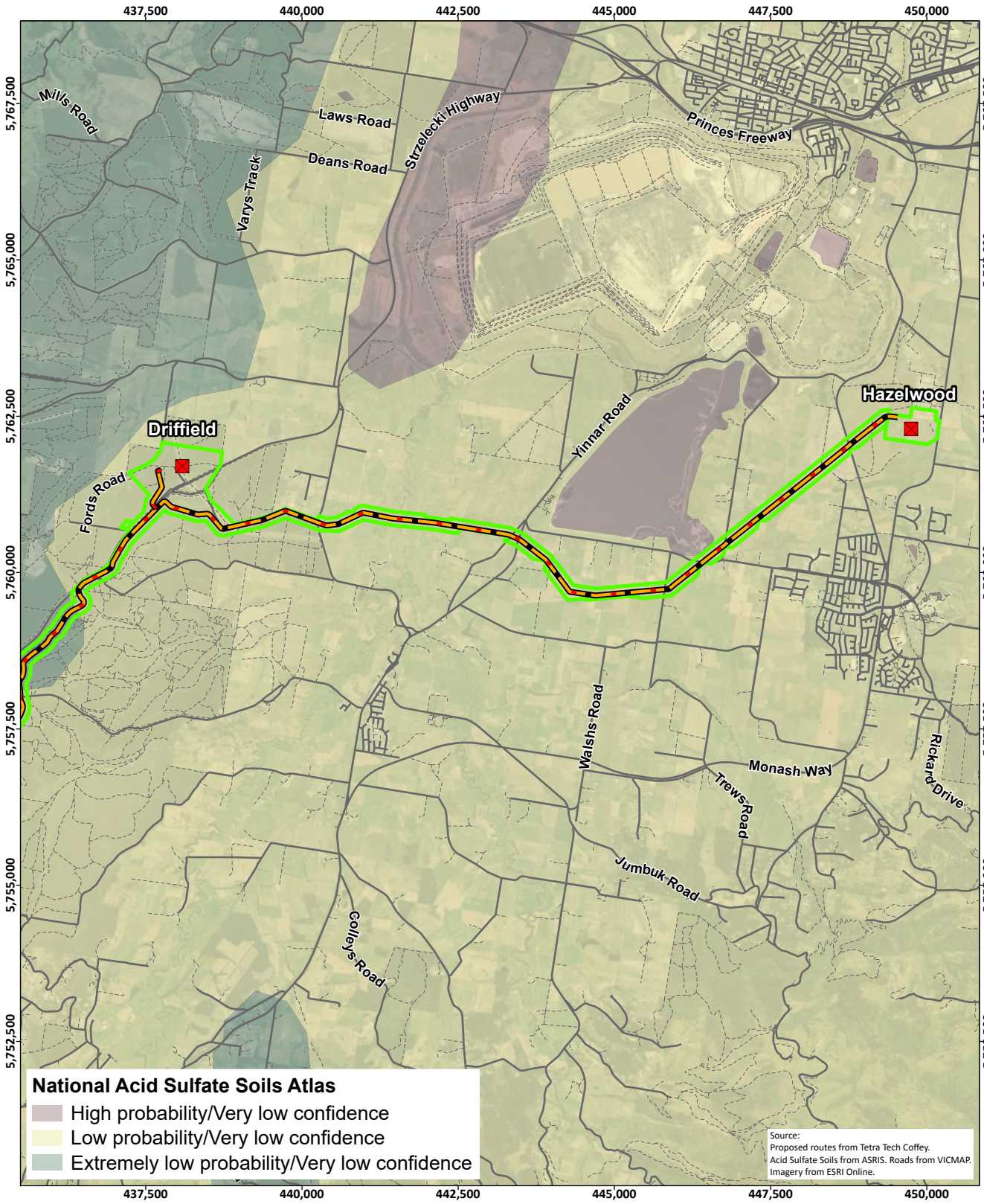

Figure 4.2: Potential acid sulfate soils associated with the Hazelwood power station

Legend

- Potential converter station
- Proposed underground HVDC cable
- Proposed easement
- Marinus Link survey area
- Road
- Track

N

Scale: 1:90,000

1.5 0.75 0 1.5 km

Coordinate System: GDA2020 MGA Zone 55
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MARINUS LINK

APPENDIX C - LAND INSIGHT ENVIRO-SCREEN REPORTS

LI-02089 Site 1 Sandy Point VIC
LI-02090 Site 2 Sandy Point VIC
LI-02091 Site 3 Fish Creek VIC
LI-02092 Site 4 Fish Creek VIC
LI-02093 Site 5 Fish Creek VIC
LI-02094 Site 6 Fish Creek VIC
LI-02095 Site 7 Fish Creek VIC
LI-02096 Site 8 Buffalo VIC
LI-02097 Site 9 Buffalo VIC
LI-02098 Site 10 Foster VIC
LI-02099 Site 11 Foster VIC
LI-02100 Site 12 Stony Creek VIC
LI-02101 Site 13 Dumbalk VIC
LI-02102 Site 14 Dumbalk VIC
LI-02103 Site 15 Dumbalk VIC
LI-02104 Site 16 Dumbalk VIC
LI-02105 Site 17 Mirboo North VIC
LI-02106 Site 18 Mirboo North 1 VIC
LI-02107 Site 19 Mirboo North 2 VIC
LI-02108 Site 20 Narracan VIC
LI-02109 Site 21 Yinnar VIC
LI-02110 Site 22 Hazelwood VIC
LI-02111 Site 23 Hazelwood VIC

Land Insight RESOURCES

Product Guide

VICTORIA

About this Report

Your Report has been produced by Land Insight and Resources (LI Resources).

The data used in this report was sourced from:

Sensitive Receptors - Google, Nearmap, 2017 - 2021.

Zoning, Planning Controls and Topography - © Department of Environment, Land, Water & Planning 2020 licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/4.0/deed.en)

Soil, Acid Sulfate Soil and Coastal Acid Sulfate soil - © Department of Economic Development, Jobs, Transport and Resources 2015 licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/4.0/deed.en), © Commonwealth Scientific and Industrial Research Organisation (CSIRO) 2015-2017 Australian Soil Resource Information System (ASRIS); Agriculture Victoria, Victorian Resources Online 2019 licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/4.0/deed.en)

Geology - © Department of Economic Development, Jobs, Transport and Resources 2014 licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/4.0/deed.en)

Aquifer Type - National Groundwater Information System © Commonwealth of Australia (Bureau of Meteorology) 2017 licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/3.0/deed.en)

PFAS Site Investigations, Priority Sites Register, Remedial Notices, Post Closure Pollution Abatement Notices, Environmental Audit Reports, Works Approvals, Licences, Amalgamated Licences, RD&D Approvals, 30A Approvals, Prescribed Industrial Waste Database – Victoria State Government © EPA Copyright 2021

Hydrogeology Map of Australia (scale 1:5m) Commonwealth of Australia 1987, licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/4.0/deed.en)

Groundwater Bores, Salinity, Depth to Watertable – State of Victoria - Department of Environment, Land, Water & Planning (DELWP WMIS) and Federation University Australia Spatial Groundwater bore database (FedUniSpatial), licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/3.0/deed.en

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UXO and Military Facilities- Australian Government - Various sources and Department of Defence © Commonwealth of Australia, 2017-2019. *The data supplied is based on Defence's assessment of information obtained from a variety of sources. It does not reflect any UXO remediation conducted on behalf of any person or organisation other than Defence. While Defence makes all reasonable efforts to ensure that the information provided is accurate, complete and up-to-date, there may be limitations to the sources available to Defence and the information may be subject to change.*
The information relating to a specific parcel of land should not be relied upon without additional checks and/or verification from the relevant state, territory or local government. Further information as to Defence's UXO categorisation criteria; along with Defence's recommendations to state and local authorities, is available on the Defence internet.

Former Gasworks - LIR proprietary dataset – dataset sourced from various sources and internal research, 2021

Other Potentially Contaminated Sites - © Google 2017-2021; Nearmap data and LIR proprietary data (dataset is sourced from internal research).

Current and Historical Military Facilities- Australian Government - LIR proprietary database based on internal research, Trove, Parish Maps and available Defence documentation, 2021.

Defence 3 Year Regional Contamination Investigation Program (RCIP) © Commonwealth of Australia, 2019.

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Derelict Mines and Quarries - LIR proprietary database based on internal research, Trove, Parish Maps

Service Stations & Repairs, Dry Cleaners and Substations (Current) - © Google 2017-2021; Nearmap data; Geoscience Australia; Dry Cleaning Institute of Australia and LIR proprietary dataset (dataset is sourced from internal research).

EPA Victoria - Environmental Audit Reports, Priority Site Register, Environmental Audit Overlays, Post Closure Pollution Abatement Notice (PC PAN), Remedial Notices, Licences and Approvals © Department of Environment, Land, Water & Planning, 2021.

NPI © Commonwealth of Australia licenced under Creative Commons CC-BY (https://creativecommons.org/licenses/by/4.0/deed.en). The data includes facilities from 1998 to 2019.

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Victorian Heritage Database - © Department of Environment, Land, Water & Planning (https://creativecommons.org/licenses/by/4.0/deed.en), 2020.

Register of the National Estate – © Australian Government Department of the Environment, Water, Heritage and the Arts

Bushfire Prone Area - Fire History - © Department of Environment, Land, Water & Planning (https://creativecommons.org/licenses/by/4.0/deed.en), 2020.

Fire History - © Department of Environment, Land, Water & Planning (https://creativecommons.org/licenses/by/4.0/deed.en), 2020.

Flood Planning Area - Fire History - © Department of Environment, Land, Water & Planning (https://creativecommons.org/licenses/by/4.0/deed.en), 2020.

1 in 100 Year Flood Extent - © Department of Environment, Land, Water & Planning (https://creativecommons.org/licenses/by/4.0/deed.en)

Historical Commercial & Trade Directory Data –

- 1900 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1905 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1915 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1925 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1935 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1945 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1955 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1965 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1975 Sands & McDougall Melbourne Trade Directory (copyright expired)
- 1960-1961 Post Office Pink Pages Melbourne – Permission for use Sensis 2017
- 1970-1971 Post Office Pink Pages Melbourne – Permission for use Sensis 2017
- 1981-1982 Telstra Yellow Pages Melbourne - Permission for use Sensis 2017
- 1990-1991 Telstra Yellow Pages Melbourne - Permission for use Sensis 2017
- 2005 - 2015 Datajet.com.au - Permission for Use 2020

Other Data – if applicable

Legacy Landfills – LIR proprietary dataset. Dataset is derived from verified Council Records, Aerial Photography Interpretation, Historic Zoning Maps, Historic Topographic Maps, Historic Parish Maps and Derelict Mines and Quarries Information

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For more detailed information regarding data source and update frequency, please contact LI Resources at info@liresources.com.au

Glossary

AVIATION RESCUE FIRE FIGHTING FACILITIES (ARFF); LIQUID FUEL & AVIATION FUEL DEPOTS/TERMINALS; POWER STATIONS; TELEPHONE EXCHANGES & WASTEWATER TREATMENT FACILITIES

These facilities may be associated with the use, storage, treatment and disposal of a range of chemicals and products such as PFAS (Per- and poly-fluoroalkyl substances), solvents, petroleum products, asbestos, PCBs (polychlorinated biphenyls) and others.

BUSHFIRE PRONE LAND

This data may assist environmental consultants, developers and others understand whether any bushfire risk is present in the area that may require specific management and/or restrict site investigations and development works.

COAL SEAM GAS, PETROLEUM WELLS AND BOREHOLES

This data may assist environmental consultants during investigations as to previous resource exploration with an area, resources present (i.e. coal, gas and petroleum), lithological data and potential for environmental contamination.

DEPARTMENT OF DEFENCE UNEXPLODED ORDNANCE (UXO) SITES

UXO is any sort of military ammunition or explosive ordnance which has failed to function as intended. It includes a range of ammunition used by the Navy, Army and Air Force; and many other types of ammunition and explosives including training munitions. UXO contamination has arisen mainly as a result of military training activities, since European settlement. In the past large numbers of ranges and training areas were approved for use in many areas of Australia. As a result, there are now a number of sites around Australia which are affected by UXO. For more information see www.defence.gov.au/UXO

DERELICT MINES AND QUARRIES

Outstanding legacy issues surrounding derelict mines and quarries have the potential to cause safety and environmental impacts and may also be an indicator of the presence of unregulated landfill.

DRY CLEANERS (CURRENT)

Dry cleaners often use or have used hazardous and flammable chemicals in their operations. Incorrect storage and disposal of these chemicals may result in fire/explosion risks or contamination of soil and groundwater or result in human health risks.

GROUNDWATER EXCLUSION ZONES

Groundwater exclusion zones are present in certain areas where aquifers are known to be contaminated or where past activities may have affected groundwater quality. Restrictions on the use of groundwater in those areas are in place and differ between the various management/exclusion zones.

HERITAGE – FEDERAL, STATE AND LOCAL

This data may assist environmental consultants, developers and others understand whether any heritage items are present on the site that may require specific management and/or restrict site investigations and development works.

HISTORICAL COMMERCIAL & TRADE DIRECTORY DATABASE (1932, 1940, 1950, 1960, 1970; 1974, 1980 and 1990)

An LI Resources proprietary database of historical potentially contaminating activities previously listed as having been undertaken on the property or surrounding area. Activities have been catalogued based on 'low to high risk activities' either known to cause potential contamination risk or to assist in guidance for sampling and remediation programs by environmental consultants.

HISTORICAL (LEGACY) LANDFILLS

An LI Resources proprietary dataset containing the location of former legacy landfills. Legacy landfills are widely present across the country, with many locations unknown. Most of these landfills were created prior to current environmental guidelines (i.e. remain unlined and uncapped) resulting in the potential for leaching of hazardous substances into waterways, production of odours, migration of landfill gas and stability issues.

HYDROGEOLOGY

This data includes information for environmental consultants on aquifer properties, the presence of wetlands and groundwater monitoring bores. This information can assist in the understanding of contaminant pathways and receptors.

Groundwater monitoring bores are primarily needed to assess changes to water table levels, groundwater quality and to assess groundwater flow direction. Impacts on groundwater result from contaminated water movement, leaching of surface pollutants caused by rainfall or irrigation water percolation, leakage of stored matter or the disposal of wastes. The presence of a monitoring bore may indicate that a site has been or is being investigated.

MILITARY FACILITIES

Military practices at certain facilities may cause potential contamination through the use of chemicals ranging from cleaning solvents and paints to ammunition, explosives and firefighting foam. These chemicals can cause human and ecological health risks.

NPI INDUSTRIAL FACILITIES

Industrial facilities that trigger a defined threshold(s) for the emission of pollutants identified in the National Pollution Inventory (NPI), must estimate and report their emissions. The pollutants identified under the NPI are those that are known to have possible effects on human health and the environment.

VIC EPA PRIORITY SITES REGISTER

The EPA is required by law to maintain a record of notices relating to contaminated land, including notices declaring land to be 'Significantly Contaminated Land'. The EPA Priority Sites Register provides information on all sites that have been declared significantly contaminated.

VIC EPA FORMER GASWORKS SITES

Former gasworks often leave a legacy of soil and groundwater contamination. The major contaminants in these instances include tars, oils, hydrocarbon sludges, spent oxide wastes, ash and ammoniacal recovery wastes. Some of these contaminants are carcinogenic to humans and toxic to aquatic ecosystems and therefore may pose a risk to human health and the environment.

VIC EPA PFAS INVESTIGATION PROGRAM

The VIC EPA is investigating particular sites to better understand the extent of PFAS use and contamination in VIC. PFAS are a group of chemicals that include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

They have many specialty applications and are widely used in a range of products in Australia and internationally. PFAS are an emerging contaminant, which means that their ecological and/or human health effects are unclear. Further information can be found at www.epa.nsw.gov.au

OTHER POTENTIALLY CONTAMINATED SITES

An LI Resources proprietary database of recent potentially contaminating activities previously listed as having been undertaken on the property or surrounding area. Activities have been catalogued based on 'moderate to high risk activities' either known to cause potential contamination risk or to assist in guidance for sampling and remediation programs by environmental consultants. Please note this database is not exhaustive and may not list all activities in the area.

SENSITIVE RECEPTORS

This data may assist environmental consultants during investigations as to the location and proximity of any sensitive receptors in the area, such as aged care, child care, community and religious facilities; sports grounds; national and state parks etc.

SOIL LANDSCAPE AND GEOLOGY

This data may assist environmental consultants during investigations as to the physical site properties that could govern potential contaminant retention or migration.

SERVICE STATIONS (CURRENT)

Service stations may contain leaking tanks which can result in petroleum products migrating into, and contaminating, the soil or groundwater or other pathways to human and biological contact.

WASTE MANAGEMENT FACILITIES

A waste facility is a premises used for the storage, treatment, processing, sorting or disposal of waste. These include landfills, waste transfer stations and waste reprocessing facilities. Waste facilities emit regulated substances to air and water, such as methane gas, and can produce odours, dust and noise.

Terms and Conditions

1. Land Insight and Resources (LI Resources) will perform the Services in accordance with these terms and conditions

2. By submitting the Application Form, the User acknowledges that it has read and understood these terms and conditions and agrees to be bound by them.

3. LI Resources reserves the right to change these terms and conditions. Any change shall be effective upon notice, which may be given by LI Resources posting such change on the Website, or by direct communication with the User.

Services

4. LI Resources agrees to undertake the Services using due skill, care and diligence.

5. The User assumes the sole risk of making use of, and/or relying on, the Report and the Services. LI Resources makes no representations about the suitability, completeness, timeliness, reliability, legality, or accuracy of the Services.

6. Unless LI Resources agrees expressly otherwise:

   (A) The Services are solely for the use and benefit of the User; and

   (B) LI Resources does not accept any liability, whether directly or indirectly, for any liability or loss suffered or incurred by any third party placing any reliance on the performance of the Services or any Documents or material arising from or in connection with the Services.

7. The User warrants to LI Resources that it will not use the Services for any purpose that is unlawful or is otherwise inconsistent with these terms and conditions.

8. The User will not alter in any way or provide a copy of the Report or any Document prepared by LI Resources to any other person without LI Resources's prior written consent.

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9. The Fee will be payable at the time of submitting the Application Form unless invoicing payment terms have been negotiated prior to purchase with LI Resources.

10. The User and LI Resources may agree in writing to vary the Services. The fee for each variation shall be agreed between LI Resources and the User.

11. The User agrees to pay LI Resources the Fee, including the fee for any variation requested in accordance with clause 12.

12. If the User's rights are terminated and the User has made an advance payment, LI Resources will refund the User a reasonable proportion of the balance as determined by LI Resources in relation to the value of Services already provided.

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23. LI Resources's liability is limited to the amount of the Fee. Liability arising in the provision of the Services is reduced to the extent that it arises out of or in connection with any negligent act or omission by the User.

24. Neither party is liable to the other for loss of actual or anticipated revenue or profits, increased capital or financing costs, increased operational or borrowing costs, pure economic loss, exemplary or punitive damages or indirect or consequential damages or loss.

25. In no event shall LI Resources or any directors, officers, employees or agents be liable for any indirect, punitive, incidental, special, or consequential damages arising out of or in any way connected with the use of the Website, any delay or inability to use the Website, any information available on the Website, or otherwise arising out of the utilisation of the Website, whether based in contract, tort, strict liability, or otherwise, even if LI Resources has been advised of the possibility of such damages. The negation of damages set forth herein is a fundamental element of the basis of the bargain between LI Resources and the User. The Services would not be provided without such limitations.

Property Verification

26. The User accepts that the Services provided do not take into account any information relating to the actual state or condition of the Property.

27. The User acknowledges that the Services are not to be interpreted as commenting on the physical characteristics or condition of the Property, any particular purpose or use of that Property or the saleability or value of the Property.

Termination and Modification

28. LI Resources reserves the right in its sole discretion to terminate, block or restrict the User's use of the Services or any portion thereof, for any reason, and without notice. In addition, LI Resources reserves the right in its sole discretion to terminate or modify any part of the Website without notice, for any reason.

Anti-Hacking

29. The User agrees not to directly or indirectly, attempt to or disrupt, impair, interfere with, alter or modify the Website or any of its content.

30. The User agrees not to allow, aid or abet third parties to directly or indirectly, attempt to or disrupt, impair, interfere with, alter or modify the Website or any of its content, or obtain access to any information regarding any User or any other Report issued to a User.

Complaints

31. Any complaints in relation to the Services should, in the first instance, be in writing and addressed to LI Resources Customer Service at: info@liresources.com.au. LI Resources will respond to any such complaints in writing as soon as practicably possible.

General Matters

32. These terms and conditions are governed by and will be construed and enforced in accordance with the laws of the State of New South Wales, Australia. If any dispute, controversy or claim arises out of or relating to these terms and conditions, whether sounding in contract, tort or otherwise, it shall be resolved by use of an alternative dispute resolution procedure acceptable to both parties with the assistance of a mediator. If the dispute has not been resolved to the satisfaction of either party within 60 days of initiation of the procedure or if either party fails or refuses to participate in or withdraws from participating in the procedure, then either party may refer the dispute to the court.

33. These terms and conditions apply to all Services provided by LI Resources.

34. If there is any inconsistency between these terms and conditions and any other document or agreement between the parties, these terms and conditions will prevail.

35. These terms and conditions represent the entire agreement between the parties.

36. The User authorises LI Resources to destroy Documents which LI Resources has prepared or holds in connection with the Services 7 years after the last date on which the Services were provided.

37. If any of the terms of the Application Form or the terms and conditions are invalid, unenforceable or void, the relevant term must be read down to the maximum extent possible or severed from the rest of the Application Form or these terms and conditions.

38. These terms and conditions can only be amended or varied by a written document signed by both parties.

39. Neither party may assign or transfer any rights or obligations arising in the provision of the Services or these terms and conditions without the other party's written consent.

Defined Terms

Application Form Means the form and accompanying information provided on the Website, completed and submitted by the User to request the Services.

Document Includes a report, and any other written or electronic document.

Fee Means the amount set out in the Application Form or confirmed via an invoice.

Property Means the property to which the Services and the Report relate.

Report Means the Document prepared by LI Resources and provided to the User which contains the environmental and development data which is relevant to the Property.

Services Means the review of data and information on which the Report is based, and the preparation and provision to the User of the Report.

Website Means LI Resources's online site, that is: www.liresources.com.au

User Means the person(s) set out in the Application Form including that person's permitted successors.

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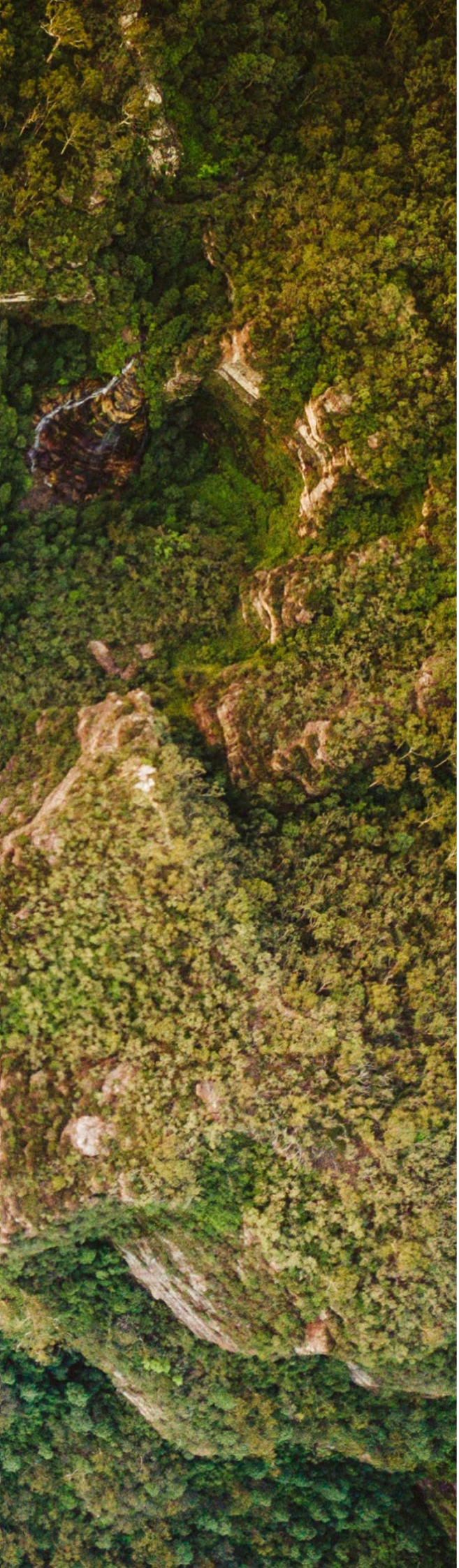
24 September 2021



Understanding your report

Your Report has been produced by Land Insight and Resources (Land Insight).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a 200 to 2000m radius (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, Land Insight cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by Land Insight includes data listed on page 4 (table of contents). All sources of data and definitions are provided in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact info@liresources.com.au

The report does not include title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

Due to the ongoing nature of database development and frequency of updates provided by various state government regulators the data displayed within this report is only current from date of production.

This Report, and your use of it, is regulated by Land Insight's Terms and Conditions (See Land Insight's Product Guide).

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SUMMARY

Section 1	**PROPERTY SETTING**	**Identified**
Sensitive Receptors Planning Control Heritage Soil and Land Information Geology and Topography		

Section 2	**HYDROGEOLOGY**	**Identified**
Aquifer Groundwater Bores and Other Borehole investigations Groundwater Dependent Ecosystems (GDE) Hydrogeology Units Wetlands		

Section 3	**ENVIRONMENTAL REGISTERS LICENCES AND INCIDENTS**	**Not Identified**
Contaminated Land Public Register Sites Regulate by Other Jurisdictional Body (Former Gaswork sites / PFAS sites) Licensing and Regulated Sites National Pollutant Inventory (NPI)		

Section 4	**POTENTIALLY CONTAMINATED AREAS**	**Not Identified**
National Liquid Fuel Facilities National Waste Management Facilities		

Section 5	**NATURAL HAZARDS**	**Identified**
Erosion risk Bushfire prone land Fire history Flood hazards		

Section 1 Property Setting

1.1 SENSITIVE RECEPTORS

Map 1.1 (200m Buffer)

Sensitive receptor	Category	Distance (m)	Direction
Not identified	-	-	-

1.2 PLANNING CONTROLS

Map 1.2 (onsite)

Zoning

Code	Zoning	Details
FZ	FARMING ZONE	-
RDZ1	ROAD ZONE - CATEGORY 1	-

Planning Overlay

Type	Category	Details
ESO	ESO3	ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 3
ESO	ESO4	ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 4
SLO	SLO3	SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 3

Other Planning Information

Type	Category	Details
Not identified	-	-

1.3 HERITAGE

Map 1.3 (200m Buffer)

State and Local Heritage

Site ID	Site Name	Type	Details	Distance (m)	Direction
24138	-	Areas of Cultural Heritage Sensitivity (CHS)	-	0.0	onsite

Australian Heritage Database

Site ID	Site Name	Type	Details	Distance (m)	Direction
Not identified	-	-	-	-	-

Commonwealth Heritage List, National Heritage List and World Heritage Area.

1.4 SOIL AND LAND USE INFORMATION

Map 1.4a/1.4b (onsite)

Soil Landscape

Soil Landscape	FfcQ7-2	fc	**Soil Group**	'Sands, Clays'
Description	High Terraces and Fans - Gippsland			
Soil Landscape	FfQ7-1	f	**Soil Group**	'Peats, Peaty clays'
Description	Barrier Complexes - Discovery Bay, Gippsland Lakes			

Salinity

Salt Susceptibility	Not identified	-

Radon

Radon Level	Bq/m^3	7

Typical radon levels in Australia are low and the values shown are the average values for each census district. For specific location, factors such as the local geology and house type could lead to different values. (ARPANSA).

Acid Sulfate Soil

Coastal Acid Sulfate Soil Hazard (CASS) *(Table 1.4.1)*	On the Property?	Within Buffer?
Class	Not identified	Not identified

National Acid Sulfate Soils Atlas

Atlas of Australian ASS *(Table 1.4.2)*	Bn(p4)	ASS in inland lakes, waterways, wetlands and riparian zones	**Probability of Occurrence**	Low Probability of occurrence

Table 1.4.1. Classification for Coastal Acid Sulfate Soils (CASS)	
Class of Land as shown on ASS Planning Maps	
Prospective Land	Land that has the potential to contain Coastal Acid Sulfate Soils as indicated by geomorphology.

Table 1.4.1. Classification for Coastal Acid Sulfate Soils (CASS)	
Made Land	Land that has been modified by human agency. Here, the geomorphic features that indicate the potential to contain Coastal Acid Sulfate Soil, no longer exist. Assessment of the potential depends on information such as geology maps or soil maps, that pre-dates modification.

Data represents Victorian coastal lands which have the potential to contain acid sulfate soil (CASS), i.e. it is prospective for CASS. The data is used for triggering an investigation of a site where proposed activities risk disturbing CASS. Department of Environment and Primary Industries.

