Appendix J

Aboriginal Cultural Heritage Technical Report

KENTBRUCK GREEN POWER HUB

ANDREW LONG + ASSOCIATES

Aboriginal Cultural Heritage Technical Report: Kentbruck Green Power Hub Environment Effects Statement

EES Technical Report: Aboriginal cultural heritage

Neoen Pty Ltd
Heritage Advisors: Ricky Feldman, Jon Howell-Meurs & Philip Liro
Author: Ricky Feldman, Philip Liro, Jocelyn Strickland & Jacqui Tumney, with contributions by John Webb
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www.alassoc.com.au
Andrew Long + Associates Pty Ltd
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Environment Effects Statement

Neoen Australia Pty Ltd

Heritage Advisors: Ricky Feldman, Jon Howell-Meurs & Philip Liro

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Executive summary

Andrew Long and Associates Pty Ltd (ALA) has been commissioned by Neoen Australia Pty Ltd (Neoen) to prepare a technical report to assess Aboriginal cultural heritage for the Kentbruck Green Power Hub (the Project) Environment Effects Statement (EES). It has been used to inform the EES required for the Project.

Project overview

Neoen is proposing a renewable energy development, known as the Kentbruck Green Power Hub, comprising a wind energy facility (wind farm) and associated infrastructure. The Project would be mostly located in an actively managed and harvested pine plantation in southwest Victoria, between Portland and Nelson, in the Glenelg Local Government Area (LGA).

The Project would involve two main components:

- A wind farm of up to 600 MW comprising up to 105 wind turbines and associated permanent and temporary infrastructure
- A new 275 kV underground transmission line, which would connect the Project to the existing AusNet electricity transmission network. The transmission line would extend from the eastern boundary of the wind farm site to the existing 275/500 kV Heywood Terminal Station and would be up to 26.6 km in length.

Requirement for an EES

On 25 August 2019, the Minister for Planning issued the decision that an EES is required under the *Environment Effects Act 1978* to assess the potential environmental effects of the project, based on the following:

- *The proposal has the potential for a range of significant effects that require assessment. In particular the project as proposed could have significant effects on:*
    - *i. Threatened fauna listed under both the Flora and Fauna Guarantee Act 1988 (FFG Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), including southern bent-wing bat, red-tailed black cockatoo, orangebellied parrot, as well as migratory shorebirds.*
    - *ii. Threatened flora and ecological communities listed under both the FFG and EPBC Act.*
    - *iii. Aboriginal cultural heritage values.*
    - *iv. Landscape values.*
    - *v. Effects on surface water and groundwater and related beneficial uses, including risks to wetlands such as Long Swamp as well as the Glenelg and Discover Bay Ramsar Site.*
- *There are other potential effects, including associated with potential acid sulphate soils, the local community and amenity that also warrant examination.*
- *Assessment of potentially significant effects is necessary to ensure their extent, related uncertainties and acceptability are sufficiently investigated. This includes examining the scope for further avoidance and minimisation of effects via feasible siting/layout, design and operational alternatives for key components of the proposal, as well as evaluating their effectiveness in achieving acceptable residual environmental risks.*
- *An EES would enable a single integrated, rigorous and transparent process for consideration of the proposal's environmental effects and risks, including their acceptability, which would inform relevant statutory decision-making, including under the Planning and Environment Act 1987, Aboriginal Heritage Act 2006, Flora and Fauna Guarantee Act 1988 and Water Act 1989.*

Aboriginal cultural heritage context

The scoping requirements for the EES by the Minister for Planning set out the specific environmental matters to be investigated and documented in the Project's EES, which informs the scope of the EES technical studies. The scoping requirements include a set of evaluation objectives. These objectives identify the desired outcomes to be achieved in managing the potential impacts of constructing and operating the project.

The following evaluation objective is relevant to the Aboriginal cultural heritage assessment:

To avoid or minimise adverse effects on Aboriginal or historic cultural heritage and associated values.

Existing conditions

At the time of preparing the EES, the following registered Aboriginal places and preliminarily recorded Aboriginal places are located within the proposed wind farm site, the transmission line corridor and Heywood Terminal Station :

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

The results of the desktop assessment indicated that the wider region was utilised by Gunditjmara in the past with more and denser presence of Aboriginal cultural heritage material located in proximity to the coastline. There is a shift in the type of Aboriginal heritage place expected to move away from the coastline. [redacted]

Key findings

The Gunditj Mirring Traditional Owner Aboriginal Corporation led iterative predictive model originated due to the observation by GMTOAC representatives that there was a correlation between the presence of red soils (chromosols) and surface Aboriginal cultural heritage material. Furthermore, the northeast, leeward, side of slopes was an area where the red soil chromosols were considered more likely to be present, and as such, have a higher potential for surface Aboriginal cultural heritage material.

In consultation with GMTOAC, there is a preference for the proposed works to have little to no direct impacts on tangible Aboriginal cultural heritage. Observations made by GMTOAC when on Country noted a correlation between the presence of Aboriginal cultural heritage material present on the ground surface within red soils (chromosols). Further discussions between GMTOAC and ALA identified the northeast (leeward) side of slopes as an area where red soils were likely to outcrop, and therefore also be associated with the presence of surface artefacts.

Therefore in order to achieve the evaluation objective for the Project as set by the Minister for Planning, and in consideration of the large size of the Project Area and limited construction impacts, a predictive model methodology was drafted that initially reviewed a correlation between the presence of red soils in relation to environmental factors such as slope, elevation, and geomorphology. The presence of red soils were initially mapped using aerial imagery and LiDAR data. An initial phase of testing was conducted by GMTOAC and ALA to ground-truth the red soil modelling. Transects of test pits and a series of auger borehole excavations were excavated in the central portion of the Project Area to confirm the presence or absence of red soils as predicted by the model established using aerial imagery and LiDAR data.

At the conclusion of the phase 1 testing, eight STPs and four auger probes were excavated. Of these 12 sampled locations, four were confirmed for the presence of chromosols and six confirmed for the absence of chromosols, both as predicted by the red soil modelling. No subsurface artefacts were identified in the chromosols, but low numbers of surface artefacts were identified in the vicinity of three of the four chromosol locations. In contrast, five of the six STPs excavated in non-chromosols contained subsurface artefacts. Surface artefacts were identified in the vicinity of only three of the eight non-chromosol locations. Two of these scatters had higher numbers than the surface scatters at the chromosol locations and one also contained potential shell midden deposits. At the conclusion of phase 1 testing, it was established that the red soil modelling appeared to be a reliable representation for the presence of chromosols within the Project Area. However, it was further established that there did not seem to be a correlation between the presence of chromosols on the leeward side of slopes.

The aim of the phase 2 testing was to collate further data in the eastern and western portions of the Project Area to better test the red soil mapping. Phase 2 testing was to provide more detailed landform and soil information regarding the geomorphological process and possible landform reconstruction. The results of the phase 2 testing was similar to that of phase 1: no surface or subsurface artefacts were identified in direct association with chromosol soils and subsurface artefacts were identified in two of 11 non-chromosol testing locations.

At the completion of the phase 1 and phase 2 testing, the initial hypothesis of correlation between the presence of chromosols and surface Aboriginal cultural heritage material appears to be incorrect, as more subsurface Aboriginal cultural heritage material was identified in non-chromosol locations. Given that chromosols likely overlie the entire karst landscape that developed on the underlying Gambier Limestone that was largely, or possibly completely, covered by wind-blown sand during the Last Glacial Maximum, the occurrence of chromosols at particular elevations and slopes present within the Project Area represents either areas where the younger wind-blown sand was not deposited, or where the sand has been subsequently eroded. The results of the phase 1 and phase 2 testing also suggests a distinction between surface artefact manifestations and subsurface artefact manifestations that appear to correlate with the presence or absence of chromosols, in combination with the evaluation within the landscape and position on the landform. These field observations suggest that chromosol presence, elevation, and landform element contribute to the sensitivity for Aboriginal cultural heritage. A phase 3 predictive model was developed and included further refinement of sensitivity ratings based on the assessment of actual correlation between the specific features and the presence or absence of artefacts. Two models representing sensitivity for artefacts were produced, one for surface artefacts and one for subsurface artefacts. The 105 proposed turbine locations were assessed against the presence of chromosols, elevation, and landform element to determine sensitivities. As such, the phase 3 predictive model methodology considers the presence of chromosols as well as elevation and landform in terms of Aboriginal cultural heritage sensitivity.

Phase 3 model was tested through five weeks of surveys which included, surface surveys at five turbines locations and six subsurface excavations at eight turbine locations (combination of 1 x 1 m and 50 cm x 50 cm manually excavated test pits, for a total of 48 test pits) that were predicted to have 0% archaeological sensitivity for subsurface artefacts. Of the 48 test pits excavated, 13 of the test pits were artefact positive. Of these 13 artefact positive test pits, 10 were located within areas of predicted moderate archaeological sensitivity, one was located within an area of predicted low/moderate archaeological sensitivity, and two were located within predicted low archaeological sensitivity.

The phase 3 survey results are largely in line with the hypothesis of phase 3 that was applied across the turbine locations, with areas of moderate, low/moderate, and low archaeological sensitivity mapped. Areas of mapped moderate archaeological sensitivity were largely artefact positive, with the areas mapped as being of low archaeological sensitivity were largely artefact negative. No further changes to the predictive model are proposed following the completion of the phase 3 surveys due to the consistency of the surveying with the model

The majority of previously registered and identified Aboriginal places within the Project Area will not be impacted by the proposed works. Mitigation measures have been drafted from the background research undertaken as part of this impact assessment as well as the phase 1 to phase 3 testing of the predictive modelling in order to avoid or minimise adverse effects on Aboriginal cultural heritage.

Mitigation measures have been included for the Aboriginal places and components of Aboriginal places that will potentially be impacted by the proposed works. Furthermore, mitigation measures have been included for those Aboriginal places and preliminarily recorded Aboriginal places that will not be impacted by the proposed works to ensure the avoidance of those places. Mitigation measures have also been included for previously unregistered Aboriginal places that may be identified during proposed works.

With implementation of the mitigation measures as documented within the CHMP, there will be a negligible residual impact to the registered Aboriginal places and unregistered Aboriginal places (if identified during proposed works) within the Project Area.

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Abbreviations

ACHRIS	Aboriginal Cultural Heritage Register and Information System
Act	*Aboriginal Heritage Act 2006*
ALA	Andrew Long and Associates Pty Ltd
APR	Archaeological Potential Rating
CHL	Commonwealth Heritage List
CHMP	Cultural Heritage Management Plan
CHP	Cultural Heritage Permit
CHS	Cultural Heritage Sensitivity
CVA	Cultural Values Assessment
DEECA	Department of Energy, Environment and Climate Action
DEMP	Decommissioning Environmental Management Plan
DSM	Digital Surface Model
EES	Environmental Effects Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EVC	Ecological Vegetation Class
FP – SR	First Peoples State Relations
GMTOAC	Gunditj Mirring Traditional Owner Aboriginal Corporation
GMU	Geomorphological unit
GTFP	Green Triangle Forest Products
ha	Hectare(s)
HA	Heritage Advisor
HDD	Horizontal Direction Drilling
ICOMOS	International Council on Monuments and Sites
ILUA	Indigenous Land Use Agreement
km	Kilometre
LDAD	Low-Density Artefact Distribution
LGA	Local Government Area
m	Metre
mm	Millimetre
MNES	Matters of National Environmental Significance
Mya	Million years ago
NHL	National Heritage List
NoI	Notice of Intent to Prepare a CHMP
OEMP	Operations Environmental Management Plan
OSOM	Oversize and Overmass
PGC	Primary Grid Coordinate
Project	Kentbruck Green Power Hub
RAP	Registered Aboriginal Party
SCADA	Supervisory Control and Data Acquisition System
SU	Survey Unit
Regulations	*Aboriginal Heritage Regulations 2018*
VAHR	Victoria Aboriginal Heritage Register
WHL	World Heritage List

Glossary

Term	Definition
Aboriginal place	'…an area in Victoria or the coastal waters of Victoria that is of cultural heritage significance to Aboriginal people generally or of a particular community or group of Aboriginal people in Victoria.' (*Aboriginal Heritage Act 2006*, section 5).
Aboriginal people/s	Aboriginal people in Australia but not necessarily from a specific cultural group.
Activity Area	The area or areas to be used or developed for an activity under a Cultural Heritage Management Plan (CHMP). Interchangeable terminology with Project Area.
Artefact Scatter	A scatter of stone artefacts that is defined as being the occurrence of more than 10 artefacts in a 10 m x 10 m area.
CHMP	Cultural Heritage Management Plan under the *Aboriginal Heritage Act 2006*.
Chromosols	Technically defined as soils with a clear or abrupt textural contrast between the A and B horizon. However, for the purposes of this report, chromosols are defined as the red soils noted across the Project Area.
Construction footprint	The indicative area that would be directly impacted by the Project during construction, subject to changes based on the final construction design. The construction footprint is estimated to be approximately 455 hectares (ha).
Contact	Period immediately after the arrival of non-Indigenous peoples.
CVA	Cultural Values Assessment.
Dolines	A hollow or basin in a karstic region.
GMTOAC	Gunditj Mirring Traditional Owners Aboriginal Corporation.
Heywood Terminal Station	Upgrade works at Heywood Terminal Station are proposed to connect the Project into the existing electricity network. Heywood Terminal Station covers an area of approximately 11 ha.
Karst	A landscape underlain by limestone that has been eroded by dissolution, producing ridges, towers, fissures, sinkholes and other characteristic landforms.
LDAD	Ten or less Aboriginal artefacts in an area of 10 m x 10 m.
Operational footprint	The indicative area needed for the operation of the Project, excluding land that may be used for unscheduled maintenance, subject to changes based on the final construction design. The operational footprint is estimated to be approximately 342 ha.
Project Area	The total area in which the Project would be developed. The project area consists of the wind farm site, the transmission line corridor and Heywood terminal Station. The Project Area covers an area of approximately 8,350 ha. Project Area has the same meaning as activity area as defined within the CHMP.
Quarry	Stone/ochre source: An Aboriginal quarry site occurs where stone or ochre is exposed and has been extracted by Aboriginal people in the past. The rock types most commonly quarried for artefact manufacture in Victoria include silcrete, quartz, quartzite, chert and fine-grained volcanics such as greenstone.
RAP	Registered Aboriginal Party under the *Aboriginal Heritage Act 2006*.

Term	Definition
Registered Cultural Heritage place	An Aboriginal place recorded in the Victorian Aboriginal Heritage Register (VAHR).
Study area	2 km buffer around the proposed area of works for the Kentbruck Green Power Hub project, also referred to as the Project Area. Study area has the same meaning as geographic region as defined within the CHMP.
Traditional Owners (TOs)	Aboriginal people in the Project Area known as the Gunditjmara.
Transmission line corridor	The corridor of land in which the transmission line would be located. The exact location of the transmission line within this corridor will be determined during the detailed design of the Project. The transmission line corridor covers an area of up to 21 ha.
Wind farm site	The parcels of land on which the wind farm would be located. The wind farm site covers an area of approximately 8,318 ha.

1. INTRODUCTION

1.1 Purpose of the report

The purpose of this report is to assess the potential Aboriginal cultural heritage impacts associated with the Kentbruck Green Power Hub (the Project) and recommend mitigation measures to avoid, minimise or manage impacts.

A report was initially prepared by Aurecon Australasia Pty Ltd (Aurecon), on behalf of Neoen Australia Pty Ltd (Neoen), which has been superseded by this report. Andrew Long and Associates Pty Ltd (ALA) has prepared this assessment consistent with the scoping requirements issued by the Minister for Planning.

On 25 August 2019, the Minister for Planning required Neoen to prepare an EES to assess the potential environmental effects of the Project.

This assessment provides a detailed understanding of the Aboriginal cultural heritage impacts of the Project, informing the development of management measures in the form of construction, operational, and decommissioning management plans within a robust Environmental Management Framework.

1.2 Why understanding Aboriginal cultural heritage is important

Aboriginal cultural heritage places are of high value to the community in general and most specifically to the Aboriginal Traditional Owners within whose land these places occur. Aboriginal heritage places provide a connection between generations and help to create a sense of belonging and interconnection between the landscape and past and current Traditional Owners. Aboriginal heritage places can speak to the momentous changes which have occurred since contact as well as to the continuities in cultural values and traditions which persist. Aboriginal cultural heritage consists of tangible elements that includes objects, artefacts, and remains, and intangible elements that includes the traditional knowledge, oral traditions, stories, and rituals.

The construction and use of the Kentbruck Green Power Hub would involve activities that have the potential to impact Aboriginal cultural heritage, both tangible and intangible. Management of such impacts is essential to ensure that only those impacts which are absolutely essential to the project are undertaken. In consultation with the Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC) the preferred outcome for tangible Aboriginal cultural heritage is for there to be no direct impact on heritage during the construction, operation, and decommissioning phases of works. As such, a GMTOAC led iterative predictive model methodology is being tested prior to the proposed works that is largely landform and geology based to identify areas of surface and subsurface Aboriginal cultural heritage sensitivity.

The predictive model will need to be further tested as part of the ongoing Cultural Heritage Management Plan (CHMP) and parameters of the model likely adjusted with the aim to better refine the sensitivity ratings based on the actual correlation between specific features and the presence or absence of artefacts. The GMTOAC led iterative predictive model will help to prevent direct impacts to tangible Aboriginal cultural heritage. A flow chart application of the predictive model has been developed that will be used to infer management condition outcomes for high impact locations in areas of modelled high-moderate cultural heritage sensitivity.

Mitigation measures have been provided to assess management of impacts to tangible Aboriginal cultural heritage that would also allow the collection of further information to inform the GMTOAC predictive model.

2. EES SCOPING REQUIREMENTS

2.1 EES evaluation objectives

The scoping requirements for the Project were issued by the Victorian Minister for Planning in February 2020 (dated January 2020). The scoping requirements set out the specific environmental matters to be investigated and documented in the Project EES. The scoping requirements include a set of evaluation objectives which provide a framework to guide an integrated assessment of environmental effects of the Project in accordance with the Ministerial Guidelines for assessment of environmental effects under the *Environment Effects Act 1978*. The evaluation objective relevant to Aboriginal cultural and historical heritage is:

- *To avoid or minimise adverse effects on Aboriginal and historical cultural heritage and associated values.*

Historic heritage is addressed in a separate study included in the Historical Heritage Assessment technical report (refer to Appendix K).

2.2 EES scoping requirements

The aspects from the scoping requirements relevant to the Aboriginal cultural heritage evaluation objective/s are shown in Table 1, as well as the location where these items have been addressed in this report.

Table 1 Scoping requirements relevant to Aboriginal cultural heritage

Aspect	Scoping requirement	Section addressed
Key issues	Destruction or disturbance of sites or places of Aboriginal or historical cultural heritage significance.	Refer to section 10
Existing environment	Review land use history, previous studies and relevant registers to identify areas with Aboriginal cultural heritage value or potential Aboriginal cultural heritage value.	Refer to section 7
	Identify and characterise Aboriginal cultural heritage sites or areas of sensitivity potentially impacted by the project area.	Refer to section 7.5
	Identify and document any known, and previously unidentified places and sites of historical cultural heritage significance potentially impacted by the project area within the project area, including any areas of significant archaeological interest, in accordance with *Guidelines for Conducting Archaeological Surveys* (Heritage Victoria, 2013.	Refer to section 7.5 Historic heritage is addressed in Historical Heritage Assessment technical report (refer to Appendix K)
Likely effects	Assess potential effects of the project on: • Identified sites or places of Aboriginal cultural heritage significance; and	Refer to section 7.5 Historic heritage is addressed in Historical Heritage

Aspect	Scoping requirement	Section addressed
	• Sites and places of historic cultural heritage significance, having regard to the *Guidelines for Investigating Historical Archaeological Artefacts and Sites*.	Assessment technical report (refer to Appendix K)
Mitigation measures	Describe and evaluate proposed design, management or site protection measures that could avoid or mitigate potential adverse effects on known or potential Aboriginal or historical cultural heritage values.	Refer to section 10 Refer to section 11.1 Historic heritage is addressed in Historical Heritage Assessment technical report (refer to Appendix K)
	Develop management and contingency measures in accordance with the requirements for a Cultural Heritage Management Plan (CHMP) under the *Aboriginal heritage Act 2006*.	CHMP 17822, that corresponds with this EES is currently in preparation
Performance criteria	Outline any proposed commitments to mitigate and manage residual effects on sites and places of Aboriginal cultural heritage significance (within the framework of a draft CHMP as appropriate).	Contingency plans for the identification and management of Aboriginal cultural heritage found during the proposed works is addressed within CHMP 17822
	Outline any proposed commitments to mitigate and manage residual effects on sites and places of historical heritage significance, including site investigation and recording procedures.	Historic heritage is addressed in Historical Heritage Assessment technical report (refer to Appendix K)

3. THE PROJECT

3.1 Site description

3.1.1 Region

The Project Area is located wholly within the municipal boundary of the Glenelg Shire Council, which was amalgamated from Portland City, Glenelg Shire and Heywood Shire in 1994 (Glenelg Shire Council, n.d.). The Glenelg Local Government Area (LGA) is located approximately 360 km west of the Melbourne city centre and consists of many towns including Portland, Casterton, Heywood, Dartmoor, Nelson and Cape Bridgewater. The Glenelg LGA, along with the municipalities of Corangamite, Moyne, Southern Grampians and Warrnambool, are within the Great South Coast Region of the Barwon South West Region, which is known for its agriculture, tourism and energy production industries (Great South Coast Group, 2021). Glenelg Shire is home to a range of natural landscapes and Indigenous heritage sites including the Budj Bim Cultural Landscape, Cape Bridgewater and the Discovery Coast, and numerous National, State and coastal parks.

3.1.2 Project Area

The Project would extend along the southern coast of the Glenelg LGA, between the city of Portland and the township of Nelson. The wind farm site is predominantly (86%) located within an area used for commercial radiata pine forestry operations which has been heavily modified. Approximately 14% of land in the wind farm site is freehold land that is primarily used for grazing. Less than 0.1% of the wind farm site is public land. A total of 66% of the transmission line length is proposed to be located beneath the existing road in Cobboboonee National Park and Cobboboonee Forest Park, with the remaining length (34%) of the transmission line located in freehold agricultural land.

The Project Area covers an area of up to 8,350 ha. There is an existing network of public roads both surrounding and internal to the Project Area, as well as several private access roads within the plantation in the wind farm site. Public roads in the plantation are used by plantation vehicles and by members of the public accessing destinations south of the plantation along the coast.

Once operational, the total amount of land occupied by the Project would be approximately 342 ha (4% of the total Project Area). Land not needed for wind farm infrastructure would continue to be used for forestry and grazing.

Figure 1 and Figure 2 shows the various project components located within the Project Area.

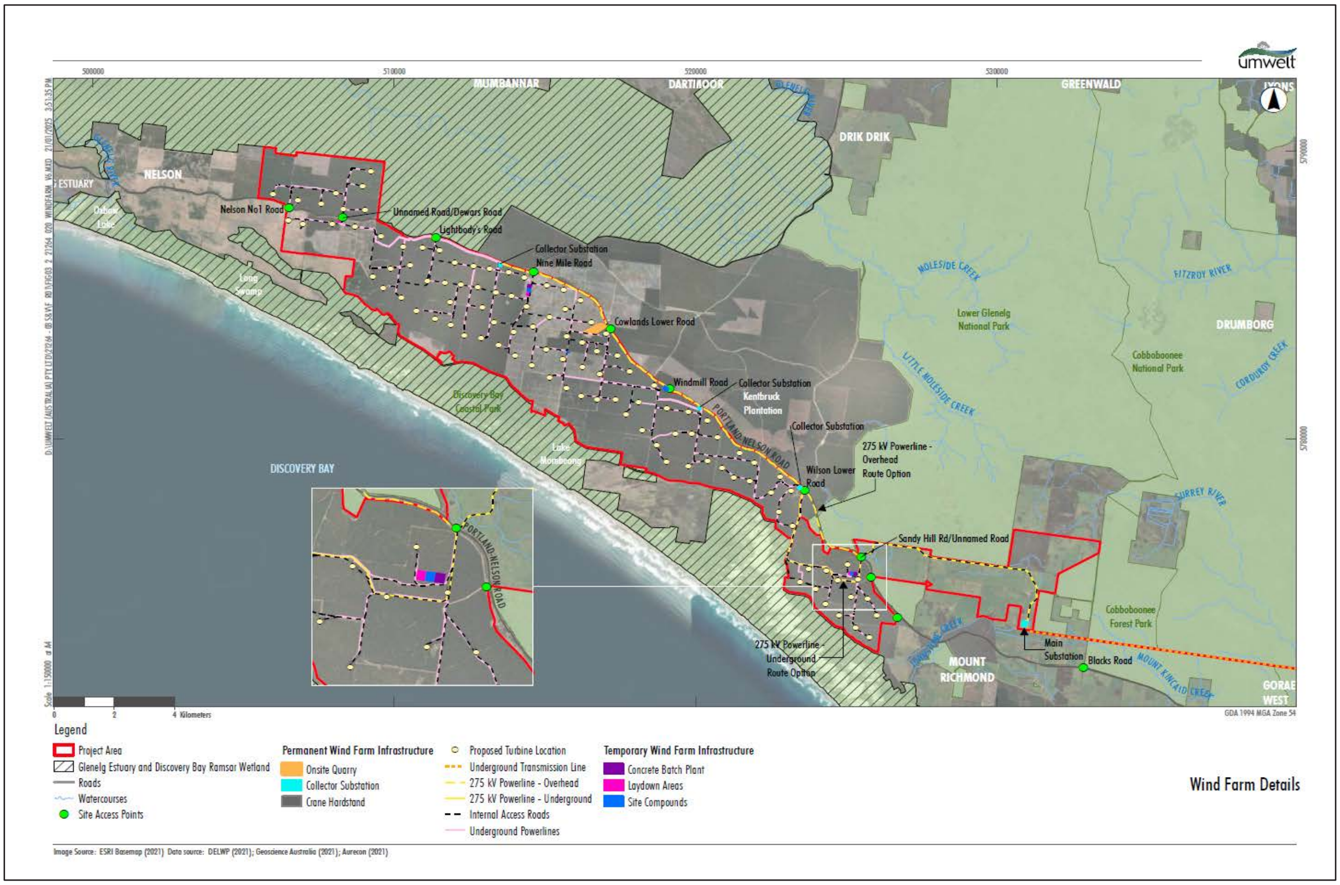


Figure 1 Kentbruck Green Power Hub Project Area

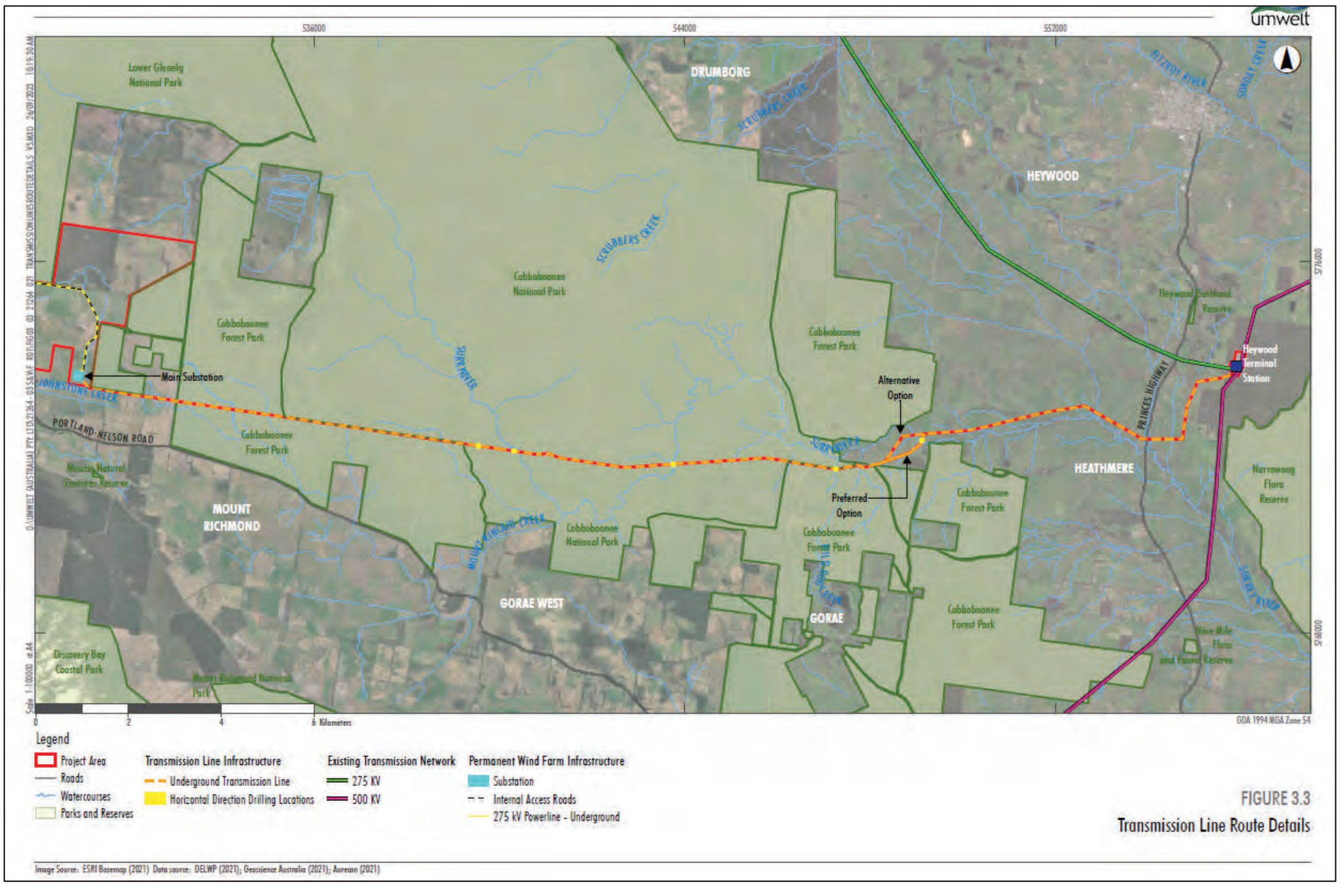


Figure 2 Transmission line options for the Project Area

3.2 Project Components and layout

The Project will involve the following key components and permanent infrastructure:

- Up to 105 wind turbines
- Permanent hardstand areas and foundations at each turbine location
- Up to three collector substations
- Underground and overhead powerlines connecting the wind turbines to the collector substations
- A main wind farm substation to which all the collector substations would be connected
- A high voltage powerline connecting the collector substations to the main substation, which would be a combination of overhead and underground cabling
- Transition stations at which the high voltage powerline would transition from overhead to underground or vice-versa (if needed)
- A 275 kV underground transmission line connecting the main substation into the electricity network
- Access roads including:
  - Site access points: existing site access routes into the commercial forestry operation would be utilised to minimise the need for new site entrances
  - Internal access roads: existing access tracks within the commercial forestry operation and on land currently used for agricultural purposes would be used where possible
- An onsite quarry
- Up to eight meteorological monitoring masts within the wind farm site
- Up to two permanent site compounds, including 30 carparking spaces at each location

Temporary infrastructure associated with the construction of the wind farm would include:

- Up to three concrete batching plants
- Laydown areas within a footprint of approximately 0.6 hectares (ha) located at each turbine
- Up to six construction compounds, each containing a site office, carparking, storage, amenities, and a workshop

The Project would also require offsite works to facilitate the Project, including intersection upgrades along the proposed delivery route of Project components.

3.2.1 Wind turbines

The Project would include up to 105 wind turbines, each made up of three blades to harness the wind and turn a rotor. The rotor is connected to a shaft with the nacelle which sits on top of the turbine tower. The nacelle houses a generator that converts mechanical energy into electricity and the wind turbine control systems. Each turbine would produce between 4 and 8 MW of peak power output, with a total wind farm capacity of approximately 600 MW and annual production of approximately 2,000 GWh.

Each wind turbine would have an approximate hub height of 174 m and maximum rotor diameter of 190 m, with a blade tip height extending from 60 m above ground level to up to 270 m above ground level.

3.2.1.1 Hardstand areas and foundation

Hardstand areas would be required at the base of each wind turbine to provide a stable platform for construction of each turbine's tower, nacelle, and rotor components. Each hardstand will also allow for maintenance activities during the Project's operation. The hardstand areas proposed as part of the Project would have a footprint of approximately 0.4 ha, subject to the final wind turbine model selected and its dimensions. The turbine hardstand areas would be retained during operation of the Project.

Each wind turbine would also have a concrete slab (gravity) or rock anchor foundation, which will be subject to detailed geotechnical assessment. Foundations would have a circular or polygonal footprint with a nominal diameter of 25 m and depth of approximately 4 m.

Additional construction laydown areas would be required within the wind farm site for delivery and temporary storage of Project equipment during construction.

3.2.2 Electrical reticulation

The Project would require new electrical reticulation that involves the construction of underground and overhead cabling throughout the wind farm site and electrical substations. Electrical reticulation transfers the electricity produced by each wind turbine to the Project's collector substations and main substation. A new transmission line to connect the Project from the main substation to the existing electricity network is also proposed.

3.2.2.1 Main substation

A main electrical substation would be constructed in the wind farm site to facilitate connection of the Project to the existing electricity network. This substation would be located near the eastern boundary of the wind farm site to minimise the distance between the substation and the connection point to the transmission network (at the Heywood Terminal Station) (see Figure 1).

The main substation would have a footprint of up to 3.3 ha with a maximum height of approximately 40 m. It would contain protection equipment and a control room with communications equipment, with tanks for storing water and oil for maintenance of the collector and main substation equipment. The substation would be constructed on a hardstand, with appropriate contamination/stormwater controls used around the oil tanks such as bunding and concrete slabs. The substation would be fully enclosed in security fencing with sufficient space for a fire break and screening around the perimeter.

3.2.2.2 Collector substations

Up to three collector substations would be constructed within the wind farm site to facilitate collection and distribution of electricity generated from the wind turbines into the main substation, and ultimately the existing electricity network. Indicative locations of the collector substations are shown on Figure 1.

The collector substations would have a footprint of approximately 1 ha with a maximum height of approximately 35 m. Each substation would contain a range of electrical equipment including step-up transformers, protection equipment (including lightning protection), and a high voltage bus bar connecting to the high voltage overhead powerline. The collector substations would be constructed on hardstands, with the transformers mounted on concrete slabs. The collector substations would be fully enclosed in security fencing.

3.2.3 Onsite wind farm powerlines

The Project would involve the installation of up to 190 km of underground powerlines (33 kV or 66 kV) connecting the wind turbines to the collector substations, and up to 27.8 km of high voltage powerline (likely 275 kV, subject to detailed design) connecting the collector substations to the main wind farm substation.

The high voltage powerline would run overhead along Portland-Nelson Road from the western collector substation to the eastern collector substation. From there two options are being considered:

- The powerline would continue overhead along Portland-Nelson Road to a transition station at the Portland-Nelson Road / Sandy Hill Road intersection.
- The powerline would transition to underground at the collector substation and run beneath existing roads in the GTFP pine plantation to the Portland-Nelson Road / Sandy Hill Road intersection.

From the Portland-Nelson Road / Sandy Hill Road intersection it would pass beneath Portland-Nelson Road then continue underground to the main wind farm substation.

The proposed alignment of the powerline, including the options described above, is shown in Figure 1.

The underground route through the GTFP plantation is the preferred option for a range of reasons. Part of the underground route is located within land previously zoned Public Park and Recreation Zone (PPRZ), which recognises areas for public recreation and open space and provides for appropriate commercial uses. Glenelg Shire Council considered this PPRZ area to be an anomaly in the Glenelg Planning Scheme (the Planning Scheme), and it has since been rezoned Farming Zone (FZ) through the gazettal of Amendment C96gelg occurred on 15 June 2023.

3.2.4 Transition stations

The Project may require a transition station to facilitate transition of the high voltage powerline from overhead to underground. The transition station would be located near the south-eastern corner of the wind farm site at the Portland-Nelson Road/Sandy Hill Road intersection. Section 3.2.5 contains a description of the 275 kV powerline route options (one of the options would involve transitioning the powerline from overhead to underground at the collector substation, where a standalone transition station would not be required).

The transition station would have a footprint of approximately 1 ha and would contain terminal poles, cable termination structures, switchgear and protection equipment, enclosed with a security fence. If required, a small building (*15 m x 4 m) would be located adjacent to each transition station to house spare equipment.

3.2.5 Transmission line

The Project will require a new 275 kV transmission line to connect the Project to the existing transmission network. The proposed transmission line route measures approximately 26.6 km in length and would extend underground from the main wind farm substation near the eastern boundary of the wind farm site to the existing Heywood Terminal Station (see Figure 1 and Figure 2). The transmission line would bisect Cobboboonee National Park and Cobboboonee Forest Park for approximately 17.6 km, where it would be buried beneath an existing road (Boiler Swamp Road).

After exiting Cobboboonee Forest Park the underground line would continue for 1.2 km through freehold agricultural land. As shown on Figure 2, two options have been identified for this section of the transmission line. The slightly shorter southern route is the preferred option, but due to its proximity to a swampy area adjacent to the Surrey River it may not be feasible for underground construction. The viability of this option will be determined in response to geotechnical investigations undertaken during detailed design and only one option would ultimately be constructed. After crossing the Surrey River, the transmission line would continue underground for 7.8 km until its connection point into the Heywood Terminal Station.

The underground route through Cobboboonee National Park / Forest Park is well understood and has been delineated into a 6.5 m-wide construction footprint. The cabling would be buried using a specialised machine that excavates, lays the cable and backfills the trench in a single pass, minimising the associated construction footprint through small trench widths and minimal spoil generation. Once the transmission line exits Cobboboonee Forest Park, the construction footprint would be approximately 9 m wide as it continues through freehold land until it reaches Heywood Terminal Station. Traditional open-cut trenching methods would be used for this section of the underground transmission line.

All transmission line options that have been considered for the Project, including those which are no longer being pursued by Neoen, are discussed in Chapter 4 of the EES and detailed in the options assessment report prepared by Umwelt (2023).Appendix 5 of this report provides a summary of the impacts associated with three alternative transmission line options considered by Neoen to date, including a combined overhead-underground option to the Heywood Terminal Station, and overhead and underground options through freehold land southeast of the wind farm site. These options are referred to as Options 1A, 2A and 2B, respectively.

3.2.5.1 Boiler Swamp Road

Boiler Swamp Road is an unsealed public road that extends from Blacks Road at Mount Richmond in the west to the intersection within Cut Out Dam Road at Gorae in the east, through the Cobboboonee National Park and Forest Park. The transmission line connecting the wind farm to the existing electricity network is proposed to be constructed beneath Boiler Swamp Road.

Boiler Swamp Road is recorded on the Department of Energy, Environment and Climate Action (DEECA) Register of Public Roads. Any road recorded on a Register of Public Roads is a 'public road' for the purposes of the *Victorian Road Management Act 2004*. Boiler Swamp Road is a Rural Class 5 road as defined by Austroads, and has a sub-class of 5C Class Type 'Minor'. It is managed by DEECA as described in the *Road Management Plan October 2019* (DELWP and Parks Victoria, 2019). The roadway (i.e. the trafficable section) is generally between 5 and 6 m wide. Managed shoulders on each side of the road are between 1 and 1.5 m wide.

3.2.6 Connection at Heywood Terminal Station

The Project would connect at Heywood Terminal Station into an existing 275 kV connection point.

3.2.7 Site access

The Project Area is bound by and encompasses a combination of roads managed by the Head of Transport for Victoria, Glenelg Shire Council and Department of Transport and Planning (DTP) and other public road assets. Access to the wind farm site for construction and operational traffic would be via Portland-Nelson Road. Then site entrances to the wind farm are proposed for Portland-Nelson Road at the road intersections outlined in Table 2. These site entrances provide access to an existing network of internal access roads in the commercial forestry site and adjoining farmland.

Nine of the ten access points are currently used for commercial forestry operations, and would be used for delivering wind turbines and other Project components and materials to the wind farm site. The additional access point would be used for accessing farmland.

The nine access points proposed to be used for the delivery of Project components would be used for oversize and overmass (OSOM) delivery vehicles and would need to be widened (e.g. with laying of temporary pavement and temporary removal of fences and other infrastructure at some locations).

Upgrade requirements for each access points are outlined in Table 2. All site entrances, except for Cowlands Lower Road, would facilitate delivery of wind turbine components. Cowlands Lower Road would be used for accessing the main construction compound and onsite quarry.

Blacks Road would be used by light vehicles during the brolga breeding season, creating an alternative access point to the wind farm site east of Portland-Nelson Road. Blacks Road would also be the main construction access point for the transmission line and main substation.

The existing plantation roads are 5-10 m wide and are all unsealed. Some internal access roads and intersections would need to be upgraded to facilitate delivery of the wind turbines and other large Project components (e.g. using temporary pavement). The need for these upgrades will be confirmed once the turbine model has been selected and dimensions are known.

Table 2 Proposed site access points and upgrade requirements

Site Access ID	Intersection	Upgrade requirements
SE1	Portland-Nelson Road – Sandy Hill Road	• Temporary pavement to be constructed along OSOM wheel-path
SE2	Portland-Nelson Road – New site entrance (opposite Sandy Hill Road)	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Remove and reinstate property boundary fence and gate (if required)
SE3	Portland-Nelson Road – Wilson Lower Road	• Temporary pavement to be constructed along OSOM wheel-path
SE4	Portland-Nelson Road – Windmill Road	• Temporary pavement to be constructed along OSOM wheel-path
SE5	Portland-Nelson Road – Cowlands Lower Road	• N/A – not used for OSOM access
SE6	Portland-Nelson Road – Nine Mile Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path
SE7	Portland-Nelson Road – Lightbody Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Extend pipe culvert to suit new intersection (remove and replace if necessary)
SE8	Portland-Nelson Road – New site entrance (adjoining Dewars Road)	• Temporary pavement to be constructed along OSOM wheel-path • Remove and reinstate wooden street marker post
SE9	Portland-Nelson Road – Unnamed Road	• Temporary pavement to be constructed along OSOM wheel-path

Site Access ID	Intersection	Upgrade requirements
SE10	Portland-Nelson Road – new site entrance (adjoining Nelson No. 1 Road)	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path

3.2.8 Onsite quarry

A new limestone quarry is proposed to be established in the wind farm site adjacent to the existing quarry operated by Green Triangle Forest Products (GTFP), on North Livingstone Road (refer to Figure 1). The cemented "cap rock" quarry would operate during both construction and operation, with the extracted material to be used for hardstands and for upgrades to existing access roads or construction of new access roads. The quarry would have a life in order of 27-32 years (wind farm operation 25-30 years plus the 2 to 2.5 year Project construction period).

The total extracted volume is estimated to be 300,000 cubic metres (m^3), with material to be extracted progressively during construction. It is anticipated that the Project would require approximately 230,000 m^3 of material for road sub-base (< 100 mm) and 70,000 m^3 of material for road base/pavement (<30 mm) during the construction phase. The proposed quarry would not be producing aggregates for use in concrete.

The proposed extraction area contains a viable resource of up to 450,000 m^3 (which is approximately 150% of the Project's construction material requirements). This will allow for contingencies in resource viability, additional incidental works, as well for any road maintenance works required during the Project's lifetime.

The quarry would require a Work Authority of approximately 18 ha, comprising approximately 9 ha of extraction area, 3.5 ha of overburden and product stockpiles and 1 ha of quarry office/parking infrastructure, with the remainder of the Work Authority being buffers (refer to Figure 3). The quarry would be a traditional soft rock extraction operation and would not involve any drilling or blasting. The maximum depth of extraction, including overburden, would be approximately 14 m.

In addition to the extraction area, associated infrastructure would also be established including a processing area, stockpiling areas, water storage tanks, office and amenity facilities, and car parking.

The quarry would be a new Work Authority and would only be available to supply material for the life of the Project. The Work Authority would be surrendered at the decommissioning of the Project, and the quarry will be rehabilitated to a landform that will be suitable to continue use as a source of plantation timber. The Work Authority for the proposed quarry would not be an extension of the adjacent existing quarry Work Authority (WA748) owned by GTFP.

Figure 3 Proposed onsite quarry

3.2.9 Meteorological monitoring masts

The Project would involve installation of up to eight meteorological monitoring masts. Each mast would measure wind speed, wind direction and other meteorological conditions to be used by the wind farm operator to evaluate the performance of the wind farm. All masts would be permanent structures supported by small concrete foundation and guy wires. Masts would house equipment such as anemometers (wind speed sensors) and pyranometers (solar irradiation sensors).

The height of each mast would be approximately three-quarters (75%) of the hub heigh of the installed wind turbines. This is expected to be no higher than 160 m above ground level. The locations of the masts are not currently known and would be determined during detailed design.

3.2.10 Permanent site compound

The Project would involve construction of one or two permanent site compounds for operation and maintenance of the Project. Each compound would include offices, sheds, carparking, and laydown areas, and would be established at a construction compound location within the wind farm site (refer to Figure 1). Each compound would have a footprint of approximately 0.35 ha (50 m x 70 m).

3.2.11 Temporary ancillary infrastructure

Ancillary infrastructure required for construction of the Project would include:

- Up to three concrete batching plants located in the wind farm site. Onsite concrete batching reduces the number of vehicle movements on public roads. The concrete batching plants may be mobile to allow concrete batching to occur close to wind turbine foundations. Each plant would have a footprint of approximately 1 ha and be access by internal access roads.
- Construction laydown areas located in the wind farm site. These laydown areas would be used for temporary storage of wind farm and transmission line equipment and materials and would be rehabilitated following completion of construction. Each laydown area would have a footprint of approximately 1 ha and be accessed by internal access roads.
- Up to six ancillary construction compounds which would house temporary site offices, carparking, storage, amenities, and a workshop, with a footprint of up to 2 ha each.

The indicative locations of this ancillary infrastructure are shown in Figure 1, but are subject to change during detailed design of the Project.

3.2.12 Offsite works

Delivery of Project components from overseas is expected to be via the Port of Portland, given its proximity to the Project Area and deep harbour which allows it to receive wind turbine components. Other options include the Port of Geelong and Port of Melbourne, which are both located further from the Project Area. From the Port of Portland, Project components more than 4.4 m in length (e.g. wind turbine blades and tower sections) would be transported from the Port of Portland to the Project Area via the following public roads: Madeira Packet Road, Cape Nelson Road, Malings Road, Bridgewater Road, Henty Highway, and Portland-Nelson Road (refer to Figure 4). All other components would be transported directly to Portland-Nelson Road via Madeira Packet Road and Henty Highway.

The transmission line route would be accessed using the network of existing roads that intersect with Portland-Nelson Road, including Boiler Swamp Road, Mt Kincaid Road, Jennings Road, Jarretts Road, Meaghers Road and Rifle Range Road (see Figure 2). The existing Heywood Terminal Station would be accessed via the Henty/Princes Highway, Meaghers Road and Rifle Range Road. The Portland-Nelson Road and Blacks Road intersection would be used for construction access to the main substation and commencement of the underground transmission line construction.

In addition to the upgrades needed to the site access points in Table 3, three narrow points along the OSOM route have been identified which would need to be widened to allow for transport of wind turbine blades (see Table 3 and Figure 4). These pinch points would require vegetation/infrastructure removal from within the blade swept path and/or temporary road pavement. Sections of road, including within the wind farm site, may also need to be upgraded (e.g. widened or improved road pavements). The need for these upgrades would be determined as the detailed design of the Project progresses and as part of the Traffic Management Plan. Potential traffic and transport impacts of the Project on these roads and the broader public road network are assessed in Chapter 15 (Volume 3).

Table 3 Intersection upgrade requirements along OSOM route

Site Access ID	Intersection	Upgrade requirements
PP1	Portland-Nelson Road – Henty Highway - Portland-Nelson Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Road signs to be made removable • Remove and reinstate property boundary fence (if required)
PP2	Portland-Nelson Road and Cashmore Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Power poles to be protected • Street light poles to be protected (or removed if required) • Traffic islands to be made driveable • Road signs to be made removable
PP3	211 Portland-Nelson Road	• Remove vegetation within blade swept path • Remove and reinstate property boundary fence (if required) • Temporary pavement to be constructed along OSOM wheel-path

Figure 4 Proposed transport routes from the Port of Portland to the wind farm site

3.3 Pre-construction details

Before Project construction can commence, a range of pre-construction activities would be undertaken including geotechnical investigations and preparation of environmental management plans in accordance with the Project's Incorporated Document.

3.4 Construction

The Project would be constructed in either a single stage or over two stages. A single stage of construction would involve up to 350 workers, with construction occurring over a two year period. If constructed over two stages, the construction period would be extended to 2.5 years and have a smaller peak workforce. The average workforce would be 250 workers for a single stage construction and 190 workers for two stage construction. Construction would be restricted to a 12-hour window on Monday-Saturday, where possible.

Construction of the Project would involve two main components: the wind farm and the transmission line. The following key construction activities would be undertaken:

- Preliminary works including clearing of pine trees within the plantation, removal of vegetation from agricultural land, and removal and storage of topsoil for future use
- Internal access road and public intersection upgrades
- Construction of internal access tracks (where needed)
- Establishment of concrete batching plants and construction of site buildings and construction compounds
- Establishment of new onsite quarry to provide road-base material. Material would be extracted progressively throughout the Project construction period
- Construction of hardstand and laydown areas
- Excavation of turbine foundations and form work
- Construction of cable trenches and power pole foundations; laying of bedding materials, cables and backfill; and replacement of topsoil
- Construction of the main wind farm substation, collector substations and operation and maintenance building, involving excavation and pouring of building foundations and concrete pads at switchyard and transformer locations
- Installation of wind turbines, collector substations, main wind farm substation, cabling and powerlines and other ancillary electricity infrastructure
- Progressive rehabilitation of the site and landscaping.

3.4.1 Wind farm

Construction of the wind farm is expected to take between two and 2.5 years (depending on whether a single or two staged approach is adopted), followed by electrical testing prior to wind farm energisation and operation. Pre-construction works would include:

- Site investigations and testing
- Vegetation clearing
- Establishment of construction compound areas
- Upgrades and/or construction of public and internal access roads.

Subsequent construction works for the wind farm would be associated with the establishment of hardstand areas, construction of foundations, wind turbine erection, electrical reticulation, and substation installation and commissioning.

The wind turbine foundations would have a circular or polygonal footprint with a nominal diameter of 25 m and depth of approximately 4 m. Subject to detailed geotechnical assessments, the turbine foundations would consist of concrete slab (gravity) or rock anchor foundations. Gravity foundations would involve the excavation of approximately 1,600 m^3 of ground material and installation of shuttering and steel reinforcement, followed by the pouring of concrete.

Much of the excavated material would, if suitable, be used as backfill around the turbine base. The remaining excavation material would be used for onsite road infrastructure where needed, or disposed of in accordance with relevant legislation and regulations. The number of foundations being constructed concurrently would be dependent on the final Project schedule, but is anticipated to be up to 15 at any one time.

Underground powerline construction in the wind farm site would involve the excavation of trenches to a depth of 0.8 to 1.2 m, unless other construction methods such as horizontal directional drilling (under boring) are required. The general procedure for the laying of underground cables via trenching would be as follows:

- Pre-construction work, involving clearance of vegetation within the powerline route and stripping of topsoil. Topsoil would be stored adjacent to the trench to be used for rehabilitation of the trenches.
- Trench excavation in 50-100 m sections. Excavated material would be stored adjacent to the trench for subsequent backfilling, in separate piles to the topsoil.
- Trench dewatering if groundwater is intersected, followed by laying the cables within a bed of protective sand or thermally stable backfill if required.
- Backfilling and compaction of previously excavated material if suitable.
- Placement of tape warning of the presence of electrical cables followed by reinstatement of topsoil.
- On completion, the powerline route may be marked with small marker posts. The surrounding vegetation would be allowed to regrow.

Approximately 210,000 m^3 of concrete would be required for construction of the Project. Concrete would be batched onsite and be used primarily for the construction of turbine foundations and ancillary infrastructure. Material for concrete batching would come from offsite quarries as the material available on site is not suitable for use in concrete.

A source of water would be required during Project construction for dust suppression, road-base construction, and to make concrete for turbine foundations and concrete slabs (e.g. at substations). Water supply requirements are estimated to be up to 250 megalitres (ML) over the Project's 24-month construction period, and would be met through the extraction of groundwater from several production wells across the plantation sub-area.

3.4.2 Quarry

Approximately 300,000 m^3 of crushed rock would be required during construction of the Project and is proposed to be sourced from the onsite quarry, noting that not all of the construction material will be derived from the onsite quarry. Crushed rock would primarily be used for upgrading and constructing internal access tracks and establishing hardstand areas.

The quarry would be a traditional soft rock extraction operation and would not involve any drilling or blasting. Extraction would be with dozers or excavators ripping and pushing the material into stockpiles. The stockpiles would then be either loaded directly into trucks for despatch or delivered to the quarry stockpiles for storage or further processing / sizing. Mobile equipment typically used on site would consist of:

- a dozer for ripping and pushing.

- a mobile sizing / processing plant.
- multiple excavators for ripping, feeding the processing plant, stockpiling, loading.
- a wheel loader for stockpiling, feeding the processing plant and loading trucks.
- road trucks for transporting the material from the extraction area to the stockpile area.

3.4.2.1 Extraction

The maximum depth of extraction, including overburden, would be approximately 14 m and the quarry would operate with either a series of benches or a continuous batter slope, depending on rock quality and specific product requirements. Regardless of the working face profile (either benches or a continuous slope) the profile would not be steeper than 1V:3H (1 vertical:3 horizontal), from the extraction crest to the quarry floor.

Development of the quarry and the proposed extraction process would consist of the following steps:

- Approximately 18,000 m^3 of soil removed and stored in mounds along the edge of the disturbance area prior to use in progressive rehabilitation or stored in temporary stockpiles at the edge of the disturbance area. Soil stockpiles would be limited to a maximum height of 2 m.
- Approximately 120,000 m^3 of overburden removed and used to create the initial hardstand, plant, and stockpile areas, then placed in storage mounds within the disturbance area, or later on used directly in progressive rehabilitation or backfilling/reprofiling. Overburden stockpiles would be limited to a maximum height of 12 m.
- Resource extracted and either loaded directly for despatch or hauled to the mobile processing plant or stockpile area. Resource stockpiles would be limited to a maximum height of 10 m.
- Cut off drains, soil mounds and other surface water management control features would be continually updated and modified to ensure dirty water is directed to the quarry sumps in the excavation and clean water is directed away from the disturbance area.

The staging methodology would be to start the quarry at the south west end of the extraction area, close to North Livingston Road and opposite the existing quarry used by GTFP. The overburden from this initial area would be used to create the hardstand and stockpile areas. After removal of sufficient overburden extraction of the resource would commence, with the majority of the material being placed into stockpiles to allow for quick dispatch when required. Material may be loaded directly from the working face as well as from the product stockpiles if product demand requires this.

The initial excavation would expand to the full width of the extraction area, then progressively develop north-east, cutting terminal faces to a batter not steeper than 1V:3H. It must be noted that extraction is a fluid process and that the staging lines as presented on Figure 3 is indicative only to demonstrate the sequence of working.

The Quarry Work Plan Requirements Report (Appendix W) contains further details on the proposed quarry.

3.4.3 Transmission line

The proposed underground transmission line route is approximately 26.6 km in length. Of this, 18.8 km would be beneath Boiler Swamp Road, which bisects the Parks in an east-west direction. The remaining 9 km would continue underground through freehold land to the point of connection at the Heywood Terminal Station.

The transmission line would primarily be constructed using trenching. Within the Parks, the cabling would be buried at a depth of approximately 1.25 m beneath an existing road (Boiler Swamp Road) using a specialised machine that uses integrated excavation, cable laying and backfilling equipment. This method excavates, lays the cable and backfills the trench in a single pass, minimising the associated construction footprint through small trench widths and minimal spoil generation. The transmission line requires three underground cables that need to be separated for thermal efficiency reasons, which means that three separate trenches would be needed beneath Boiler Swamp Road. Indicative trench dimensions are shown in Plate 1 and overlaid on a photo of Boiler Swamp Road at Plate 2.

Horizontal direction drilling (HDD) is proposed to be used at several locations along the transmission line route. HDD involves drilling a hole through the ground through which the cables are pulled, avoiding the need for open trenching. It is useful for burying cables underneath surface waterbodies which would require dewatering if trenching was to be used, and for avoiding services that cannot be removed or reinstated.

HDD would be used at several crossings of the Surrey River to avoid interaction with the waterway and riparian zone, thereby reducing the risk of transporting sediment into nearby waterways. The proposed locations of HDD are shown in Figure 1.

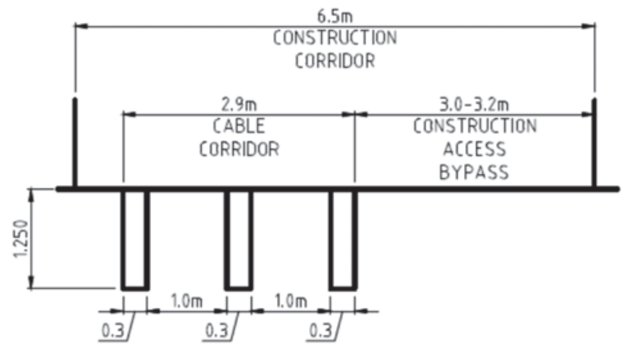


Plate 1 Indicative design of the underground section of the transmission line, comprising three trenches underneath an existing road with space for construction and emergency vehicles to pass alongside the trenches

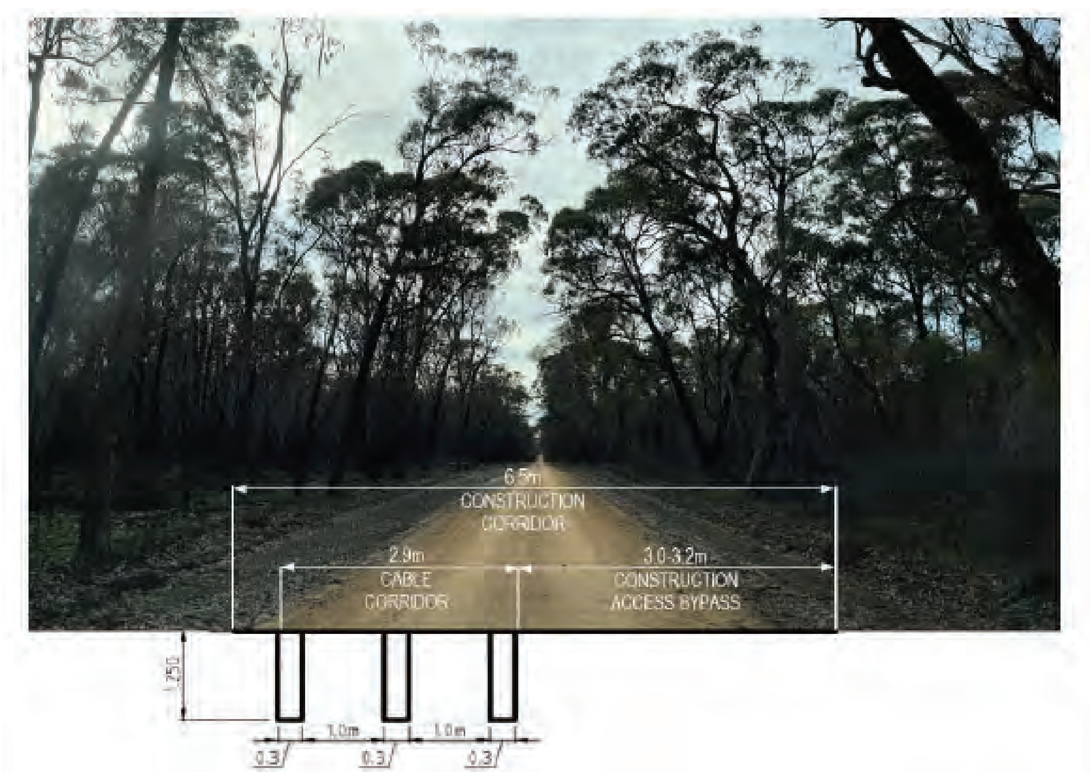


Plate 2 Indicative design of the transmission line along Boiler Swamp Road

To the east of Cobboboonee Forest Park, the transmission line would be constructed using traditional open-cut trenching methods involving an excavator bucket. This section of transmission line would have a maximum construction footprint width of 9 m. Joint bays will be required approximately every 750 m or less along the transmission line to connect consecutive lengths of cabling. The cables would be laid inside the joint bays then capped and coiled, and left in place until the adjoining section of cable has been installed and is ready to be joined. The joint bays would therefore be installed at roughly the same time as the adjoining cabling. Link boxes may be required adjacent to each joint bay to provide a weather proof environment for connecting links used for earthing or cross-bonding of the metallic sheaths of high voltage cables.

3.5 Operation

Before operation commences, detailed management plans would be prepared in consultation with the Responsible Authority and relevant environmental regulators. The overarching management document for the operational phase of the Project will be the Operations Environmental Management Plan (OEMP), as required by the Project's Incorporated Document. The OEMP will be developed in accordance with the requirements of the Environmental Management Framework and mitigation measures and address potential environmental impacts of operation and maintenance activities associated with the Project.

The operational life of the wind farm is expected to be between 25 and 30 years. During this period, operation, maintenance, and monitoring of the wind farm would include the following activities:

- Service of the wind turbines and associated infrastructure.
- Maintenance of internal access tracks and electrical infrastructure.
- Use and maintenance of buildings and plant, including the operations and maintenance building.
- Ongoing environmental monitoring in accordance with operational requirements and relevant approval conditions.
- A Supervisory Control and Data Acquisition System (SCADA) and other site equipment including meteorological monitoring masts) would enable remote monitoring and control of the Project's electricity generation.

In general, maintenance of the transmission line would be minimal. Underground assets including cables and joints are expected to be maintenance free throughout their respective design lives. Regardless, regular monitoring would be undertaken by Neoen remotely. If a fault is detected, the joint bays or link boxes would be accessed for repair or further testing. These inspections would involve removal of the joint bay / link box lids and visual inspections of the pits.

The proposed operation and maintenance activities would not require further ground disturbing works.

3.6 Decommissioning

At the end of the operational life of the Project, the wind farm would either be decommissioned or upgraded with new turbines and ancillary infrastructure. Upgrading (repowering) the Project would extend the operational period of the Project and be subject to varied or additional approvals and permits.

Key decommissioning activities would include:

- Removal of all above-ground non-operational equipment
- Removal and clean-up of any residual contamination
- Rehabilitation of all storage areas, construction areas, access tracks and other areas affected by the Project, if those areas are not otherwise useful to the ongoing use or decommissioning of the wind farm and pine plantation. The site would be rehabilitated in consultation with the relevant stakeholders.

The Project would comply with any relevant requirements for decommissioning as prescribed under any planning approval or subsequent permit or licence. A Decommissioning Environmental Management Plan (DEMP) would be prepared to manage the potential environmental impacts associated with decommissioning activities. The DEMP would specify controls for management of waste at the end of the project's life, including the removal/replacement of turbines.

4. LEGISLATIVE AND POLICY CONTEXT

The key legislation, regulations, and guidelines that apply to the Aboriginal cultural heritage impact assessment for the Project are summarised in Table 3.

Table 4 Key legislation and policy

Legislation policy	Relevance to technical discipline
Commonwealth	
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)	Requires that approval be obtained before any action takes place that could have a significant impact on: • National heritage values of a National heritage place inscribed on the NHL • the world heritage values of a declared world heritage property, being properties inscribed on the WHL • the Commonwealth Heritage values of a Commonwealth Heritage place on Commonwealth land, as inscribed on the CHL There are no Aboriginal places on the WHL, NHL, or CHL within the study area. Further, the Study Area is not located within Commonwealth land.
Native Title Act 1993 (Cth)	Provides a process for Aboriginal people to seek a native title determination from the Federal Court, validates historic acts of the Commonwealth government, and sets out the circumstances in which government decisions or other acts that affect native title can be lawfully undertaken. Approximately 1,219 ha (15%) of land within the Project Area is subject to native Title determination with the Gunditjmara and is held by the GMTOAC. Neoen is sponsoring the GMTOAC to prepare a Cultural values Assessment to inform preparation of an Indigenous Land Use Agreement (ILUA) as well as the related CHMP. Relevant lease and license arrangements for elements of the Project on Crown land would be finalised with DTP following planning approvals being obtained.
Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)	This Act empowers the Commonwealth Minister for Environment to make emergency and permanent declarations to protect significant Aboriginal areas that are under threat of injury or desecration.
Victorian State	
Aboriginal Heritage Act 2006 and *Aboriginal Heritage Regulations 2018 (Vic)*	Protects Aboriginal cultural heritage in Victoria, and requires the preparation and approval of a CHMP for any works that are subject to an EES. CHMPs are approved by the relevant RAP or, if there is no RAP, First Peoples – State Relations. At the time of writing, there is one Registered Aboriginal Party (RAP) – GMTOAC– responsible for the lands within the Project locations. CHMP 17822 is currently being prepared for the Project in accordance with the *Aboriginal Heritage Act 2006* and Aboriginal Heritage Regulations 2018 (Vic).
Traditional Owner and Settlement Agreement Act 2010 (Vic)	Empowers the State to enter into Recognition and Settlement Agreements and Land Use Activity Agreements with traditional owner groups. GMTOAC is yet to negotiate a TOSA agreement.

4.1 Legislation

4.1.1 Commonwealth legislation

4.1.1.1 Environment Protection and Biodiversity Conservation Act 1999 (Cth)

The EPBC Act provides a legal framework for the protection and management of Matters of National Environmental Significance (MNES). The EPBC Act provides for the protection of cultural heritage places that have been included on the World Heritage List (WHL), National Heritage List (NHL), or the Commonwealth Heritage List (CHL) and sets out requirements for the management of heritage places on these lists. One of these requirements is an obligation for a project proponent to refer the project to the Commonwealth under the EPBC Act for a determination of whether the project's potential impacts on the heritage values of a place on the WHL, NHL, and CHL should be assessed and approved.

Places can only be included on the CHL if they are situated on Commonwealth land or are overseas.

4.1.1.2 Native Title Act 1993 (Cth)

The *Native Title Act 1993* overturned the legal fiction of terra nullius and recognises that Aboriginal and Torres Strait Islander people had a system of law and ownership of their land and water relating to their traditional laws and customs. The objectives of the *Native Title Act* include:

- To provide for the recognition and protection of native title
- To determine whether native title exists and compensation for acts affecting native title
- To establish ways in which future dealings affecting native title may proceed and to set standards for those dealings.

In general, native title rights can be recognised in some areas of Crown land as well as certain Aboriginal reserves and some pastoral leases held by native title holders. Native title can only exist in those areas where it has not been partly or wholly extinguished. Native title has been wholly extinguished in areas such as:

- Privately owned freehold land
- Pastoral or agricultural leases that grant exclusive possession
- Residential, commercial, community purposes
- In areas where the government has constructed public works on or before 23 December 1996.

Native title also covers future acts, proposed activities on land or water that may affect native title rights and interests.

4.1.1.3 Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)

The purposes of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* is for the preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects that are of particular significance to Aboriginals in accordance with Aboriginal tradition.

The Act empowers the Commonwealth Environment Minister, on the application of an Aboriginal person or group of persons, to make a declaration to protect an area, object, or class of objects from a threat of injury or desecration. This Act is not the primary legislative protection for Aboriginal cultural heritage in Victoria.

4.1.2 State legislation

4.1.2.1 Aboriginal Heritage Act 2006 and Aboriginal Heritage Regulations 2018 (Vic)

The *Aboriginal Heritage Act 2006*, along with the *Aboriginal Heritage Regulations 2018* provides for the protection and management of Aboriginal heritage within Victoria with processes linked to the Victorian planning system. The *Aboriginal Heritage Act 2006* recognises Aboriginal people as the primary guardians, keepers, and knowledge holders of Aboriginal cultural heritage. Registered Aboriginal Parties (RAPs) are Aboriginal organisations recognised under the Act with responsibilities for the management and protection of Aboriginal cultural heritage.

CHMPs and Cultural Heritage Permits are processes to manage activities that may harm Aboriginal cultural heritage. A CHMP is a legally binding document that includes a cultural heritage assessment, consultation with Aboriginal stakeholders, management conditions and contingency plans. An approved CHMP also acts like a permit and when adhered to, protects the Sponsor of the CHMP against prosecution under the Act.

The *Aboriginal Heritage Regulations 2018* defines the circumstances in which a CHMP is required to be prepared, and the standards for the preparation of a CHMP. The Regulations also prescribe standards and set fees and charges for CHMP evaluation which are detailed in section 3.3 of this report.

4.1.2.2 Traditional Owner and Settlement Agreement Act 2010 (Vic)

The *Traditional Owner Settlement Act 2010* defines a framework for agreements between Victorian Traditional Owners and the Victorian Government to recognise Traditional Owner group's relationship to land, provide them with certain rights on Crown land, as well as decision-making rights and other rights that may be exercised in relation to the use and development of the land or natural resources on the land.

The *Traditional Owner Settlement Act 2010* allows for an out of court settlement for native title. When entering into a settlement, Traditional Owner groups must agree to withdraw native title and compensation applications under the native Title Act 1993 (Cth) and no applications may be filed in the future.

4.2 Guidelines

4.2.1 Commonwealth Guidelines

4.2.1.1 The Burra Charter 2013

The Burra Charter (2013) and its accompanying guidelines define the basic principles, processes and practices upon which statutory assessments of heritage significance in Australia are based. The Burra Charter has been adopted by the Australia International Council on Monuments and Sites (ICOMOS). It is not a statutory document; rather, it informs the principles by which fieldwork and consideration of sites (significance and registration) is undertaken.

The Australia ICOMOS Burra Charter, and its accompanying guidelines, defines the principles and procedures for the conservation and management for items of cultural significance within Australia. The Burra Charter is the industry standard when providing advice and recommendations on places or objects of cultural heritage significance. Cultural significance is used in Australian heritage practice to include all of the cultural values and meanings that may be ascribed to a place (Australian ICOMOS, 2013).

The determination of cultural heritage significance within this CHMP is based on the five aspects of cultural significance documented within the Burra Charter:

- **Historic** – defined with the Burra Charter as encompassing all aspects of history. Australian ICOMOS' *Practice Note: Understanding and assessing cultural significance* documents that a place may have historic value because it has influenced, or has been influenced by, an historic event, phase, movement or activity, person or group of people. It may be the site of an important event. For any place the significance will be greater where the evidence of the association or event survives at the place, or where the setting is substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of such change or absence of evidence. To help understand the historic value of a place, ask:
    - Is the place associated with an important event or theme in history?

  - Is the place important in showing patterns in the development of history locally, in a region, or on a state-wide, or national or global basis?
  - Does the place show a high degree of creative or technical achievement for a particular period?
  - Is the place associated with a particular person or cultural group important in the history of the local area, state, nationally or globally? (Australian ICOMOS, 2013, p. 3)
- **Aesthetic** – defined within the Burra Charter as the sensory and perceptual experience of a place. In considering aesthetic value, ask:
  - Does the place have special compositional or uncommonly attractive qualities involving combinations of colour, textures, spaces, massing, detail, movement, unity, sounds, scents?
  - Is the place distinctive within the setting or a prominent visual landmark?
  - Does the place have qualities which are inspirational, or which evoke strong feelings or special meanings?
  - Is the place symbolic for its aesthetic qualities: for example, does it inspire artistic or cultural response, is it represented in art, photography, literature, folk art, folk lore, mythology or other imagery or cultural arts?
  - Does the place display particular aesthetic characteristics of an identified style or fashion?
  - Does the place show a high degree of creative or technical achievement? (Australian ICOMOS, 2013, p. 3)
- **Scientific** – is defined within the Burra Charter as the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques. To appreciate scientific value, ask:
  - Would further investigation of the place have the potential to reveal substantial new information and new understandings about people, places, processes or practices which are not available from other sources? (Australian ICOMOS, 2013, pp. 3-4)
- **Social** – social values relate to associations that a place has for Aboriginal people and the social and/or cultural meanings that the place holds for them. The Burra Charter further documents that to understand social value ask:
  - Is the place important as a local marker or symbol?
  - Is the place important as part of community identity or the identity of a particular cultural group?
  - Is the place important to a community or cultural group because of associations and meanings developed from long use and association? (Australian ICOMOS, 2013, p. 4)
- **Spiritual** - is defined within the Burra Charter as the intangible values and meanings embodied in or evoked by a place which give it importance in the spiritual identity, or the traditional knowledge, art and practices of a cultural group. Spiritual value may also be reflected in the intensity of aesthetic and emotional responses or community associations and be expressed through cultural practices and related places. To appreciate spiritual value, ask:
  - Does the place contribute to the spiritual identity or belief system of a cultural group?
  - Is the place a repository of knowledge, traditional art or lore related to spiritual practice of a cultural group?
  - Is the place important in maintaining the spiritual health and wellbeing of a culture or group?

- o Do the physical attributes of the place play a role in recalling or awakening an understanding of an individual or a group's relationship with the spiritual realm?
- o Do the spiritual values of the place find expression in cultural practices or human-made structures, or inspire creative works? (Australian ICOMOS, 2013, p. 4).

4.2.2 State guidelines

First Peoples – State Relations has produced approved forms and guidelines that specifies the format in which a CHMP must be prepared in order to comply with the *Aboriginal Heritage Act 2006*. The CHMP prepared as part of this EES, was undertaken in accordance with two of these government documents: *Format in which a cultural heritage management plan must be prepared* (approved form) and *Guide to preparing a Cultural Heritage Management Plan*.

4.2.2.1 Standards for Recording Victorian Aboriginal Heritage Places and Objects

First Peoples – State Relations (FP – SR) produced *Standards for Recording Victorian Aboriginal Heritage Places and Objects* (the Standards), to assist with completing the Victorian Aboriginal Heritage Register's (VAHR) forms used for registering identified Aboriginal places.

The Standards include guidance on when to register Aboriginal stone artefacts as a low density artefact distribution (LDAD) or an artefact scatter. The differentiation between an artefact scatter and an LDAD is based on the density of the material observed and definitions taken from the Standards are provided below.

LDADs are used to record low densities of artefacts across a landscape. There is no assumption of a relationship between artefacts within a single registration and therefore no extent can be prescribed. The LDAD type is most appropriate for registering artefacts where densities are low and where clustering is minimal or absent.

The artefact scatter place type is used to record the abundance and clustering patterns of moderate to high densities of artefacts across a landscape. An extent must be assigned to Aboriginal places of this type.

4.3 Aboriginal cultural heritage impact assessment criteria

The assessment criteria relevant to this Aboriginal cultural heritage impact assessment are outlined below:

- Legislation and policy
- Standards and guidelines
- Industry standards and best practice
- RAP feedback.