Table 1.4.2. Atlas of Australian Acid Sulfate Soils1 (ASRIS) (CSIRO/NatCASS)	
Probability of Occurrence of ASS[1]	
A	**High Probability of occurrence -** (>70% chance of occurrence in mapping unit)
B	**Low Probability of occurrence** - (6-70% chance of occurrence in mapping unit)
C	**Extremely low probability of occurrence** - (1-5% chance of occurrence in mapping unit)
D	**No probability of occurrence** - (<1% chance of occurrence in mapping unit)
x	**Disturbed ASS[1] terrain -** (ASS[1] material present below urban development).
u	**Unclassified** - (Insufficient information to classify map unit)
Zones	
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS[1] generally within upper 1 m.
f	ASS[1] generally below 1 m from the surface
g	ASS[1], generally below 3 m from the surface.
h	ASS[1] generally within 1 m of the surface.
i, j	ASS[1] generally below 1 m of the surface.
k	ASS[1] material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS[1] generally within upper 1 m in wet / riparian areas.
Subscripts to codes	
(a)	Actual acid sulfate soil (AASS) = sulfuric material.
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
Confidence levels	
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

[1]Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

1.5 GEOLOGY AND TOPOGRAPHY

Map 1.5 (onsite)

Geology

Map Sheet	Symbol	Name	Geologic History	Lithology	Description
1:50,000 Geological Units	Qc1	colluvium(Qc1): generic	Pliocene to Holocene (sheet flow - colluvial)	diamictite (dominant); rubble (significant); clay [lithology] (significant); silt [material] (significant); sand (significant); gravel [material] (significant)	Diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting
	Qg	coastal lagoon deposits (Qg): generic	Holocene to Holocene (water [process] - delta plain)	silt [material] (significant); clay [lithology] (significant)	Silt, clay: dark grey to black; variably consolidated
	Nlh	Haunted Hills Formation(Nlh): generic	Pliocene to Pleistocene (over-bank stream flow - fluvial [environment])	silt [material] (significant); sand (significant); gravel [material] (significant)	Sand, silt, gravel: various shades of brown, yellow, red, white; variably sorted; variably rounded; crudely to well-bedded; commonly strongly oxidised with ironstone near the top and also within the formation

Naturally Occurring Asbestos Potential (NOA)

Category	On the Property?	Within Buffer?
Not identified	-	-

Topography

Topography	10 – 20 mAHD

Section 2 Hydrogeology

2.1 HYDROGEOLOGY AND GROUNDWATER BORES

Map 2.1 (2000m Buffer)

	On the Property?	Within Buffer?
Aquifer Type	Porous, extensive highly productive aquifers	Porous, extensive highly productive aquifers
Designated Water Supply Catchments	Not identified	Not identified
Depth to Watertable (m)	<5 - 20	<5 - >50
Wetlands	Not identified	Temporary freshwater swamps Coastal saltmarsh Shallow Inlet Marine & Coastal Park
Groundwater Salinity (mg/L)	1000	1000

Groundwater Quality Restricted Use Zones

Number	Address	Site history	Restrictions on Use	Distance (m)	Direction
Not identified	-	-	-	-	-

Groundwater Bores

Map ID	Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity (mg/L)	Yield (L/s)	Distance (m)	Direction
9	100966	Stock and Domestic	1/01/1988	13.0	13.0				785.0	South-east
6	100784	Stock and Domestic	2/11/1981	8.0	8.0			0.5	934.0	South
8	100658	Stock and Domestic	1/03/1976	5.0	5.0				968.2	South-east
5	100949	Stock and Domestic	14/08/1990	24.0	24.0			0.505	1215.5	West

Map ID	Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity (mg/L)	Yield (L/s)	Distance (m)	Direction
4	WRK983421	Exploration	24/01/2008	25.0	25.0				1514.0	West
1	WRK983422	Exploration	24/01/2008	10.0	10.0				1518.2	West
2	WRK983423	Exploration	24/01/2008	10.0	10.0				1518.2	West
3	WRK983424	Exploration	25/01/2008	10.0	10.0				1518.2	West
10	330661	Unknown	2/09/1978	4.0	4.0				1743.9	South-east
11	100754	Stock and Domestic	19/10/1979	4.0	4.5			0.5	1765.2	South-east
15	100710	Stock and Domestic	30/09/1977	5.0	4.6			0.379	1834.1	South-east
13	100623	Stock and Domestic	10/04/1973	6.0	6.0				1860.5	South-east
14	100608	Stock and Domestic	2/01/1974	6.0	6.1			0.378	1892.9	South-east
12	100957	Stock and Domestic	18/12/1990	7.0	7.2			0.5	1931.9	South-east
7	100776	Stock and Domestic	12/02/1981	5.0	5.0			0.5	1939.5	South-east
16	100636	Unknown	30/08/1975	7.0	6.7			0.505	1998.7	South-east

Groundwater Bores Driller Lithology Details

Groundwater Bore ID	From Depth – To Depth (m) Lithology	Distance (m)	Direction
100966	#N/A	785.0	South-east
100784	#N/A	934.0	South
100658	#N/A	968.2	South-east
100949	0m-0.6m Black Top Soil 0.6m-1.5m Black Pug Clay 1.5m-18m Brown Sandy Clay 18m-20m Hard Grey Slate 20m-24m Grey Slate Reef	1215.5	West
WRK983421	0m-0.4m Sandy Top Soil 0.4m-5m Clayey Silt Brown 5m-10m Siltstone Brown/Orange	1514.0	West
WRK983422	0m-0.3m Sandy Top Soil Brown 0.3m-4.5m Clay Brown/Orange 4.5m-10m Siltstone Orange/Brown	1518.2	West
WRK983423	0m-0.5m Sandy Top Soil Brown 0.5m-3.6m Clayey Silt Brown 3.6m-10m Siltstone Orange/Brown	1518.2	West
WRK983424	0m-1m Sand Light Brown 1m-2.2m Sandy Clay Brown 2.2m-3.6m Clayey Sand Grey Moist/Wet 3.6m-8m Wet 8m-10m Silty Sandy Clay Grey	1518.2	West
330661	#N/A	1743.9	South-east
100754	#N/A	1765.2	South-east
100710	#N/A	1834.1	South-east
100623	#N/A	1860.5	South-east
100608	#N/A	1892.9	South-east

100957	0m-0.5m Top Soil 0.5m-6m White Sand 6m-7.2m Coarse Light Grey Sand, Shell & Small Stones	1931.9	South-east
100776	#N/A	1939.5	South-east
100636	#N/A	1998.7	South-east

2.2 HYDROGEOLOGY AND OTHER BOREHOLES

Map 2.2 (500m Buffer)

	On the Property?	Within Buffer?
Groundwater Management Areas	Not identified	-
Hydrogeologic Unit	Surficial Sediment Aquifer (porous media - unconsolidated)	Surficial Sediment Aquifer (porous media - unconsolidated)

Groundwater Dependent Ecosystems (GDE)

	On the Property?	Within Buffer?
Aquatic	Not identified	-
Terrestrial	Low potential for GW interaction	Low potential for GW interaction Moderate potential for GW interaction High potential for GW interaction

Aquatic - Ecosystems that rely on the Surface expression of groundwater.
Terrestrial - Ecosystems that rely on the Subsurface expression of groundwater.

Other Known Borehole Investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes)

Borehole ID	Purpose	Project	Client/ Licence	Date Drilled	Depth (m)	Distance (m)	Direction
Not identified	-	-	-	-	-	-	-

Section 3 Environmental Registers, Licences and Incidents

3.1 CONTAMINATED LAND PUBLIC REGISTER

Map 3.1 (1000m Buffer)

Environmental Audit Reports

CARMS No.	Address	Audit Category	Distance (m)	Direction
Not identified	-	-	-	-

Priority Site Register

Notice No.	Address	Issue	Distance (m)	Direction
Not identified	-	-	-	-

Table 3.1.1 Sections 53X and 53V of the Environment Protection Act 1970	
EPA Types of Environmental Audits	
53X Audits	A 53X ('condition of the environment') audit is most frequently used by the planning system and verifies that potentially contaminated land can be used for a specific use (industrial, commercial or residential). From a 53X audit comes either a certificate or statement of environmental audit.
53V Audits	A 53V ('risk of harm') audit is most commonly used by EPA to understand the risk to the environment posed by an industrial activity or to validate that cleanup of contaminated land or groundwater has occurred. The 53V audit assesses the risk of any possible harm to a site caused by an industrial process or activity, waste substance or noise. This includes audits associated with the construction and operation of landfills.

3.2 SITES REGULATED BY OTHER JURISDICTIONAL BODY

Map 3.2 (2000m Buffer)

Defence, Military Sites and UXO Areas

Site name	Type*	Description	Distance (m)	Direction
Not identified	-	-	-	-

**RCIP (Regional Contamination Investigation Program). UXO (Unexploded Ordnance Areas)*

Former Gasworks Sites

Site name	Description	Distance (m)	Direction
Not identified	-	-	-

PFAS Sites

Site name	Description	Distance (m) *	Direction
Not identified	-	-	-

National Pollutant Inventory (NPI)

Facility name	Address	Primary ANZSIC Class	Latest report	Distance (m)	Direction
Not identified	-	-	-	-	-

3.3 LICENCES, APPROVALS & NOTICES

Map 3.3 (500m Buffer)

Licences

Licence No.	Type	Company Name	Address	Details	Distance (m)	Direction
Not identified		-	-	-	-	-

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Approvals

Doc No.	Type	Company Name	Address	Details	Distance (m)	Direction
Not identified		-	-	-	-	-

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Notices

Transaction No.	Type	Company Name	Address	Distance (m)	Direction
Not identified		-	-	-	-

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Table 3.3.1 EPA Regulatory Instruments Explanation	
Approvals	
Works approval is required for industrial and waste management activities that have the potential for significant environmental impact.	
Works Approval	EPA's works approval process is designed to ensure the best and most cost-effective environmental outcomes on projects are achieved. Without works approvals there is an increased risk of industrial projects causing pollution issues and requiring expensive retrofitting.
30A Approval	Section 30A is an overriding provision of the Environment Protection Act 1970 (the Act) under which EPA can authorise discharges, emissions, storage, treatment, disposal and handling of waste in emergencies and other temporary situations that would otherwise be an offence under the Act. 30A approvals are not issued lightly, as they permit activities that would not normally be allowed.
Notices	
Remedial notices are served to prevent or remedy a range of non-compliances or likely non-compliances. Remedial notices are not punitive measures.	
Clean Up Notice	Clean up notices (CUN) are issued under section 62A of the *Environment Protection Act 1970*. They aim to prevent further contamination and impact on beneficial uses through removal of waste, undertaking clean-up activities, ongoing management of pollution, altered handling, storage or location of industrial or prescribed industrial waste.
Minor Works Pollution	Minor works pollution abatement notices (MWPANs) are issued under section 31B of the EP Act. They aim to prevent further occurrence of pollution or potential environmental risk through installation of risk controls and changes to onsite processes and practices in urgent situations.
Pollution Abatement Notice	Pollution abatement notices are issued under section 31A of the *Environment Protection Act 1970*. They aim to prevent further occurrence of pollution or potential environmental risk through installation of risk controls and changes to on-site processes and practices.
Post closure pollution abatement notices (PC PAN)	Post Closure Pollution Abatement Notices (PAN's) are formal legal enforceable Notices issued by EPA on former landfill sites. The environmental risks posed by landfill sites continue for a significant period of time after waste acceptance has ceased.

Table 3.3.1 EPA Regulatory Instruments Explanation	
Licences	
EPA licence is required for all scheduled premises. It allows the licence-holder to operate and sets conditions that they must meet.	
Licence	Licences contain standard conditions that aim to control the operation of the premises so that there is no adverse effect on the environment. These conditions address areas such as waste acceptance and treatment, air and water discharges, and noise and odour.
Amalgamated Licence	An amalgamated licence is a legal document that contains standard conditions to control the operation of scheduled premises to minimise impacts on the environment. These conditions address areas such as waste acceptance and treatment, air and water discharges, noise and odour.

Section 4 Potentially Contaminated Areas

4.1 POTENTIALLY CONTAMINATING ACTIVITIES

Map 4.1 (500m Buffer)

Liquid Fuel Facilities

Site name	Category	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Waste Management Facilities & Recycling Centres

Site name	Category	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Liquid Fuel Facilities Datasets, representing the spatial locations of liquid fuel depots, refineries, terminals and petrol stations present in the Australian Government National Liquid Fuel Facilities Dataset and Petrol stations identified by Land Insights.
Waste Management Facilities, representing the spatial locations of reprocessing facilities, transfer stations and landfills present in the Australian Government National Waste Management Facilities Dataset and Waste/Recycling facilities identified by Land Insights.

A more comprehensive list of all Potentially Contaminating Activities is available in the Due Diligence Insight report.

**Status:*
Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business is operating on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years prior from the day this report was issued. All former sites older than 2 years will be reported in the 'Historical Potentially Contaminating Activities' section 4.4 in this report.

4.2 HISTORICAL POTENTIALLY CONTAMINATING ACTIVITIES (not mapped)

1900 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1905 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1915 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1925 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1935 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1940 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1945 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1955 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1965 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1970 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1975 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1980 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1990 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

2005 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

2010 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

2015 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

Land Insight uses a number of address geocoding techniques and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When a historical street address does not contain complete details or a match is not found, a record identified as being in the surrounding area will be included for reference and the accuracy of the data is approximate only. The positional accuracy of the records is listed below:

Historical data positional accuracy and georeferencing results explanation		
Positional accuracy	**Georeferenced**	**Description**
Address	Located to the address level	*When street address and names fully match.*
Street	Located to the street centroid	*When street names match but no exact address was found. Location is approximate.*
Place	Located to the structure, building or complex	*When building, residential complex or structure name match but no exact address was found. Location is approximate.*
Suburb	Located to the suburb area	*When suburb name match but no exact address was found. Location is approximate.*

The data used in this section was extracted from range of historical commercial trade directories and historical business listing information. The business addresses were geocoded using historical information and cannot be relied upon as some of the addresses no longer exist. From 2005, the historical business records in this section are considered more accurate as information was extracted from digital directories with geographic coordinate location information available. For more information on how these records were geocoded and the methodology used by Land Insight, contact us at info@landinsight.co.

Historical Industries or business activities deemed to be of negligible or lesser risk are not reported. Please note that any record not identified within this section (due to error or unforeseen omission) does not necessarily mean that the screened area is not potentially contaminated or free of any risks.

Section 5 Natural Hazards

5.1 Natural Hazards

Map 5.1 (500m Buffer)

Erosion Risk

Category	On the Property?	Within Buffer?
Not identified	-	-

Fire Hazard

Category	On the Property?	Within Buffer?
Bush Fire Prone Area (BLA)	Yes	Yes
Fire History	-	Not identified

Flood Hazard

Name	On the Property?	Within Buffer?
1 in 100 year flood extent	-	Yes
Land Subject To Inundation Overlay	-	Yes

Land Insight

Tower Three, Level 24
300 Barangaroo Avenue
Sydney NSW 2000 Australia
02 8067 8870
info@liresources.com.au
www.liresrouces.com.au

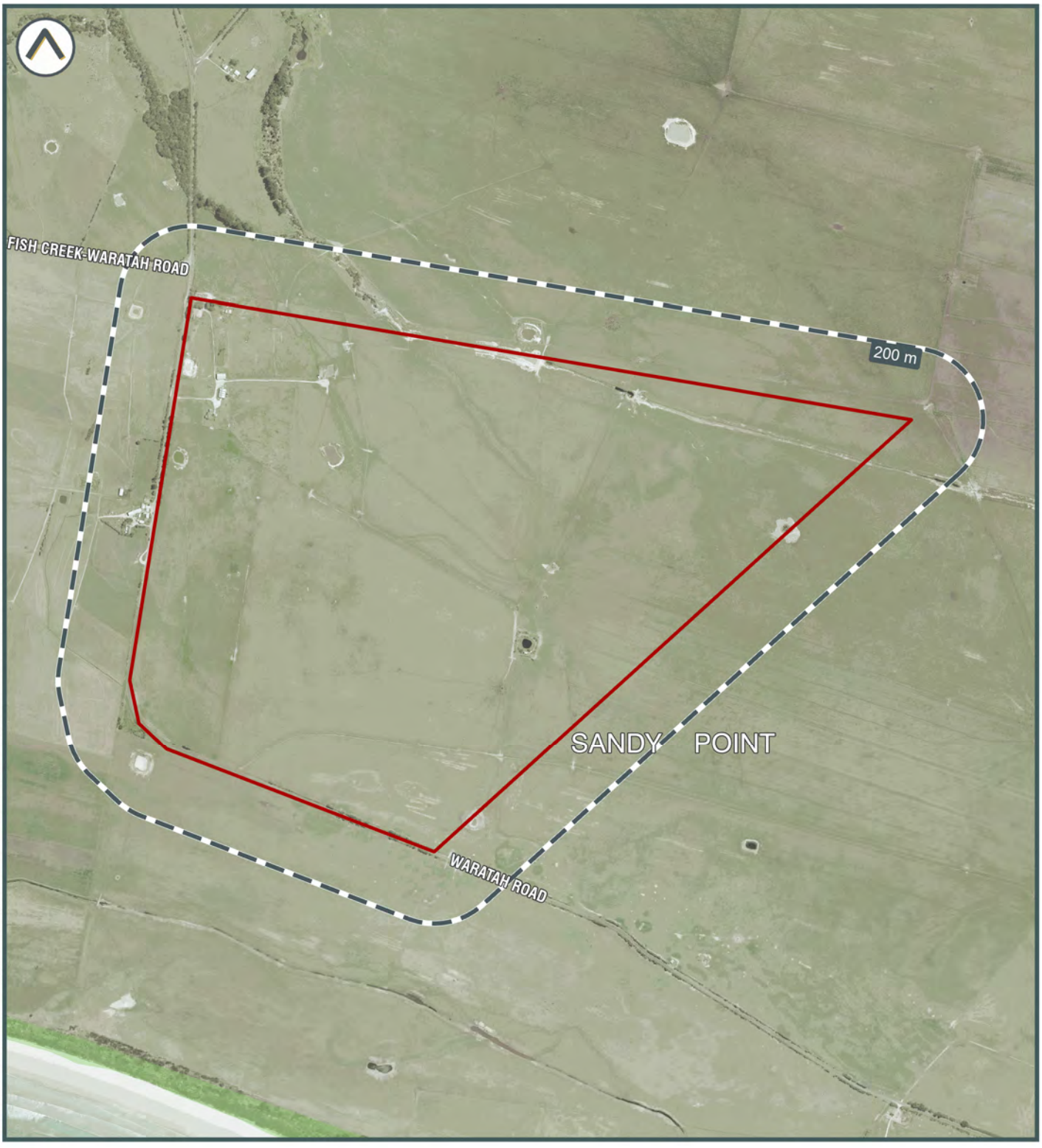
Appendix A

REPORT MAPS

PROPERTY SETTING

MAP 1.1

Subject Area and Sensitive Receptors



Subject area

0 200 400 600 800 1,000m

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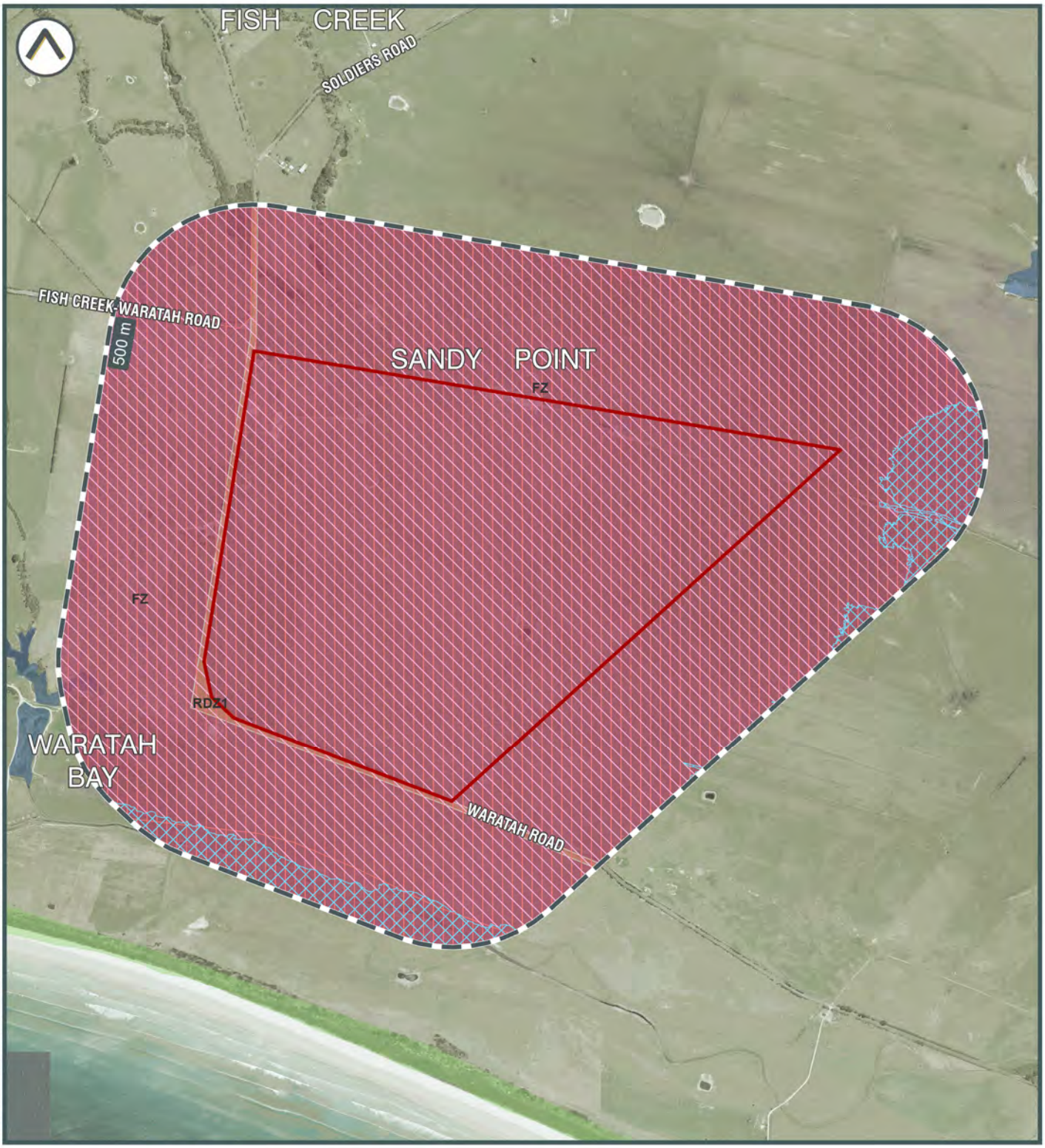
MAP 1.2

Planning Controls



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Subject area

Planning Scheme
ESO
LSIO
SLO

Zoning
FZ | Farming Zone
RDZ1 | Road Zone – Category 1

0 200 400 600 800 1,000m

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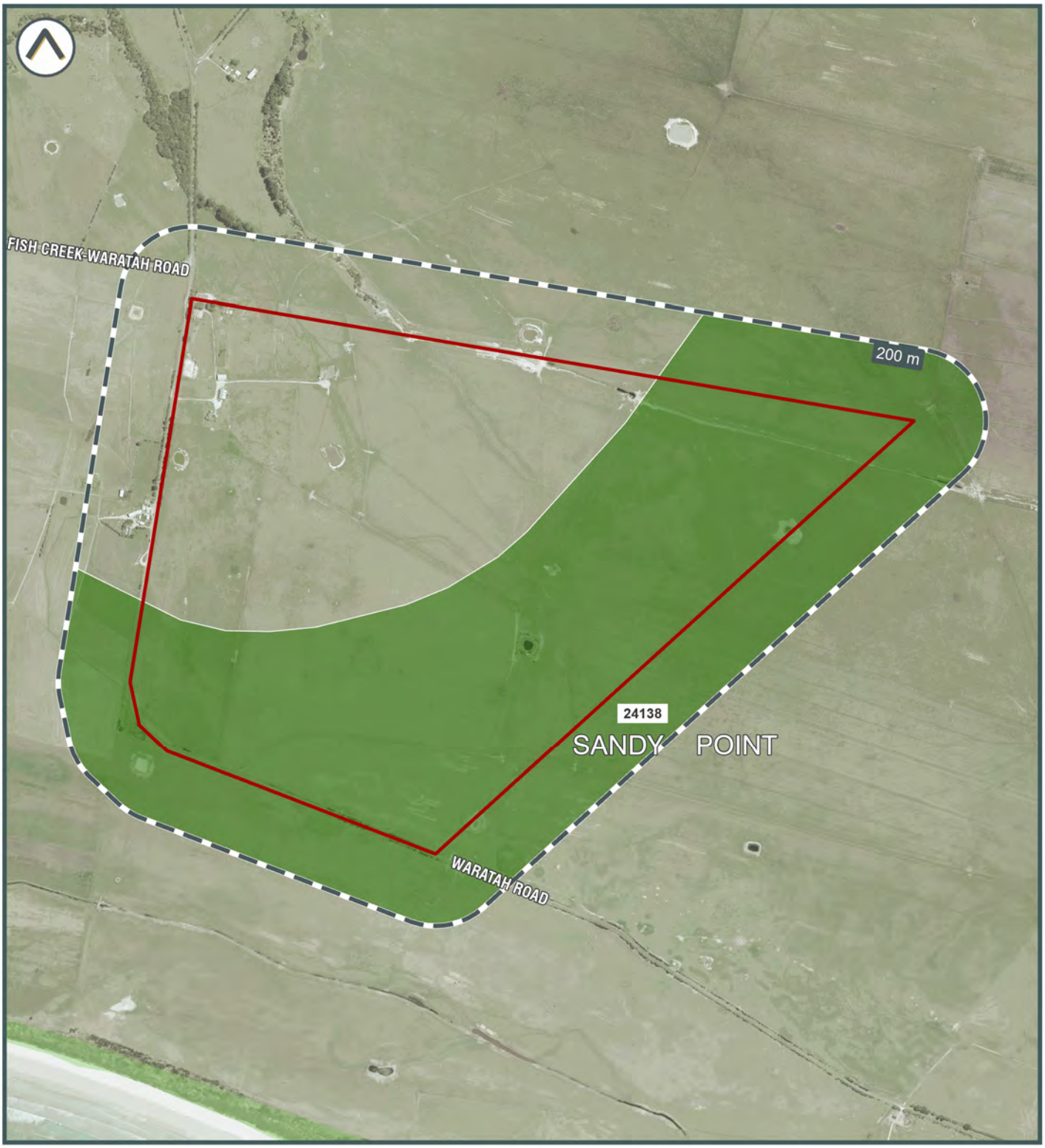
Heritage

MAP 1.3



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Subject area

Victorian Heritage Inventory (VHI)
Areas of Cultural Heritage Sensitivity (CHS)
Victorian Heritage Register (VHR)

Commonwealth Heritage List (CHL)
National Heritage List (NHL)
World Heritage Area (WHA)

0 200 400 600 800 1,000m

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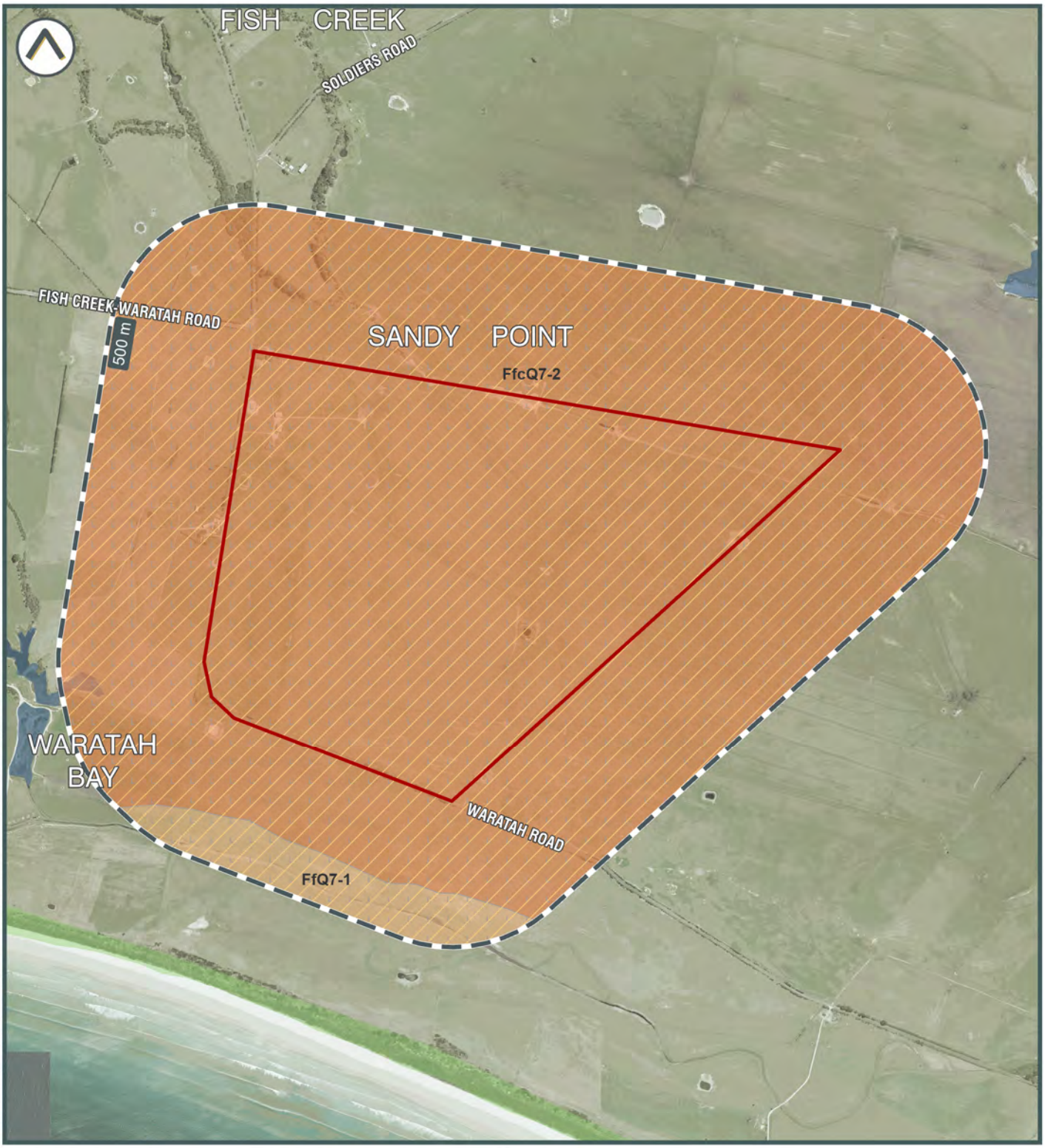
MAP 1.4a

Soil Landscape and Salinity



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Subject area

Salinity Hazard
Low

Soil Landscape
FfQ7-1,Present flood plain
FfcQ7-2,Present flood plain

Radon Level (Bq/m3)
5-19

0 200 400 600 800 1,000m

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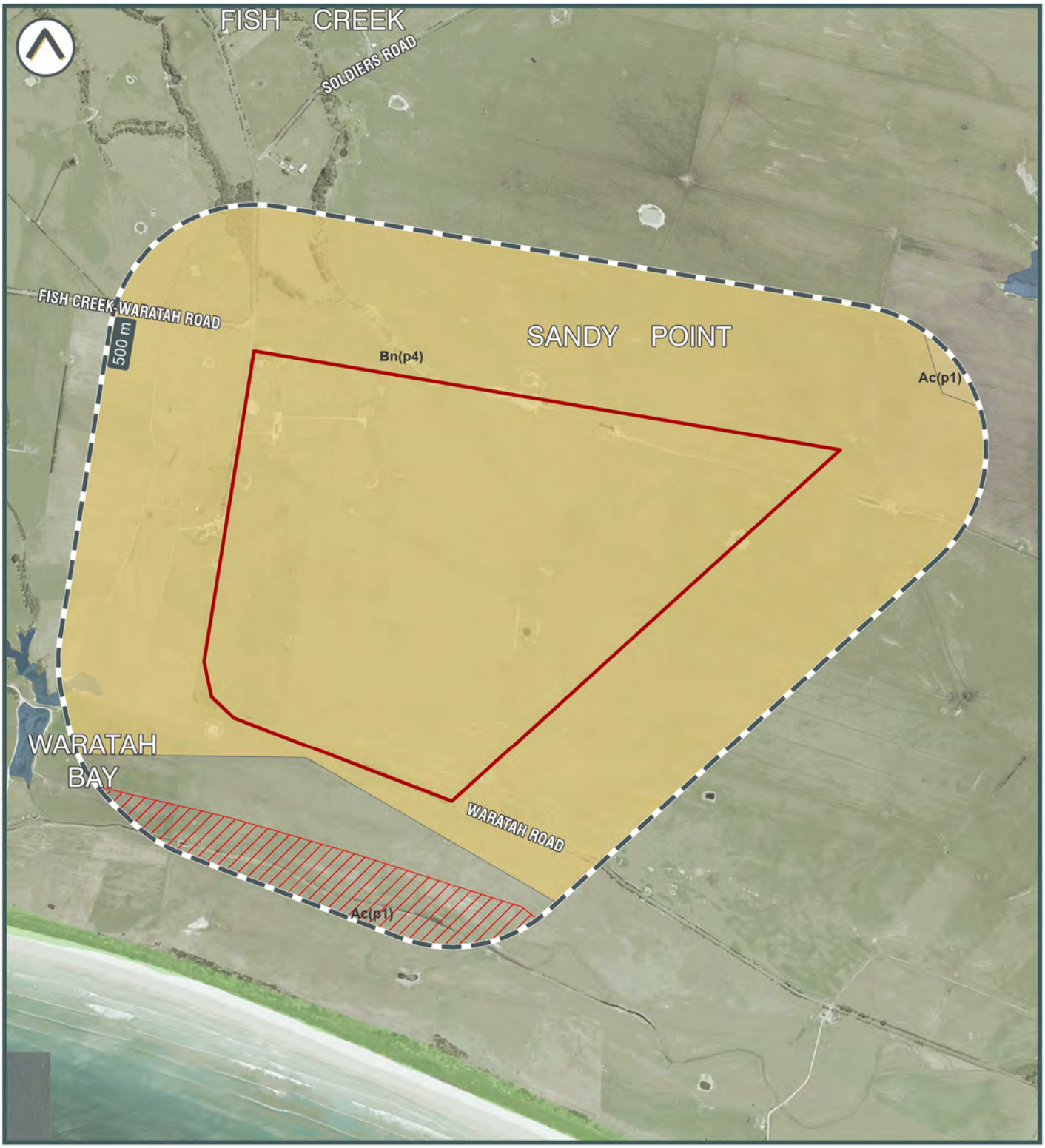
Acid Sulfate Soils

MAP 1.4b



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Subject area

Coastal Acid Sulphate Soils
Prospective

ASRIS Atlas of Australian Sulfate Soils
Ac(p1) | ASS in tidal zones
Bn(p4) | ASS in inland lakes, waterways, wetlands and riparian zones

0 200 400 600 800 1,000m

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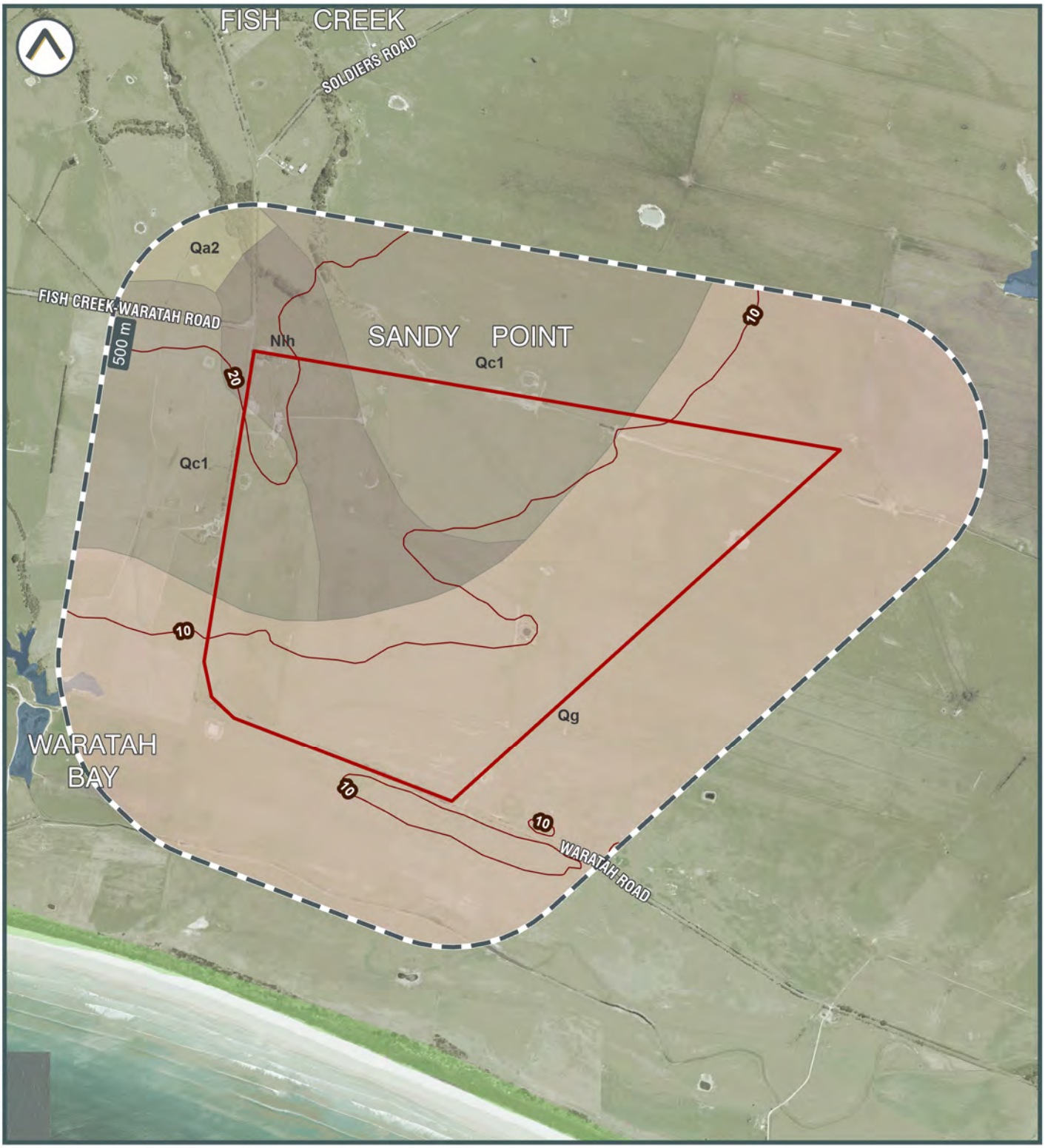
MAP 1.5

Geology and Topography



©2021 Land Insight (LI) www.landinsight.co | 24/09/2021 | Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area
Topographic contour (m)

1:250,000 Geological Units

Nlh | Sand, silt, gravel: various shades of brown, yellow, red, white; variably sorted; variably rounded; crudely to well-bedded; commonly strongly oxidised with ironstone near the top and also within the formation

Qa2 | Gravel, sand, silt: variably sorted and rounded, generally unconsolidated; dissected to form terraces higher than Qa1, alluvial floodplain deposits

Qc1 | Diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting

Qg | Silt, clay: dark grey to black; variably consolidated

0 200 400 600 800 1,000m

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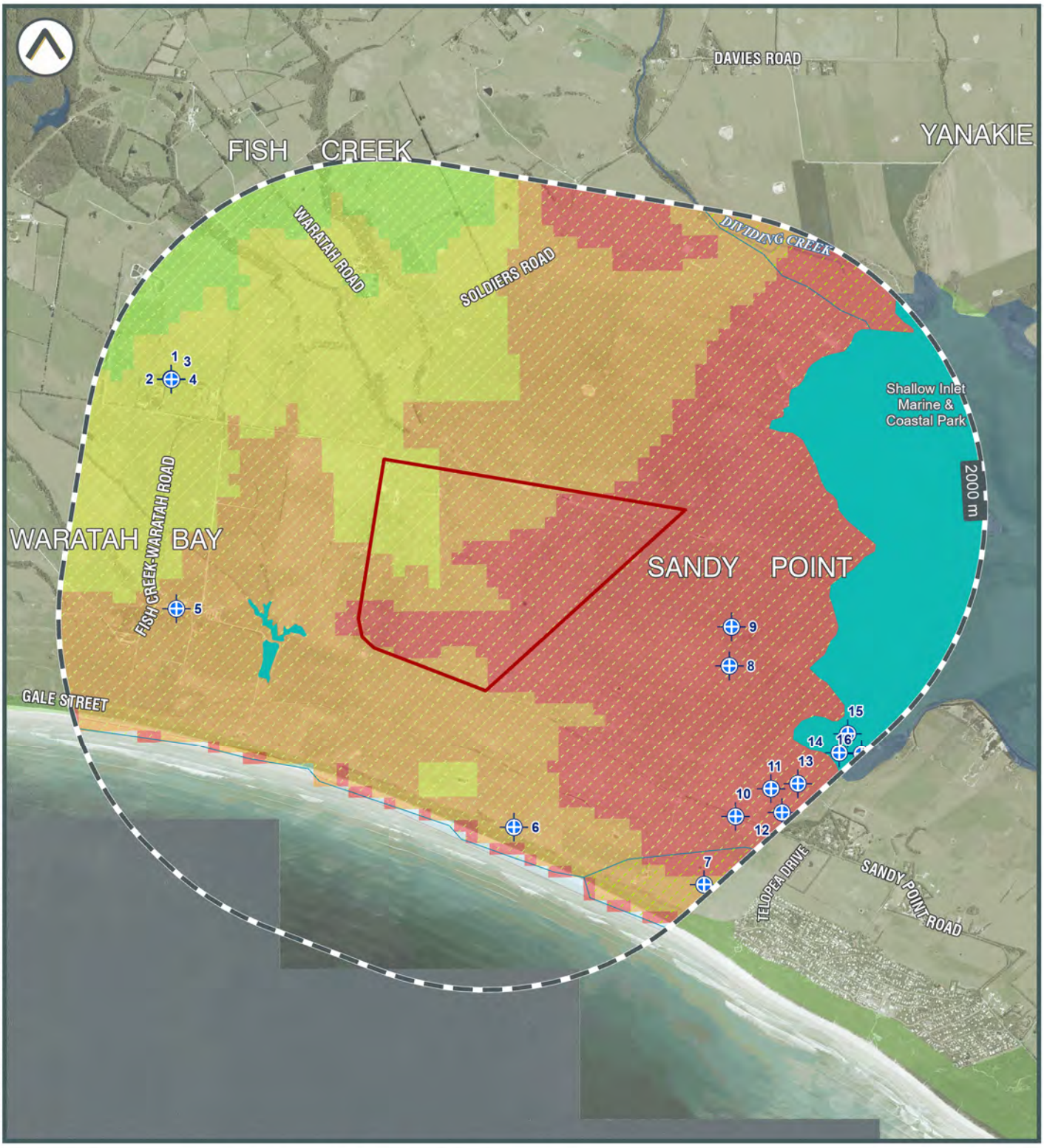
HYDROGEOLOGY

MAP 2.1

Hydrogeology and Groundwater Boreholes



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Subject area
Groundwater bores
Wetlands

Groundwater salinity (mg/l)
Less than 500
500 – 1,000

Depth to Watertable (m)
<5
5–10
10–20
20–50
>50

Aquifer type
Porous, extensive highly productive aquifers

0 300 600 900 1,200 1,500m

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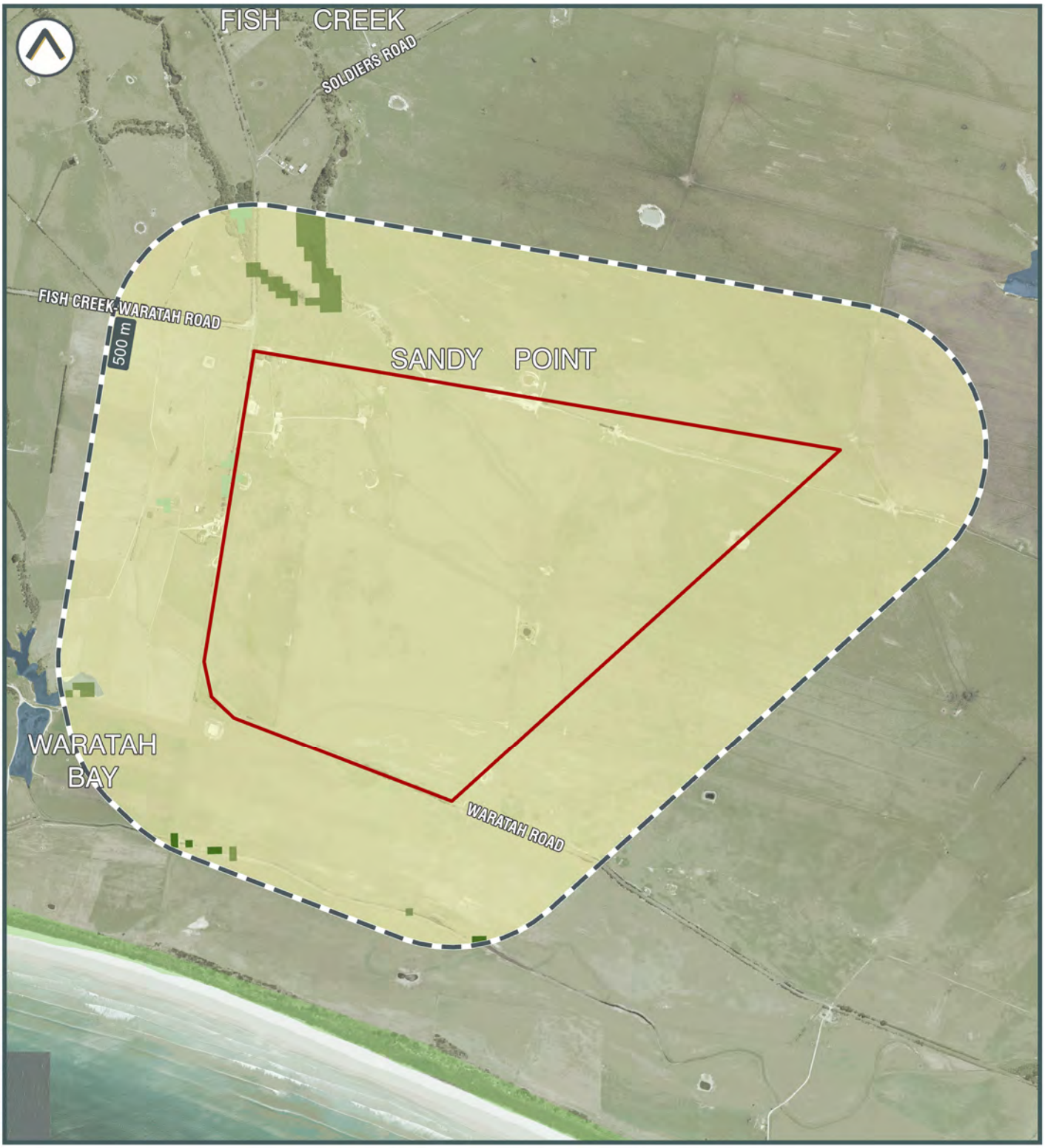
HYDROGEOLOGY

Hydrogeology and Other Boreholes

MAP 2.2



©2021 Land Insight (LI) www.landinsight.co | 24/09/2021 | Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area
Other boreholes

Hydrogeologic Unit
Surficial Sediment Aquifer (porous media – unconsolidated)

Ecosystems that rely on Subsurface presence of Groundwater
High potential for GW interaction
Moderate potential for GW interaction
Low potential for GW interaction

0 200 400 600 800 1,000m

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MAP 3.1

Contaminated Land Public Register

Subject area

Contaminated Land Register (EPA)
Priority Sites Register
Audit Report

0 200 400 600 800 1,000m

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ENVIRONMENTAL REGISTERS LICENSES AND INCIDENTS

MAP 3.2

Sites Regulated by other Jurisdictional Body

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- Subject area
- PFAS sites
- NPI Facilities
- Former Gasworks Sites
- Unexploded Ordnance (UXO) Areas
  - Substantial Potential
  - Slight potential
- Sea Dumping of Depth Charges
- Sea Dumping of Depth Charges (Chemical munitions sea dumping)
- Other Sea Dumping Sites
- Other
- Defence Area / Military Sites
- Defence Controlled Area

0 300 600 900 1,200 1,500m

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MAP 3.3

Licensing Under the POEO Act

Subject area

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0 200 400 600 800 1,000m

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POTENTIALLY CONTAMINATED AREAS

MAP 4.1

Potentially Contaminating Activities (PCAs)

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Subject area

Liquid Fuel Depots

Waste Management Facilities

Operational Petrol Stations

Former Petrol Stations

Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.

0 200 400 600 800 1,000m

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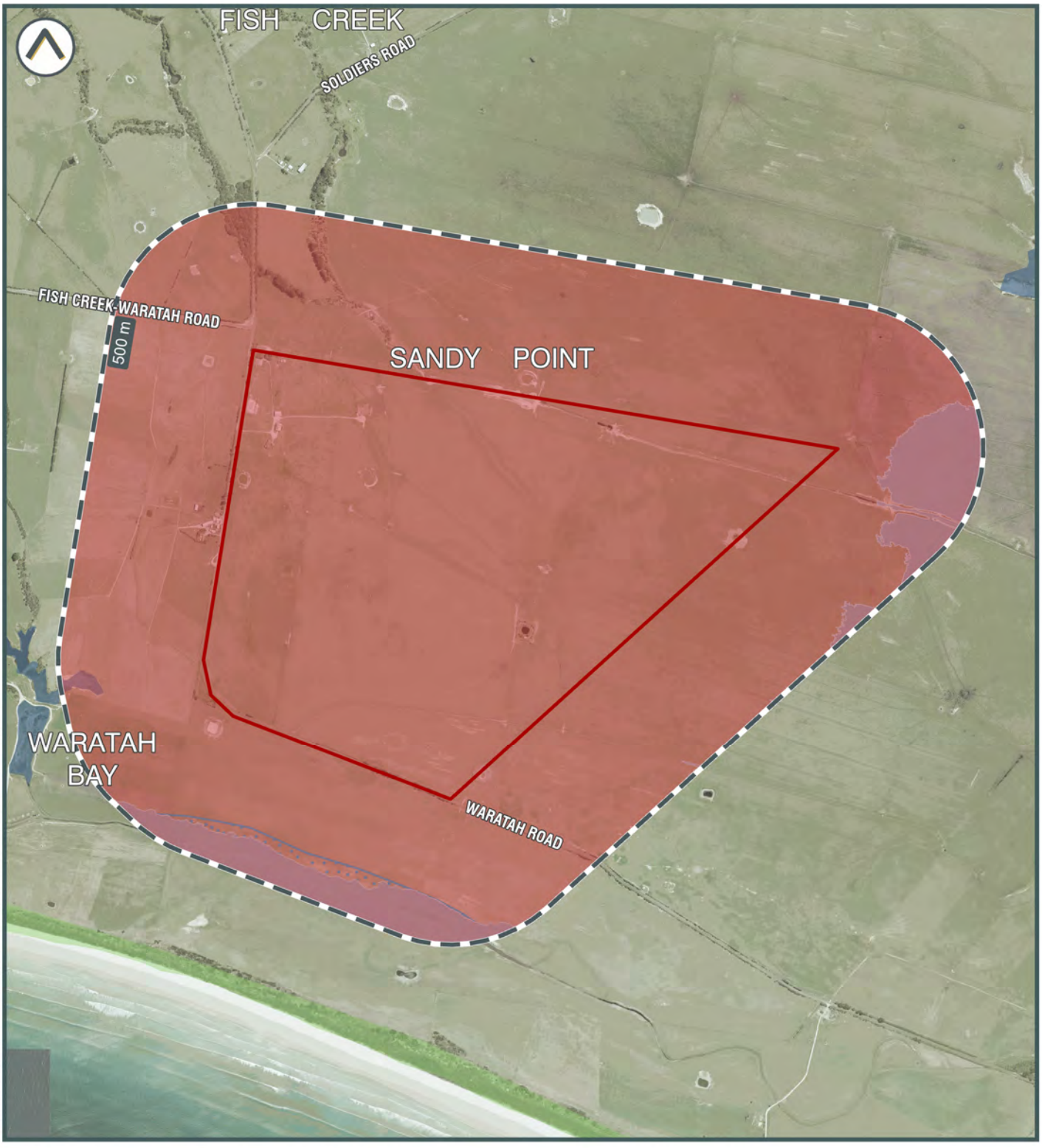
NATURAL HAZARDS

MAP 5.1

Fire and Flood Hazards



©2021 Land Insight (LI) www.landinsight.co | 24/09/2021 | Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area | Bush Fire Prone Land | Flood Hazard: 1 in 100 year flood extent | Land Subject To Inundation Overlay

0 200 400 600 800 1,000m

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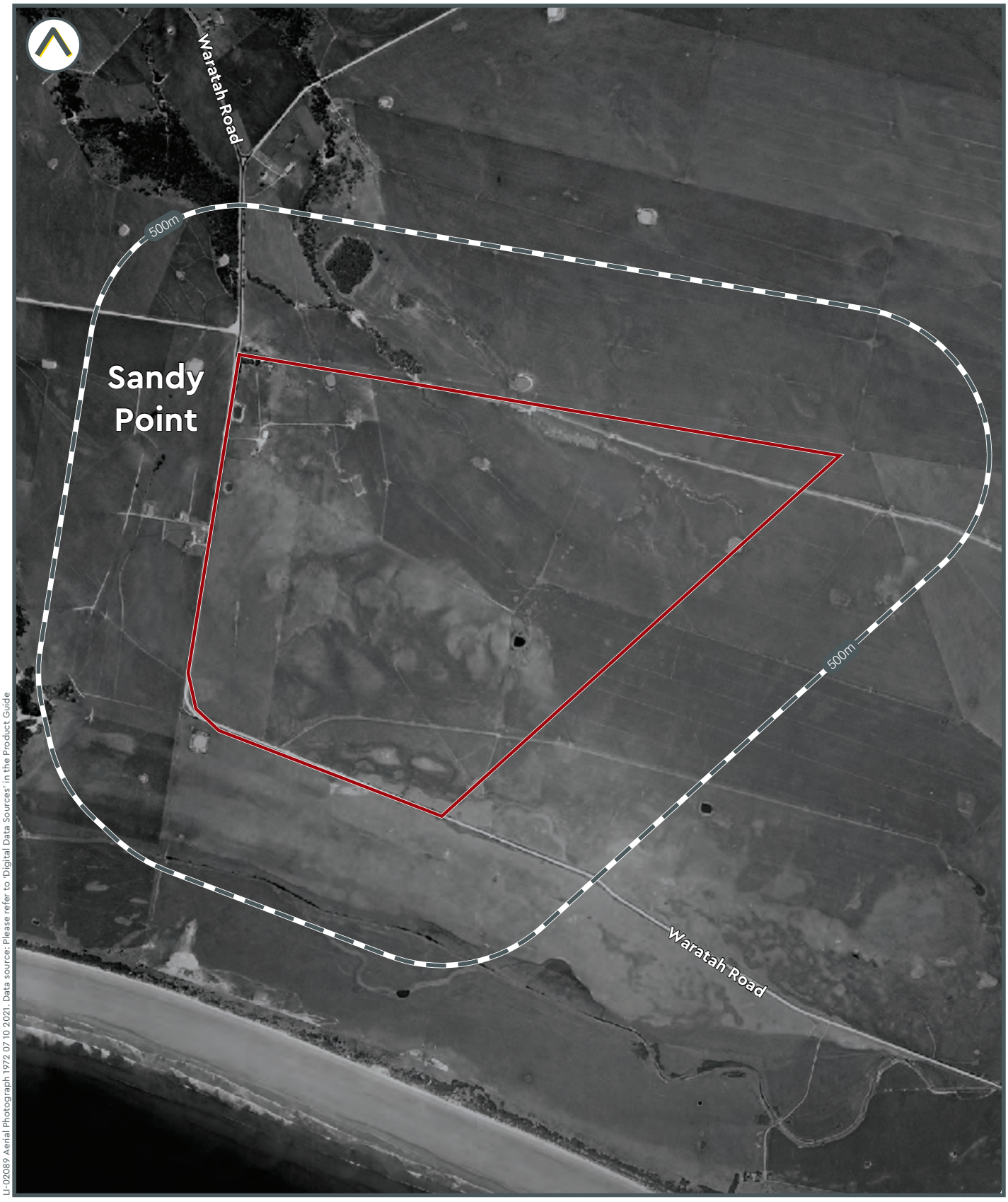
Land Insight RESOURCES