4.3.1 Construction Criteria

Sections 46 and 49 of the *Aboriginal Heritage Act 2006* requires that a mandatory CHMP be prepared if an EES is required for the project:

Section 46 – Mandatory Cultural Heritage Management Plan

(1) A Cultural Heritage Management Plan is required under this Part for a proposed activity if –
  a. the regulations require the preparation of the plan for the activity; or
  c. a plan is required for the activity under section 49

Section 49 – Plan required if Environment Effects Statement required

(1) This section applies if a proponent or other person is required to prepare an Environment Effects Statement under the E*nvironmental Effects Act 1978* in respect of any works
(2) The proponent or other person must, before commencing the works, also prepare a cultural heritage management plan for the area in which the works are to be carried out.

(3) In this section –

Environment Effects Statement and proponent have the same meaning as in the ***Environmental Effects Act 1978***;

Works includes *public works* within the meaning of the *Environmental Effects Act 1978*.

Consequently, the *Aboriginal Heritage Act 2006* requires the Sponsor to lodge a mandatory CHMP for the proposed activity as an EES is required for the Project. The CHMP allows for the management and protection of Aboriginal cultural heritage within the Project Area that may be disturbed during the course of activities associated with the Project. In addition, this CHMP provides contingency arrangements for managing the discovery of further Aboriginal cultural heritage places identified during the course of activities associated with the development.

4.3.2 Operation criteria

The CHMP provides contingency arrangements for managing the discovery of further Aboriginal cultural heritage places identified during the operational phase of the Project.

4.3.3 Decommissioning criteria

The CHMP provides contingency arrangements for managing the discovery of further Aboriginal cultural heritage places identified during decommissioning/rehabilitation works associated with the Project. Furthermore, mitigation measure(s) are documented in relation to rehabilitation works that include consultation and participation of GMTOAC for the restoration of Country.

5. CONSULTATION AND ENGAGEMENT

Stakeholders and the community were consulted to support the preparation of the Kentbruck Green Power Hub EES and to inform the development of the Project and understanding of potential impacts. Table 5 lists specific community and stakeholder engagement that has occurred in relation to Aboriginal cultural heritage, with more general engagement activities occurring at all stages of the Project.

Table 5 Stakeholder engagement undertaken for Aboriginal cultural heritage

Date	Activity	Matters Discussed	Outcomes
12/03/21	Notice of Intent (NoI) submitted	Filing NoI to prepare a CHMP with the Secretary DPC through FP – SR.	CHMP Number issued for assessment (17822)
12/03/21	NoI submitted with RAP	Filing NoI with GMTOAC.	Notice of intention to evaluate the CHMP by the RAP received via email on 26/03/2021
1/09/22	Onsite meeting to listen to GMTOAC and be guided by their priorities / concerns	Limitations during standard assessment. Concerns that previous Aurecon complex assessment methodology focused on proposed impacts without sufficient consideration of the likelihood of identifying Aboriginal heritage.	Productive onsite visit and discussion with the RAP. RAP expressed firm opinions regarding the Aboriginal heritage sensitivities of the activity area based on the presence of certain soil types. In particular, the RAP shared anecdotal evidence of the relationship between red soils and surface expressions of artefact scatters. ALA's immediate priority to understand the drivers and distil the information into a spatial format so that the

Date	Activity	Matters Discussed	Outcomes
			project can use it to make decisions regarding impacts. ALA to review relevant data sources to assist with the preparation of the preliminary Aboriginal heritage site predictive model. The next step will be to present the findings to the RAP and then ultimately start to test the model.
9/11/22	ALA Office meeting	Presentation of Ver 01 of the preliminary Aboriginal heritage site predictive model. Discuss how to advance preparation of a model to the satisfaction of the RAP.	It was concluded that red soils did not correlate with NE facing leeward slopes that were considered potential areas of shelter from prevailing winds, but perhaps a correlation between the coarse land unit mapping with red chromosols exists. Explored options to further investigate this idea through lidar and aerial data. Adam Black requested a secondary meeting to present the model update to Denise Lovett and Billy Bell for endorsement.
24/01/23	Online meeting	Presentation of Ver 02 of the preliminary Aboriginal heritage site predictive model. Discuss how to advance testing the model.	It was agreed that ALA would proposes an initial phase of subsurface testing (e.g. targeted transects of shovel test pits/auger probes spanning areas of high and low potential) to test the preliminary site predictive model and subsequently inform the complex assessment methodology for the CHMP with RAP support.
31/01/23	Online meeting	CVA update.	CVA will provide recommendations for the management of intangible heritage based on the inputs from community.

Date	Activity	Matters Discussed	Outcomes
7/02/23	Online meeting	Confirm approach using model. Discussed ALA's proposal for targeted transects of STPs spanning areas of high and low potential.	Agreement to proceed to next step of testing the model.
21/02/23	Email	Requested a few additional focus areas added to the proposal.	Agreed that areas adjacent to a previously identified Aboriginal heritage place warranted further investigation in relation to the model and was added to program.
7/03/23 and 16/03/23	Email	Review final methodology.	Confirm field dates to test model.
27/04/23	Online meeting	Presented results of the preliminary testing for the Aboriginal heritage site predictive model. Discuss next steps.	RAP agreed that the initial testing of the model has increased their understanding of likelihood of heritage distribution; however, consider some additional subsurface investigation necessary to extrapolate the model to the eastern and western extent of the activity area. RAP agreed that an independent geomorphological assessment would assist with the understanding of the evolution of landscape and relationship with potential buried heritage.
31/05/23 - 05/10/23	Ongoing weekly online meetings	Discussions and presentations for the continued development of the model. Updates on the results of second phase testing to support the model. Next steps and further applications for the model.	RAP confirmed that the predictive model was developing however the application needed clarity. A case study approach was proposed to utilize the model functionally. Pathways for the EES and CHMP were discussed with regards to model use and development.

Date	Activity	Matters Discussed	Outcomes
			Continual engagement with RAP maintained to incorporate the needs of the community throughout the EES and CHMP processes.
19/03/2024	Online meeting	Revised layout of the Impact Assessment Chapter discussed with FP – SR.	Revised layout is in line with EES requirements. Content of the report will be subject to FP – SR review once resubmitted.

6. METHODOLOGY

In accordance with the Project scoping requirements, each impact assessment has adopted a systematic risk-based approach to understand the existing environment, the potential impact of the Project on the environment and to evaluate the effectiveness of measures to avoid, minimise or manage impacts. This section outlines the methodology adopted to understand the Project's impacts on Aboriginal cultural heritage.

6.1 Summary of assessment process

The following sections describe the methodology adopted for the Aboriginal cultural heritage impact assessment. The initial desktop assessment to establish the existing conditions of the Project Area was undertaken by Aurecon and used as the basis for establishing a preliminary assessment of archaeological potential in the form of general predictive statements and a site predictive model. The desktop assessment was subsequently updated by Andrew Long and Associates. An initial field survey (standard assessment) was undertaken by Aurecon. Further field assessments were completed by Andrew Long and Associates, resulting in the development, in consultation with GMTOAC, of an iterative predictive model to guide the siting of Project wind turbines with the aim of no direct impacts to tangible Aboriginal cultural heritage material.

6.2 Defining the Project Area

The Project Area for this assessment is based on the project area for the EES (refer to Figure 1 and Figure 2). For consistency in the management of Aboriginal cultural heritage, the activity area for CHMP 17882 is the same to the project area for the EES. It is noted that the activity area may change prior to the CHMP being submitted for evaluation.

An additional 2 km buffer was defined around the Project Area to act as a broad geographic region for the preparation of both this assessment and the CHMP, referred to within this assessment as the study area. The concept of the geographic region enables a better understanding of the wider range of resources that may have been available for the Gunditjmara within and around the Project Area, which may have influenced past human activity. The information within the wider geographic region assists in assessing the degree to which environmental and/or human processes have likely impacted on cultural heritage places.

6.3 Establishing existing conditions – desktop assessment

A comprehensive desktop assessment was undertaken to understand the existing environment of the Project Area and wider study area to inform the environmental impact assessment for the Project (see Section 7). The methods used to undertake the assessment included:

- using appropriate sources, including Victorian government and other publicly available information, reviewing and summarising relevant environmental background;
- searching the Victorian Aboriginal Heritage Register (VAHR) and other research sources (for example, consultancy reports, academic research etc.) for information relating specifically to the Project Area as well as the wider study area; and

- reviewing and analysing this information to identify or characterise the Aboriginal cultural heritage site types and locations within the Project Area.

6.3.1 Landforms, geomorphology, and historical environment

The geographic context of the Project Area provides an understanding of the possible resources available to Aboriginal people prior to European contact. In addition, this provides information as to whether natural environmental processes (for example, weathering of land surfaces) may have impacted on Aboriginal cultural heritage.

The environmental context of the broader study area and the possible resources available to Aboriginal people prior to European contact provides an understanding of what aspects of the Project Area may have provided a focus for Aboriginal use and occupation. A review of environmental datasets was undertaken to provide insight into the environment utilised by hunter-gather groups within the region.

6.3.2 Ethnohistorical and historical accounts of Aboriginal occupation in the region

A review of available ethnohistorical and historical information relating to Aboriginal people in the study area assists in formulating a model of Aboriginal subsistence and occupation patterns. In conjunction with an analysis of the documented archaeological record of the region, the ethnohistorical information also assists in the interpretation of archaeological places in the wider study area, and in predicting the potential likelihood and location of archaeological place types within the Project Area.

6.3.3 Land use history

Land use activities have the potential to significantly affect the preservation and condition of surface and subsurface archaeological deposits. A review of the land use history provided an overview of the key periods of European activity in the Project Area and the impacts of these developments had on ground surfaces. The specialist technical study directly relevant to the land use history is Historical Heritage Assessment technical report (Biosis 2023).

6.3.4 Victorian Aboriginal Heritage Register search

A review of the relevant registers is necessary to identify known heritage and characterise heritage site types and locations likely to be present within the Project Area. This assessment included a review of the VAHR via the Aboriginal Cultural Heritage Register and Information System (ACHRIS). The VAHR is maintained by FP – SR.

6.3.5 Previous archaeological assessments

Previous archaeological assessments undertaken within the wider Study Area and the more immediate locality of the Project were reviewed to assist with understanding the level of previous archaeological investigations of the Project Area and to characterise the likely archaeological and cultural heritage values.

6.4 Aurecon predictive model and field assessment

6.4.1 General predictive model

Based on the results of their initial desktop assessment, a series of predictive statements was developed by Aurecon regarding the likely types and distribution of Aboriginal places that might be present within the Project Area (see section 7.7).

6.4.2 Specific predictive model

The following description of methodology is derived from the draft Aurecon report and draws on a system of ratings based on previously established models (Verduci & Lovell, 2020; Mathews, Feldman, & Liousas, 2020). The predictive model established by Aurecon was developed for the purposes of better understanding patterns of occupation and use of the landscape by Aboriginal people across the Project Area, based on a reconstruction of the 1750 landscape.

In addition to the general predictive statements, Aurecon developed a spatial model to gain an understanding of the potential areas where Aboriginal cultural heritage may occur. The model was developed to enable field assessments to focus on those areas considered to have the highest archaeological potential and to eliminate the requirement to physically assess those areas considered to have low archaeological potential. The following existing GIS datasets were used as base layers to create the spatial model:

- Modelled 1750s Ecological Vegetation Classes
- Geological units
- Geomorphological units
- Distance from non-coastal water
- Slope

These datasets were selected on the basis that their attributes were considered to have had a modifying influence on the Aboriginal occupation and use of the geographic region and therefore the area within the project boundary. This influence is expected to be detectable in variations in the distribution and density of different types of Aboriginal cultural heritage places in the geographic region. All the datasets used in the modelling are derivatives of these existing datasets.

To prepare the predictive modelling summary, data was collected regarding the occurrence of attributes from the above-described datasets within the geographic region. Data was also collected on the prevalence of previously registered Aboriginal cultural heritage places associated with these attributes. Together with the desktop research and the general predictive model, this information informed the rating of various attributes for their expected influence on the occurrence, distribution, and density of Aboriginal cultural heritage places of varying types.

The conversion of the five spatial datasets for input into the predictive model involved the selection of the relevant attribute classes, for each of the datasets, requiring a rating. The ratings range from 1 to 99 in set intervals, with 10 being neutral with respect to the likely presence of Aboriginal places (Table 6). The strength and type of correlation between places and particular spatial data classes was established through assessment in workshops with archaeological specialists and was informed by tabulated information regarding the association of known heritage places and environmental variables. The ratings convey the likelihood that activities resulting in the formation of Aboriginal heritage places were associated with specific attribute classes. In other words, the predictive model is concerned with site formation, not with site preservation.

Table 6 Rating values

Rating	Interpretation
1	Strongly positively correlated with places of the relevant type
5	Weakly positively correlated with places of the relevant type
10	Neutral with regard to places of the relevant type
20	Weakly negatively correlated with places of the relevant type
40	Strongly negatively correlated with places of the relevant type
99	No data/ disturbed

Once the ratings for the first modelling iteration were agreed upon among the consulted specialists, rated layers were derived through the reclassification of the input datasets. Rated vector datasets (geology, EVCs and distance to water) were then rasterised in correspondence with the elevation and slope rasters.

To finalise the construction of the predictive model, the rated layers were combined. The input of these layers can be weighted differentially to reflect their differential importance in relation to each other in influencing heritage place distribution. However, as this is a preliminary predictive model, the layers were weighted equally.

The rated base layers were then converted to rasters and geoprocessed using the ArcGIS Spatial Analyst Raster Calculator. This geoprocessing involved adding up the rating values for each raster cell in a weighted fashion, resulting in a normalised predictive value for each cell. Once the rating and weightings were established, the predictive model was constructed through raster calculation in an ESRI ArcGIS environment. The model was classified into classes ranging from most likely to least likely.

The Aurecon predictive model has several limitations. Some of these limitations are inherited from the input data. The 1750 EVC layer, for instance, is a modelled dataset. The assumptions underlying it also underlie the rated EVC model layers and hence the models themselves. The proximity to water dataset was derived from various watercourses data, which is a line dataset that does not take into account the width of watercourses. The limitations of the parent datasets are set out in the relevant metadata statements.

In addition to the inherited limitations, there are a number of additional assumptions and limitations:

- No cultural values spatial mapping was prepared for non-archaeological and/or intangible heritage places.
- The outputs are models of the predicted occurrence of specific Aboriginal activities in the landscape and the resulting formation of general Aboriginal cultural heritage places.
- The assumption inherent in the use of the parent datasets is that these datasets adequately reflect the class of attribute they purport to reflect for the time period during which Aboriginal people were present in the area.
- Expert knowledge of Aboriginal activities within the project boundary area and their surroundings is based on an incomplete archaeological record.
- Gaps occur in the existing datasets that will likely require ground-truthing.
- Disturbance mapping was not integrated into the predictive model.

Predictive model ratings

The ratings that were applied in the construction of the model and are presented in Table 7 to Table 11.

The pre-1750 EVCs dataset (Table 7) was rated for its likelihood to contain Aboriginal cultural heritage places.

Table 7 EVC ratings

1750s EVCs			
EVC Group name	**EVC**	**EVC Name**	**Rating**
Herb-rich Woodlands	3	Damp Sands Herb-rich Woodland	5
Heathlands (sandy/well-drained)	6	Sand Heathland	10
Heathlands (not well-drained)	8	Wet Heathland	20
Lowland Forests	16	Lowland Forest	5
Dry Forests (sheltered/higher altitude)	23	Herb-rich Foothill Forest	5
Heathy Woodlands (dry/better drained)	48	Heathy Woodland	5
Riparian Scrubs or Swampy Scrubs and Woodlands	53	Swamp Scrub	10
Heathy Woodlands (dry/better drained)	179	Heathy Herb-rich Woodland	5

1750s EVCs			
Riverine Grassy Woodlands/Forests (creekline, swampy)	198	Sedgy Riparian Woodland	5
Heathlands (not well-drained)	645	Wet Heathland/Heathy Woodland Mosaic	20
Heathy Woodlands (damp/less well-drained)	650	Heathy Woodland/Damp Heathy Woodland/Damp Heathland Mosaic	5
Wetlands (fresh water)	680	Freshwater Meadow	10
Wetlands (fresh water)	681	Deep Freshwater Marsh	10
Herb-rich Woodlands (damp sands)	713	Damp Sands Herb-rich Woodland/Damp Heathland/Damp Heathy Woodland Mosaic	5
Herb-rich Woodlands (damp sands)	740	Damp Sands Herb-rich Woodland/Heathy Woodland/Sand Heathland Mosaic	5
Coastal Scrubs, Gras and Woodlands	858	Coastal Alkaline Scrub	10

The geological units comprising 1:50,000 seamless geology dataset was rated for its likelihood to contain Aboriginal cultural heritage places. Table 8 shows the ratings for Geological unit 50K dataset.

Table 8 Geological unit rating

Geological Unit	Rating
Qda1	5
Qdl1	5
Nh	5
Qns	10
Qxr	10
Qm1	10

The geomorphology dataset was rated for its likelihood to contain Aboriginal cultural heritage places. Table 9 shows the ratings for the Geomorphology dataset.

Table 9 Geomorphological unit rating

Geomorphological Unit	Rating
Discovery Bay (8.5.2)	5
Cressy (6.2.1)	10
Warrnambool (6.2.3)	10
Follett (6.1.4)	20

The distance from non-coastal water dataset was rated for its likelihood to contain Aboriginal cultural heritage places. Table 10 shows the ratings for distance to non-coastal water dataset.

Table 10 Ratings for distance to non-coastal water

Distance to non-coastal water (m)	Rating
0	40
1-500	5
500-1000	10
1000-5000	20
5000+	40

The slope dataset was rated for its likelihood to contain Aboriginal cultural heritage places. Table 11 shows the ratings for the Slope dataset.

Table 11 Slope rating

Slope class (degrees)	Rating
0-5	10
5-10	10
10-15	20
15+	40

The results of Aurecon's specific predictive model (see Section 7.7.2) were assessed during a subsequent field survey. It is noted that subsurface investigation was not undertaken by Aurecon, and that the archaeological potential ratings (APR) established by Aurecon were superseded by a change in the predictive model methodology, as undertaken by ALA when the project was resumed in 2022 (refer to Section 8.2).

6.4.3 Aurecon standard assessment

A formal standard assessment consistent with the requirements for CHMP 17822 was undertaken by Aurecon. As documented in the Aurecon draft CHMP report, the aims of the standard assessment were to:

- Inspect accessible locations within the Project Area via pedestrian and vehicular methods for the presence of surface Aboriginal cultural heritage.
- Inspect accessible locations within the Project Area for archaeological sensitivity based on disturbance and landforms via both pedestrian and vehicular methods.
- Enable RAP group representatives to inspect the Project Area and provide input regarding values and concerns.
- Assess the potential of the Project Area to contain subsurface Aboriginal cultural heritage deposits.
- Inspect any indigenous mature trees for evidence of cultural scarring.
- Inspect any cave, rock shelter or cave entrance in the Project Area.
- Document the extent of previous ground disturbance within the Project Area.
- Identify and record any Aboriginal cultural material present in the Project Area.

The field survey methodology was determined by the need to examine the Project Area and confirm the results of the desktop assessment and the initial place predictive model. The standard assessment took the form of a combined systematic pedestrian and vehicular survey targeting the hard-stand and foundation locations of the proposed wind turbines, access tracks, laydown areas and underground transmission lines.

Given the vast extent covered by the Project Area, the survey area was divided into arbitrary survey units (SU) mostly delineated by roadways. Ground surface visibility was recorded per survey section and ground disturbance noted where it revealed the nature of the subsurface soils. Mature indigenous trees were inspected for cultural scarring.

The results of the standard assessment are documented in Section 8.1.

6.5 ALA predictive models

6.5.1 Background

An initial onsite meeting and briefing from GMTOAC was held at the time of the handover of the project from Aurecon to ALA on 01 September 2022. It was agreed that a new approach was required to satisfy the scoping requirements that would incorporate a GMTOAC led Aboriginal place predictive model. The outputs from the revised predictive model would inform the preparation and execution of a complex assessment methodology for the CHMP and, ultimately, the design (in terms of siting of turbines and infrastructure) of the Project. This approach was favoured by GMTOAC over a previously proposed complex assessment methodology that focused on proposed impacts without the support of a conclusive desktop and standard assessment program or detailed consideration of the likelihood of identifying Aboriginal heritage places.

Several approaches were discussed that considered a focus on aspect and elevation to investigate the potential correlation between the likely presence of Aboriginal heritage places and leeward slopes, as well as potential correlation with visible red soils (chromosols). The potential of a geomorphological assessment and drone survey to capture the presence/absence of red soils was also considered.

6.5.2 GMTOAC-led iterative Aboriginal heritage place predictive model

Phase 1 – red soil modelling and testing

During the onsite briefing in September 2022, GMTOAC expressed firm opinions regarding the Aboriginal heritage sensitivities of the Project Area based on the presence of certain soil types. In particular, they shared anecdotal evidence of a correlation between red soils (chromosols) and the surface expression of artefact scatters. Further discussions identified the northeast (leeward) side of slopes as an area where red soils were likely to outcrop, and therefore also be associated with the presence of surface artefacts.

The aims of Phase 1 of the development of the predictive model were therefore to:

- Review available GIS datasets to investigate the capacity for representing slope, elevation and geomorphology.
- Identify a method for the remote identification of outcropping red soils.
- Through a program of targeted testing, assess the method for identifying red soils.
- Review the correlation between red soils and environmental factors such as slope, elevation and geomorphological land units.
- As a secondary aim, gather information about the presence or absence of Aboriginal cultural heritage (specifically stone artefacts) to assess and revise the model.

LiDAR data provided by Neoen allowed the visualisation of a digital surface model (DSM) of the Project Area using ESRI's ArcGIS Pro (refer to Figure 7 and Figure 8). A raster depicting aspect was then derived from the DSM to identify areas of northeasterly slope (refer to Figure 9 and Figure 10).

Inspection of aerial imagery associated with the LiDAR revealed areas that were distinctly red (refer to Figure 11). The in-built ArcGIS Pro imagery tools were explored to see whether the identification of these red areas could be automated. The Clay Minerals Index option was found to produce results consistent with the manual identification of red areas by eye (Figure 12).

Although the Neoen aerial imagery is of high resolution and covers the entire Project Area, the Clay Minerals Index (and, similarly, manual inspection) is only effective where the ground is actually visible, i.e. not where pine plantation is present. This limited the assessment to cleared areas. To expand the distribution of the model it was necessary to investigate options to capture a broader area. Investigation of other aerial imagery sources (Google Earth, VicMap or Nearmap, including timeline imagery) confirmed that the tool can be successfully applied to a standard aerial image. However, the outcomes were dependent on the quality (resolution and lighting) of the aerial image used (refer to Figure 13 through Figure 15). The length of time since trees were cleared also appears to impact the result, requiring manual adjustment to the classification settings in order to produce somewhat equivalent results.

The phase 1 testing program (see section 8.2) was primarily designed to ground-truth the red soil modelling, with transects of test pits and hand augering to confirm the presence or absence of red soil as predicted by the model. This testing focused on the central part of the Project Area, where the red soil modelling was based on high-quality LiDAR imagery.

Comparison of the model with geomorphological land units (Nelson Plains and Dunes Red Chromosols) revealed some correlation with the mapped red soils (refer to Figure 16), even though the resolution of this mapping is coarse. A review of the locations of leeward slopes against the mapped red soils, however, noted that the red soils did not appear to correlate with northeast facing slopes.

Although the red soil modelling was determined to be a reliable representation of the presence of chromosols in the Project Area (see section 8.2), expansion of the model was hampered by the absence of sufficient aerial photography with good soil visibility. Furthermore, at the completion of this stage, subsurface testing was deemed insufficient to develop a hypothesis regarding the relationship between artefact occurrence, soil type and topography/landform. Following discussions with GMTOAC it was deemed necessary to consider investigating methods for augmenting the visual identification of red soils.

Phase 2 – additional field assessments

The primary aim of the phase 2 testing program was to obtain a larger sample of subsurface testing locations across a range of land units, soil types and elevations, in order to identify any correlations with artefact occurrences and to produce a revised predictive model. Additional surface survey was also undertaken. The specific aims of the field assessments were to:

- Obtain additional data to further test the validity of the red soil modelling.
- Gather more information about geomorphology and the nature of soil deposits.
- Determine associations between identified Aboriginal cultural heritage in relation to chromosols or landform features.
- Define relative sensitivity of landforms and soil types.

Eleven survey areas were proposed, sampling sections of the Project Area in the northwest, east and far east. Test pits were placed opportunistically to sample a variety of environments, and pedestrian survey was undertaken where surface visibility was good, primarily along roadsides and around recently cleared trees. The specific field methodology used for the survey and testing are described in section 6.6.

Phase 3 – development of a new predictive model

A new predictive model was developed following the second phase of testing. The results of the phase 1 and phase 2 testing and survey were used to develop a new ratings system based on observed correlations between the presence/absence of artefacts and the following features:

- Landform element
- Elevation
- Soil type (chromosols)

The process followed was similar to that used by Aurecon for their specific predictive model, except in this case, the ratings were based on GMTOAC input and field observations, rather than archaeological specialists – a data-driven rather than an exclusively expert-driven approach.

Ratings

Landform elements were derived from the Neoen DSM using the ArcGIS Pro 'Geomorphon Landforms' tool; these landform elements were rated for subsurface sensitivity on the basis of the frequency of positive (artefact bearing) versus negative (non-artefact bearing) testing (e.g. Figure 5), and rated for surface sensitivity on the basis of the frequency of surface artefacts compared to the total area of the landform element in the survey area (e.g. Figure 6). Ratings are shown in Table 12.

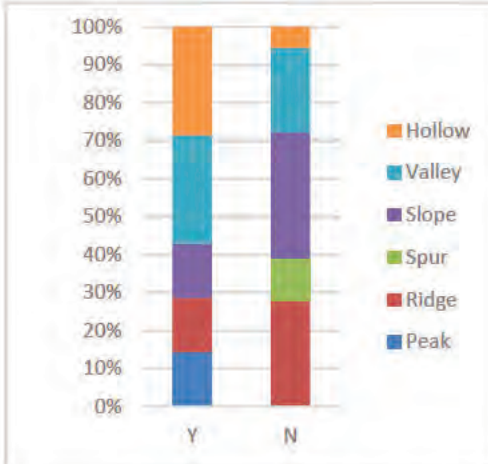


Figure 5 Relative frequency of landform element comparing positive pits (Y) and negative pits (N) – positive pits are more likely to occur on peaks and in hollows and negative pits are more likely to occur on spurs and slopes

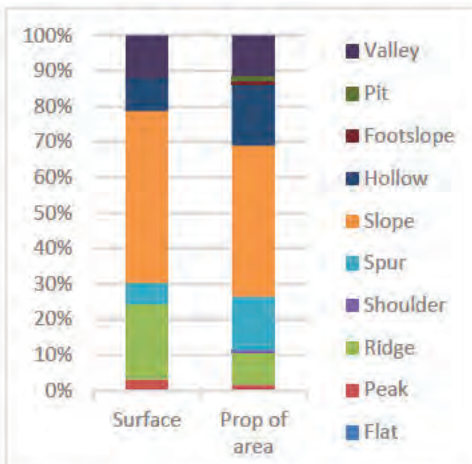


Figure 6 Relative frequency of landform element comparing surface artefact locations and the proportion of the surveyed area – surface artefacts occur on ridges, peaks and valleys more often than expected based on the frequency of ridges, and on spurs and hollows less likely than expected

Table 12 Rating values for landform element

Landform element	Rating, subsurface	Rating, surface
Flat	10	10
Peak	1	5
Ridge	5	1
Shoulder	10	10
Spur	20	20
Slope	20	10
Hollow	1	20
Footslope	10	10

Landform element	Rating, subsurface	Rating, surface
Pit	10	10
Valley	5	5

Arbitrary elevation ranges were used to subdivide the elevation of specific test pit and surface artefact locations. These ranges were different for subsurface and surface locations, due to the distribution of test pits and the absence of subsurface testing data within some elevation ranges. Using the same process of comparison between positive and negative pits and between surface artefact locations and the survey area, ratings were established for subsurface artefacts (Table 13) and surface artefacts (Table 14).

Table 13 Rating values for elevation for subsurface artefacts

Elevation range (m)	Rating, subsurface
<16	10
16-18	5
19-36	20
37-41	5
42-50	20
51-85	10
86-87	20
88-124	10
125	5
>126	10

Table 14 Rating values for elevation for surface artefacts

Elevation range (m)	Rating, surface
-2 to 12	10
12 to 21.5	1
21.5 to 31	5
31 to 34.5	1
34.5 to 53	5
53 to 148	10
>148	10

Although the red soil model performed reliably at identifying the location of chromosols, insufficient coverage by aerial imagery precluded its use across the entirety of the Project Area. Field observations suggested a correlation between the presence of chromosols and areas of high relative elevation (peaks, ridge, spurs). Comparison of the distribution of known red soils and landform elements confirmed this correlation, while non-chromosols correlate with valleys and hollows. Chromosols were moderately likely to occur on slopes, and other landform elements had insufficient data. Landform element was therefore used in a secondary capacity as a proxy for chromosols (Table 15).

Table 15 Rating values for landform element as a proxy for soil type

Landform element	Rating, subsurface	Rating, surface
Flat = no data	10	10
Peak = likely chromosol	20	10

Landform element	Rating, subsurface	Rating, surface
Ridge = likely chromosol	20	20
Shoulder = no data	10	10
Spur = likely chromosol	20	10
Slope = possible chromosol	5	5
Hollow = non-chromosol	2	1
Footslope = no data	10	10
Pit = no data	10	10
Valley = non-chromosol	2	1

Outcomes

Raster layers representing each feature (landform, elevation and soil) were reclassified according to the above ratings to produce a 'likelihood' raster for each, for both surface and subsurface artefacts (a total of six raster models). The three feature rasters were combined (with equal weighting) to create a combined subsurface sensitivity model and a surface sensitivity model.

Additional assumptions and limitations of this approach include:

- The model is limited to predictions regarding stone artefacts;
- Correlations are based on presence/absence compared to expected frequencies without being supported by statistical methods (e.g. chi-squared testing);
- Landform element (peaks, ridges, spurs) is used as a proxy for the presence of chromosols in those portions of the Project Area where aerial imagery data was not conclusive, meaning that the landform element layer is contributing twice, albeit in different ways, to the overall model;
- Slope aspect has not been considered;
- Use of elevation does not take into account significant changes in landform, e.g. plateau to east, possible faulting in west;
- Sampled size remains limited.

Model adaptability:

- Ratings can be adjusted as more presence/absence data strengthens or weakens correlations;
- The landform, elevation and chromosol datasets can be assigned variable weightings depending on how important each is considered to be to the final model;
- The visual representation of the models can be adjusted (reclassified) to get a better sense of the spread of the sensitivity ratings.

The results and potential applications of the iterative predictive model are presented and discussed in Section 8.5.

The iterative predictive model is intended to inform a strategy for siting of proposed works that will have the least direct impact on tangible Aboriginal cultural heritage material. The iterative predictive model will be further tested during the complex assessment portion for the CHMP and is designed to be updated and refined as additional data are obtained from GMTOAC, further field assessment and external specialist analysis. This iterative process will provide an increasingly-improving assessment of archaeological potential in the Project Area.

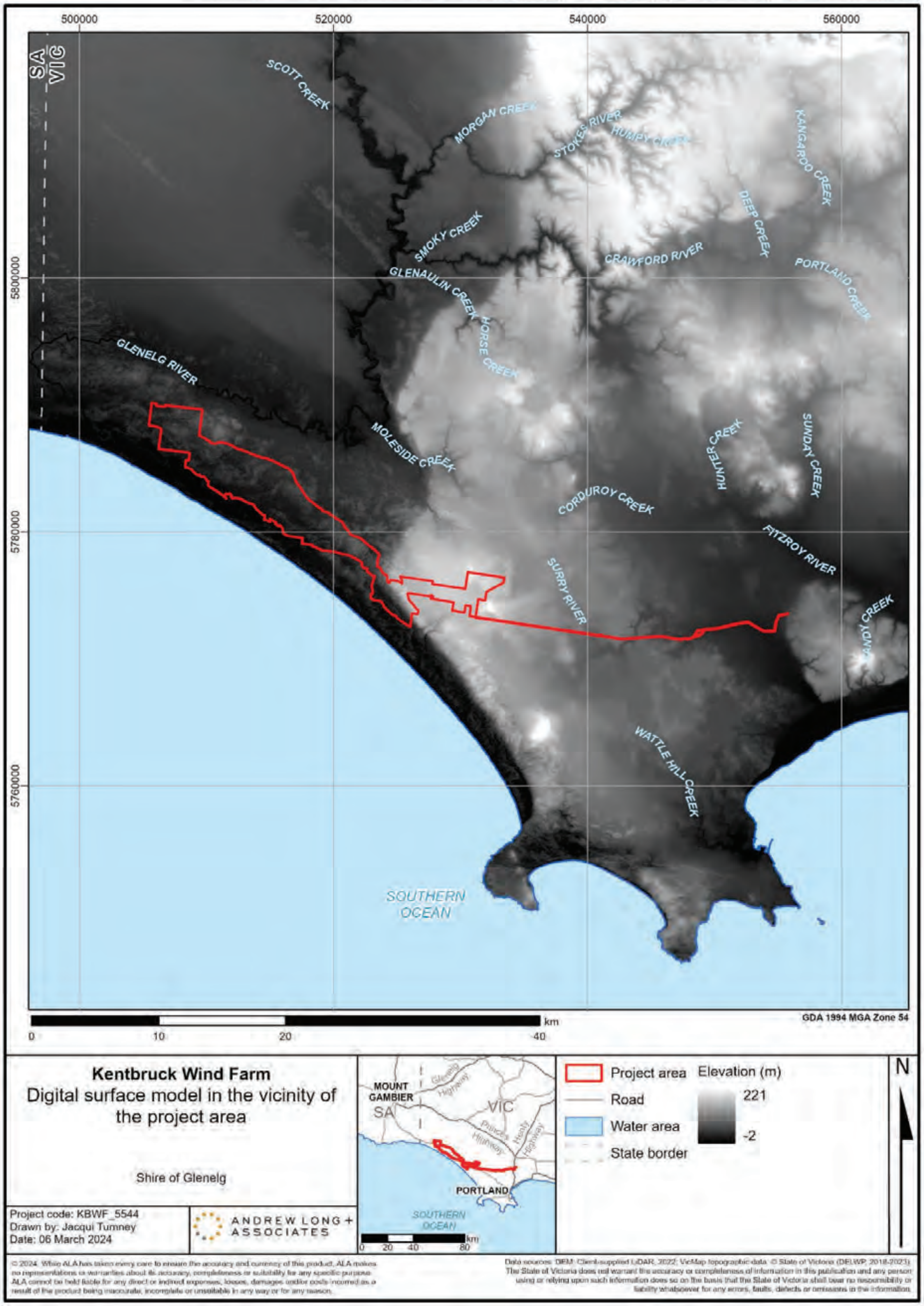


Figure 7 Neoen provided LiDAR data for the Project Area

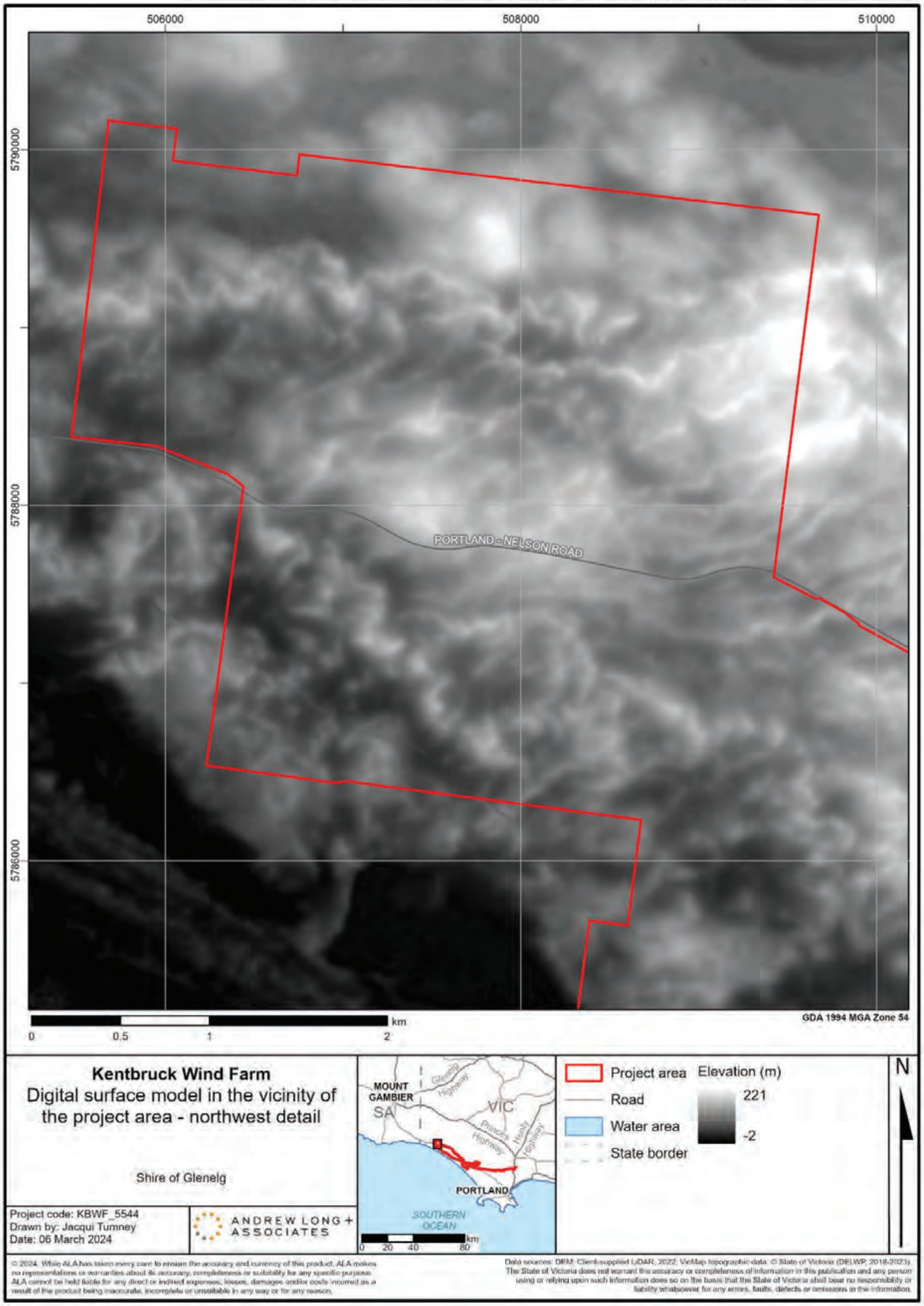


Figure 8 Close up of Digital Surface Model in northwest portion of Project Area

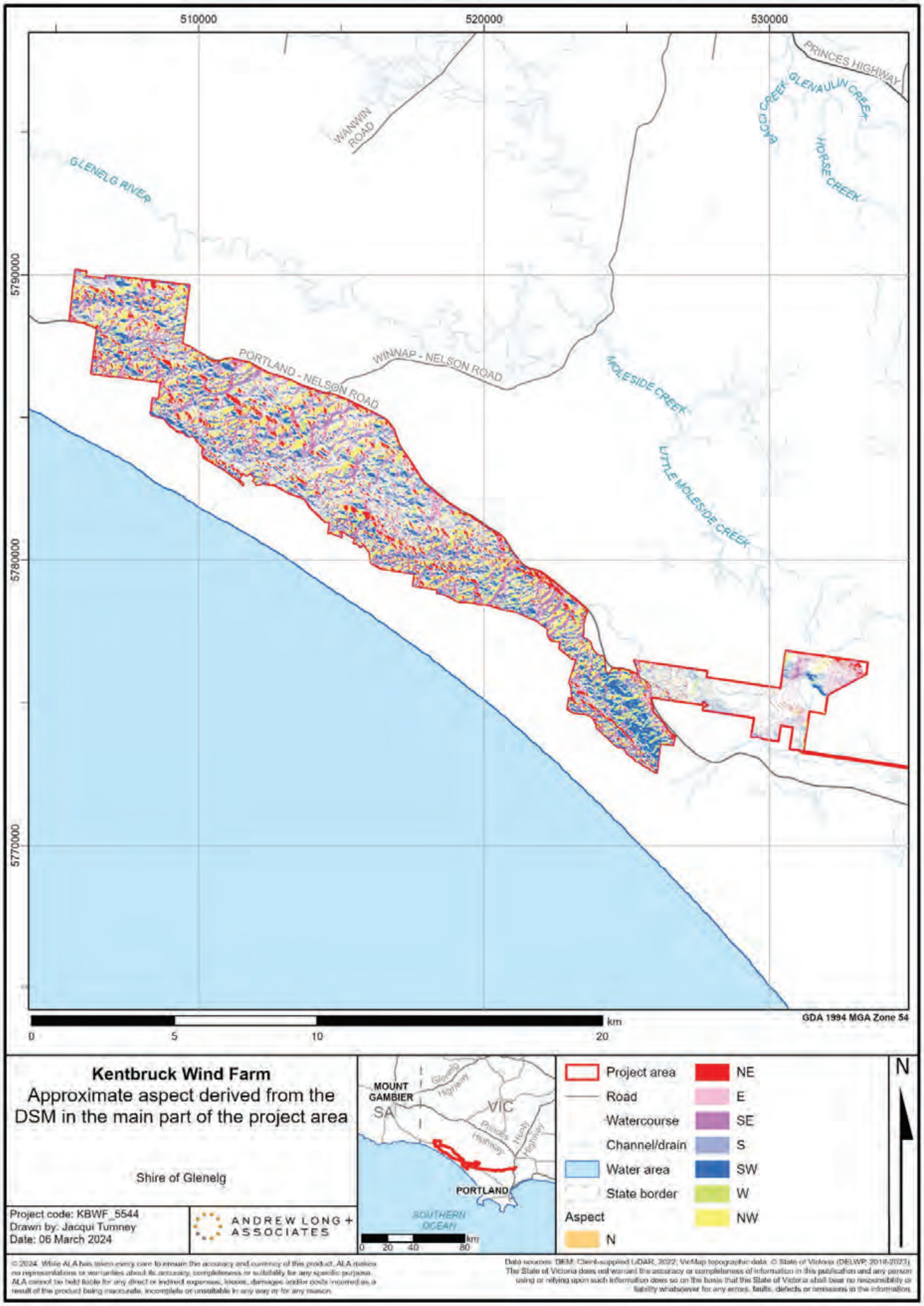


Figure 9 Aspect showing leeward slope(red) for the remainder of the Project Area

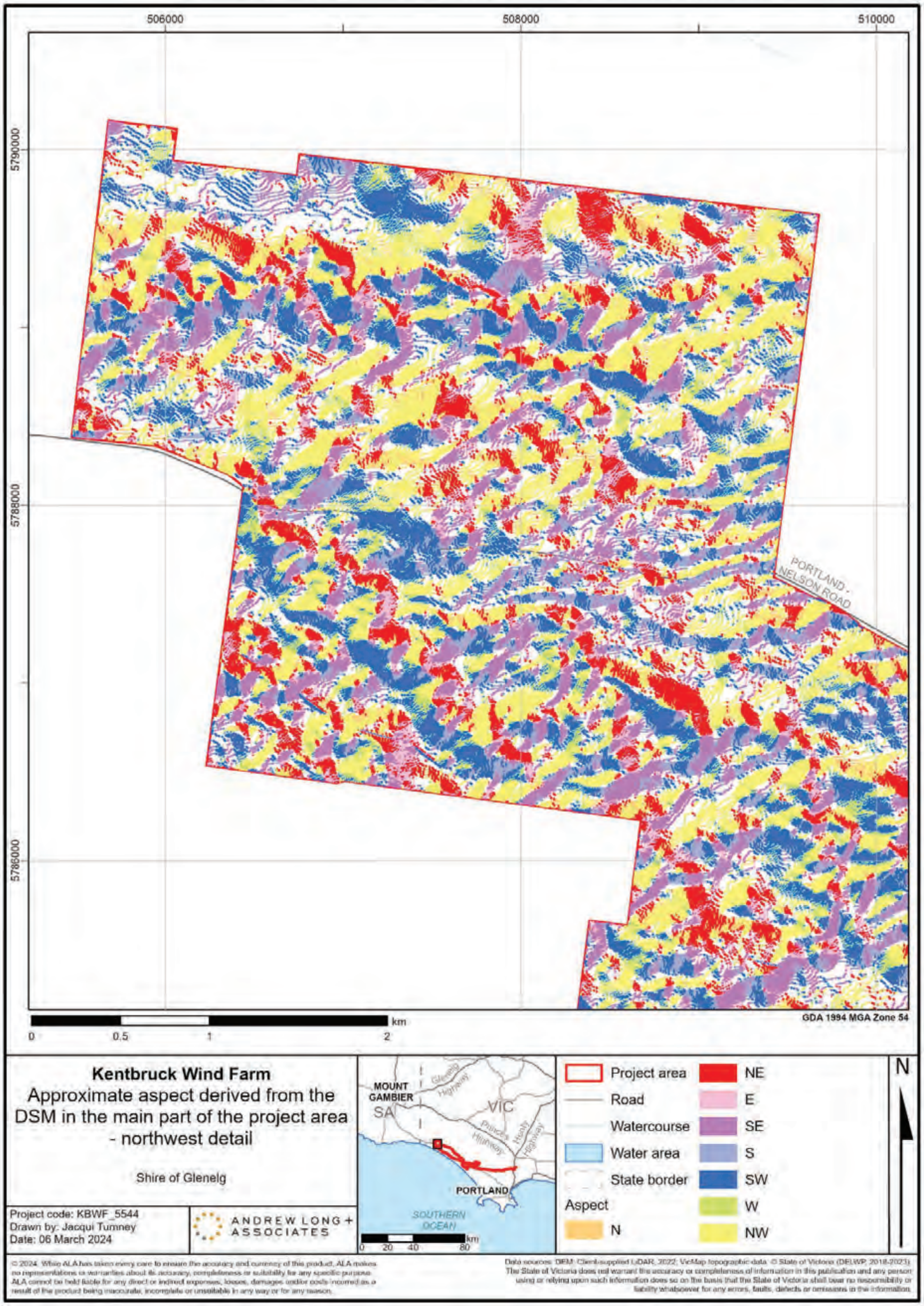


Figure 10 Aspect showing sheltered leeward slope (red) to the northeast

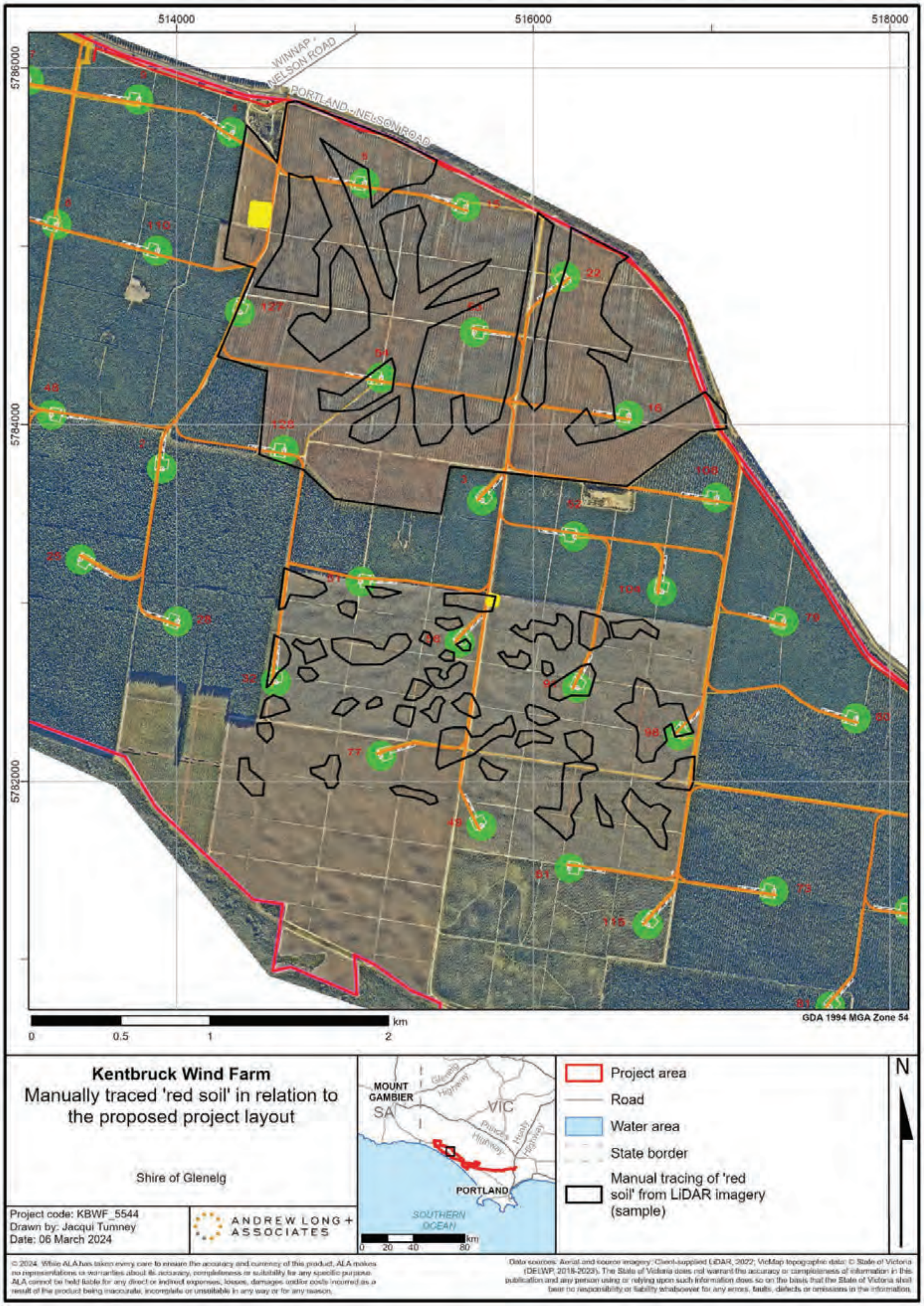


Figure 11 Section showing preliminary results of the modelling and proposed project layout

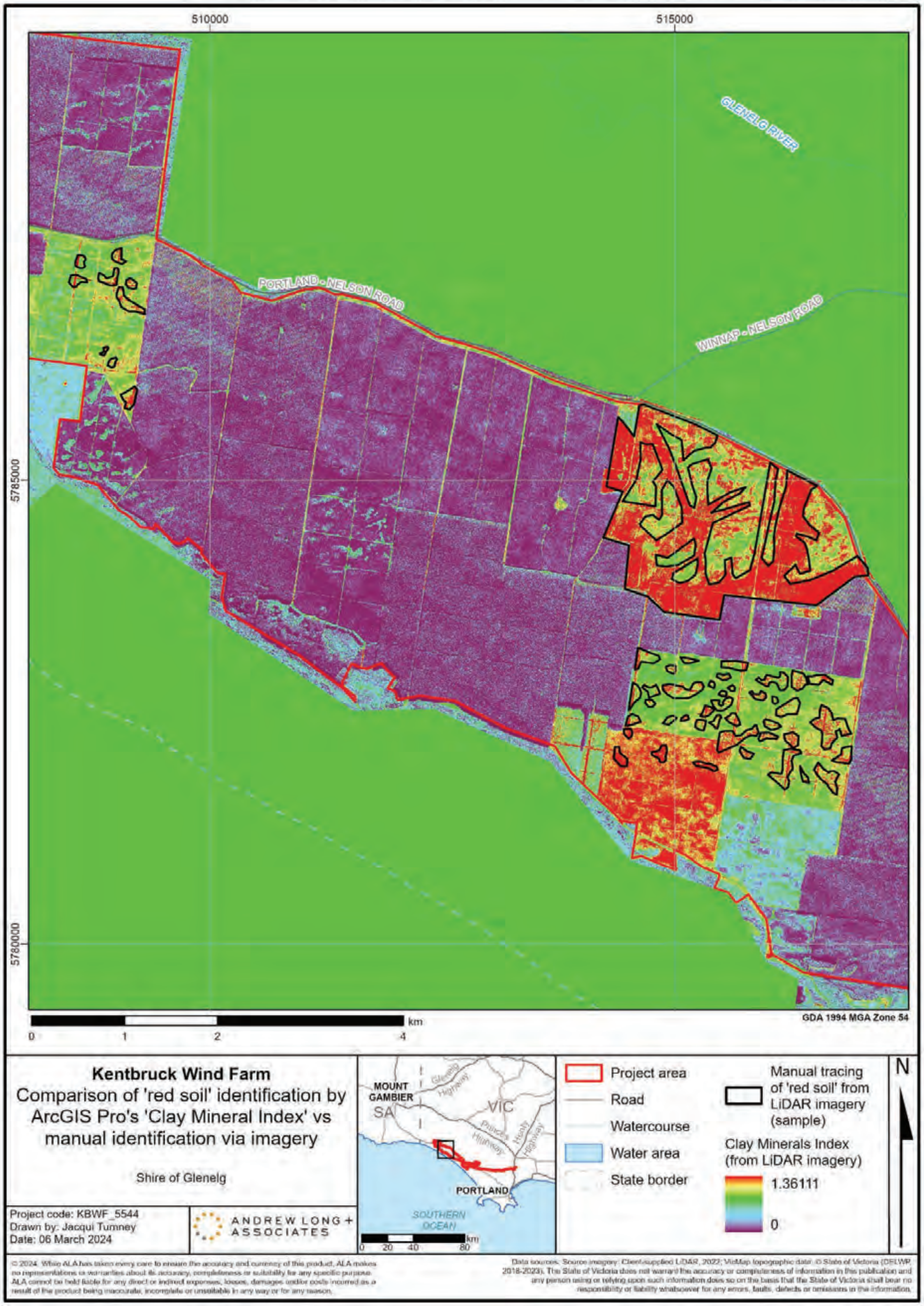


Figure 12 Roughly traced areas of the red soil visible in the Lidar imagery (Red Soils vs Clay Mineral Raster)

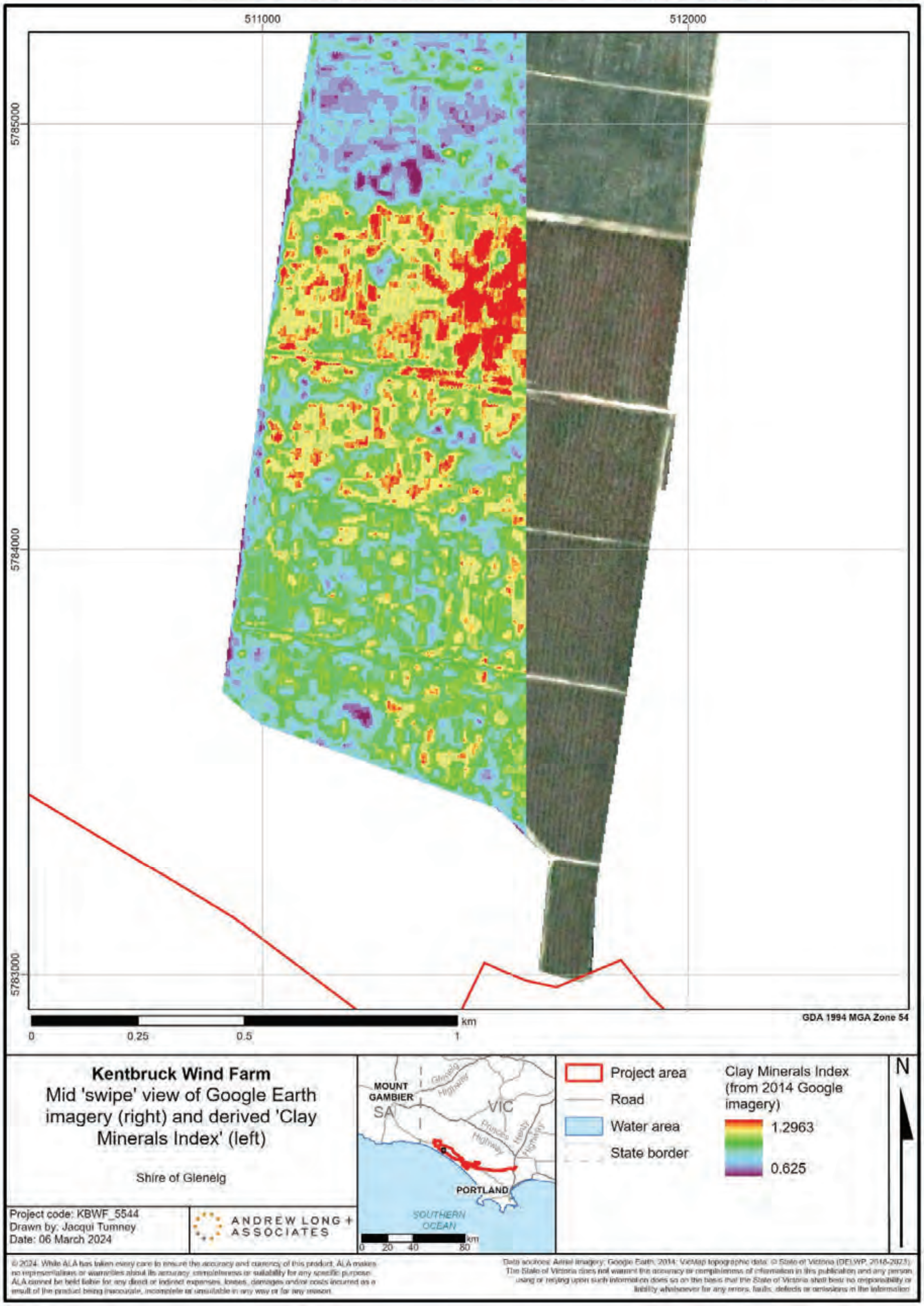


Figure 13 Example 1 of a Google Earth image showing the use of the clay minerals tool applied part way through a swipe

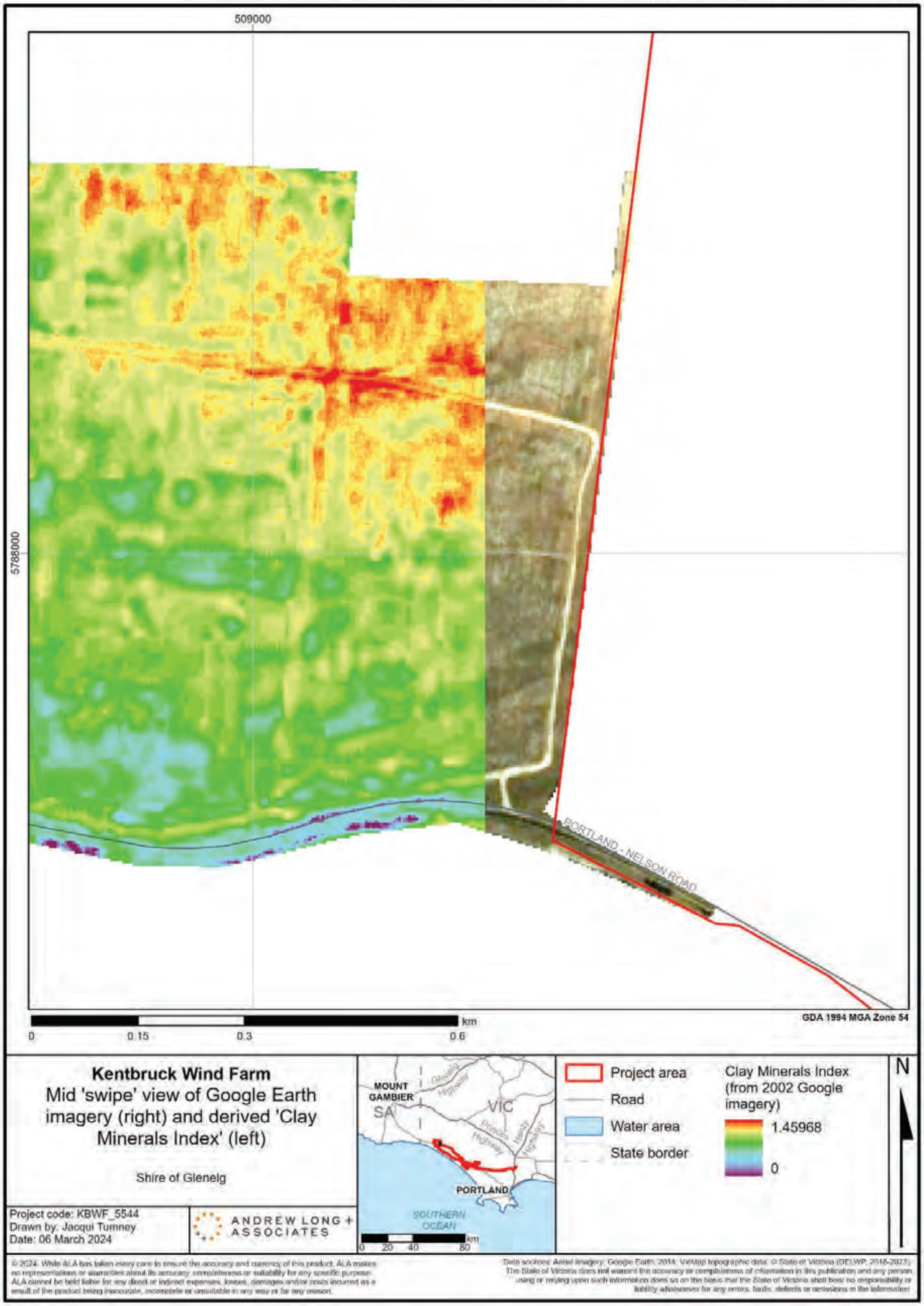


Figure 14 Example 2 of a Google Earth image showing the use of the clay minerals tool applied part way through a swipe

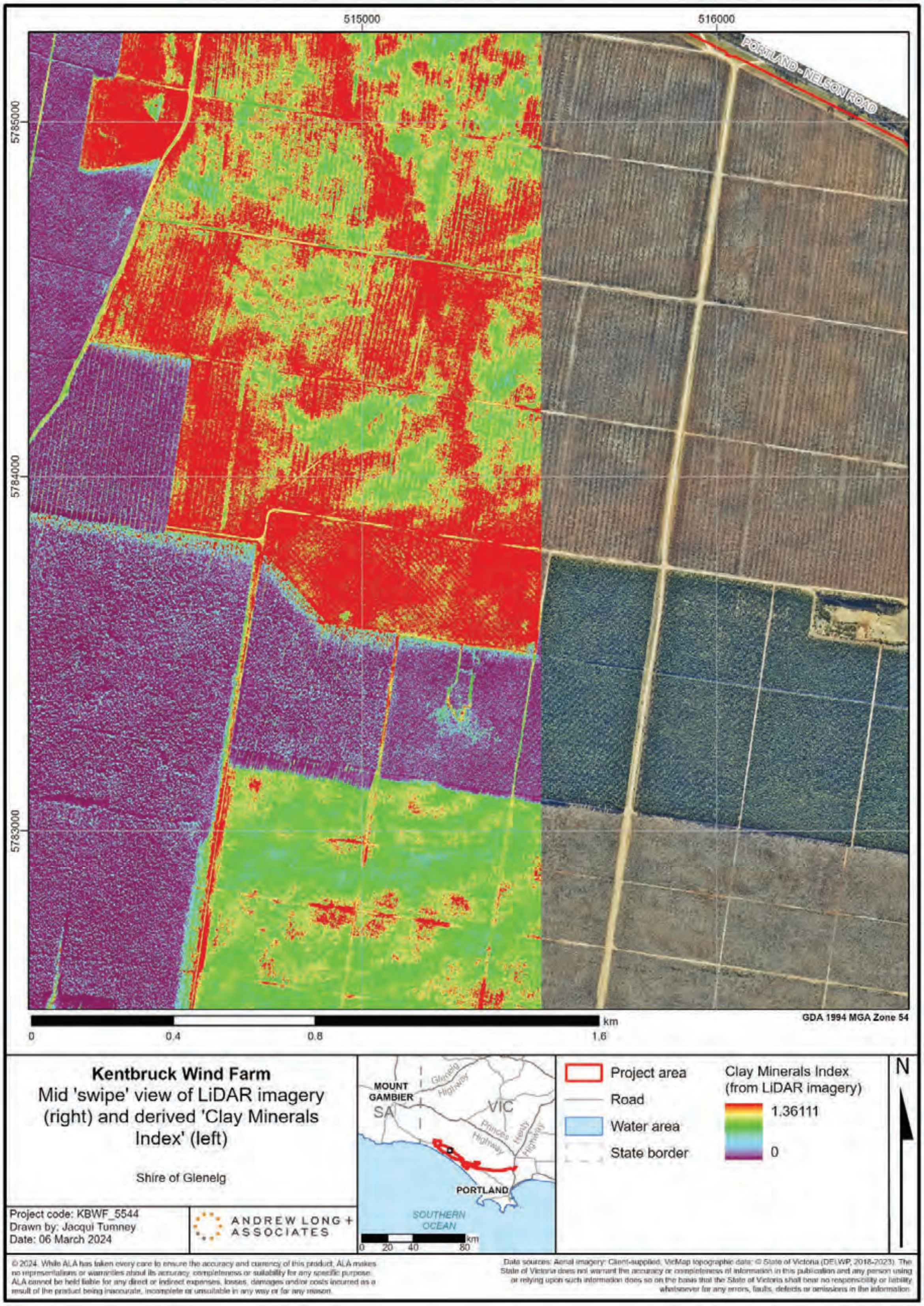


Figure 15 Example 3 of a Google Earth image showing the use of the clay minerals tool applied part way through swipe

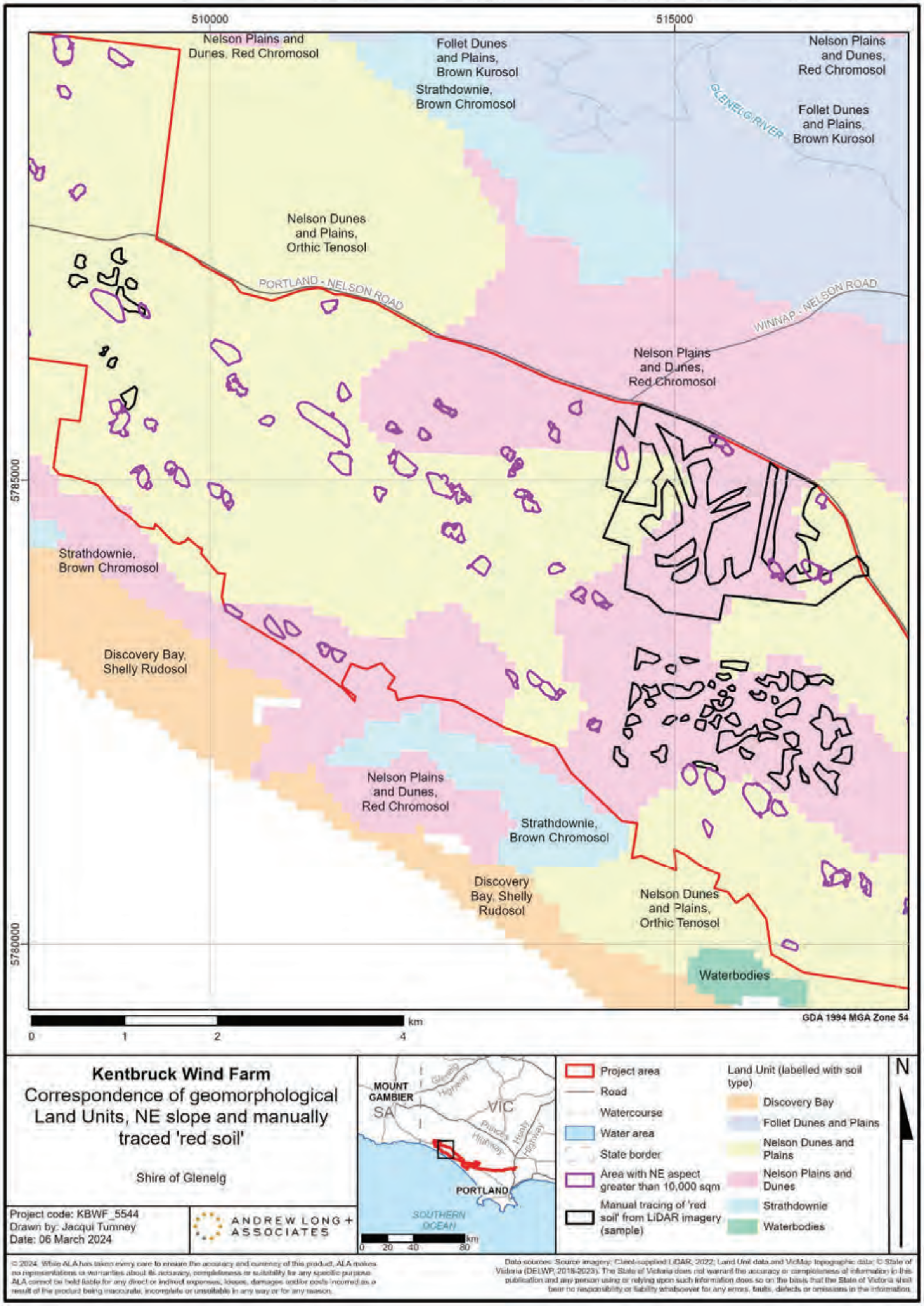


Figure 16 Land unit, NE leeward aspect and red chromosols mapping combined

6.6 ALA field assessments

6.6.1 Phase 1

Preliminary test excavations were conducted by ALA and GMTOAC participants between 11 and 14 April 2023 to substantiate the GMTOAC led iterative predictive modelling for chromosol distributions and Aboriginal cultural heritage material association.

The specific aims of the testing program were as follows:

- Test the validity of the chromosol mapping predictive model (refer to Section 6.5.2, Phase 1);
- Assess the presence or absence of chromosol sediments and gather more information and geomorphological data at the mesoscopic level on the nature of soil deposits;
- Establish associations of identified Aboriginal cultural heritage in relation to the chromosols or landform features.

The subsurface testing program utilised shovel test pits (STPs) and auger probes with the following methodology:

- Excavations undertaken by shovel, trowel, and hand auger (100 millimetre auger head);
- 0.5 m x 0.5 m STPs excavated in 100 millimetre spits down to a culturally sterile layer or to a maximum depth of 1.2 m or to the limit of the auger depth;
- Supplementary auger probes completed in STPs that did not identify a sterile layer at 1.2 metres or where significantly deep dune sediments were identified;
- Additional auger probes in targeted locations to assist in landform analysis;
- All deposits were 100% hand sieved using a 5 mm mesh to assess the presence or absence of stone artefacts excluding standalone auger tests.
- All locations were recorded using a submeter Trimble GNSS unit, while pH and Munsell readings were recorded for each STP, including a mesoscopic sediment analysis.

The results of the Phase 1 testing are presented in Section 8.2.

6.6.2 Phase 2

The Phase 2 assessment took place from 17 to 21 July 2023 and included a combined program of field survey and subsurface testing.

The aim of the subsurface testing program was to provide accurate local data for the revised GMTOAC led iterative predictive model and assess its validity for potential locations of cultural heritage significance. Additionally, the testing was to provide more detailed landform and soil information regarding the geomorphological processes and possible landform reconstruction in relation to potentially culturally sensitive chromosol sediments. Testing was to take into consideration the needs and locations identified by GMTOAC as well as the mapped locations for chromosols both in relation to known cultural heritage material and predicted landform elements.

The aim of the surface survey was to assist in defining the relative cultural sensitivity of a given landform or soil type associated with the predictive model and provide a general view of the types of ground surfaces in relation to testing locations.

Surface surveying used the following methodology:

- Targeted surface inspection under the advice and guidance of GMTOAC;

- Opportunistic pedestrian surface inspection of locations associated with subsurface testing;
- General artefact counts and descriptions within a 1 m x 1 m square area;
- Landform description and assessment of ground surface visibility.

Subsurface testing locations were chosen opportunistically within the survey areas, with guidance from GMTOAC, and followed the methodology applied in Phase 1.

The results of the Phase 2 field assessments are presented in Section 8.3.

6.6.3 Ongoing assessments

The current field assessments were aimed at testing the hypotheses posed in the GMTOAC-led process of revising the predictive model and to provide data to contribute to a definitive model to allow for the assessment of impacts and scope for the future testing of the predictive model during the ongoing CHMP assessment. Ultimately, the GMTOAC-led predictive model will be used to guide the siting of wind turbines and related infrastructure in order to avoid directly impacting culturally sensitive areas. The results provide guidance on the suitability of the Project laydown and proof of concept to further the development of the modelling for Kentbruck sediment distribution and cultural material association. The resulting predictive model will be used as a guide, in conjunction with GMTOAC consultation, to design the methodology for further subsurface investigations for CHMP 17822. This methodology may include, but is not limited to:

- The establishment of a GMTOAC led model to assess areas of low archaeological potential, and targeted testing to further confirm the GMTOAC led predictive model, the outcome of which is to avoid areas at high risk of potential harm to unknown Aboriginal cultural heritage, thus resulting in the proposed works having as little direct impacts to tangible heritage as possible;
- Subsurface testing utilising a combination of standard 1 m x 1 m/STP excavation approaches with supplementary augering for deep sediments;
- Use of LiDAR and additional geomorphological techniques supported by specialist consultants.

6.7 Cultural values assessment

A Cultural Values Assessment (CVA) was sponsored by Neoen and conducted at the request of the Gunditjmara native title holders to articulate their intangible cultural values within and around the Project Area. The intent of the CVA was to direct the ILUA and to give the power back to the Gunditjmara and their community, to enable them to move forward.

To establish the cultural values of the region an assessment was led by GMTOAC, with assistance from Kate Waters of Waters Consultancy. The intention was to build on existing information and research and exploring non-archaeological and intangible heritage values, associates and histories from the region.

The primary methods of investigation included:

- Two online community workshops hosted by GMTOAC
- One-on-one online conversations with GMTOAC Gunditjmara staff
- One-on-one online conversations with Gunditjmara community members
- On-Country community session at lake Mombeong hosted by GMTOAC
- Presentation and workshop with GMTOAC staff
- Presentation and workshop with previous participants of the CVA one-on-one conversations
- Presentation of outcomes to Native Title meeting for review

- Presentation of draft CVA report to Gunditjmara community members

6.8 Impact Assessment

Impacts are described as changes or effects to baseline environmental conditions, assets or values as a result of activities driven by the project. The extent of any impact is measured against the baseline conditions assessment. Impacts may be referred to either prior to mitigation (potential impact) or following mitigation (residual impact). Impacts can be positive or negative, direct or indirect.

This study assesses the impacts of the project on Aboriginal cultural heritage assets and values (tangible and intangible) to be protected.

The factors that have been considered when assessing the significance of potential environmental impacts of the project on Aboriginal cultural heritage are as follows:

- Identifying key issues and risks of the Project on tangible and intangible Aboriginal cultural heritage values.
- Review of the design and Project description.
- Identification of potential impacts on Aboriginal cultural heritage places, both tangible and intangible, as well as areas of sensitivity arising from the Project during construction, operation, and decommissioning phases.