Appendix B

HISTORIC IMAGERY

Historic Aerial Photograph - 1972



LI-02089 Aerial Photograph 1972 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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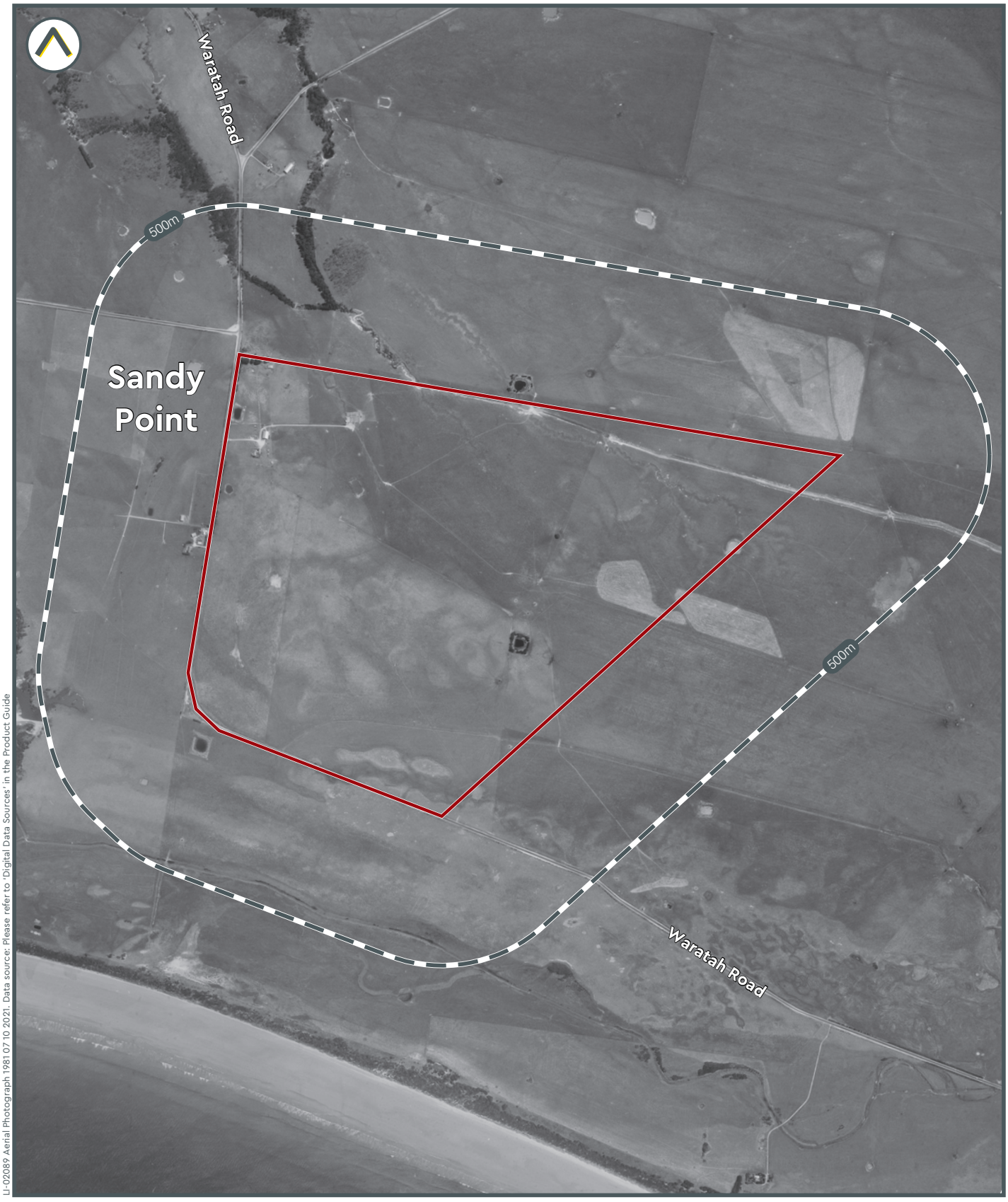
Historic Aerial Photograph - 1981



LI-02089 Aerial Photograph 1981 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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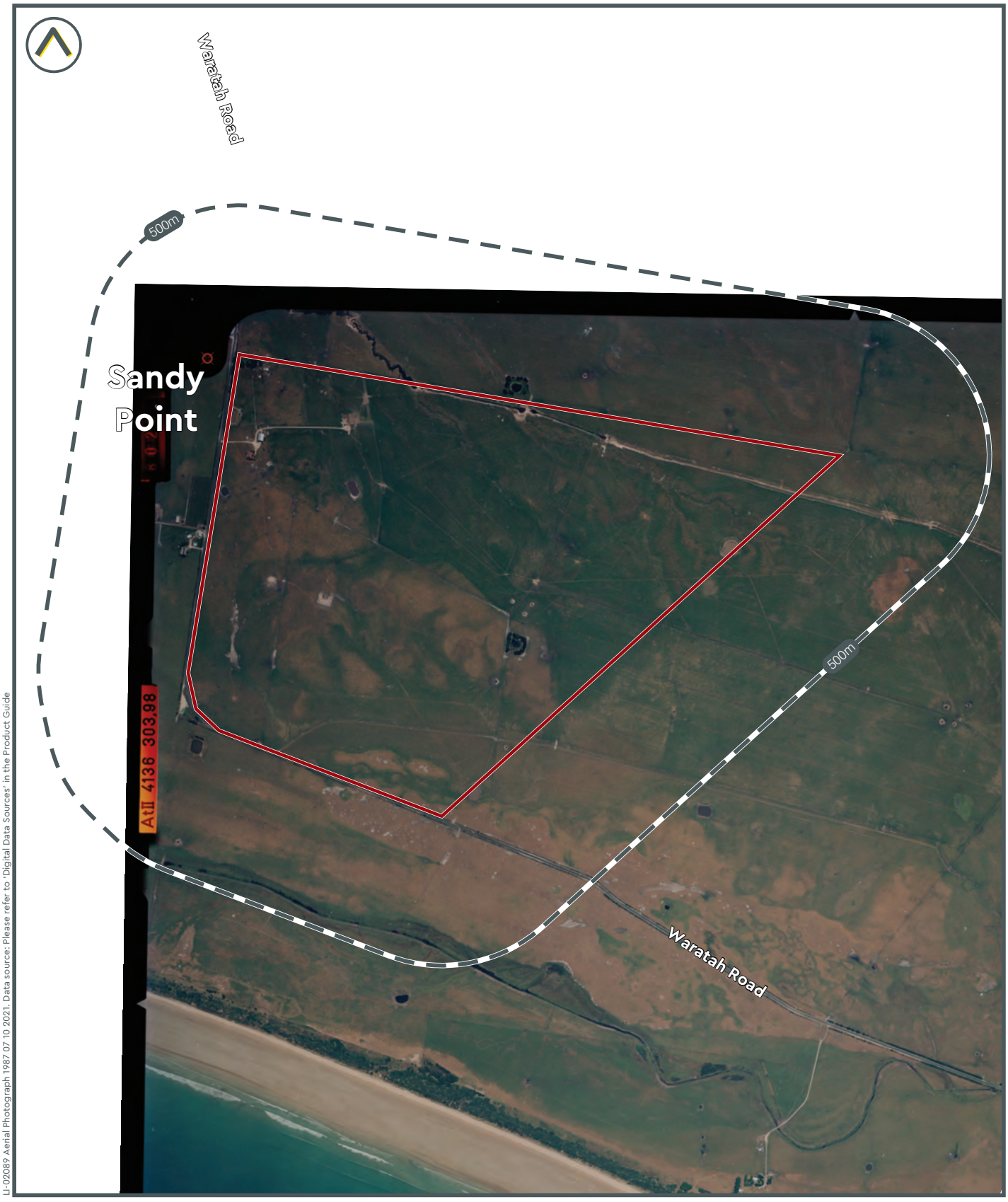
Historic Aerial Photograph - 1987



Subject area

0 800m

LI-02089 Aerial Photograph 1987 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

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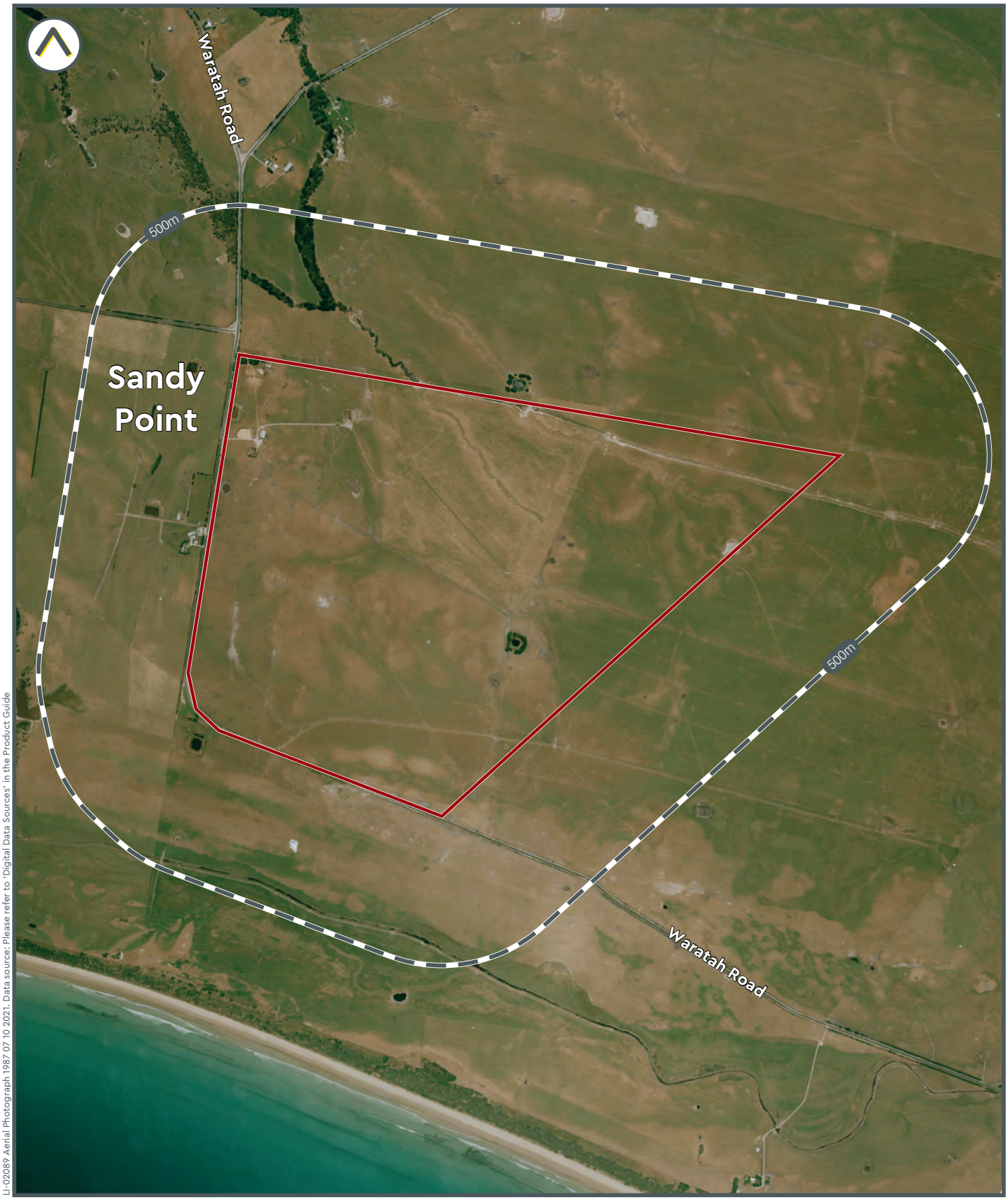
Historic Aerial Photograph - 1991



LI-02089 Aerial Photograph 1987 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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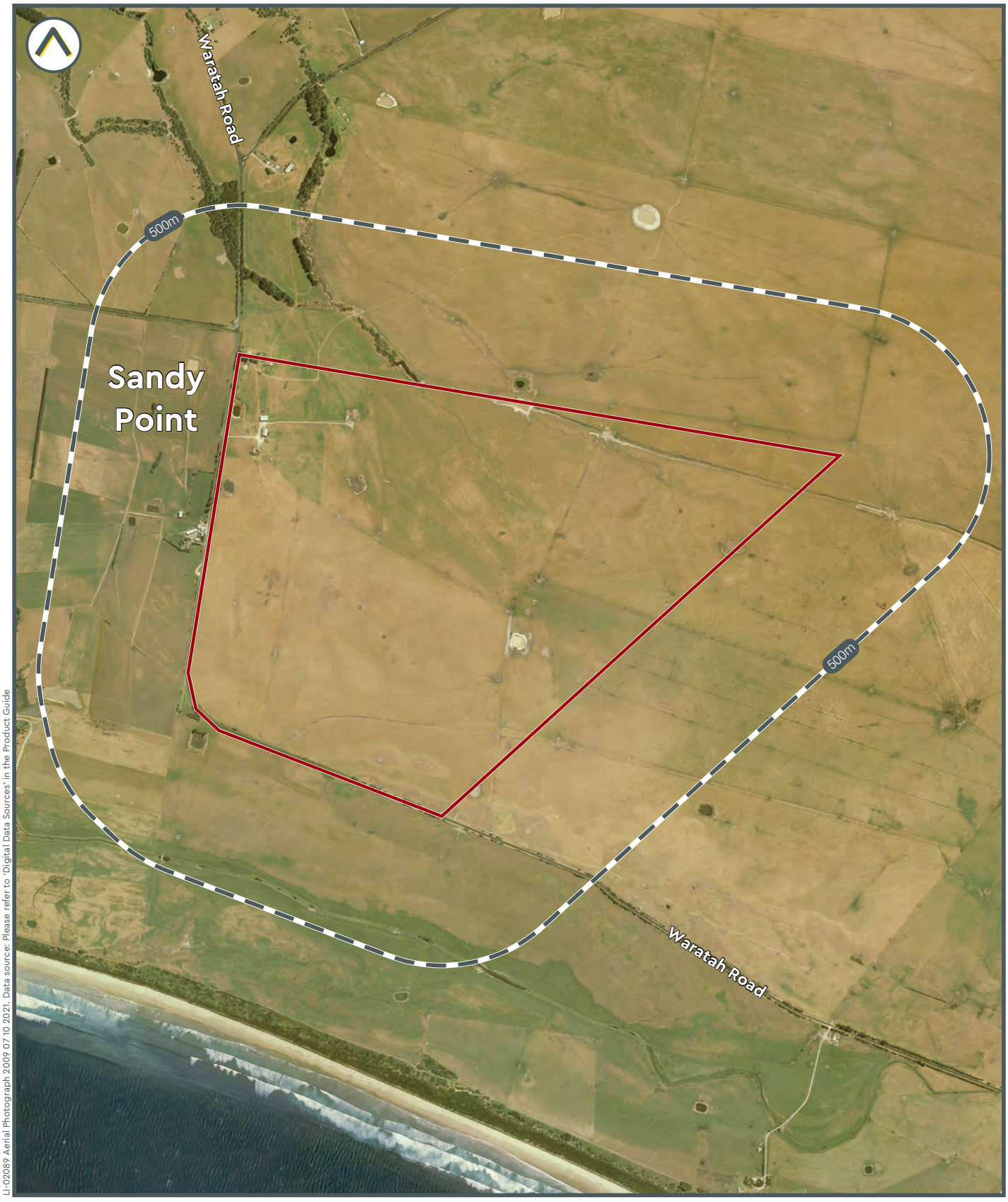
Historic Aerial Photograph - 2009



LI-02089 Aerial Photograph 2009 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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Historic Aerial Photograph - 2010

LI-02089 Aerial Photograph 2010 07 10 2021, Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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Historic Aerial Photograph - 2014

LI-02089 Aerial Photograph 2014 07 10 2021, Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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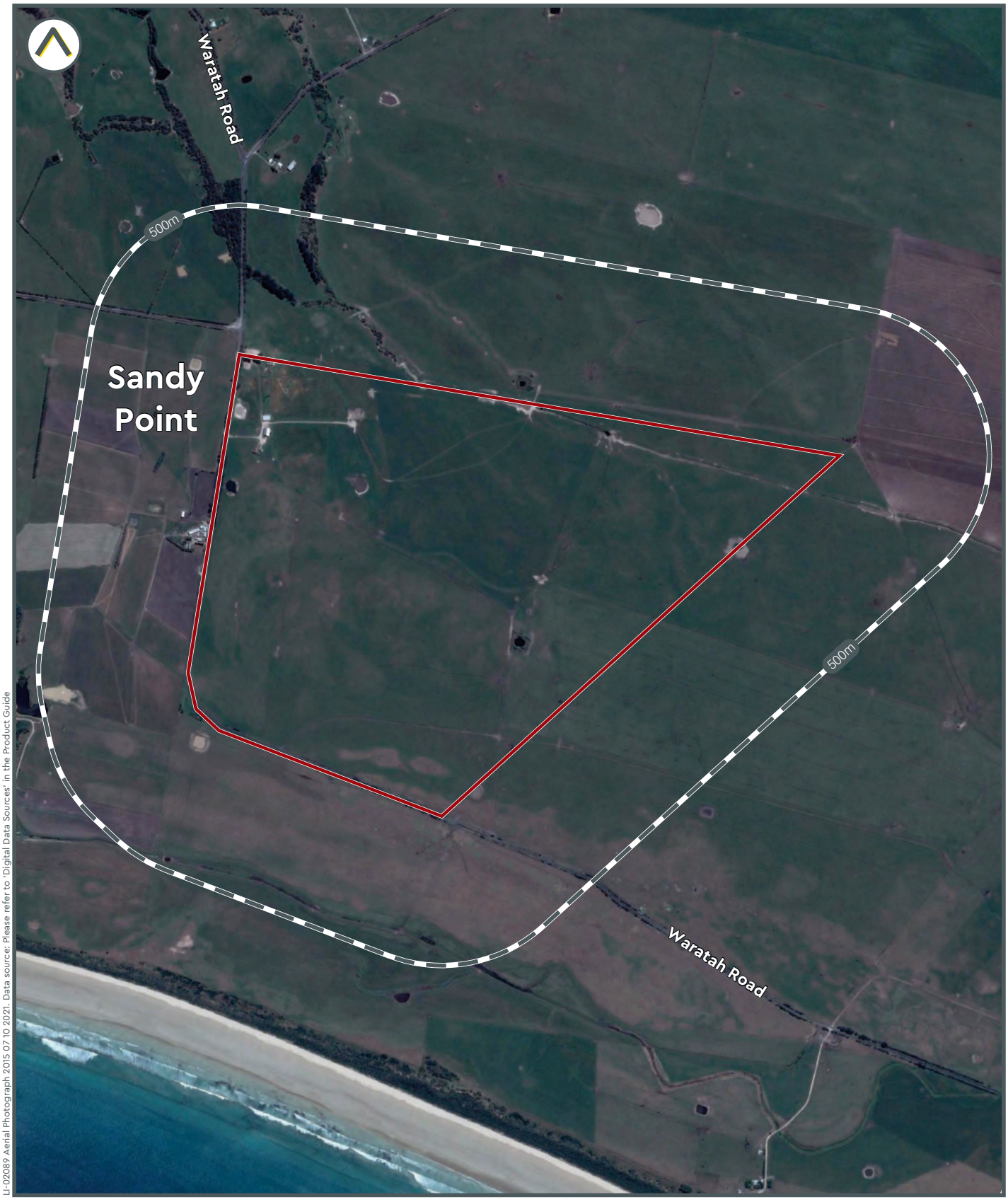
Historic Aerial Photograph - 2015



LI-02089 Aerial Photograph 2015 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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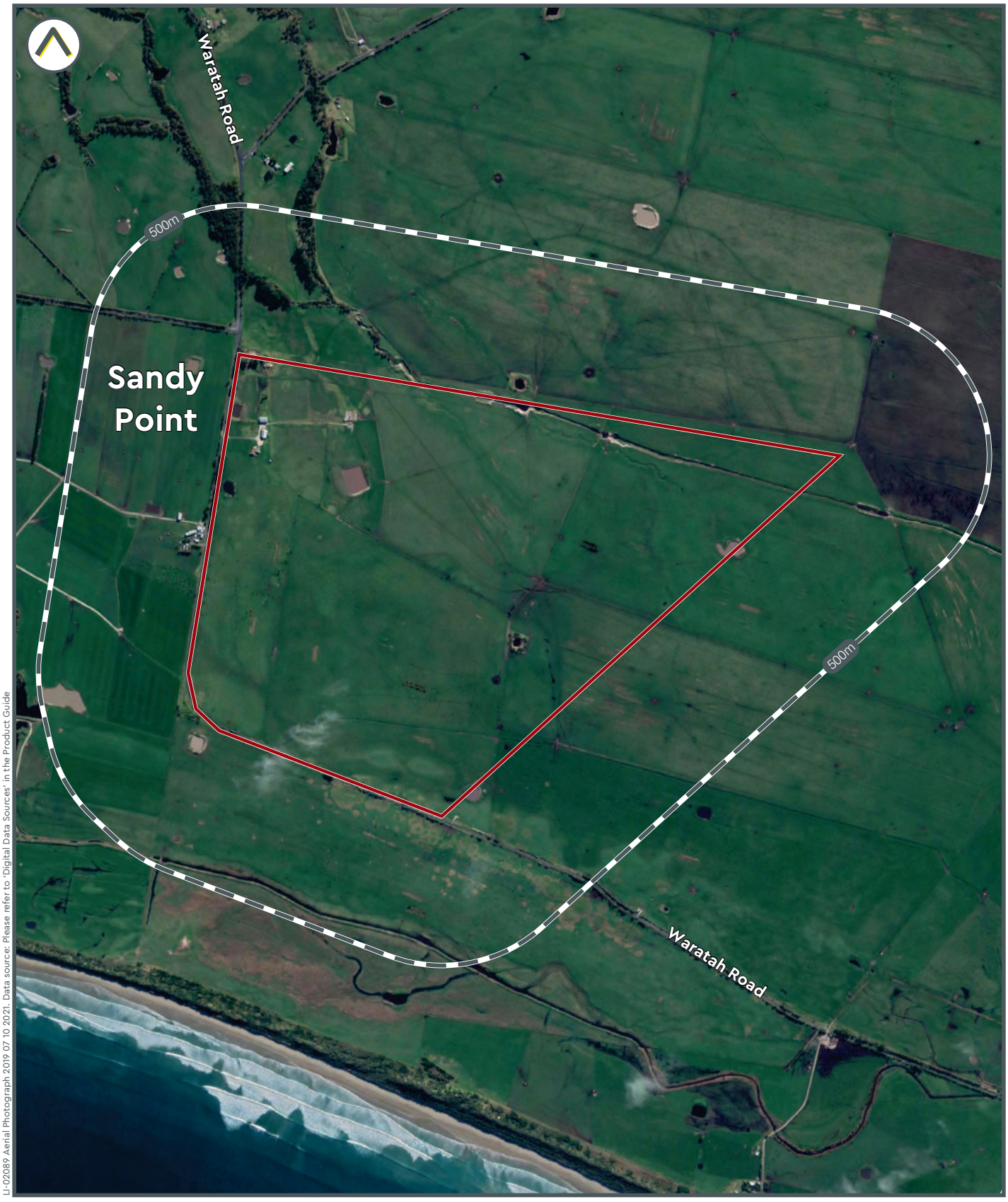
Historic Aerial Photograph - 2019



LI-02089 Aerial Photograph 2019 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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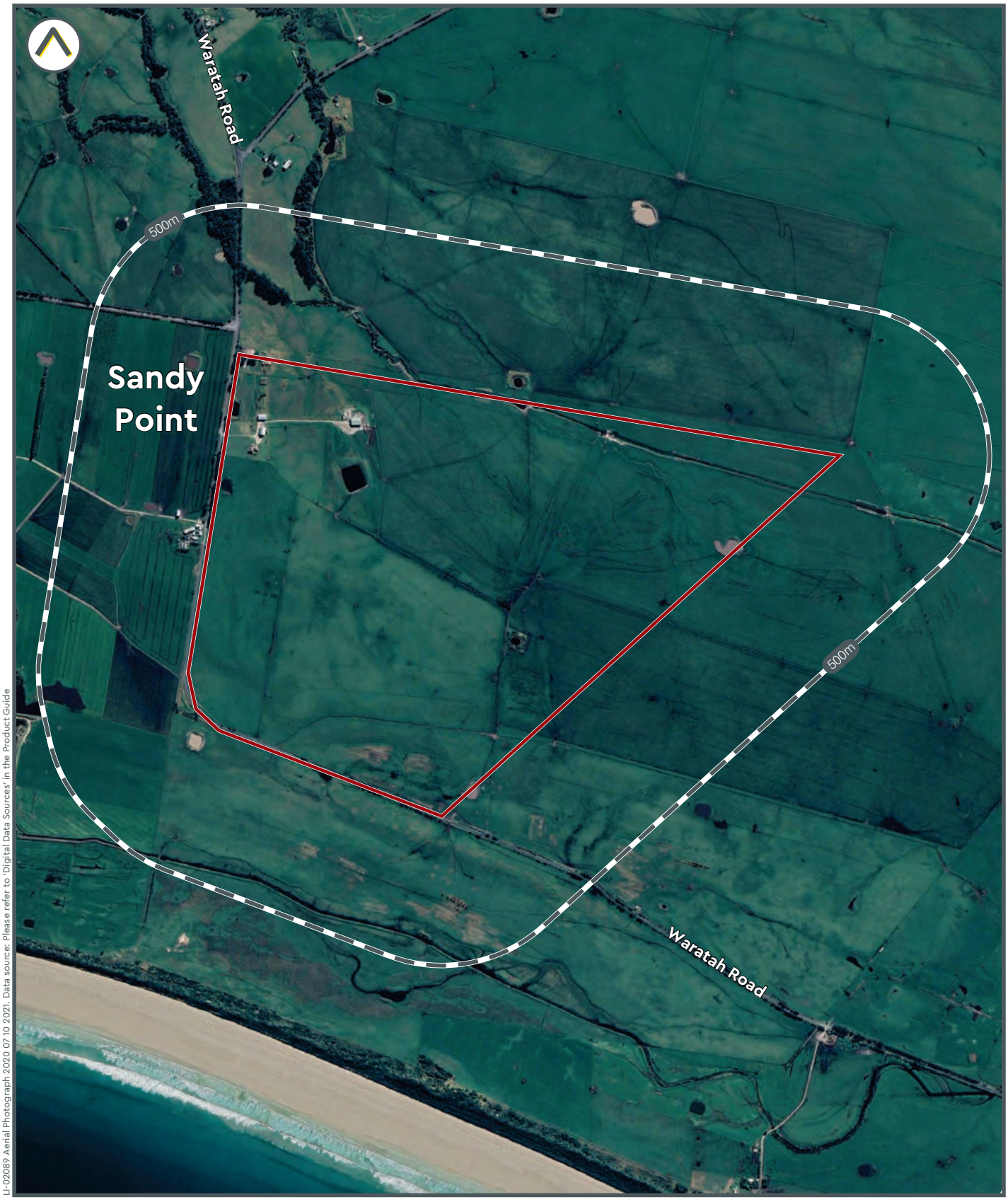
Historic Aerial Photograph - 2020



LI-02089 Aerial Photograph 2020 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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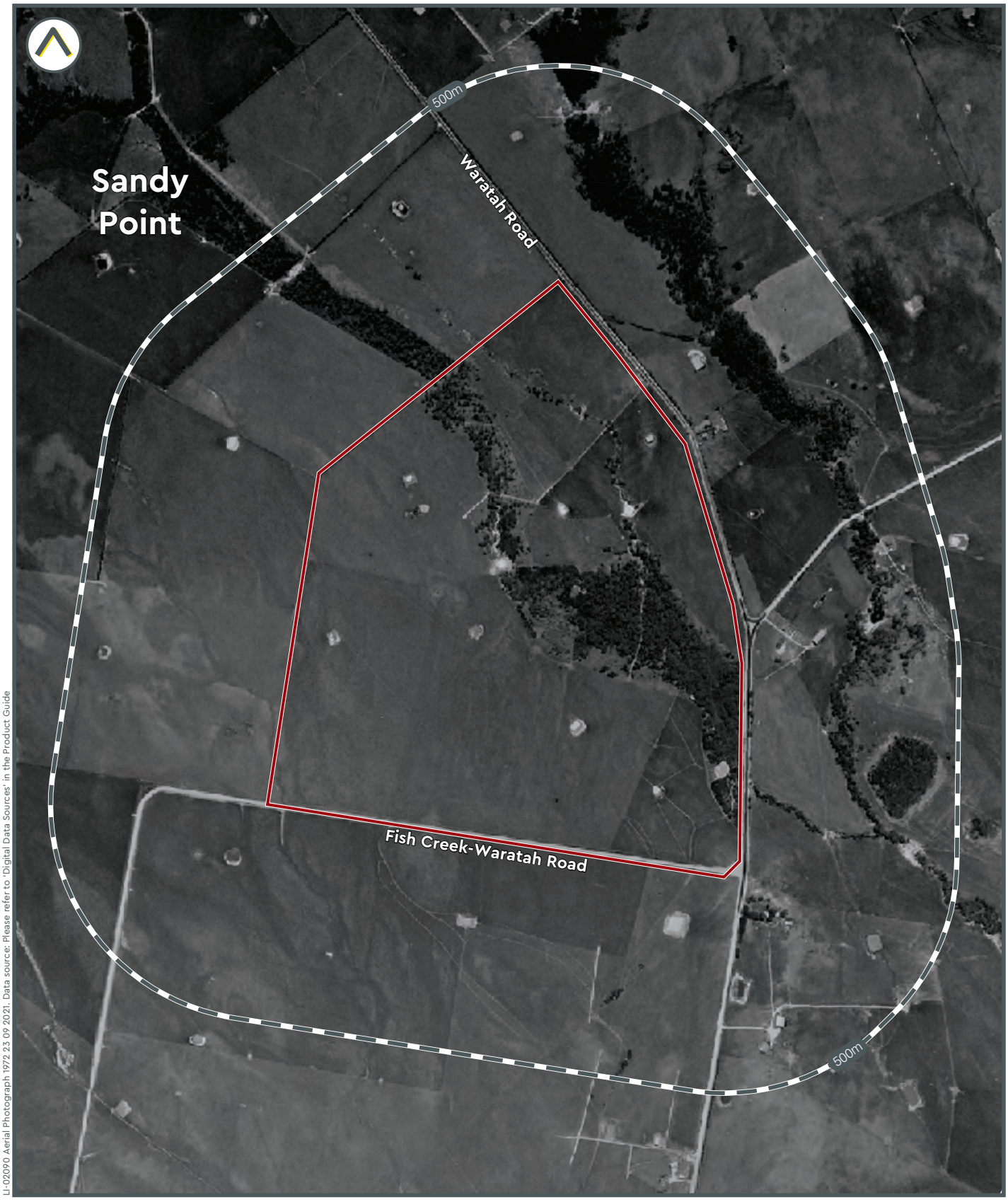
Land Insight RESOURCES

IMAGERY INSIGHT

Historic Aerial Photograph - 1972



LI-02090 Aerial Photograph 1972 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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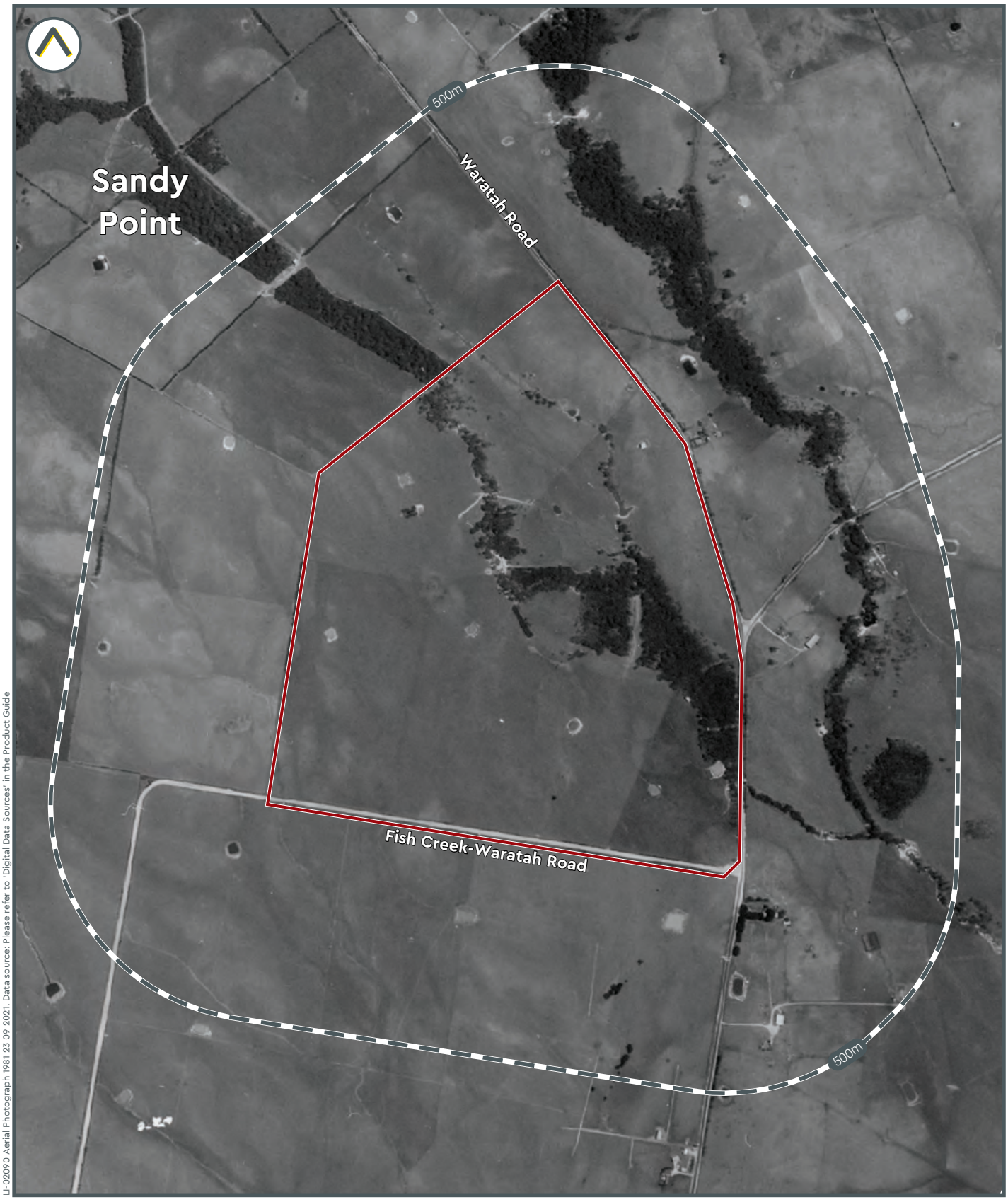
IMAGERY INSIGHT

Historic Aerial Photograph - 1981



LI-02090 Aerial Photograph 1981 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

Land Insight

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Historic Aerial Photograph - 1991

LI-02090 Aerial Photograph 1972 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

Land Insight

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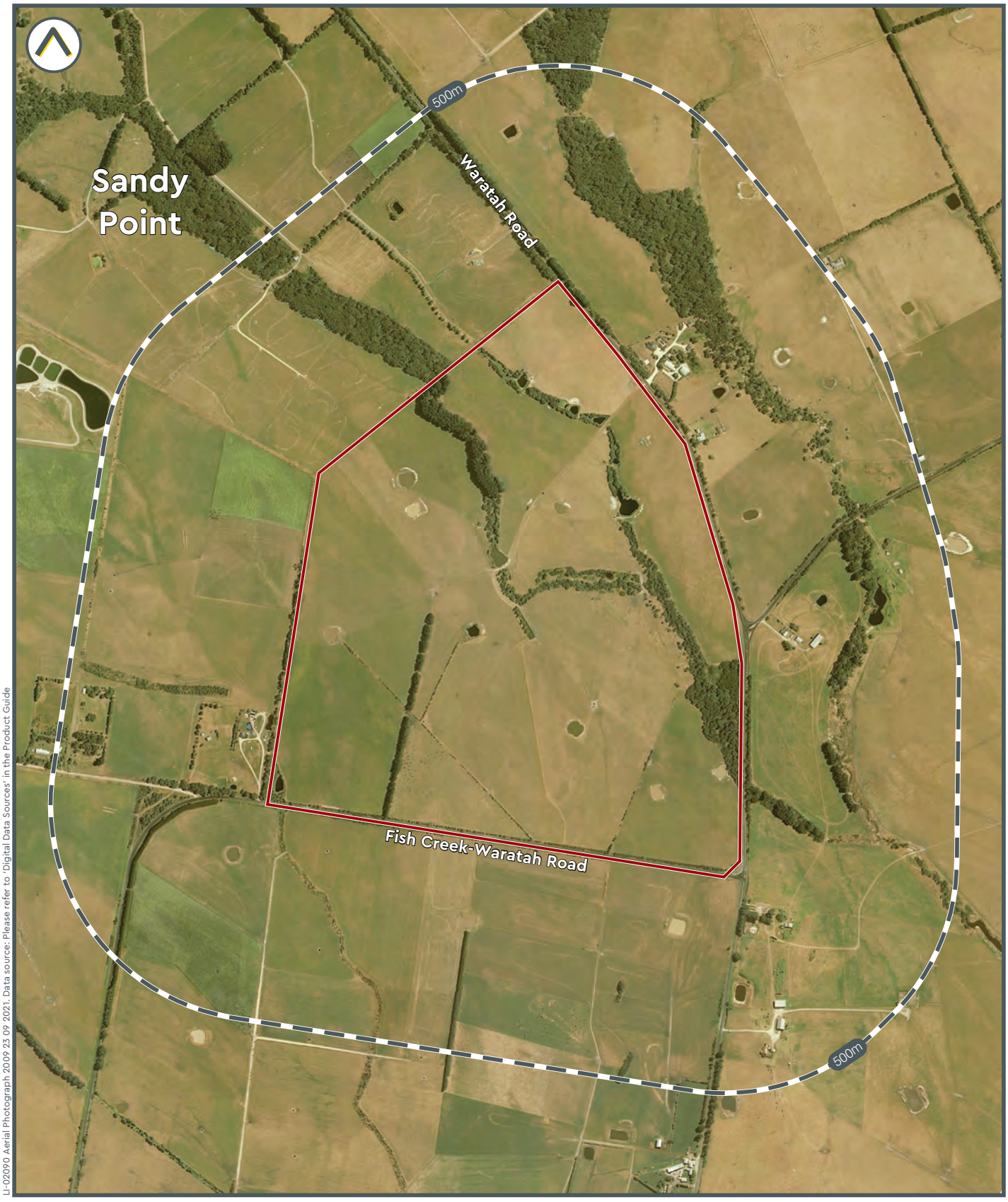
Historic Aerial Photograph - 2009



LI-02090 Aerial Photograph 2009 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

Land Insight

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Historic Aerial Photograph - 2010

LI-02090 Aerial Photograph 1981 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

Land Insight

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Historic Aerial Photograph - 2014

LI-02090 Aerial Photograph 2014 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

Land Insight

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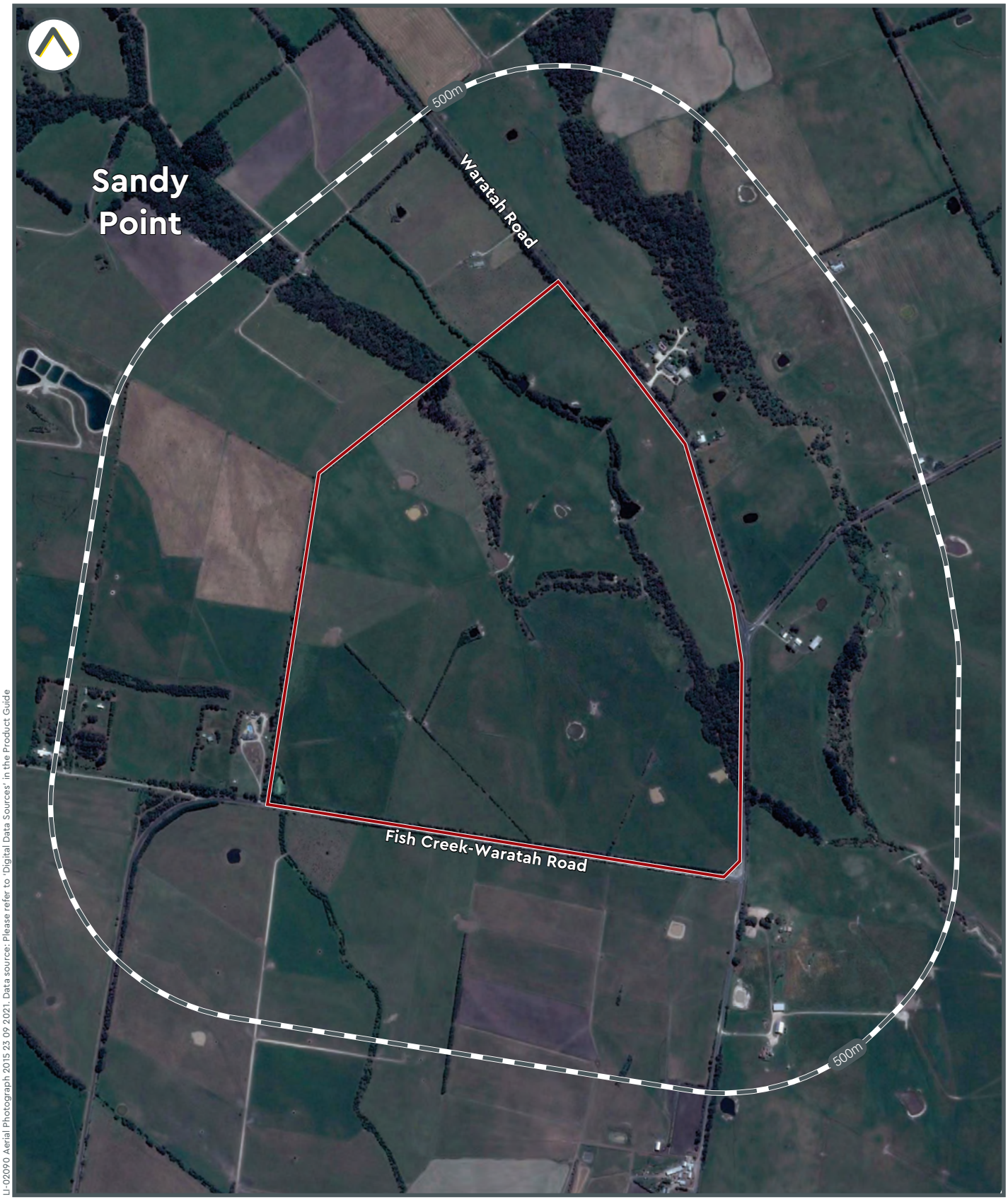
Historic Aerial Photograph - 2015



LI-02090 Aerial Photograph 2015 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

Land Insight

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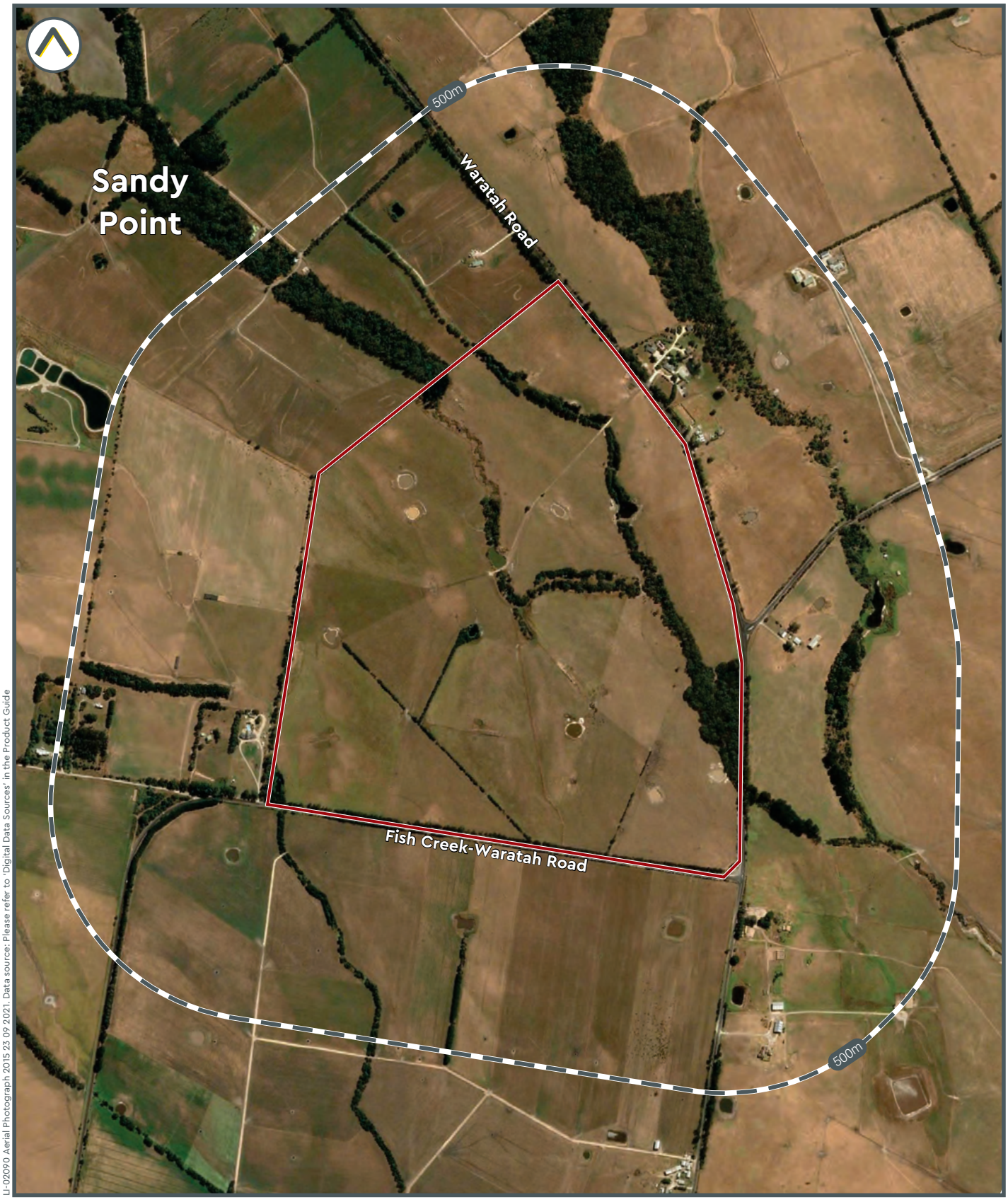
Historic Aerial Photograph - 2019



LI-02090 Aerial Photograph 2015 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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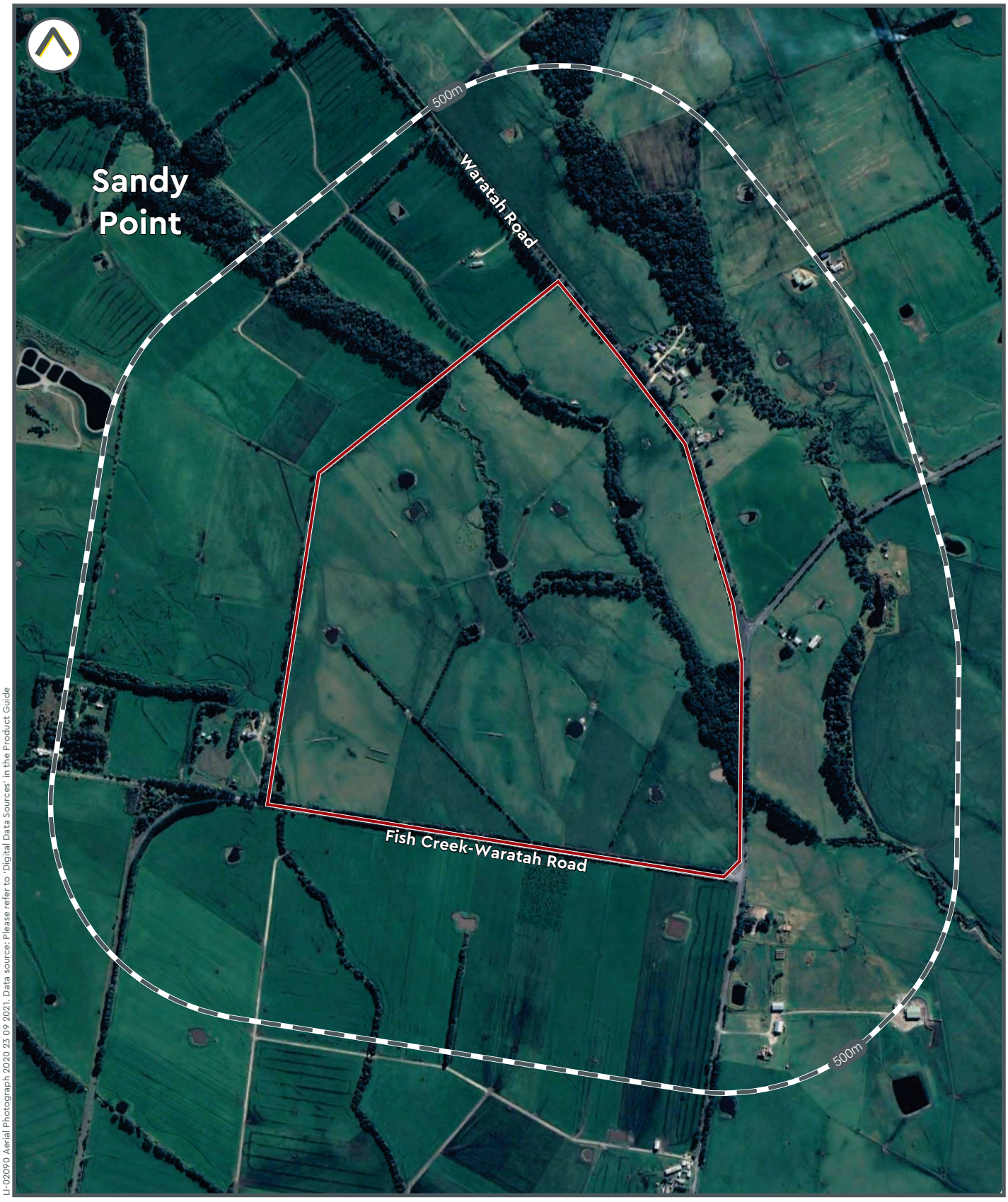

LI-02090 Aerial Photograph 2020 23 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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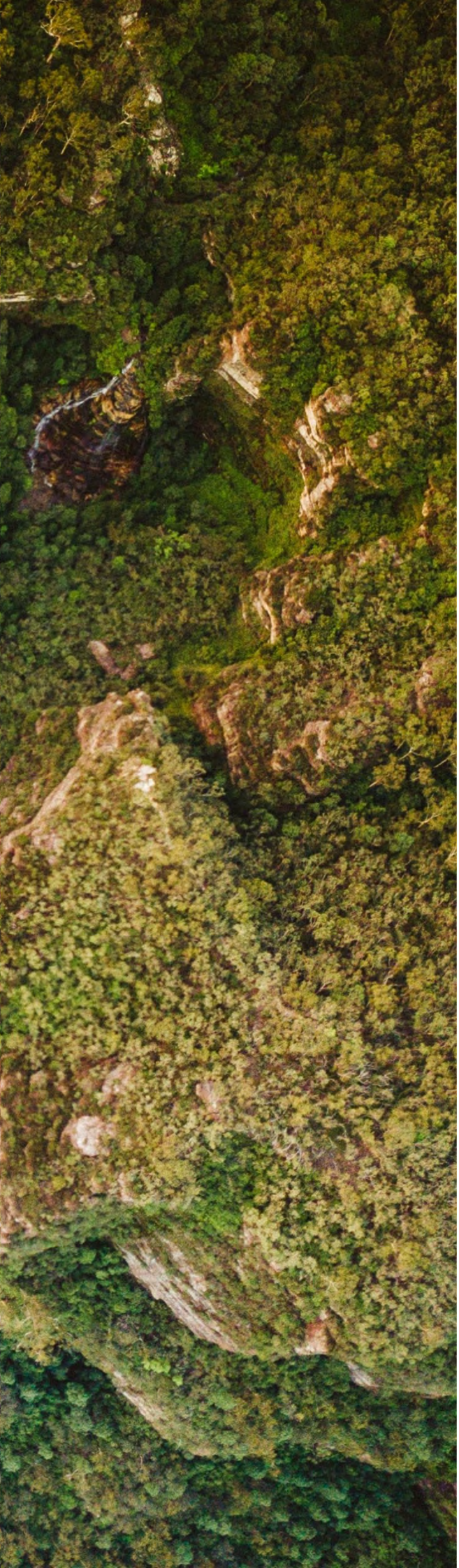
Enviro-Screen

900 Waratah Road
Fish Creek, VIC

24 September 2021



Understanding your report

Your Report has been produced by Land Insight and Resources (Land Insight).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a 200 to 2000m radius (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, Land Insight cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by Land Insight includes data listed on page 4 (table of contents). All sources of data and definitions are provided in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact info@liresources.com.au

The report does not include title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

Due to the ongoing nature of database development and frequency of updates provided by various state government regulators the data displayed within this report is only current from date of production.

This Report, and your use of it, is regulated by Land Insight's Terms and Conditions (See Land Insight's Product Guide).

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SUMMARY

Section 1	**PROPERTY SETTING**	**Identified**
Sensitive Receptors Planning Control Heritage Soil and Land Information Geology and Topography		

Section 2	**HYDROGEOLOGY**	**Identified**
Aquifer Groundwater Bores and Other Borehole investigations Groundwater Dependent Ecosystems (GDE) Hydrogeology Units Wetlands		

Section 3	**ENVIRONMENTAL REGISTERS LICENCES AND INCIDENTS**	**Not Identified**
Contaminated Land Public Register Sites Regulate by Other Jurisdictional Body (Former Gaswork sites / PFAS sites) Licensing and Regulated Sites National Pollutant Inventory (NPI)		

Section 4	**POTENTIALLY CONTAMINATED AREAS**	**Not Identified**
National Liquid Fuel Facilities National Waste Management Facilities		

Section 5	**NATURAL HAZARDS**	**Identified**
Erosion risk Bushfire prone land Fire history Flood hazards		

Section 1 Property Setting

1.1 SENSITIVE RECEPTORS

Map 1.1 (200m Buffer)

Sensitive receptor	Category	Distance (m)	Direction
Not identified	-	-	-

1.2 PLANNING CONTROLS

Map 1.2 (onsite)

Zoning

Code	Zoning	Details
FZ	FARMING ZONE	-
RDZ1	ROAD ZONE - CATEGORY 1	-

Planning Overlay

Type	Category	Details
BMO	BMO	BUSHFIRE MANAGEMENT OVERLAY
ESO	ESO5	ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 5
ESO	ESO4	ENVIRONMENTAL SIGNIFICANCE OVERLAY - SCHEDULE 4
SLO	SLO3	SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 3

Other Planning Information

Type	Category	Details
Not identified	-	-

1.3 HERITAGE

Map 1.3 (200m Buffer)

State and Local Heritage

Site ID	Site Name	Type	Details	Distance (m)	Direction
Not identified	-	-	-	-	-

Australian Heritage Database

Site ID	Site Name	Type	Details	Distance (m)	Direction
Not identified	-	-	-	-	-

Commonwealth Heritage List, National Heritage List and World Heritage Area.

1.4 SOIL AND LAND USE INFORMATION

Map 1.4a/1.4b (onsite)

Soil Landscape

Soil Landscape	FfcQ7-2	fc	**Soil Group**	'Sands, Clays'
Description	High Terraces and Fans - Gippsland			
Soil Landscape	PfcC7-2	fc	**Soil Group**	'Yellow duplex soils, Pale sands'
Description	Plain above flood level (relative relief <9m)			

Salinity

Salt Susceptibility	Low	Areas with yellow clayey soils but in which salt seeps have not been recorded
	Low	Salinity Provinces (SPs) provide a framework for describing land and water (both surface and groundwater) salinity

Radon

Radon Level	Bq/m³	7

Typical radon levels in Australia are low and the values shown are the average values for each census district. For specific location, factors such as the local geology and house type could lead to different values. (ARPANSA).

Acid Sulfate Soil

Coastal Acid Sulfate Soil Hazard (CASS) *(Table 1.4.1)*	On the Property?	Within Buffer?
Class	Not identified	Not identified

National Acid Sulfate Soils Atlas

Atlas of Australian ASS *(Table 1.4.2)*	Bn(p4)	ASS in inland lakes, waterways, wetlands and riparian zones	**Probability of Occurrence**	Low Probability of occurrence
	Cq(p4)	ASS in inland lakes, waterways, wetlands and riparian zones		Extremely low probability of occurrence

Table 1.4.1. Classification for Coastal Acid Sulfate Soils (CASS)	
Class of Land as shown on ASS Planning Maps	
Prospective Land	Land that has the potential to contain Coastal Acid Sulfate Soils as indicated by geomorphology.
Made Land	Land that has been modified by human agency. Here, the geomorphic features that indicate the potential to contain Coastal Acid Sulfate Soil, no longer exist. Assessment of the potential depends on information such as geology maps or soil maps, that pre-dates modification.

Data represents Victorian coastal lands which have the potential to contain acid sulfate soil (CASS), i.e. it is prospective for CASS. The data is used for triggering an investigation of a site where proposed activities risk disturbing CASS. Department of Environment and Primary Industries.