6.8.1 Avoidance and mitigation measures

The following measures have been adopted in relation to the design, construction, operation, and decommissioning of the project to avoid and minimise impacts:

- Consideration of Aboriginal cultural values (both tangible and intangible).
- Avoiding known areas of high archaeological sensitivity as defined by the predictive model. As noted above, the predictive model will be better defined and refined with further GMTOAC consultation and testing of the model.
- The risk of harm to previously unregistered Aboriginal cultural heritage within the Project Area to be documented under the CHMP for the activity area. Contingency plans for the discovery of Aboriginal cultural heritage material identified during the proposed works is documented within the CHMP.

6.9 Rationale

The approach used in the assessment has been guided by the evaluation framework that applies to the project comprising the regulatory framework (that is, applicable legislation and policy) as well as the scoping requirements set by the Victorian Minister for Planning.

6.10 Limitations and Assumptions

The following limitations, uncertainties, and assumptions apply to this assessment:

- The desk-based assessment was extensive but not exhaustive, thus there remains the possibility that there are Aboriginal places within the Project Area that have not been identified during the assessment.

- Further revisions to the GMTOAC predictive model methodology is still in development in consultation with GMTOAC. As such, the methodology for subsurface investigations is subject to change throughout the life of the assessment and potentially the Project.
- Not all sections of the Project Area were accessible during the standard assessment. These areas were therefore assessed through the desktop assessment only.
- Complexities of testing GMTOAC led iterative predictive model.
- Highly variability across a small area (i.e. variability within the predicted archaeological sensitivity within a proposed turbine location). ALA approach is to look at proportions of ratings.

7. EXISTING CONDITIONS – DESKTOP ASSESSMENT

This section outlines the results of the desktop assessment to establish existing conditions. The aims of the assessment are:

- to determine the level of previous archaeological investigation within the Project Area and wider Study Area;
- to determine if previously registered Aboriginal places are present within the Project Area;
- to review historical and ethnohistorical accounts of Aboriginal occupation;
- to determine the environmental context of the Project Area in regard to landform and geomorphology;
- to develop a preliminary site prediction model for the proposed Project locations.

7.1 Geomorphology, geology, and soils

The Project Area is roughly divided into two: the area to the east and west of the Kanawinka Fault (refer to Plate 3). The area to the west of the fault is lower than that of the east, with the land to the east of the fault uplifted by the fault (refer to Plate 4). Fault movement probably occurred during a period of Late Miocene-Early Pliocene tectonism that affected much of southeastern Australia (White & Webb, 2015)

All of the land is underlain by Gambier Limestone that was deposited during the late Eocene and early Middle Miocene and consists of a fossiliferous bioclastic carbonate laid down onto an open marine shelf (Li, McGowran, & White, 2000).

The area of lower elevation, to the west of the fault, consists of a karst landscape that developed on the underlying Gambier Limestone, with low limestone pinnacles and ridges separated by depressions (refer to Plate 5). There is no surface drainage on the karst landscape; all rainfall is diverted underground through the dolines. Chromosol soils developed on the underlying Gambier Limestone during the period of weathering that formed the karst landscape.

To the south of the Project Area are east/west aligned linear carbonate dunes formed parallel to the coast (refer to Plate 6). These are part of the Bridgewater Formation, and most likely of Pleistocene age based on the basis of correlation with similar dunes to the west in South Australia (Banerjee, et al., 2003).

Younger parabolic dunes occur along the coastline and are being blown inland (refer to Plate 6); In places they overlie the linear dunes. Coastal sands have also blown across the karst landscape in the Project Area, covering the limestone ridges and overlying chromosols in dune sand. The most recent period of extensive aeolian activity in southeastern Australia occurred during the Last Glacial Maximum (approximately 20,000 years ago), when the Malanganee Sand was deposited across large parts of coastal Victoria (Lipar & Webb, 2015); Sand deposition across the karst landscape in the Project Area may have occurred at the same time.

To the east of the Kanawinka Fault, the Gambier Limestone is overlain by late Tertiary basalt flows (refer to Plate 3) (Heyligers, 1981).

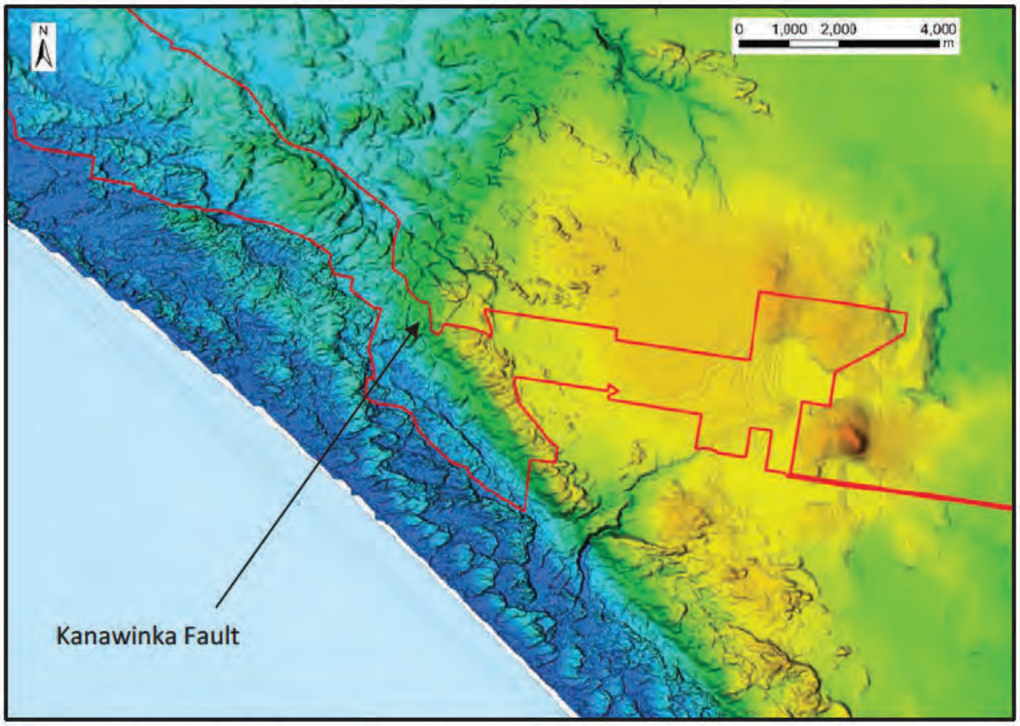


Plate 3 Location of Kanawinka fault within Project area, note green area to the left showing limestone ridges, and yellow area to the east representing land covered in basalt flows

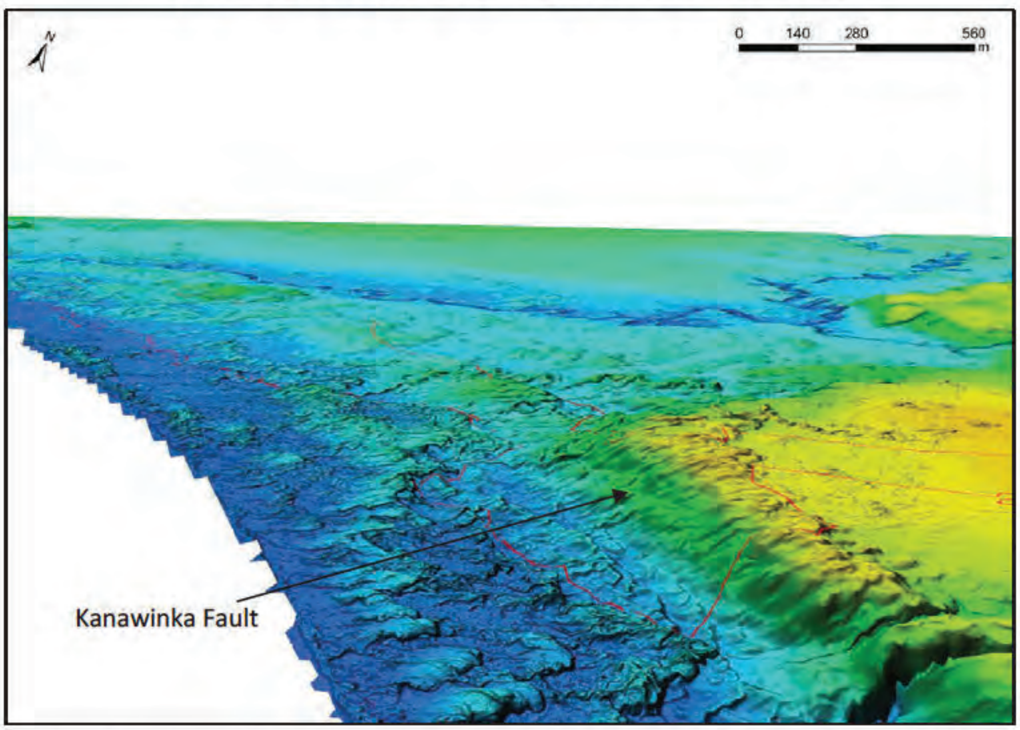


Plate 4 Oblique view of land to the east and west of the Kanawinka fault with Project Area in red

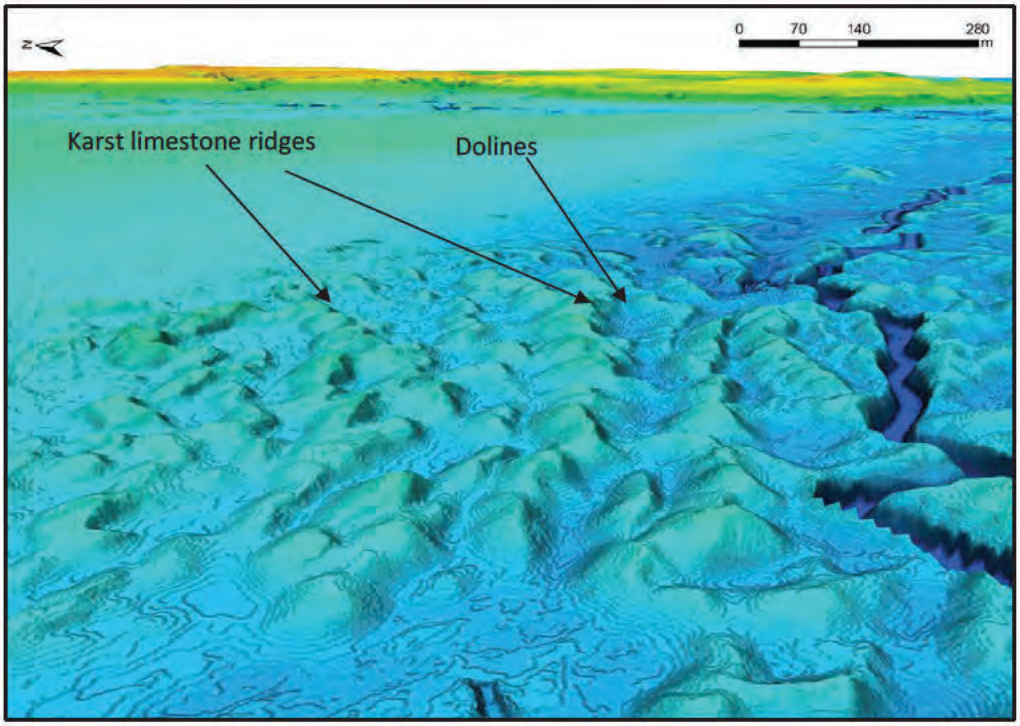


Plate 5 DSM imaging of karst limestone ridges with dolines within western aspect of Project Area

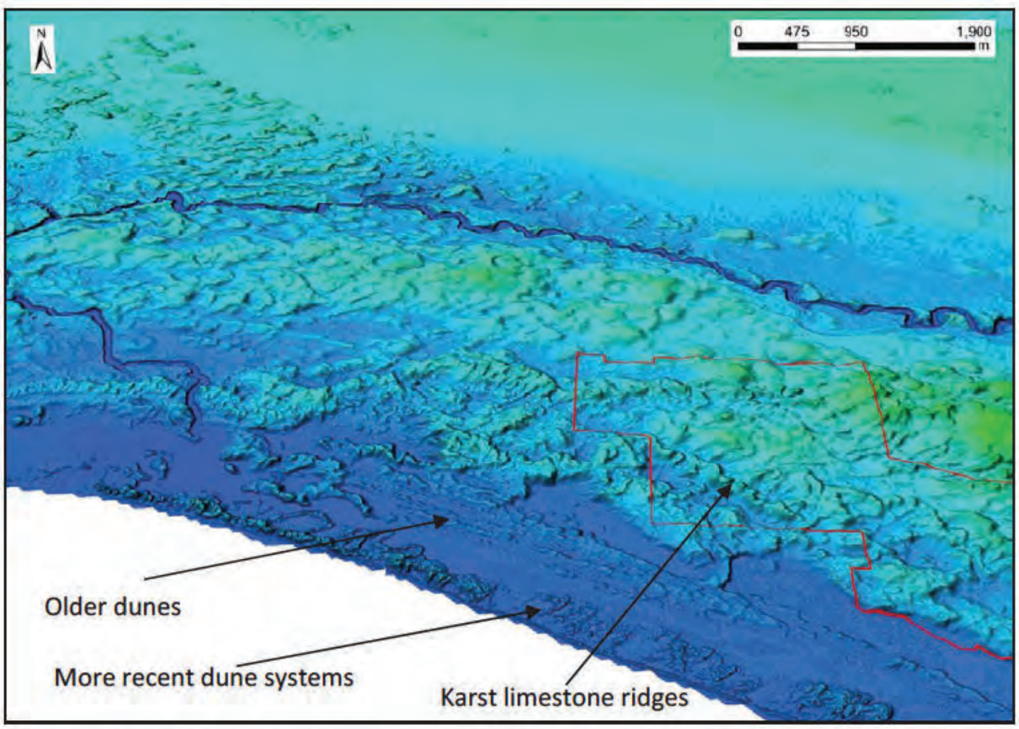


Plate 6 DSM imaging of older dunes located parallel to the coast line in relation to karst limestone and younger dune systems

7.2 Historical environment

The environmental context of the Project Area and the possible resources available to Gunditjmara before European contact provides an understanding of what portions of the Project Area may have served as a focus for Aboriginal use and occupation. A review of environmental datasets and modelled pre-1750 vegetation mapping of the area was undertaken to provide insight into the environment utilised by hunter-gather groups within the region.

7.2.1 Hydrology

There are no major water courses present within the Project Area; however, few smaller creeks and rivers intersect with the Study Area. The headwaters of the Surry River are located within the north-eastern end of the Study Area. The transmission line to Heywood crosses the Surry River three times, and Wild Dog Creek once before following the north side of the Surry River course to Heywood terminal. Along the southern extent of the Study Area is a series of extensive swamp lands. Long Swamp is a large, diverse freshwater ecosystem situated near the coastal town of Nelson. The wetland extends from Oxbow Lake (part of the Glenelg River Estuary) near the border with South Australia, eastwards for approximately 15 km, forming a chain of diverse, interconnected wetland habitats through to Lake Momboeng (a permanent, groundwater-fed freshwater lake). These swamp lands and watercourses would have provided Gunditjmara with freshwater as well as an abundant source of animal and plant resources.

7.2.2 Modelled pre-1750 vegetation of the Project Area

The modelled pre-1750 vegetation of the Project Area provides insight into the environment utilised by past Gunditjmara groups within the region, and the resources available prior to European land clearance and development. Classification of native vegetation in Victoria follows a typology in which EVCs are the primary level of classification. The distribution of pre 1750 EVCs within the Study Area is displayed in Figure 21 and Figure 22.

Prior to European settlement, woodland complexes and grasslands were the dominant vegetation types within the Project Area. Along the ridges and escarpments, the Project Area was characterised by Heathy Dry Forest (EVC 20) and Grassy Dry Forest (EVC 22) which comprise an overstorey that is generally a low open Eucalypt forest to 20 m tall on the steeper slopes and ridges. The forests included Red Stringybark (*Eucalyptus macrorhyncha*) and Long-leaved Box (*Eucalyptus goniocalyx*) at lower altitudes and Broad-leaf Peppermint (*Eucalyptus dives*) and Brittle Gum (*Eucalyptus mannifera*) at higher altitudes. Shrubs such as Beard Heath (*Leucopogon*), Austral Grass-tree (*Xanthorrhoea australis*), known to have been a source of food, spear shafts, gum and fibre for Aboriginal people (Wesson & Clark, 1980), Ploughshare Wattle (*Acacia gunnii*), Hairy Geebung (*Persoonia hirsute*) and Silver-top Wallaby-grass (*Joycea pallida*) are also present (Department of Energy, Enviornment and Climate Action, 2023).

Valley Grassy Forest (EVC 47) and Herb-rich Foothill Forest (EVC 23) usually occurred on valley floors and plains on alluvial soils throughout the Study Area. The occurrence of these vegetation types are typically in proximity to intermittent streams or drainage lines (State of Victoria (Agriculture Victoria), 2024), many of which are present throughout the Project Area. The tall, open overstorey to 25 m tall may carry a variety of eucalypts, usually species which prefer moist, or fertile conditions over a sparse shrub cover. The forest vegetation includes Yellow Box (*Eucalyptus melliodora*), Candlebark (*Eucalyptus rubida*) and Manna Gum (*Eucalyptus viminalis*). The ground layer across the valley floors and plains is dominated by a dense sward of Common Tussock-grass (*Poa labillardieri*), Weeping Grass (*Microlaena stipoides*), Grey Tussock-grass (*Poa sieberiana*) and Wallaby Grasses (*Austrodanthonia spp*) (Land Conservation Council (LCC), 1987; Department of Energy, Enviornment and Climate Action, 2023). Between the grass tussocks, a diverse array of native herb species flourished throughout the Project Area and broader Study Area. The distribution of these depended on the moisture levels, and included Cinquefoil Cranesbil (*Geranium potentilloides*), Hairy Pennywort (*Hydrocotyle* *hirta*), Blue Pincushion (*Brunonia australis*), Kidney Weed (*Dicondra repens*) and Chocolate Lily (*Arthropodium strictus*) (Department of Energy, Enviornment and Climate Action, 2023).

This array of plant resources available to Gunditjmara in and around the wider Study Area would have provided a range of tubers, fruits, berries, seeds, grasses, reeds, bark and leaves. These would have been used for food, medicines, fibre for making string and weaving, reeds for making baskets, bark for shelters, canoes and containers (Land Conservation Council (LCC), 1987, pp. 230-242). In addition, some of the prominent faunal resources that would have been available to Aboriginal people in the Project Area and wider Study Area include kangaroos and wallabies (*Mammalia diprotodontia Macropodidae*), possums (*phalangeridae*), wombat (*Vombatus ursinus*), platypus (*Mammalia monotremata*), echidna (*Tachyglossus aculeatus*), bandicoot (*Mammalia peramelomorphia peramelidae*), lizards/snakes (*Reptilia squamata agamidae/elapidae*), dingo (*Canis lupis*) and a range of birds.

Coastal resources would have provided littoral resources along with seasonal plant (Zola & Gott, 1992). Besides littoral sources of fish and shellfish, seabirds such as Cormorants and Sandpipers would have provided eggs as well as meat.

Vegetation within the Kentbruck land unit originally consisted of a dry sclerophyll forest or tall woodland predominantly of stringybark (*Eucalyptus baxteri*) and namma gum (*E. viminalis*), with some peppermint (*E. vitrea*) (Gibbons & Downes, 1964). Karst landforms generally general consist of impenetrable vegetation and that may not have been conducive for longer term occupation (pers comm. John Webb, 21/03/2024).

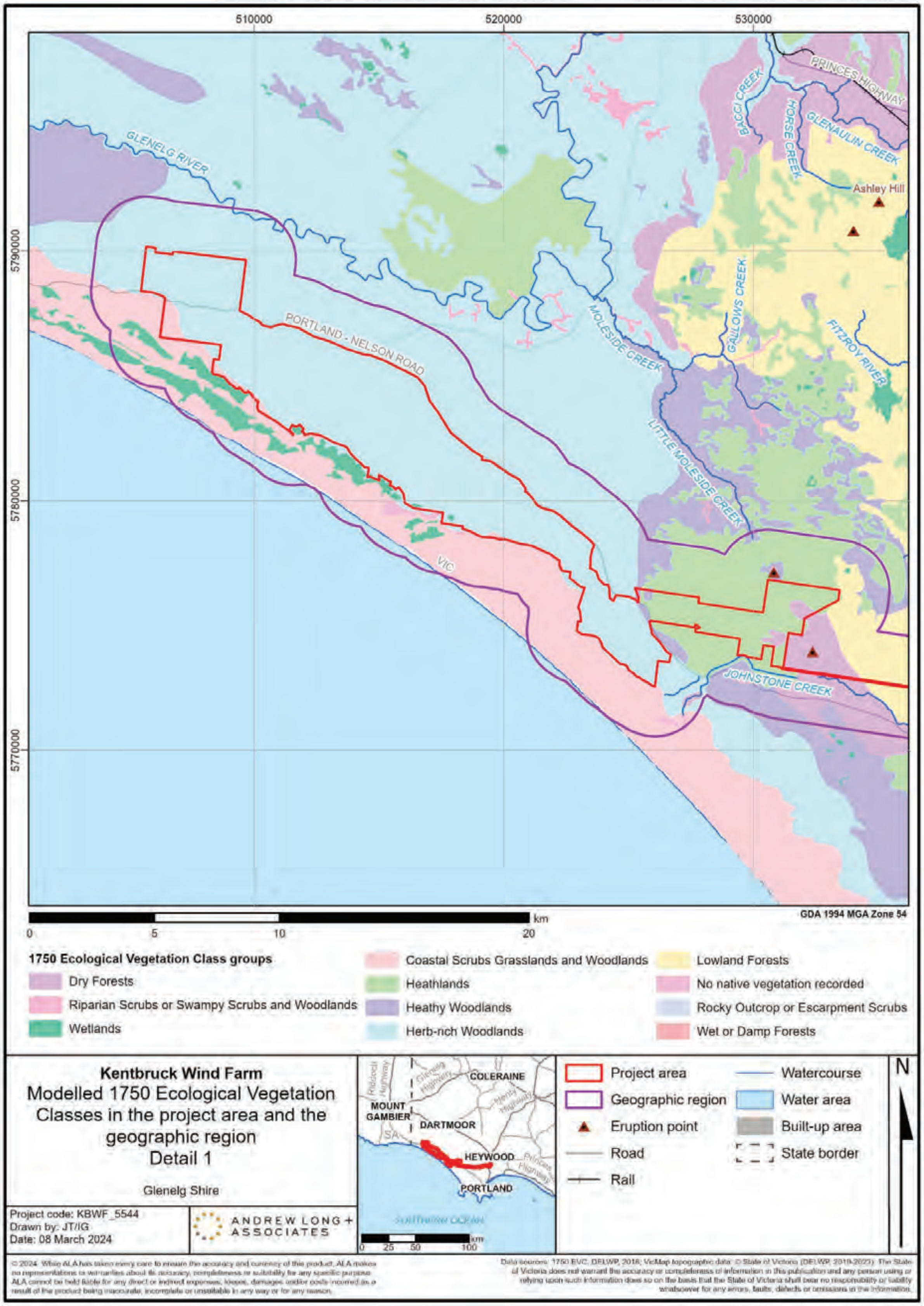


Figure 17 EVCs associated with the study area–- detail 1

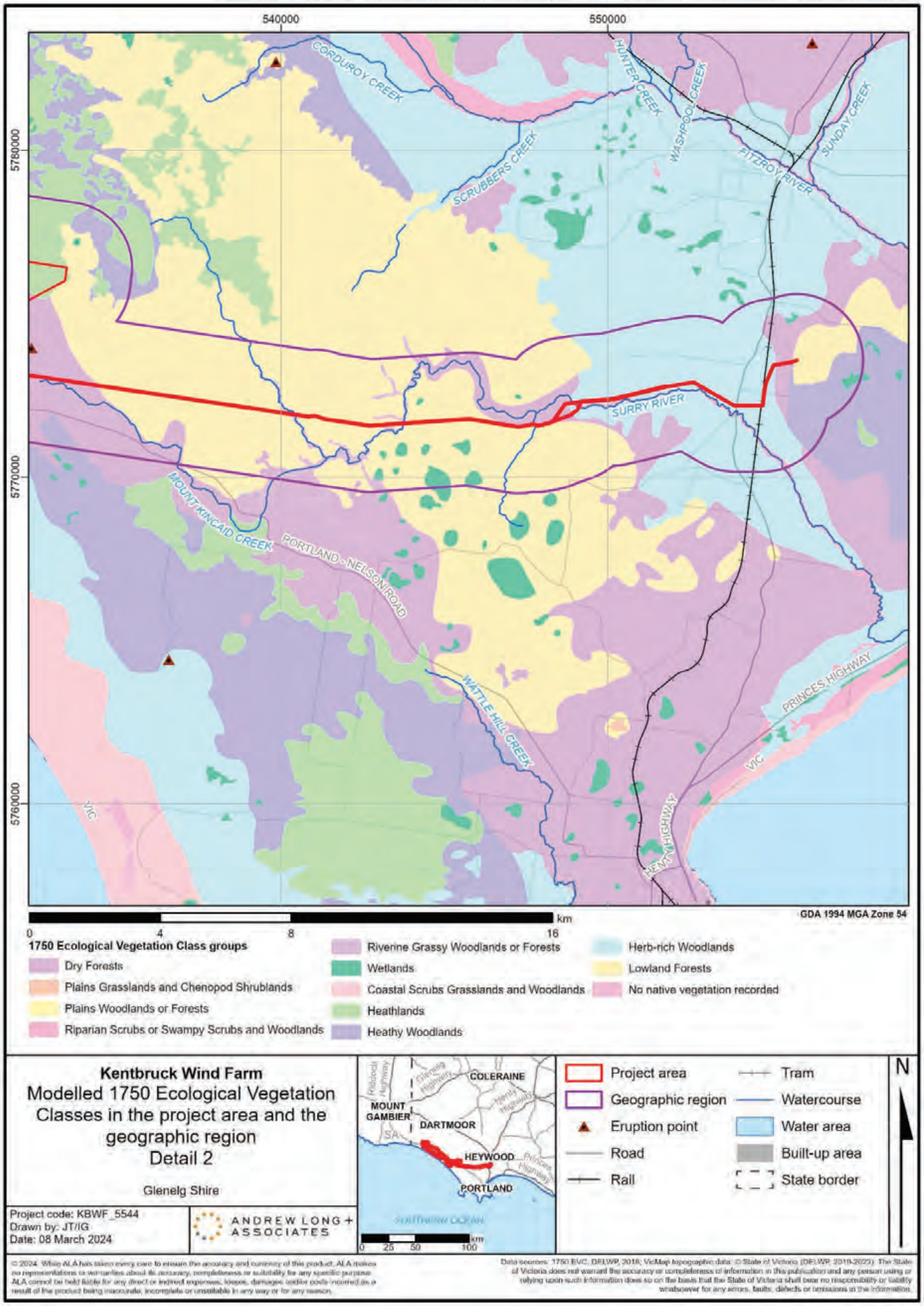


Figure 18 EVCs associated with the study area – detail 2

7.3 Review of historical and ethnohistorical accounts of Gunditjmara occupation in the region

A review of available ethnohistorical and historical information relating to Gunditjmara in the Project Area assists in formulating a model of Aboriginal subsistence and occupation patterns relevant to the Project Area. In conjunction with an analysis of the documented archaeological record of the region, the ethnohistorical information also assists in the interpretation of archaeological places in the wider Study Area, and in predicting the potential location of archaeological place types within the Project Area.

7.3.1 Ethnohistorical accounts

7.3.1.1 Social organisation

According to Clark (1990), the Project Area and broader Study Area are situated within the traditional lands of the Gunditjmara. Gunditjmara County extends from the coastal areas of Portland, Port Fairy, and Warrnambool and inland to Camperdown. Clark defines the boundaries of Dhauwurd wurrung speaking Gunditjmara as the country around Portland and Lake Condah, as well as the Glenelg to Gellibrand River and inland for 50 miles or more. The Hopkins River formed the boundary between the Dhauwurd wurrung and the Girai wurrung to the east (Clark I. D., 1990).

Much of what is known about the Gunditjmara is from the accounts of James Dawson (1881) and R.H. Mathews (1904). As such, much of the language of the Dhauwurd wurrung is better known than any other Victorian language (Clark I. D., 1995). What is known of clan organisation is from the journals and papers of G.A. Robinson (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990).

The Gunditjmara were divided into 59 clans, each with a distinct area of land or estate. Clark maps several clans within the Project Area (refer to Plate 7). The clans living in, and responsible for, the region surrounding the Project Area were the Narcurrer gundidj (number 30 in Plate 7 below), Tarrerwung gundidj (number 39 in Plate 7 below), and/or Tarngonene wurrer gundidj (number 41 in Plate 7 below) (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990).

The Narcurrer gundidj (number 30 in Plate 7 below) were responsible for the land to the southwest of Mingbim's camp located on the Crawford River, near the crossing place on Portland Road (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990). In 1841, Robinson lists the names of 35 adult makes, 57 women, and 64 children that make up the Narcurrer gundidj. The name, Narcurrer gundidj, means "belonging to Narcarrer" (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990, p. 68).

The Tarrerwung gundidj (number 39 in Plate 7 below) were responsible for the land to the west of Portland, in the bend of the Glenelg River and the ocean (Clark I. D., 1990). The clan head was Mingbim (Clark I. D., 1998). In 1841, Robinson listed the names of six men. The clan name means Tarerwung conedeet, "belonging to Tarerewint," after a lake "Tarer bung" (Clark I. D., 1990, p. 77).

The Tarngonene wurrer gundidj (number 41 in Plate 7 below) were responsible for the country to the southwest, near the Fitzroy River and Glenelg, along he Surrey River to Mount Clay. The clan name means "belonging to Tarngonene people" and the clan head was unknown (Clark I. D., 1990, p. 78)

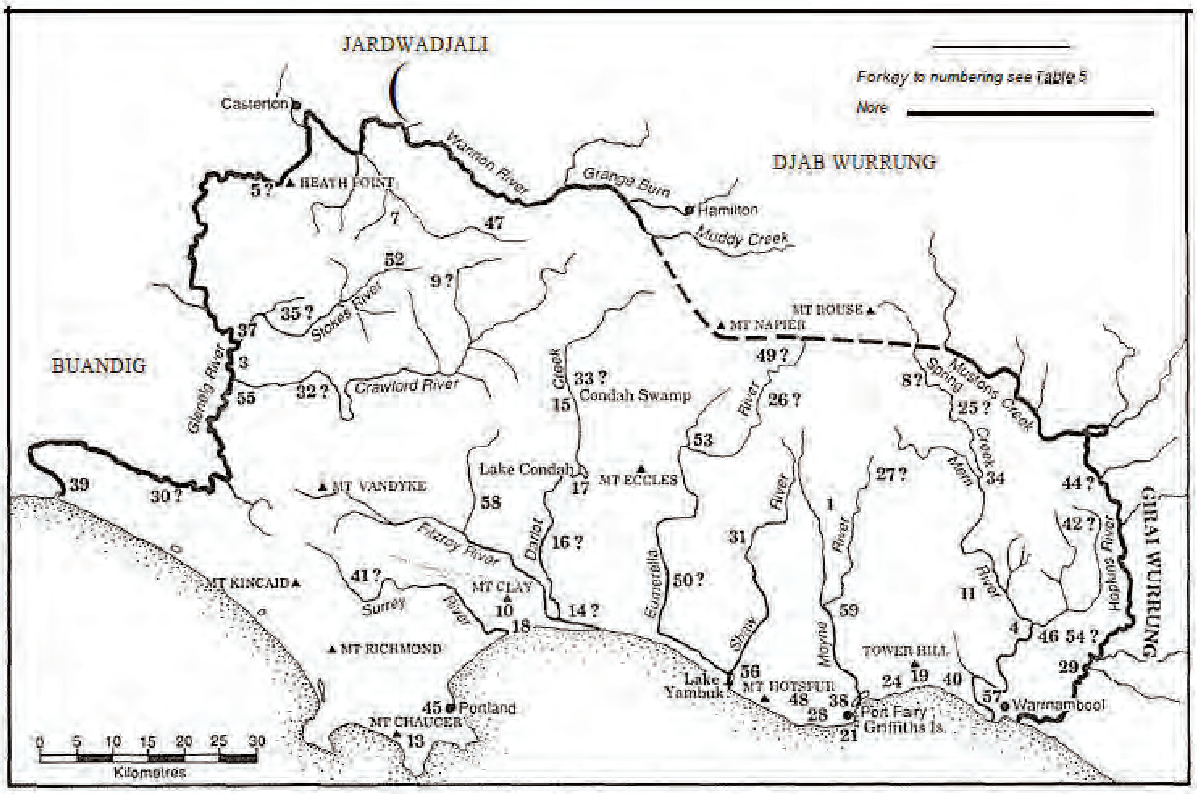


Plate 7 Dhauwurd wurrung language area and clans (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990, p. 54)

7.3.2 Contact and post-contact periods

James Grant with the H.M. Brig *Lady Nelson* is generally accepted as the first European along the western Victoria coast in 1800 (Clark I. D., 1998). Dawson notes that the first ship seen by western Victoria Aboriginal people was thought to be a huge bird, or tree, that was growing out of the ocean (Clark I. D., 1998).

European settlement in the region had a devastating effect on local Aboriginal populations. Steep declines in population were recorded soon after European settlement in 1844, with introduced diseases heavily impacting the Gunditjmara. A census in 1850 taken by the Commissioner of Crown Lands for Portland Bay, William Grey, indicates there was a population of 422 Gunditjmara people. By 1862 this had dropped to just 157, a decrease of 73% in only 13 years.

The arrival of the Hentys to the area in 1834 invaded the traditional lands of the Gunditjmara, for the grazing of sheep. In response, local clans began to use traditional burning off methods to drive the Hentys off of the land. This did not thwart the Hentys, and by 1839, Edward Henty noted that he was on the best of terms with the various groups in the area (Clark I. D., 1990).

Local Gunditjmara would use the stoney rises as a base from which they could launch attacks at the European invaders, especially those that chose to settle on the traditional meeting places and sacred sites. This resistance to European settlement was maintained for several years and even slowed the rate of settlement to the area. The resistance became so frequent and intense, that the native Police Corps was dispatched to the Western District, and by 1846, the resistance movement had ceased (Clark I. D., 1990).

In 1839 the Aboriginal protectorate scheme was introduced in Victoria. A Chief Protector, Robinson, was appointed and supported by four Assistant Protectors. The role of the protectorates was to provide food, shelter and medical supplies, record cultural and population information and to indoctrinate Aboriginal peoples into European cultural and economic systems. The Assistant Protector assigned to the western district was C. W. Sievwright, who established his headquarters at Thomsons Keilambete run near Terang in February 1841. The Aboriginal protectorate scheme was disbanded in 1949 (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990).

In the 1850s Gunditjmara were living on a number of pastoral stations in the district. In 1861 3,500 acres of land on the Hopkins River was reserved by the government for the exclusive use of Aboriginal people (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990). Responsibility for the mission, Framlingham Aboriginal Station, was given to the Church of England in 1865, however most Aboriginal groups from the Portland area refused to live on the mission despite sharing a common language with some of the groups settled there (Clark I. D., Aboriginal Languages and Clans: an Historical Atlas of Western and Central Victoria, 1800–1900, 1990). The Church only managed the site for a year before handing it back to the Central Board for Protection of Aborigines. In 1867 the Board decided to close Framlingham and moved the 73 residents to Lake Condah Mission (Koorie Heritage Trust 2021).

In 1886, The Victorian Parliament passed the *Aborigines Protection Law Amendment Act*, which redefined the legal definitions of Aboriginality to be “full bloods, half castes over 35, female half castes married to Aborigines, infants of Aborigines”. Any person not meeting these criteria was forced to leave the Lake Condah Mission within three years. This was done with the intention that they would be “Europeans”, reducing government costs and therefore assimilating them into European society. Many of these families moved to Little Dunmore, just south of the mission. In the 1890s, some of these families petitioned to have land from the mission on which to live, a request that was denied by the Board. In 1916, four weatherboard houses were moved to Little Dunmore as housing for the remaining Aboriginal people living in the area. The Condah Mission had 70 residents in 1939. The school was officially closed in 1948 and in 1951 all but a small portion of the mission land was revoked and given to the Solider Settlement Commission (Koorie Heritage Trust, 2021).

7.4 Land use history

Land use activities have the potential to significantly affect the preservation and condition of surface and subsurface archaeological deposits. A review of the land use history provided an overview of the key periods of European activity in the Project Area and the impacts of these developments had on ground surfaces.

In December 1800 Lieutenant James Grant in the ship Lady Nelson visited and named Cape Bridgewater and Matthew Flinders in the Investigator officially charted the coast in April 1802. Sealers and whalers were likely present prior to 1807-1810 with Captain James Wishart and two others, Armstrong and Schultz recorded to have built log huts as seasonal shelter as they worked the Portland Bay coastline (Port Fairy to Portland). In 1828 William Dutton formed a sealing and whaling depot at Portland, building a cottage for himself and huts for his men who were numbered between twenty to thirty. Dutton’s house was reported to be located at Whaler’s Point where the creek from the lagoon enters the sea. Edward Henty arrived in Portland in 1833 seeking a suitable place to establish a settlement and was shown the advantages of Portland by Dutton.

The Henty family settled in the area in 1834 and initially commenced agricultural and pastoral activities before undertaking whaling in 1836 (Kiddle, 1996). Edward Henty recorded that inland north east of Portland and east of Lake Condah and Bridgewater abundant grass and country was to be found (Learmonth, The Story of a Port: Portland, Victoria, 1960). 1837 was the recorded peak whaling year with 20 whales caught by the Henty’s compared to 11 whales in 1843. By 1845 the whaling industry at Portland was waning with a brief resurgence in 1858-1859 when one whale was caught each season and in 1860-1861 when seven whales were caught (Townrow, 1997). The Henty family were the first to graze and breed sheep in Victoria having landed in 1834 with four merino rams, six merino ewes and 90 crossbreed ewes (Learmonth, The Story of a Port: Portland, Victoria, 1960).

The town of Portland was first surveyed in November 1839 by C. J. Tyers and his assistant surveyor T. S. Townsend. Tyers calculated the population of the district as 203 people. Sale of the township blocks commenced in October 1840. By 1849 wool exports from the area had increased to 5,495 bales from 2.050 bales in 1842 and attempts were made to improve the roads to transport goods to the Port. A railway was proposed to the hinterland but in 1856 it was decided that a tramway running on wooden rails was more suitable and work commenced in 1857. By 1865 the scheme was abandoned, and the tramway material sold at auction. In 1874 the Portland-Hamilton Railway was constructed and opened (Learmonth, The Story of a Port: Portland, Victoria, 1960).

The Henty family first settled Cape Bridgewater shortly after settling in Portland 1834. Cape Bridgewater at the time was one of the Henty's six stations in the district. The Henty Brothers cleared and cultivated land from as early as the late 1830s at Cape Bridgewater where they acquired a pre-emptive right of approximately 31 acres as Allotment 1 of Section 1. In April 1842, Gideon, Thomas and William Lang arrived upon the shores of Discovery Bay and took up a licence for 151,000 acres between the Glenelg River and Kentbruck. The Bridgewater area was surveyed in 1849 and 1850 and opened up for pastoral leases in 1850. Most of the allotments were purchased from the Crown by R. Liddle and James Kennedy (Glenelg Shire, 2021). Liddle, Kennedy, J. Remfry and J. Trangmar purchased allotments where the Project Area is located (Public Records Office of Victoria (PROV), 1937).

Kentbruck has a history that is typical of the other parishes covered by the Project Area. The etymology of Kentbruck is from the Old English word 'kant' meaning headland or corner and 'bruch' meaning swamp (Bennett, 1997). The western section was named Lake Moniboeng (after the Indigenous name for beautiful sheet of water) (Learmonth, 1970) and eastern section was called Kentbrush (No. 160). Both runs were licensed 18 months before the 1847 NSW OIC (Spreadborough & Anderson, 1983). The Lake Moniboeng licence changed hands several times, to well-known south-west Victorian families (McLeans, Egans and Mathesons), before it was cancelled in 1876 (Learmonth, 1970).

The main industry within the Project Area was agriculture which then turned to forestry, with the stripping of wattle bark beginning in the 19th century. Land reservations were set aside for forest in the area (Savill, 1976) and at least one government financed plantation in Kentbruck was established as early as the 1870s. However, this was short lived as it was burnt before it could be harvested. Sawmilling was an important industry, with townships established at Portland, Heywood, Gorae and Gorae West, Hotspur and Digby, and at Dartmoor and Drik Drik directly as a result of sawmilling activities. The timber produced was mainly used for ship-building, jetty construction and general building works. Steam-powered sawmills were introduced in the 1860s which reduced the manual labour required previously. Within the broader area, the major enterprises were grain, cattle and dairying. The gold rushes depleted the labour force, but on the other hand provided a major market for the goods produced in the Bridgewater area. By 1860 about 38 families lived and worked in the area. Small industries associated with agriculture were established in the late 19th and early 20th centuries with one such example being the Bridgewater Butter Factory opening in 1902 to cater for local herds (Learmonth, 1960). The Project Area has remained predominately rural with closer settlement at Cape Bridgewater.

7.5 Victorian Aboriginal Heritage Register search

At the time of the VAHR search (17 May 2023, and again on 20 February 2024 to ensure that no further Aboriginal places had been included on the VAHR within the Study Area from the time that the assessment commenced) there were a total of [redacted] registered Aboriginal cultural heritage places within the defined Study Area (2 km buffer around the Project Area). Those [redacted] places comprise [redacted] locations (primary and component coordinates) at which Aboriginal cultural heritage material has been identified and is depicted in Figure 23 through Figure 34.

There are a total of [redacted] previously registered Aboriginal places within the Project Area discussed in further detail in Section 7.5.1 below. The majority of Aboriginal places within the wider Study Area consist of [redacted] The distribution of registered Aboriginal places within the wider Study Area shows a correlation between the location of artefacts in proximity to the coastline. The details of the Aboriginal places recorded within the Study Area are summarised in Table 44, Appendix 1.

7.5.1 Aboriginal places within the Project area

Of the [redacted] Aboriginal places recorded within the Study Area, a total of [redacted] Aboriginal places are recorded within the Project Area. [redacted] were recorded during the Biosis (2019) due diligence assessment prepared for the Project and [redacted] as part of CHMP 18058. Details of these Aboriginal places are summarised below.

[redacted]

Aboriginal place comprises two coastal flint artefacts both described as steep-edged scrapers. [redacted]

[redacted]

Aboriginal place comprises an artefact scatter and shell midden, including over 40 artefacts, however only one was analysed as coastal flint medial flake located within a shell midden. [redacted]

[redacted]

Aboriginal place is recorded as a distal flake made from coastal flint. [redacted]

[redacted]

Aboriginal place comprises [redacted] coastal flint artefacts recorded at the same location [redacted].

[redacted]

Aboriginal place is recorded as a single silcrete geometric microlith. [redacted]

[redacted]

Aboriginal place is a large collection of [redacted] artefacts found in [redacted] The Aboriginal place contains a wide variety of tool types but is almost exclusively dominated by coastal flint raw materials accounting for approximately 99% of the assemblage. [redacted]

Figure 19 VAHR places map – Overview

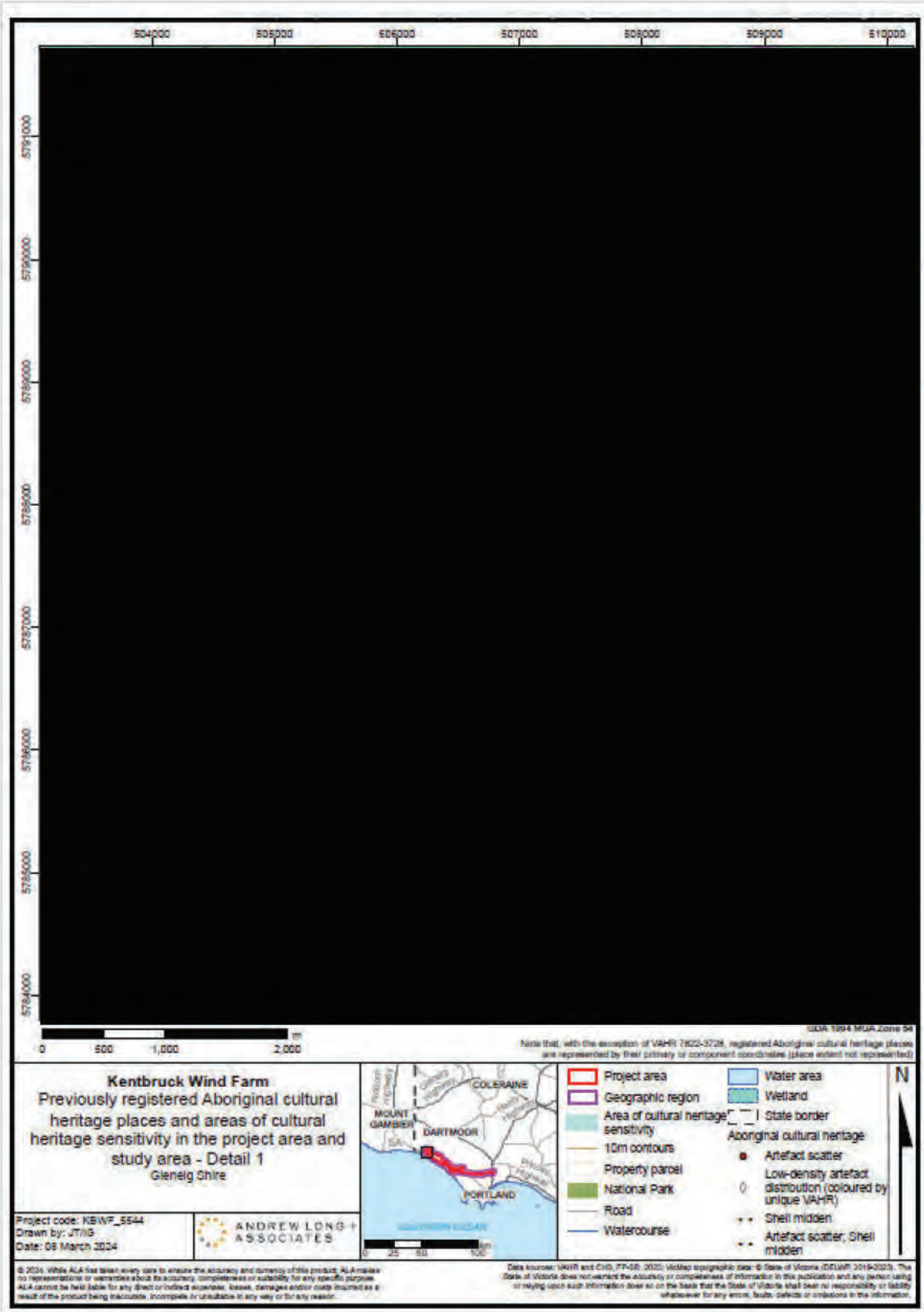


Figure 20 VAHR places map – detail 1

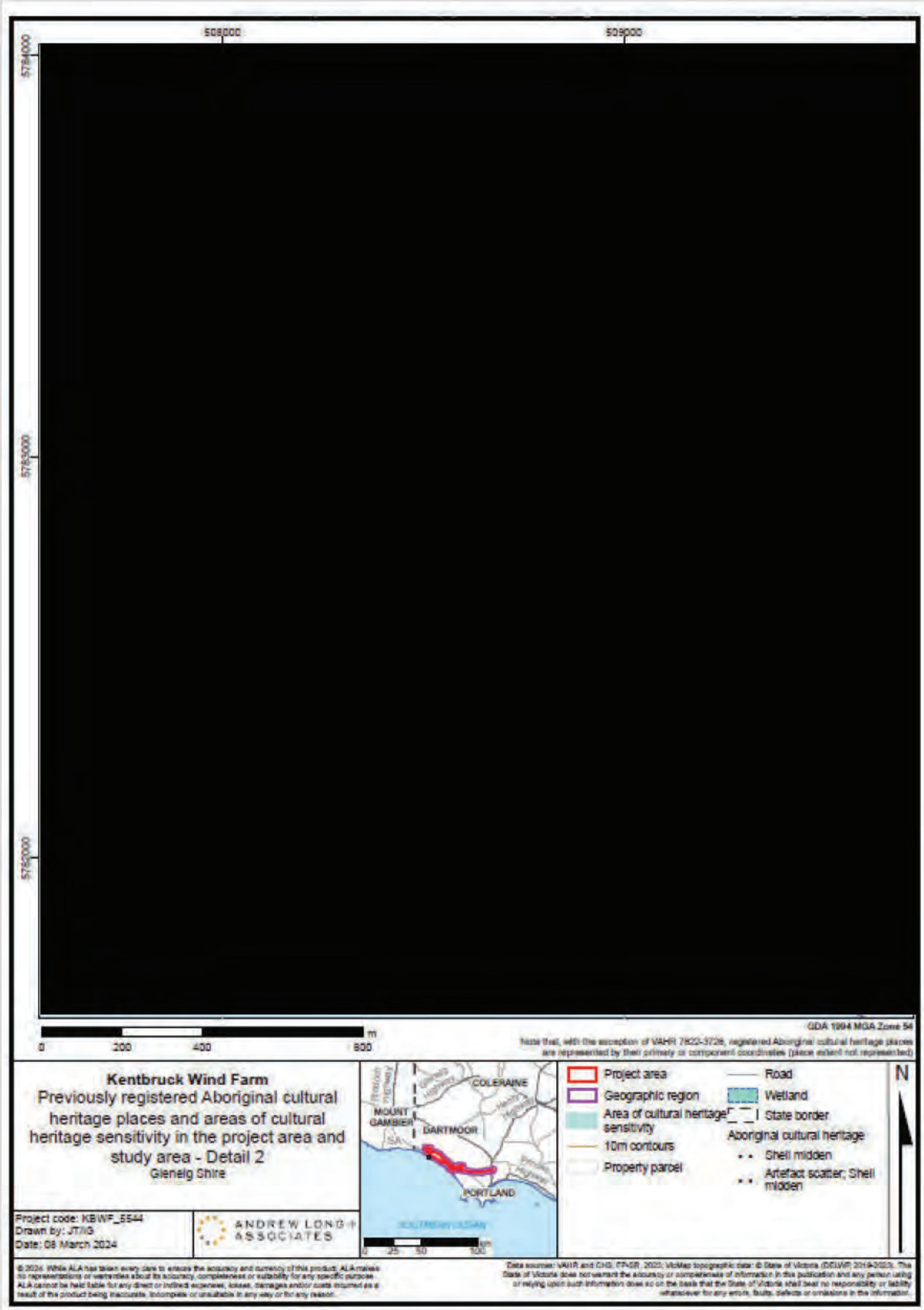


Figure 21 VAHR places map – detail 2

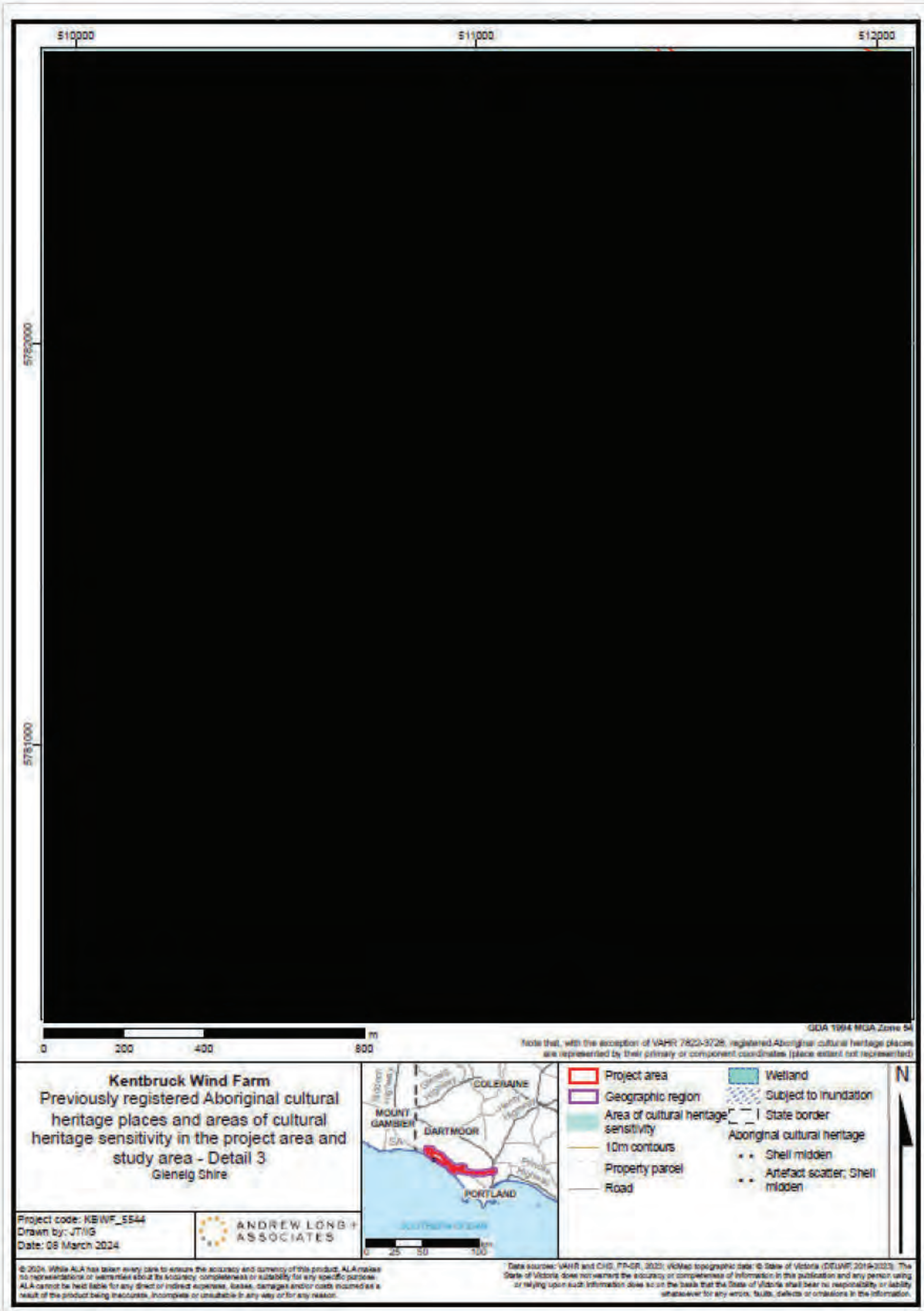


Figure 22 VAHR places map – detail 3

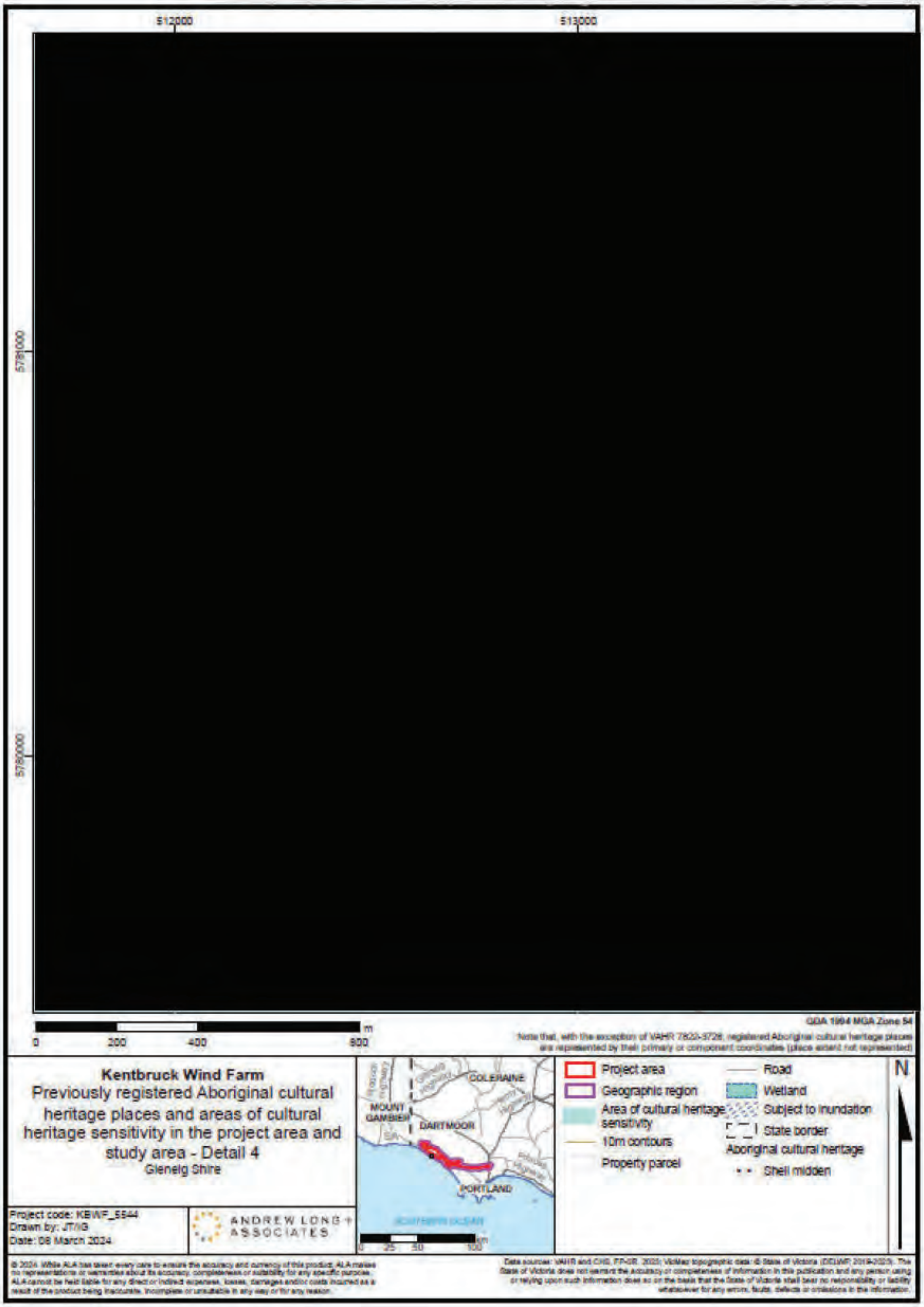


Figure 23 VAHR places map – detail 4

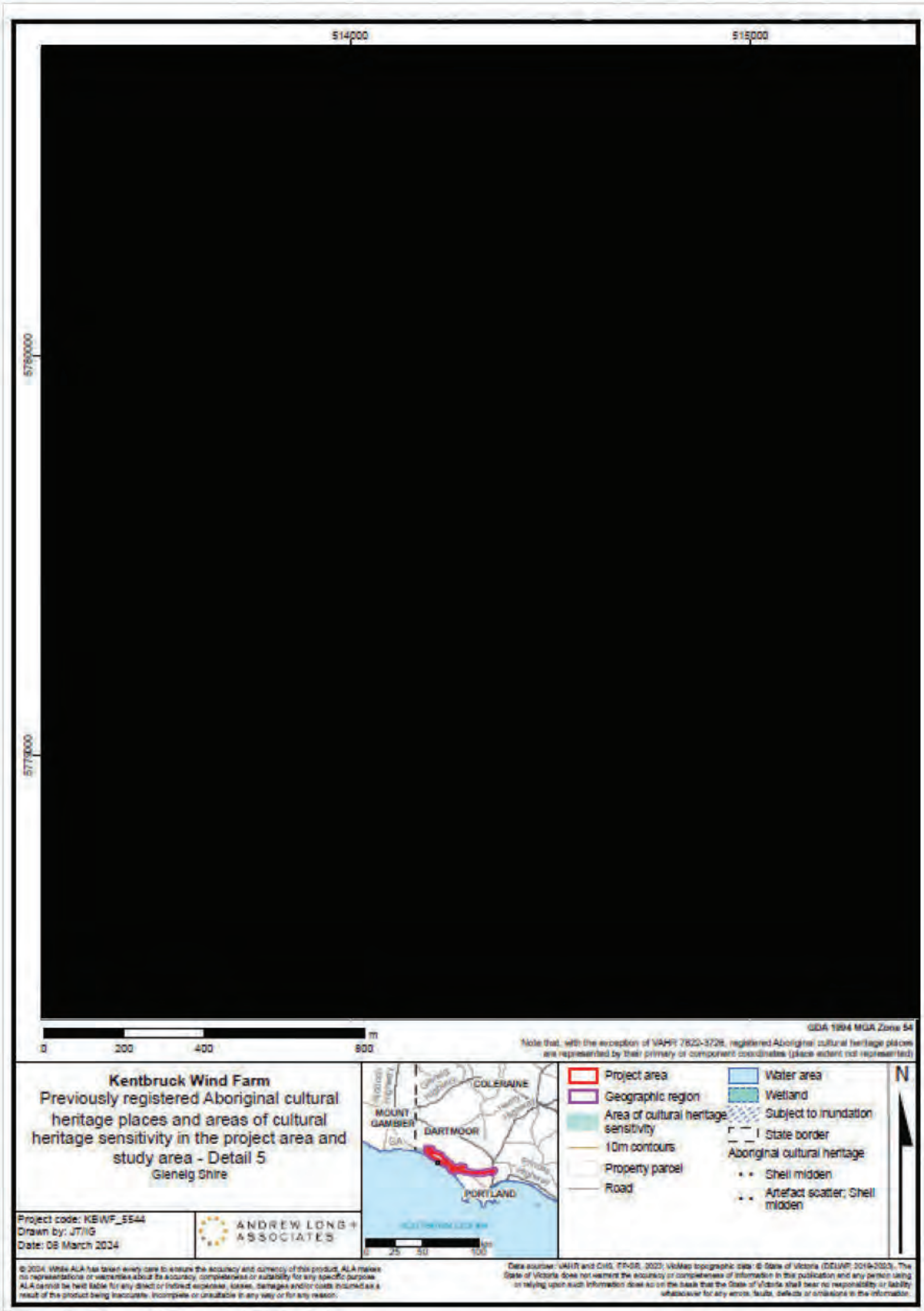


Figure 24 VAHR places map – detail 5

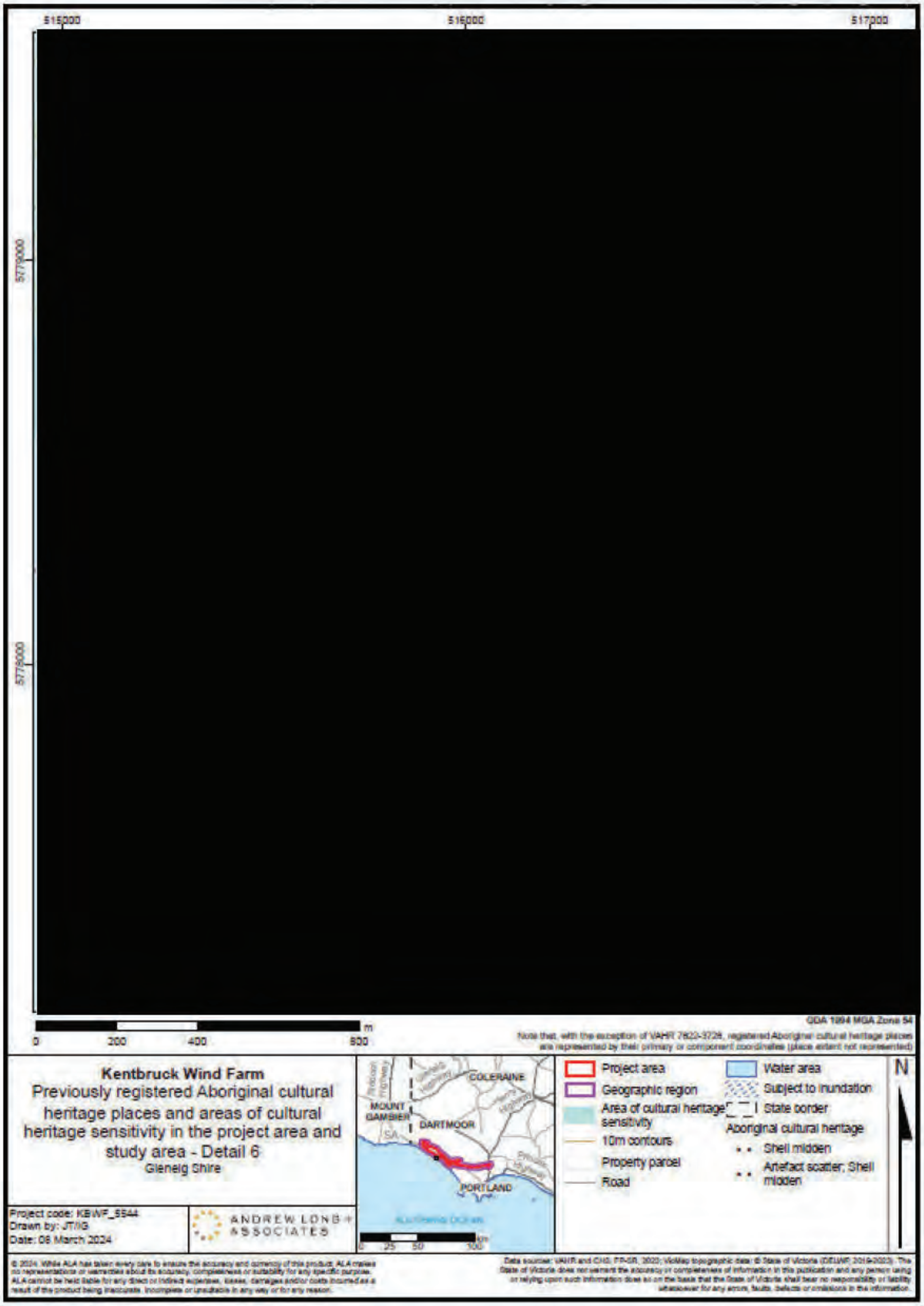


Figure 25 VAHR places map – detail 6

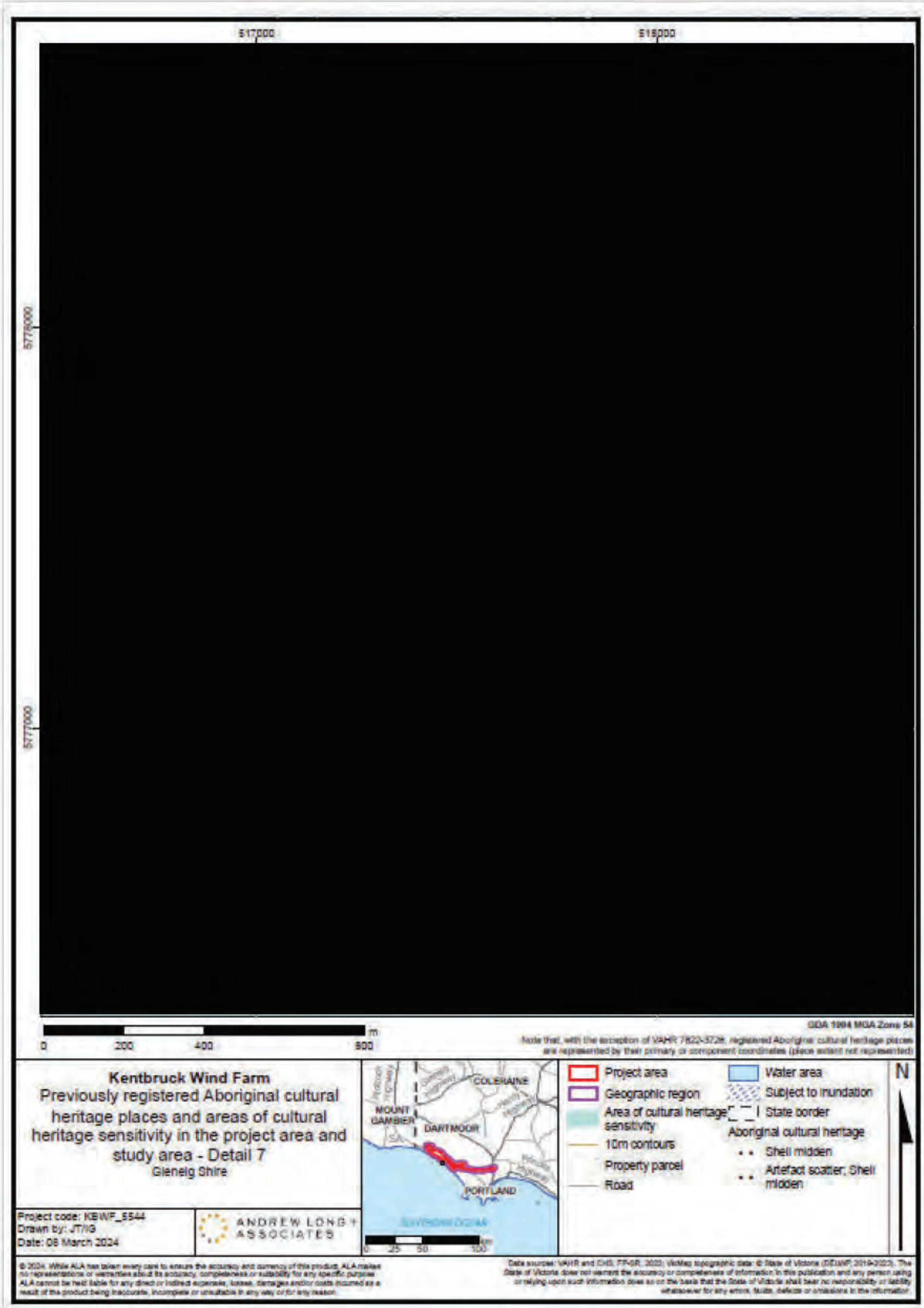


Figure 26 VAHR places map – detail 7

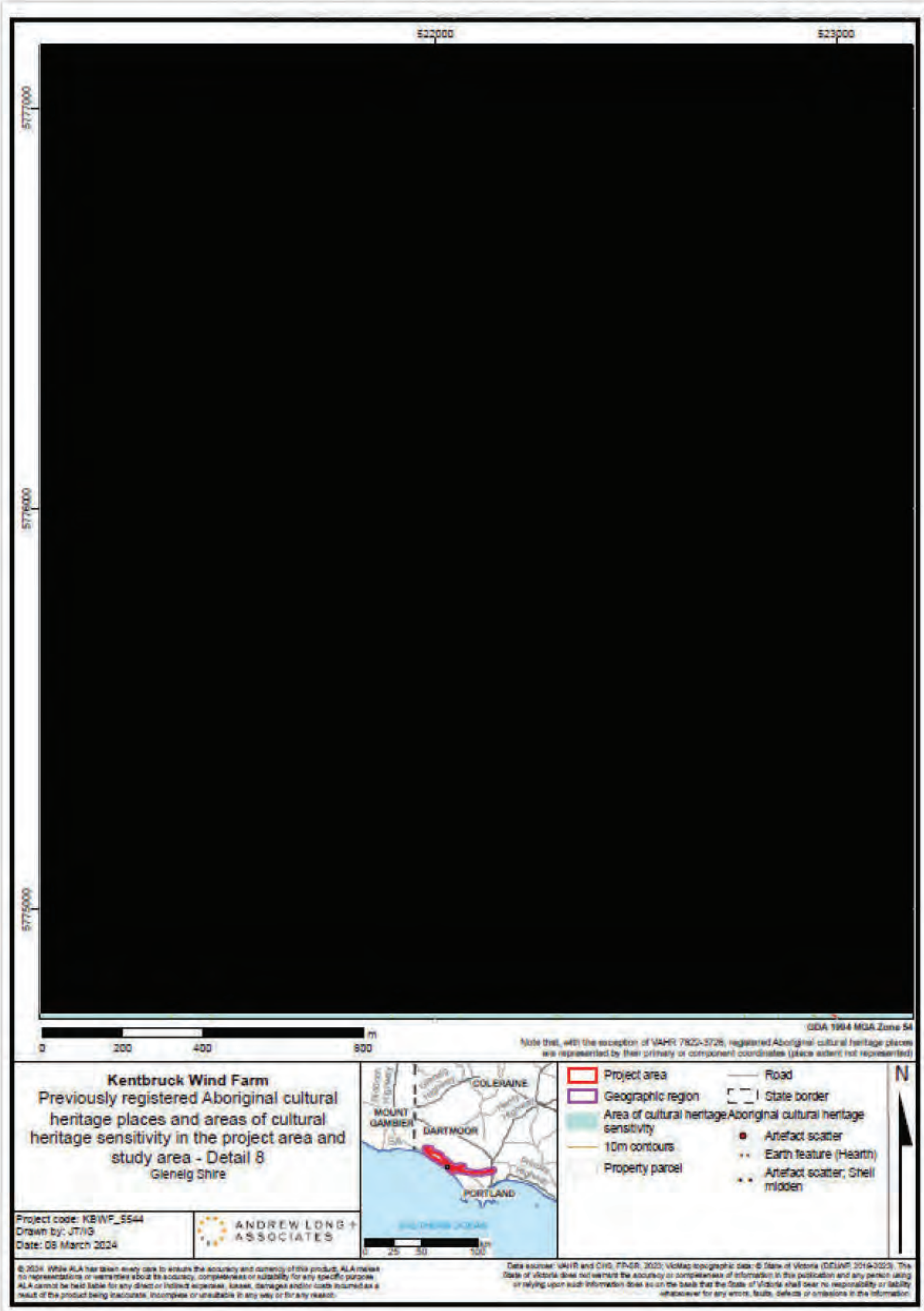


Figure 27 VAHR places map – detail 8

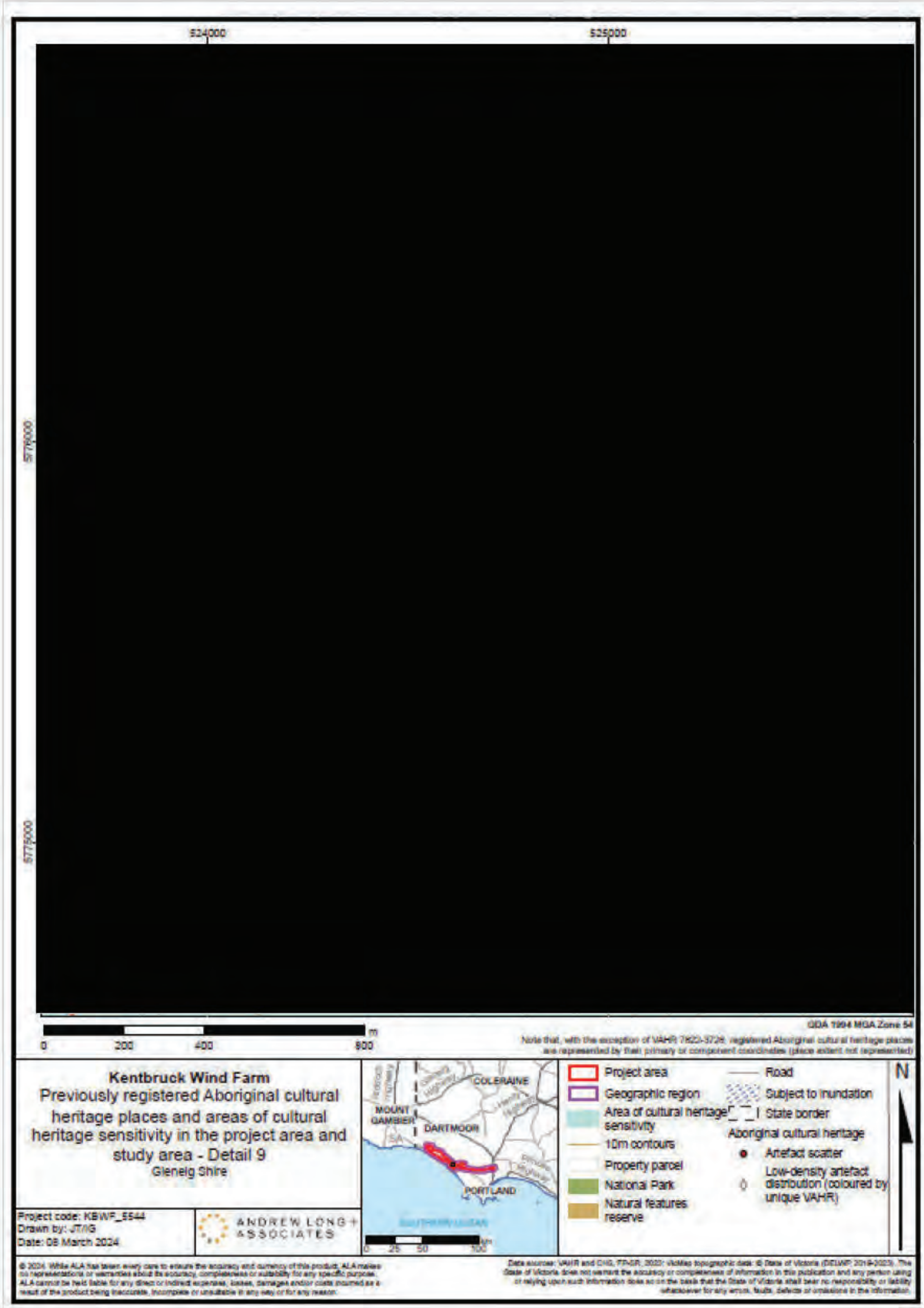


Figure 28 VAHR places map – detail 9

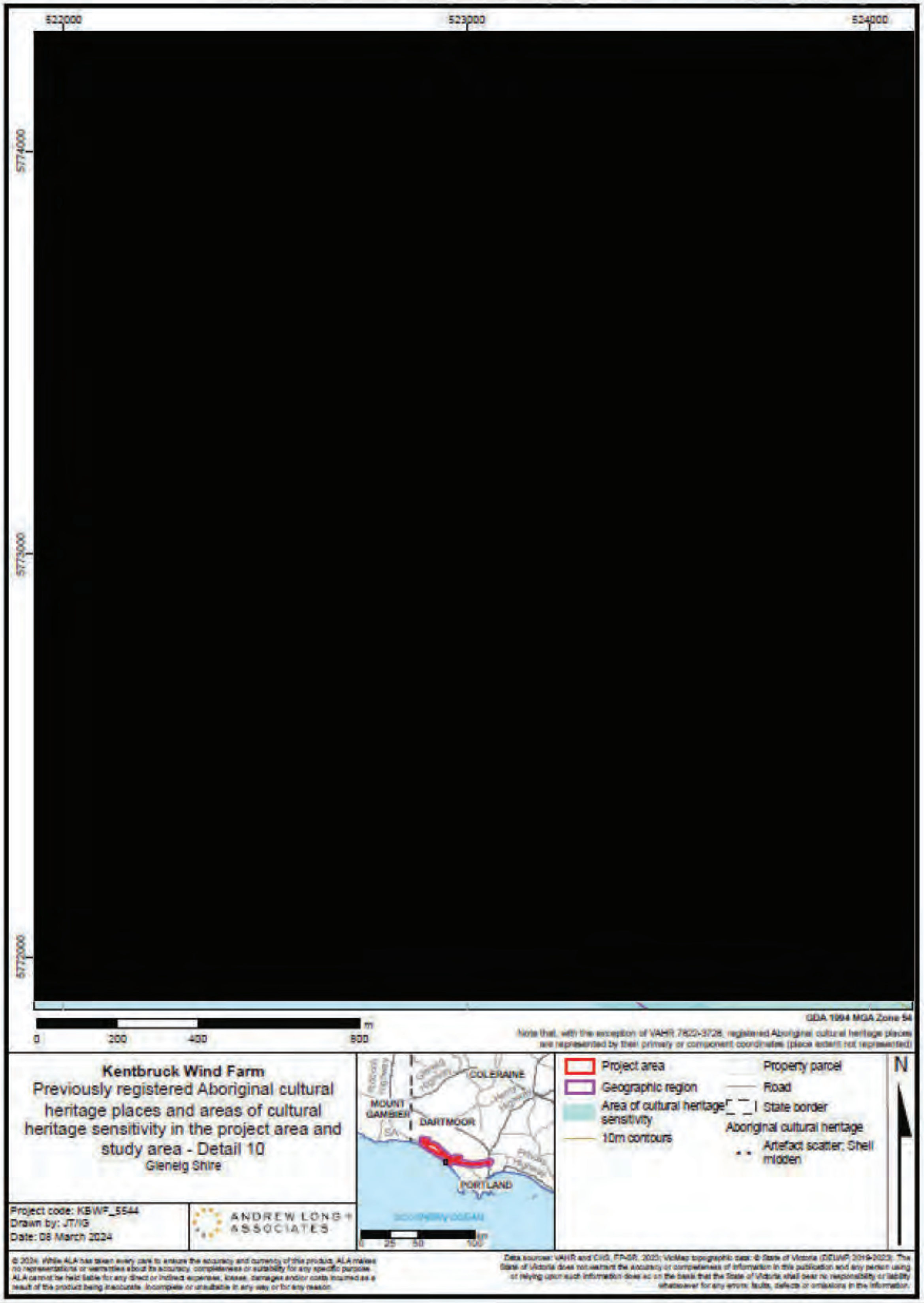


Figure 29 VAHR places map – detail 10

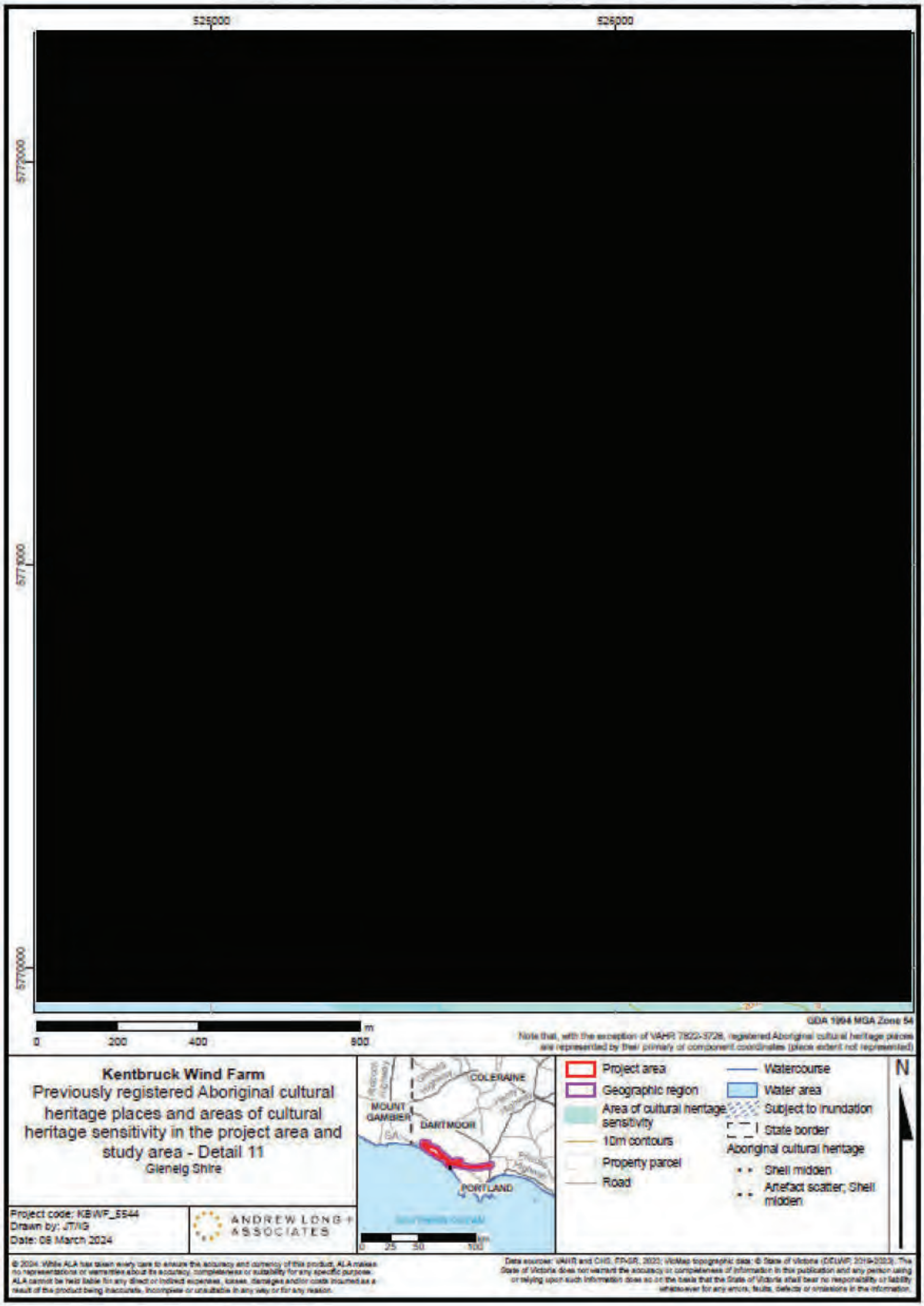


Figure 30 VAHR places map – detail 11

7.6 Review of reports about Aboriginal cultural heritage – regional and local studies

A total of 33 previous archaeological assessments have been undertaken within the Study Area. The majority of these previous assessments (n=21) relate to desktop assessment works. However, two complex assessments, eight surveys, and one test excavation has also been undertaken within 2 km of the Project Area. The regional studies can assist in characterising the general pattern of archaeological place distribution across a broad region. The more localised studies assist in developing an understanding of archaeological sensitivity and the extent and scope of prior archaeological investigation in closer proximity to the Project Area. Complex assessments can be a good indication of subsurface conditions in proximity to the Project Area.

The regional and local archaeological reports relevant to the Project Area have been summarised below.

7.6.1 Previous archaeological assessments (localised)

Archaeological investigations at Discovery Bay

Overall, the Project Area and wider Study Area have been subject to very few archaeological investigations; however, the Discovery Bay coastline in the southern extent of the Study Area has been the focus of numerous heritage assessments and archaeological investigations. Archaeological investigation of the Discovery Bay coastline commenced in the 1970s, between 1975 and 1977 Lourandos undertook excavations of Bridgewater Cave, while Witter (1977) and Godfrey (1980) and (1989) conducted surveys along the coastline.

The Discovery Bay area was subject to a range of heritage assessments during the 1990s and 2000s ((Schell, 2000); (Clark D. , 1995); (Webb, 1995); (Godfrey, 1996); (Richards & Jordan, 1996) and (Everett, 1998)). These surveys have resulted in the recording of hundreds of Aboriginal places, mainly comprising shell middens, artefact scatters and isolated hearths along the coastline. There are a wide range of midden types that vary in condition, size and composition. Many are highly disturbed, and most have a variety of rock platform and sandy beach shell species, with many middens dominated by a small number of species that reflects site location and age. Occasionally burnt rocks and charcoal (representing ovens and hearths) are found with the middens. Such features have been recorded both at Cape Bridgewater and at Cape Nelson.

The archaeology evident in the area today is mostly composed of middens deflated into the bottoms of sand dune blowouts in unconsolidated dunes, which could consist of shells from many middens. Most of these middens are located within 200 m of the foredunes at Capes Bridgewater, Nelson and Sir William Grant. A smaller number of sites extend further inland and can be found on influential topographic features, which would have afforded excellent views.

The shell middens present within the southern extent of the Study Area are located on the margins of Holocene dunes mostly within the coastal reserve, reflecting resource exploitation in relation to the dispersal of shellfish deposits. However, this distribution may also be influenced by poor survey data of the inshore areas and increased levels of disturbance on private landholdings. Archaeological investigations along the Discovery Bay coastline have determined that shell middens are found associated with rocky headlands, sandy beaches or dunes, where they could occur either on the seaward or inland sides. Within the middens there are several species of shellfish, both sandy shore and rock platform, all of which appear to reflect their proximity to shellfish resources, as well as being influenced by other food resources, location to potable water and local topography. Stone artefacts are usually found in association with middens, containing marine flint, quartz and glossy brown chert, with flint the dominant material.

Kentbruck Green Power Hub (Black, Amorosi, & Thomson, 2019)

Biosis was commissioned by AECOM on behalf of Neoen to prepare a due diligence report for the Project. The due diligence assessment was undertaken as part of an initial phase of understanding the legislative and approvals requirements for the Project. The current Project footprint and scope of works are covered in this due diligence assessment.

The desktop assessment confirmed that no previous archaeological investigations had been conducted within the Project Area. At the time of this assessment, no Aboriginal places had been identified within the Project Area or registered on the VAHR. The desktop reporting indicated that the Study Area contains several sensitive landforms that are likely to contain Aboriginal cultural heritage, including dunes, ridge lines, hill tops and water sources. A site inspection was conducted and revealed varying levels of ground disturbance associated with the existing Forestry blocks within large parts of the Study Area. However, a number of properties in the east remain largely undisturbed, consisting of primarily open cleared farmland. Other disturbances within the Study Area included road/track construction, pastoral dams, and homestead and farm infrastructure. During the site inspection, a number of Aboriginal stone artefact scatters and shell middens were identified along existing plantation access tracks where ground surface visibility was increased. A total of five Aboriginal places were recorded during the site inspection of the Project Area and have been considered throughout the current assessment. No Aboriginal cultural material was identified within the plantations due to poor ground surface visibility. The results of this due diligence assessment have been considered and are incorporated into the CHMP that is being prepared for the Project.

Portland Nelson Road Upgrade, Kentbruck (Cooper & Chester, 2022)

CHMP 18058 was conducted prior to upgrades for the Portland-Nelson Road, that includes a portion of the Project Area. The desktop assessment identified a wider cultural landscape comprising of the Kentbruck and Discovery Bay dune systems. It notes that the registered Aboriginal places are typically common between registrations with similar attributes of coastal flint and shell midden compositions.

The standard assessment identified previous ground disturbance and modification of the landform from the construction of the Portland-Nelson Road and parking area. A sandy dune system was present and based on the desktop results there was potential for subsurface cultural material. The complex assessment directly followed that of the standard assessment and comprised two 2 m x 2 m test pits, two 1 m x 1 m test pits focusing on the crest of a sand dune. This initial testing identified 428 artefacts to depths of 1.2 m prompting changes in design options to avoid further harm to the place. A second round of testing was commenced for a retaining wall option to limit landform and Aboriginal place impacts. The testing added 11 shovel test pits 0.5 m x 0.5 m which identified a further 10 artefacts to depths of 1000 mm.

Fifty of the artefacts identified during subsurface testing within STPs 1-4 were recorded within highly disturbed contexts, most likely a result of the construction of the Portland-Nelson Road. Disturbed contexts were generally located at depths between 0-150 mm; however, disturbance was noted at depths up to 800 mm in some instances. The soil profile largely consisted of a deep yellowish brown sandy soil, likely a chromosol soil, profile overlying limestone. The authors correlated this stratigraphy to that of the Bridgewater Formation that consists of late Pleistocene aeolian sand that contains calcarenite.

The densest concentration of artefacts were recorded on the crest of the dune (n=298) as well as on a slight incline on the northwest side of the dune (n=114). Artefacts were recorded up to depths of 1.2 m. No artefacts were recorded in the northwestern side of the dune where the incline was between 20-40°. As a result of the assessment, one new Aboriginal place was registered: [redacted].

A subsequent salvage excavation was undertaken (Cooper & Yakimov, 2023) in 2023. During the salvage excavation a total of 768 lithic artefacts were identified. Similar to the artefacts recorded during the complex assessment, almost all of the artefacts identified during the salvage excavation consisted of coastal flint. Tool types including scrapers, flakes, blades, cores, and angular fragments suggested that knapping and subsistence activities were occurring at this site.

The artefacts identified during the complex and salvage excavations were located on an unconsolidated sand dune between 100 m and 140 m in elevation. This would have been part of an ancient dune landform within the Kentbruck and Discovery Bay dunes complex overlooking a former swamp system.

7.6.2 Previous archaeological assessments (wider Study Area)

An archaeological survey of the South-West Wimmera (Rhoads & Bird, 2000)

An archaeological survey (FP-SR Report No. 2275) was undertaken of the sand plains to the west and north of Glenelg River, including the western portion of the Project Area. The study area for the survey consisted of 24,000 square km of land, consisting of the western Victorian sand plains from the inland margin of the Victorian coastal strand to the northern boundary of the Little Desert, including the Dundas Tablelands.

The survey locations were decided by analysing the following landscape details:

- Variation of relief in terrain as determined by contour lines
- Presence of particular landscape features including dunes, depressions, ridgelines
- A water source including seasonal, ephemeral, permanent, as well as lands, swamps, and channels

These features were chosen by the authors as they would have been more stable over a period of time, and they would have been in direct proportion to one another over time. The next step in establishing the survey strategy was to assess which of the above characteristics occur in combination with each other. In order to assess this, the sample strata went through five steps:

1. The sand plains were divided into primary sample squares measuring 10 square km
2. The occurrence of each attribute was recorded for every 1 km grid square
3. The resulting table was processed using correspondence analysis
4. The resulting matrix of correspondence analysis object scores was analysed using hierarchical clustering. This produced a relationship between the sample square in the region
5. The groups of sample squares were identified to make up the sample strata

The analysis resulted in five clusters of sample squares that were broadly characterised as:

1. Stratum 1: Flat, relatively waterless plain (n=23)
2. Stratum 2: Mostly flat plain with seasonal swamps and ephemeral waterways (n=17)
3. Stratum 3: Rolling terrain with numerous seasonal waterways (n=16)
4. Stratum 4: Rolling landscape and lakes (n=18)
5. Stratum 5: Outliers – those squares that contain rugged terrain and/or rivers (n=25)

This characterised the survey area in terms of increasing relief and increasing reliability and quantity of surface water. In the end, 10 sample squares were surveyed that equates to approximately 10% of the entire region. It is noted that none of the area to the south of the Glenelg River was surveyed. In total 428 Aboriginal places were recorded that consisted of:

- Scarred trees (n=231)
- Surface artefact scatters (n=60)
- Isolated artefacts (n=137)

The authors concluded that the distribution of artefacts increases from Stratum 1 to Stratum 4. This is in line with the interpretation that strata represent increasing reliability and consistency of water sources. The distribution of artefacts in relation to the environment shows a correlation between presence of artefacts with lakeshores and dunes.

The distribution of scarred trees seemed to reflect the distribution of tree species; however, this would be impacted by tree survival. Scarred trees were largely absent within the sand plains.

The survey concluded that, at a regional level, the distribution and characteristics of Aboriginal places within the southwest Wimmera relates to the distribution and nature of water sources. The evidence of Aboriginal activity increases in quantity with increasing reliability of surface water. At a more local level, the authors concluded that the location of artefact scatters is associated with a range of environments. Artefact scatters (both high and low density) were largely absent from the sandy plains, and were most common in proximity to lake shores and source bordering dunes.

Archaeological sites impact assessment PEP 151 Lower Glenelg National Park and Adjacent Private Land Western Victoria (Luebbers, 2001)

An impact assessment (FP – SR Report No. 1938) was conducted to assess a portion of the Petroleum Exploitation Tenement (PEP 151) located to the west of Portland for oil and gas reserves that could be extracted. The 2001 study area focussed on part of the Lower Glenelg National Park and adjacent private land that consisted of 120 km^2, including a portion of the Project Area from the southwest of Kentbruck to Mount Kincaid.

Two Aboriginal places were identified within fire breaks during the survey: [redacted] located [redacted] to the [redacted] of the Project Area, and [redacted] located [redacted] to the [redacted] of the Project Area. Both of these places were located in [redacted]

Glenelg Shire Desktop Cultural Heritage Study (Murphy & Rymer, 2006)

A desktop study into the Aboriginal heritage values of Glenelg Shire (FP – SR Report No. 3652) was undertaken to better understand heritage values that could be used to promote tourism as well as further opportunities for cultural heritage investigation in areas of archaeological potential.

The desktop assessment noted that few archaeological investigations had been undertaken within Glenelg Shire, with the exception of the coastline around Discovery Bay, Portland, and Cape Bridgewater as well as the Mount Eccles lava flow, now known as the Budj Bim National Estate Landscape. Based on these previous assessments, areas of high to moderate archaeological potential were noted as those along coastal margins, the Volcanic Plains wetlands, waterways, and the margins of lakes and swamps.

Heywood Terminal Station Extension project: Heywood, South West Victoria (Carr & Hill, 2013)

CHMP 12660 was prepared prior to the installation of a transformer and upgrade works at the existing Heywood Terminal Station, located 258 m to the north of the eastern terminus of the Project Area. The activity area for CHMP 12660 is located on the coastal plains associated with the Fitzroy and Surrey Rivers. The authors concluded that this was an area of past Aboriginal occupation and use as three previously registered Aboriginal places are located within 2 km of the proposed upgrade works., with several other Aboriginal places recorded within the wider region in similar environments.

During the field survey, no Aboriginal cultural heritage material was identified. The northern section of the 2021 activity area was noted as being an area of archaeological potential as the landscape changes from a flat landscape to a slight rise that was further investigated via subsurface excavation.

A total of one 1 m x 1 m and fifteen 50 cm x 50 cm shovel test pits were excavated across the 2021 activity area. No Aboriginal cultural heritage material was identified during the excavations. Soil stratigraphy was noted as a loose silty sand with some moisture content. Changes in soil colouration was concluded by the authors to be from varying moisture levels and vegetation decomposition.

Due to the lack of Aboriginal cultural heritage material during the 2021 assessment, the authors concluded that the activity area was infrequently used by Aboriginal people. The material remains that may be present, are on such a small-scale that it would be difficult to detect from conventional subsurface testing methodologies.

Darts Road Employment Precinct Industrial Development in Portland (Oataway, O'Reilly, & Liro, 2020)

Biosis was engaged to prepare a CHMP (16312) on behalf of Porthaul Civil Pty Ltd for the proposed Darts Road Employment Precinct Industrial Development in Portland, Victoria. The activity area is located at 697 Henty Highway, Portland, approximately 11 km south of the current Study Area. The proposed work involves the development of an employment precinct through land subdivision and utility installation.

Similar to the geomorphology of the current Study Area, the activity area is situated within the moderately undulating degrading basalt stony rise landform as part of the plains with well-developed drainage and deep regolith (Cressy) (GMU 6.1.4). A standard assessment noted evidence of bluestone quarrying activities in addition to recent pastoral farming cross the activity area. One new Aboriginal place was identified during the standard assessment, [redacted]

The complex assessment comprised manual excavation of a number of 1 x 1 m test pits and 500 x 500 mm shovel test pits located across the activity area. Excavation across the stony rise landform identified a stratigraphic profile consisting of dark red brown clayey silt with increasing occurrences of degrading basalt with depth. The maximum depth of excavation was reached at 490 mm at a dark red brown sterile clay or a degrading basalt base. Extent testing was carried out and confirmed the location of Aboriginal cultural heritage material to be largely localised to within close vicinity of the main stony rise crests. Testing across the low-lying undulating plains landform identified a stratigraphic profile of dry brown clayey silt with small amounts of degrading basalt and buckshot increasing with depth atop a well compacted brown clay base with a maximum depth of excavation reached at 500 mm. The artefacts within the low-lying plain were identified at depths between 100–- 200 mm while the artefacts identified within the stony rise were typically at the interface or amongst the degrading basalt rock between 200–- 300 mm. Two new Aboriginal places were recorded as a result of [redacted] testing, [redacted] Further recommendations have been made for archaeological salvage of these Aboriginal places prior to ground disturbing works taking place.

Telecommunication cable in Cape Bridgewater (Baker & Kurpiel, 2018)

Barker & Kurpiel were engaged to prepare a CHMP (15485) on behalf of Service Stream Mobile Communications Pty Ltd for the proposed installation of a subsurface telecommunication cable in Cape Bridgewater. The activity area is situated approximately 19 km south of the current Study Area. Of relevance to understanding the geomorphological landscape of the current Study Area, desktop reporting identified the activity area to be situated within the karst plains with depressions (Warrnambool) (GMU 6.2.3) geomorphological unit.

Desktop reporting indicated that there was increased potential for Aboriginal cultural heritage in the form of stone artefact scatters and shell midden material to be present in the activity area due to its proximity within the dunes landform. The standard assessment noted limited ground surface visibility due to the presence of grass and gravel material imported for road construction. No Aboriginal cultural heritage material was identified during the standard assessment. The complex assessment comprised the manual excavation of two 1 x 1 m test pits and 19 500 x 500 mm shovel test pits. The maximum depth of excavation was reached at 1000 mm due to safe working limitations and reaching the maximum depth of the proposed activity. The lower lying flat due landform stratigraphic profile consisted of friable very dark grey brown sand atop brown compact sand with increasing patches of mottled orange brown clay with depth. The elevated undulating dune landform stratigraphic profile consisted of grey brown friable sand with degrading limestone increasing with depth. Two Aboriginal places were identified during [redacted] testing. A total of [redacted] were recorded across [redacted] The [redacted]

[redacted] All Aboriginal cultural heritage material identified was collected during the complex testing and is stored with the heritage advisor.

Industrial subdivision and timber mill in Portland (O'Connor & Bullers, 2016)

Ecology & Heritage Partners were commissioned to prepare a CHMP (14340) by A2C Trading Pty Ltd for the proposed industrial subdivision and timber mill at Cashmore Road in Portland. The activity area is situated approximately 13 km south of the current Study Area. Similar to the current Study Area, the activity area is situated within the geomorphological landscape of the plains with well-developed drainage and deep regolith (Cressy) (GMU 6.1.4) which is characterised by very planar landscapes with thicker soil development.

A standard assessment noted limited ground surface visibility associated with the pastoral grasses throughout the activity area. No Aboriginal cultural heritage material was identified during the standard assessment. Complex testing included a total of one 1 x 1 m test pit and 31 500 x 500 mm shovel test pits excavated across five transects. The stratigraphy of the volcanic plain landform shows a gradational profile with a medium brown silt overlying medium to dark orange-brown clay. A layer of small to medium sized basalt rock was identified above the natural clay in most test pits. The maximum depth of excavation across the volcanic plains was 350 mm, however the shovel test pits within the low-lying swamp area reached a maximum depth of 820 mm. No Aboriginal cultural heritage material was identified during the complex assessment.

Portland Wind Energy Project windfarm development (Lane & Gilchrist, 2013)

Lane and Gilchrist were engaged by Pacific Hydro Portland Wind Farm Pty Ltd to prepare a CHMP (12857) for the proposed Portland Wind Energy Project windfarm development in Cape Sir William Grant and Cape Nelson North, Victoria. The proposed activity includes the installation of 23 wind turbines and associated above and underground infrastructure, construction of access tracks and compounds across two divided sections of the activity area. The activity area is situated approximately 17 km south of the current Study Area. To assist in understanding the geomorphological context of the current Study Area, this activity area is situated largely within the karst plains with depressions landform (Warrnambool) (GMU 6.2.3). Similarly, the northern portion of the activity area is located within the plains with ridges (Follett) (GMU 6.2.1) landform which is characterised by undulating coastal plateaus and unconsolidated dune sands with steep slopes which formed during the Holocene.

The standard assessment noted varied ground surface visibility across the activity area, with thick vegetation impeding access and inspection in some areas. A number of Aboriginal places were recorded as a result of the standard inspection. A total of 23 LDADs, two artefact scatters and one multi-component Aboriginal place (shell midden and artefact scatter) were recorded during the standard assessment. The Aboriginal places were largely located on or adjacent to tracks or cable trench routes. All artefacts identified on the ground surface were complete and broken flint flakes with a few flint cores recorded. Shell material consisted of paphie, turbo and mussel species.

The complex assessment included a total of 24 1 x 1 m test pits and eight 1.5 x 2 m machine test pits which were excavated across the two sections of the activity area. Complex testing was largely carried out at the locations of the proposed wind turbines. With a maximum depth of excavation reached at 1.4 m, the soil profile across the activity area was characterised by deep sandy silty deposits over calcarenite nodules (terra rossa soils). A total of [redacted] were identified as a result of subsurface testing. All artefacts identified in subsurface contexts were [redacted] evidence of two separate instances of use of the landscape by Aboriginal people in the past. All cultural heritage material identified during the complex assessment was collected and is currently stored with the heritage advisor.

Overtaking lanes along the Princes Highway near Greenwald and Lyons (Albrecht, 2012)

Andrew Long and Associates were engaged to prepare a CHMP (11910) on behalf of VicRoads for the proposed overtaking lanes along the Princes Highway near Greenwald and Lyons. The proposed activity will involve the excavation, cut and fill of the existing ground surface up to depths of 650 mm. The narrow linear activity area is less than 30 m wide and is situated approximately 17 km north of the current Study Area. Desktop reporting indicated that the activity area is largely situated within the plains with well-developed drainage and deep regolith (Cressy) (GMU 6.1.4) landform unit, similar to the current activity area. The eastern section of the activity area comprising the proposed Lyons overtaking lane is situated atop the basalt plains of the Newer Volcanics landform, with a small section of inland coastal dunes present. The western section of the activity area includes the proposed Greenwald overtaking lanes which is situated atop the basalt plains with small sections of Whalers Bluff formation and unnamed swamp and lake deposits also present.

As standard assessment was undertaken via systematic pedestrian survey which covered the entire length of the activity area. High densities of scrub and ground cover impeded the ground surface visibility along the road reserves of the activity area. It was noted that sections of the road reserves also showed signs of ground disturbance associated with the on-going maintenance of the Princes Highway through drainage features and the installation of safety barriers. No Aboriginal cultural heritage material was identified during the standard assessment. The complex assessment included manually testing landforms across the entire activity area. A total of four 1 x 1 m test pits and a total of 42 400 x 400 mm shovel test pits were excavated across the entire activity area. The maximum depth of excavation was 1220 mm. A total of four stone artefacts were recorded across two locations within the activity area. This included the registration of [redacted] ll artefacts identified during complex testing were collected and are currently stored with the heritage advisor.

Country Fire Authority Facility at Mumbannar Recreation Reserve (Weaver, 2012)

Practical Archaeology Services were engaged to prepare a CHMP (12051) on behalf of Country Fire Authority for the proposed Country Fire Authority Facility south of the Princes Highway, at Mumbannar Recreation Reserve. The activity area comprises an area of 36 x 25 m of well grassed, flat land. The activity area is situated 15 km north of the current Study Area within the wide and flat karst plains with depressions (Warrnambool) (GMU 6.2.3) landform between the Glenelg and Crawford Rivers. As a Pleistocene landscape, the activity area was considered culturally sensitive and was subject to further investigation.

A standard assessment was undertaken via pedestrian survey of the activity area. However, the majority of the activity area comprised thick grasses with few areas of exposure noted along the western edge of the activity area under some mature cypress trees. No Aboriginal cultural heritage material was identified during the standard assessment. The complex assessment included the manual excavation of one 1 x 1 m test pit and nine shovel probes which were excavated across the activity area. The stratigraphic profile of the test pit consisted of a brown silty sand with a gradual change noted around 300 mm to a light brown sand deposit atop mottled sandy clay at 600 mm. The shovel test probes were excavated in transects at 10 m intervals across the activity area. The stratigraphic profile was largely uniform with a dark grey humic sandy soil identified within the first 200 mm atop a dark orange brown compact sandy soil with a firm clay base reached at 600 – 800 mm. No Aboriginal cultural heritage material was identified during the complex assessment. It was considered likely that Aboriginal cultural heritage material would be present within the elevated sandy rises outside of the activity area.

Sewerage scheme in North Portland (Feldman, Albrecht, Chandler, & Liousas, 2011)

Andrew Long and Associates completed a CHMP (11240) on behalf of Wannon Region Water Corporation for a Sewerage Scheme along Dutton Way in North Portland. The activity area comprises a 12 km narrow linear alignment located to the north and north east of Portland. The activity area is situated approximately nine kilometres south of the current Study Area. Similar to the current Study Area, the activity area was located within the plains with well-developed drainage and deep regolith (Cressy) (GMU 6.1.4).

The standard assessment noted signs of ground disturbance associated with the construction of roads, installation of utilities trenches and housing development. Thick vegetation, bitumen, concrete and gravel over much of the activity area resulted in overall low ground surface visibility. No Aboriginal places were recorded during the standard assessment. A complex assessment was carried out, including three 1 x 1 m test pits and 109 400 x 400 mm shovel test pits. The 1 x 1 m test pits were excavated within the different landforms of the activity area, on a flat, level coastal area and an inland hill landform. The maximum depth of excavation was 1150 mm with high levels of ground disturbance noted through evidence of plastic, metal and slag between 130–- 450 mm. The soil profiles consisted of dark duplex sandy clayey soils within the hill landform section of the activity area where sterile clay deposits were reached at a depth of 600 mm. Along the coastal areas, brown dune sand was identified atop sterile light grey to yellowish sand deposits at depths of around one metre. Two new Aboriginal places were identified as [redacted] The identified artefacts were all collected during the complex assessment and are in the custody of the heritage advisor.

Sewerage pipeline in West Portland (Chandler, 2009)

Andrew Long and Associates were engaged by Wannon Region Water Corporation to prepare a CHMP (10546) for the proposed installation of a sewerage pipeline in West Portland. The activity area is situated 14 km south of the current Study Area within the plains with well-developed drainage and deep regolith (Cressy) (GMU 6.1.4) landform.

The standard assessment was recorded poor ground surface visibility across the activity area due to dense grasses. Few areas of exposure were associated with vehicle access tracks. The standard assessment determined that the majority of the activity area has undergone a variety of disturbances associated with the construction of roads, drains and parks, however areas adjacent to the creeks were less disturbed. No Aboriginal cultural heritage material was identified during the standard assessment.

Complex testing included a total of three 500 x 500 mm shovel test pits and 87 400 x 400 mm shovel test pits excavated across 15 transects. The soil profiles identified during the course of the complex assessment varied, although they generally comprised dark to red to greyish brown silty clay deposits over yellowish brown to orange clay. The test pits were excavated to sterile clay deposits between 140 – 760 mm. [redacted] It was considered unlikely that any further cultural heritage material may be present within the activity area

Reverse osmosis facility in Bald Hill, Portland (Debney & Patton, 2008)

Biosis were engaged by Wannon Water to prepare a CHMP (10468) for the proposed reverse osmosis facility in Bald Hill, Portland. The proposed activity involves the construction of associated plant, storage tanks and the installation of underground pipelines. Situated across similar geomorphological units similar to the current Study Area, the activity area largely comprises the wide and flat karst plains with depressions (Warrnambool) (GMU 6.2.3) with a small portion of the eastern extent of the activity area situated within the plains with ridges (Follett) (GMU 6.2.1) landform.

The standard assessment recorded generally poor ground surface visibility across the activity area, with dense leaf litter and grasses offering few areas of exposure. [redacted] and will not be impacted by the proposed works. During the survey, a number of areas of potential archaeological sensitivity were identified throughout the activity area, particularly where native vegetation was present and sections within the existing road reserve or track easements that have not been significantly disturbed by the installation of utilities. Complex testing included one 1 x 1 m test pit, over 45 mechanical 300 x 300 mm auger probes along with 16 hand auger probes. Many of the auger probes contained evidence of ground disturbance. This disturbance was noted in the form of imported fill which typically commenced at depths of around 300mm and was underlain by deposits of predominantly fine calcareous soils. Deposits typically featured an upper layer of dark grey sandy soil overlying a lighter grey calcareous sand. The average depth of the auger probes was 800 mm. The soil profile of the test pit consisted of a red grey to brown calcareous sand with evidence of a fill layer noted at 310 mm. The test pit reached a maximum depth of 750 mm at which imported fill was reached. No Aboriginal cultural heritage material was identified during the complex testing. This has been attributed to the extensive levels of ground disturbance evident throughout the activity area.

7.7 Results of the Aurecon desktop assessment and predictive modelling

7.7.1 General predictive model

As an outcome of their desktop assessment, including a search of the VAHR and a review of the previous literature and relevant archaeological reports at that time, Aurecon derived the following predictive summary statements in relation to the Project Area:

- There is potential for [redacted] to be present in the Project Area in [redacted]
- [redacted]
- [redacted]
- [redacted]
- Most Aboriginal places within the plains and lower slopes will have been destroyed or damaged by agricultural activities.
- [redacted]

7.7.2 Specific predictive model

The results of the site predictive modelling by Aurecon for the Project Area are presented in Figure 35.

Areas considered to have the highest likelihood of containing Aboriginal cultural heritage were located in the vicinity of the southern boundary of Kentbruck Plantation, predominantly within 500 m of waterbodies.

These results were most heavily influenced by the high ratings for proximity to:

- Non-coastal water (between 1 and 500 metres)
- Geomorphological units associated with Discovery Bay
- Geological units associated with the Bridgewater Formation (Qxr) and unnamed coastal dune deposit (Qdl1)

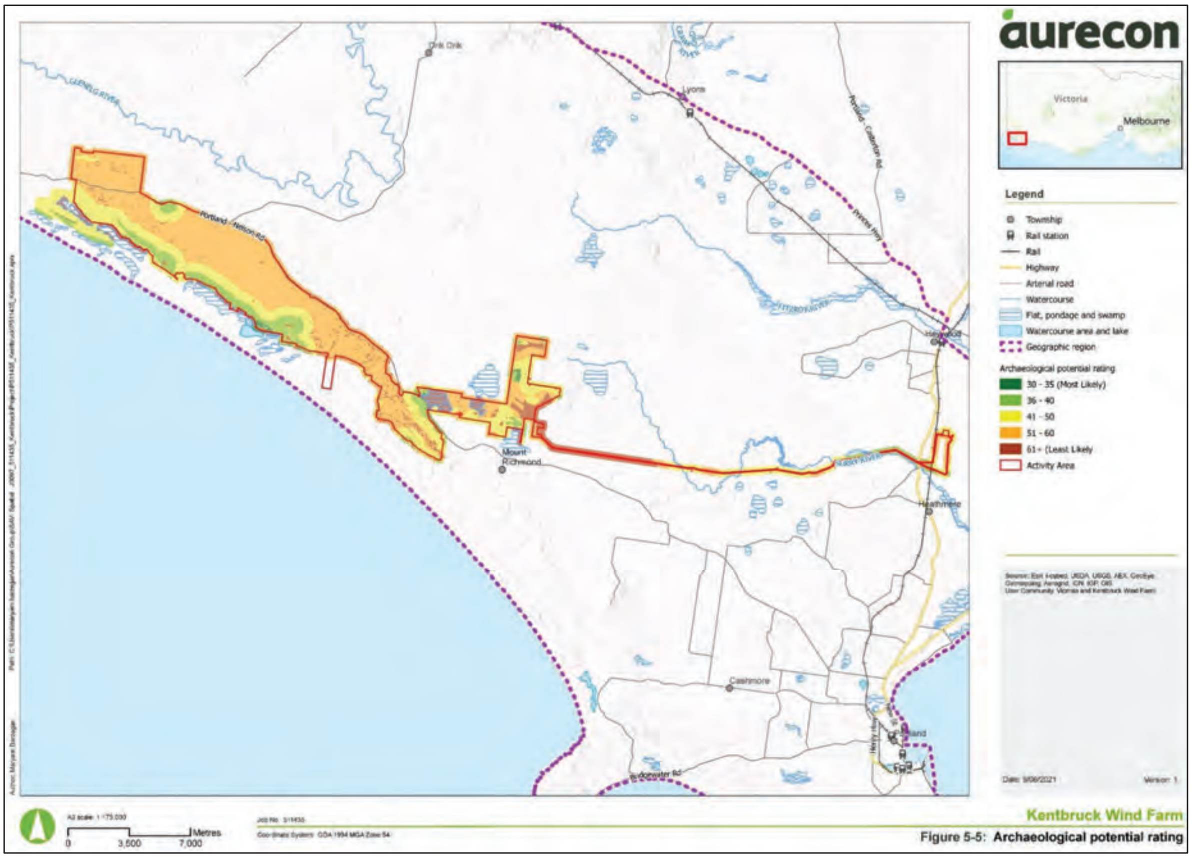


Figure 31 Aurecon predictive model of archaeological potential

7.7.3 Conclusions of the Aurecon desktop assessment

The Aurecon desktop assessment identified that there were six previously registered Aboriginal places recorded within the Project Area. A review of the VAHR against geomorphological mapping indicates that the landforms influence the Aboriginal cultural heritage place types which are likely to be present within the Project Area. Additional correlations may also be seen in proximity to the coast line and non-coastal waters and elevations.

The Discovery Bay landform is the most likely area where shell middens will be found. Usually, but not always, artefact scatters will be found in association with the shell middens. The next closest landform to the coastline (Warrnambool) has a smaller number of shell middens present, and this drops off to a minor number when the more northerly Follett and Cressy landforms are encountered. This distance decay is to be expected for coastal shell midden distribution. It must also be noted that the presence of shell middens upon the Warrnambool landform may be slightly skewed as there is an area around Bridgewater and Nelson Bay where the Warrnambool landform meets the coastline, and several shell middens are recorded in these areas.

7.8 Existing conditions conclusions

From a review of the existing conditions within the Project Area and wider Study Area, the following summary was concluded by the Aurecon desk-based assessment:

- Majority of Aboriginal places recorded within the geographic region are located [redacted]
- [redacted]
- The associated landform assessment for Aboriginal places completed by CHMP 17822 suggests the Follett landform has the [redacted].
- [redacted]

The places within the Project area suggest a variable density nature to Aboriginal places with pockets of high density artefact scatters and isolated or dispersed LDADs being common typically in association with dunes.

8. FIELD ASSESSMENTS AND PREDICTIVE MODELS

8.1 Aurecon standard assessment

An initial standard assessment was undertaken by Aurecon as part of the preparation of CHMP 17822. The standard assessment was conducted over 9 non-consecutive days from 26 April 2021 to 7 May 2021 and was conducted in accordance with proper archaeological practice as set out in Regulation 63 of the *Aboriginal Heritage Regulations 2018*. The following results and conclusions are taken from the draft reports prepared by Aurecon. Note that the turbine locations discussed in this section reflect the initial layout of the Kentbruck wind turbines (refer to Figure 33 through Figure 37), and have since been revised.

8.1.1 Results of the Aurecon standard assessment

The Aurecon field survey targeted locations of the Project Area where the greatest impacts would occur and to identify areas of archaeological potential. This included a visual inspection of each proposed hardstand turbine location at the time of the Aurecon standard assessment (where access was permitted), pedestrian and vehicular inspection of the transmission route and reidentification of previously registered Aboriginal places within the Project Area.

Figure 32 documents the seven survey units that the study area was divided into during the standard assessment. Figure 33 through Figure 40 document the results of the Aurecon filed survey. It is noted that at the time of the Aureon field survey, the number of proposed wind turbine locations and project scope has since been adjusted from those shown in Figure 33 through Figure 40.

The following conclusions are made following the Aurecon survey:

- The survey allowed for a better understanding of the landscape and the identification of areas which may retain archaeological deposits.
- The majority of the Project Area is located within the active GTFP pine plantation with a dense layer of pine needles covering the ground surface. Some sand and dirt access tracks are present within the pine plantation. These access tracks would have been subject to superficial levels of ground disturbance which may have disturbed intact archaeological deposits.
- The remainder of the Project Area comprises grassed pastoral paddocks with livestock present, and a mixture of juvenile and mature blue gum plantations. Ground surface visibility within these areas was limited to areas of exposure.
- The proposed transmission route which traverses Cobboboonee National Park was subject to visual inspection through a combination of opportunistic pedestrian and vehicular inspection. All areas east of Cobboboonee National Park have not been subject to standard assessment.
- Disturbance assessments were only able to consider visible and known prior impacts so were limited in their assessment given the proposed depth of impact at various locations.

Previously registered Aboriginal cultural heritage material

During the desktop assessment, it was identified that [redacted] previously registered Aboriginal cultural heritage places were located within the Project Area at the time of the initial standard assessment. A further [redacted] previously registered Aboriginal places were located within [redacted] Project Area at the time of the standard assessment. The previously recorded Aboriginal places within [redacted] of the Project Area were not reidentified during the Aurecon standard assessment.

Three new Aboriginal places were recorded during the standard assessment:

- [redacted]

All [redacted] of these Aboriginal places were recorded within survey area defined as SU A, the western end of the existing GTFP plantation (Lucas to Lightbody Road). [redacted]

The previously registered Aboriginal places within and within 200 m of the Project Area are documented in Table 24. Five of the Aboriginal places within the Project Area were reidentified during the Aurecon standard assessment.

Table 16 Previously registered Aboriginal places within, and within 200 m of the Project Area

VAHR places within the Project Area	VAHR places within 200 m of the Project Area
[redacted]	

VAHR places within the Project Area	VAHR places within 200 m of the Project Area
[redacted]	

No subsurface investigation was conducted by Aurecon as part of this Impact Assessment or the CHMP.

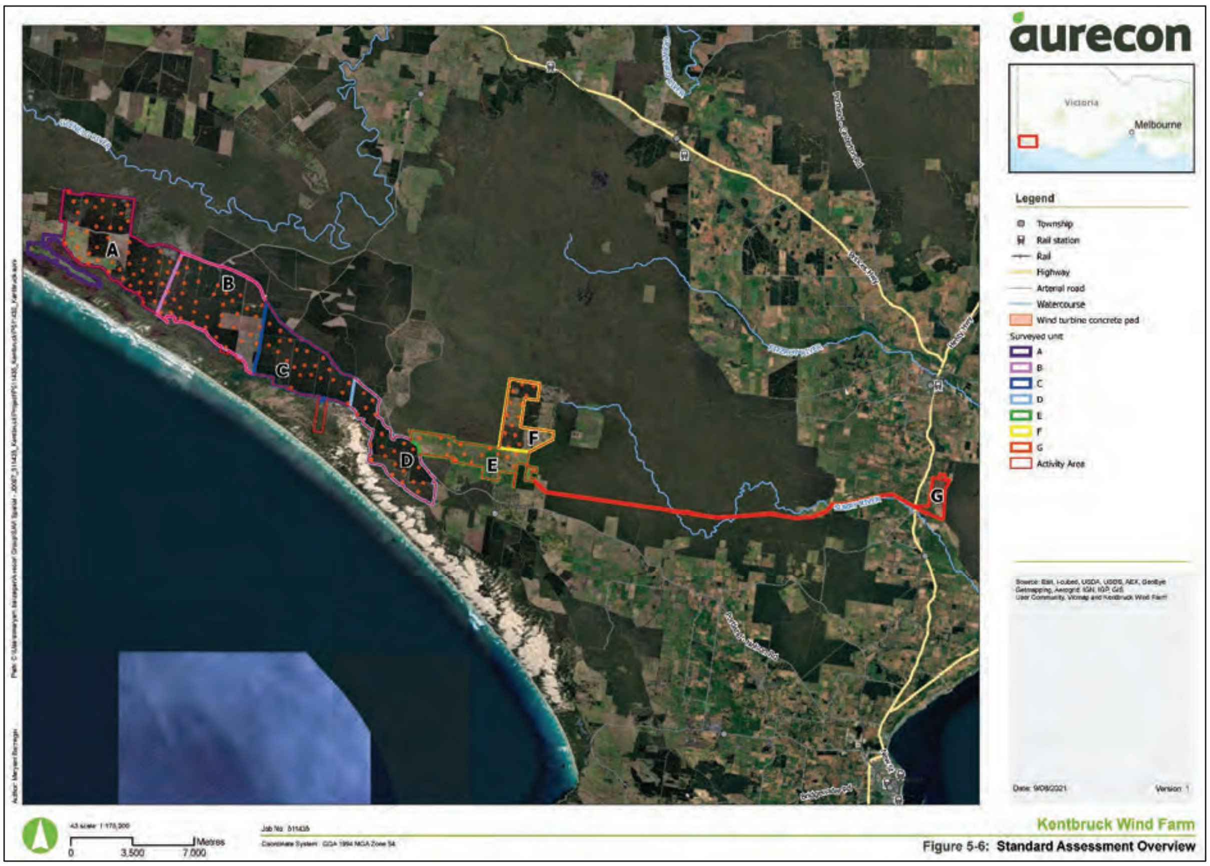


Figure 32 Survey units within the Project Area as defined during the Aurecon standard assessment

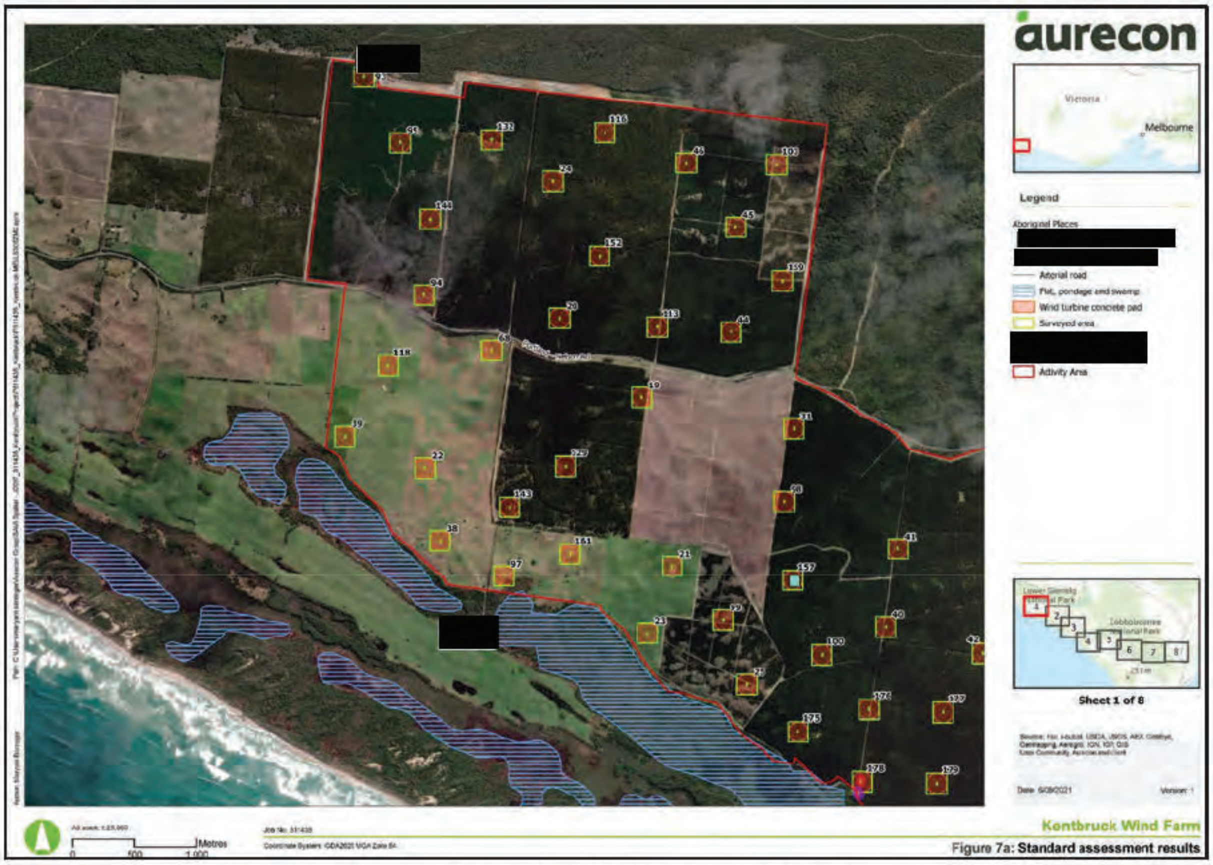


Figure 33 Standard Assessment Survey areas (SU A with now superseded turbine alignments) – Map 1

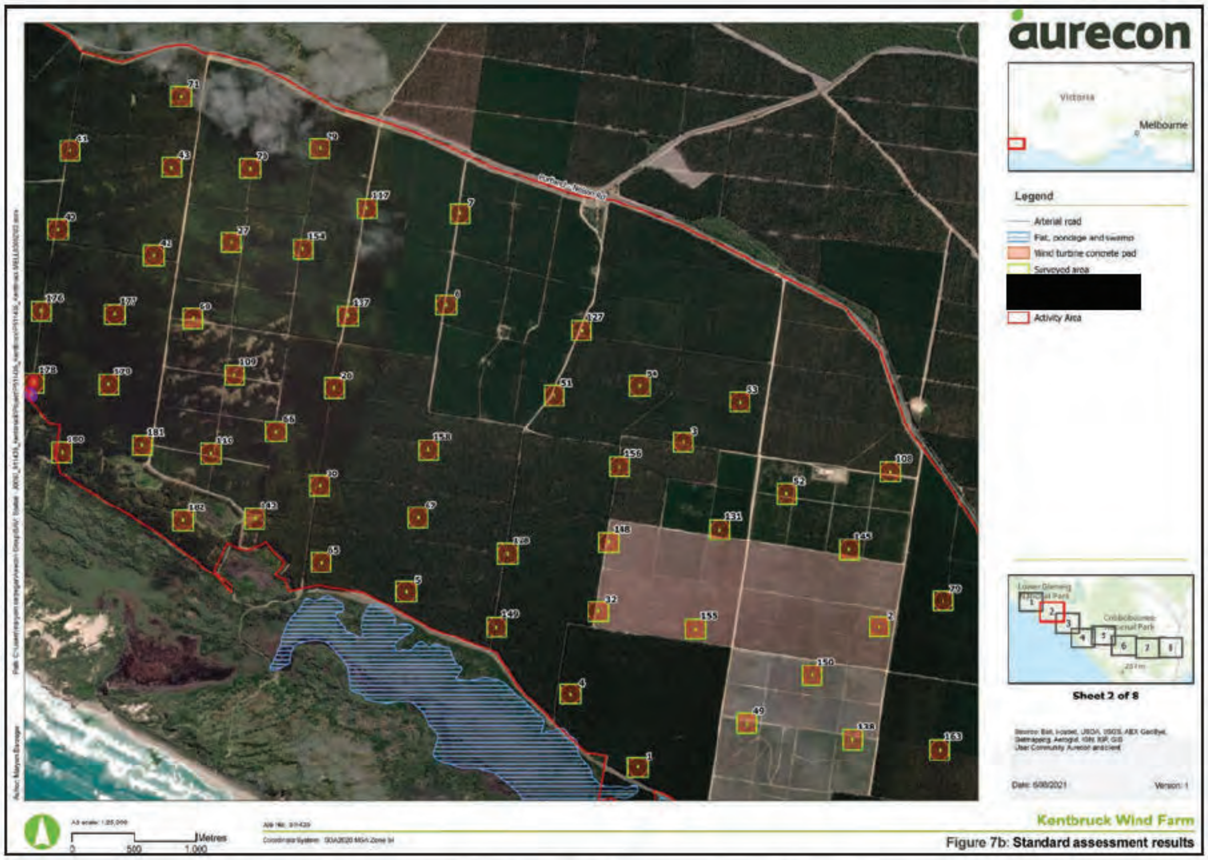


Figure 34 Standard Assessment Survey areas (SU B with now superseded turbine alignments) – Map 2

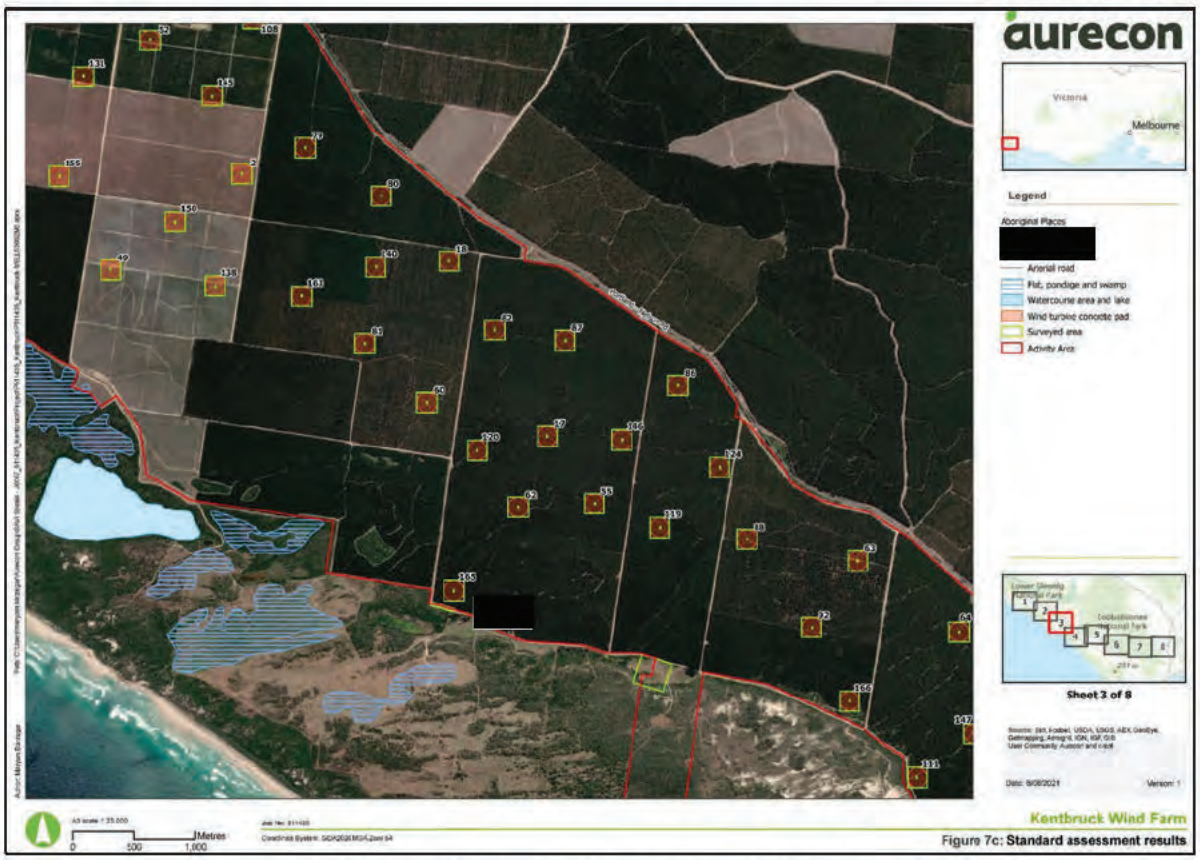


Figure 35 Standard Assessment Survey areas (SU C with now superseded turbine alignments) – Map 3

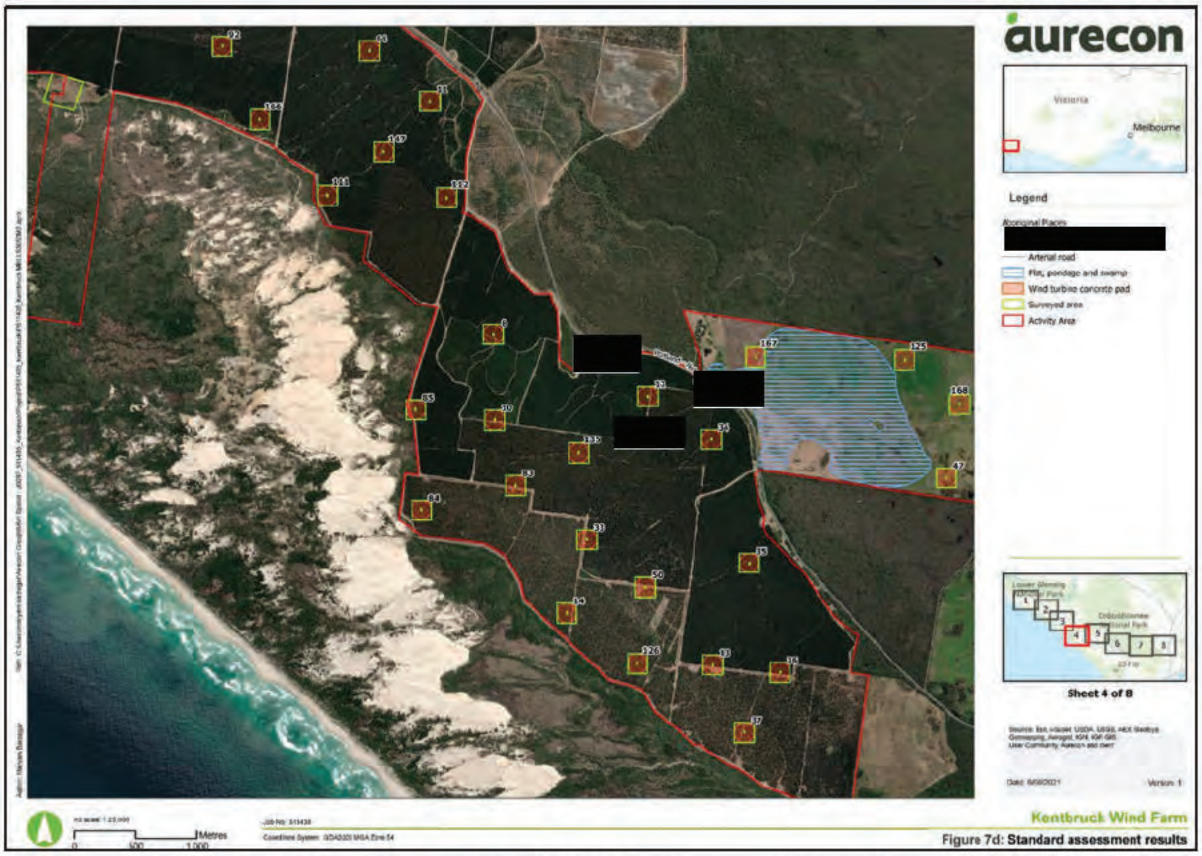


Figure 36 Standard Assessment Survey areas (SU D and SU E with now superseded turbine alignments) – Map 4

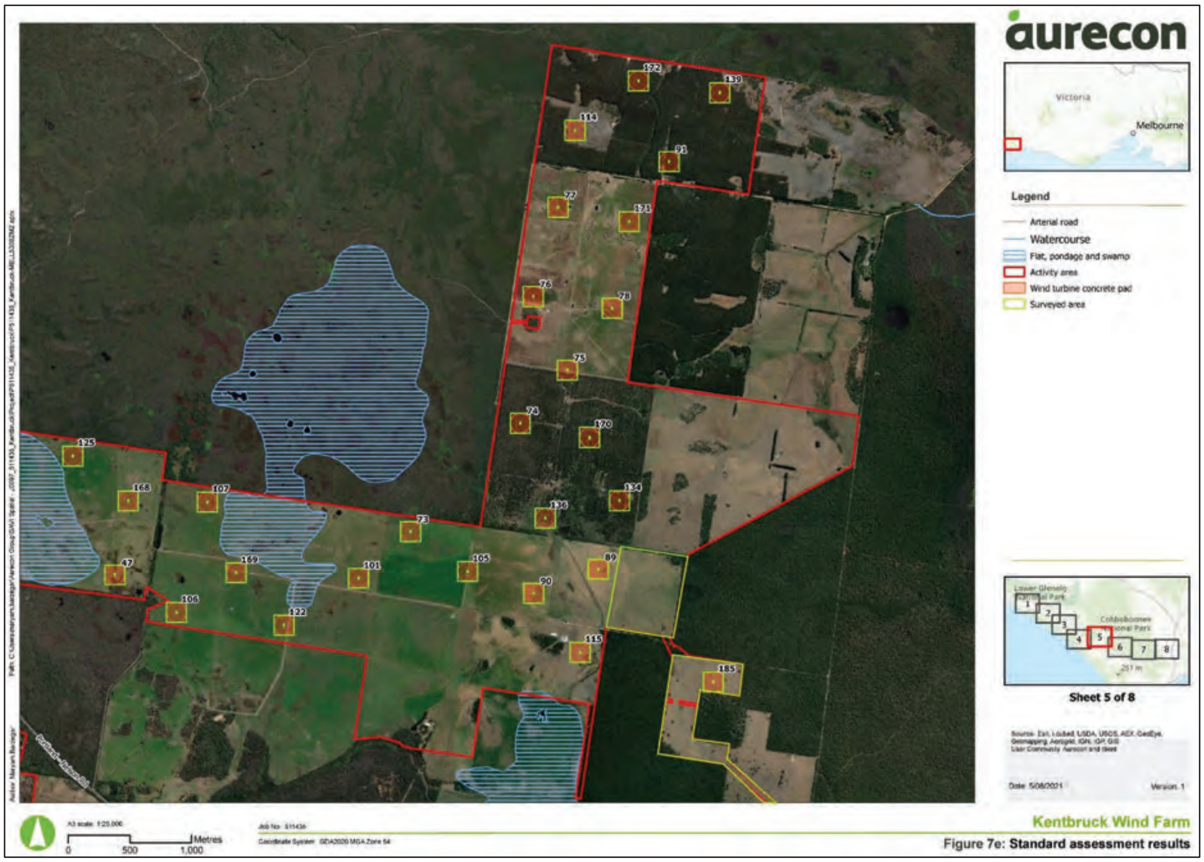


Figure 37 Standard Assessment Survey areas (SU E and SU F with now superseded turbine alignments) – Map 5

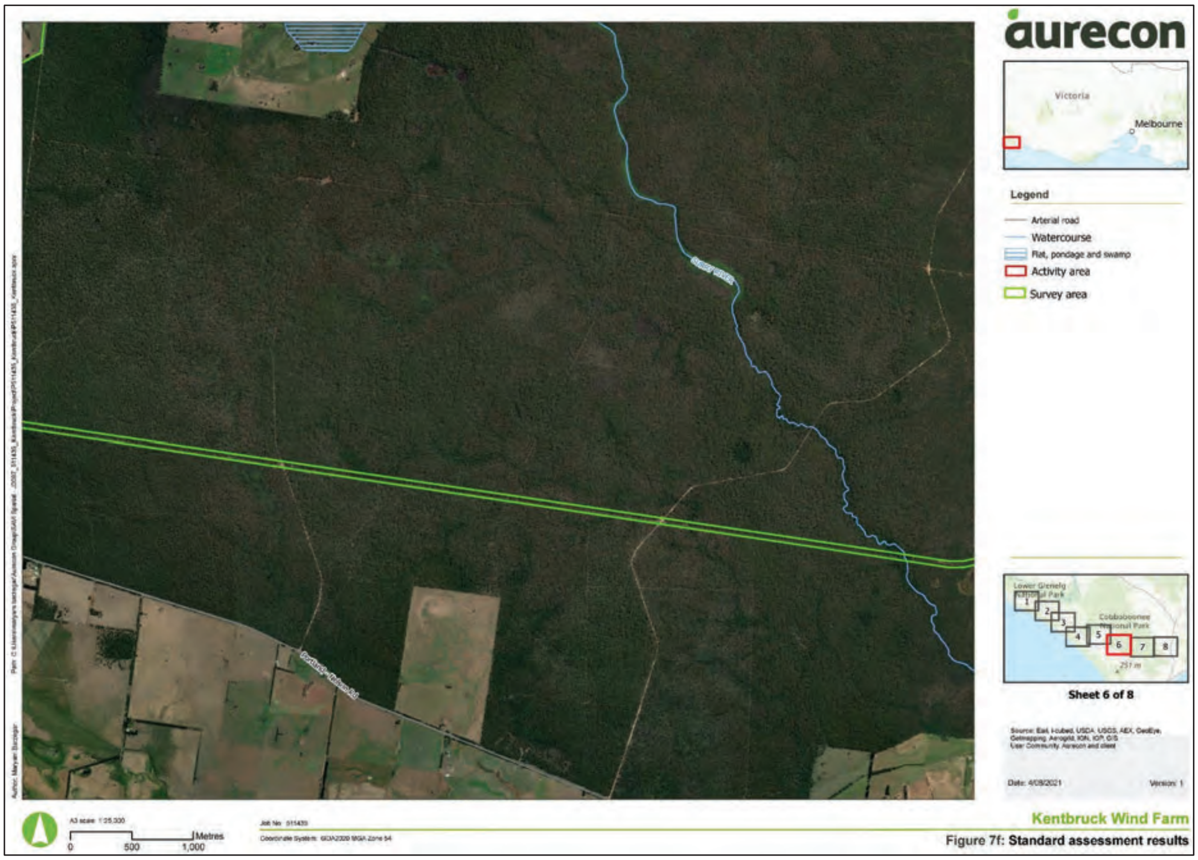


Figure 38 Standard Assessment Survey areas (SU G) – Map 6

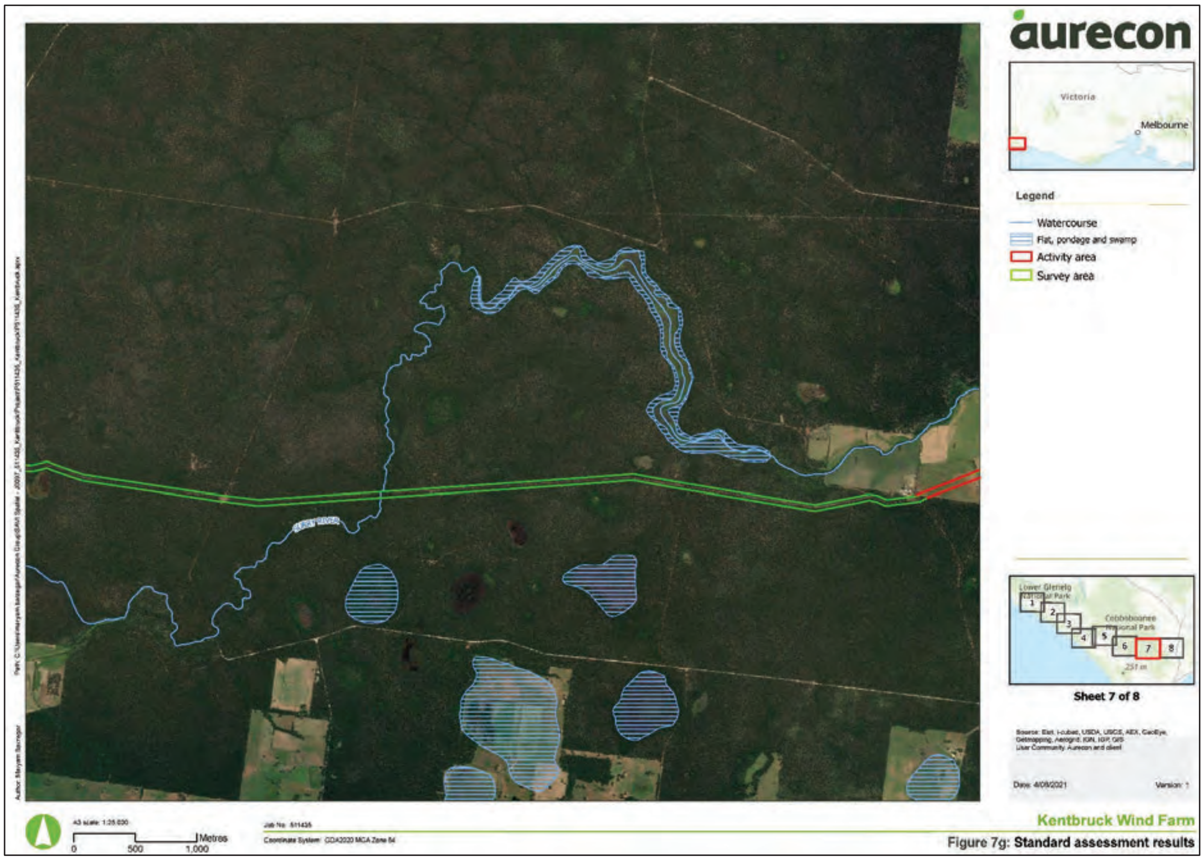


Figure 39 Standard Assessment Survey areas (SU G) – Map 7

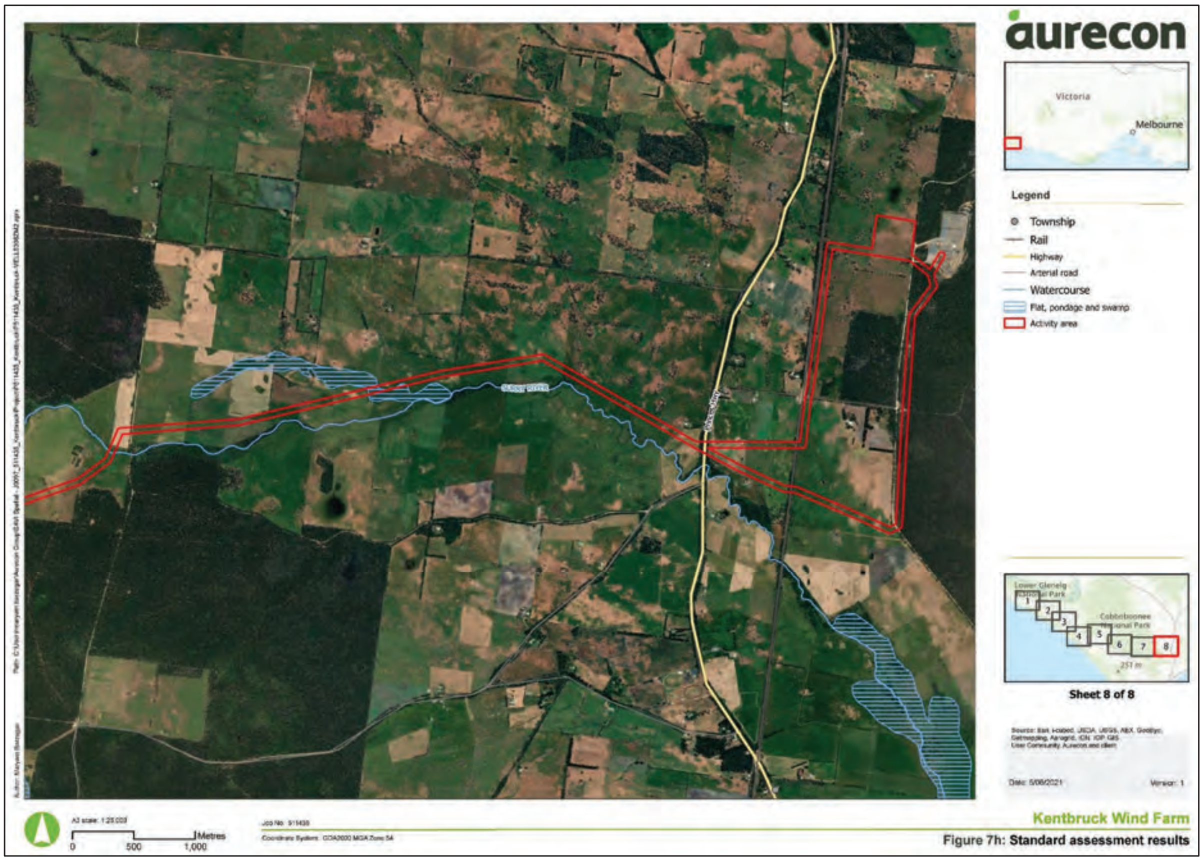


Figure 40 Standard Assessment Survey areas (SU G) – Map 8

8.2 ALA phase 1 modelling and testing

ALA conducted preliminary test excavations with GMTOAC participants between 11 to 14 April 2023 to substantiate the predictive modelling for chromosol distribution and establish associations between Aboriginal cultural heritage material and the presence of chromosols or landform features.