Table 1.4.2. Atlas of Australian Acid Sulfate Soils1 (ASRIS) (CSIRO/NatCASS)	
Probability of Occurrence of ASS[1]	
A	**High Probability of occurrence -** (>70% chance of occurrence in mapping unit)
B	**Low Probability of occurrence** - (6-70% chance of occurrence in mapping unit)
C	**Extremely low probability of occurrence** - (1-5% chance of occurrence in mapping unit)
D	**No probability of occurrence** - (<1% chance of occurrence in mapping unit)
x	**Disturbed ASS[1] terrain -** (ASS[1] material present below urban development).
u	**Unclassified** - (Insufficient information to classify map unit)
Zones	
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS[1] generally within upper 1 m.
f	ASS[1] generally below 1 m from the surface
g	ASS[1], generally below 3 m from the surface.
h	ASS[1] generally within 1 m of the surface.
i, j	ASS[1] generally below 1 m of the surface.
k	ASS[1] material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS[1] generally within upper 1 m in wet / riparian areas.
Subscripts to codes	
(a)	Actual acid sulfate soil (AASS) = sulfuric material.
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
Confidence levels	
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

[1]Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

1.5 GEOLOGY AND TOPOGRAPHY

Map 1.5 (onsite)

Geology

Map Sheet	Symbol	Name	Geologic History	Lithology	Description
1:50,000 Geological Units	Qa2	alluvial terrace deposits (Qa2): generic	Pleistocene to Pleistocene (channelled stream flow - alluvial terrace)	sand (significant); gravel [material] (significant); silt [material] (significant)	Gravel, sand, silt: variably sorted and rounded, generally unconsolidated; dissected to form terraces higher than Qa1, alluvial floodplain deposits
	Nlh	Haunted Hills Formation (Nlh): generic	Pliocene to Pleistocene (over-bank stream flow - fluvial [environment])	silt [material] (significant); sand (significant); gravel [material] (significant)	Sand, silt, gravel: various shades of brown, yellow, red, white; variably sorted; variably rounded; crudely to well-bedded; commonly strongly oxidised with ironstone near the top and also within the formation

Naturally Occurring Asbestos Potential (NOA)

Category	On the Property?	Within Buffer?
Not identified	-	-

Topography

Topography	40 – 50 mAHD

Section 2 Hydrogeology

2.1 HYDROGEOLOGY AND GROUNDWATER BORES

Map 2.1 (2000m Buffer)

	On the Property?	Within Buffer?
Aquifer Type	Porous, extensive highly productive aquifers	Porous, extensive highly productive aquifers Fractured or fissured, extensive aquifers of low to moderate productivity
Designated Water Supply Catchments	Not identified	Not identified
Depth to Watertable (m)	10 - 50	<5 - >50
Wetlands	Not identified	Temporary freshwater swamps
Groundwater Salinity (mg/L)	500	500 - 1000

Groundwater Quality Restricted Use Zones

Number	Address	Site history	Restrictions on Use	Distance (m)	Direction
Not identified	-	-	-	-	-

Groundwater Bores

Map ID	Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity (mg/l)	Yield (L/s)	Distance (m)	Direction
1	WRK983422	Exploration	24/01/2008	10.0	10.0	<Null>	<Null>	<Null>	626.8	South-west
2	WRK983423	Exploration	24/01/2008	10.0	10.0	<Null>	<Null>	<Null>	626.8	South-west
3	WRK983424	Exploration	25/01/2008	10.0	10.0	<Null>	<Null>	<Null>	626.8	South-west

Map ID	Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity (mg/l)	Yield (L/s)	Distance (m)	Direction
4	WRK983421	Exploration	24/01/2008	25.0	25.0	<Null>	<Null>	<Null>	628.8	South-west

Groundwater Bores Driller Lithology Details

Groundwater Bore ID	From Depth – To Depth (m) Lithology	Distance (m)	Direction
WRK983422	0m-0.3m Sandy Top Soil Brown 0.3m-4.5m Clay Brown/Orange 4.5m-10m Siltstone Orange/Brown	626.8	South-west
WRK983423	0m-0.5m Sandy Top Soil Brown 0.5m-3.6m Clayey Silt Brown 3.6m-10m Siltstone Orange/Brown	626.8	South-west
WRK983424	0m-1m Sand Light Brown 1m-2.2m Sandy Clay Brown 2.2m-3.6m Clayey Sand Grey Moist/Wet 3.6m-8m Wet 8m-10m Silty Sandy Clay Grey	626.8	South-west
WRK983421	0m-0.4m Sandy Top Soil 0.4m-5m Clayey Silt Brown 5m-10m Siltstone Brown/Orange	628.8	South-west

2.2 HYDROGEOLOGY AND OTHER BOREHOLES

Map 2.2 (500m Buffer)

	On the Property?	Within Buffer?
Groundwater Management Areas	Not identified	-
Hydrogeologic Unit	Surficial Sediment Aquifer (porous media - unconsolidated) Upper Tertiary/Quaternary Aquitard (porous media - unconsolidated)	Surficial Sediment Aquifer (porous media - unconsolidated) Upper Tertiary/Quaternary Aquitard (porous media - unconsolidated)

Groundwater Dependent Ecosystems (GDE)

	On the Property?	Within Buffer?
Aquatic	Not identified	-
Terrestrial	Low potential for GW interaction Moderate potential for GW interaction	Low potential for GW interaction Moderate potential for GW interaction

Aquatic - Ecosystems that rely on the Surface expression of groundwater.
Terrestrial - Ecosystems that rely on the Subsurface expression of groundwater.

Other Known Borehole Investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes)

Borehole ID	Purpose	Project	Client/ Licence	Date Drilled	Depth (m)	Distance (m)	Direction
Not identified	-	-	-	-	-	-	-

Section 3 Environmental Registers, Licences and Incidents

3.1 CONTAMINATED LAND PUBLIC REGISTER

Map 3.1 (1000m Buffer)

Environmental Audit Reports

CARMS No.	Address	Audit Category	Distance (m)	Direction
Not identified	-	-	-	-

Priority Site Register

Notice No.	Address	Issue	Distance (m)	Direction
Not identified	-	-	-	-

Table 3.1.1 Sections 53X and 53V of the Environment Protection Act 1970	
EPA Types of Environmental Audits	
53X Audits	A 53X ('condition of the environment') audit is most frequently used by the planning system and verifies that potentially contaminated land can be used for a specific use (industrial, commercial or residential). From a 53X audit comes either a certificate or statement of environmental audit.
53V Audits	A 53V ('risk of harm') audit is most commonly used by EPA to understand the risk to the environment posed by an industrial activity or to validate that cleanup of contaminated land or groundwater has occurred. The 53V audit assesses the risk of any possible harm to a site caused by an industrial process or activity, waste substance or noise. This includes audits associated with the construction and operation of landfills.

3.2 SITES REGULATED BY OTHER JURISDICTIONAL BODY Map 3.2 (2000m Buffer)

Defence, Military Sites and UXO Areas

Site name	Type*	Description	Distance (m)	Direction
Not identified	-	-	-	-

**RCIP (Regional Contamination Investigation Program). UXO (Unexploded Ordnance Areas)*

Former Gasworks Sites

Site name	Description	Distance (m)	Direction
Not identified	-	-	-

PFAS Sites

Site name	Description	Distance (m) *	Direction
Not identified	-	-	-

National Pollutant Inventory (NPI)

Facility name	Address	Primary ANZSIC Class	Latest report	Distance (m)	Direction
Not identified	-	-	-	-	-

3.3 LICENCES, APPROVALS & NOTICES

Map 3.3 (500m Buffer)

Licences

Licence No.	Type	Company Name	Address	Details	Distance (m)	Direction
Not identified		-	-	-	-	-

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Approvals

Doc No.	Type	Company Name	Address	Details	Distance (m)	Direction
Not identified		-	-	-	-	-

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Notices

Transaction No.	Type	Company Name	Address	Distance (m)	Direction
Not identified		-	-	-	-

If the record does not contain a complete street address and/or cannot be located, the records' geographic location will be approximated and reported as being within the surrounding area.

Table 3.3.1 EPA Regulatory Instruments Explanation	
Approvals	
Works approval is required for industrial and waste management activities that have the potential for significant environmental impact.	
Works Approval	EPA's works approval process is designed to ensure the best and most cost-effective environmental outcomes on projects are achieved. Without works approvals there is an increased risk of industrial projects causing pollution issues and requiring expensive retrofitting.
30A Approval	Section 30A is an overriding provision of the Environment Protection Act 1970 (the Act) under which EPA can authorise discharges, emissions, storage, treatment, disposal and handling of waste in emergencies and other temporary situations that would otherwise be an offence under the Act. 30A approvals are not issued lightly, as they permit activities that would not normally be allowed.
Notices	
Remedial notices are served to prevent or remedy a range of non-compliances or likely non-compliances. Remedial notices are not punitive measures.	
Clean Up Notice	Clean up notices (CUN) are issued under section 62A of the *Environment Protection Act 1970*. They aim to prevent further contamination and impact on beneficial uses through removal of waste, undertaking clean-up activities, ongoing management of pollution, altered handling, storage or location of industrial or prescribed industrial waste.
Minor Works Pollution	Minor works pollution abatement notices (MWPANs) are issued under section 31B of the EP Act. They aim to prevent further occurrence of pollution or potential environmental risk through installation of risk controls and changes to onsite processes and practices in urgent situations.
Pollution Abatement Notice	Pollution abatement notices are issued under section 31A of the *Environment Protection Act 1970*. They aim to prevent further occurrence of pollution or potential environmental risk through installation of risk controls and changes to on-site processes and practices.
Post closure pollution abatement notices (PC PAN)	Post Closure Pollution Abatement Notices (PAN's) are formal legal enforceable Notices issued by EPA on former landfill sites. The environmental risks posed by landfill sites continue for a significant period of time after waste acceptance has ceased.

Table 3.3.1 EPA Regulatory Instruments Explanation	
Licences	
EPA licence is required for all scheduled premises. It allows the licence-holder to operate and sets conditions that they must meet.	
Licence	Licences contain standard conditions that aim to control the operation of the premises so that there is no adverse effect on the environment. These conditions address areas such as waste acceptance and treatment, air and water discharges, and noise and odour.
Amalgamated Licence	An amalgamated licence is a legal document that contains standard conditions to control the operation of scheduled premises to minimise impacts on the environment. These conditions address areas such as waste acceptance and treatment, air and water discharges, noise and odour.

Section 4 Potentially Contaminated Areas

4.1 POTENTIALLY CONTAMINATING ACTIVITIES

Map 4.1 (500m Buffer)

Liquid Fuel Facilities

Site name	Category	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Waste Management Facilities & Recycling Centres

Site name	Category	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Liquid Fuel Facilities Datasets, representing the spatial locations of liquid fuel depots, refineries, terminals and petrol stations present in the Australian Government National Liquid Fuel Facilities Dataset and Petrol stations identified by Land Insights.
Waste Management Facilities, representing the spatial locations of reprocessing facilities, transfer stations and landfills present in the Australian Government National Waste Management Facilities Dataset and Waste/Recycling facilities identified by Land Insights.

A more comprehensive list of all Potentially Contaminating Activities is available in the Due Diligence Insight report.

**Status:*
Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business is operating on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years prior from the day this report was issued. All former sites older than 2 years will be reported in the 'Historical Potentially Contaminating Activities' section 4.4 in this report.

4.2 HISTORICAL POTENTIALLY CONTAMINATING ACTIVITIES (not mapped)

1900 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1905 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1915 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1925 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1935 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1940 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1945 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1955 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1965 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1970 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1975 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1980 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

1990 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

2005 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

2010 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

2015 Historical Business Data

Activity	Name	Address	Positional accuracy[1]	Distance (m)	Direction
Not identified	-	-	-	-	-

Land Insight uses a number of address geocoding techniques and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When a historical street address does not contain complete details or a match is not found, a record identified as being in the surrounding area will be included for reference and the accuracy of the data is approximate only. The positional accuracy of the records is listed below:

Historical data positional accuracy and georeferencing results explanation		
Positional accuracy	**Georeferenced**	**Description**
Address	Located to the address level	*When street address and names fully match.*
Street	Located to the street centroid	*When street names match but no exact address was found. Location is approximate.*
Place	Located to the structure, building or complex	*When building, residential complex or structure name match but no exact address was found. Location is approximate.*
Suburb	Located to the suburb area	*When suburb name match but no exact address was found. Location is approximate.*

The data used in this section was extracted from range of historical commercial trade directories and historical business listing information. The business addresses were geocoded using historical information and cannot be relied upon as some of the addresses no longer exist. From 2005, the historical business records in this section are considered more accurate as information was extracted from digital directories with geographic coordinate location information available. For more information on how these records were geocoded and the methodology used by Land Insight, contact us at info@landinsight.co.

Historical Industries or business activities deemed to be of negligible or lesser risk are not reported. Please note that any record not identified within this section (due to error or unforeseen omission) does not necessarily mean that the screened area is not potentially contaminated or free of any risks.

Section 5 Natural Hazards

5.1 Natural Hazards

Map 5.1 (500m Buffer)

Erosion Risk

Category	On the Property?	Within Buffer?
Not identified	-	-

Fire Hazard

Category	On the Property?	Within Buffer?
Bush Fire Prone Area (BLA)	Yes	Yes
Fire History	-	Not identified

Flood Hazard

Name	On the Property?	Within Buffer?
Not identified	-	-

Land Insight

Tower Three, Level 24
300 Barangaroo Avenue
Sydney NSW 2000 Australia
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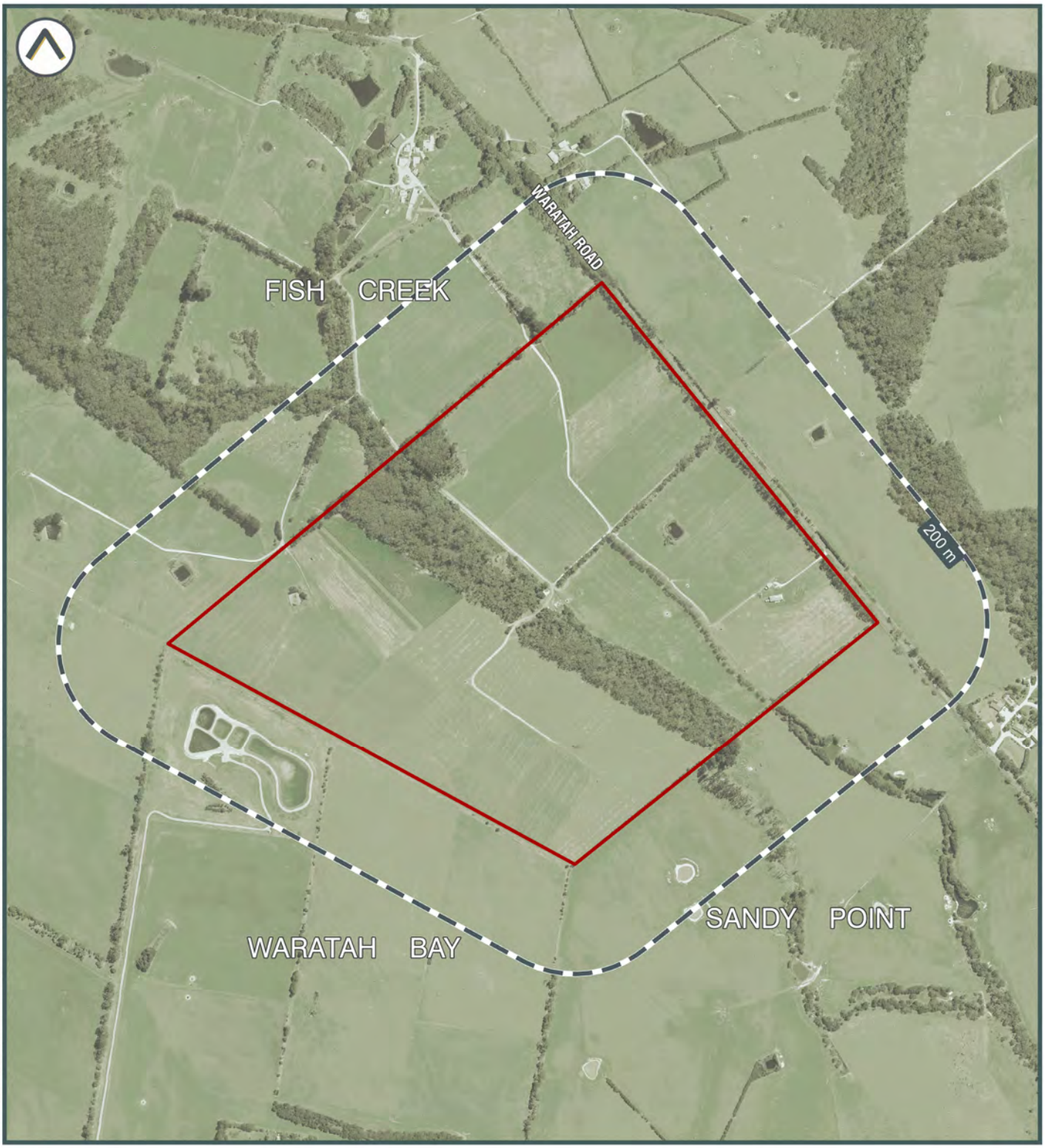
Appendix A

REPORT MAPS

PROPERTY SETTING

MAP 1.1

Subject Area and Sensitive Receptors



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Subject area

0 100 200 300 400 500m

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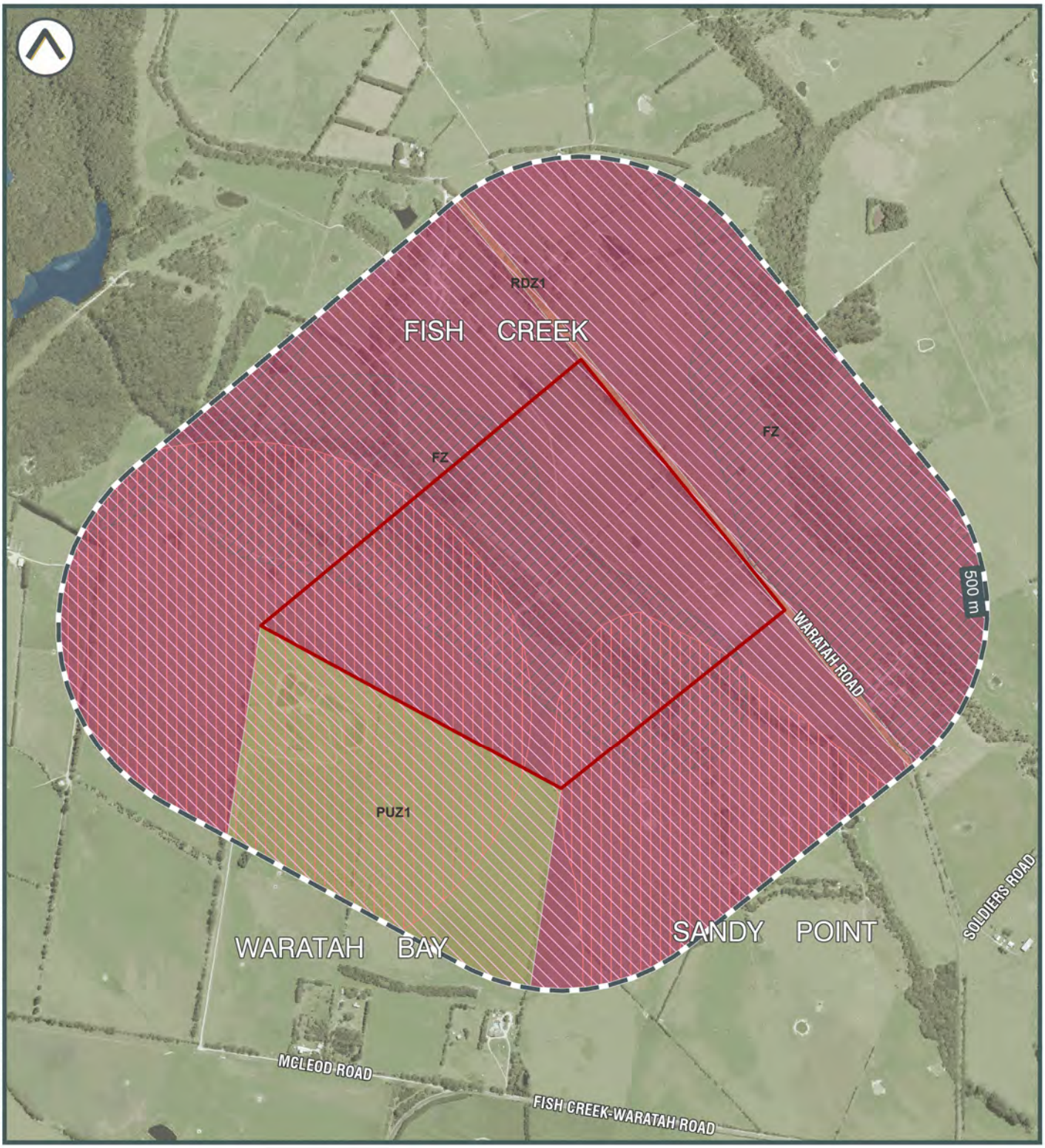
PROPERTY SETTING

Planning Controls

MAP 1.2



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Subject area

Planning Scheme
- BMO
- ESO

SLO

Zoning
- FZ | Farming Zone
- PUZ1 | Public Use Zone – Service And Utility
- RDZ1 | Road Zone – Category 1

0 100 200 300 400 500m

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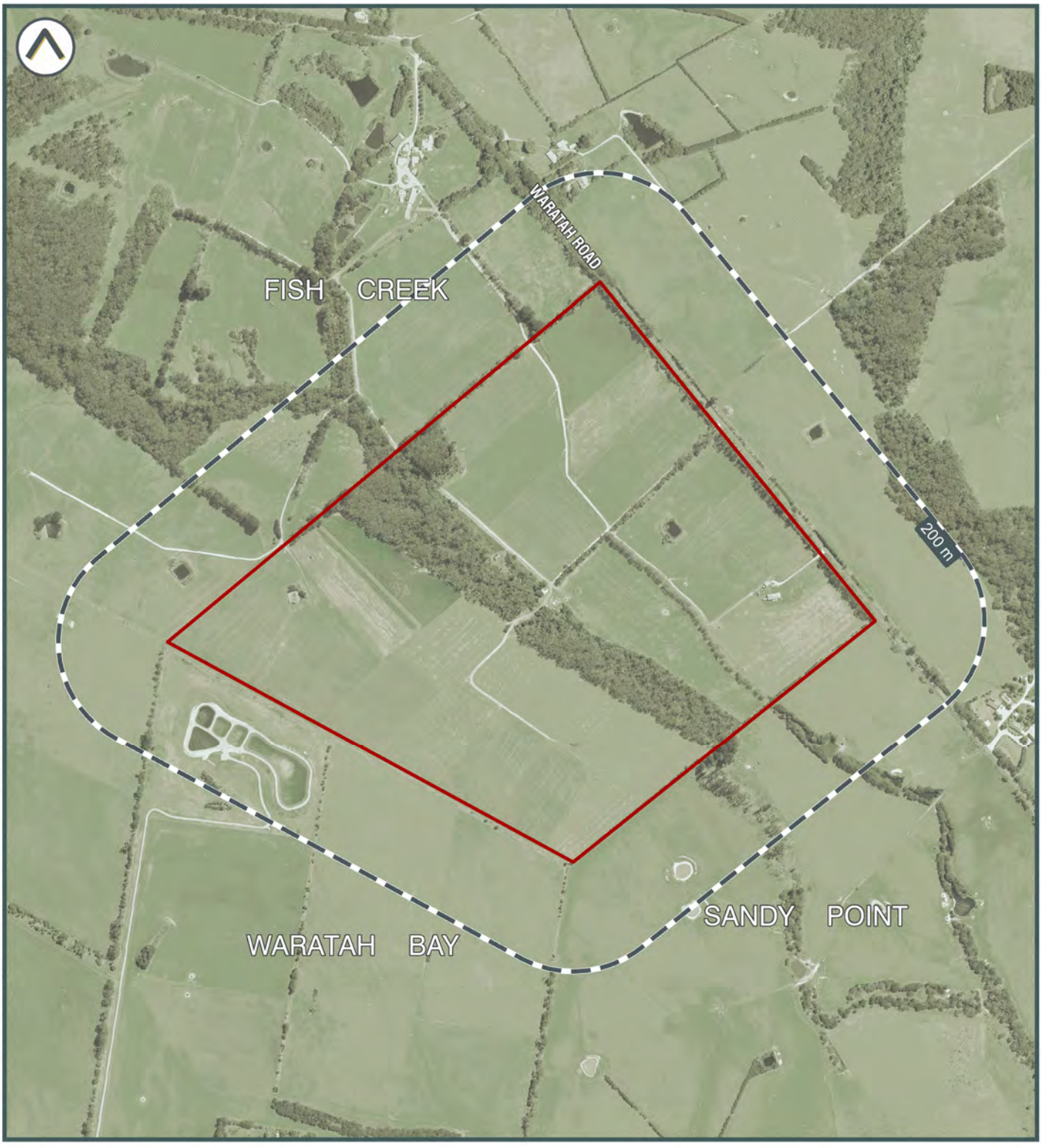
MAP 1.3

Heritage



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Subject area

Victorian Heritage Inventory (VHI)
Areas of Cultural Heritage Sensitivity (CHS)
Victorian Heritage Register (VHR)

Commonwealth Heritage List (CHL)
National Heritage List (NHL)
World Heritage Area (WHA)

0 100 200 300 400 500m

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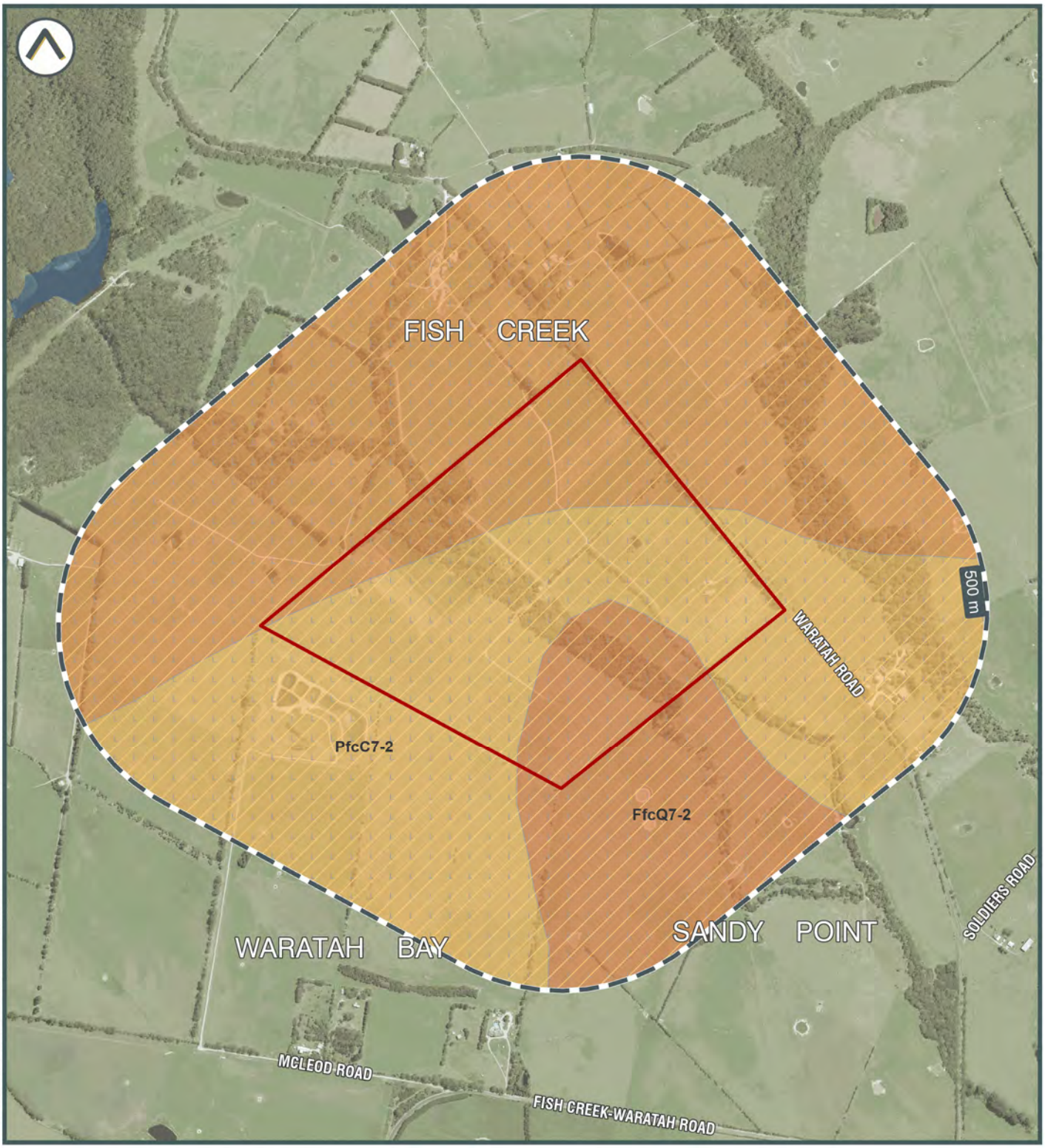
MAP 1.4a

Soil Landscape and Salinity



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Subject area

Salinity Hazard
Low

Soil Landscape
,
FfcQ7-2,Present flood plain
PfcC7-2,Plain above flood level (relative relief <9m)

Radon Level (Bq/m3)
5-19

0 100 200 300 400 500m

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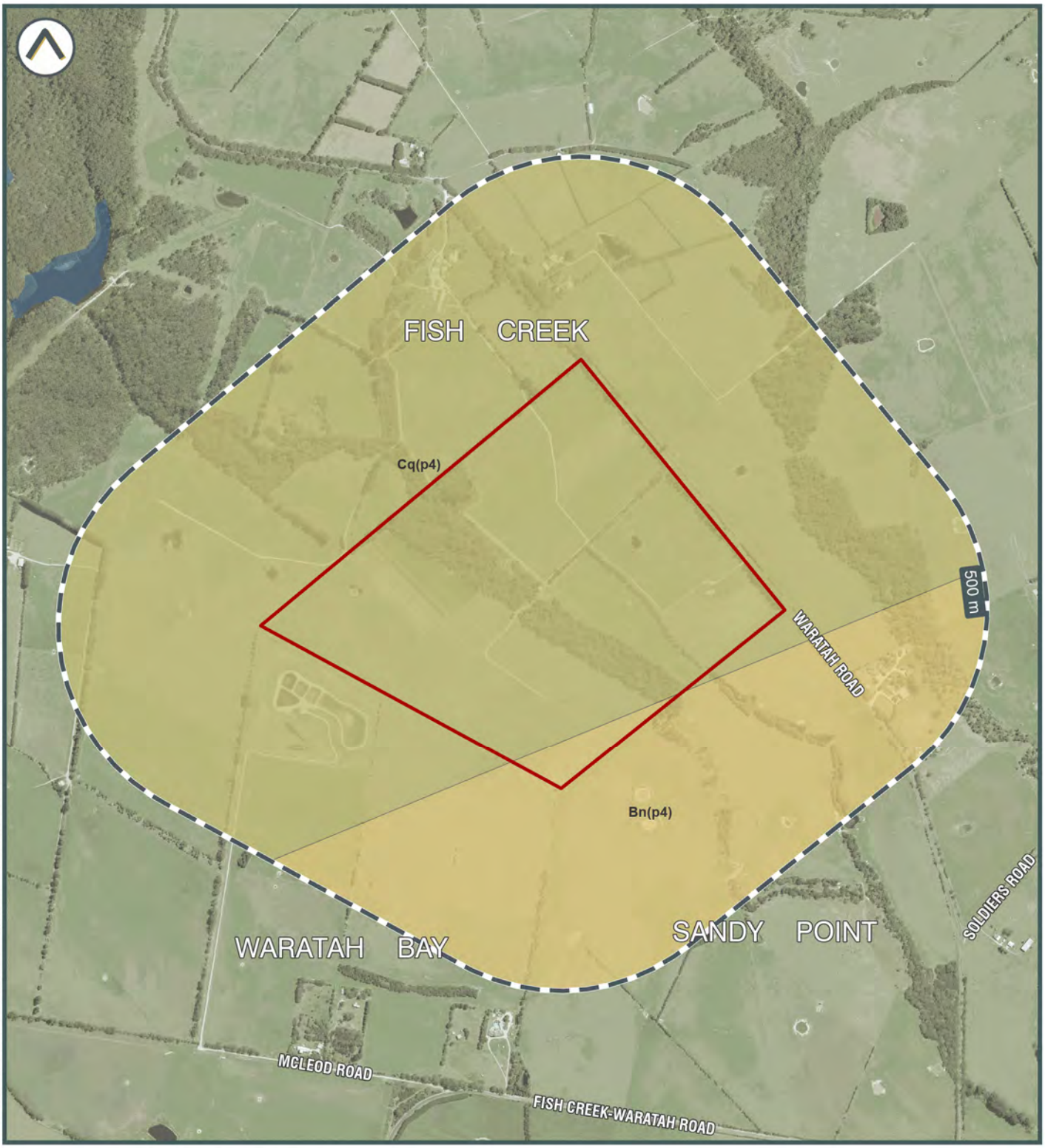
MAP 1.4b