8.2.1 Limitations

The ‘red soil’ modelling was limited by the coverage of available aerial imagery and the computer processing capacity required to classify and extract data from the high-resolution Neoen imagery. Useful modelling was limited to aerial imagery showing cleared plantation, resulting in an incomplete mosaic.

Obstacles encountered during the testing scope consisted of inclement weather requiring sheltering amidst excavations. Testing could therefore not be completed at all of the proposed locations. Thick pine plantation limited access into some areas as well impeding ground surface visibility.

8.2.2 Phase 1 predictive model

For the purposes of testing the ‘red soil’ modelling, an area in the central part of the Project Area was targeted where the high-resolution Neoen imagery showed areas cleared of plantation. Transects were proposed that captured areas where red soils were predicted and where they were predicted to be absent (Figure 83).

8.2.3 Phase 1 testing results

Phase 1 testing consisted of a total of eight STPs and four auger probes. Given the reduced capacity to complete the whole proposed testing program, excavations occurred in pairs where possible, to ensure targeting of both predicted chromosol and non-chromosol locations. The sample locations and the outcomes of the sampling are shown in Figure 84.

Soil descriptions from a representative sample of subsurface testing locations are documented below (Table 26 and Table 27, and Figure 86 to Figure 109). Table 26 collates information about chromosol-bearing sample locations and their surrounds, while Table 27 compiles information about non-chromosol locations. Although a surface survey was not a formal part of this phase of assessment, opportunistic survey took place and notes were made regarding the surface context at the subsurface testing locations and where surface artefacts were identified.

Of the twelve sampled locations, four confirmed the presence of chromosols as predicted by the modelling and six confirmed the absence of chromosols as predicted by the modelling. Two locations where red soils were predicted contained non-chromosol soils, although it is worth noting that both of these samples occurred on the edge of the modelled area, where edge effects can reduce the accuracy of a model, and immediately adjacent to roads where disturbance may have occurred.

No subsurface artefacts were identified in the chromosols, but low numbers of surface artefacts were identified in the vicinity of [redacted] chromosol locations (Table 25 and Figure 85). In contrast, [redacted] STPs excavated in non-chromosols contained subsurface artefacts. Surface artefacts were identified in the vicinity of only [redacted] non-chromosol locations. Two of these scatters had higher numbers than the surface scatters at the chromosol locations and one also contained potential shell midden deposits.

Table 17 Summary of observations from phase 1 testing

Soil type	Test pit ID	Artefacts	Preliminary VAHR name
Non-chromosol	STP01 (transgressive dune) (predicted to be in chromosol)	[redacted]	[redacted]
	STP02 (saddle/deflated hollow)	[redacted]	[redacted]
	STP03 (low undulation)		[redacted]
	STP05 (transgressive dune) (predicted to be in chromosol)		[redacted]
	STP06 (dune saddle)		[redacted]
	STP08 (low slope of dune)	N	NA
	Auger 2 (mid to low slope of dune on leeward side)	N	NA
	Auger 4 (mid to low slope of dune on leeward side)	N	NA
Chromosol	STP04 (crest of dune)	None with STP04 [redacted]	[redacted]
	STP07 (mid slope of dune)	N	NA
	Auger 1 (crest of dune)	None within Auger 1 [redacted]	[redacted]
	Auger 3 (crest/high slope of transgressive dune)	None within Auger 3 [redacted]	[redacted]

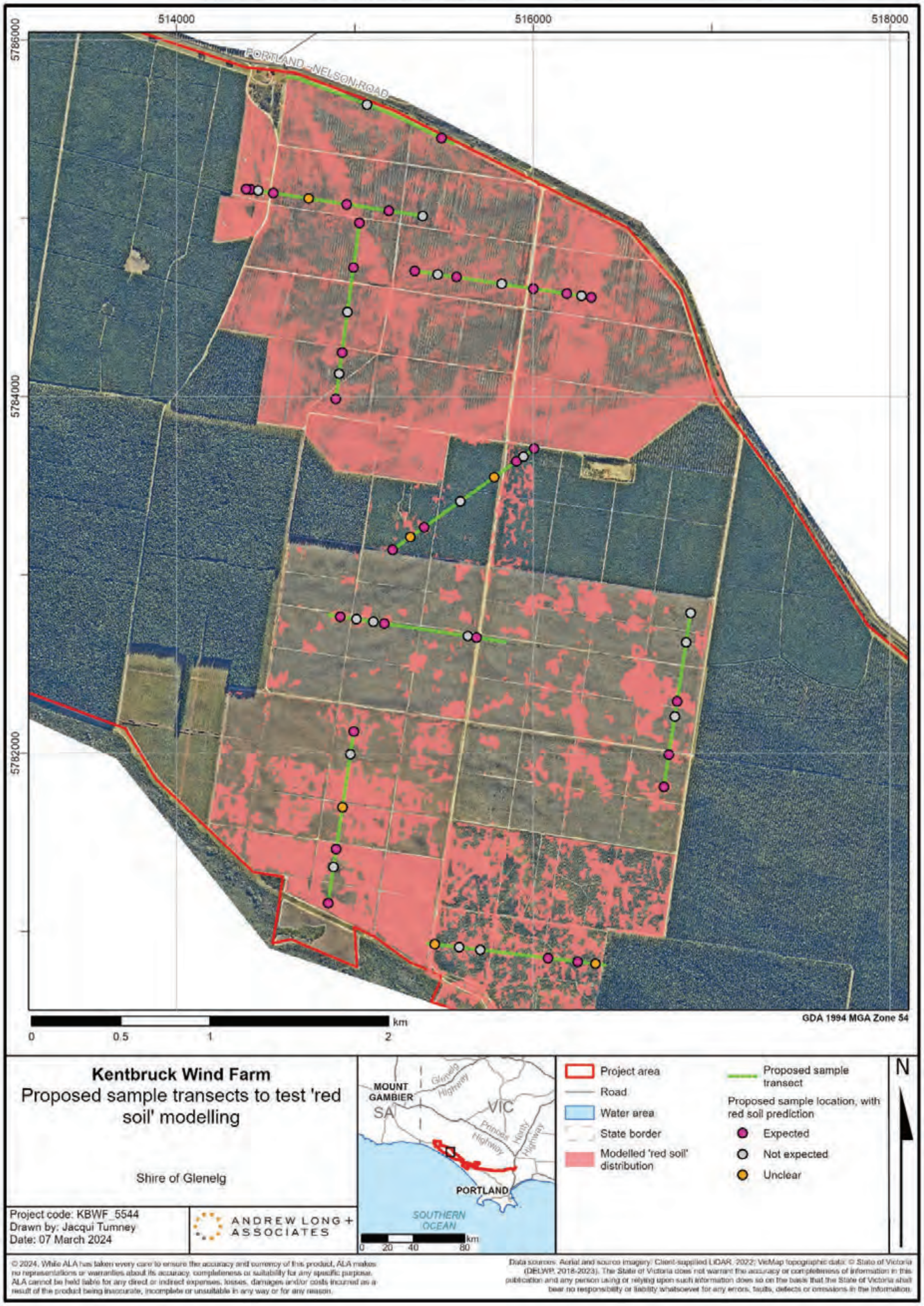


Figure 41 Proposed transects and testing locations (Phase 1) in the central part of the Project Area

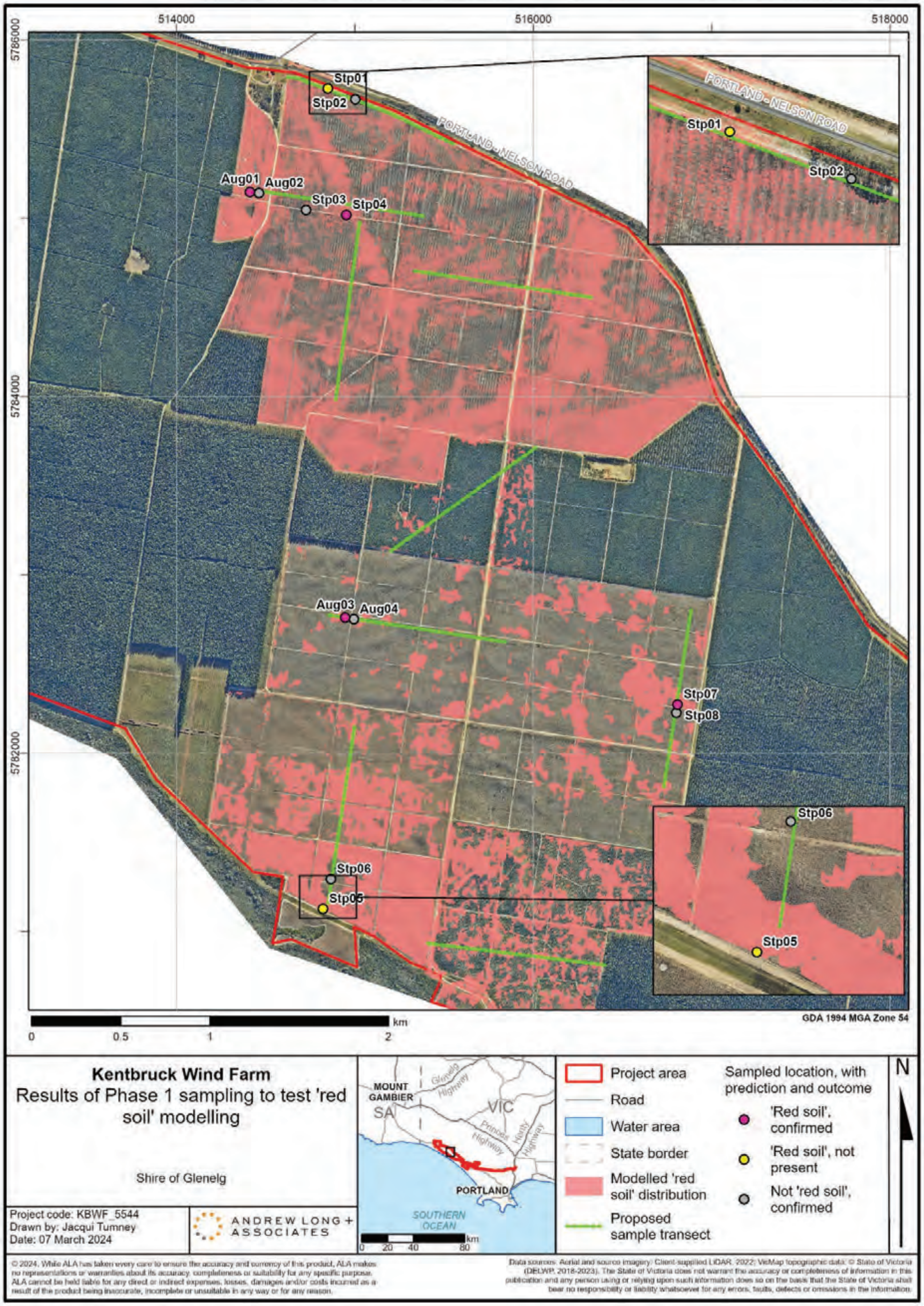


Figure 42 Preliminary test results (Phase 1) showing correlation with the red soil modelling

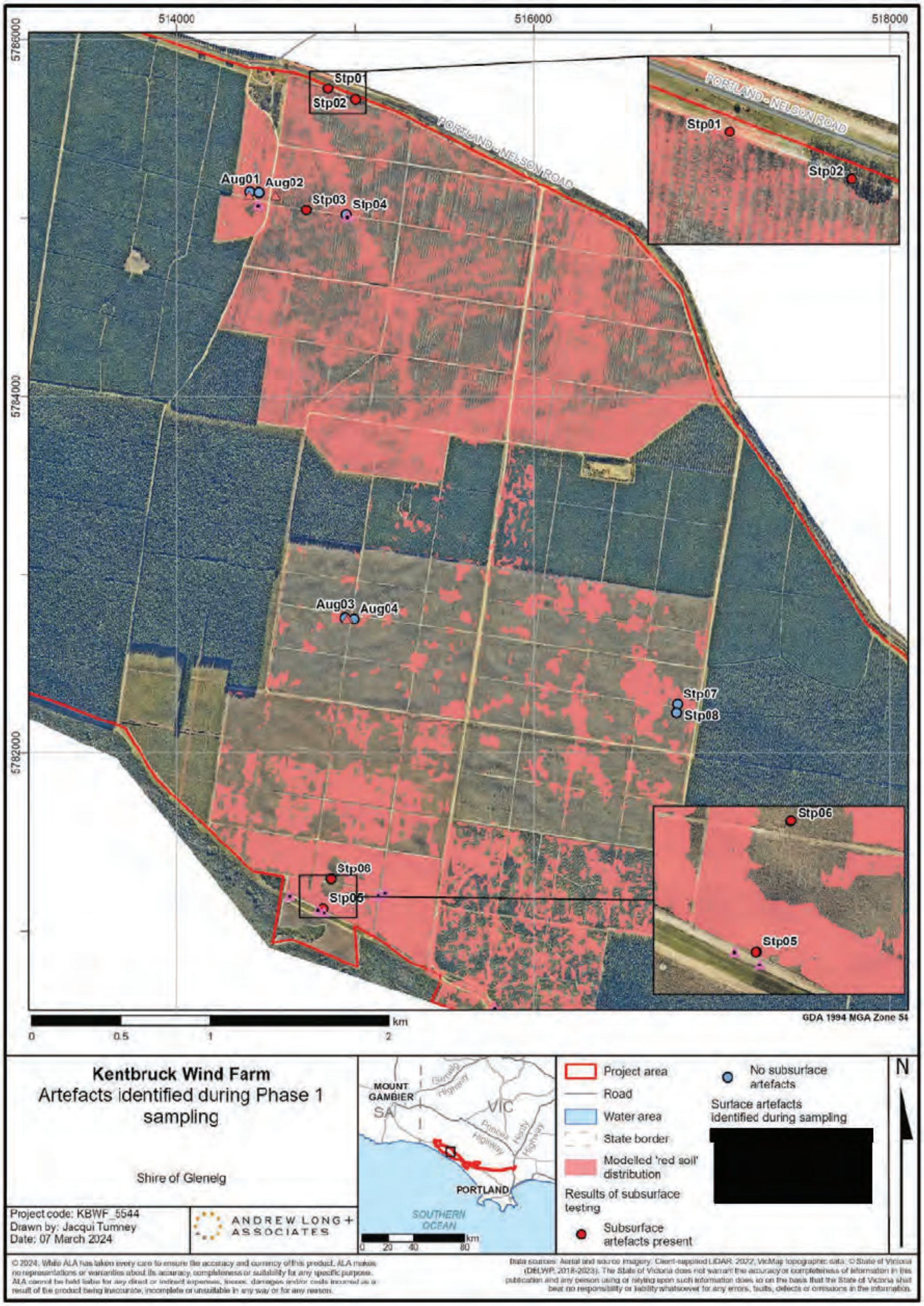


Figure 43 Subsurface testing results and nearby surface artefacts at the locations of Phase 1 testing

Table 18 Summary results at chromosol locations

Investigation Area	
Survey method	Pedestrian
Sampling strategy	Targeted around the vicinity of proposed testing locations, crests and exposures
No. of participants	4
Transect width	3 m
Transect spacing	5 m
Visibility	
Exposure type(s)	Exposures or vehicle tracks
% area with exposure	65
% surface visibility on exposure(s)	95
% area without exposure	35
% surface visibility without exposure	5
Average ground surface visibility	~50% overall
Environment	
Environmental settings	Coastal
Landform, systems & elevations	Lowland dunes part of a rolling undulating sandy coastal plain
Slope	Crests and gently inclined
Locality landforms	Modified coastal plain transitioning into a coastal dune landform in south
Disturbance	Road ways and pine plantation
Soil/Sediment	
Dominant Soil	Chromosol
Sub-group	Terra Rossa and potentially Rendzina qualities
Features	Shallow red/brown sand with abrupt contact to limestone base
Erosion profile	Moderate aeolian erosion with low level pedogenesis
Aboriginal Place Identified	
Type	[redacted]
Subsurface artefacts	None identified
Estimated density for surface artefacts	[redacted] No subsurface artefacts identified
VAHR	[redacted]
Shovel Test Pits	
STP 04	**0-310 mm:** Dry loose fine- to medium-grained sand A-Horizon, granular structure with a sharp contact to context 2. Munsell 5YR 3/4 dark reddish brown, pH 9. **310-400 mm:** Dry loose fine-grained sand A1-horizon, granular structure with a sharp contact to context 3. Munsell 5YR 4/6 yellowish red, pH 8. Minor fragments of calcareous rock or limestone. **400 mm+:** Limestone rock base, blocky sub angular C-Horizon, unable to excavate further.
STP 07	**0-250 mm:** Dry loose fine- to medium-grained sand A-Horizon, granular structure with a sharp contact to context 2. Munsell 2.5 YR 2.5/2 very dark red, pH 6.5. **250-600 mm:** Dry loose fine-grained sand A1-horizon, granular structure with a sharp contact to context 3. Munsell 5YR 4/6 yellowish red, pH 7. Minor fragments of calcareous rock or limestone. **600 mm+:** Limestone rock base, blocky sub angular C-Horizon, unable to excavate further.
Augers	
Auger 01	**0-250 mm:** Dry loose fine- to medium-grained sand A-Horizon, granular structure with a gradual contact to context 2. Munsell 2.5YR 2.5/2 very dark red, pH 7.

	250-350 mm: Dry loose fine-grained sand A1-horizon, granular structure with a sharp contact to context 3. Munsell 2.5YR 2.5/4 dark reddish brown, pH 7. Minor fragments of calcareous rock or limestone. **350 mm+:** Limestone rock base, blocky sub angular C-Horizon, unable to excavate further.
Auger 03	**0-200 mm:** Dry loose fine- to medium-grained sand A-Horizon, granular structure with a sharp contact to context 2. Munsell 5YR 3/4 dark reddish brown, pH 6.5. **200-600 mm:** Dry loose fine-grained sand A1-horizon, granular structure with a sharp contact to context 3. Munsell 5YR 4/6 yellowish red, pH 6. Minor fragments of calcareous rock or limestone. **600 mm+:** Limestone rock base, blocky sub angular C-Horizon, unable to excavate further.

Figure 44 Chromosol soils on dune crest near STP 4, looking east (P. Liro 11/04/23)

Figure 45 Chromosol soils on mid-slope of dune STP 7, looking north (P. Liro 13/04/23)

Table 19 Summary results at non-chromosol locations

Investigation Area	
Survey method	Pedestrian
Sampling strategy	Opportunistic as dictated by plantation access and exposures or slopes
No. of participants	4
Transect width	3 m
Transect spacing	2 m around plantation obstacles
Visibility	
Exposure type(s)	Occasional bare patches, exposures or vehicle tracks
% area with exposure	5
% surface visibility on exposure(s)	90
% area without exposure	95
% surface visibility without exposure	3
Average ground surface visibility	4% overall
Environment	
Environmental settings	Coastal
Landform, systems & elevations	Lowland dunes part of a rolling undulating sandy coastal plain
Slope	Gently inclined mid-slopes and depressions or incised dunes
Locality landforms	Modified coastal plain transitioning into a coastal dune landform in south
Disturbance	Road ways and pine plantation
Soil/Sediment	
Dominant Soil	Orthic Tenosol or modern dune system
Sub-group	Sandy Iron leptopodsol or potential deep terra rossa
Features	Deep grey/brown/yellow sand with gradually merging massive, with potential for clays and some limestone
Erosion profile	Low aeolian erosion with high level pedogenesis
Aboriginal Place Identified	
Type	[redacted]
Subsurface artefacts	Identified in [redacted] at 200-300 mm, 500-600 mm [redacted] at 400-500 mm, 600-700 mm, [redacted] at 500-600 mm, [redacted] at 100-200, 300-400, [redacted] at 900-1000 mm.
Estimated density for surface artefacts	>10 per square metre but highly localised
VAHR	[redacted]
Shovel Test Pit Stratigraphy	
STP 03	**0-270 mm:** Dry loose fine-grained sand granular structure A-Horizon, gradual contact to context 2. Munsell 10YR 3/1 very dark grey, pH 7. **270-620 mm:** Dry loose fine-grained sand with granular structure A1-Horizon with an clear contact to context 3. Munsell 7.5YR 6/4 light brown, pH 6.5. **620-1100 mm:** Dry loose fine-grained sand massive A1-Horizon with an abrupt contact to context 3. Munsell 7.5YR 4/6 strong brown, pH 6.5. **1100-1650 mm:** Dry loose fine-grained sand massive A1-Horizon with an abrupt contact to context 3. Munsell 5YR 4/6 yellowish red, pH 6. **1650 mm+:** Limestone rock obstruction with developing coffee rock, C-Horizon, unable to excavate further.
STP 06	**0-300 mm:** Dry loose fine- to medium-grained loamy sand granular structure A-Horizon with an abrupt contact to context 2. Munsell 5YR 2.5/2 dark reddish brown, pH 8.5.

	300-500 mm: Dry loose fine-grained sand with granular structure A2-Horizon with an clear contact to context 3. Munsell 7.5YR 6/4 light brown, pH 7. **500-630 mm:** Slightly moist loose medium-grained silty sand with granular structure with abrupt contact to context 4. Munsell 10YR 2/1 Black, pH 9. **630-1255 mm:** Dry loose fine-grained sand massive A3-Horizon with a gradual contact to context 5. Munsell 10YR 6/3 pale brown, pH 8. **1255-2200 mm:** Dry loose fine-grained sand massive A3-Horizon with a gradual contact to context 6. Munsell 10YR 7/3 very pale brown, pH 8. **2200-3220 mm:** Dry loose very fine-grained sand massive. Munsell 7.5YR 8/6 reddish yellow, pH 8. Unable to excavate further due to fine sands.
Auger Stratigraphy	
Auger 02	**0-250 mm:** Dry loose fine sand A-Horizon with a gradual contact to context 2. Munsell 10YRr 3/1 very dark grey, pH 7. **250-500 mm:** Dry loose fine-grained sand with granular structure A2-Horizon with clear contact to context 3. Munsell 10YR 5/3 brown, pH 6. **500-1000 mm:** Dry loose fine-grained sand massive A2-Horizon with a gradual contact to context 4. Munsell 10YR 7/3 very pale brown pH 6. **1000-2200 mm:** Dry loose fine-grained sand massive A3-Horizon with a gradual contact to context 5. Munsell 7.5YR 6/6 reddish yellow, pH 6. **2200-2520 mm:** Dry moderately compacted slightly sandy clay with a moderate plasticity, granular B-Horizon and sharp contact to context 6. Munsell 2. YR3/6 dark red, pH 7.5. **2520 mm+:** Potential limestone rock obstruction, C-Horizon, unable to excavate further.
Auger 04	**0-300 mm:** Dry loose fine sand A-Horizon with a gradual contact to context 2. Munsell 10YR 4/2 dark greyish brown, pH 5. **300-600 mm:** Dry loose fine-grained sand with granular structure A2-Horizon with clear contact to context 3. Munsell 10YR 5/3 brown, pH 6. **600-11000 mm:** Dry loose fine-grained sand massive A3-Horizon with a gradual contact to context 4. Munsell 10YR 8/8 yellow pH 6. **1100-2400 mm:** Dry loose fine-grained sand massive A3-Horizon with a gradual contact to context 5. Munsell 7.5YR 6/6 reddish yellow, pH 6. **2400-2550 mm:** Dry moderately compacted slightly clayey sand, granular B-Horizon. Munsell 5YR 6/6 reddish yellow, pH 6.

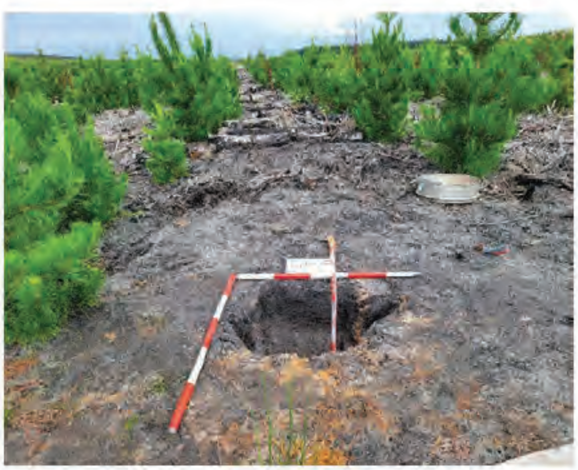


Figure 46 Location of STP 03 on depression in landscape within non-chromosol soils, looking south (P. Liro 12/04/23)

Figure 47 Top of dune looking east along non-chromosol soils (P. Liro 14/04/23)

8.2.4 Conclusions from phase 1

The following observations and conclusions were made during the phase 1 testing:

- A total of 12 subsurface testing locations were undertaken during the phase 1 testing: eight STPs and four auger probes.
- Of the 12 subsurface testing locations, two STPs and two auger probes were excavated within chromosol soils, and six STPs and two auger probes were excavated within non-chromosol soils.
- Predicted soil type was confirmed at 10 of the 12 locations; STP01 and STP05 were predicted to be within the chromosol range but were identified as non-chromosols.
- Within the chromosol soils, no subsurface artefacts were identified; however, surface artefacts were recorded within the vicinity of [redacted] testing locations.
- Within the non-chromosol soils, subsurface artefacts were identified in [redacted] STP testing locations; surface artefacts were identified in proximity to [redacted], but at higher artefact densities than those surface artefacts identified in the vicinity of chromosol testing locations.
- Subsurface artefacts appear more likely to occur in association with non-chromosol soils.
- Surface artefacts occur in proximity to both chromosol and non-chromosol soils, and perhaps at different densities, but it is not clear what the precise underlying soil type is at these locations.
- Additional sampling is needed to confirm the RAP observation of surface artefacts in association with red soils.
- The elevation and landform at which various soils occur are additional factors that may need to be considered.

Based on the results of the preliminary testing, the model for mapping of chromosol soils is relatively consistent especially through the central portions of the Project Area. There may be some slight variation to the soil distribution with a potential deviation of boundaries in relation to the mapping; however, this seems to be more the case along the outskirts of the Project Area and requires further testing. Further testing is also required to reliably identify correlations between soil type and artefact presence.

8.3 ALA phase 2 field assessment results

Phase 2 testing of the predictive model consisted of collating data from a larger sample size within the Project Area. Targeted areas for subsurface excavation consisted of those areas in the east and west of the Project Area that could not be easily identified for the presence/absence of “red soils” during phase 1 testing. The presence of chromosols was also noted on landform elements during the phase 2 survey and testing.

The phase 2 field assessments took place with GMTOAC participants from 17 to 21 July 2023. The primary aim of phase 2 was to obtain a larger sample of subsurface and landscape information to better identify any correlations with artefact occurrences and to produce a revised predictive model. Both surface and subsurface assessments were undertaken.

8.3.1 Limitations

Thick pine plantation limited access into some areas as well impeding ground surface visibility.

8.3.2 Phase 2 survey results

During the phase 2 testing, an opportunistic targeting survey of accessible areas of the Project area were subject to visual inspection. Eleven locations within the Project Area were delineated to be subject to surface survey – three areas in the north-west (Figure 110), six in the east and two in the far north-east of the main Project Area (Figure 111). Five areas were successfully able to be surveyed (see Figure 126 to Figure 129).

The purpose of the opportunistic survey was to identify the presence/absence of surface cultural heritage material in association with chromosol soils. Representative photographs of the survey areas are shown in Figure 112 to Figure 125.

Within the five areas that were successfully surveyed, the following Aboriginal cultural heritage material was identified:

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Table 20 Low density artefacts across the Project Area (Kentbruck 15 LDAD (VAHR No. pending))

Preliminary VAHR naming convention	Recorded artefact density
[redacted]	1 sandstone fragment 1 chert flake
[redacted]	2 chert flakes
[redacted]	1 artefact
[redacted]	1 chert flake
[redacted]	1 chert flake 1 core
[redacted]	1 chert artefact
[redacted]	1 chert flake 1 artefact

[redacted]	1 artefact
[redacted]	Unknown
[redacted]	Unknown
[redacted]	2 unknown artefacts
[redacted]	7 artefacts
[redacted]	3 artefacts

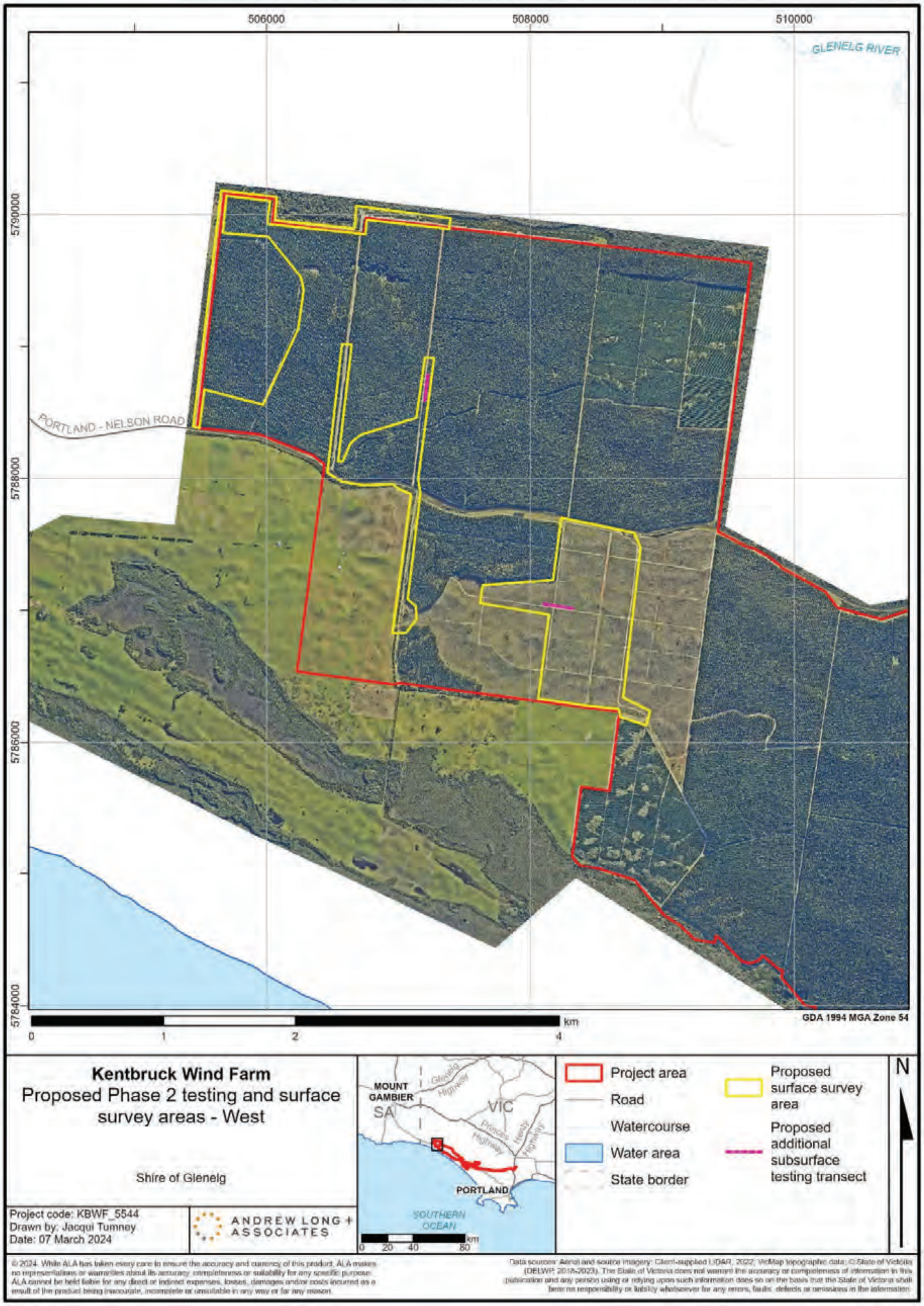


Figure 48 Proposed survey and additional subsurface testing areas for Phase 2 in the western part of the Project Area

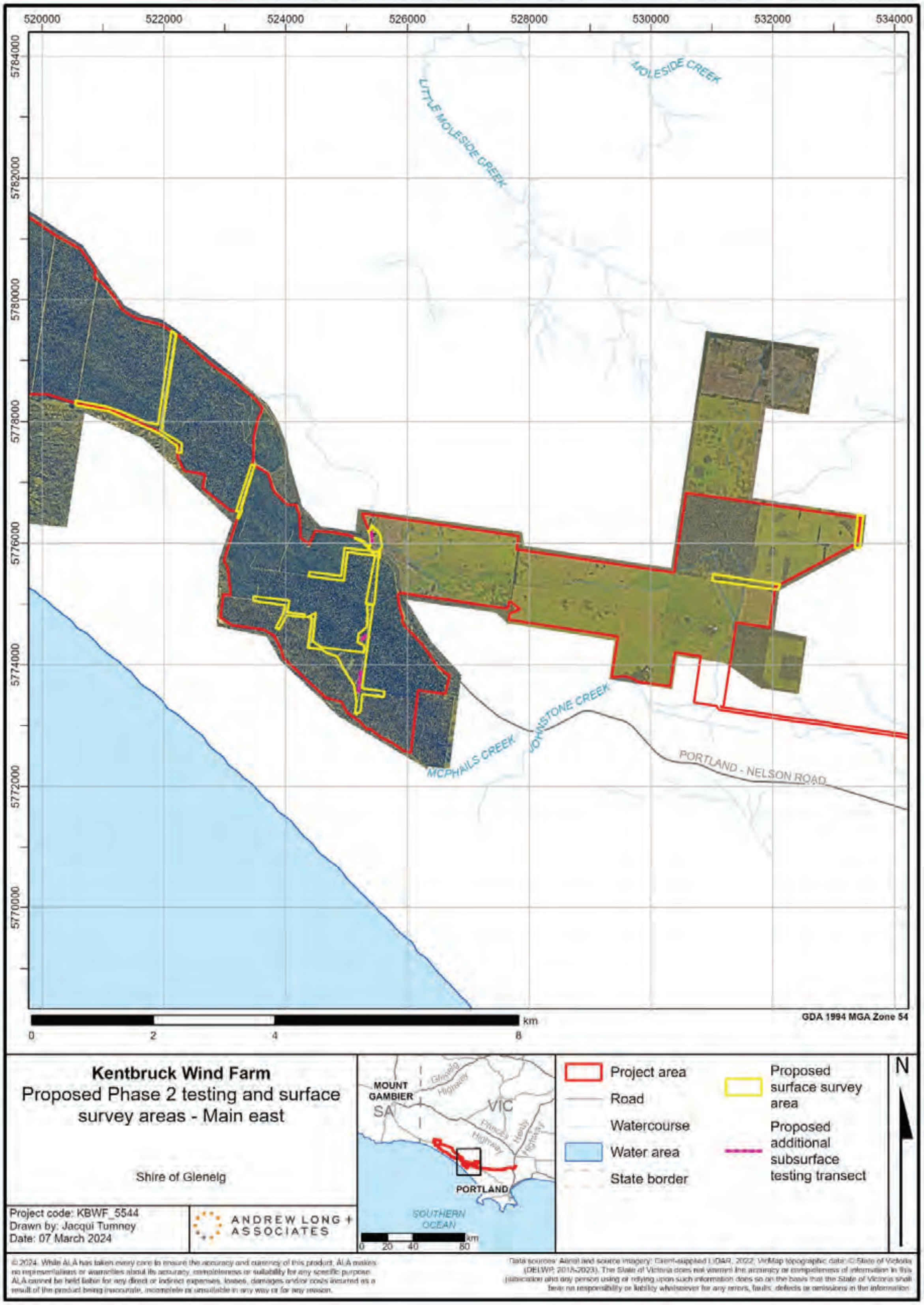


Figure 49 Proposed survey and additional subsurface testing areas for Phase 2 in the eastern (main) part of the Project Area

Figure 50 Rolling hills across the location of E STP 05 and 06, looking east (A. Valka 19/07/23)

Figure 51 General view of landform around STP 05, looking west (A. Valka 19/07/23)

Figure 52 Landform views in eastern portion of existing plantation, looking south at firebreak (A. Valka 19/07/23)

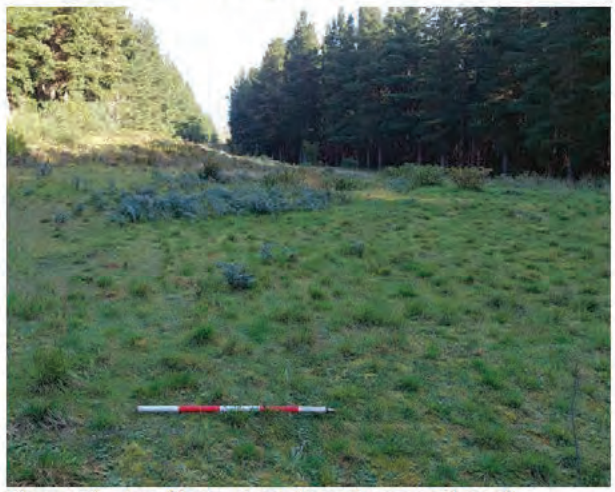


Figure 53 Landform views in eastern portion of existing plantation at general location of E STP 07, looking south (A. Valka 19/07/23)

Figure 54 View of landform in western portion facing north at western most edge near surface artefacts [redacted] (A. Valka 17/07/23)

Figure 55 View of landform in western portion of Project area, facing south at western most edge near surface artefacts ([redacted] A. Valka 19/07/23)

Figure 56 General location of NW STP 01 -02, looking north (A. Valka 19/07/23)

Figure 57 Existing Boiler Swamp Road with minor waterways and drainages, looking west (A. Valka 21/07/23)

Figure 58 Existing Boiler Swamp Road at location of proposed subsurface transmission line, looking east (A. Valka 21/07/23)

Figure 59 Side of existing roadway at Boiler Swamp Road, looking north (A. Valka 21/07/23)

Figure 60 [redacted], looking north located on [redacted] (A. Valka 18/07/23)

Figure 61 [redacted] located [redacted], looking southwest (A. Valka 18/07/23)

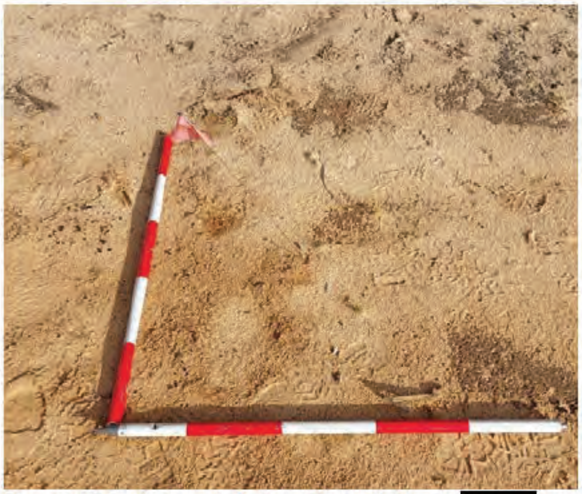


Figure 62 Surface artefact scatter relating to [redacted] ground view (A. Valka 18/07/23)

Figure 63 Surface artefact scatter [redacted], ground view (A. Valka 18/07/23)

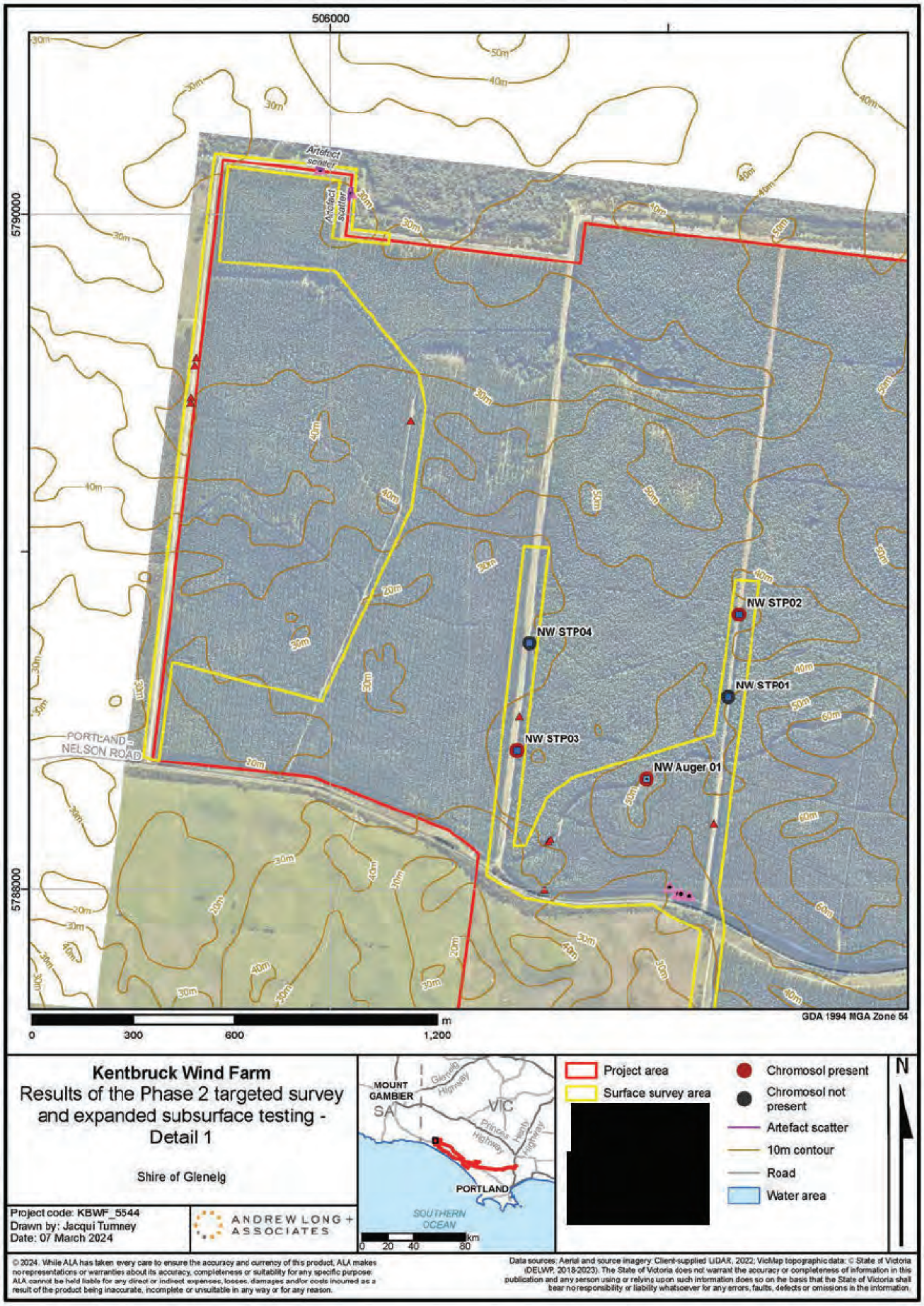


Figure 64 Results of the Phase 2 survey and testing, including chromosol presence, and surface and subsurface artefacts – Detail 1

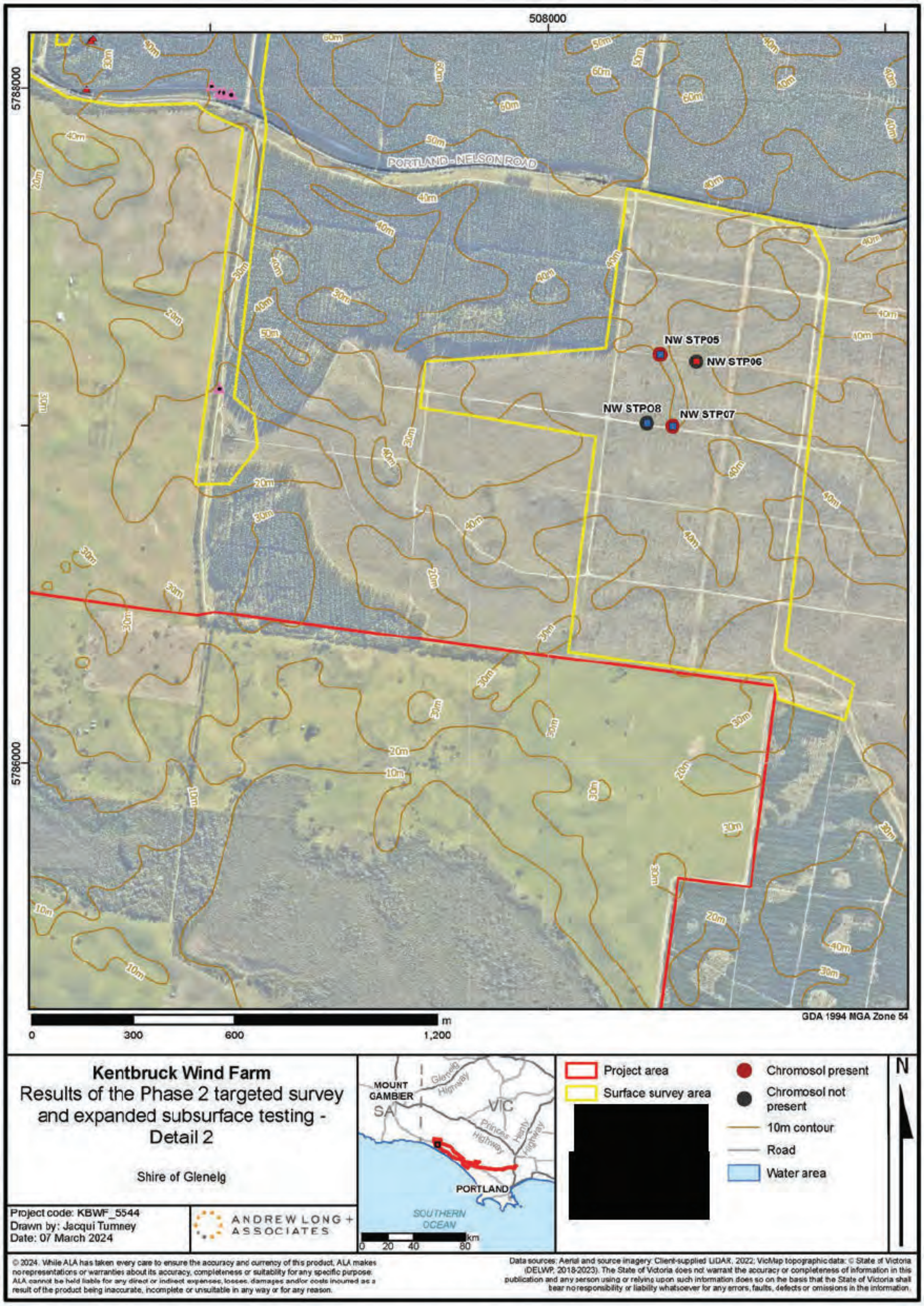


Figure 65 Results of the Phase 2 survey and testing, including chromosol presence, and surface and subsurface artefacts – Detail 2

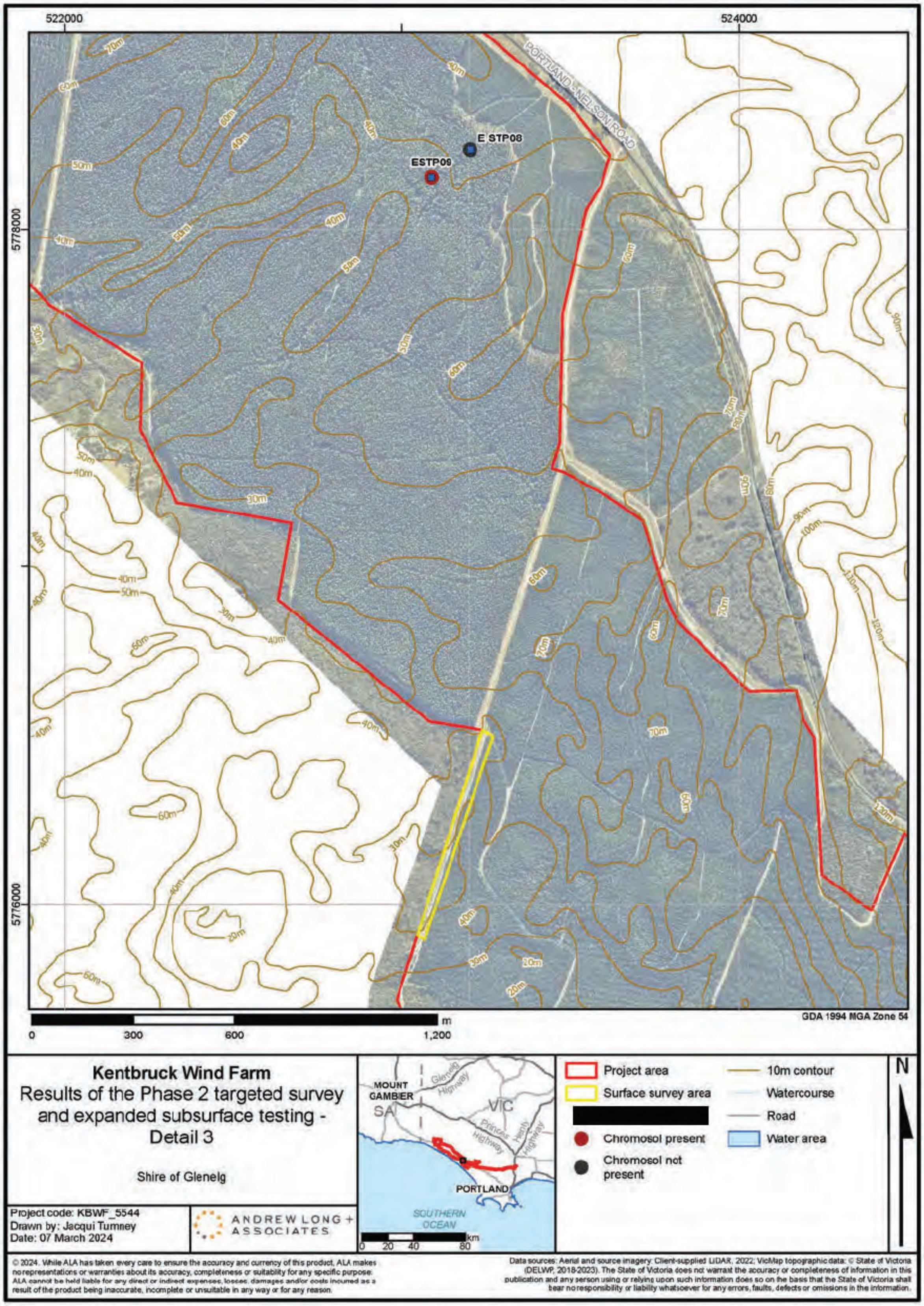


Figure 66 Results of the Phase 2 survey and testing, including chromosol presence, and surface and subsurface artefacts – Detail 3

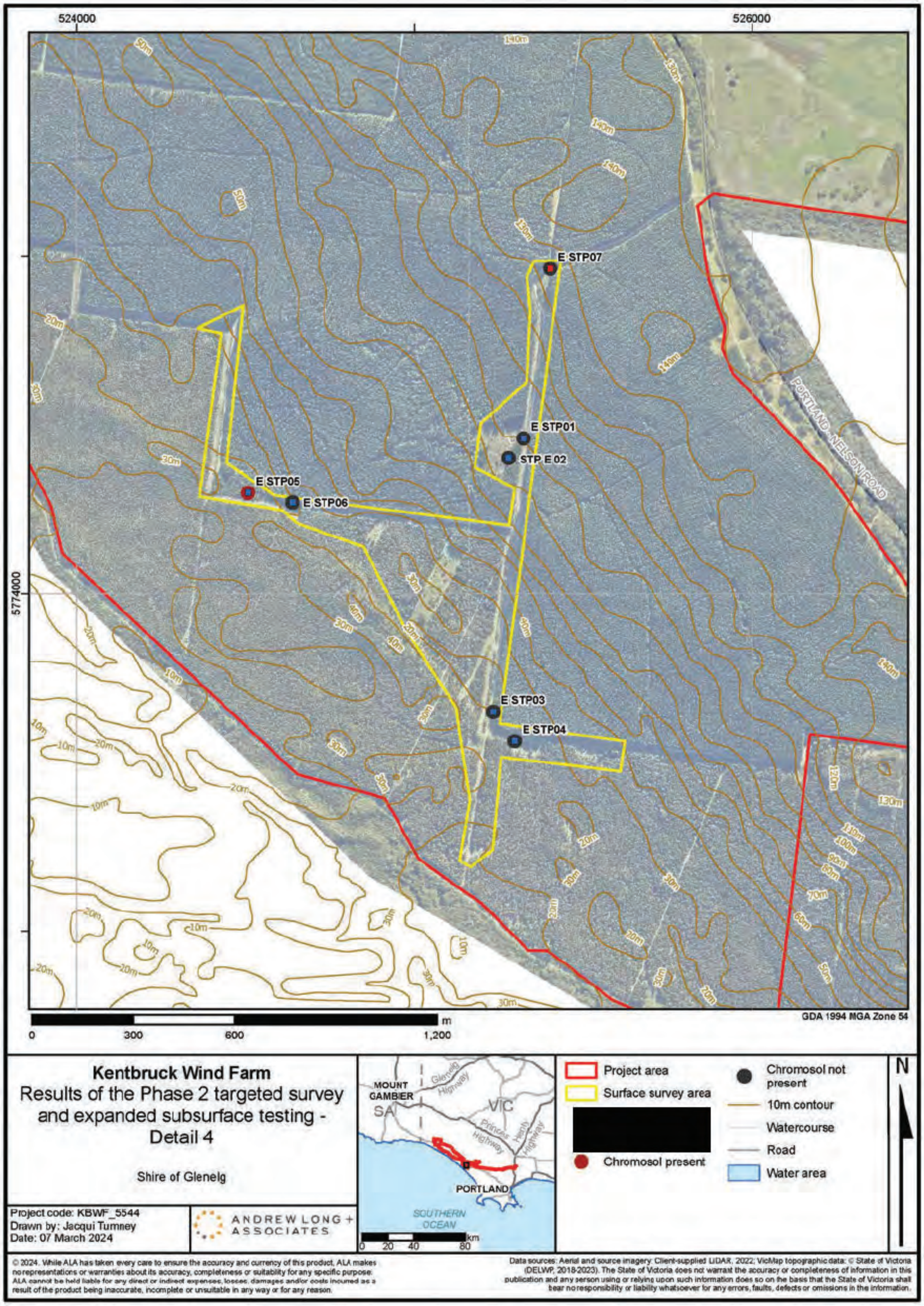


Figure 67 Results of the Phase 2 survey and testing, including chromosol presence, and surface and subsurface artefacts – Detail 4

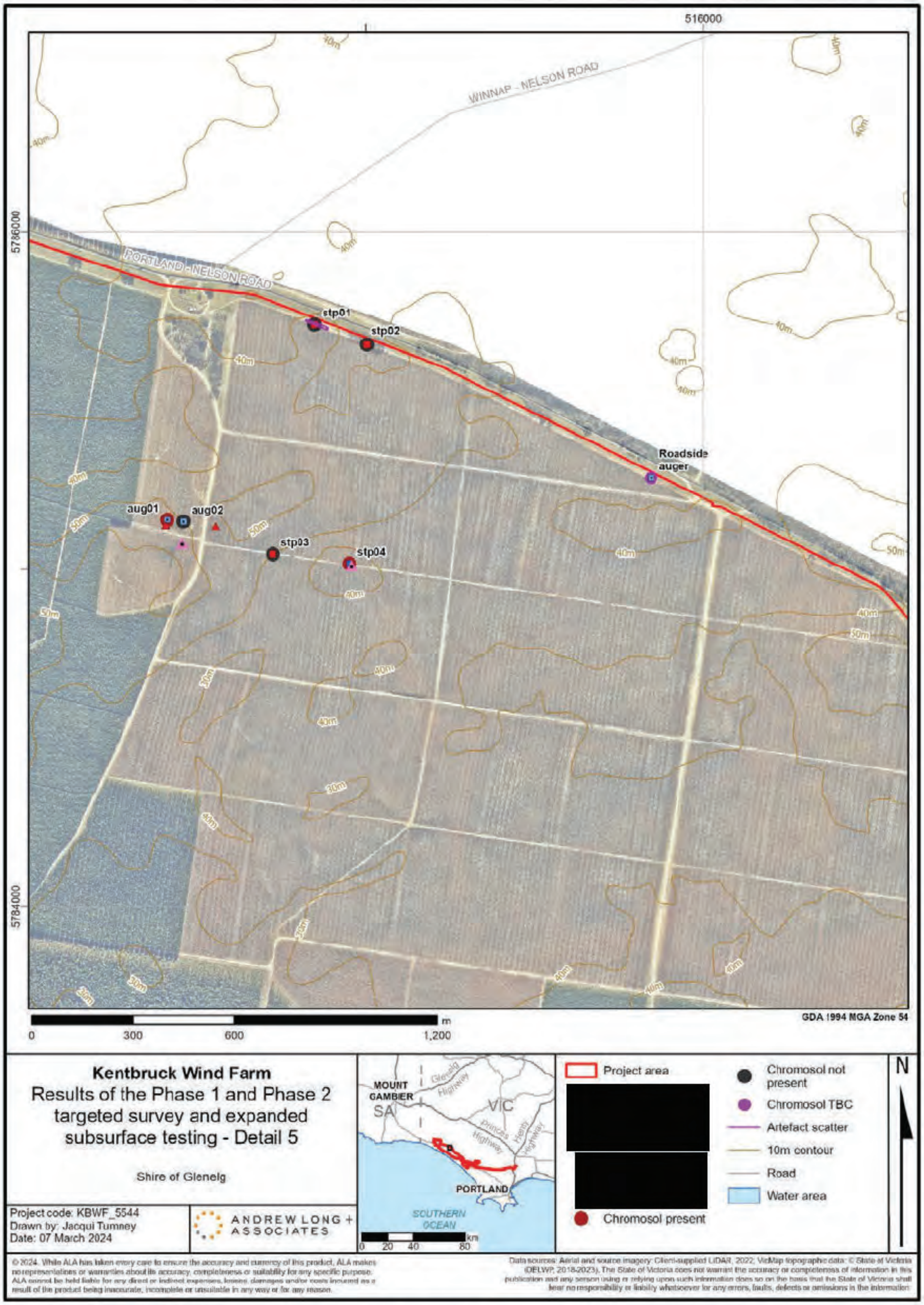


Figure 68 Results of the Phase 2 survey and testing, including chromosol presence, and surface and subsurface artefacts and Phase 1 results – Detail 5

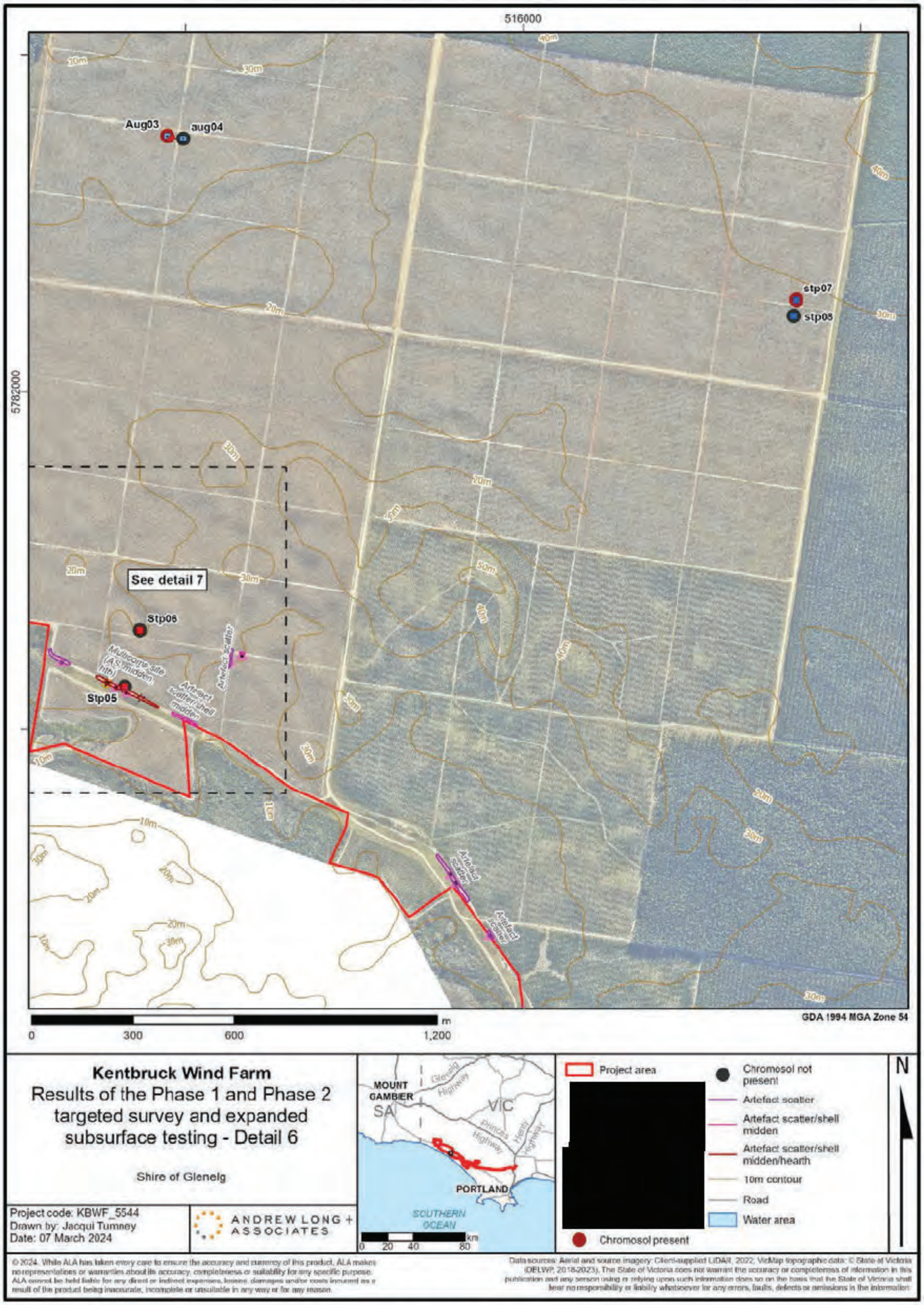


Figure 69 Results of the Phase 2 survey and testing, including chromosol presence, and surface and subsurface artefacts, with a focus on Phase 1 results – Detail 6

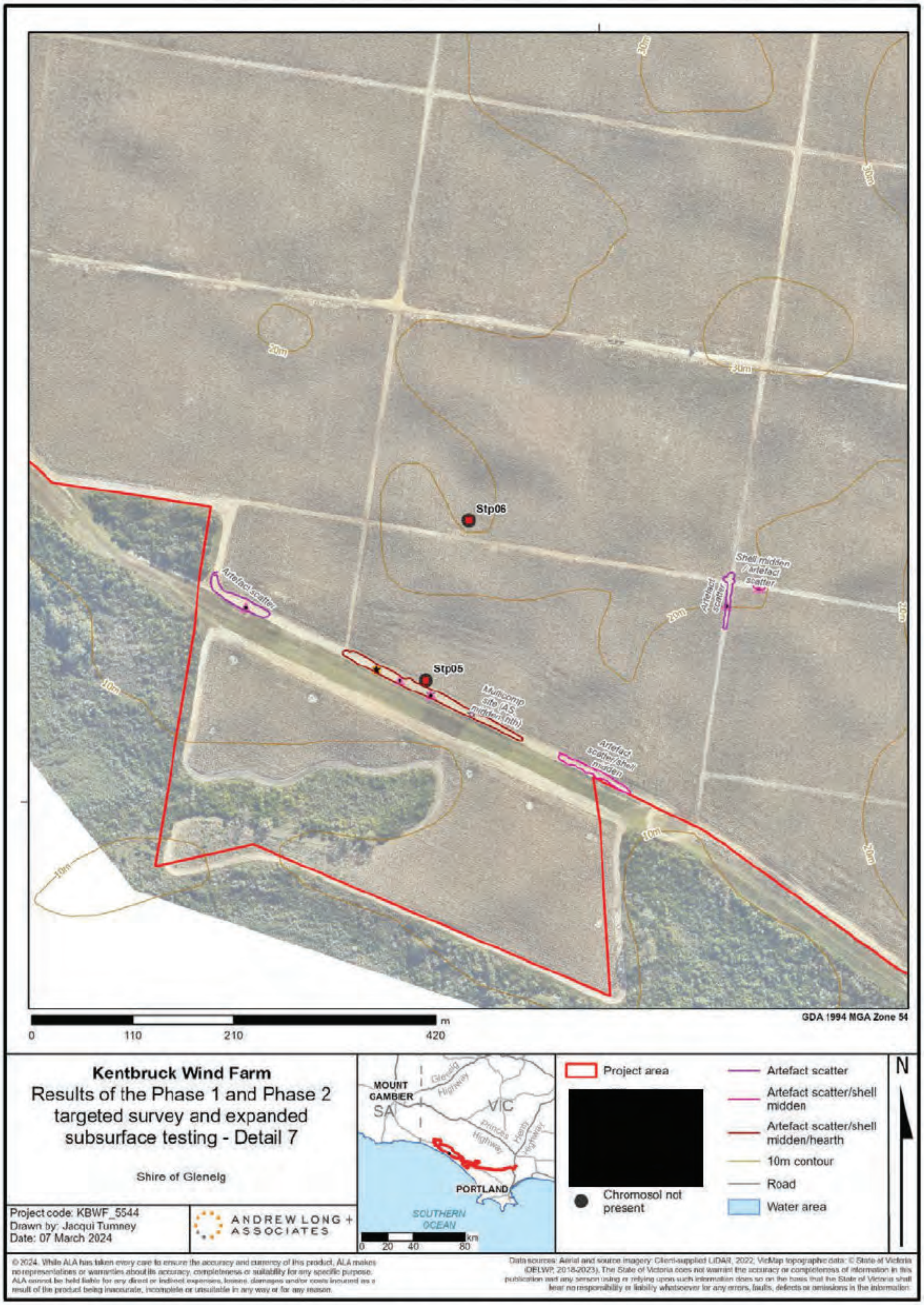


Figure 70 Results of the Phase 2 survey and testing, including chromosol presence, and surface and subsurface artefacts, with a focus on Phase 1 results – Detail 7

8.3.3 Phase 2 testing results

Phase 2 testing comprised 17 STPs excavated within four of the survey areas and two auger probes. Soil descriptions from a representative sample of subsurface testing locations are documented below (Table 30, Figure 133 to Figure 150). Testing locations and the outcomes of the testing are shown in Figure 126 to Figure 130 (with Phase 1 results also included in Figure 130 to Figure 132) and a detailed table of all excavation results is provided in Appendix 5.

Table 21 Summary of observations from phase 2 testing

	Test pit ID	Artefacts	Preliminary VAHR name
Non-chromosol	E STP01 (Dune slope)	N	NA
	E STP02 (bottom of dune)	N	NA
	E STP03 (undulating land)	N	NA
	E STP04 (bottom of dune)	N	NA
	E STP06 (bottom of dune)	N	NA
	E STP07 (saddle of slope)	[redacted]	[redacted]
	E STP08 (base of rise)	N	NA
	NW STP01 (slope of rise)	N	NA
	NW STP04 (low rise)	N	NA
	NW STP06 (Bottom of dune)	[redacted]	[redacted]
	NW STP08 (Bottom of dune)	N	NA
Chromosol	E STP05 (top of rise)	N	NA
	E STP09 (top of rise)	N	NA
	NW STP02 (top of rise)	N	NA
	NW STP03 (top of rise)	N	NA
	NW STP05 (top of dune)	N	NA
	NW STP07 (top of rise)	N	NA
	NW Auger 1 (top of rise)	N	NA
To be confirmed	Roadside auger (undulating dunes)	N	NA

Chromosols were present at seven locations, and subsurface artefacts were recovered from just two of the STPs, both of which were non-chromosols.

Table 22 Summary results of phase 2 survey and testing

Investigation Area	
Survey method	Pedestrian – fanning out from the testing location
Sampling strategy	Targeted around the vicinity of proposed testing locations, crests, dolines, and exposures

No. of participants	4
Transect width	4 m
Transect spacing	5 m or where available space between pine plantations allow
Visibility	
Exposure type(s)	Eroded/exfoliated exposures or vehicle tracks in roads or sporadic zones between plantations. Generally, visibility within the plantation forests was less than 5% with access tracks and cleared sections along major road ways at least 95%. Boiler Swamp Road is part of the proposed transmission line did not have any significant natural visibility with shoulders being dominated by road impacts and forest humic litter. The above variation in visibilities is generally accurate project wide however effective visibility for Boiler Swamp Road is high but largely artificial in nature.
Environment	
Environmental settings	Coastal
Landform, systems & elevations	Lowland dunes, part of a rolling undulating sandy limestone karst land system. Minor portion of the project in north east identified as a heathland plain
Slope	Undulating crests and gently declining landscape into the coastline
Locality landforms	Modified coastal plain transitioning into a sandy dune like covering karst landform across the project. Heathland occupying north east portion approximately 20% of the project area most notably Boiler swamp road.
Disturbance	Road ways and pine plantation
Soil/Sediment	
Dominant Soil: West – Chromosols and non-chromosols between karst undulations East – Limestone transitioning to Heathlands with non-chromosols, Heathland soils, chromosols present on karst peaks in some locations.	Testing in both eastern and western extents of the Project Area confirmed undulating transitions between chromosols and non-chromosols on a limestone landform consistent with Phase 1 testing. These transition into heathland sandy soils only in the north east along Portland-Nelson Road with possible Orthic Tenosols developing in the eastern most and north eastern most regions. The undulating limestone landscape is constant through the projects coastal margin with testing generally confirming chromosols on shallow limestone based ridges and deeper sandy iron leptopodsols in the dolines.
Sub-group	Terra Rossa (generally Project wide)
Features	On top of limestone (chromosols): Shallow red/brown sand with abrupt contact to limestone base. In dolines between limestone ridges (non-chromosols): Deep grey/brown/yellow sand with gradually merging massive, with potential for clays and some limestone. Moderate depth heathland: Dark slightly humic sandy soils with diffuse transition into a limestone base.
Erosion profile	Moderate aeolian erosion with impacts from plantation and vehicle access track uses.
Aboriginal Place Identified	
Type	Probable LDADs and artefact scatters
Estimated density for artefacts	<10 per square meter
VAHR	[redacted]
Shovel Test Pits – Eastern portion of Project area	
E STP 05 (Chromosol)	**0-80 mm:** Dry-damp loose slightly humic sandy silt, A-Horizon, fine grained, granular structure with a sharp contact to context 2. Munsell 10YR 2/1, pH 8.5. Dark topsoil influenced by pine plantation. **80-180 mm:** Dry cemented calcareous rock/limestone base. Munsell 10YR 7/3, pH 8.5. Base of chromosol soil at peak of karst.

E STP 06 (Non-chromosol)	**0-50 mm:** Damp loose fine to medium grained sandy silt A-Horizon, granular structure with a smooth gradual contact to context 2. Munsell 10YR 2/1, pH 7.5. In doline impacted by plantation with some sandstone and organic inclusions. **50-150 mm:** Damp friable sandy silt A2-horizon, with a smooth gradual contact to context 3. Munsell 10YR 4/2, pH 7.5. Moderate charcoal fragments with pine and sandstone debris from pine plantation impacts. **150-900 mm:** Damp friable silty sand with a smooth gradual transition to context 4. Potential extended A-Horizon with continual inclusions. Munsell 10YR 2/1, pH 7.5. **900-1000 mm:** Damp friable sand with a smooth contact through auger continuation to context 5. Munsell 10YR 5/2, pH 7.5. Potential deeper A Horizon. **1000-1950 mm:** Damp friable sand with a smooth gradual contact to context 6. Munsell 10yr 5/2, pH 7.5. Potential deeper A Horizon. Munsell 10YR 6/6, pH 7. **1950-2200 mm:** Damp friable sand continuation of context 5. Munsell 10YR 6/8, pH 7. **2200-2660 mm:** Damp friable clayey sand with increased clays, Munsell 5 YR 5/8, pH 7.5. Smooth gradual contact to context 8. Potential A3-Horizon. **2660-2950 mm:** Damp firm sandy clay with a smooth gradual contact to context 9. Munsell 2.5 YR 4/8, pH 7.5. likely A3 Horizon **2950-330 0mm:** Damp friable coarse sand – clayey sand, with excavation limits reached by auger. Munsell 10 YR 6/6, pH 7.5. A3 Horizon.
E STP 07 (Heathland)	**0-160 mm:** Dry-damp loose slightly humic sandy silt, A-Horizon, fine grained, granular structure with a clear contact to context 2. Munsell 10YR 2/1, pH 7.5. Dark topsoil influenced by pine plantation. **160-630 mm:** Damp loose medium grained sandy A1-horizon, with a diffuse contact to context 3. Munsell 10 YR 4/4, pH 7. Aboriginal cultural heritage identified. **630-1300 mm:** Damp loose medium grained sand with a sharp transition to context 4 and A2-Horizon for the landform. Munsell 10YR 3/6, pH 8. Aboriginal cultural heritage identified. **1300-1330 mm:** Dry cemented calcareous rock/limestone base. Munsell 10 YR 7/3, pH 8. Base of karst along the saddle (mid-slope) of landform.
Shovel Test Pits – Western portion of Project area	
NW STP 03 (Chromosol)	**0-110 mm:** Dry-damp loose silty sand/humic A-Horizon with a sharp contact to context 2. Munsell 7.5YR 3/4, pH 8.5. **110-120 mm:** Cemented limestone base and B-Horizon, identified karst ridge. Munsell 10YR 7/4, pH 8.
NW STP 04 (Non-chromosol over limestone with possible chromosol at base not eroded out)	**0-190 mm:** Damp loose silty sand/humic A-Horizon with an abrupt contact to context 2. Heavy root disturbance, frequent small charcoal inclusions from pine plantation. Located on small rise at mid elevation. Munsell 7.5YR 2.5/1, pH 8.5. **190-1250 mm:** Damp friable medium sand A1-Horizon with a clear contact to context 3. Continuing plantation impacts. Munsell 10YR 5/6, pH 7.5. **1250-1550 mm:** Damp friable medium sand A2-Horizon with a sharp contact to context 4. Munsell 7.5YR 5/8, pH 7.5. **1550- 1600 mm:** Cemented limestone base and B-Horizon, Identified karst ridge. Munsell 10YR 6/3, pH 8.
NW STP 06 (Non-chromosol)	**0-350 mm:** Dry friable sandy silt, A-Horizon, fine grained, granular structure with a clear contact to context 2. Munsell 7.5YR 4/3, pH 7. Bottom of dune in pine plantation. **350-620 mm:** Dry friable sandy silt A-horizon, with an irregular contact to context 3. Munsell 7.5YR 5/4, pH 7.