Acid Sulfate Soils



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Subject area

ASRIS Atlas of Australian Sulfate Soils
- Bn(p4) | ASS in inland lakes, waterways, wetlands and riparian zones
- Cq(p4) | ASS in inland lakes, waterways, wetlands and riparian zones

0m

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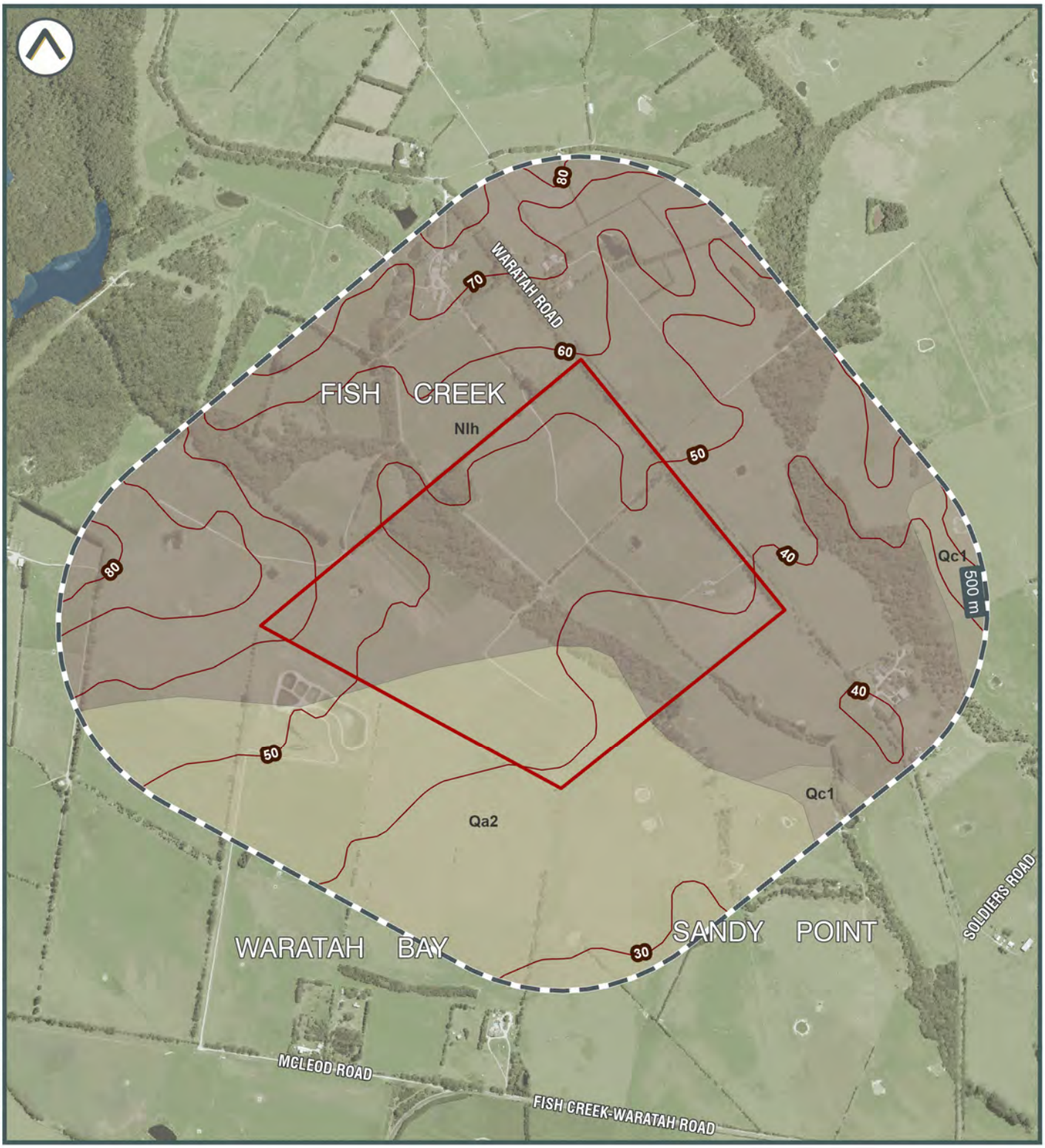
MAP 1.5

Geology and Topography



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Subject area
Topographic contour (m)

1:250,000 Geological Units

Nlh | Sand, silt, gravel: various shades of brown, yellow, red, white; variably sorted; variably rounded; crudely to well-bedded; commonly strongly oxidised with ironstone near the top and also within the formation

Qa2 | Gravel, sand, silt: variably sorted and rounded, generally unconsolidated; dissected to form terraces higher than Qa1, alluvial floodplain deposits

Qc1 | Diamictite, gravel, sand, silt, clay, rubble: sorting variable, usually poor; generally poorly rounded; clasts locally sourced; includes channel deposits with better rounding and sorting

0 100 200 300 400 500m

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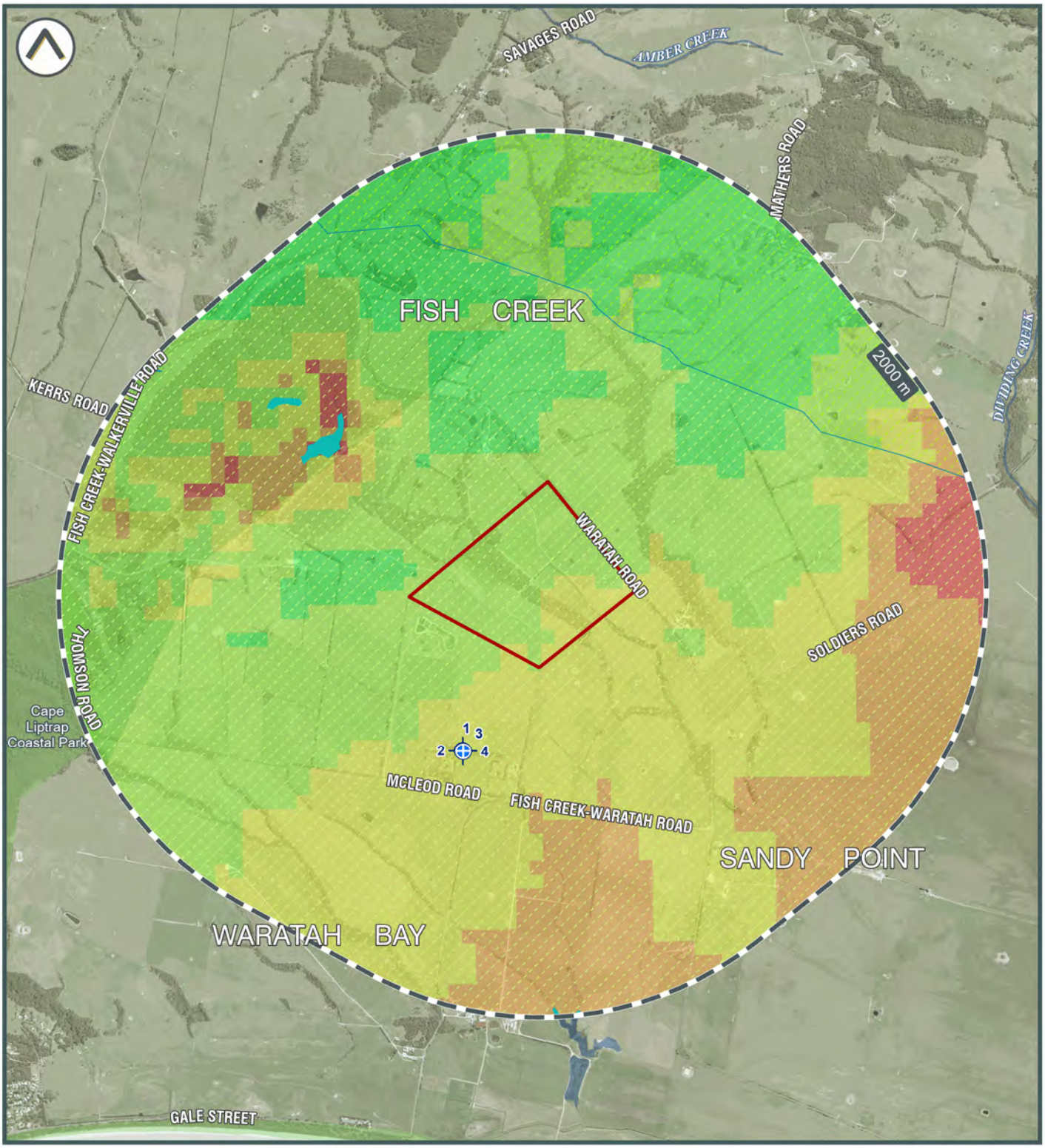
MAP 2.1

Hydrogeology and Groundwater Boreholes



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Subject area
Groundwater bores
Wetlands

Groundwater salinity (mg/l)
Less than 500
500 – 1,000

Depth to Watertable (m)
<5
5–10
10–20
20–50
>50

Aquifer type
Fractured or fissured, extensive aquifers of low to moderate productivity
Porous, extensive highly productive aquifers

0 200 400 600 800 1,000m

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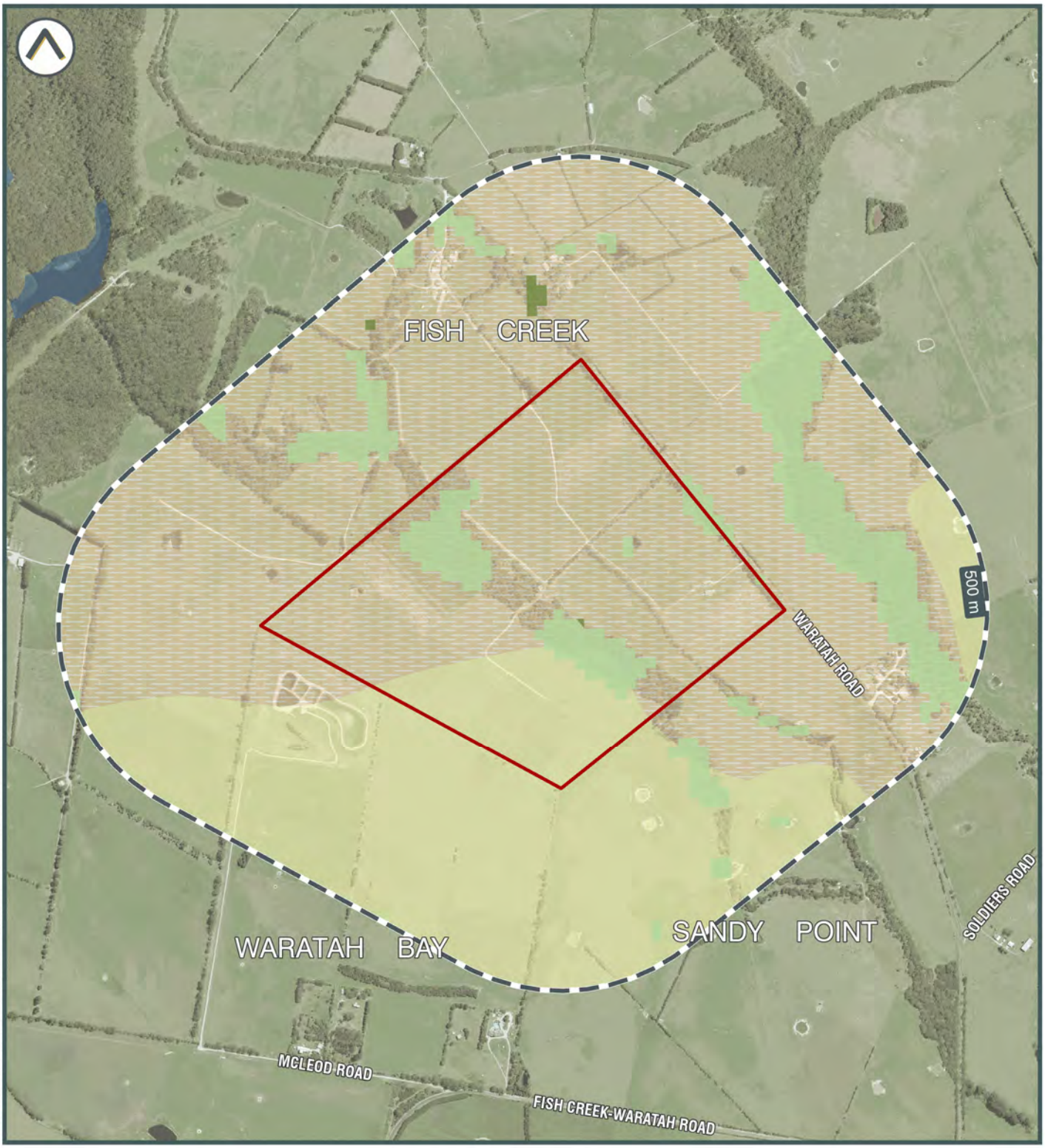
HYDROGEOLOGY

MAP 2.2

Hydrogeology and Other Boreholes



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Subject area
Other boreholes

Hydrogeologic Unit
Surficial Sediment Aquifer (porous media – unconsolidated)
Upper Tertiary/Quaternary Aquitard (porous media – unconsolidated)

Ecosystems that rely on Subsurface presence of Groundwater
Moderate potential for GW interaction
Low potential for GW interaction

0 100 200 300 400 500m

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ENVIRONMENTAL REGISTERS LICENSES AND INCIDENTS

MAP 3.1

Contaminated Land Public Register

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Subject area

Contaminated Land Register (EPA)
Priority Sites Register
Audit Report

0 200 400 600 800 1,000m

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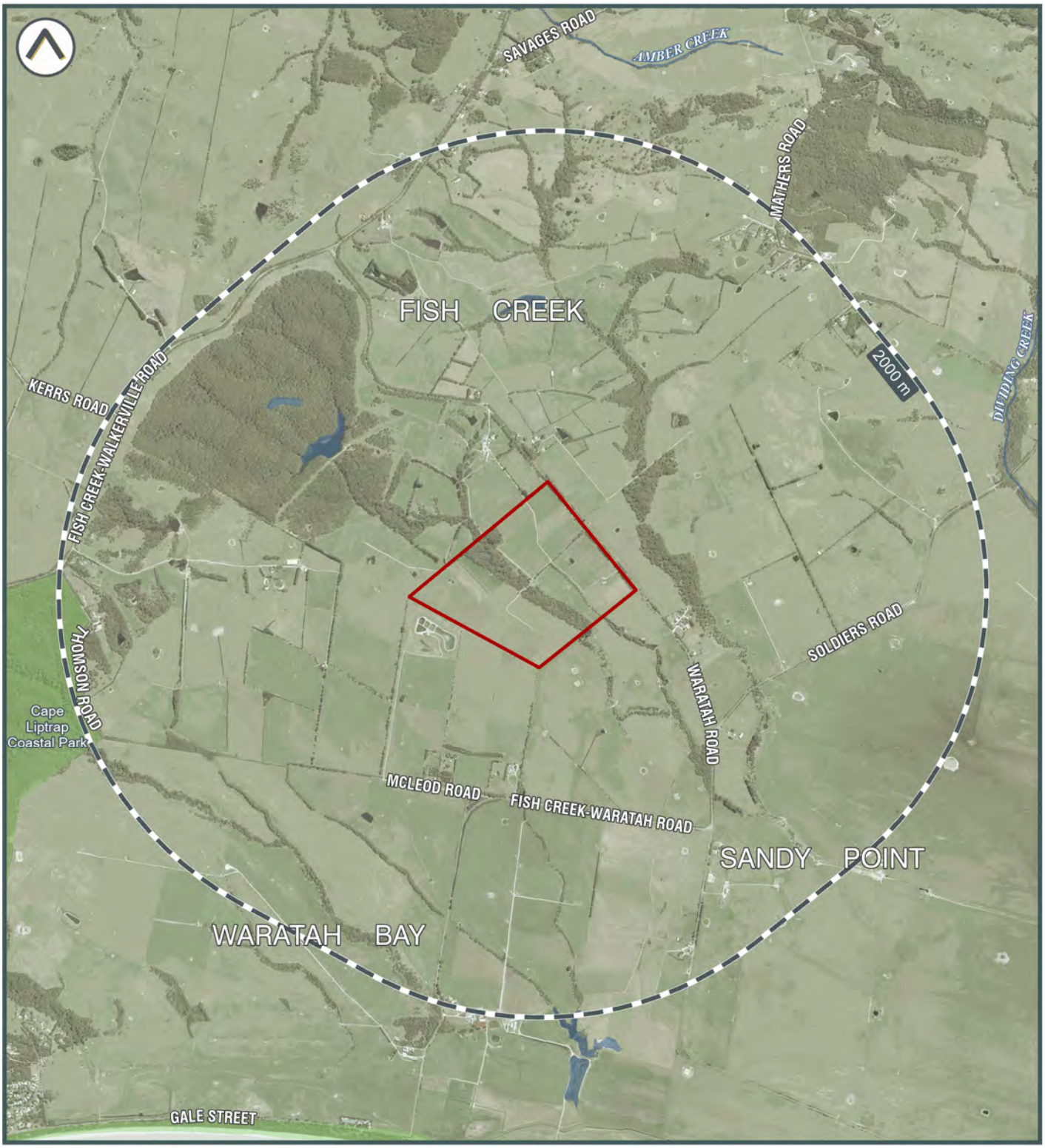
ENVIRONMENTAL REGISTERS LICENSES AND INCIDENTS

MAP 3.2

Sites Regulated by other Jurisdictional Body



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- Subject area
- PFAS sites
- NPI Facilities
- Former Gasworks Sites
- Unexploded Ordnance (UXO) Areas
  - Substantial Potential
  - Slight potential
- Sea Dumping of Depth Charges
- Sea Dumping of Depth Charges (Chemical munitions sea dumping)
- Other Sea Dumping Sites
- Other
- Defence Area / Military Sites
- Defence Controlled Area

0 200 400 600 800 1,000m

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MAP 3.3

Licensing Under the POEO Act

Subject area

0 100 200 300 400 500m

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POTENTIALLY CONTAMINATED AREAS

MAP 4.1

Potentially Contaminating Activities (PCAs)

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Subject area

Liquid Fuel Depots

Waste Management Facilities

Operational Petrol Stations

Former Petrol Stations

Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.

0 100 200 300 400 500m

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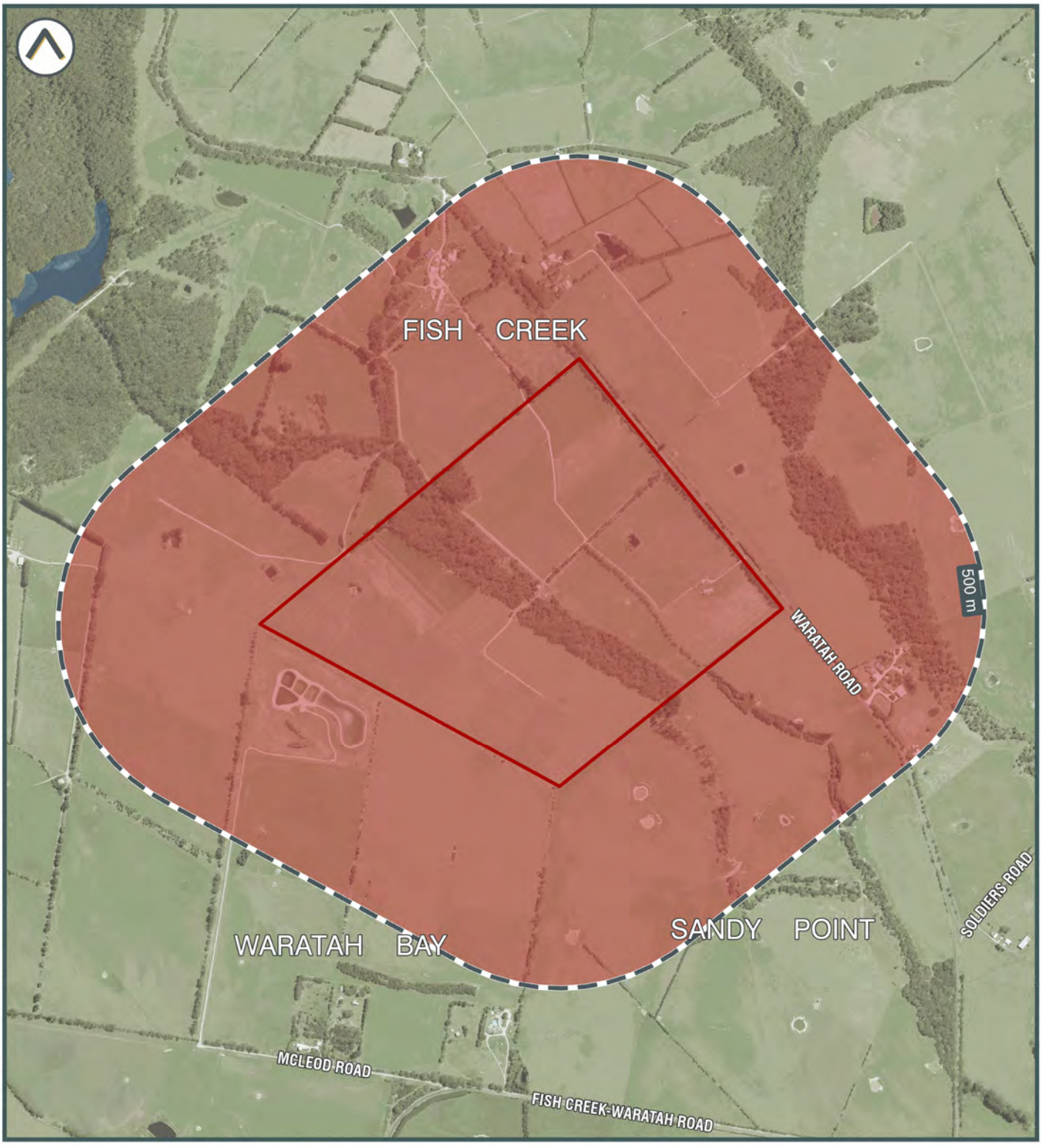
NATURAL HAZARDS

MAP 5.1

Fire and Flood Hazards



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Subject area Bush Fire Prone Land

0 100 200 300 400 500m

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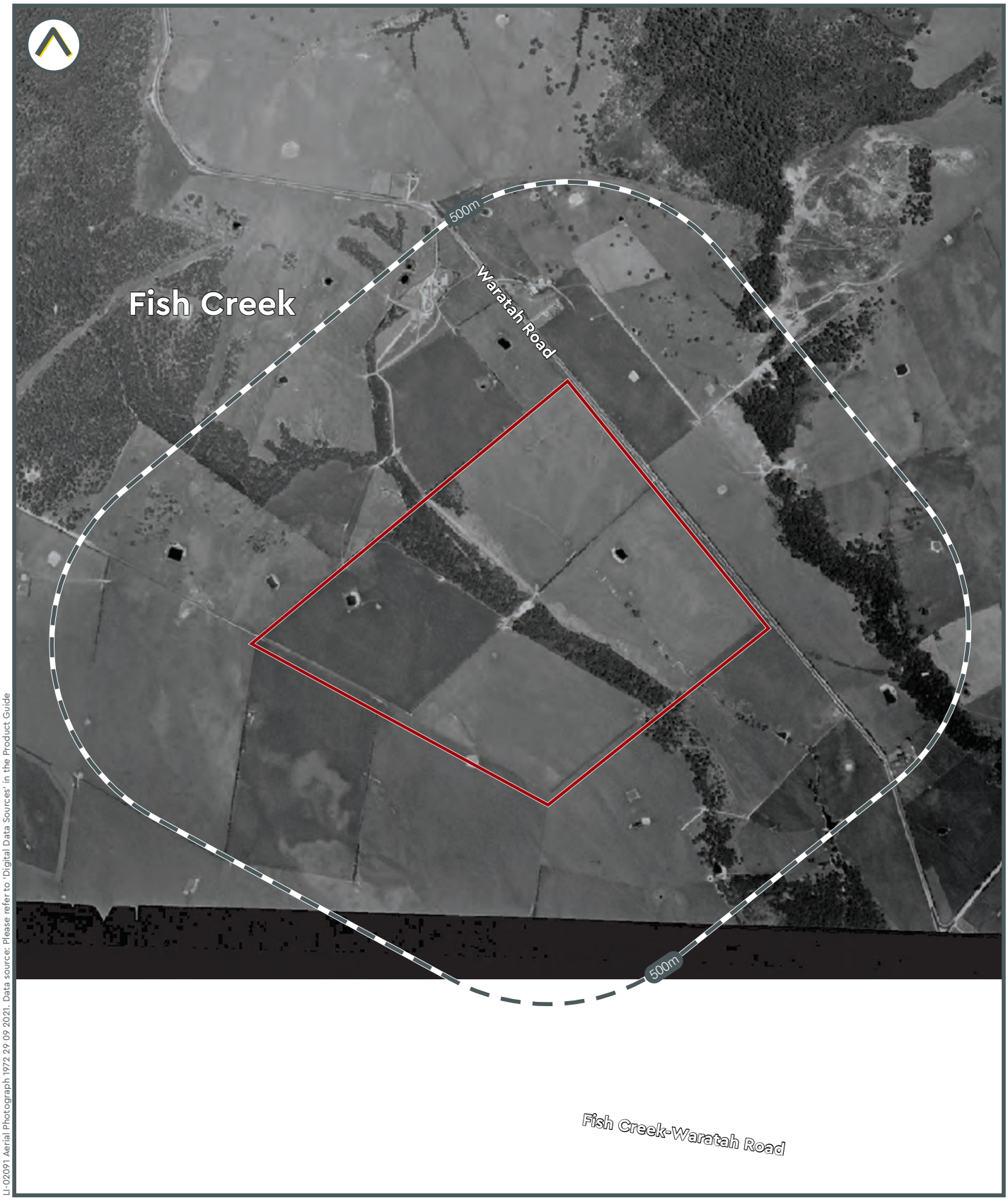
Land Insight RESOURCES