	620-1050 mm: Dry friable sandy silt. Munsell 7.5YR 6/8, pH 7. Aboriginal cultural heritage identified approximately 750 mm. **1050-1300 mm:** Dry friable silty sand A1-Horizon. Munsell 7.5YR 4/3, pH 7.5. **1300-1500 mm:** Dry friable silty sand A1-Horizon. Munsell 7.5YR 4/3, pH 7.5. **1500-1750 mm:** Dry friable to cemented silty sand and limestone base B-Horizon, Karst base reached. Munsell 7.5YR 7/8, pH 8.

8.3.4 Conclusions from phase 2

The following observations and conclusions were made during the phase 2 survey and testing:

- Surface artefacts were recorded in [redacted] surveyed areas, in the northwest part of the Project Area
- A total of 19 subsurface testing locations were undertaken during the phase 2 testing: 17 STPs and 2 auger probes
- Of the 19 subsurface testing locations, six STPs and one auger were located within chromosol soils, and 11 STPs were within non-chromosols; one auger was inconclusive
- No surface artefacts were identified in the immediate proximity of any of the subsurface testing locations
- No subsurface Aboriginal cultural heritage material was found in any of the six testing locations within chromosol soils
- Within the non-chromosol soils, Aboriginal cultural heritage material was identified in [redacted] esting locations: [redacted] located on the saddle of a slope, and [redacted] located on the bottom of a dune

The results of phase 2 survey and testing in the eastern and western portions of the Project Area are broadly consistent with the results of phase 1 testing undertaken in the central portion of the Project Area. Aboriginal cultural heritage material is largely found more in non-chromosol soils than chromosol soils, especially subsurface artefacts. No subsurface material was identified in chromosol soils, and two of the STP locations in non-chromosol soils contained subsurface artefacts. No surface material was noted within or in proximity to the testing locations in phase 2.

The results of the phase 2 assessment further suggest that elevation and landform are contributing to the distribution of identified Aboriginal cultural heritage in the Project Area. To assist in interpretation of both phase 1 and phase 2 assessments, the results have been plotted against the modelled red soil distribution, elevation (the DSM) and landform. These three distinct map sets are provided in full in the appendices due to the large number of maps generated for each feature (refer to Appendix 2, Appendix 3, and Appendix 4).

8.4 Conclusions from testing of the predictive model to date (phase 1 and phase 2)

The GMTOAC-led iterative predictive model originated due to the observation by GMTOAC representatives that there was a correlation between the presence of red soils (chromosols) and surface Aboriginal cultural heritage material. Furthermore, the northeast, leeward, side of slopes was an area where the red soil chromosols were considered more likely to be present, and as such, have a higher potential for surface Aboriginal cultural heritage material.

Phase 1 testing was designed to verify an initial model of the distribution of red soils based on visibility in aerial images. By the conclusion of phase 1 testing within the central portion of the Project Area it was established that the red soil modelling did seem to be a reliable representation for the presence of chromosols within the Project Area. However, there did not seem to be a correlation between the presence of chromosols on the leeward side of slopes.

The limited amount of survey and subsurface testing conducted during phase 1 indicated that no surface or subsurface artefacts were identified at the subsurface testing locations within the chromosol soils; however, a low density of surface artefacts were recorded in proximity to [redacted] testing locations. Conversely, subsurface artefacts were identified in [redacted] testing locations within non-chromosol soils. No surface artefacts were identified at the non-chromosol testing locations; however higher density artefact scatters were identified in the vicinity of [redacted] subsurface testing locations.

Further data was needed to test and develop the GMTOAC led iterative predictive model. Phase 2 testing aimed to obtain a larger sample of subsurface testing across a range of land units, soil types, and elevations. The specific results of phase 2 testing were similar to those of phase 1; no surface or subsurface artefacts were identified in direct association with chromosol soils. Subsurface artefacts were identified in [redacted] non-chromosol testing locations.

As such, at the completion of phase 1 and 2 testing, the initial hypothesis of a correlation between the presence of chromosols and surface Aboriginal cultural heritage material appears to be incorrect, as more subsurface Aboriginal cultural heritage material was identified at non-chromosol locations. Admittedly, the subsurface sample size (n=28) is still small considering the size of the Project Area (approximately 7500 ha). While it remains possible that soil type is a factor in the distribution of Aboriginal cultural heritage material, elevation and landform also seem to have a role to play. Thus, modelling of 'red soil' distribution is insufficient for predicting the sensitivity of the Project Area with respect to Aboriginal cultural heritage. Additional inputs into the model are required (refer to section 8.5).

8.4.1 Distribution of soils and landforms

Geologically a major fault line has created an escarpment that extends north-west from Bridgewater to Kentbruck and then moves north to north-easterly at Jones Ridge and Drik Drik. This escarpment crosses the Project Area and is marked by higher elevations of ground to the east of the fault and a karst limestone landscape of low relief to the west (State of Victoria (Agriculture Victoria), 2024).

The positively identified chromosols can largely be defined as red/brown soils where the limestone is near the surface and forms an abrupt boundary at the base of the profile. The chromosols identified through testing in STPs 4 and 7 are terra rossa or sandy rendzina soils, which are typical for the coastal Kentbruck region and develop over calcareous dunes and limestone. The chromosols identified in the Project Area show a very shallow sandy profile A-Horizon before an abrupt limestone C-Horizon that prevents further excavation. The higher elevation shallow chromosols directly overlie Gambier Limestone and formed during the period of weathering that formed the karst landscape, i.e. they are probably at least Pleistocene in age.

The non-chromosol subsurface testing locations that were positively identified following the testing are either orthic tenosols or sandy iron leptopodsols overlying buried chromosols and deeper Gambier Limestone. STP 1 and 2 are good examples of this, as a limestone base was reached with deeper coloured sands present directly before the auger termination. The relatively thick non-chromosol sandy deposits are identified as aeolian sand probably deposited during the cold, dry and windy conditions of the Last Glacial Maximum; there may also be older and younger sand components. The thick sandy profile resulted in a high level of podsol pedogenesis. These thicker late Pleistocene- Holocene sands bury the older chromosols.

8.4.2 Correlations with Aboriginal cultural heritage

The second phase of testing aimed at providing more data for the additions of landform models in conjunction with chromosol mapping to better assess the cultural heritage impact in targeted locations. Field observations and inspection of the survey and testing results in conjunction with chromosols, elevation and landform (see Appendix 2 to Appendix 4) suggest that elevation and landform have an impact on the occurrence of red soils (chromosols). For example, chromosols appear less likely to occur below 26 m elevation and above 86 m elevation, or on surfaces with an aspect of 60-135 degrees. Given that chromosols probably overlie the entire karst landscape developed on the Gambier Limestone and were largely, perhaps completely, covered by wind-blown sand during the Last Glacial Maximum, their occurrence at particular elevations and slopes represents either areas where the younger wind-blown sand was not deposited, or perhaps more likely, where this sand has been subsequently eroded (pers comm. John Webb, 03/04/2024). The results also suggest a distinction between surface artefact manifestations and subsurface artefact manifestations which are linked to the presence or absence of chromosols, in combination with their elevation in the landscape and position on the landform. Overall, the shoulders or mid slopes of karst landforms at moderate elevations associated with non-chromosol soils appear to have the greatest potential for Aboriginal cultural heritage material. These field observations suggest that chromosol presence, elevation, and landform element contribute to the sensitivity for Aboriginal cultural heritage, particularly in combination, and preliminary proposed sensitivities are shown in Table 31 and Table 32.

Table 23 Surface artefact data correlation and associated sensitivities

Sensitivity	Chromosol	Elevation	Landform
High	No	<20 metres	Foot slopes or dolines
Moderate	Yes	30-40 metres	Shoulder or mid slopes
Low	Yes	50+ metres	Peaks or ridges

Table 24 Subsurface artefact data correlation and associated sensitivities

Sensitivity	Chromosol	Elevation	Landform
High	No	30-40 metres	Shoulder or mid slopes
Moderate	No	<20 metres	Foot slopes or dolines
Low	Yes	50+ metres	Peaks or ridges

Further testing throughout the CHMP process would help better represent the model from all aspects of investigation specifically when confirming null test locations as low or no impact producing areas. As discussed with the RAP, the testing of the initial red soil model provided a better understanding of the likelihood of heritage distribution based on landform. The RAP supported the requirement for an independent geomorphological assessment to be undertaken, which would assist with a greater understanding of the evolution of landscape and relationship with potential buried heritage.

8.5 ALA phase 3 modelling

The results of collated data from the conclusions of the phase 1 and phase 2 testing, indicates that more subsurface Aboriginal cultural heritage material was identified in non-chromosol locations. Elevation and landform also appear to have a positive correlation with the occurrence of chromosol soils. As such, archaeological sensitivities for both surface and subsurface Aboriginal cultural heritage material were calculated based on the following:

- Landform/element – phase 1 and phase 2 test results indicate that artefact positive test are more likely to occur on peaks and in hollows, while artefact negative test pits are more likely to occur on spurs and slopes. Surface artefacts are more likely to occur on ridges, peaks and valleys more often than expected based on the frequency of ridges, and on spurs and hollows less likely than expected.
- Elevation – elevation ranges were used to subdivide the elevation of specific test pits and surface artefact locations. These ranges were different fir surface and subsurface locations due to the distribution of test pits and the absence of subsurface testing data during phase 1 and phase 2 within some elevation ranges.

- Soil type – phase 1 testing concluded that red soil mapping performed reliably well for the identification of chromosols. However, insufficient coverage of aerial imagery precludes the use across the entire Project Area. Field observations suggested a correlation between the presence of chromosols and areas of high relative elevation (i.e. peaks, ridges, spurs). A comparison of the distribution of known chromosol soils and landform elements confirmed the correlation, while non-chromosols soils correlate with valleys and hollows. As such, chromosols are more likely to occur on slopes; however, other landform elements had insufficient data. Landform element was therefore used in a secondary capacity as a proxy for chromosols.

The above parameters were combined from the GMTOAC and ALA field observations during phase 1 and phase 2 testing (presence of chromosols, elevation, and landform element) to contribute to the sensitivity for Aboriginal cultural heritage material, particularly in combination. Preliminary proposed sensitivities are for surface and subsurface artefacts, to be tested during phase 3 are outlined in Table 23 and Table 24.

Two models representing sensitivity for artefacts were produced, one for surface artefacts (refer to Figure 71 through Figure 78) and one for subsurface artefacts (refer to Figure 79 through Figure 86). The locations of additional surface artefacts recorded by Aurecon and GMTOAC were not received prior to the development of this model and will be included in later iterations.

The results of the latest parameters for areas of potential are shown in relation to the current turbine layout, survey areas, and all currently known Aboriginal cultural heritage in Figure 71 through Figure 78 for surface potential and in Figure 79 through Figure 86 for subsurface potential.

8.5.1 Phase 3 testing of predictive model

For the phase 3 testing of the predictive model, the 105 proposed turbine locations were assessed against the presence of chromosols, elevation and landform element.

Based on the two predictive models, those turbine locations that have the lowest proportion of high sensitivity areas were targeted for further testing (refer to Figure 87 through Figure 90). There are 10 turbine locations that have 0% (i.e. the lowest percent) high sensitivity for surface artefacts. Furthermore, there are 24 proposed turbine locations that have 0% high sensitivity for subsurface artefacts. Of these, five turbine locations were assessed for surface artefacts and a further eight turbine locations were assessed for the subsurface artefacts (refer to Table 25).

Table 25 Proposed turbines for testing – phase 3

Turbine ID No.	Phase 3 testing target priority	Percentage of proposed turbine location with high sensitivity for surface artefacts	Percentage of proposed turbine location with high sensitivity for subsurface artefacts
88	Surface assessment	0%	17.46%
50	Surface assessment	0%	19.93%
63	Surface assessment	0%	31.30%
33	Surface assessment	0%	31.66%
92	Surface assessment	0%	36.95%
98	Subsurface assessment	3.09%	0%
97	Subsurface assessment	5.20%	0%
91	Subsurface assessment	10.85%	0%

Turbine ID No.	Phase 3 testing target priority	Percentage of proposed turbine location with high sensitivity for surface artefacts	Percentage of proposed turbine location with high sensitivity for subsurface artefacts
85	Subsurface assessment	10.85%	0%
120	Subsurface assessment	17.37%	0%
128	Subsurface assessment	13.14%	0%
13	Subsurface assessment	15.96%	0%
60	Subsurface assessment	19.75%	0%

8.5.2 Methodology of phase 3 of the predictive model

Phase 3 testing of the GMTOAC led iterative predictive model commenced on 20 May 2024 for a five week period. The following methodology was employed to test phase 3 of the predictive model, noting that the development of the phase 3 iterative model was led by GMTOAC wanting to test the null hypothesis to avoid potential direct impacts to tangible heritage during works:

- Field survey of five turbine locations with 0% high surface archaeological sensitivity (refer to Figure 71 through Figure 78). This initially started as the surface survey of 5 turbine locations with 0% high archaeological sensitivity for surface artefacts; however, the ground surfaces were covered with plantation debris so that only small areas of visibility were present. As such, the remaining five turbine locations were abandoned.
- Subsurface excavation at eight turbine locations with 0% high archaeological sensitivity (refer to Figure 79 through Figure 86), that consists of:
    - Surface survey at each of the turbine locations.
    - Manual excavation of two 1 m x 1 m test pits in areas of low and moderate sensitivity at each of the locations to help further substantiate the predictive model.
    - Manual excavation of 50 cm x 50 cm shovel test pits in each cardinal direction, approximately 75 m from the turbine pad centre point to further help with micro-siting the proposed turbine infrastructure elements as well as to further substantiate the predictive model.

Preliminary results of the phase 3 testing of the GMTOAC led iterative predictive model are summarised below.

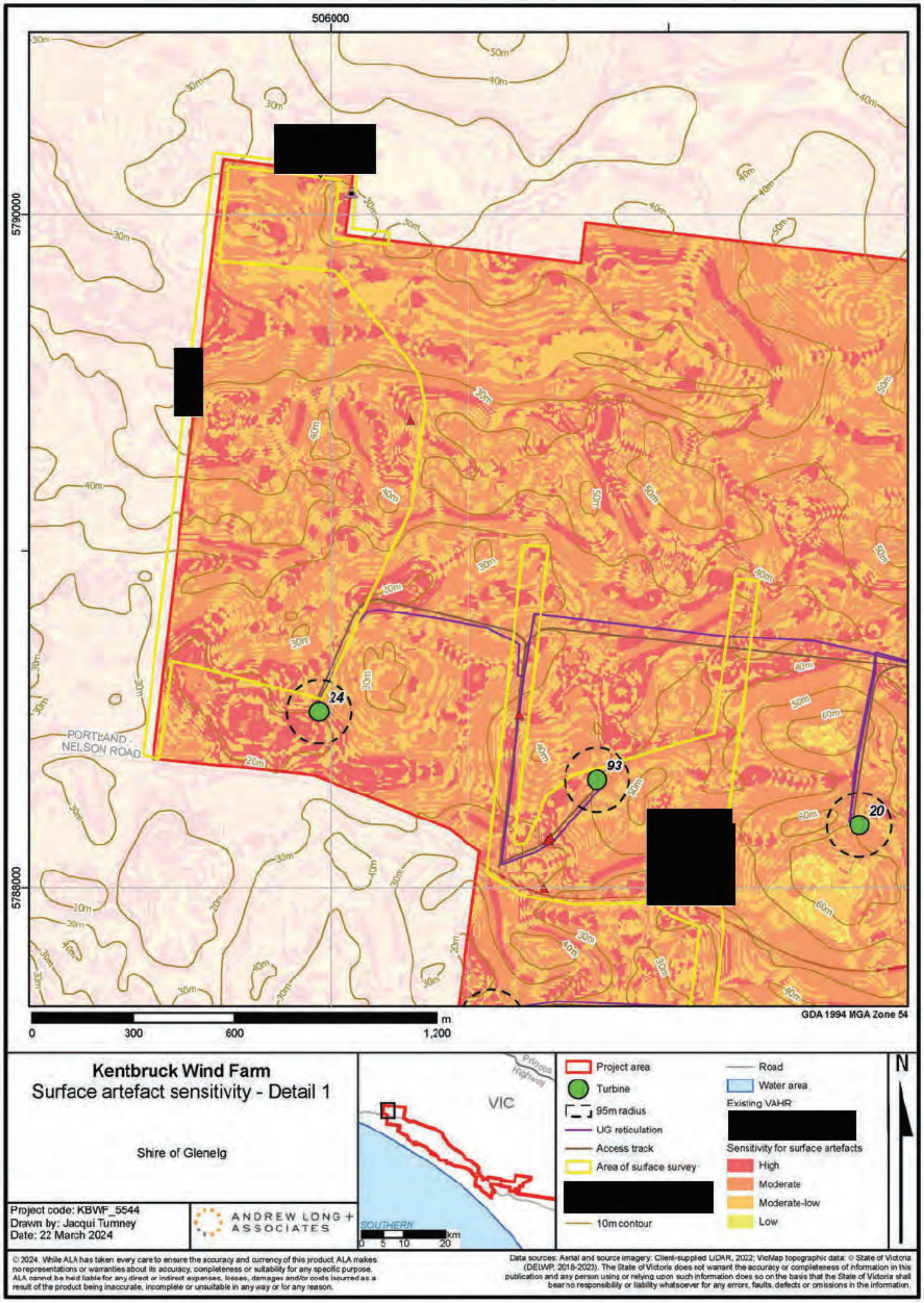


Figure 71 Surface artefact sensitivity modelling prediction with Project overlay – Detail 1

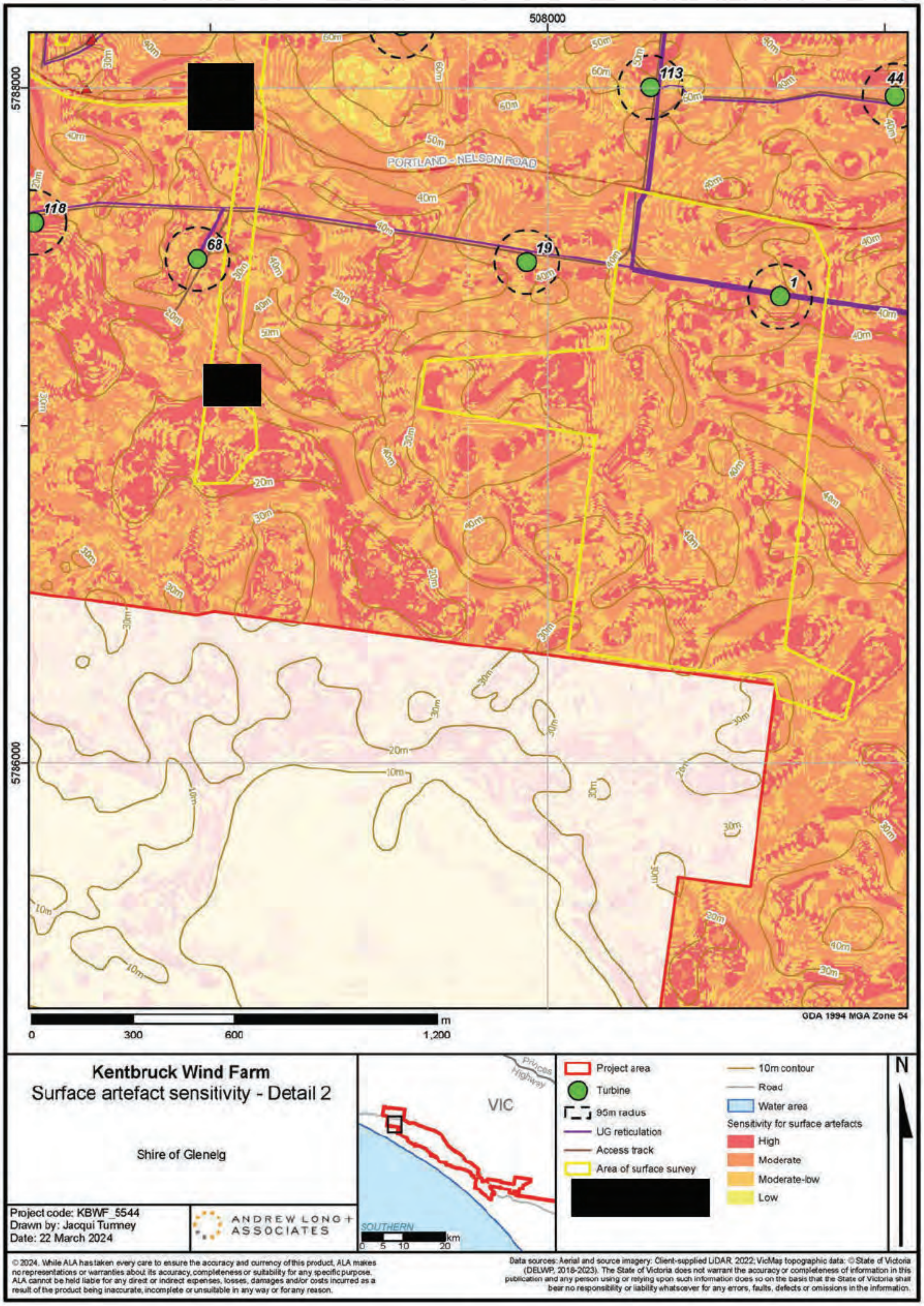


Figure 72 Surface artefact sensitivity modelling prediction with Project overlay – Detail 2

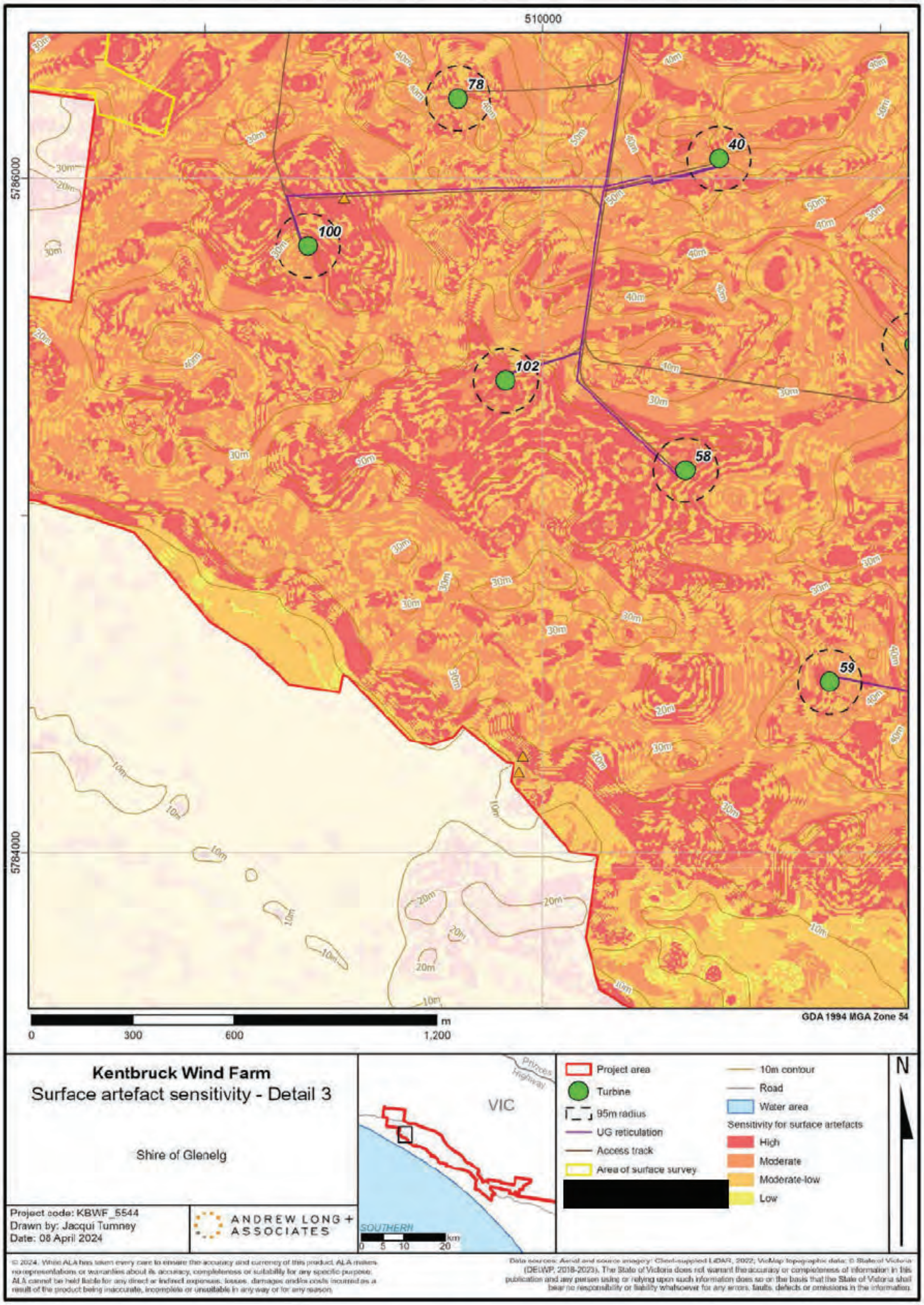


Figure 73 Surface artefact sensitivity modelling prediction with Project overlay – Detail 3

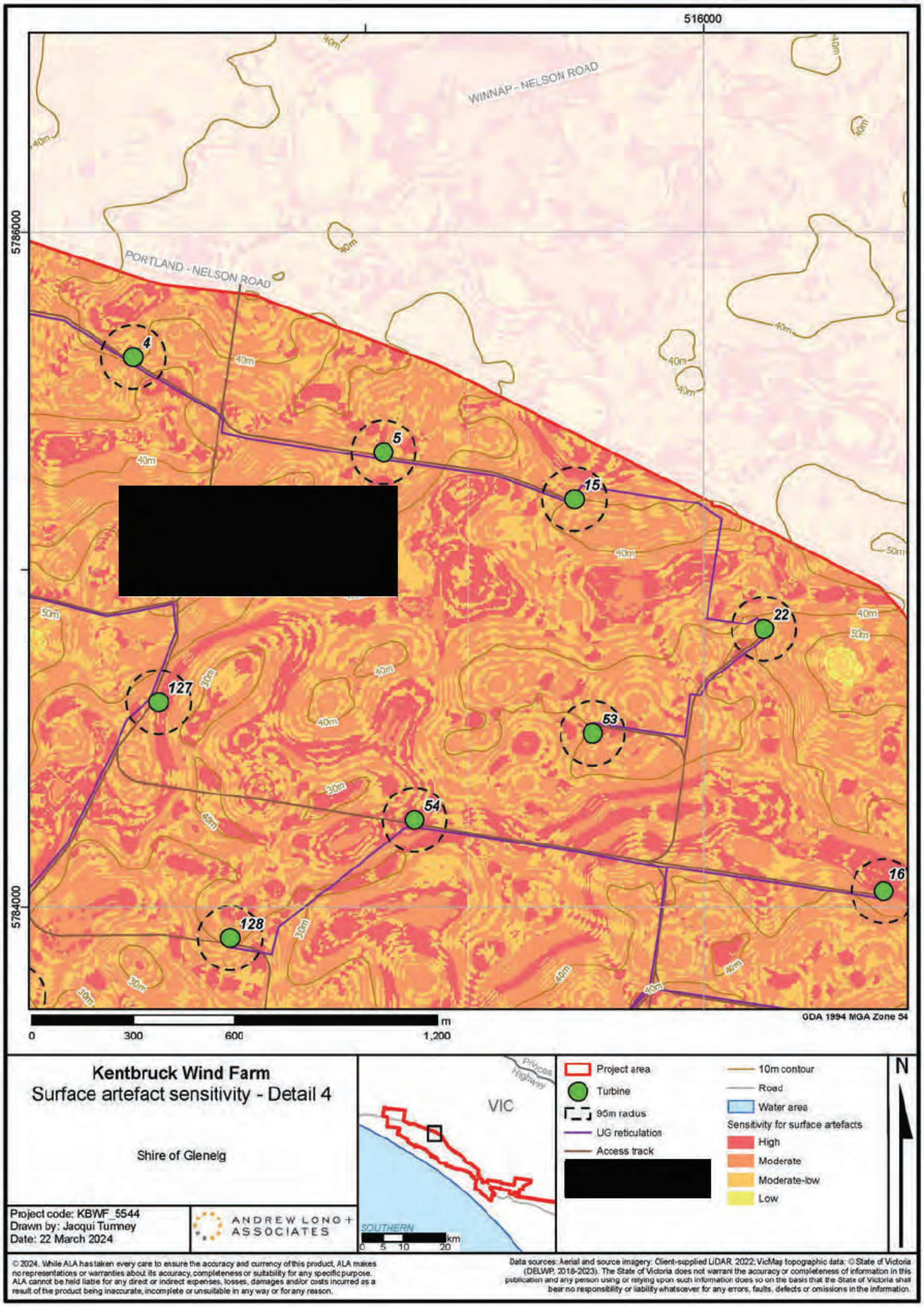


Figure 74 Surface artefact sensitivity modelling prediction with Project overlay – Detail 4

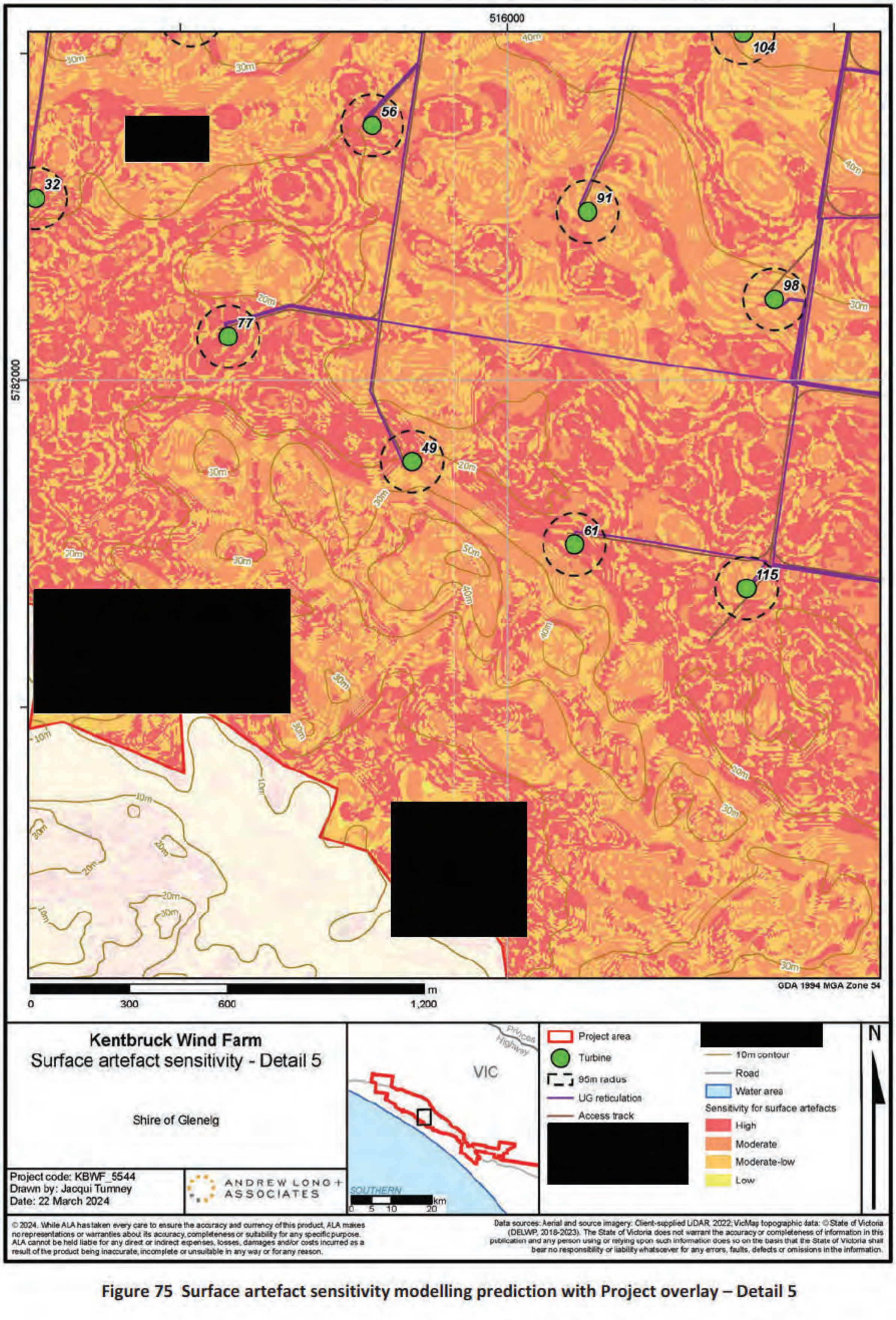


Figure 75 Surface artefact sensitivity modelling prediction with Project overlay – Detail 5

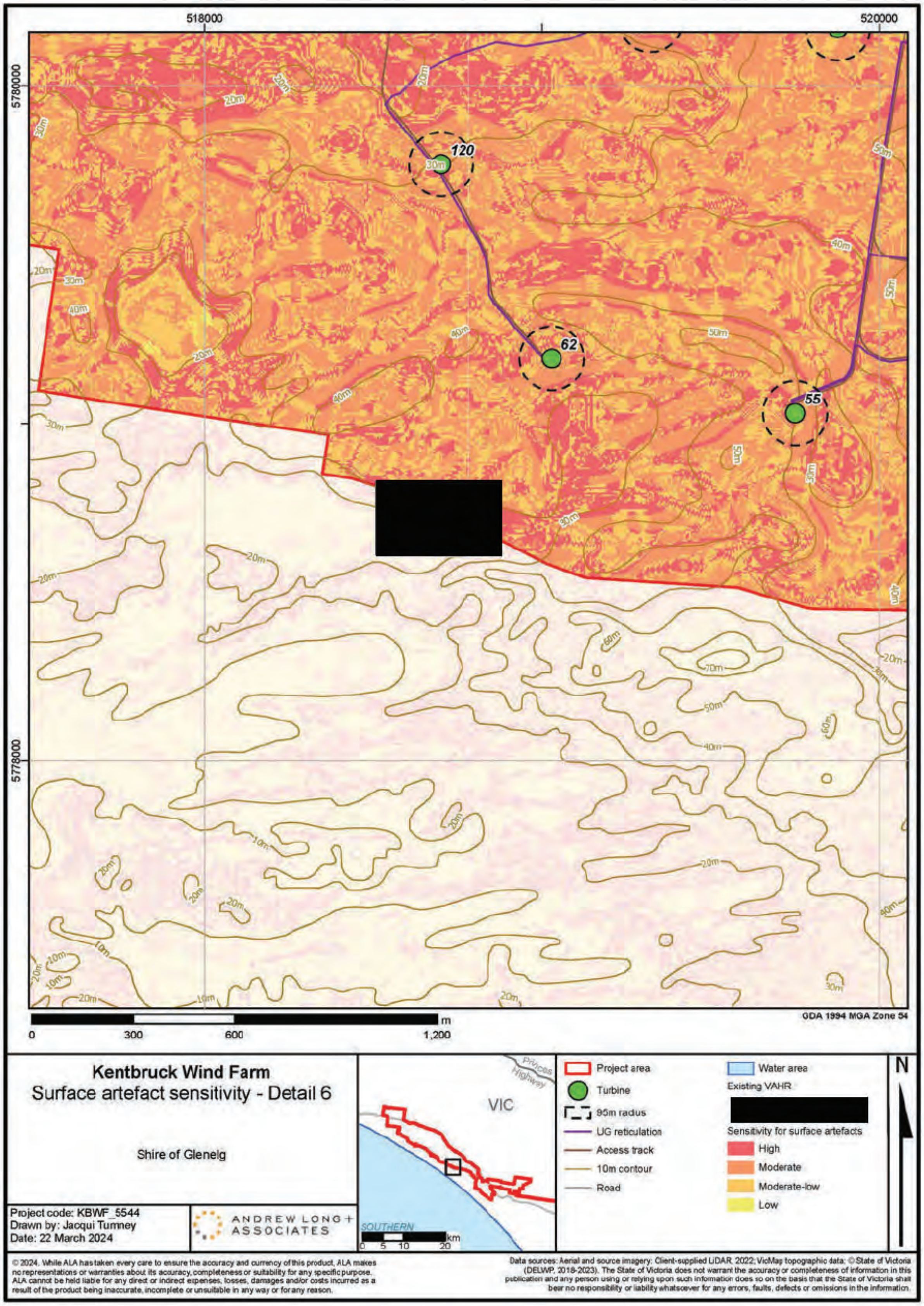


Figure 76 Surface artefact sensitivity modelling prediction with Project overlay – Detail 6

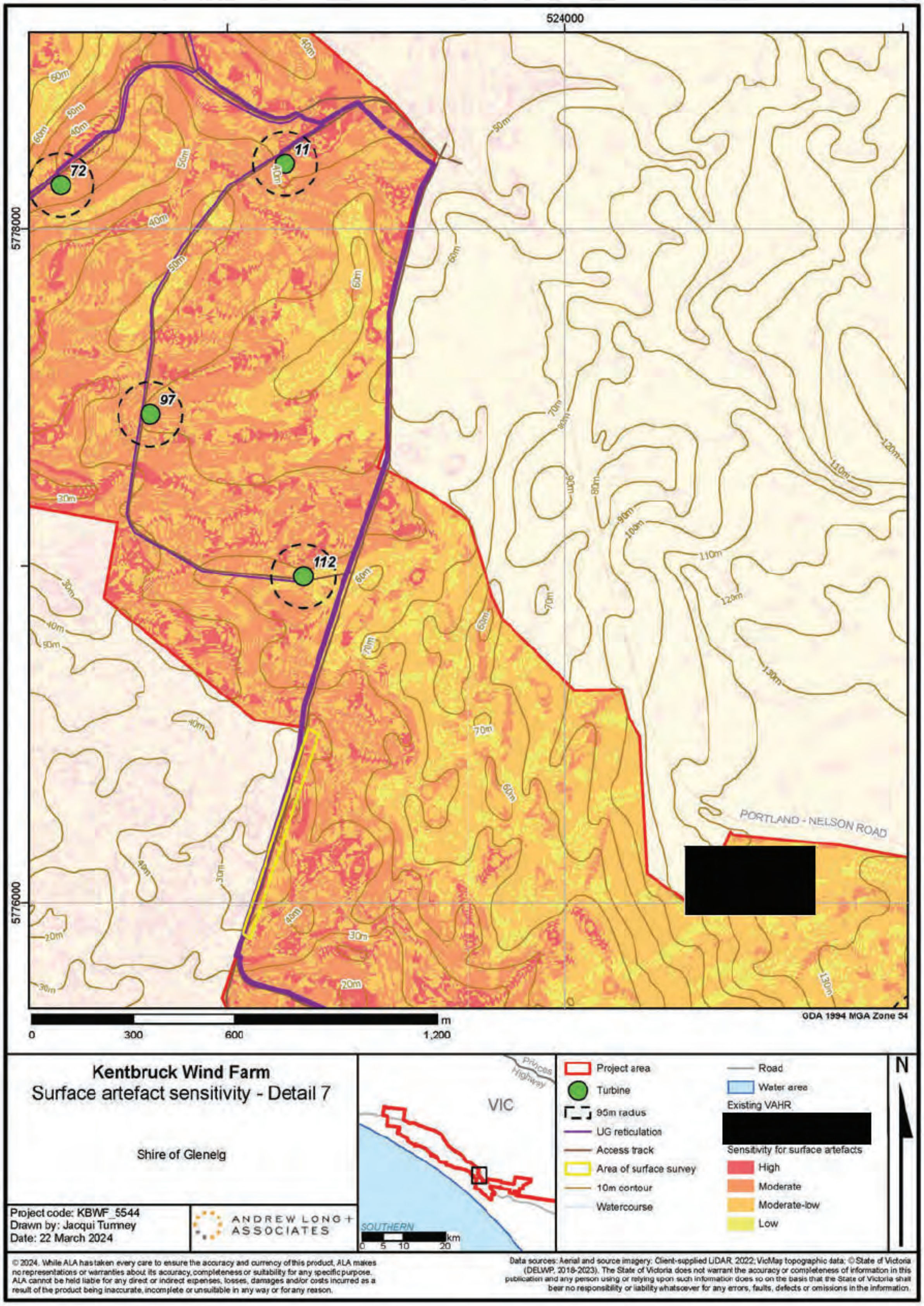


Figure 77 Surface artefact sensitivity modelling prediction with Project overlay – Detail 7

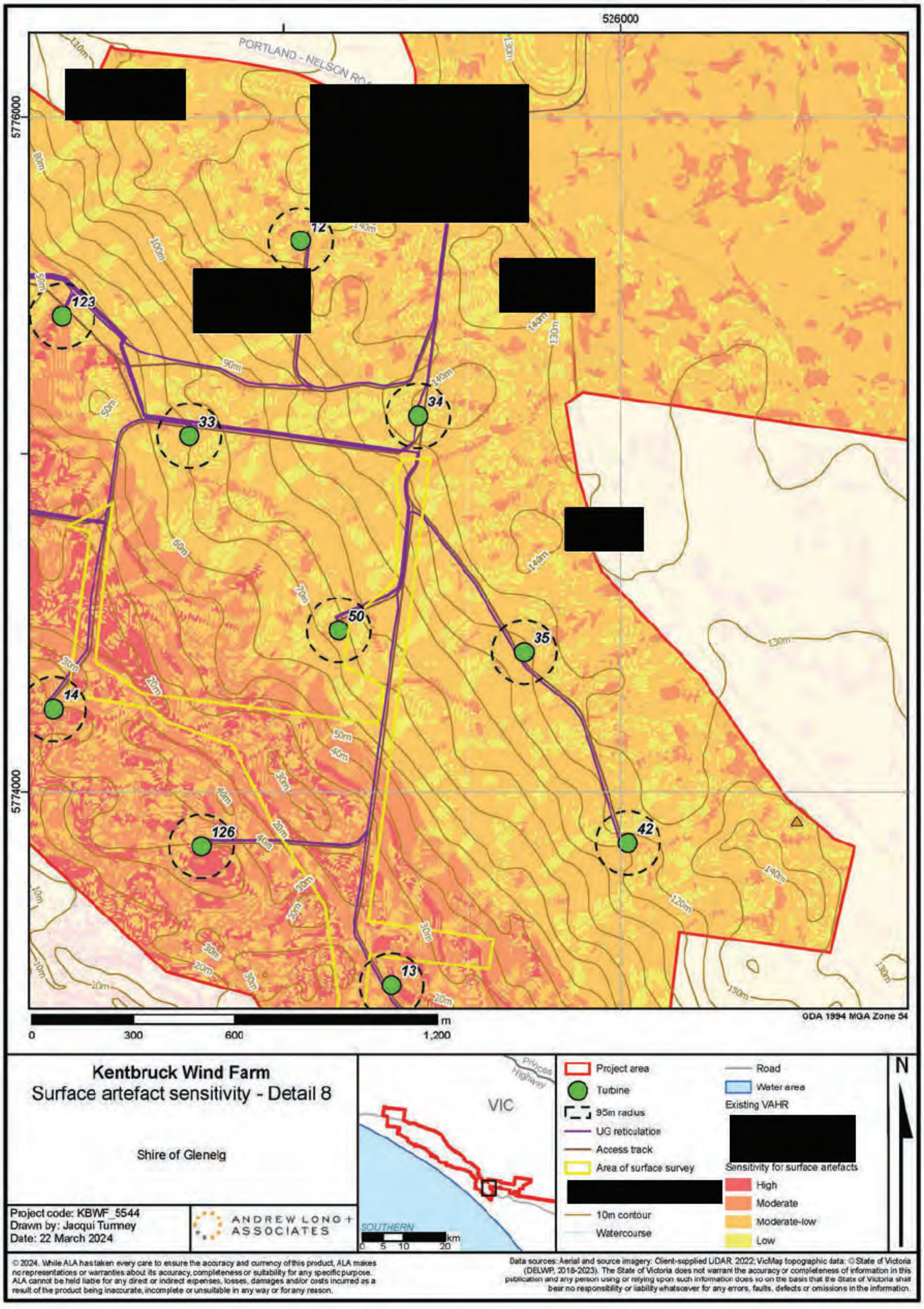


Figure 78 Surface artefact sensitivity modelling prediction with Project overlay – Detail 8

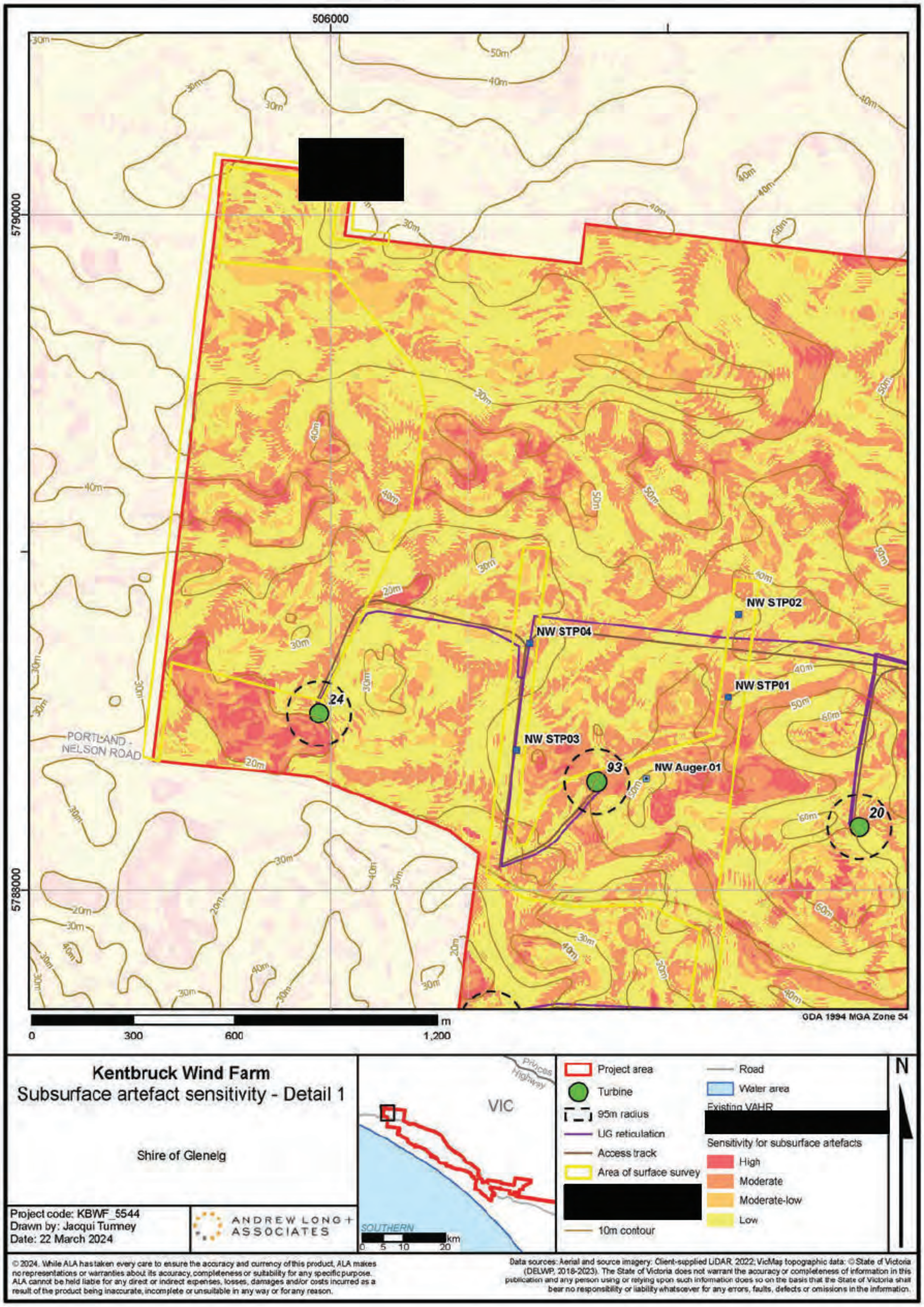


Figure 79 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 1

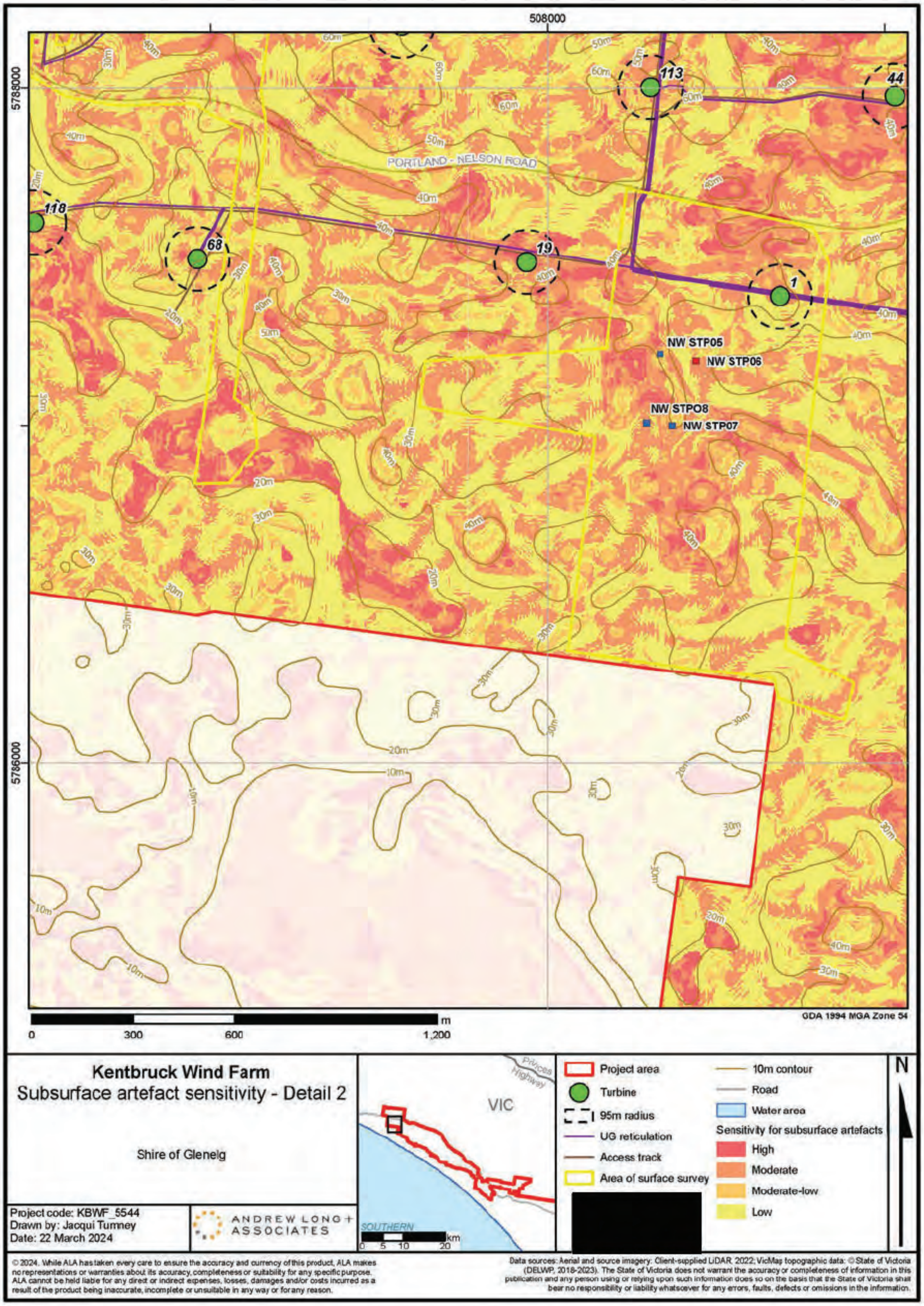


Figure 80 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 2

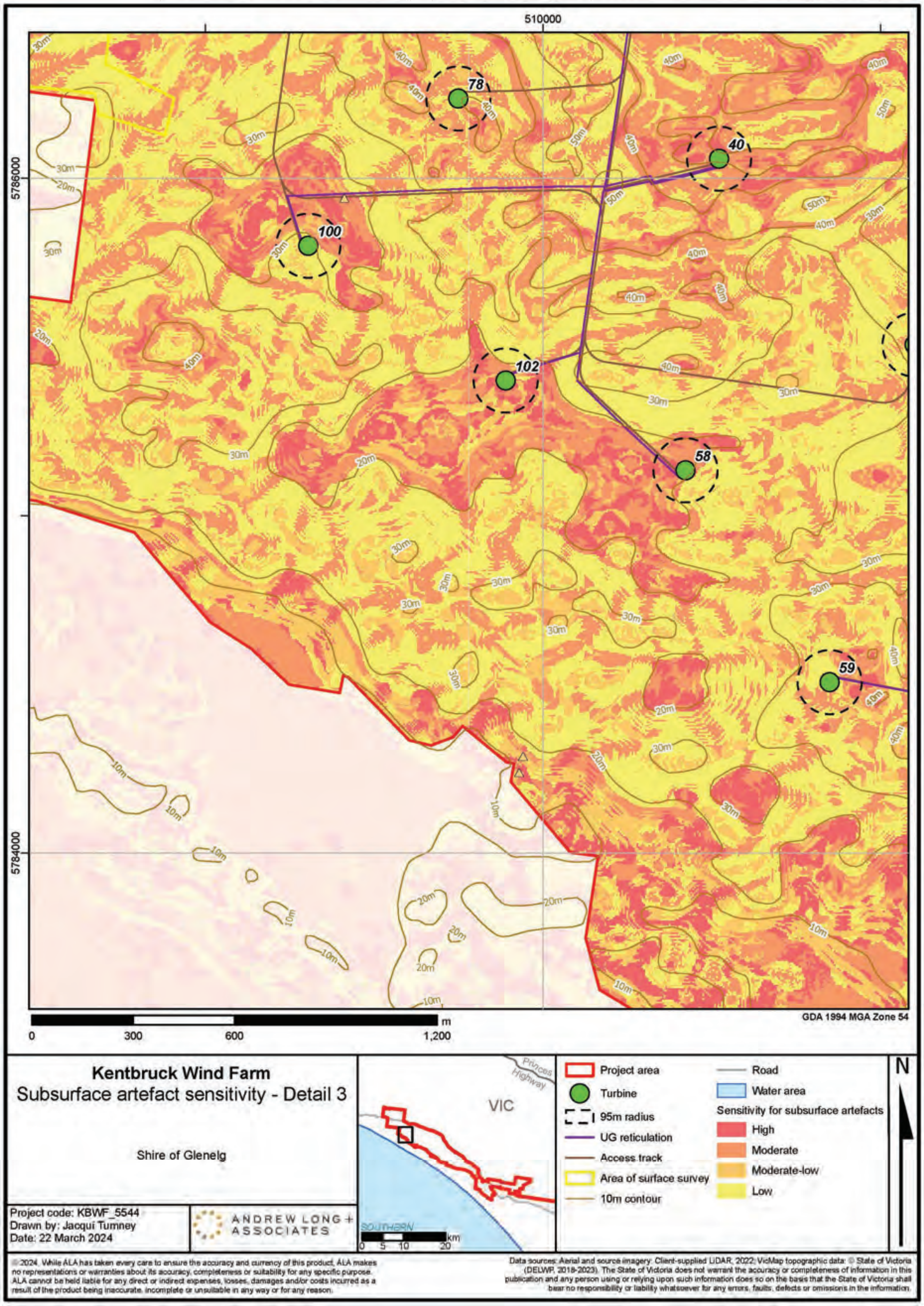


Figure 81 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 3

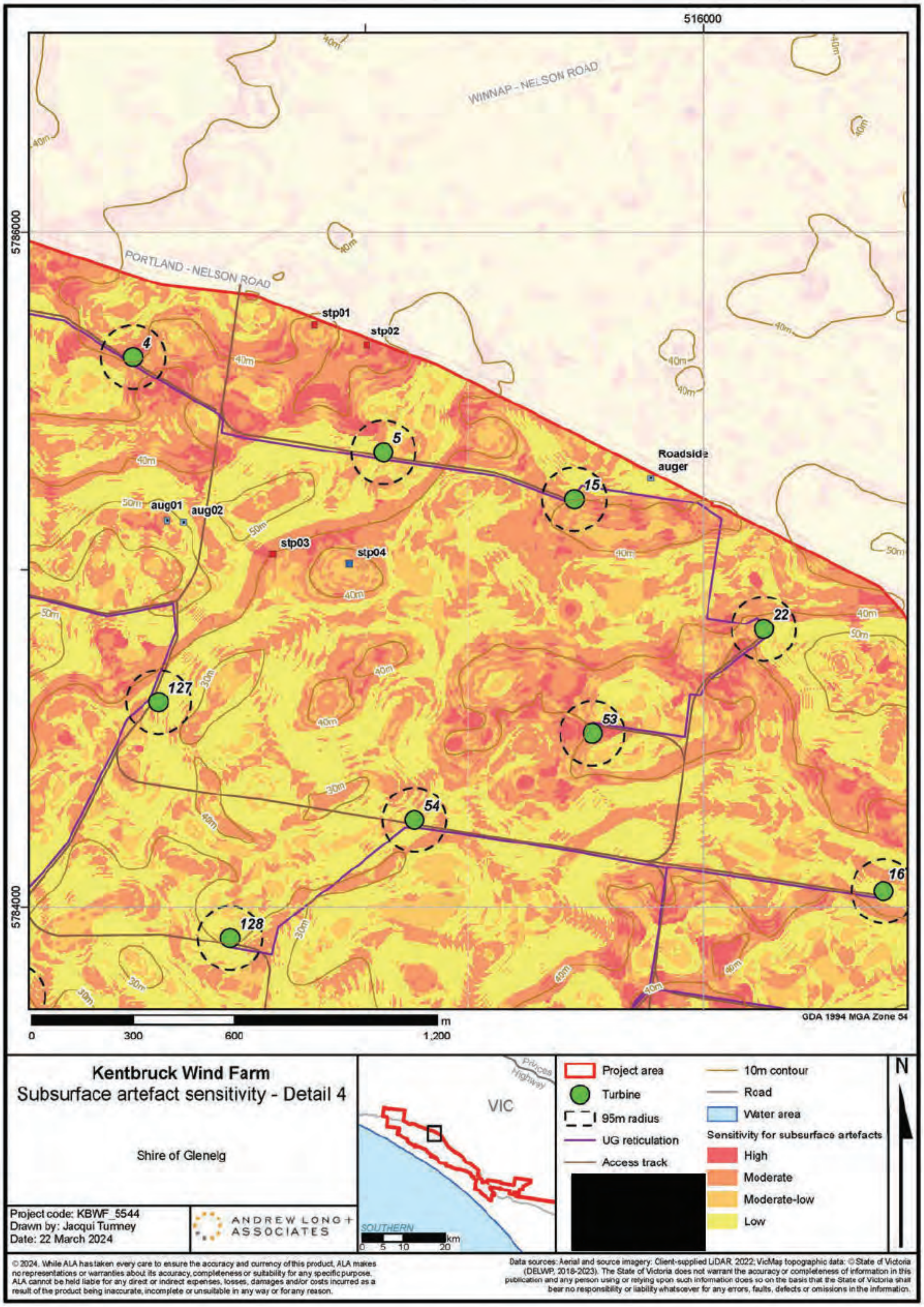


Figure 82 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 4

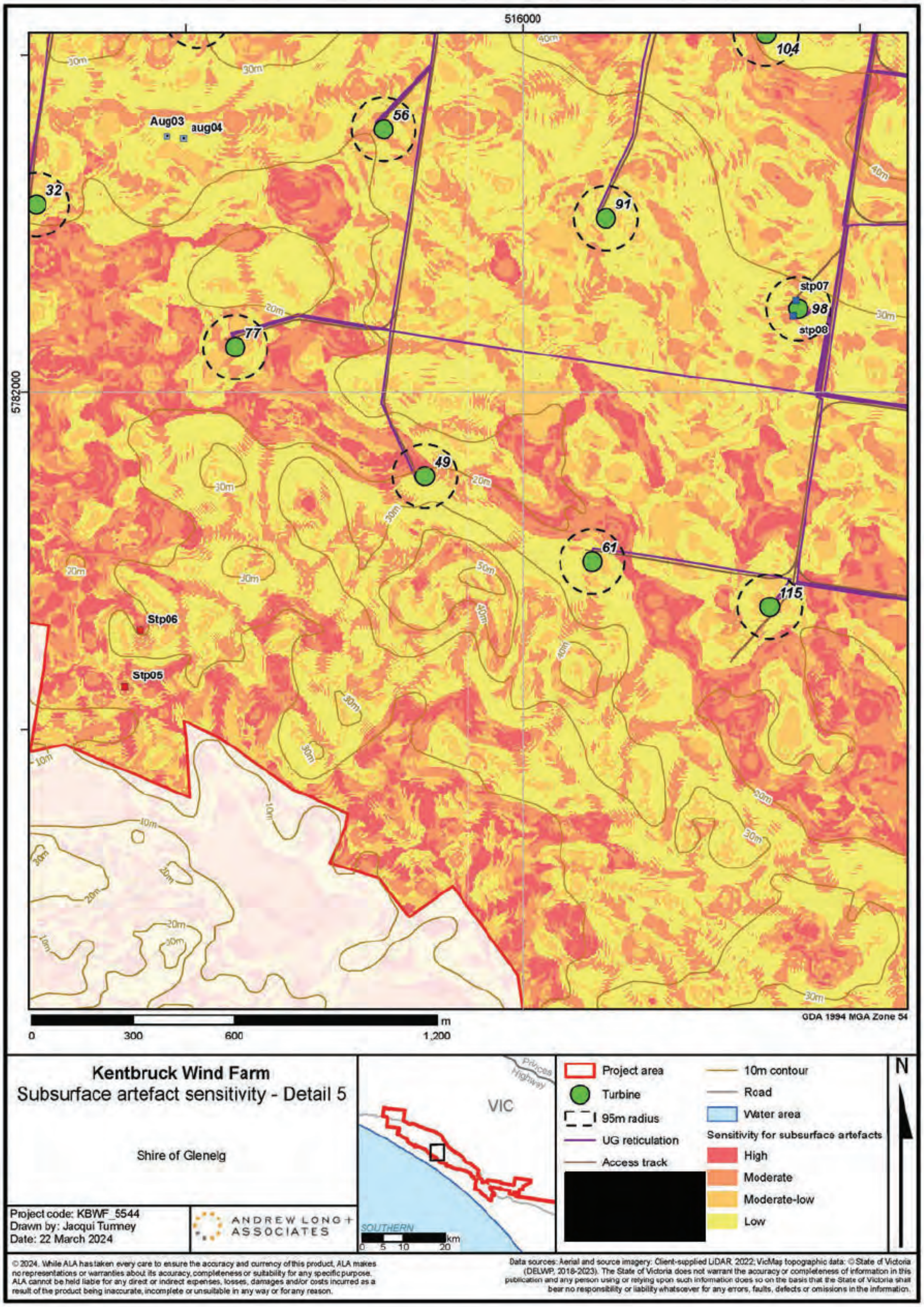


Figure 83 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 5

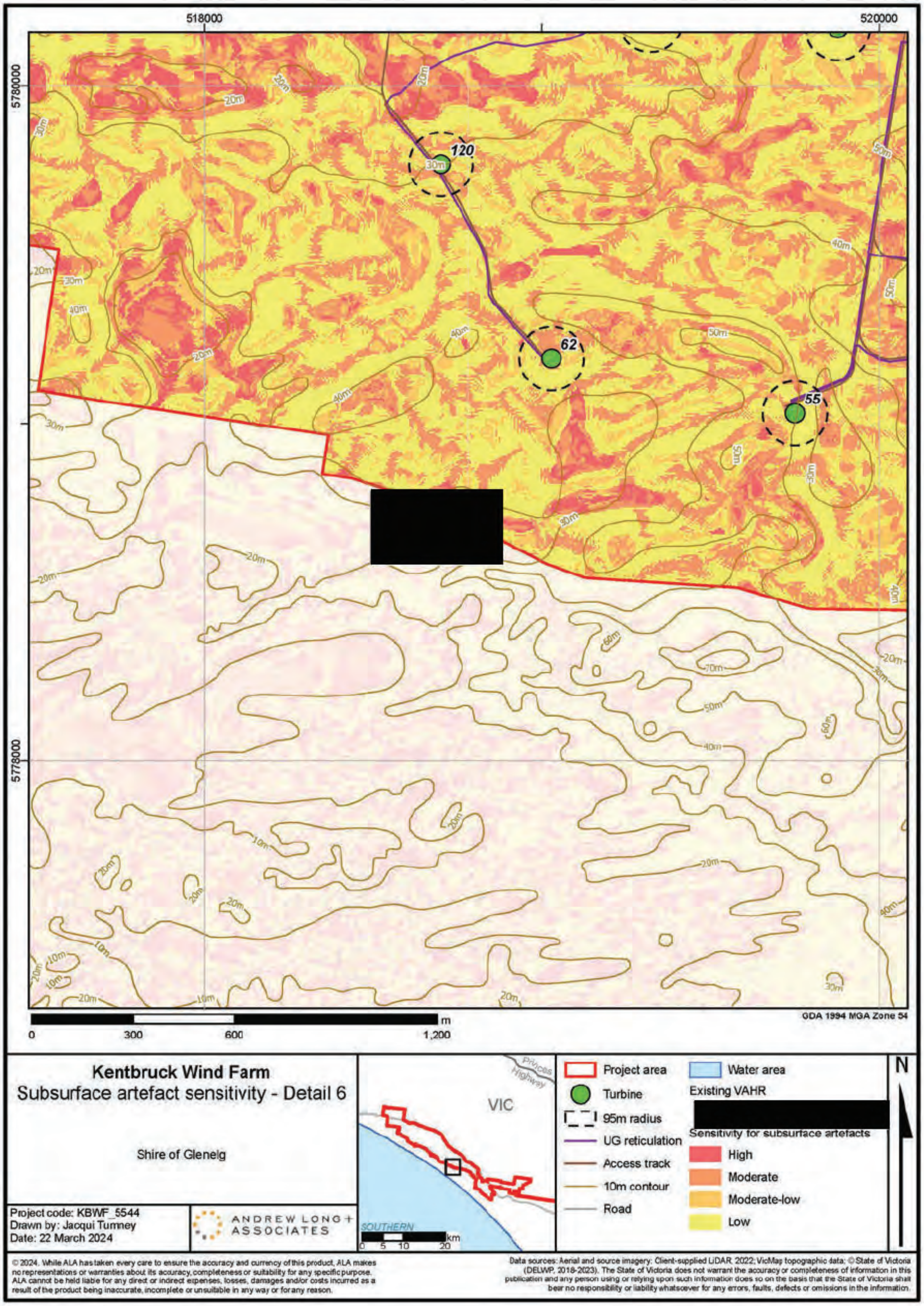


Figure 84 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 6

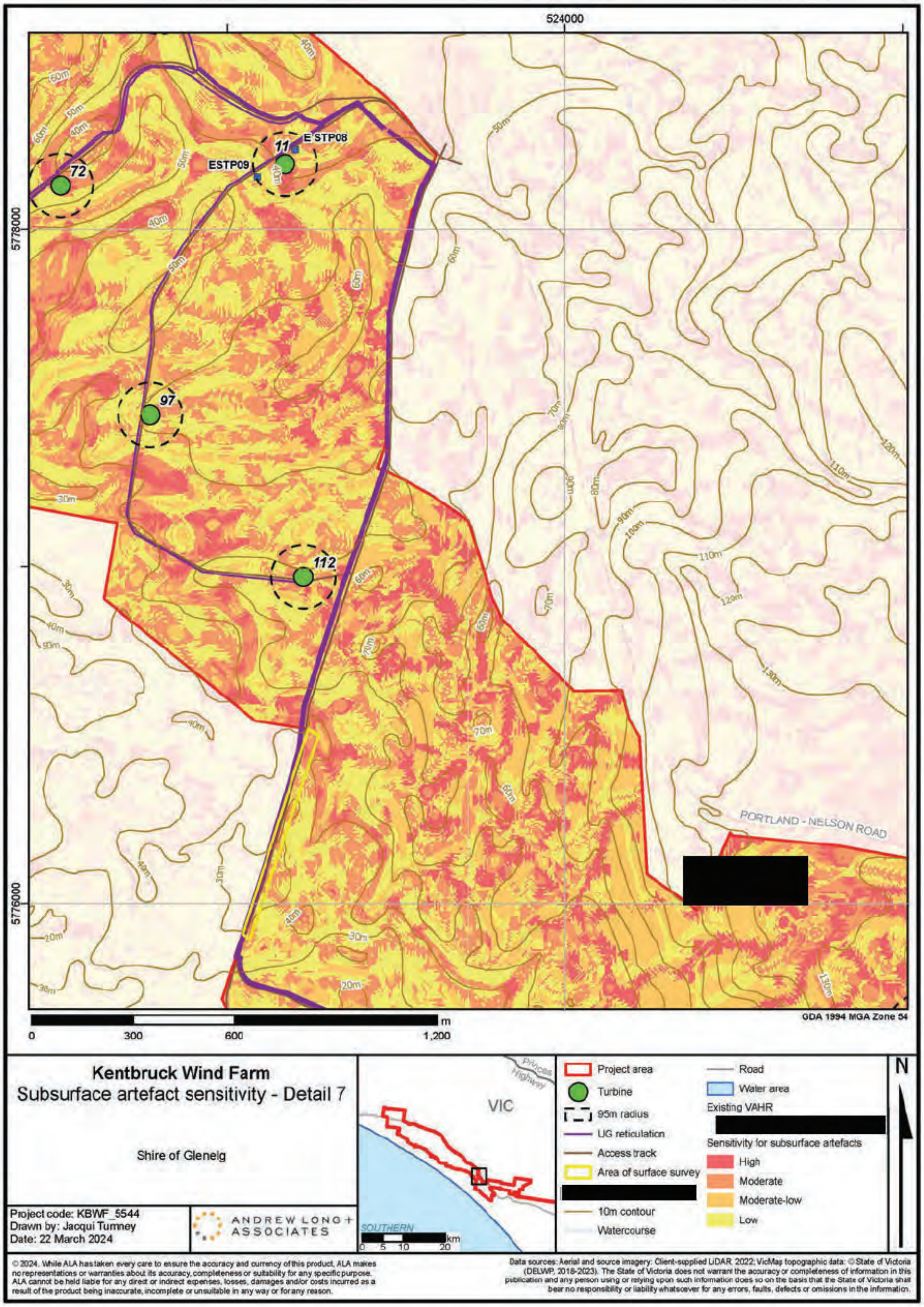


Figure 85 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 7

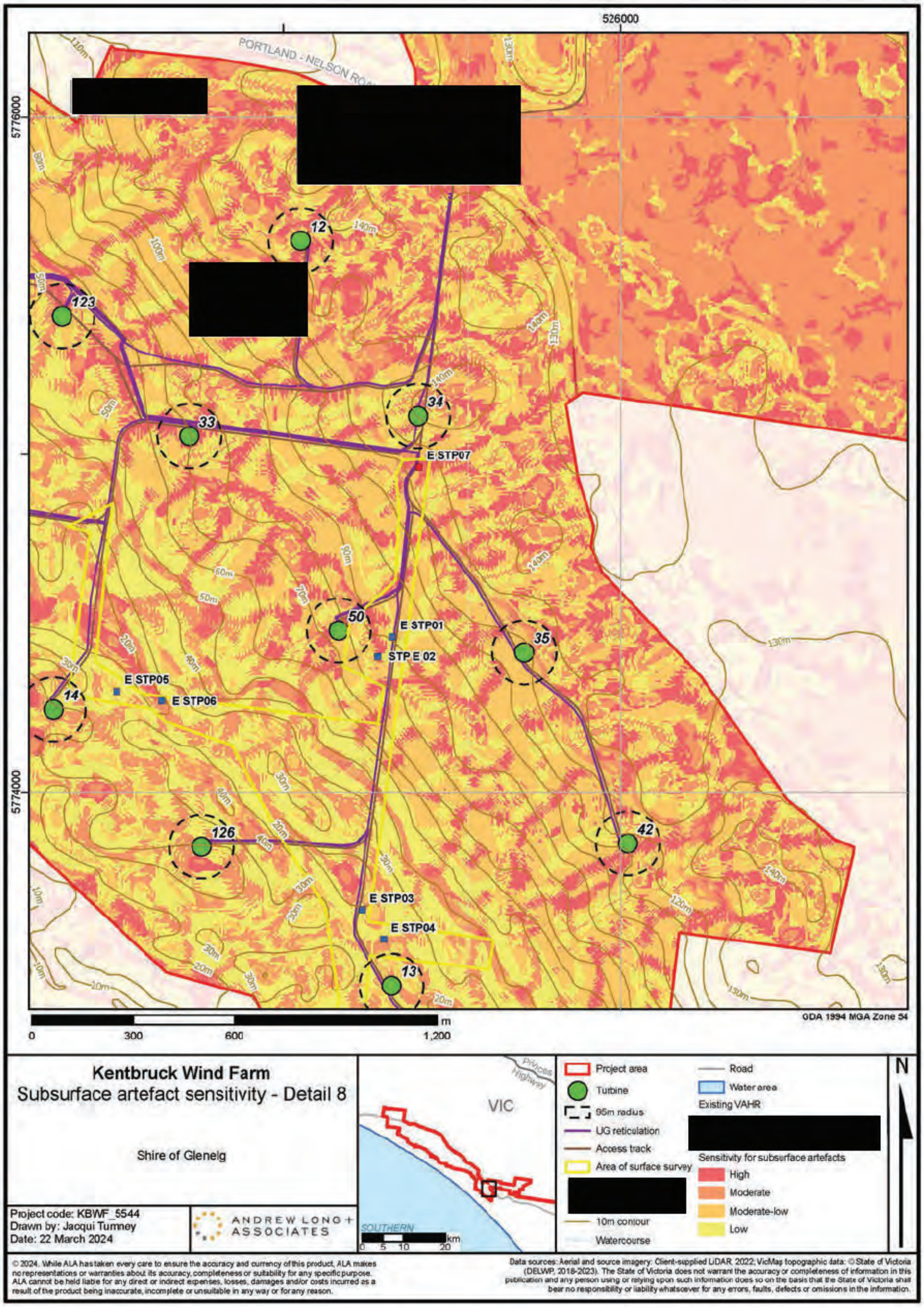


Figure 86 Subsurface artefact sensitivity modelling prediction with Project overlay – Detail 8

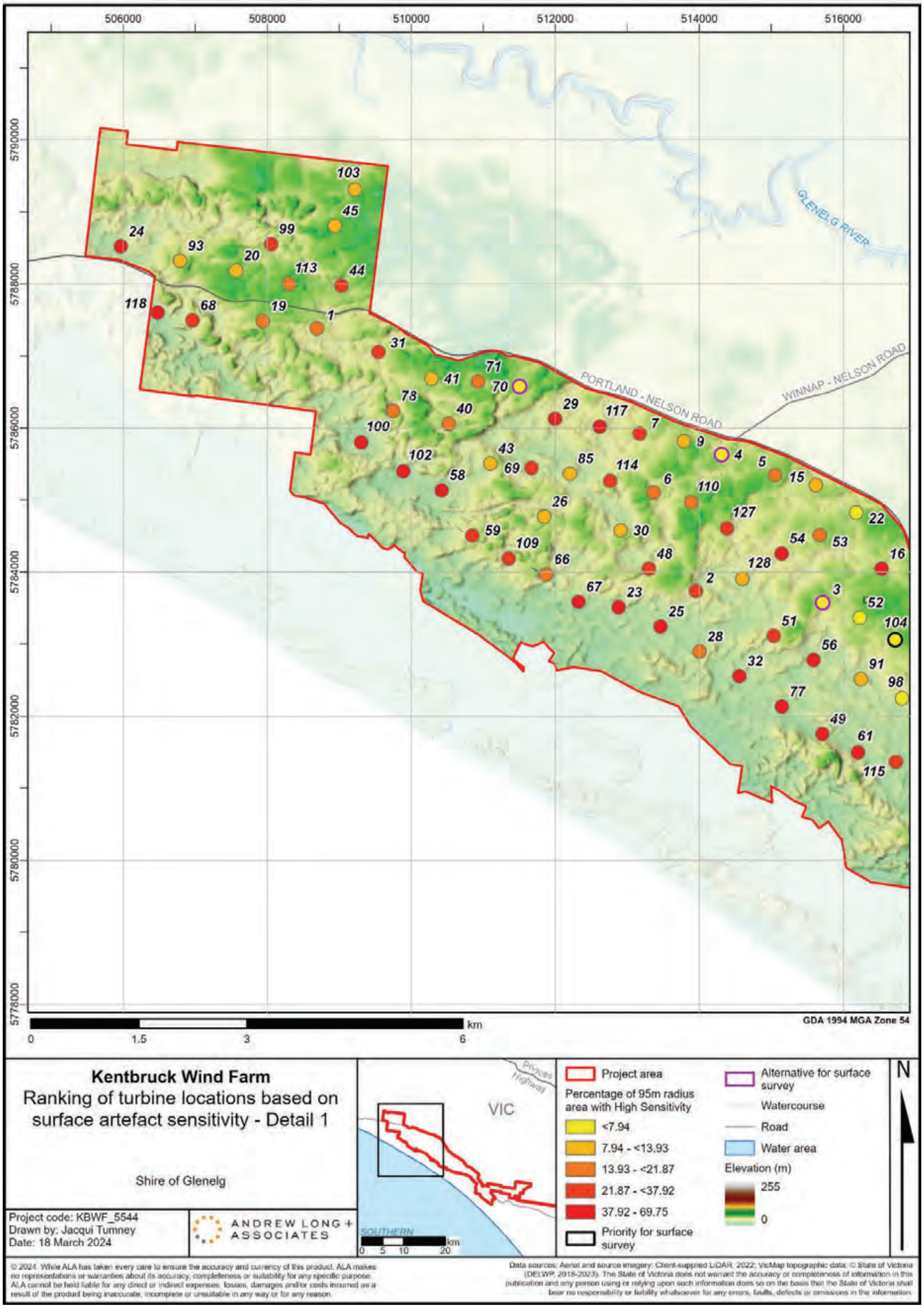


Figure 87 Percent of turbine area with high sensitivity for surface artefacts, detail 1

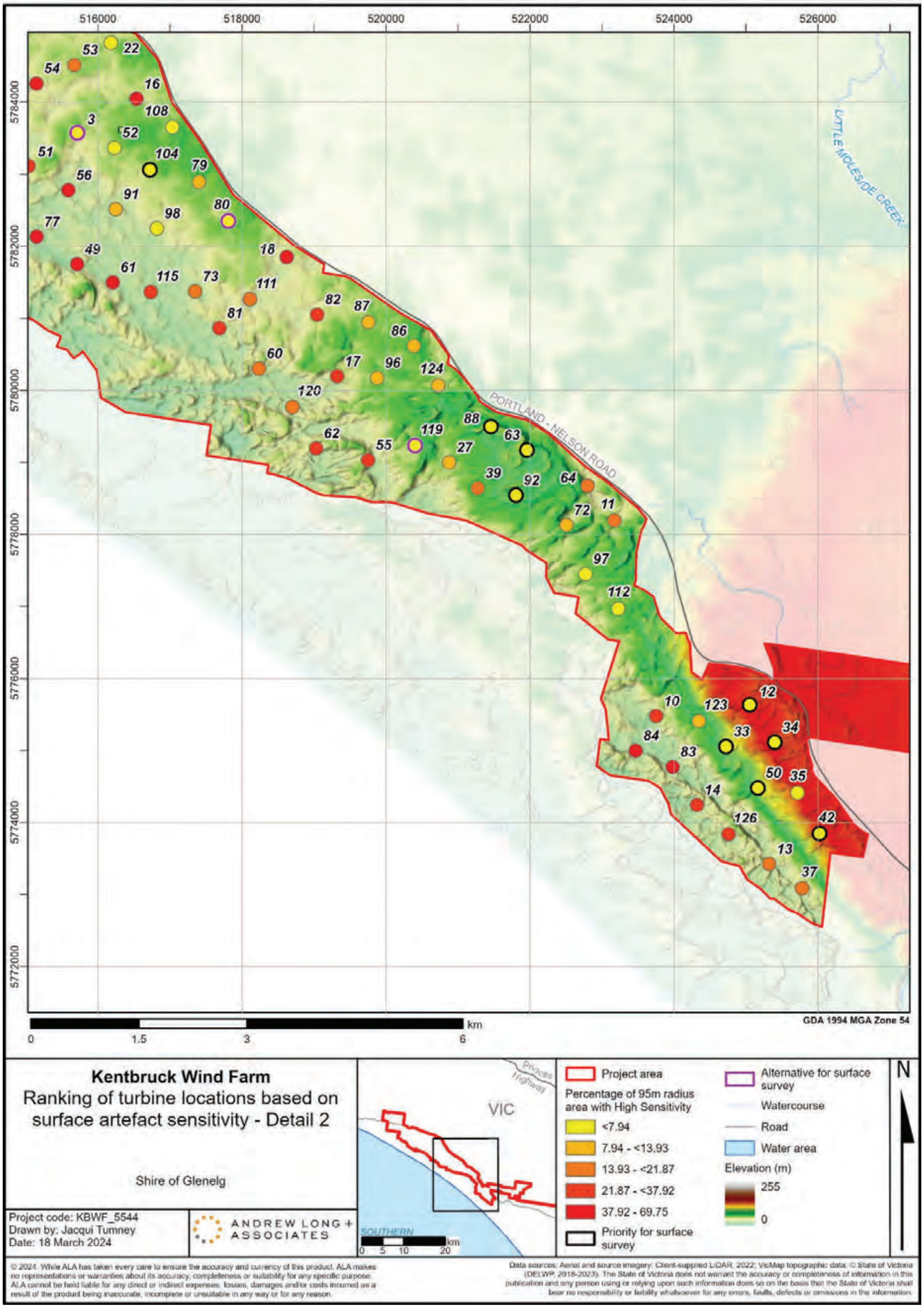


Figure 88 Percent of turbine area with high sensitivity for surface artefacts, detail 2

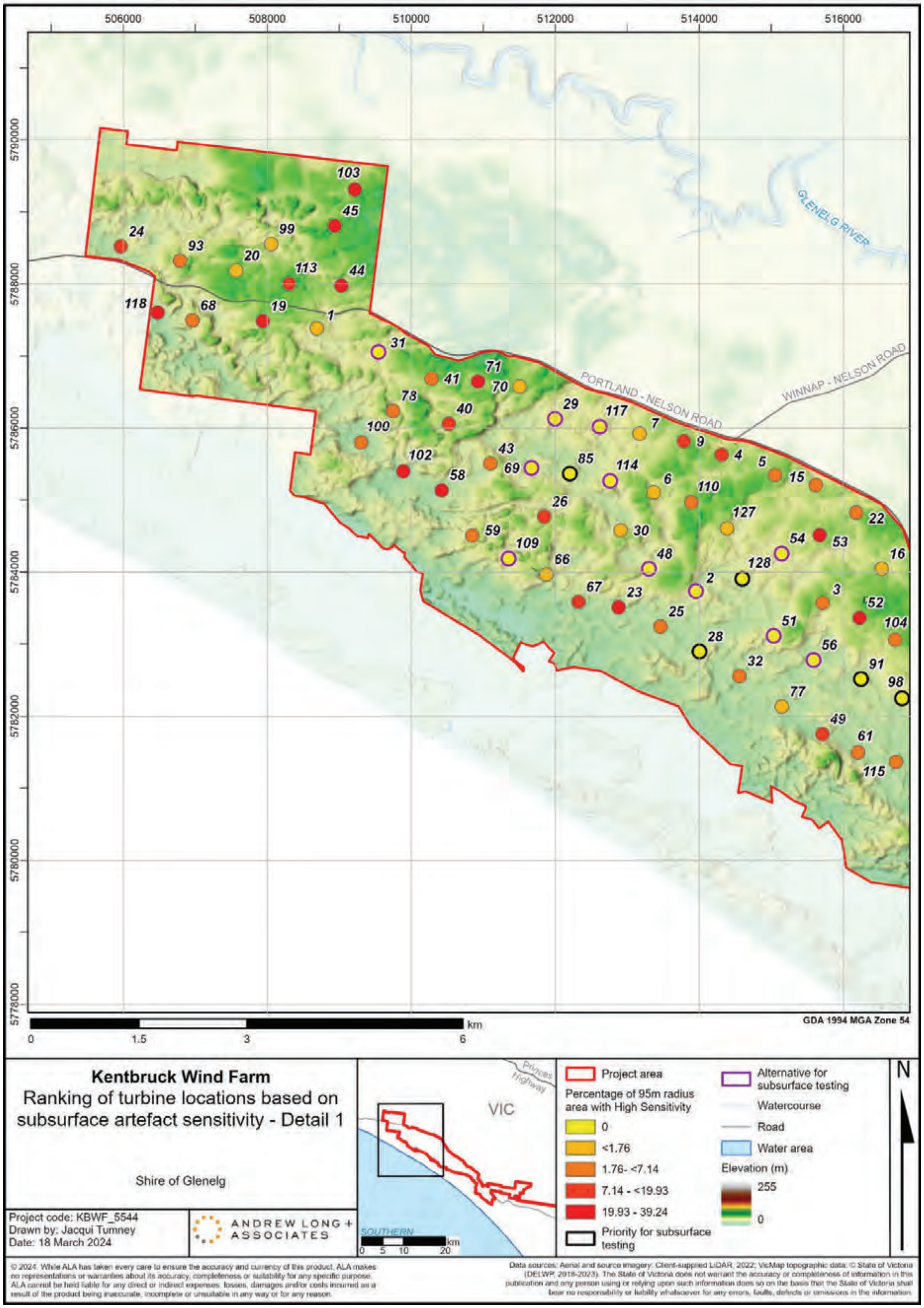


Figure 89 Percent of turbine area with high sensitivity for subsurface artefacts, detail 1

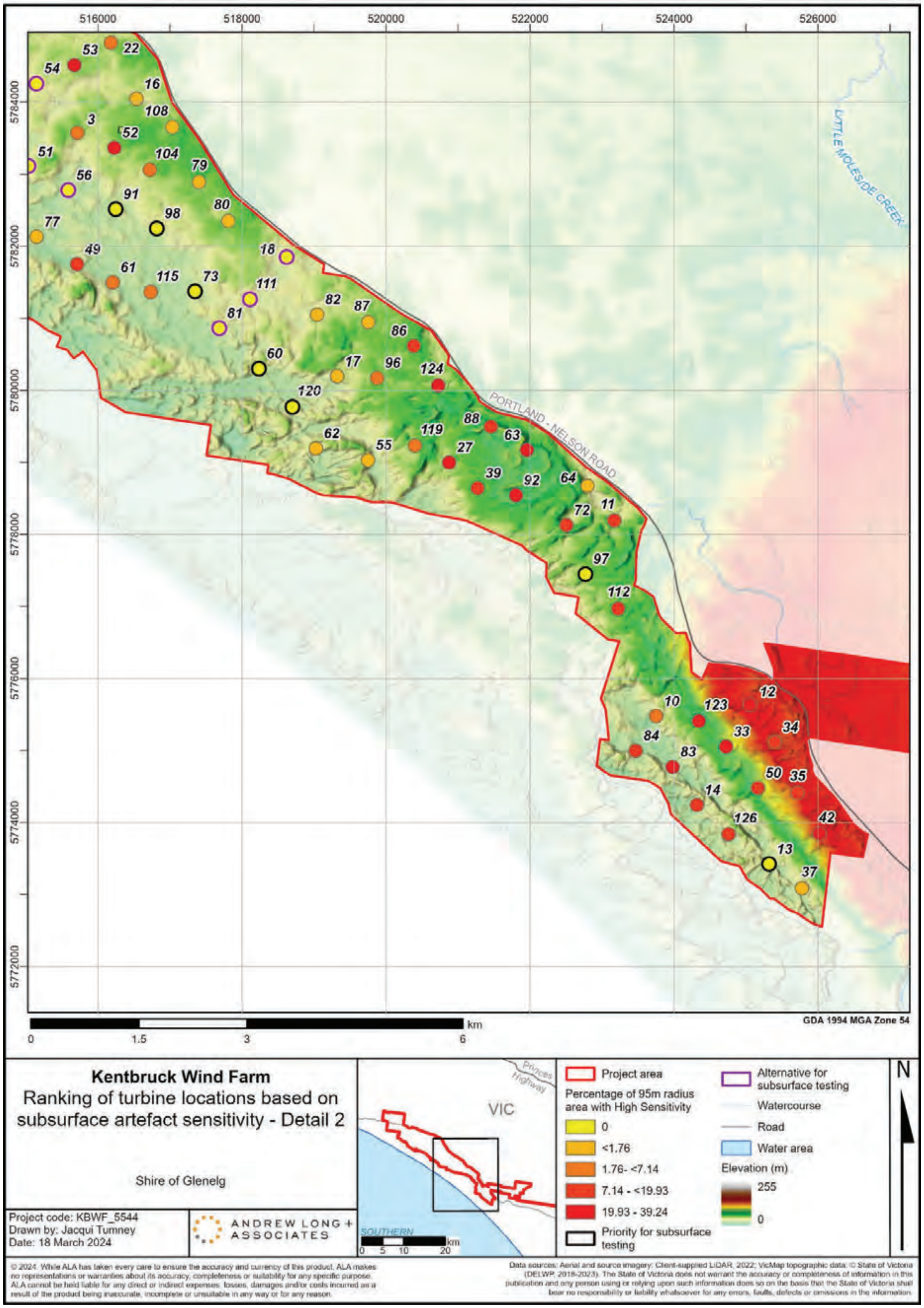


Figure 90 Percent of turbine area with high sensitivity for subsurface artefacts, detail 2

8.5.3 Surface survey testing results

Five turbine locations predicted to have 0% high archaeological sensitivity for surface artefacts were surveyed. No Aboriginal cultural heritage material was identified during the survey of the five turbine locations; however, this is significantly impacted by the obstruction of the ground surfaces by pine needle debris. In those areas of limited ground surface visibility, no cultural heritage material was identified.

Table 26 notes the percentages of predicted low, low/moderate and moderate archaeological sensitivity at each of the five turbine locations. Areas of predicted low/moderate archaeological sensitivity make up the highest percentage at each of the turbine locations. This would allow for micro siting within areas of lower archaeological sensitivity; therefore, having less direct impacts on surface Aboriginal cultural heritage material at the proposed turbine locations.

Table 26 Areas of surface archaeological sensitivity ratings within each surface surveyed turbine location's 100 m buffer zone

Rating of archaeological sensitivity	Sum of area (m^2)	%
Turbine 33		
High	0	0
Moderate	2,413.10	8.5
Low/Moderate	22,912.95	80.8
Low	3,025.66	10.7
Total	**28,351.71**	**100**
Turbine 50		
High	0	0
Moderate	1,175.18	4.1
Low/Moderate	20,901.71	73.7
Low	6,274.82	22.1
Tota46.4l	**28,351.71**	**100**
Turbine 63		
High	0	0
Moderate	2,208.70	7.8
Low/Moderate	21,081.60	74.4
Low	5,061.41	17.9
Total	**28,351.71**	**100**
Turbine 88		
High	0	0
Moderate	2,413.1	8.5
Low/Moderate	22,912.95	80.8
Low	3,025.66	10.7
Total	**28,351.71**	**100**
Turbine 92		

Rating of archaeological sensitivity	Sum of area (m^2)	%
High	0	0
Moderate	4,668.29	16.5
Low/Moderate	21,372.97	75.4
Low	2,310.45	8.1
Total	**28,351.71**	**100.0%**

8.5.4 Subsurface testing results

Turbines 13, 60, 85, 91, 97, 98, 120 and 128 were assessed as having 0% areas of high archaeological sensitivity for subsurface cultural heritage material. Areas of sensitivities were mapped based on landform, elevation, and soil type. During subsurface testing of the eight turbine locations a 95 m buffer was placed around the proposed turbine pad centre point, with areas of moderate, low/moderate, and low archaeological sensitivity mapped throughout. Prior to conducting the subsurface excavations, a surface survey was conducted of the 95 m buffer around each of the turbine locations. It is noted that these turbine locations did not have 0% predicted high archaeological sensitivity for surface cultural heritage material (refer to Table 28). However, visibility was largely obscured by pine plantation needles. Visibility was limited to upturned tree roots and small patches of the ground surface. No surface Aboriginal cultural heritage material was identified during the surface survey of the eight turbine locations. Table 27 summarises the results of the six subsurface excavations undertaken within each of the eight proposed turbine locations. Table 28 notes the total area for each archaeological sensitivity rating.

9.1.1.1 Turbine 13

The elevation of Turbine 13 varied between 22 m AHD at the lowest elevation to 31 m AHD at the highest elevation. Landforms within the location of Turbine 13 consist of valleys, shoulders, ridges, and peaks of dunes. The subsurface excavations conducted within Turbine 13 were excavated on ridges (E STP and W STP), peaks of dunes (1 x 1 B and S STP), valleys (1 x 1 A), and shoulders (N STP) (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 13, five were excavated within areas of low/moderate sensitivity, with the remaining test pit (1 x 1 A) located within an area of predicted moderate archaeological sensitivity. The test pit located within the area of predicted moderate archaeological sensitivity was the [redacted] excavated within the buffer zone of Turbine 13 [redacted] were recorded within S STP noting that [redacted] This artefact positive test pit was also located within an area of chromosol soils (refer to Figure 91).

For turbine 13, low archaeological sensitivity rating makes up 78.5% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

9.1.1.2 Turbine 60

The elevation of Turbine 60 varied between 22 m AHD at the lowest elevation to 37 m AHD at the highest elevation. Landforms within the location of Turbine 60 consist of valleys, slopes and hollows. The subsurface excavations conducted within Turbine 60 were excavated on hollows (N STP, S STP, and W STP), valleys (1 x 1 A and E STP), and on a slope (1 x 1 B) (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 60, one was excavated within an area of predicted low archaeological sensitivity (1 x 1 B), four were excavated within areas moderate sensitivity (1 x 1 A, N STP, E STP, and W STP), with the remaining test pit (S STP) excavated within an area of predicted low/moderate archaeological sensitivity. No artefacts were recorded within the subsurface excavations undertaken at Turbine 60 (refer to Figure 92). All of the test pits were located within an area of chromosol soils.

For turbine 60, low archaeological sensitivity rating makes up 46.3% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

9.1.1.3 Turbine 85

The elevation of Turbine 85 varied between 22 m AHD at the lowest elevation to 30 m AHD at the highest elevation. Landforms within the location of Turbine 85 consist of slopes, spurs, hollows, and peaks of dunes. The subsurface excavations conducted within Turbine 85 were excavated on slopes (E STP), spurs (1 x 1 B, N STP, and S STP) and hollows (1 x 1 A and W STP) (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 85, two were excavated within areas of low archaeological sensitivity (1 x 1 B and N STP), three were located within areas of moderate sensitivity (1 x 1 A, E STP, and W STP), and the remaining excavation location was within an area of low/moderate sensitivity (S STP). [redacted] of the excavation locations contained Aboriginal cultural heritage material, both of which were located within areas of moderate archaeological sensitivity (E STP and W STP). Both of these test pit locations had [redacted] (refer to Figure 93). [redacted] test pits were also located within areas of non-chromosol soils.

For turbine 85, low archaeological sensitivity rating makes up 57.0% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

9.1.1.4 Turbine 91

The elevation of Turbine 91 varied between 21 m AHD at the lowest elevation to 28 m AHD at the highest elevation. Landforms within the location of Turbine 91 consist of ridges and slopes that rise towards the east to the peak of a dune located just outside of the 100 m buffer around the turbine pad centre point. Five of the six subsurface excavations conducted within Turbine 91 were excavated on slopes. The E STP was excavated within a ridge landform (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 91, four were excavated within areas of low archaeological sensitivity (1 x 1 B, N STP, S STP, and W STP), one was located within an area of moderate sensitivity (1 x 1 A), and the remaining excavation location was within an area of low/moderate sensitivity (E STP). 1 x 1 A contained [redacted] and was located within an area of moderate sensitivity (refer to Figure 94). The [redacted] test pit was located within chromosol soils.

For turbine 91, low archaeological sensitivity rating makes up 57.0% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

9.1.1.5 Turbine 97

Turbine 97 was one of the more elevated areas with the GTFP plantation, ranging in elevation between 43 m AHD to 52 m AHD. Landforms within the location of Turbine 97 consist of ridges, hollows, slopes, spurs, and the peaks of a dunes. The subsurface excavations conducted within Turbine 97 were excavated on slopes (N STP), spurs (S STP, and W STP), hollows (1 x 1 B), ridges (1 x 1 A), and the peak of a dune (E STP) (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 97, three were excavated within areas of low archaeological sensitivity (N STP, S STP, and W STP), three were located within areas of moderate sensitivity (1 x 1 A, 1 x 1 B, and E STP). Excavations at Turbine 97 yielded some of the most artefact dense locations compared to the other seven turbine locations that were tested, with 15 artefacts identified within three of the test pit locations. The [redacted] locations were located within those areas of moderate archaeological sensitivity (refer to Figure 95). Furthermore, all [redacted] test pits were located within areas of non-chromosol soils.

For turbine 97, low archaeological sensitivity rating makes up 66.8% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

9.1.1.6 Turbine 98

The elevation of Turbine 98 varied between 23 m AHD at the lowest elevation to 29 m AHD at the highest elevation. Landforms within the location of Turbine 98 consist of hollows, slopes, and spurs. Four of the subsurface excavations conducted within Turbine 98 were excavated on slopes, with the remaining test pits located within a hollow (N STP), and a spur (W STP) (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 98, four were excavated within areas of low archaeological sensitivity (1 x 1 B, E STP, S STP, and W STP), and the remaining two test pits were located within areas of moderate sensitivity (1 x 1 A, and N STP). Two of the test pits contained Aboriginal cultural heritage material. Test pit 1 x 1 B, located on a slope in an area of predicted low archaeological sensitivity was [redacted] of predicted moderate archaeological sensitivity (refer to Figure 96). Furthermore, [redacted] test pits were located within areas of chromosol soils.

There appear to be north/south and northeast/southwest aligned trends within the areas of moderate archaeological sensitivity for Turbine 98. The location of 1 x 1 B appears to be within a gap of this trend; however, there was no explanation for this gap within the data. The artefacts were identified at depths of 800-900 m so likely were not impacted by the construction and ongoing use of the plantation. The location of 1 x 1 B is on a slope; therefore, it is possible that the concentration of artefacts could be from slope wash, from higher up the slope that is within an area of moderate archaeological sensitivity. However, extent testing was not conducted at this stage of the testing programme.

The remaining three test pit locations within areas of low archaeological sensitivity were artefact negative. For turbine 98, low archaeological sensitivity rating makes up 57.7% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

9.1.1.7 Turbine 120

The elevation of Turbine 120 varied between 25 m AHD at the lowest elevation to 33 m AHD at the highest elevation. Landforms within the location of Turbine 120 consist of ridges, slopes, hollows, and peaks of dunes. The subsurface excavations conducted within Turbine 120 were excavated on ridges (N STP, E STP, and S STP), within a hollow (1 x 1 A), on a slope(W STP), and on the peak of a dune (1 x 1 B) (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 120, two were excavated within areas of predicted low archaeological sensitivity (E STP and W STP), three were excavated within areas of low/moderate sensitivity (1 x 1 B, N STP, and S STP), with the remaining test pit (1 x 1 A) excavated within an area of predicted moderate archaeological sensitivity (refer to Figure 97). No artefacts were recorded within the subsurface excavations undertaken at Turbine 120. Four of the test pits were located within non-chromosol soils, with the remaining two test pits (1 x 1 A and 1 x 1 B) located within chromosol soils.

For turbine 120, low archaeological sensitivity rating makes up 43.9% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

9.1.1.8 Turbine 128

The elevation of Turbine 128 varied between 23 m AHD at the lowest elevation to 33 m AHD at the highest elevation. Landforms within the location of Turbine 128 consist of hollows, slopes, spurs, and peaks of dunes. Two of the subsurface excavations conducted within Turbine 128 were excavated on slopes (1 x 1 B and S STP), two test pits were located within hollows (1 x 1 A and E STP), one test pit within a spur (W STP), and the remaining test pit on a peak of a dune (N STP) (refer to Table 27).

Of the six subsurface excavations undertaken for Turbine 128, three were excavated within areas of low archaeological sensitivity (1 x 1 B, S STP, and W STP), two of the test pits were located within areas of moderate archaeological sensitivity (1 x 1 A and E STP), with the remaining test pit located within an area of low/moderate sensitivity (N STP).

[redacted] were located within areas of moderate archaeological sensitivity and contained two artefacts at each location. [redacted]

Also like Turbine 98, there appear to be a northeast/southwest aligned trend within the areas of moderate archaeological sensitivity for Turbine 128. The location of S STP appears to be within a gap of this trend; however, there was no explanation for this gap within the data. The artefacts were identified at depths between 200-900 m so likely were not impacted by the construction and ongoing use of the plantation. The location of S STP is on a slope; therefore, it is possible that the concentration of artefacts could be from slope wash, from higher up the slope that is within an area of moderate archaeological sensitivity. However, extent testing was not conducted at this stage of the testing programme.

The remaining two test pit locations within areas of low archaeological sensitivity were artefact negative. For turbine 128, low archaeological sensitivity rating makes up 43.9% of the 100 m buffer around the turbine pad centre point. This would allow for micro siting within areas of low archaeological sensitivity; therefore, having less direct impacts on subsurface Aboriginal cultural heritage material at this proposed turbine location.

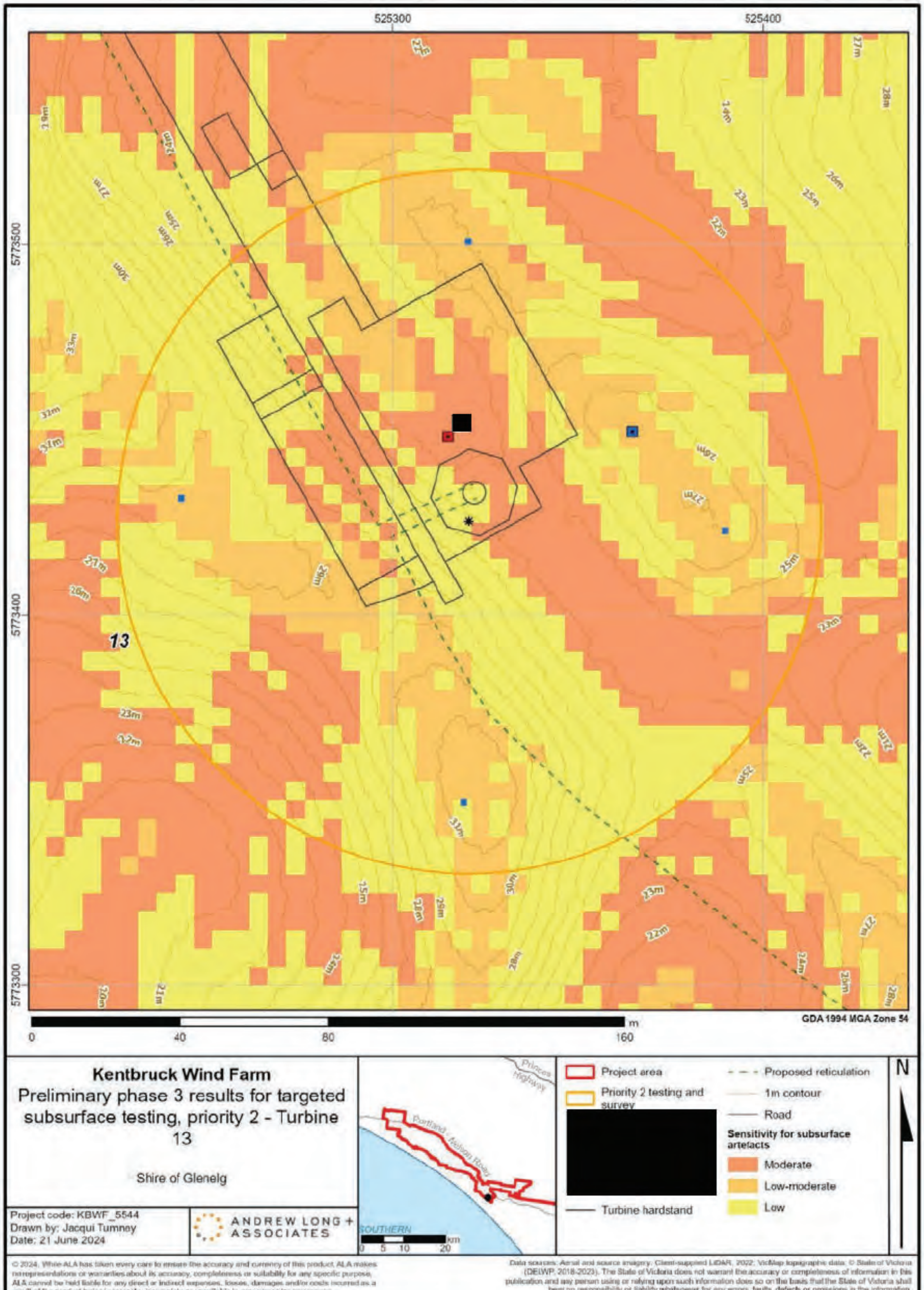


Figure 91 Preliminary results of subsurface excavations at Turbine 13

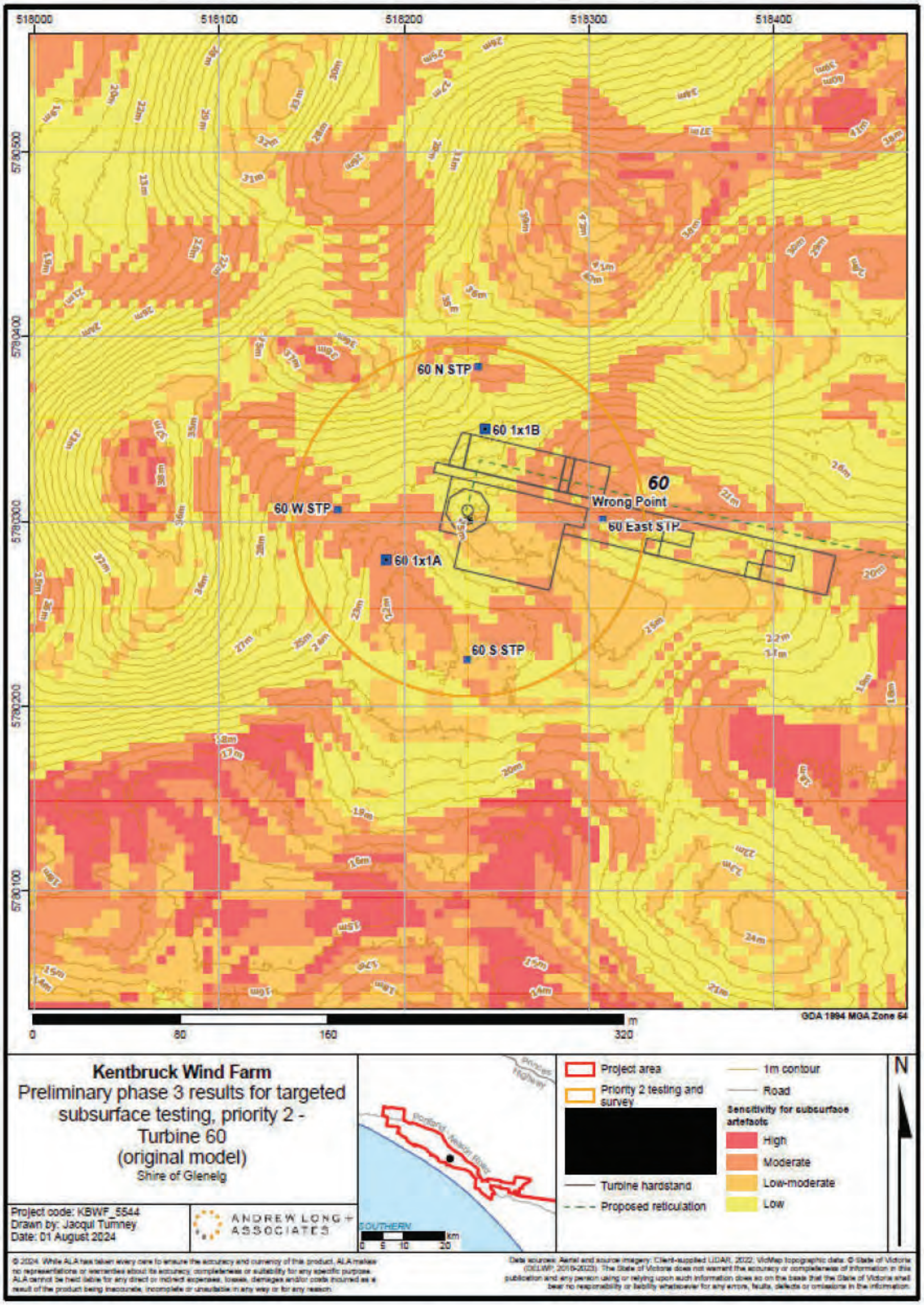


Figure 92 Preliminary results of subsurface excavations at Turbine 60

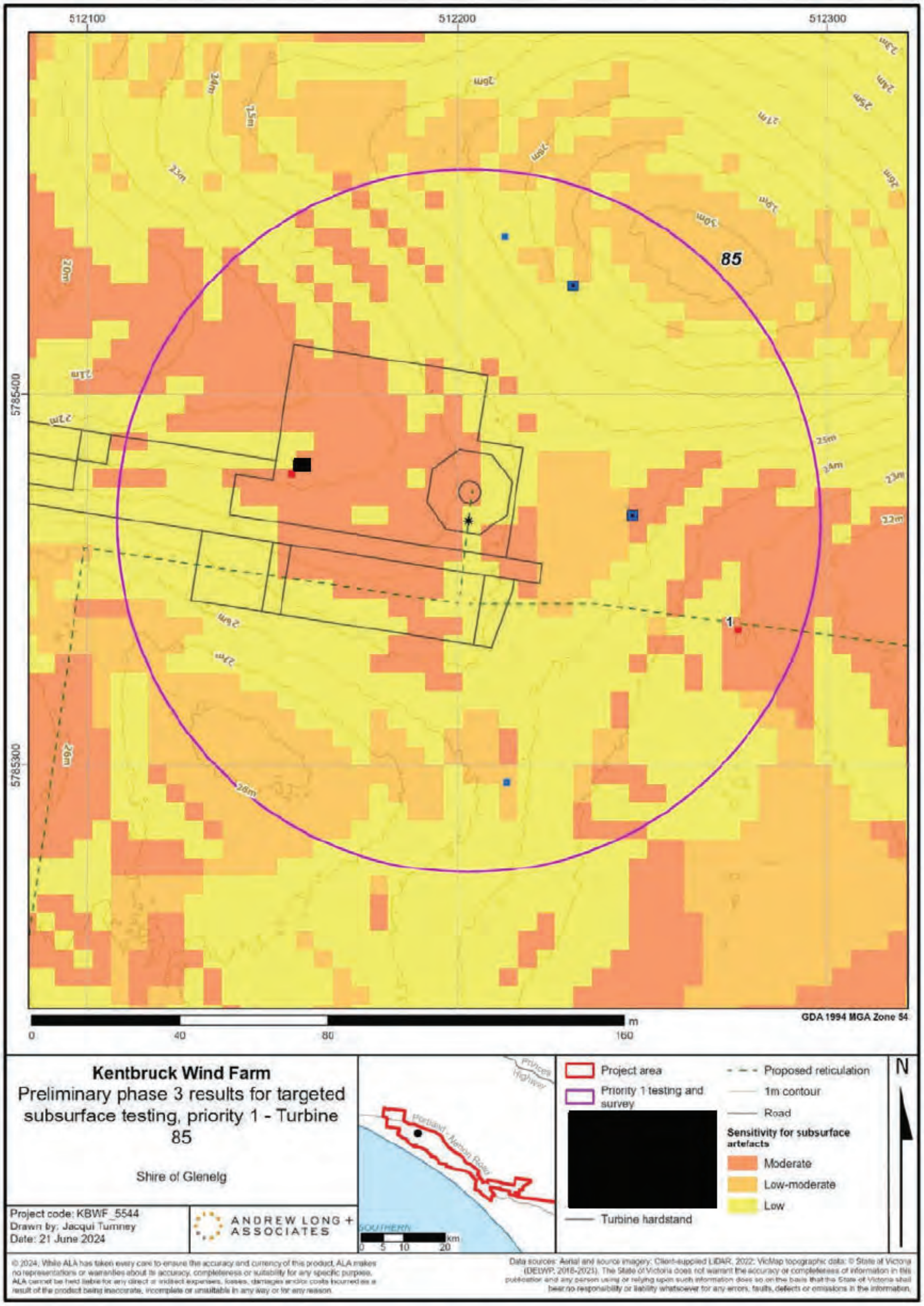


Figure 93 Preliminary results of subsurface excavations at Turbine 85

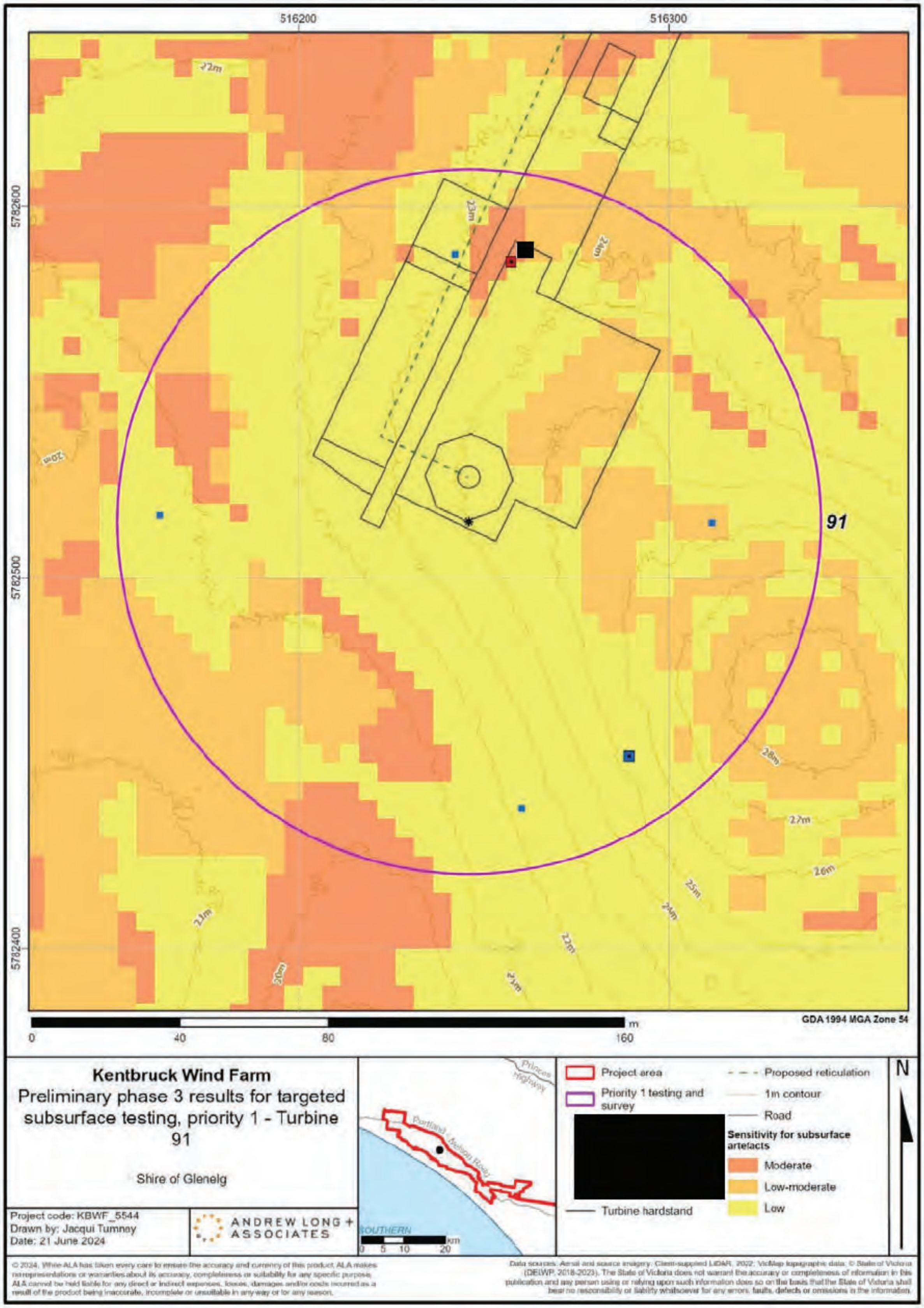


Figure 94 Preliminary results of subsurface excavations at Turbine 91

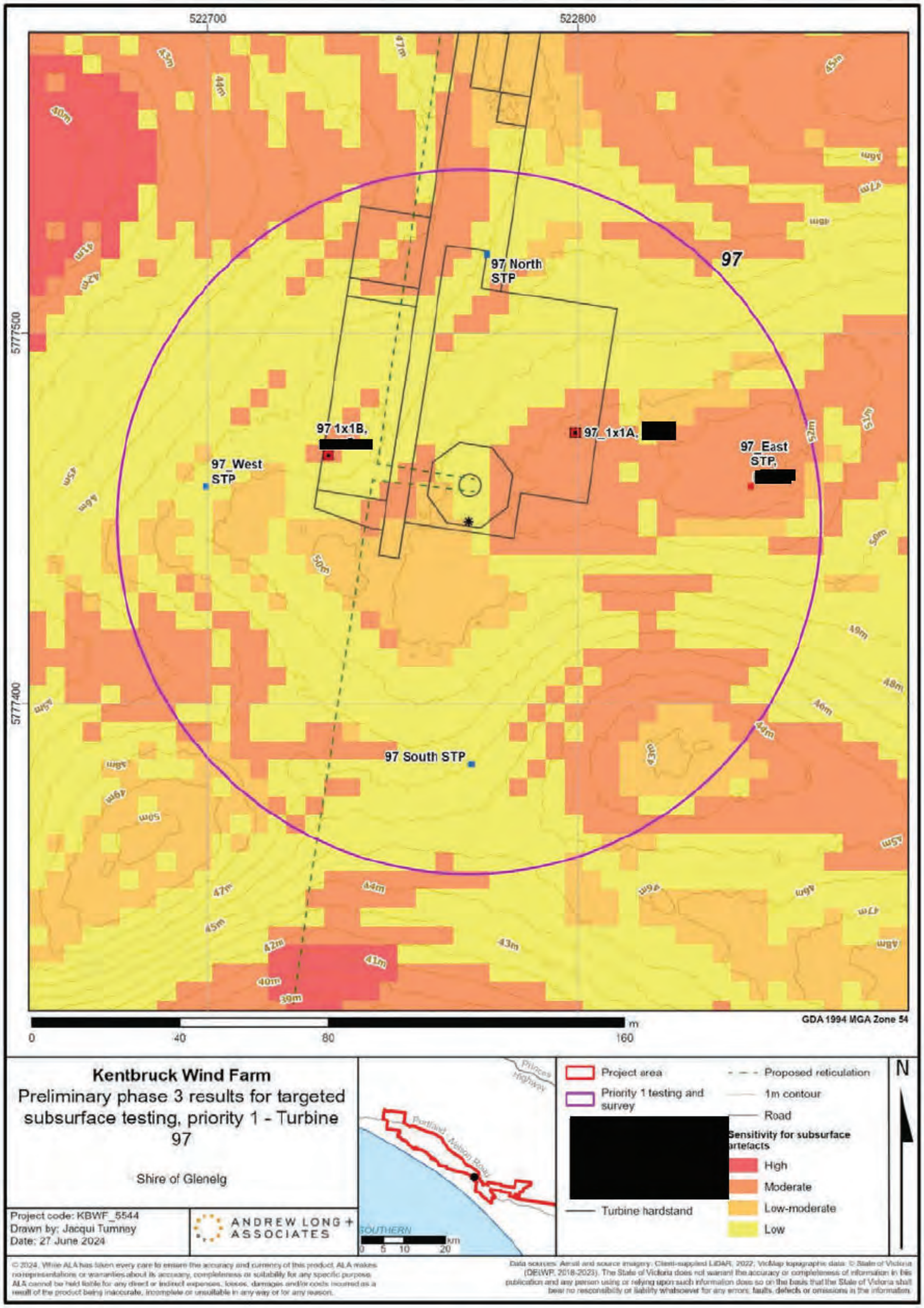


Figure 95 Preliminary results of subsurface excavations at Turbine 97

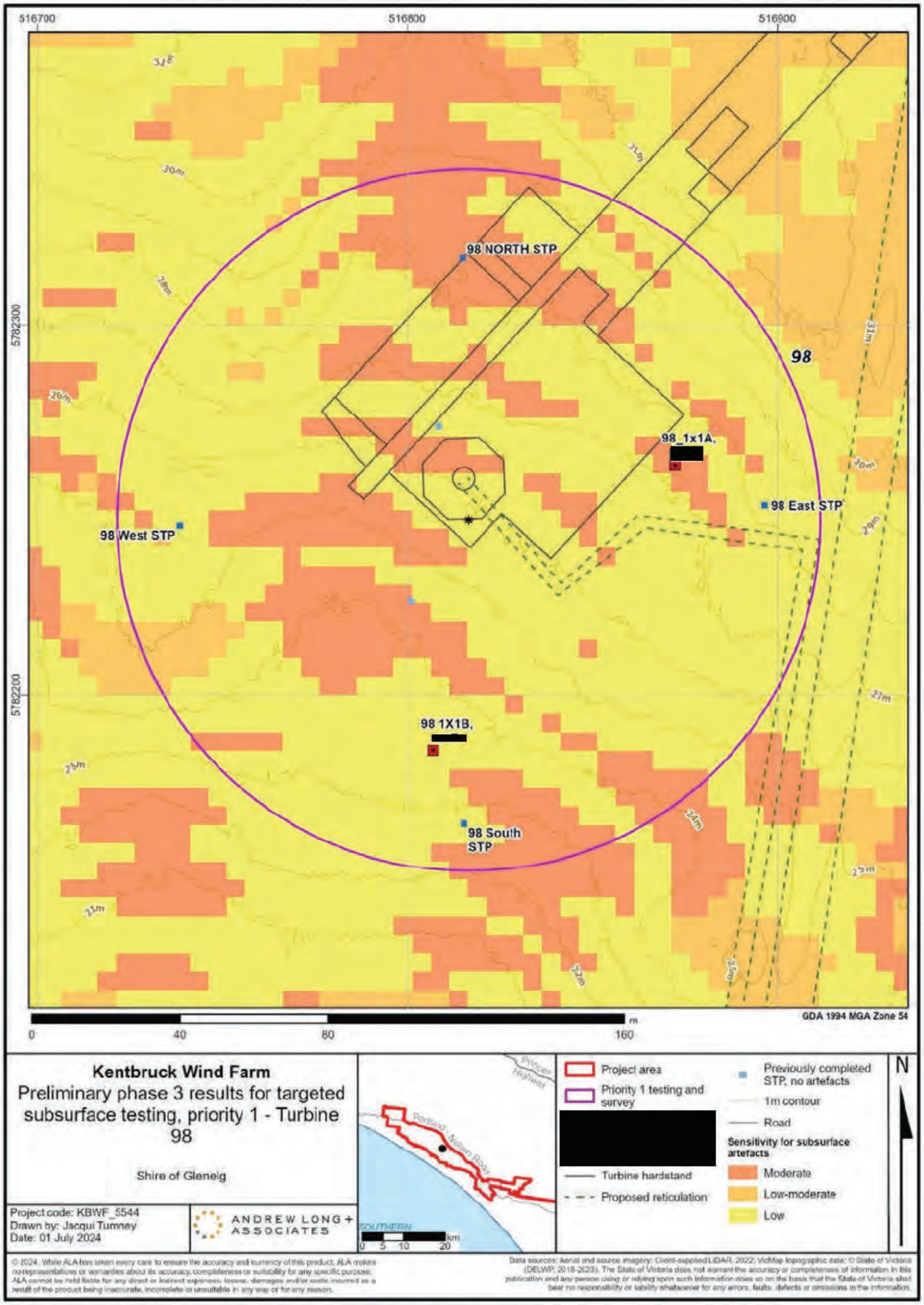


Figure 96 Preliminary results of subsurface excavations at Turbine 98

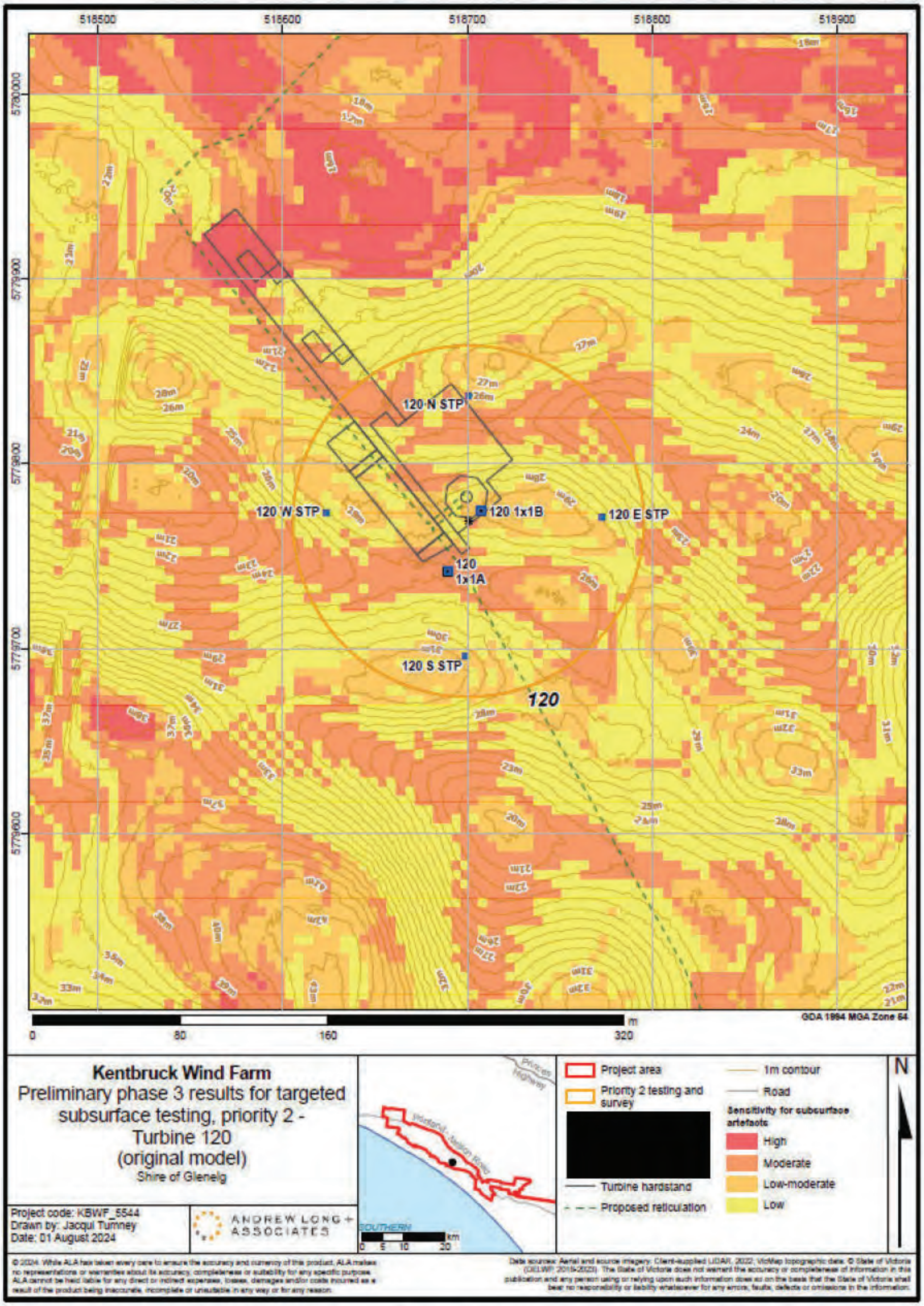


Figure 97 Preliminary results of subsurface excavations at Turbine 120

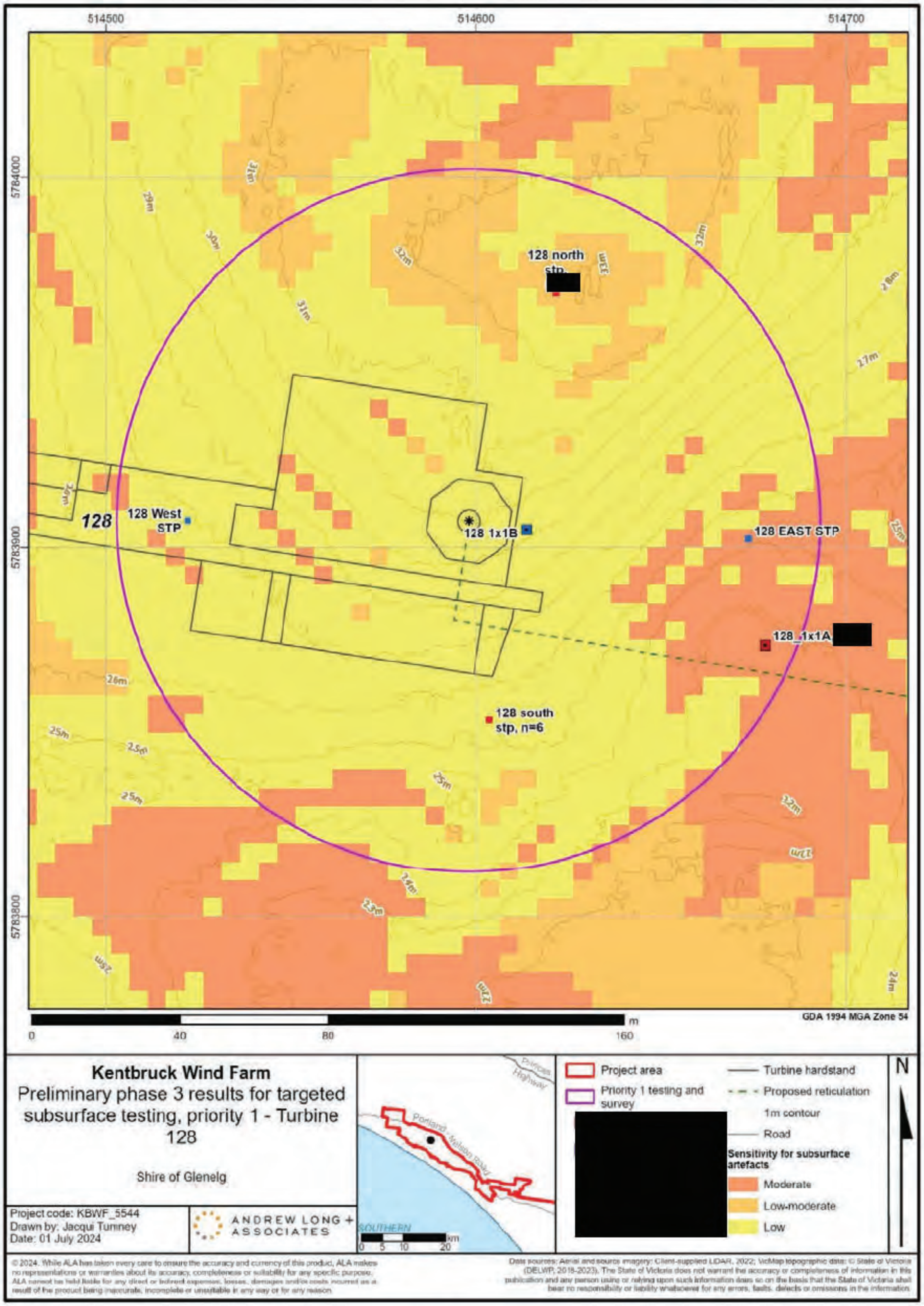


Figure 98 Preliminary results of subsurface excavations at Turbine 128

Table 27 Results of subsurface excavations at each turbine location

Turbine ID No.	Test Pit ID	Landform	Elevation	Soil	Area of archaeological sensitivity	Artefacts
13	1 x 1 A	Valley	23 m AHD	Chromosols (?)	Moderate	[redacted]
	1 x 1 B	Peak	26-27 m AHD	Non-chromosol	Low/Moderate	[redacted]
	N STP	Shoulder	24 m AHD	Non-chromosol	Low/Moderate	[redacted]
	E STP	Ridge	26-27 m AHD	Non-chromosol	Low/Moderate	[redacted]
	S STP	Peak	31 m AHD	Non-chromosol	Low/Moderate	[redacted]
	W STP	Ridge	29-30 m AHD	Chromosol	Low/Moderate	[redacted]
Total						[redacted]
60	1 x 1 A	Valley	22-23 m AHD	Chromosol	Moderate	[redacted]
	1 x 1 B	Slope	27-28 m AHD	Chromosols (?)	Low	[redacted]
	N STP	Hollow	31 m AHD	Chromosol	Moderate	[redacted]
	E STP	Valley	22-23 m AHD	Chromosol	Moderate	[redacted]
	S STP	Hollow	22 m AHD	Chromosol	Low/Moderate	[redacted]
	W STP	Hollow	25 m AHD	Chromosol	Moderate	[redacted]
Total						[redacted]
85	1 x 1 A	Hollow	25 m AHD	Chromosol	Moderate	[redacted]
	1 x 1 B	Spur	27 m AHD	Non-chromosol	Low	[redacted]
	N STP	Spur	27-28 m AHD	Chromosol	Low	[redacted]
	E STP	Slope	23 m AHD	Non-chromosol	Moderate	[redacted]
	S STP	Spur	25-26 m AHD	Chromosols (?)	Low/Moderate	[redacted]
	W STP	Hollow	23 m AHD	Non-chromosol	Moderate	[redacted]
Total						[redacted]
91	1 x 1 A	Slope	23-24 m AHD	Chromosol	Moderate	[redacted]
	1 x 1 B	Slope	25-26 m AHD	Chromosol	Low	[redacted]
	N STP	Slope	23 m AHD	Chromosol	Low	[redacted]
	E STP	Ridge	25-26 m AHD	Chromosol	Low/Moderate	[redacted]
	S STP	Slope	22-23 m AHD	Chromosol	Low	[redacted]
	W STP	Slope	21 m AHD	Chromosol	Low	[redacted]
Total						[redacted]
97	1 x 1 A	Ridge	51 m AHD	Non-chromosol	Moderate	[redacted]
	1 x 1 B	Hollow	48 m AHD	Non-chromosol	Moderate	[redacted]
	N STP	Slope of dune	48 m AHD	Non-chromosol	Low	[redacted]
	E STP	Peak of dune	52 m AHD	Non-chromosol	Moderate	[redacted]
	S STP	Spur	47 m AHD	Non-chromosol	Low	[redacted]

Turbine ID No.	Test Pit ID	Landform	Elevation	Soil	Area of archaeological sensitivity	Artefacts
	W STP	Spur	48 m AHD	Non-chromosol	Low	[redacted]
Total						[redacted]
98	1 x 1 A	Slope	27-28 m AHD	Chromosol	Moderate	[redacted]
	1 x 1 B	Slope	23-24 m AHD	Chromosols (?)	Low	[redacted]
	N STP	Hollow	28 m AHD	Chromosol	Moderate	[redacted]
	E STP	Slope	28-29 m AHD	Chromosol	Low	[redacted]
	S STP	Slope	22-23 m AHD	Chromosols (?)	Low	[redacted]
	W STP	Spur	25-26 m AHD	Chromosol	Low	[redacted]
Total						[redacted]
120	1 x 1 A	Hollow	26-27 m AHD	Chromosol	Moderate	[redacted]
	1 x 1 B	Peak	29 m AHD	Chromosols (?)	Low/Moderate	[redacted]
	N STP	Ridge	26 m AHD	Non-chromosol	Low/Moderate	[redacted]
	E STP	Ridge	28 m AHD	Non-chromosol	Low	[redacted]
	S STP	Ridge	30-31 m AHD	Non-chromosol	Low/Moderate	[redacted]
	W STP	Slope	28 m AHD	Non-chromosol	Low	[redacted]
Total						[redacted]
128	1 x 1 A	Hollow	23 m AHD	Chromosol	Moderate	[redacted]
	1 x 1 B	Slope	23-33 m AHD	Non-chromosol	Low	[redacted]
	N STP	Peak	32-33 m AHD	Chromosol	Low/Moderate	[redacted]
	E STP	Hollow	24 m AHD	Chromosol	Moderate	[redacted]
	S STP	Slope	24-25 m AHD	Chromosol	Low	[redacted]
	W STP	Spur	25 m AHD	Chromosol	Low	[redacted]
Total						[redacted]
Total number of [redacted] excavation locations						[redacted]

Table 28 Areas of archaeological sensitivity ratings within each tested turbine location's 95 m buffer zone

Rating of archaeological sensitivity	Sum of area (m^2)	%
Turbine 13 - Surface		
High	4,565.85	16.1
Moderate	14,422.46	50.9
Low/Moderate	9,363.40	33.0
Total	**28,351.71**	**100**
Turbine 13 - Subsurface		
High	0	0.0

Rating of archaeological sensitivity	Sum of area (m^2)	%
Moderate	8,227.55	29.0
Low/Moderate	6,983.35	24.6
Low	13,140.81	46.3
Total	**28,351.71**	**100**
Turbine 60 - Surface		
High	5,589.49	19.7
Moderate	13,245.99	46.7
Low/Moderate	9,516.22	33.6
Total	**28,351.71**	**100**
Turbine 60 - Subsurface		
High	0.2	0.0
Moderate	10,536.71	37.2
Low/Moderate	4,669.02	16.5
Low	13,145.95	46.4
Total	**28,351.71**	**100**
Turbine 85 - Surface		
High	3,077.52	10.9
Moderate	15,719.03	55.4
Low/Moderate	9,555.09	33.7
Total	**28,351.71**	**100**
Turbine 85 - Subsurface		
High	0	0.0
Moderate	7,669.07	27.0
Low/Moderate	4,508.66	15.9
Low	16,173.98	57.0
Total	**28,351.71**	**100**
Turbine 91 - Surface		
High	3,093.92	10.9
Moderate	17,255.88	60.9
Low/Moderate	8,001.91	28.2
Total	**28,351.71**	**100**
Turbine 91 - Subsurface		
High	0	0.0
Moderate	2,258.27	8.0
Low/Moderate	7,140.42	25.2

Rating of archaeological sensitivity	Sum of area (m^2)	%
Low	18,953.02	66.8
Total	**28,351.71**	**100**
Turbine 97 - Surface		
High	1,467.12	5.2
Moderate	17,258.92	60.9
Low/Moderate	9,625.66	34.0
Total	**28,351.71**	**100.0**
Turbine 97 - Subsurface		
High	0	0.0
Moderate	8,140.71	28.7
Low/Moderate	3,865.81	13.6
Low	16,345.18	57.7
Total	**28,351.71**	**100.0**
Turbine 98 - Surface		
High	864.59	3.0
Moderate	17,344.94	61.2
Low/Moderate	10,142.18	35.8
Total	**28,351.71**	**100.0**
Turbine 98 – Subsurface		
High	0	0.0
Moderate	7,497.41	26.4
Low/Moderate	571.42	2.0
Low	20,282.88	71.5
Total	**28,351.71**	**100.0**
Turbine 120 - Surface		
High	4,933.27	17.4
Moderate	13,585.18	47.9
Low/Moderate	9,833.26	34.7
Total	**28,351.71**	**100.0**
Turbine 120 - Subsurface		
High	0	0.0
Moderate	8,855.52	31.2
Low/Moderate	7,048.00	24.9
Low	12,448.19	43.9
Total	**28,351.71**	**100.0**

Rating of archaeological sensitivity	Sum of area (m^2)	%
Turbine 128 - Surface		
High	3,728.15	13.1
Moderate	14,468.05	51
Low/Moderate	10,155.51	35.8
Total	**28,351.71**	**100.0**
Turbine 128 - Subsurface		
High	0	0.0
Moderate	2,978.12	10.5
Low/Moderate	3,125.39	11.0
Low	22,248.20	78.5
Total	**28,351.71**	**100.0**

8.5.5 Phase 3 Subsurface testing conclusions

A total of 48 subsurface excavations were conducted during the preliminary phase 3 testing. Six subsurface excavations (combination of 1 x 1 m and 50 cm x 50 cm manually excavated test pits) were conducted at eight turbine locations that were predicted to have 0% high sensitivity for subsurface artefacts. Of the 48 test pits excavated, 13 of the test pits were artefact positive. Of these 13 artefact positive test pits, 10 were located within areas of predicted moderate archaeological sensitivity, one was located within an area of predicted low/moderate archaeological sensitivity, and two were located within predicted low archaeological sensitivity.

As such, the results of the phase 3 testing are largely in line with the hypothesis of phase 3 that was applied across the turbine locations, with areas of moderate, low/moderate, and low archaeological sensitivity mapped. Areas of mapped moderate archaeological sensitivity were largely artefact positive, with the areas mapped as being of low archaeological sensitivity were largely artefact negative.

Table 29 Artefact positive test pits per area of predicted archaeological sensitivity for Phase 3 subsurface testing

Rating of archaeological sensitivity	No. of artefact positive test pits/shovel test pits	Total no. of test pits/shovel test pits excavated	% positive
High	0	0	0
Moderate	9	17	50
Low/Moderate	1	10	10
Low	2	21	9

Turbines 98 and 128 appear to be the outliers to the predictive model. A test pit at each of these turbine locations, located within areas of low archaeological sensitivity contained artefacts [redacted]. The reason for artefact positive test pits at these locations, within areas of predicted low archaeological sensitivity have not been discerned from the subsurface excavations or data to date. However, outliers are also going to be present within any predictive model.

8.5.6 Next steps of the GMTOAC led iterative predictive model

Next steps for the GMTOAC-led iterative predictive model consists of the following:

- Further subsurface testing in areas of predicted high archaeological sensitivity to substantiate the model
- Further consultation with GMTOAC regarding further revisions of the model

8.5.7 Surface survey and auger borehole testing of Boiler Swamp Road and the transmission line route alignment

The proposed transmission route alignment is located along Boiler Swamp Road for a length of 17.6 km, and a further 9 km located within agricultural land. It is noted that no previously registered Aboriginal places are located along the proposed route alignment. An options assessment (refer to Appendix 5) was undertaken for the proposed transmission route alignment. Option 1A was the preferred transmission line route alignment as the majority of the alignment will be beneath Boiler Swamp Road.

The transmission line route was subject to surface survey during the week of 7-11 October 2024. Boiler Swamp Road appears to site at a slightly lower ground surface than the surrounding ground surfaces (those outside of the road reserve). It was noted by the GMTOAC representatives, Dean Lovett and Keisha Lovell-King, that Boiler Swamp Road is graded annually and imported sand is used to resurface the road.

A series of auger borehole excavations were targeted on various landform elements along Boiler Swamp Road to establish the presence/absence of ground disturbance from the construction of the road as well as the soil stratigraphy. The auger boreholes were located along the northern and southern road reserves in proximity to pre-Contact wetlands, various aspects of slopes, and valleys. Twelve auger boreholes were excavated along the length of Boiler Swamp Road. An additional auger borehole was excavated within the transmission route alignment on a north-facing slope of a rise within an agropastoral paddock (refer to Figure 99 through Figure 101).

The results of the 12 auger boreholes along Boiler Swamp Road were largely consistent with a soil stratigraphy of various depths of clay on top of a compacted clay. In proximity to existing drainage lines our areas of wetland, the water table was often encountered at depths around 300 mm to 500 mm. The stratigraphy noted along Boiler Swamp Road was similar to that of the underlying geology, late Tertiary basalt flows overlying Gambier Limestone. Soil stratigraphy is typically characterised by clay intermixed with ironstone. It is noted that limestone was not encountered in any of the boreholes excavated long Boiler Swamp Road. The borehole excavated at the end of the transmission line route alignment before the alignment turns towards the northwest through agricultural paddocks (A8) as well as the intersection of Fish Hole Road and Boiler Swamp Road (A11) contained road base material, possibly indicating that the road was once metalled

The auger borehole (A13) excavated in the transmission line route alignment had a much different soil stratigraphy than those located along Boiler Swamp Road. The soil stratigraphy of A13 consisted of a sandy silt (Munsell 7.5YR 3/2) that was overlying a silt (Munsell 7.5YR 5/4), overlying a clayey silt (Munsell 10YR 5/3) with red (Munsell 2.5YR 4/6) clay mottles, that was on top of a red clay (Munsell 2.5YR 4/8). The depth of A13 was to 800 mm.

No Aboriginal cultural heritage material was identified within the 13 auger boreholes. Those boreholes excavated along Boiler Swamp Road were excavated to a depth until a culturally sterile compact clay was encountered.

The portion of the proposed transmission line alignment along Boiler Swamp Road is proposed to be located beneath the existing road surface. As the road was likely levelled at the time of initial construction, and is annually graded, there is little potential for in situ surface or sub-surface Aboriginal cultural heritage material to be present.

The remainder of the transmission line route alignment consisted of very gentle rises that aligned with 1 m contour lines on topographic map. Inundated ground surface were noted in between these slight rises. Grazing animals had impacted these inundated areas. Created animal scars noted outside of the transmission route alignment consisted of a stratigraphy of silty sand. The soil stratigraphy outside of Boiler Swamp Road will need to be investigated further through a series of subsurface excavations conducted as part of the CHMP process to further assess for the presence/absence of Aboriginal cultural heritage material.