Appendix B

HISTORIC IMAGERY

Historic Aerial Photograph - 1972



LI-02091 Aerial Photograph 1972 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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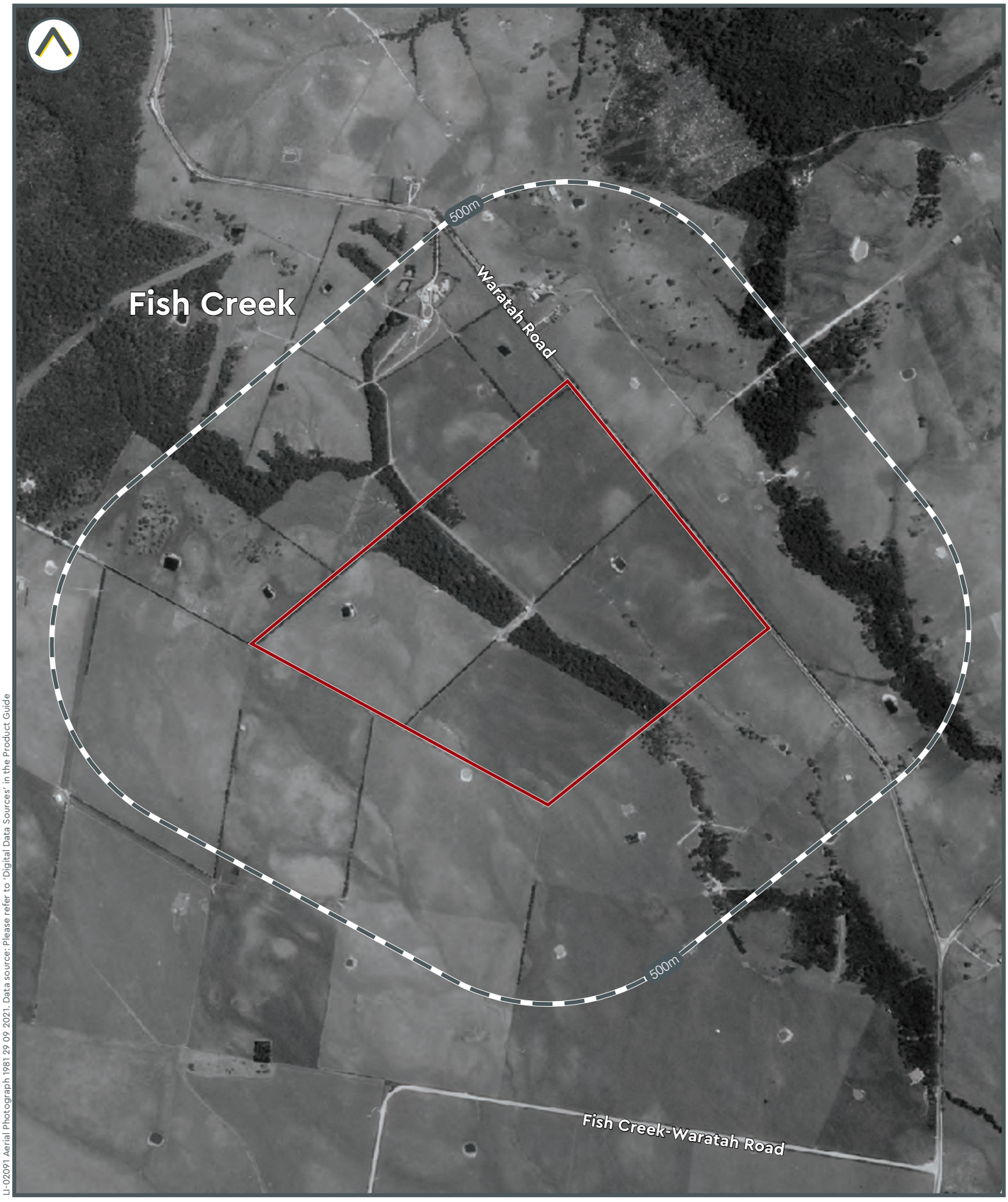
Historic Aerial Photograph - 1981



LI-02091 Aerial Photograph 1981 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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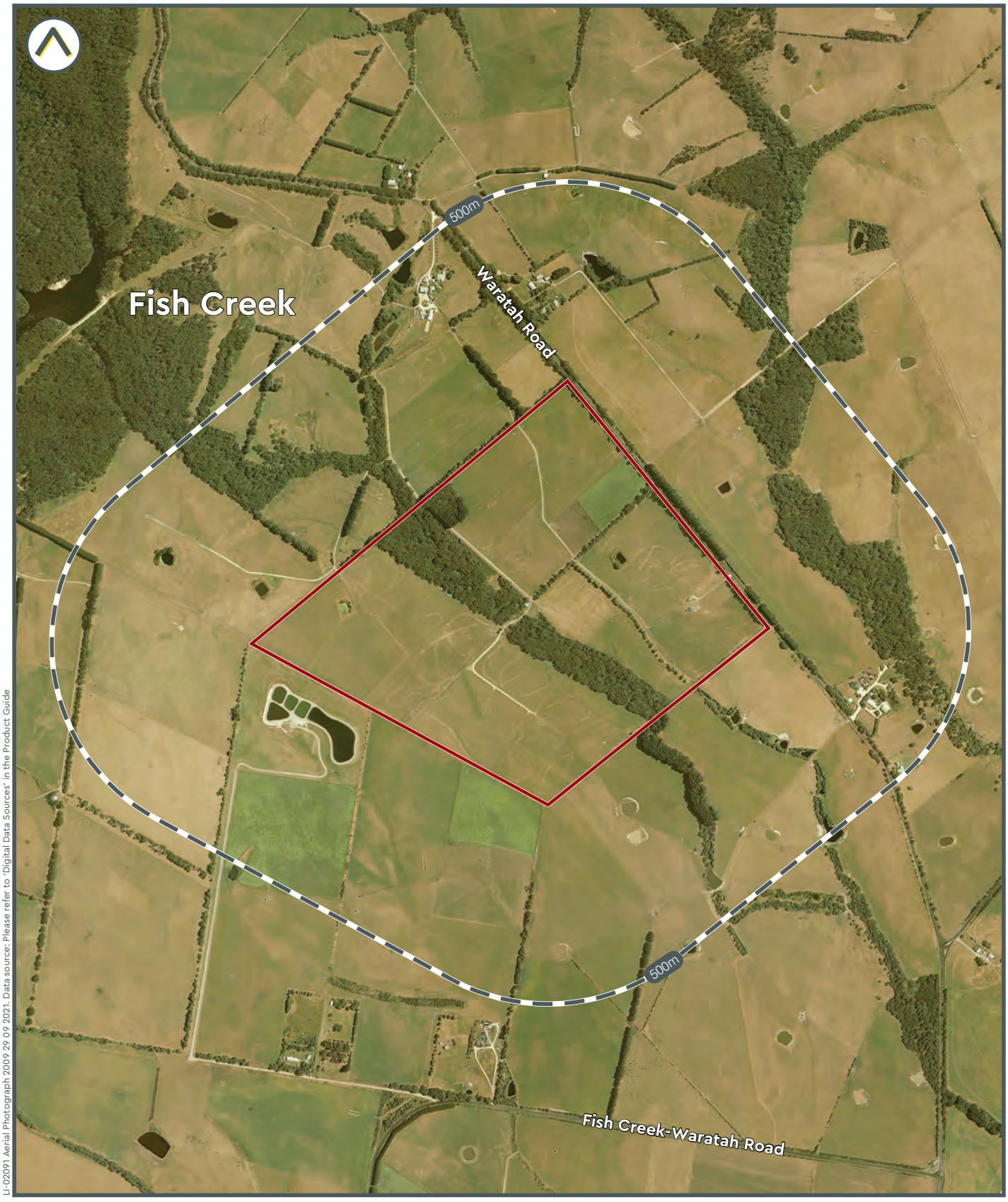
Historic Aerial Photograph - 2009



LI-02091 Aerial Photograph 2009 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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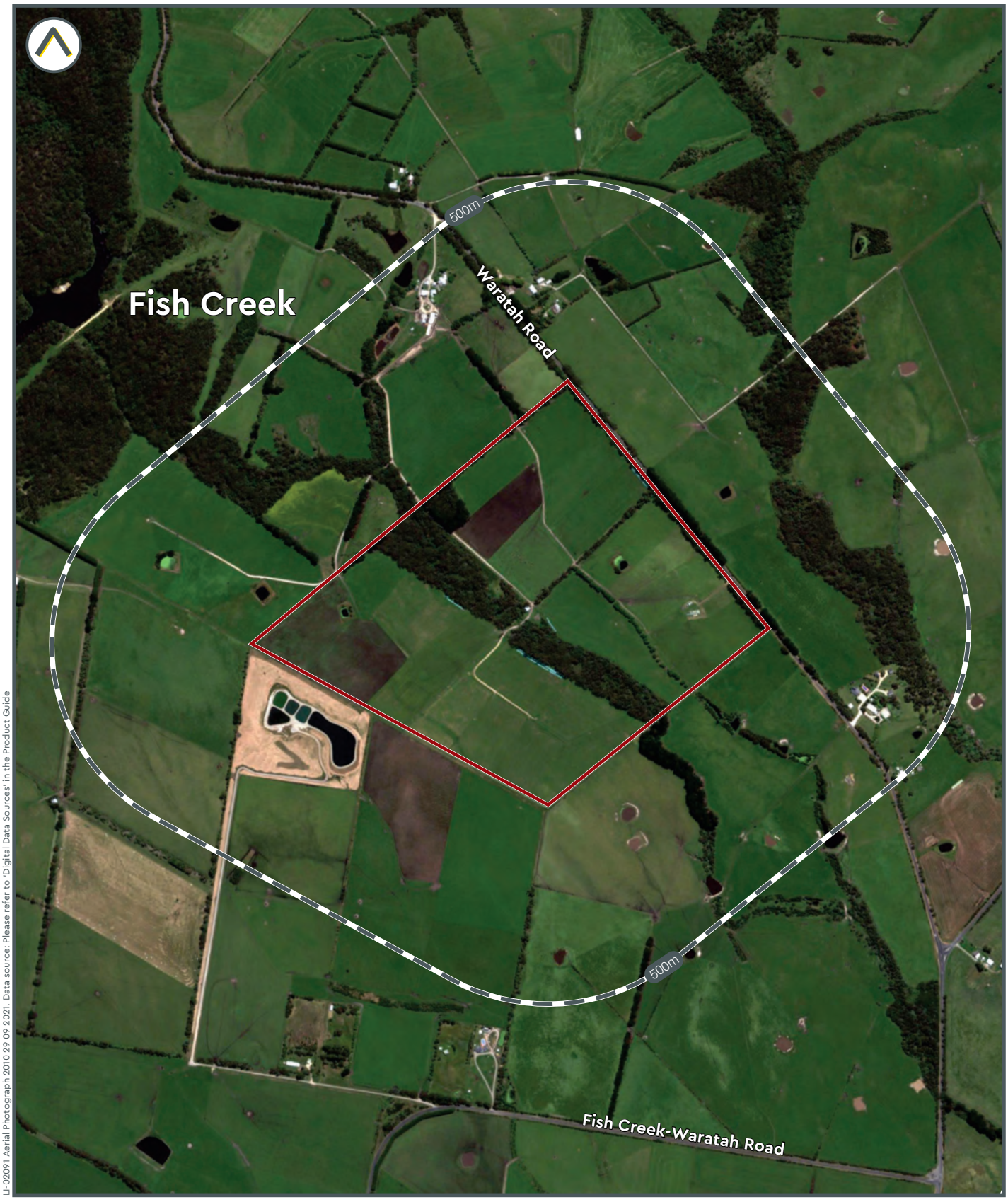
Historic Aerial Photograph - 2010



LI-02091 Aerial Photograph 2010 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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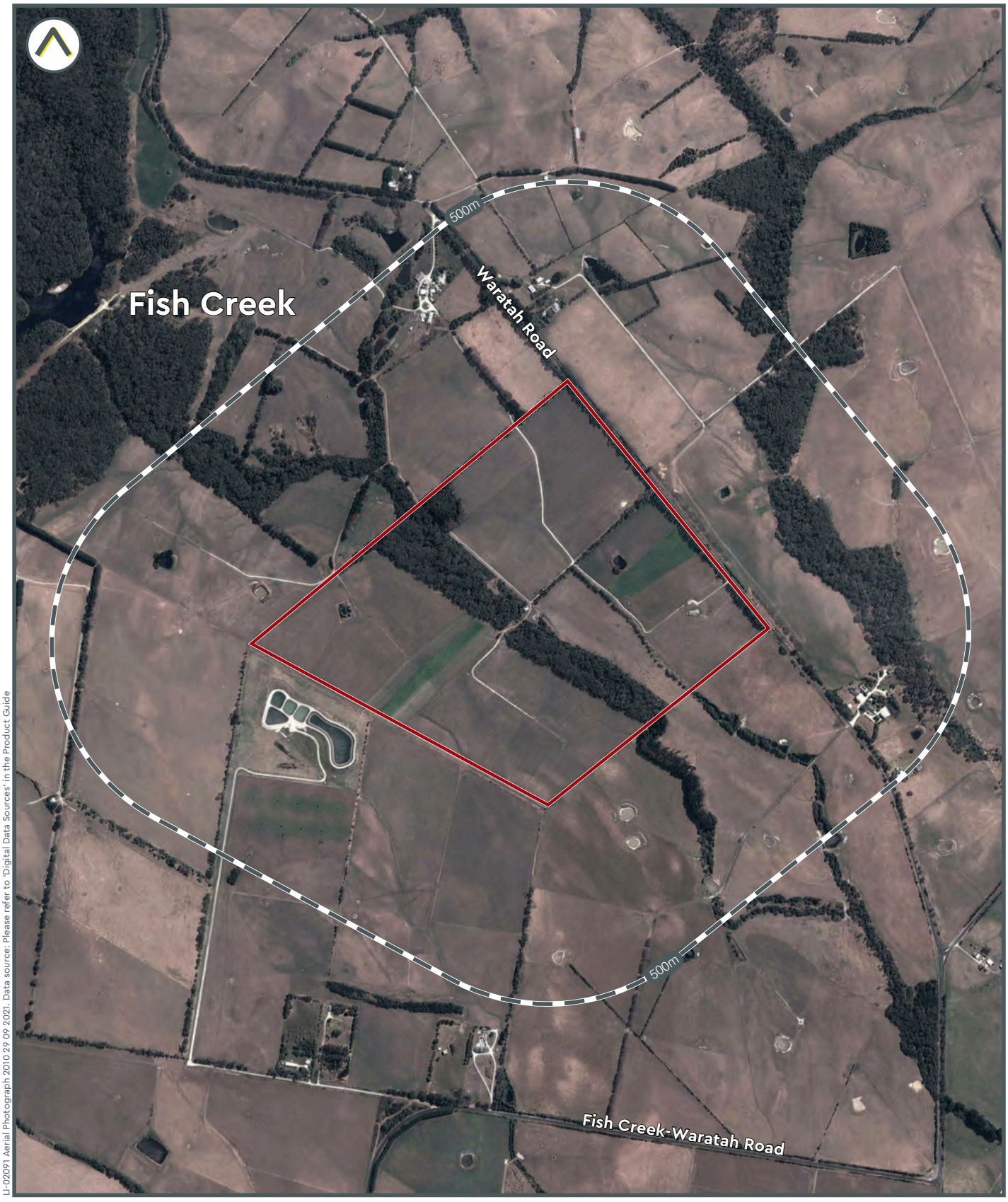
Historic Aerial Photograph - 2013



LI-02091 Aerial Photograph 2010 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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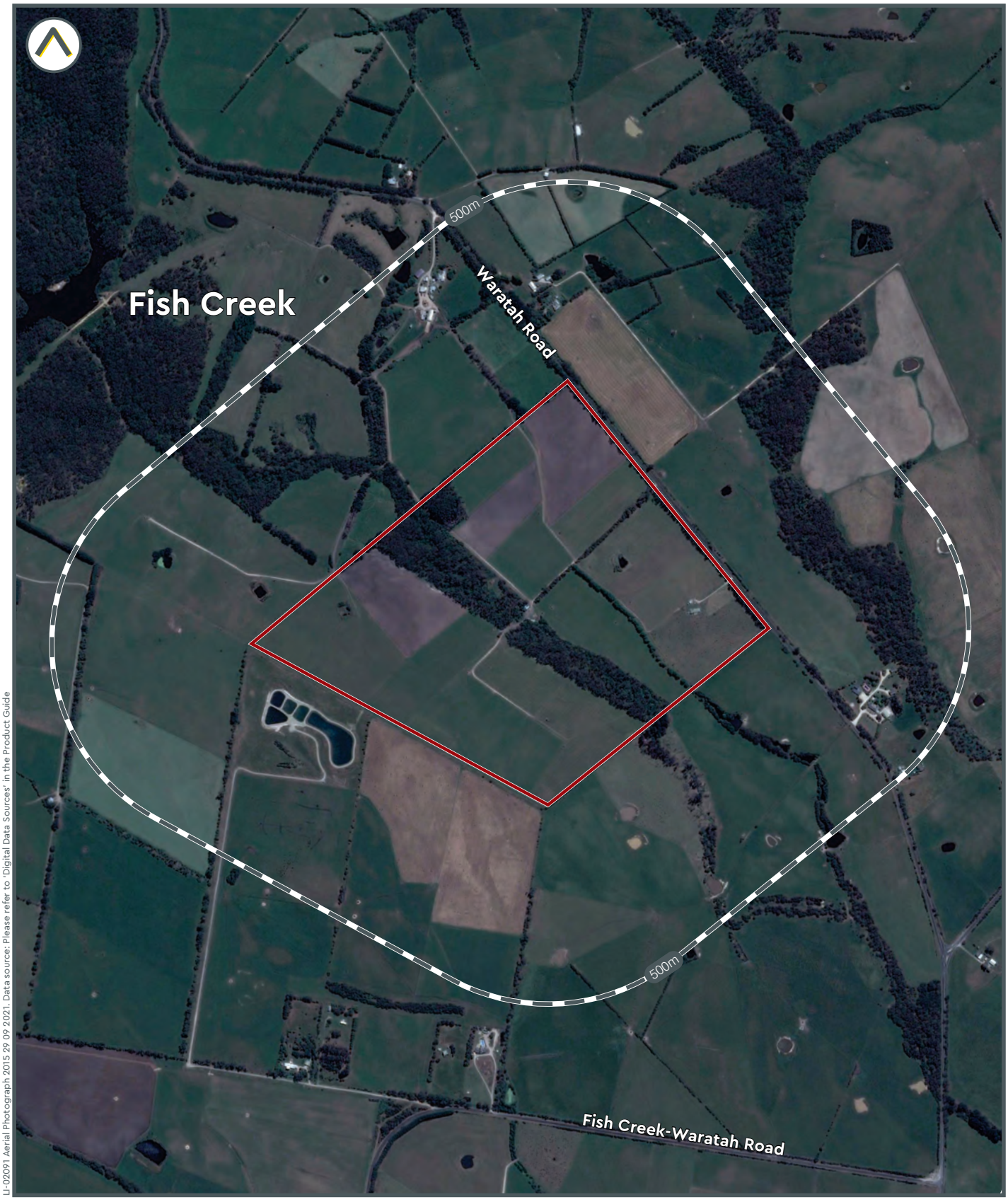
Historic Aerial Photograph - 2015



LI-02091 Aerial Photograph 2015 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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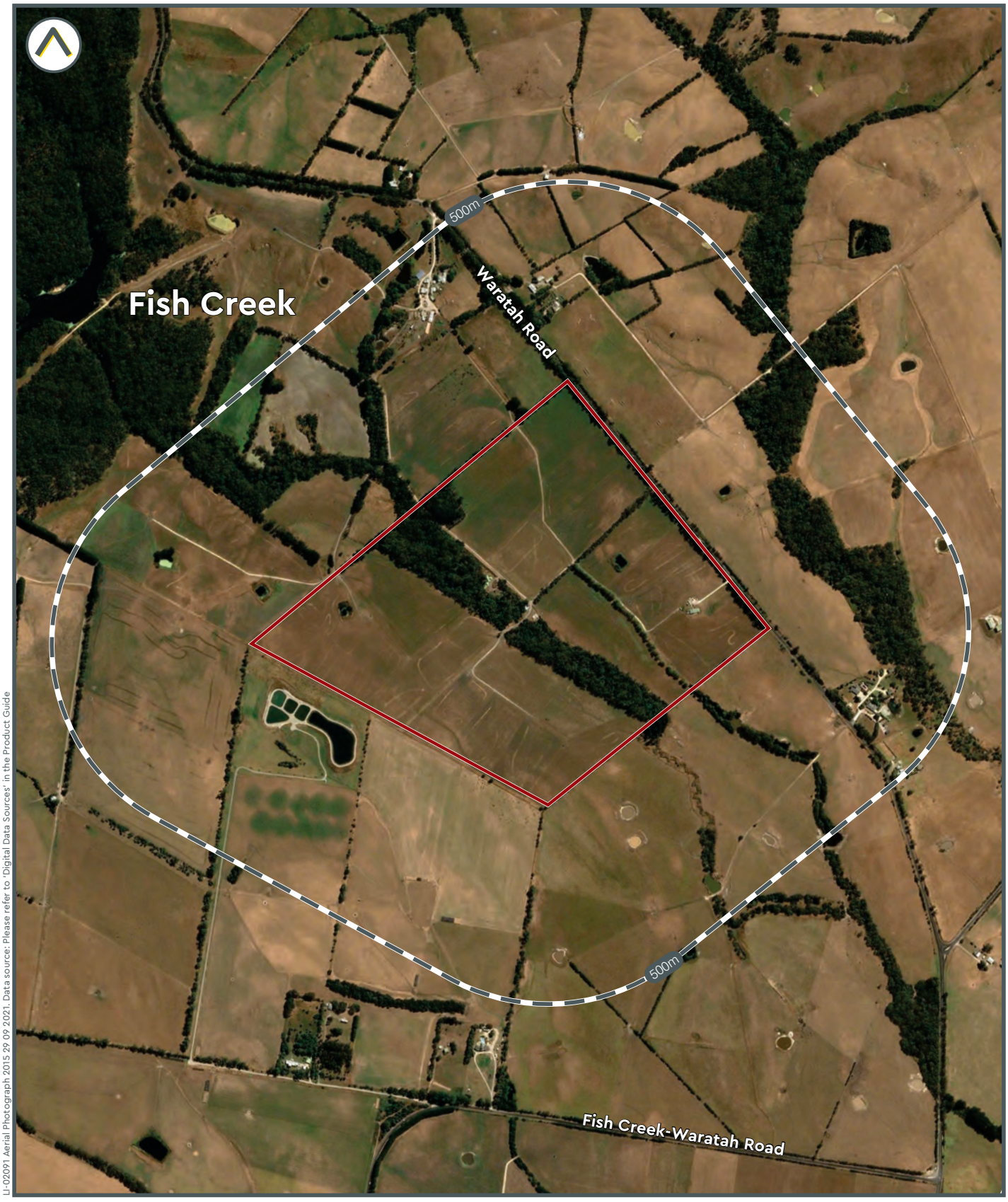
Historic Aerial Photograph - 2019



LI-02091 Aerial Photograph 2015 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

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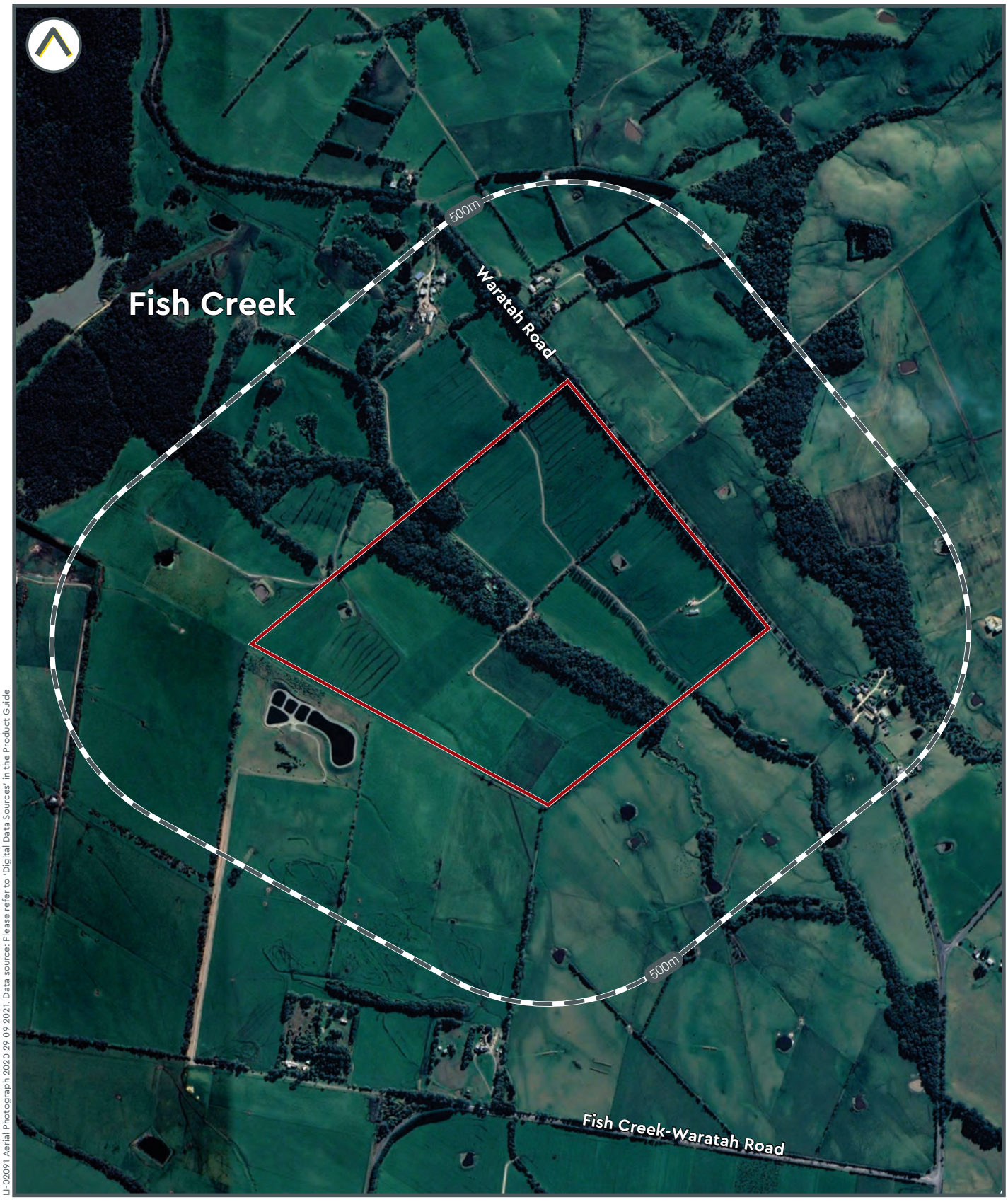
Historic Aerial Photograph - 2020

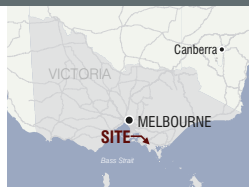


LI-02091 Aerial Photograph 2020 29 09 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 400m

Land Insight



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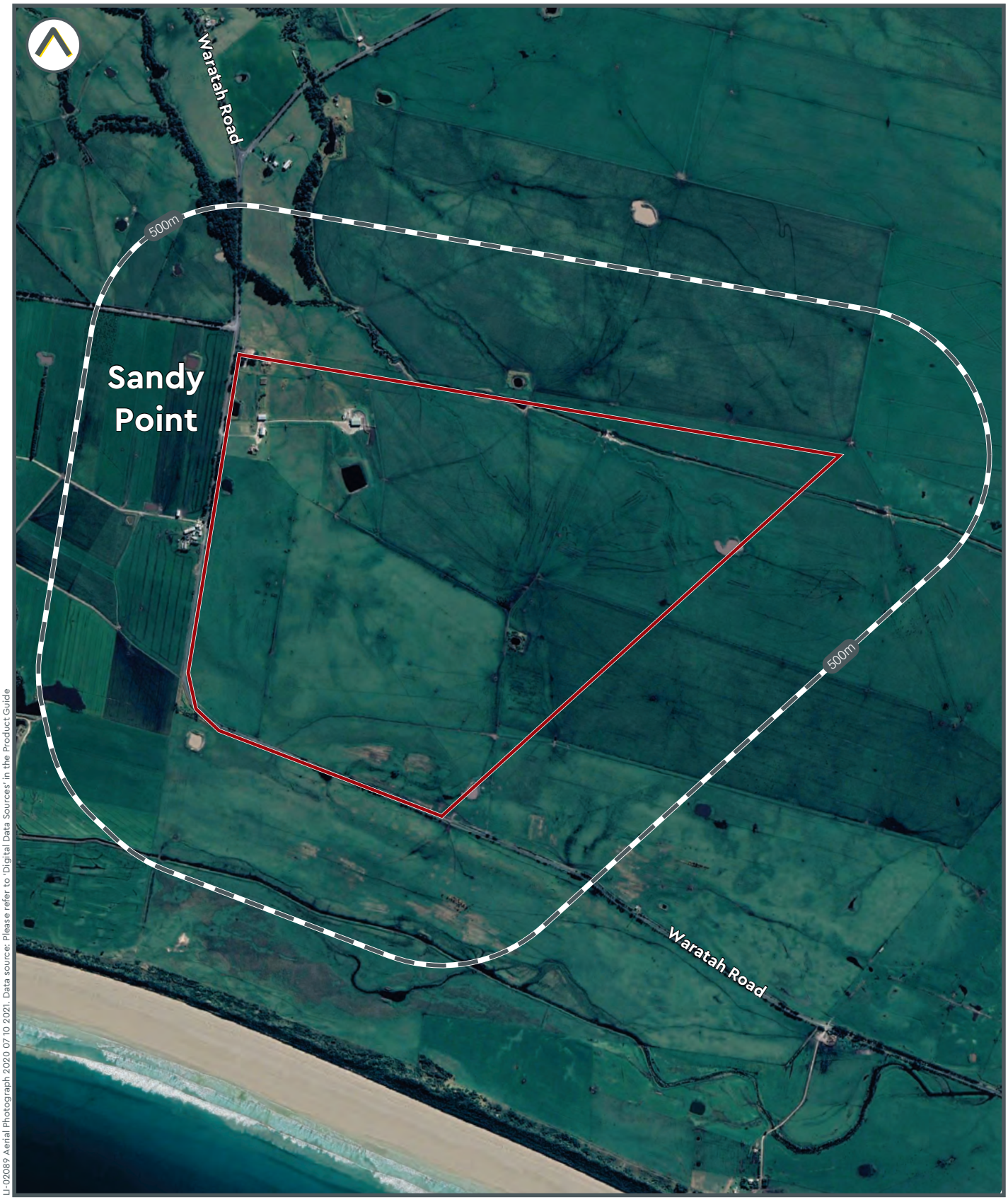
Historic Aerial Photograph - 2020



LI-02089 Aerial Photograph 2020 07 10 2021. Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

0 800m

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