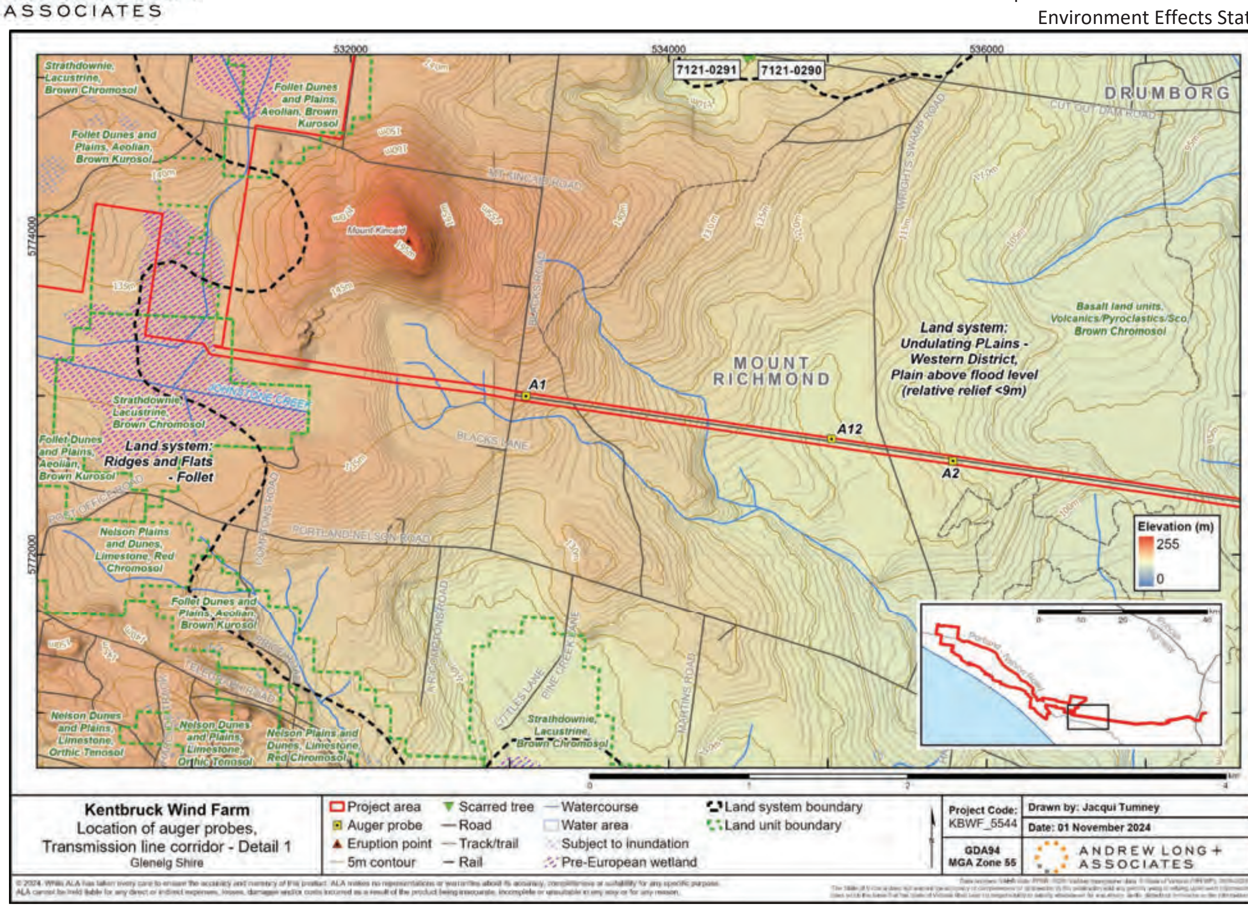


Figure 99 Location of auger boreholes along transmission line route alignment – Detail 1

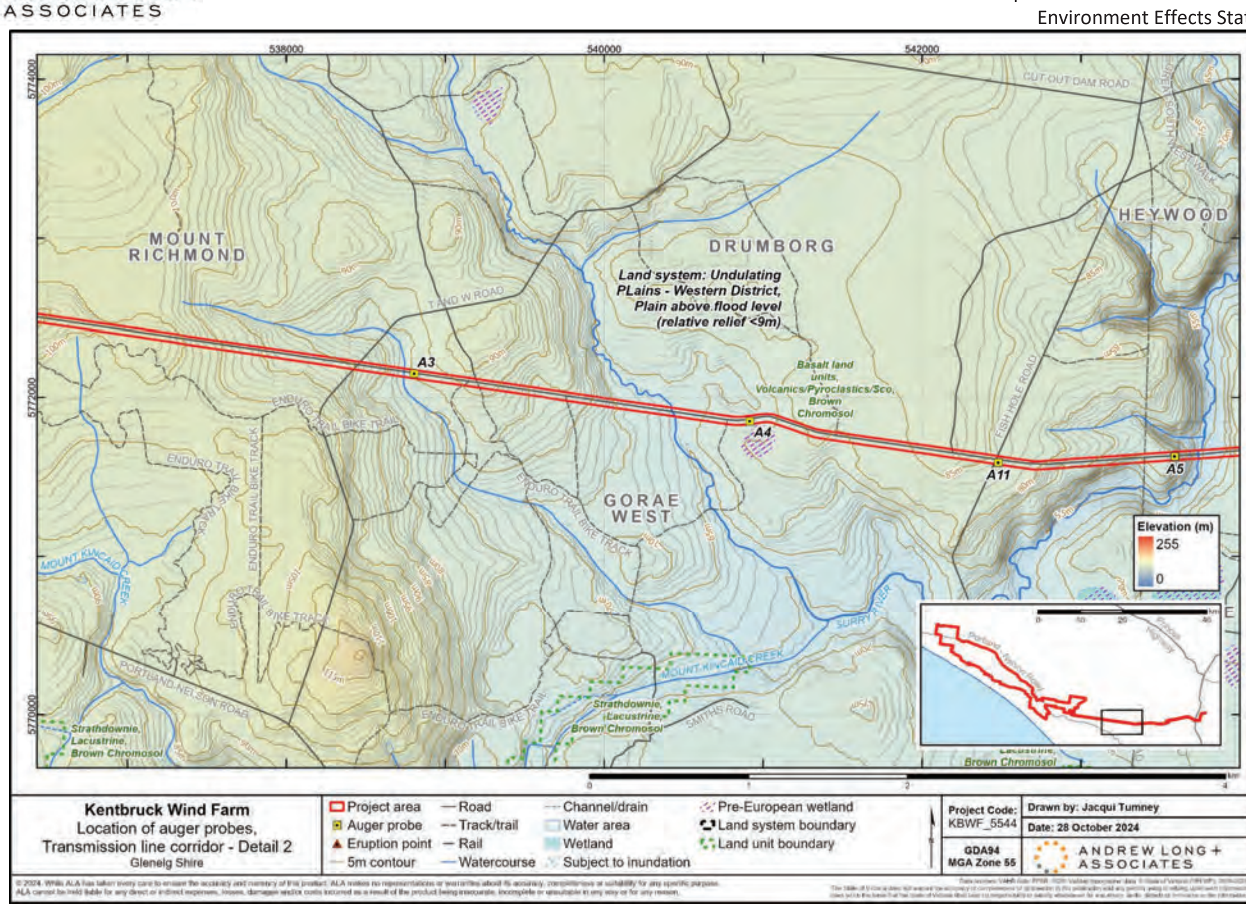


Figure 100 Location of auger boreholes along transmission line route alignment – Detail 2

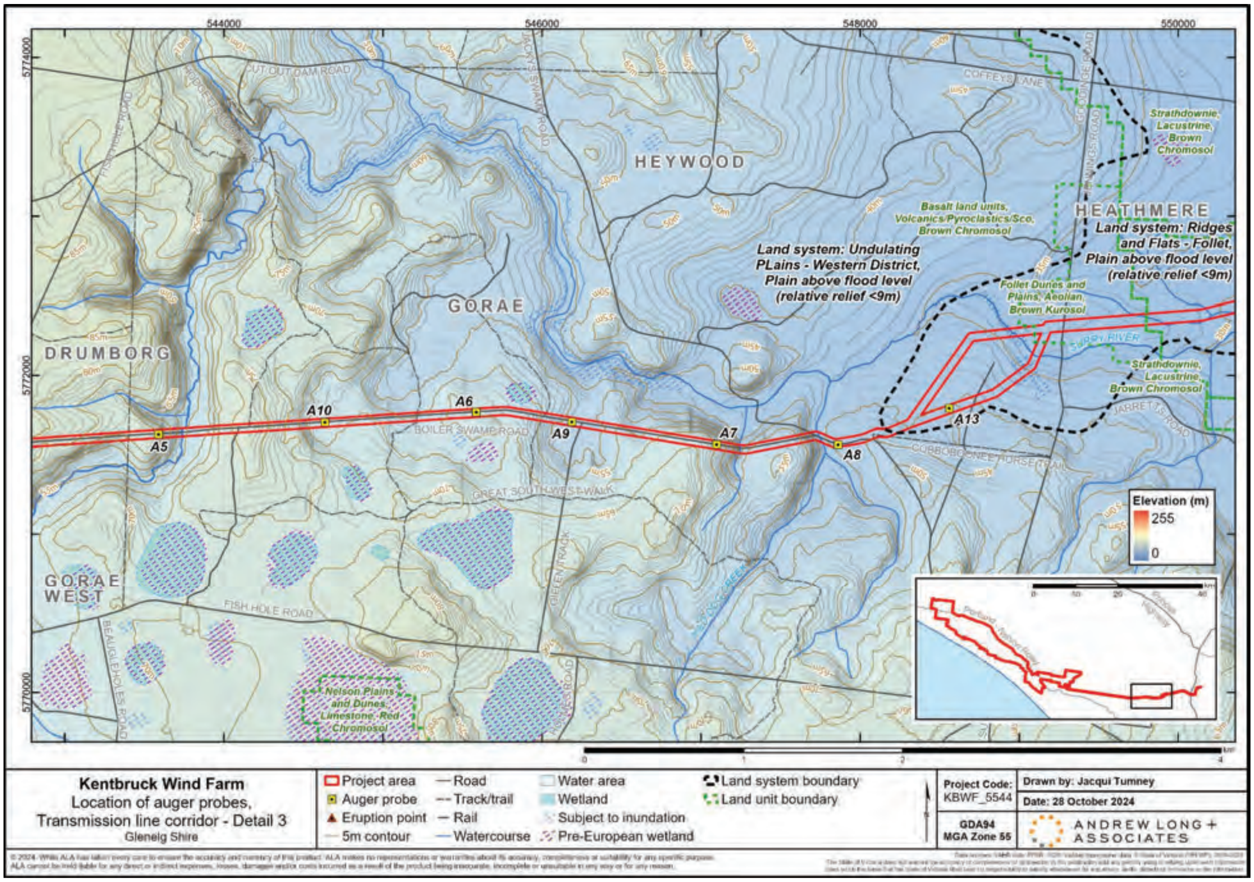


Figure 101 Location of auger boreholes along transmission line route alignment – Detail 3

10. CULTURAL VALUES ASSESSMENT

The primary objective of the cultural values assessment was to build on existing information and research to explore non-archaeological and intangible heritage values, associations and histories from the region and the activity area. The methods of assessment are described in Section 6.7.

10.1 Background

[redacted]

10.2 Cultural values assessment

GMTOAC has provided a memo regarding the cultural values assessment conducted by GMTOAC community in participation with Kate Waters (2023) and presented in full below:

[redacted]

1

[redacted]

[redacted]

3

Next Steps

- [redacted]

Memo issued by:
Kate Waters
Waters Consultancy
June 2023
Images by Korey Moon (Waters Consultancy) taken on community day, March 2023.

10.3 Results of the cultural values assessment

The CVA documented the following cultural values of the Gunditj Mirring:

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

The Project EES contains several specialist assessments that did not consider impacts through the lens of the CVA; however, do consider impacts to specific sites from a planning perspective that have been identified as of interest during the CVA. These specialist assessments include the following:

- Biodiversity and habitat (refer to Chapters 7-9 and Appendix C through Appendix H of the EES) that could impact on the cultural linkages of Gunditj Mirring Country. The EES objective for biodiversity and habitat is to avoid or minimise potential adverse effects on biodiversity values within the Project Area and its environs, including native vegetation, listed species and ecological communities, other protected species, and habitat for these species.
- Catchment values and hydrology (refer to Chapters 9-10 and Appendix F through Appendix I of the EES) that could impact on Sky Country and the cultural linkages of Gunditj Mirring Country. The EES objective for catchment values and hydrology are to maintain the functions and values of the aquatic environments, surface water and groundwater quality, and stream flows to prevent adverse effects on protected beneficial uses.
- Landscape and visual (refer to Chapter 12 and Appendix L through Appendix M of the EES) that could impact on cultural view lines of Gunditj Mirring Country. The EES objective for landscape and visual is to minimise and manage potential adverse effects on the landscape and visual amenity
- Noise and Vibration from the project that could impact on the sounds of Gunditj Mirring Country (refer to Chapter 15 Appendix P of the EES). The objective for noise and vibration consists of the avoidance and minimisation of adverse effects for community amenity and safety, with regard to construction noise, vibration, dust, traffic and transport, operational turbine noise and fire risk management.

The above EES chapters include mitigation measures to avoid/minimise impacts to biodiversity and habitat, flora and fauna of the Project Area, aquatic environments, landscape and visual amenity, as well as noise and vibration, that will, in turn, avoid/minimise the indirect effects to the cultural values of Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest).

11. IMPACT AND MITIGATION

11.1 Construction impacts

This section discusses the potential impacts of the project on previously registered and identified Aboriginal cultural heritage material assets and values as well as the potential for unregistered Aboriginal cultural heritage assets as a result of construction activities. Proposed mitigation measures have been provided with the aim of avoiding and/or reducing impacts. It is noted that potential impacts will be mitigated/managed through the implementation of the CHMP and through further consultation with GMTOAC.

11.1.1 Construction of permanent infrastructure on tangible heritage

11.1.1.1 Wind turbines with hardstand areas and foundations of approximately 0.4 ha and temporary laydown areas

Previously registered Aboriginal cultural heritage material

Impact
At the conclusion of phase 1 and phase 2 testing, no previously identified or recorded Aboriginal places are located within the proposed wind turbine locations or associated hardstand, foundations or temporary laydown areas in the locations that were assessed.

Mitigation
As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact
There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact
Amendments to the Kentbruck Green Power Hub design have already consisted of reducing the number of wind turbines from an initial 157 reduced to 116, with a further reduction in number to 105. The reduction in wind turbine numbers was not from the results of Aboriginal cultural heritage investigations; however, the reduction in wind turbine number leads to a reduction in the total area of the project and therefore a reduction in potential impacts on previously unregistered Aboriginal cultural heritage material.

No previously identified or recorded Aboriginal places are located within the location of proposed wind turbine locations or associated hardstand in the areas that were assessed.

The risk of harm to previously unregistered Aboriginal cultural heritage material within the proposed wind turbine locations relates to the archaeological sensitivity of the area. Testing of the GMTOAC led iterative predictive model is ongoing to better refine the model. However, regardless of ongoing and future refinements to the model, Figure 179 documents the steps that must be considered prior to the siting of wind turbine locations.

Mitigation

Predictive model resolution flow chart

A flow chart application of the predictive model will be used to infer management condition outcomes for high impact locations in areas of modelled high-moderate cultural heritage sensitivity (Figure 179).

Specific management conditions for identified Aboriginal places will comprise a compliment of the below proposed controls to be implemented where feasible:

- Micro siting / compliance inspections of targeted impact locations (e.g., Turbine locations).
- Turbine location adjustments up to 100 metres or removals from the maximum scope of the project where required by known Aboriginal place extents or micro siting results.
- Delineation of potential activities resulting from impact mitigation for specific cultural layers that may be identified through the CHMP and EES modelling (e.g., No-go zones, fencing, ground protection zones).
- Impact mitigation procedures to be constructed in negotiation with the RAP throughout the project based on flow chart results.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to wind turbine construction including the hardstand footprint as well as the temporary laydown areas is expected to decrease as a result of the implementation of the flow-chart as well as the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP are summarised below:

Condition 1: The Cultural Heritage Management Plan (CHMP): a hard copy of the CHMP must always be available on site. The Sponsor, site supervisor and relevant supervisory staff and onsite personnel must be aware of the conditions and contingency plans concerning Aboriginal heritage.

Condition 2: Cultural Heritage Induction: a cultural heritage induction must be held prior to the commencement of any onsite work within the activity area. Additional cultural heritage inductions must be held, as required, to ensure that newly appointed personnel involved in ground disturbing works have been inducted.

Condition 3: Notification of activity milestones: the Sponsor must notify GMTOAC of the commencement and completion of the activity. Furthermore, the Sponsor must notify GMTOAC of any changes to the activity area documented within the CHMP as well as the outcomes of the predictive model applications to specific management conditions resolution flow chart.

Condition 4: Non-compliance with management conditions and contingency plans: non-compliance issues must result in a stop-work situation (within scope of impact works triggering non-compliance) until such time as a meeting can be held between the RAP, the Sponsor and a suitably qualified heritage advisor.

Condition 5: Compliance Inspections: a series of compliance inspections will be conducted before, during, and after the construction phase of works. The compliance inspections will be conducted by a GMTOAC representative.

Condition 6: Management of Aboriginal cultural heritage: a heritage advisor must ensure that all Aboriginal cultural heritage material other than Aboriginal Ancestral Remains recovered from the Project Area are documented and stored properly until such time that the cultural heritage material can be repatriated back to Gunditjmara Country.

<u>Condition 7: Protocol for handling sensitive information</u>: apart from publicly available information there shall be no communication or public release of information concerning Aboriginal cultural heritage without the written permission of GMTOAC. Furthermore, no photographs of onsite cultural heritage, or information concerning Aboriginal cultural heritage is to be circulated to the media or via public media without the written permission of the GMTOAC.

11.1.1.2 Electrical reticulation

The proposed electrical reticulation consists of the construction of approximately 190 km of underground cabling throughout the wind farm site and electrical substations. Underground powerline construction in the wind farm site would involve the excavation of trenches to a depth of 0.8 m to 1.2 m unless other construction methods such as HDD are required. The general methodology for laying of the underground cables via trenching is documented in Section 3.4.1.

<u>Previously registered Aboriginal cultural heritage material</u>
<u>Components of</u> [redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place components.

Mitigation
With the reduction in turbine numbers during the project design phase, the amount of required underground reticulation was also reduced based on the revised turbine layout.

To mitigate impacts to the Aboriginal place, the underground reticulation would be realigned through detailed design if possible. However, if works cannot be realigned to avoid the components of the Aboriginal place, the following must occur, subject to approval of the CHMP:

- The extent, nature, and significance of the components must be ascertained as part of the CHMP process.
- Specific management conditions will be implemented to minimise harm to the components of the Aboriginal Place. These specific management conditions will be drafted and approved by GMTOAC.
- GMTOAC may undertake inspection(s) during the construction and installation of the underground electricity reticulation to ensure that no further Aboriginal cultural heritage material relating to [redacted] is identified during the proposed works. If further Aboriginal cultural heritage material is identified during the proposed works, the contingency measures documented within the approved CHMP must be implemented.

Residual Impact
With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted]

[redacted] could be impacted by the proposed works.

Mitigation

To mitigate impacts to the Aboriginal place, the underground reticulation would be realigned through detailed design if possible. However, if the underground reticulation works cannot be realigned to avoid the Aboriginal place, the following must occur, subject to approval of the CHMP:

- The extent, nature, and significance of the components must be ascertained as part of the CHMP process
- Specific management conditions will be implemented to minimise harm to the components of the Aboriginal Place. These specific management conditions will be drafted and approved by GMTOAC.
- GMTOAC may undertake inspection(s) during the construction and installation of the underground electricity reticulation to ensure that no further Aboriginal cultural heritage material relating to [redacted] is identified during the proposed works. If further Aboriginal cultural heritage material is identified during the proposed works, the contingency measures documented within the approved CHMP must be implemented.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

11.1.1.3 Main substation

A main substation is required to facilitate the connection of the Project to the existing electrical network. The main substation will be located near the eastern boundary of the wind farm and have a footprint of up to 3.3 ha. The substation will be constructed on hardstand with appropriate bunding and concrete slabs for contamination/stormwater controls. Fencing will enclose the substation with space for a firebreak and screening around the perimeter.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed substation locations in the areas that were assessed.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the location of the proposed main substation. Construction of the main substation will impact surface and subsurface soils to the depth required for the hardstand, bunds and concrete slab as well as fence posts.

Assessing the proposed location for the main substation against the phase 3 predictive model (refer to section 8.5) produces the following breakdown regarding the sensitivities:

Table 30 Area of surface sensitivity – main substation

Sensitivity rating	Sum of area (m^2)	% of overall area
High	0	0%
Moderate	97.5	0.3%
Moderate-low	31,505.85	99.7%
Total	**31,603.35**	**100.0%**

Table 31 Area of subsurface sensitivity – main substation

Sensitivity rating	Sum of area (m^2)	% of overall area
High	97.5	0.3%
Moderate	32,505.85	99.7%
Moderate-low	0	0%
Low	0	0%
Total	**31,603.35**	**100.0%**

Table 34 and Table 35 shows that the location of the proposed main substation is located in a good position to likely not impact on unregistered surface Aboriginal cultural heritage material. None of the proposed location is within an area of high sensitivity and only 0.3% of the location is within an area of moderate sensitivity. The footprint of the proposed location for the main substation is also within an area of moderate sensitivity (99.7%) for subsurface Aboriginal cultural heritage material.

Mitigation

A surface survey must be undertaken of the location of the proposed main substation to ensure that no surface Aboriginal cultural heritage material is present. Further testing can be undertaken within the areas of moderate sensitivity for subsurface Aboriginal cultural heritage material to ensure no subsurface Aboriginal cultural heritage material is present. These mitigation measures are subject to GMTOAC approval. The final mitigation measure for the location of the proposed main substation will be documented within the approved CHMP.

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction for the main substation.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction of the main substation is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.1.4 Collector substations

Up to three collector substations will be constructed as part of the wind farm site to facilitate the collection and distribution of electricity that is generated from the wind turbines into the existing electricity network. Each of the collector substations will have a footprint up to 1 ha. The collector substations will be constructed on hardstands, with transformers mounted on concrete slabs. Each substation will be fully enclosed in security fencing.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed substation locations in the areas that were assessed.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the location of the proposed collector substations. Construction of the substations will impact surface and subsurface soils to the depth required for the hardstand, concrete slab as well as fence posts.

Assessing the proposed location for the main substation against the phase 3 testing model (refer to section 8.5) produces the following breakdown of the sensitivities:

Table 32 Area of surface sensitivity – collector substations

Collector substation identifier	Sensitivity rating	Sum of area (m^2)	% of overall area
West	High	134.03	1.3%
	Moderate	5,966.02	59.6%
	Moderate-low	3,903.94	39.0%
	Total	**10,003.99**	**100%**
Central	High	741.95	7.4%
	Moderate	5,229.16	52.3%

Collector substation identifier	Sensitivity rating	Sum of area (m^2)	% of overall area
	Moderate-low	4,028.35	40.3%
	Total	**9,999.46**	**100%**
East	High	457.64	4.6%
	Moderate	6,021.48	60.2%
	Moderate-low	3,523.12	35.2%
	Total	**10,002.23**	**100%**

Table 33 Area of subsurface sensitivity – collector substations

Collector substation identifier	Sensitivity rating	Sum of area (m^2)	% of overall area
West	High	2,178.28	21.8%
	Moderate	3,210.87	32.1%
	Moderate-low	1,189.26	11.9%
	Low	3,425.59	34.2%
	Total	**10,003.99**	**100%**
Central	High	0	0.0%
	Moderate	2,552.51	25.5%
	Moderate-low	2,169.81	21.7%
	Low	5,277.14	52.8%
	Total	**9,999.46**	**100%**
East	High	108.56	1.1%
	Moderate	5,156.09	51.5%
	Moderate-low	2,271.75	21.7%
	Low	2,465.82	52.8%
	Total	**10,002.23**	**100%**

Table 36 and Table 37 shows that the location of the collector substations (referred to as west, central and east in the tables above) are in relatively good positions to likely not impact on unregistered surface Aboriginal cultural heritage material. A total of 1.3% of the westernmost substation footprint is located within an area of high sensitivity for surface cultural heritage material. A total of 4.6% of the overall area of footprint for the easternmost substation is within an area of high sensitivity for surface artefacts and 7.4% of the overall area of the footprint for the centrally located substation. Similarly, the overall area for the three collector substations are also currently sited in locations to not impact on areas of high sensitivity for subsurface Aboriginal cultural heritage material: 0% of the overall area for the centrally located substation, 1.1% for the easternmost substation, and 21.8% for the westernmost substation.

Mitigation
A surface survey must be undertaken of the locations of the proposed collector substations to ensure that no surface Aboriginal cultural heritage material is present. Further testing can be undertaken within the areas of moderate sensitivity for subsurface Aboriginal cultural heritage material to ensure no subsurface Aboriginal cultural heritage material is present. These mitigation measures are subject to GMTOAC approval. The final mitigation measure for the location of the proposed main substation will be documented within the approved CHMP.

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction of the collector substations.

Residual Impact
The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction of the proposed collector substations is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.1.5 Onsite wind farm powerlines

Up to 27.8 km of high voltage powerlines will be installed to connect the collector substations to the main wind farm substation. The high voltage powerline will be overhead.

The powerline would transition to underground at the collector substation and run beneath the existing roads in the GTFP pine plantation to the Portland-Nelson Road / Sandy Hill Road intersection. From this intersection, the powerline would continue underground to the main wind farm substation.

Previously registered Aboriginal cultural heritage material

[redacted]

Impact
[redacted] No further material was identified at this time.

The location of [redacted] may not be impacted by the proposed powerline alignment.

Mitigation
The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The

approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to the low-density artefact distribution [redacted].

[redacted]

Impact

[redacted]

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted]. Further testing would need to be conducted to ascertain the nature, extent, and significance of the place.

The location of [redacted] may be impacted by the proposed powerline alignment.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

<u>A component of</u> [redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place component.

Mitigation

If the location of the powerline alignment cannot be sited to avoid the component of the Aboriginal place, the following must occur, subject to approval of the CHMP:

- The extent, nature, and significance of the place component must be ascertained as part of the CHMP process.
- Specific management conditions will be implemented to minimise harm to the component of the Aboriginal Place. These specific management conditions will be drafted and approved by GMTOAC.
- GMTOAC may undertake inspection(s) during the construction and installation of the powerline alignment (if required) to ensure that no further Aboriginal cultural heritage material relating to [redacted] is identified during the proposed works. If further Aboriginal cultural heritage material is identified during the proposed works, the contingency measures documented within the approved CHMP must be implemented.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

11.1.1.6 Transition stations

It is not known at the time of preparing this assessment if transition stations would be required and is dependent on the final powerline route alignment. If required, the transition stations would be located near the south-eastern corner of the wind farm site at the Portland-Nelson Road / Sandy Hill Road intersection. The footprint of the transition station would be approximately 1 ha and would contain terminal poles, cable termination structures, switchgear and protection equipment. Each transition station would be enclosed by security fencing.

Previously registered Aboriginal cultural heritage material

[redacted]

Impact

The final location of the transition stations (if required) is not known. However, [redacted] is located in proximity to [redacted].

[redacted]. No further material was identified at this time.

The location of [redacted] may not be impacted by the proposed works.

Mitigation

As the final location of the transition station is not known, the transition station (if required) must be sited in order to avoid the extent of the place.

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to the low-density artefact distribution [redacted]

[redacted]

Impact

The final location of the transition stations (if required) is not known. However, [redacted] is located in proximity to [redacted]

[redacted]

Mitigation

As the final location of the transition station is not known, the transition station (if required) must be sited in order to avoid the extent of the place.

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to artefact scatter [redacted]

A component of [redacted]

Impact

The final location of the transition stations (if required) is not known. However, [redacted] located in proximity to [redacted] components.

Mitigation

As the final location of the transition station is not known, the transition station (if required) must be sited in order to avoid the of the place point location. If the location of the transition station cannot be sited to avoid the component of the Aboriginal place, the following must occur, subject to approval of the CHMP:

- The extent, nature, and significance of the place component must be ascertained as part of the CHMP process.
- Specific management conditions will be implemented to minimise harm to the component of the Aboriginal Place. These specific management conditions will be drafted and approved by GMTOAC.
- GMTOAC may undertake inspection(s) during the construction and installation of the transition stations (if required) to ensure that no further Aboriginal cultural heritage material relating to [redacted] is identified during the proposed works. If further Aboriginal cultural heritage

material is identified during the proposed works, the contingency measures documented within the approved CHMP must be implemented.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

<u>*Previously unregistered Aboriginal cultural heritage material*</u>

Impact

Construction and excavation for the approximately 1 ha footprint of the transition station (if required) will impact surface and subsurface soils to the required depth of excavation.

Mitigation

Once it has been determined if the transition station is required for the Project. The location of the transition station can be assessed for proposed sensitivities for surface and subsurface artefacts using the GMTOAC led predictive model.

Following on the results from the predictive model, a surface survey must be undertaken of the location of the proposed transition station (if required) to ensure that no surface Aboriginal cultural heritage material is present. Further testing can be undertaken within the areas of moderate sensitivity for subsurface Aboriginal cultural heritage material to ensure no subsurface Aboriginal cultural heritage material is present. These mitigation measures are subject to GMTOAC approval. The final mitigation measure for the location of the proposed transition station (if required) will be documented within the approved CHMP.

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction for the transition station.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction of the transition station is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.1.7 Transmission line

The Project would require a new 275 kV transmission line to connect the Project to the existing transmission network. The proposed transmission line route measures approximately 26.6 km in length and would extend underground from the main wind farm substation near the eastern boundary of the wind farm site to the existing Heywood Terminal Station. The transmission line would bisect the Cobboboonee National Park and Cobboboonee Forest Park for approximately 17.6 km, where it would be buried beneath the existing road (Boiler Swamp Road) before continuing through freehold agricultural land for another 9 km.

As documented in section 3.4.3, construction methodology for the transmission line primarily consists of trenching. Within the Parks, the cabling would be buried at a depth of approximately 1.25 m beneath an existing road (Boiler Swamp Road) using a specialised machine that uses integrated excavation, cable laying and backfilling equipment. This method excavates, lays the cable and backfills the trench in a single pass, minimising the associated construction footprint through small trench widths and minimal spoil generation. The transmission line requires three adjacent underground cables that need to be separated for thermal efficiency reasons, which means that three separate, and adjacent, trenches would be needed beneath Boiler Swamp Road. Indicative trench dimensions are shown in Plate 1 and overlaid on a photo of Boiler Swamp Road at Plate 2.

Horizontal direction drilling (HDD) is proposed to be used at several locations along the transmission line route. HDD involves drilling a hole through the ground through which the cables are pulled, avoiding the need for open trenching. It is useful for burying cables underneath surface waterbodies which would require dewatering if trenching was to be used, and for avoiding services that cannot be removed or reinstated.

HDD would be used at several crossings of the Surrey River to avoid interaction with the waterway and riparian zone, thereby reducing the risk of transporting sediment into nearby waterways. The proposed locations of HDD are shown in Figure 1.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed transmission line alignment in the areas that were assessed.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact

Revisions to the proposed transmission line have already been undertaken including replacement of the overhead section of the transmission line between Cobboboonee Forest Park and Heywood Terminal Station with an underground line. As such, the full length of the alignment is underground.

The proposed construction methodology for the transmission alignment is underground. The underground route through Cobboboonee National park / Forest Park has been reduced in size to 6.5 m wide to minimise impacts on potential Aboriginal cultural heritage within the Boiler Swamp Road corridor, that would have been subject to previous disturbance from the construction of the existing road. Furthermore, it is proposed that the transmission line cabling is installed using a specialist machine that excavates, lays the cable and backfills the trench in a single pass. This construction methodology minimises the associated construction footprint through small trench widths and minimal spoil generation. Once the alignment is outside Cobboboonee Forest Park, the construction footprint would be approximately 9 m wide with an open-cut trenching construction methodology.

No previously identified or recorded Aboriginal places are located within the location of transmission line in the areas that were assessed. Furthermore, an options assessment was undertaken to assess the proposed locations for the siting of the transmission line (refer to Appendix 5).

No Aboriginal cultural heritage material was identified along the proposed alignment at Boiler Swamp Road during the standard assessment conducted by Aurecon or during the phase 1 or phase 2 testing conducted by ALA.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction of the transmission line.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction and installation of the underground transmission line is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.1.8 Site access and access tracks

<u>Site access</u>

The Project Area consists of several existing roads. There are ten site access points proposed that will connect to the existing network of internal access roads in the commercial forestry and adjoining farmland. Nine of the ten access points are currently used for commercial forestry operations and would be used for delivering wind turbines and other Project components and materials to the wind farm site. The additional access point would be used for accessing farmland.

Upgrade requirements would be required for each of the ten access points. These upgrade requirements would consist of laying with temporary pavement as well as the removal of vegetation within the blade swept path, temporary removal of fences and other infrastructure at some locations.

Table 38 documents that two of the ten proposed site access points are in proximity to the registered and preliminary recorded Aboriginal places [redacted]

Table 34 Location of proposed site access points in relation to registered and preliminary Aboriginal places

Site Access ID	Intersection	Upgrade requirements	Impacts to Aboriginal cultural heritage places
SE1	Portland-Nelson Road – Sandy Hill Road	• Temporary pavement to be constructed along OSOM wheel-path	[redacted]
SE2	Portland-Nelson Road – New site entrance (opposite Sandy Hill Road)	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Remove and reinstate property boundary fence and gate (if required)	
SE3	Portland-Nelson Road – Wilson Lower Road	• Temporary pavement to be constructed along OSOM wheel-path	• None at the time of preparing this assessment
SE4	Portland-Nelson Road – Windmill Road	• Temporary pavement to be constructed along OSOM wheel-path	• None at the time of preparing this assessment

Site Access ID	Intersection	Upgrade requirements	Impacts to Aboriginal cultural heritage places
SE5	Portland-Nelson Road – Cowlands Lower Road	• N/A – not used for OSOM access	• None at the time of preparing this assessment
SE6	Portland-Nelson Road – Nine Mile Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path	• None at the time of preparing this assessment
SE7	Portland-Nelson Road – Lightbody Road	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path • Extend pipe culvert to suit new intersection (remove and replace if necessary)	• None at the time of preparing this assessment
SE8	Portland-Nelson Road – New site entrance (adjoining Dewars Road)	• Temporary pavement to be constructed along OSOM wheel-path • Remove and reinstate wooden street marker post	• None at the time of preparing this assessment
SE9	Portland-Nelson Road – Unnamed Road	• Temporary pavement to be constructed along OSOM wheel-path	• None at the time of preparing this assessment
SE10	Portland-Nelson Road – new site entrance (adjoining Nelson No. 1 Road)	• Remove vegetation within blade swept path • Temporary pavement to be constructed along OSOM wheel-path	• None at the time of preparing this assessment

__Previously registered Aboriginal cultural heritage material__

[redacted]

Impact

The points location for [redacted] No further material was identified at this time.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to the low-density artefact distribution [redacted]

Impact

[redacted] is located in proximity t [redacted]

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

A component of [redacted]

Impact

[redacted] is located in proximity to [redacted]

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place components.

Mitigation

If the location of site access locations SE1 and SE2 cannot be sited to avoid the component of the Aboriginal place, the following must occur, subject to approval of the CHMP:

- The extent, nature, and significance of the place component must be ascertained as part of the CHMP process.
- Specific management conditions will be implemented to minimise harm to the component of the Aboriginal Place. These specific management conditions will be drafted and approved by GMTOAC.
- GMTOAC may undertake inspection(s) during the construction and installation of the site access points to ensure that no further Aboriginal cultural heritage material relating to [redacted] is identified during the proposed works. If further Aboriginal cultural heritage material is identified during the proposed works, the contingency measures documented within the approved CHMP must be implemented.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

Previously unregistered Aboriginal cultural heritage material

Impact

Construction and excavation for the widening of the site access points will impact surface and subsurface soils to the required depth of excavation. Construction and excavation in areas of existing roadways, shoulders, etc will likely not impact on Aboriginal cultural heritage material.

Mitigation

The final locations of the site access widening and upgrade works that consist of ground disturbance in areas outside of existing road works can be assessed for proposed sensitivities for surface and subsurface artefacts using the GMTOAC led predictive model.

Following on the results from the predictive model, a surface survey must be undertaken of the location of the proposed site access points to ensure that no surface Aboriginal cultural heritage material is present. Further testing can be undertaken within the areas of moderate sensitivity for subsurface Aboriginal cultural heritage material to ensure no subsurface Aboriginal cultural heritage material is present. These mitigation measures are subject to GMTOAC approval. The final mitigation measure for the location of the proposed transition station (if required) will be documented within the approved CHMP.

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction for the site access points.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction and excavation for the widening of the site access points is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

Access tracks

The locations of the proposed access tracks are documented in Figure 1.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed access tracks in the areas that were assessed.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed access tracks. Many of the proposed access tracks are within existing access road alignments. Construction and excavation of the existing access tracks for widening, where required, will impact surface and subsurface soils to the required depth of excavation.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the excavation, where required, for access track construction and/or upgrade works.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the excavation for the access tracks is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.1.9 Onsite quarry

The construction of the new limestone quarry will have a maximum footprint of 11 ha and up to 15 m in depth. The quarry will operate during the construction and operation phases of work. Construction of the quarry will impact on ground surfaces and former land surfaces. It is noted that the proposed quarry will be located adjacent to an existing quarry operated by GTFP on North Livingston Road. At the time of preparing this assessment there were no previously recorded Aboriginal places within the extent of the existing quarry or immediate surrounds.

Previously registered Aboriginal cultural heritage material

Impact
No previously identified or recorded Aboriginal places are located within the proposed quarry location in the areas that were assessed.

Mitigation
As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact
There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact
No previously identified or recorded Aboriginal places are located within the location of the proposed quarry. Assessing the quarry location against the phase 3 predictive model (refer to section 8.5) produces the following breakdown of sensitivities within the proposed quarry area:

Table 35 Area of surface sensitivity - quarry

Sensitivity rating	Sum of area (m^2)	% of overall area
High	19,499.25	10.8%
Moderate	101,708.63	56.3%
Moderate-low	59,416.75	32.9%
Total	**180624.64**	**100.0%**

Table 36 Area of subsurface sensitivity - quarry

Sensitivity rating	Sum of area (m^2)	% of overall area
High	16,761.35	9.3
Moderate	53,236.43	29.5%
Moderate-low	34,186.07	18.9%
Low	76,440.79	42.3%
Total	**180,624.64**	**100.0%**

Table 39 and Table 40 shows that the majority of the proposed quarry location (56.3%) has been predicted to be within an area of moderate archaeological sensitivity, and 32.9% within an area of moderate to low sensitivity for surface Aboriginal cultural heritage.

Mitigation

Further data is required to test the accuracy of the GMTOAC led iterative predictive model. This data will also provide better accuracy into artefact densities. More data and better accuracy will give GMTOAC and the Sponsor better certainty over how to mitigate potential Aboriginal cultural heritage material that may be present. Further data will be derived from further surveys and possible subsurface excavation within the areas of archaeological sensitivity. The requirement for further survey/subsurface testing will be determined by GMTOAC upon further consultation during the CHMP.

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the excavation of the quarry.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction and expansion of the proposed quarry is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.1.10 Meteorological monitoring masts

The Project would involve installation of up to eight meteorological monitoring masts. All masts would be permanent structures supported by small concrete foundation and guy wires. The locations of the masts are not currently known and would be determined during detailed design.

Previously registered and unregistered Aboriginal cultural heritage material

Impact

As the location of the meteorological masts were not known at the time of preparing this assessment, it could not be assessed if previously identified or recorded Aboriginal places are located within the eight mast locations.

Minimal ground disturbance is likely required for the concrete foundations. As such, the meteorological masts can be located in an area of low archaeological sensitivity, with the below mitigation measures proposed.

Mitigation

The final locations of the eight meteorological masts can be assessed for proposed sensitivities for surface and subsurface artefacts using the GMTOAC led predictive model.

Following on the results from the predictive model, a surface survey must be undertaken of the location of the eight meteorological mast locations to ensure that no surface Aboriginal cultural heritage material is present. Further testing can be undertaken within the areas of moderate sensitivity for subsurface Aboriginal cultural heritage material to ensure no subsurface Aboriginal cultural heritage material is present. These mitigation measures are subject to GMTOAC approval. The final mitigation measure for the location of the proposed transition station (if required) will be documented within the approved CHMP.

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction for the site access points.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within eight locations for the meteorological masts is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.1.11 Permanent site compound

The Project would involve construction of one or two permanent site compounds for operation and maintenance of the Project. Each compound would have a footprint of approximately 0.35 ha (50 m x 70 m).

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the locations of the permanent site compounds in the areas that were assessed.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the permanent site compounds in the areas that were assessed.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction of the permanent site compounds.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction of the permanent site compounds is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.2 Construction of temporary ancillary infrastructure on tangible heritage

11.1.2.1 Concrete batching plants

Up to three concrete batching plants will be constructed in the Project Area. The concrete batching plants may be mobile to allow the concrete batching to occur close to wind turbine foundations. Each plant would have a footprint of approximately 1 ha and be accessed by internal access roads.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed concrete batching plant locations in the areas that were assessed.

However, the proposed location for the western concrete batching plant is located approximately [redacted] and the eastern concrete batching plant is located approximately [redacted]

Components of [redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place components.

Mitigation

If the concrete batching plants cannot be sited to avoid the components of the Aboriginal place, the following must occur, subject to approval of the CHMP:

- The extent, nature, and significance of the components must be ascertained as part of the CHMP process.
- Specific management conditions will be implemented to minimise harm to the components of the Aboriginal Place. These specific management conditions will be drafted and approved by GMTOAC.
- GMTOAC may undertake inspection(s) during the construction of the footprint for the concrete batching plants to ensure that no further Aboriginal cultural heritage material relating to [redacted] is identified during the proposed works. If further Aboriginal cultural heritage material is identified during the proposed works, the contingency measures documented within the approved CHMP must be implemented.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

Previously unregistered Aboriginal cultural heritage material

Impact

Construction of the batching plants will impact surface and subsurface soils to the depth required for the 1 ha footprint.

Assessing the proposed location for the concrete batching plants the phase 3 testing model (refer to section 8.5) produces the following breakdown of the sensitivities:

Table 37 Area of surface sensitivity – concrete batching plants

Collector substation identifier	Sensitivity rating	Sum of area (m²)	% of overall area
Western batch plant	High	2,208.91	22.1%
	Moderate	4,691.23	46.9%
	Moderate-low	3,099.86	31.0%
	Low	0	0.0%
	Total	**10,000.00**	**100%**
Eastern batch plant	High	0	0.0%
	Moderate	2,133.02	21.3%
	Moderate-low	7,432.99	74.3%
	Low	433.22	4.3%
	Total	**9,999.22**	**100%**

Table 38 Area of subsurface sensitivity – concrete batching plants

Collector substation identifier	Sensitivity rating	Sum of area (m²)	% of overall area
Western batch plant	High	4,514.99	45.1%
	Moderate	5,218.00	52.2%
	Moderate-low	119.64	1.2%
	Low	147.37	1.5%
	Total	**10,000.00**	**100%**
Eastern batch plant	High	3,031.59	30.3%
	Moderate	3,802.17	38.0%
	Moderate-low	2,932.49	29.3%
	Low	232.97	2.3%
	Total	**9,999.22**	**100%**

Table 41 and Table 42 shows that the location of the western and eastern concrete batching plants are in relatively good positions to likely not impact on unregistered surface Aboriginal cultural heritage material. A total of 22.1% of the western batching plant is located within an area of high sensitivity for surface cultural heritage material. A total of 0.0% of the overall area of footprint for the eastern batching plant is within an area of high sensitivity for surface artefacts.

A total of 45.1% of the western batching plant is located within an area of high sensitivity for subsurface cultural heritage material. A total of 30.3% of the overall area of footprint for the eastern batching plant is within an area of high sensitivity for subsurface artefacts.

Mitigation

A surface survey must be undertaken of the locations of the proposed concrete batching plants to ensure that no surface Aboriginal cultural heritage material is present. Further testing can be undertaken within the areas of moderate sensitivity for subsurface Aboriginal cultural heritage material to ensure no subsurface Aboriginal cultural heritage material is present. These mitigation measures are subject to GMTOAC approval. The final mitigation measure for the location of the proposed concrete batching plants will be documented within the approved CHMP.

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction of the concrete batching plants.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction of the proposed concrete batching plants is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.2.2 Temporary construction compounds

Up to six temporary construction compounds are proposed as part of the Project which would house site offices, car parking, storage, amenities, and workshops.

The construction methodology for the construction compounds will consist of a various depths of cut and fill dependent on ground conditions at each location.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed temporary compound locations in the areas that were assessed.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the location of the construction compounds. Construction of the temporary construction compounds will impact surface and subsurface soils to the required depth of excavation.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction of the temporary construction compound.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction of the temporary construction compounds is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.2.3 Temporary construction laydown areas

These laydown areas would be used for temporary storage of wind farm and transmission line equipment and materials and would be rehabilitated following completion of construction. Each laydown area would have a footprint of approximately 1 ha and be accessed by internal access roads.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the proposed temporary laydown locations in the areas that were assessed.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the locations of the proposed laydown areas. Construction of the temporary laydown areas will impact surface and subsurface soils to the required depth of excavation.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction of the temporary laydown areas.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction of the temporary laydown areas is expected to decrease as a result of the preparation and implementation of an approved CHMP.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Project Area, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

The general management conditions of the CHMP, as provided by GMTOAC, are summarised in Section 10.1.1.1.

11.1.3 Aboriginal places within the Project Area not impacted by proposed works

[redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted] No further shell material or stone tools were identified at this time.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted] No further material was identified at this time.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted]. No further material was identified at this time.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted].

[redacted]

Impact

[redacted] Additional artefacts were identified at this time.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]).

[redacted]

Impact

[redacted]

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted]

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted]

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted]

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

[redacted]

Impact

[redacted]

Further testing would need to be conducted to ascertain the nature, extent, and significance of the place.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with

protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, and significance of the place and to ensure that the identified artefacts are related to the same place.

The location of [redacted] will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to [redacted]

Impact

[redacted] Further testing would need to be conducted to ascertain the nature, extent, to ensure that the locations are defined as LDADs.

[redacted] (refer to section 10.1.1.2). The remaining [redacted] components of the place will not be impacted by the proposed works.

Mitigation

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Residual Impact

With implementation of the mitigation measures (subject to approval of the CHMP), there will be no residual impact to the [redacted]

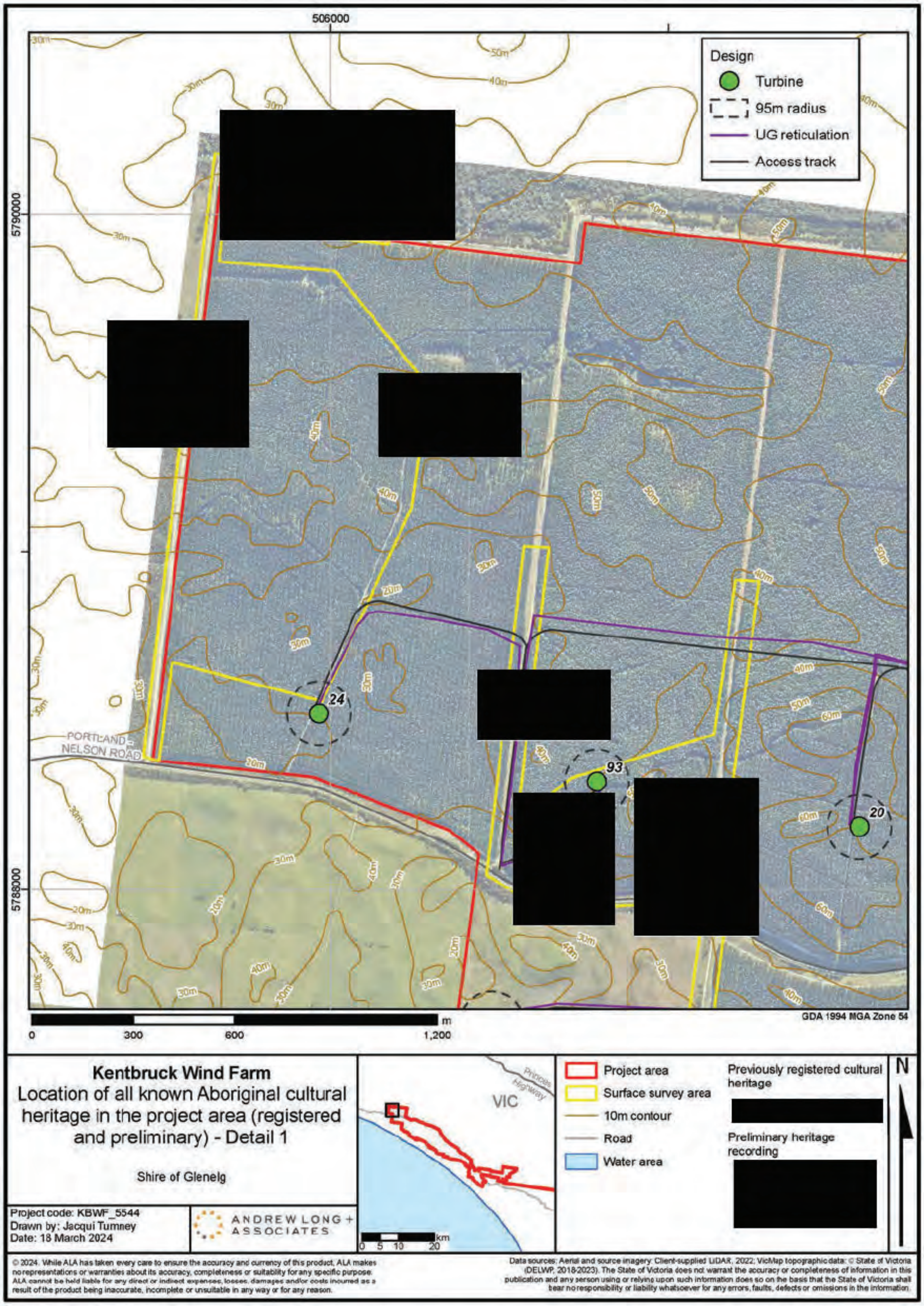


Figure 102 **Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 1**

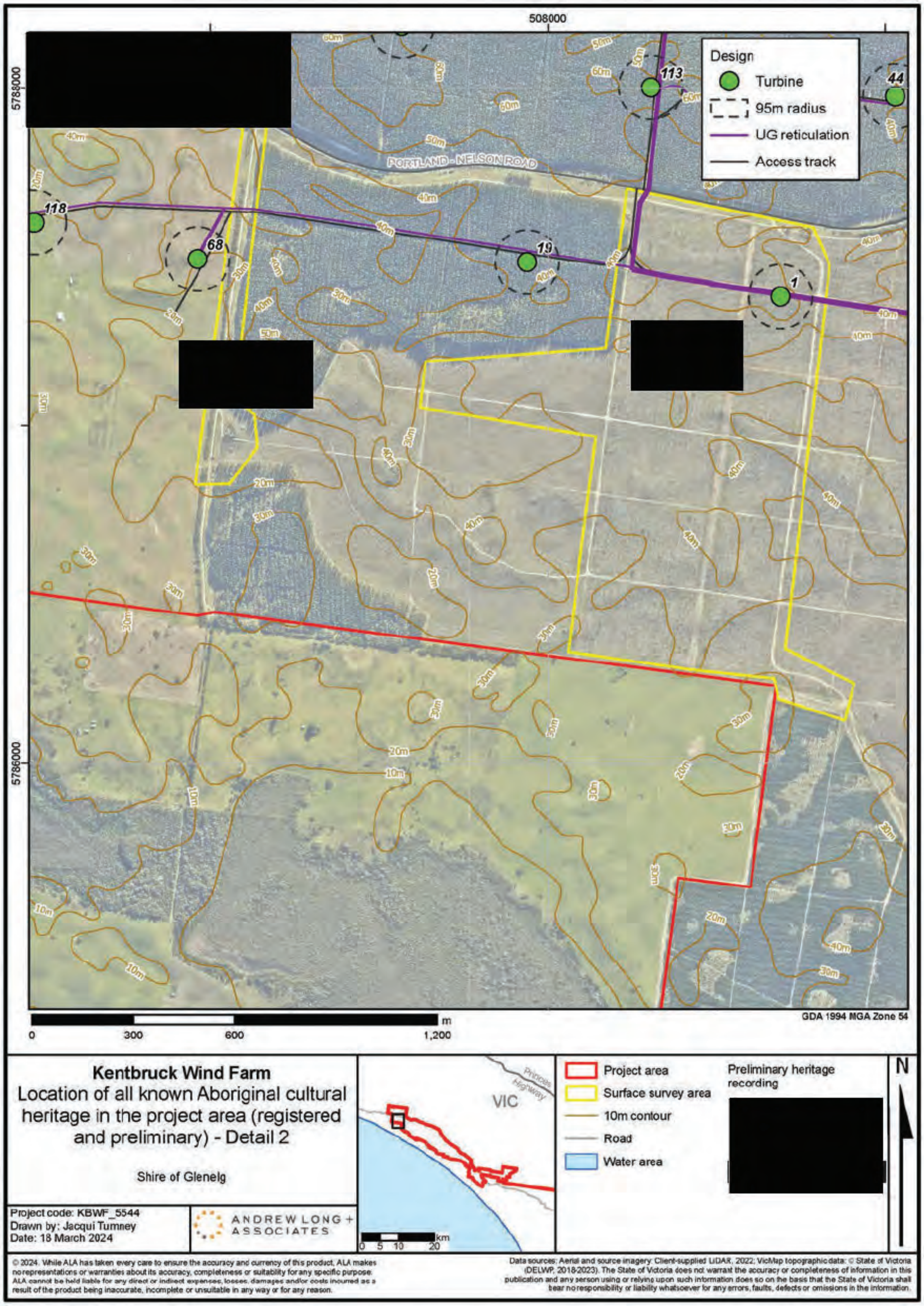


Figure 103 **Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 2**

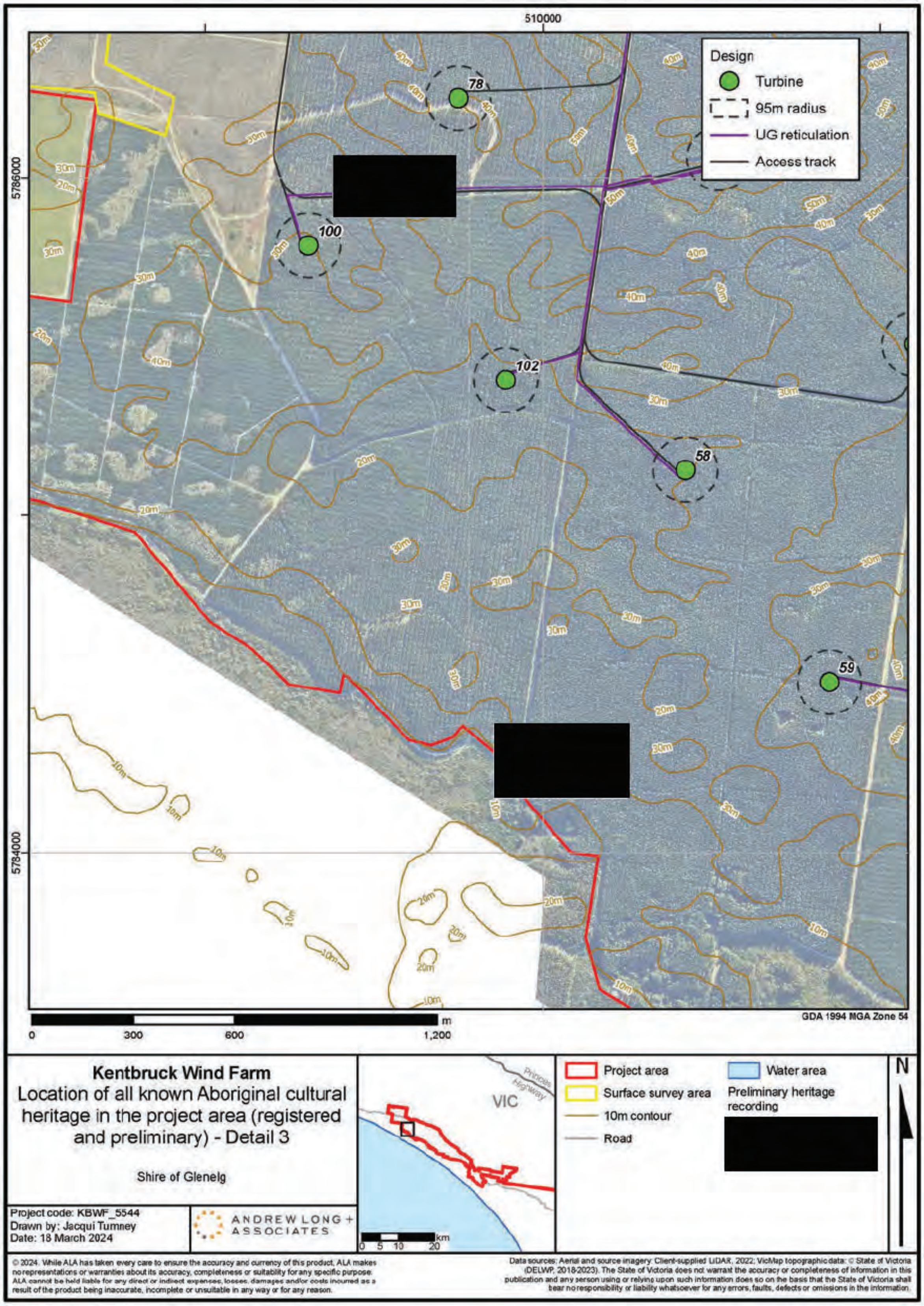


Figure 104 Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 3

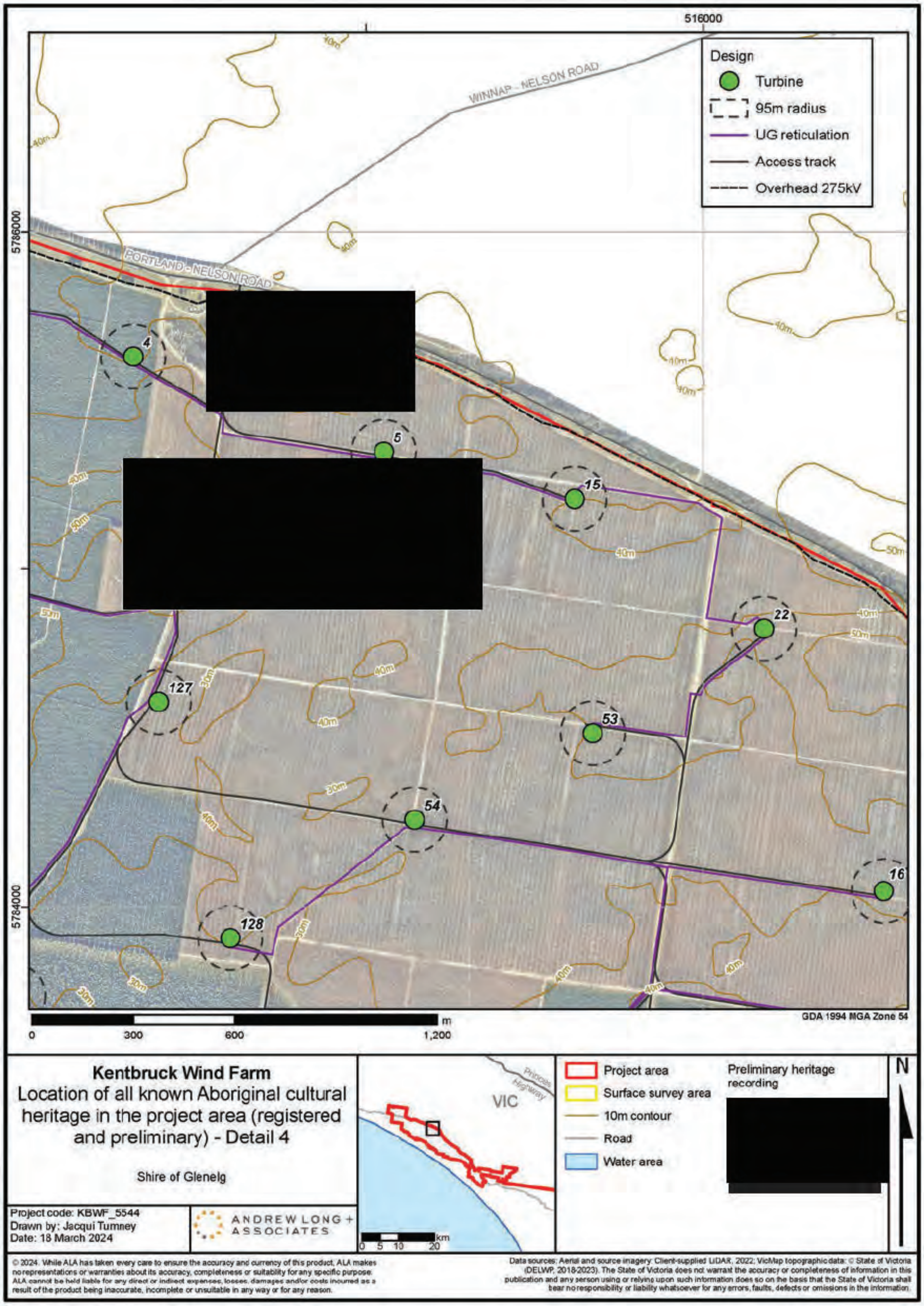


Figure 105 **Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 4**

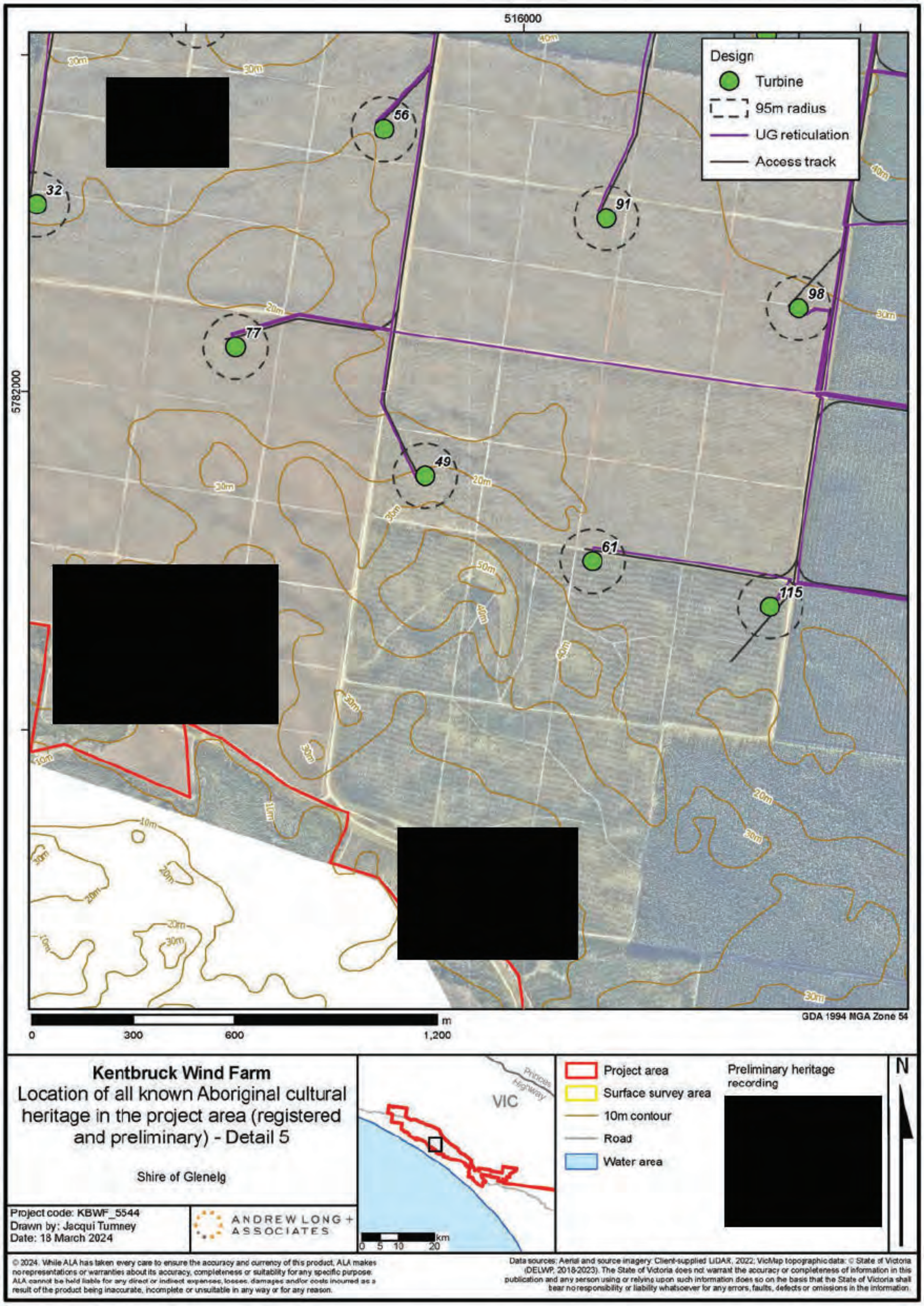
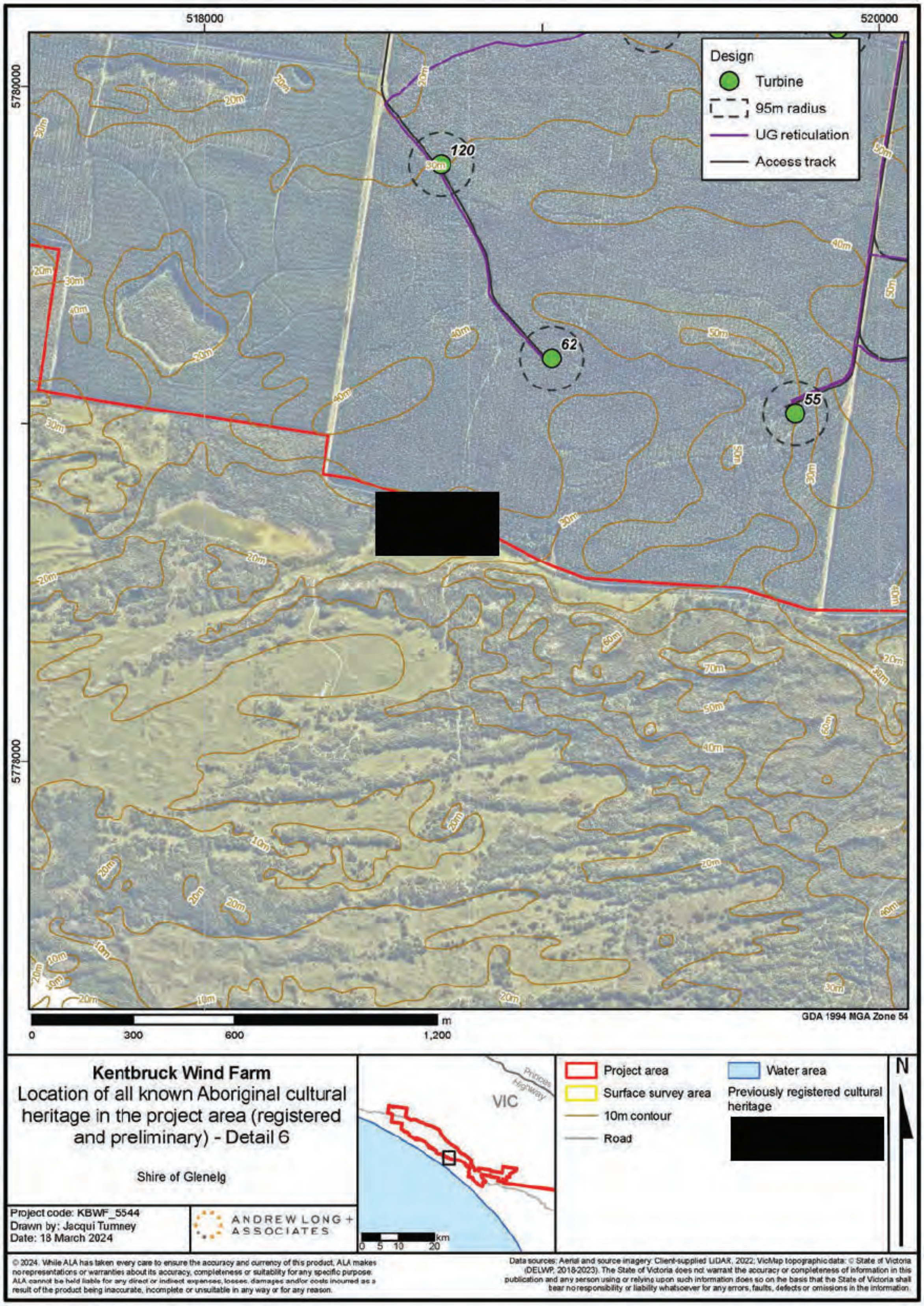


Figure 106 Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 5



Data sources: Aerial and source imagery: Client-supplied LIDAR, 2022; VicMap topographic data: © State of Victoria (DELWP, 2018-2023). The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

Figure 107 **Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 6**

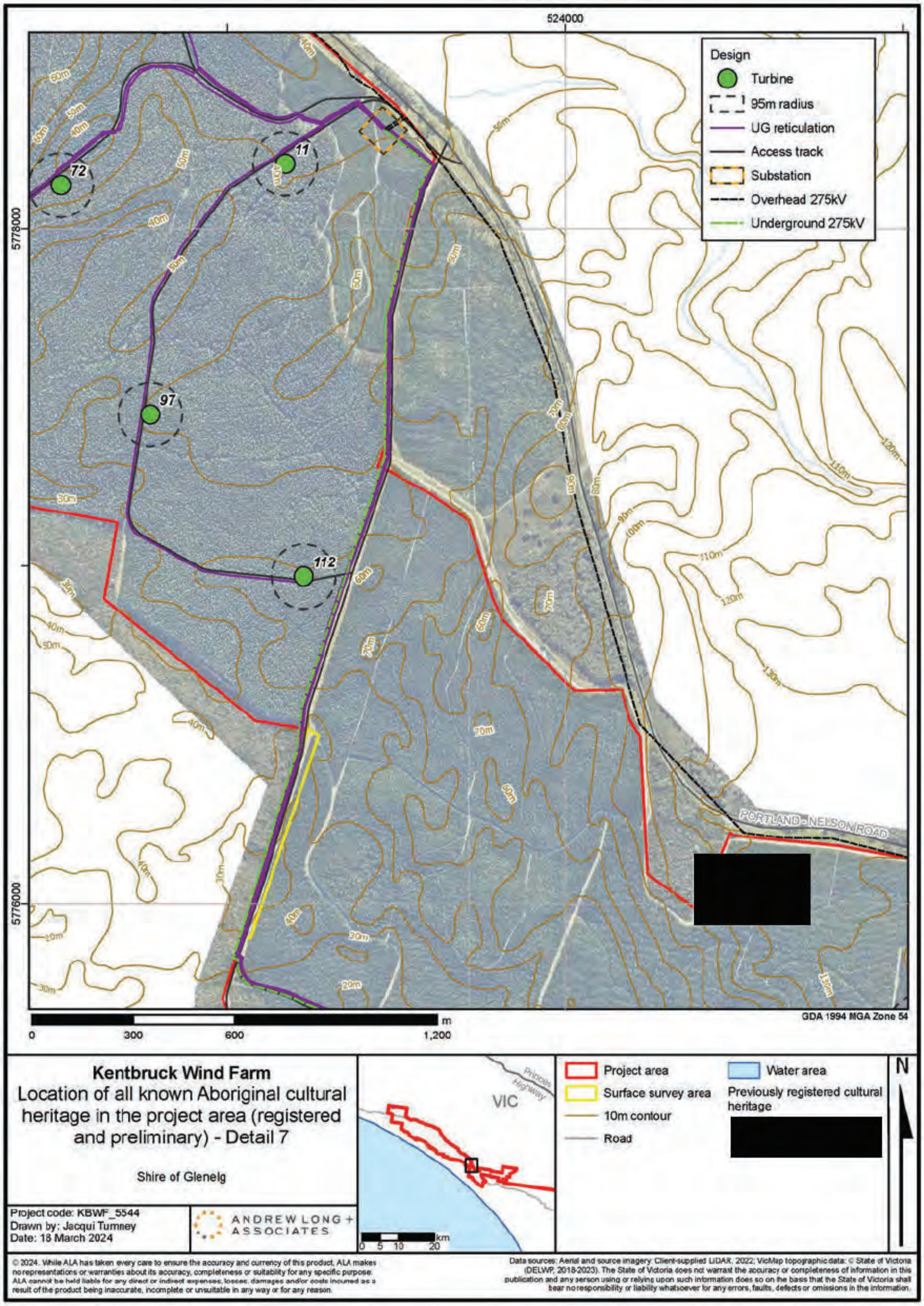


Figure 108 Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 7

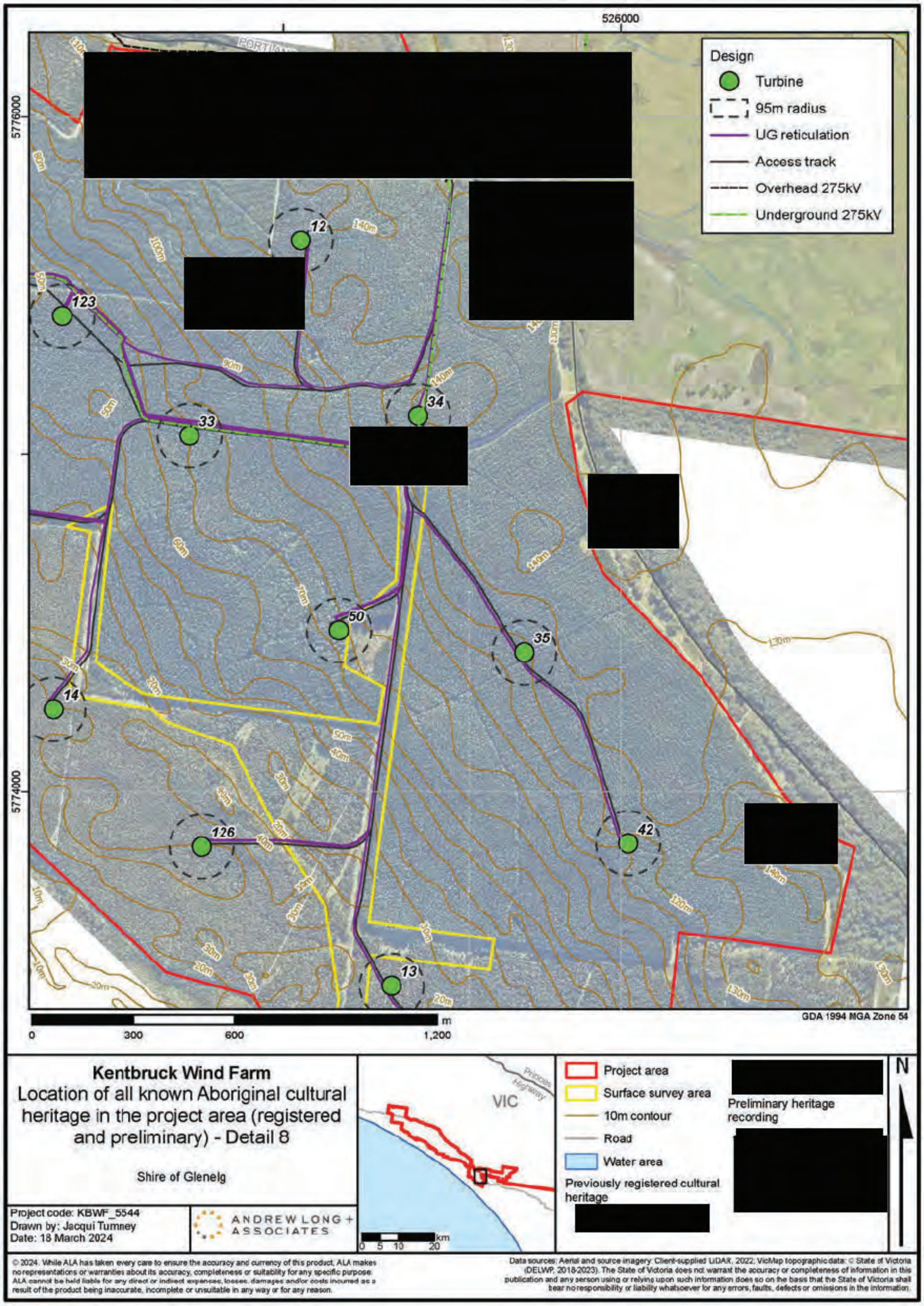


Figure 109 Location of known (identified and previously recorded) Aboriginal places in relation to proposed works – Detail 8

11.1.4 Impacts to intangible, non-archaeological Aboriginal heritage place(s) and/or values

Impact

Indirect effects to Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest) as well as potential indirect effects to Sky Country, cultural view lines, the cultural linkages and the sounds of Gunditj Mirring Country during the construction phase of the project.

Mitigation

The EES includes mitigation measures to avoid/minimise impacts to biodiversity and habitat, flora and fauna of the Project Area, aquatic environments, landscape and visual amenity, as well as noise and vibration, that will, in turn, avoid/minimise the indirect effects to the cultural values of Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest).

Intangible heritage identified during the CVA/ILUA process can be considered and managed in the approved CHMP that will provide processes to manage harm to intangible heritage during the construction phase by detailed conditions and contingency plans. This may consist of the VAHR registration of places identified by GMTOAC upon further consultation with GMTOAC. Furthermore, intangible heritage will also be managed through ongoing consultation and stakeholder engagement with GMTOAC. GMTOAC must continue to be consulted, and involved where practicable, before, during, and after the construction phase. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the construction phase of works.

Those intangible heritage places not associated with a registered place, or those that GMTOAC do not wish to have registered on the VAHR, will be managed through consultation with GMTOAC, employing GMTOAC Research Principles and Guidelines in addition to any prepared CVA recommendations as part of the ILUA.

Residual impact

Residual impacts are those that remain once mitigation and management measures have been implemented. The level of risk to intangible, non-archaeological Aboriginal heritage places and/or values that may be situated within the Project Area is expected to decrease as a result of the implementation of an approved CVA.

11.2 Operation impacts

11.2.1 Registered Aboriginal places

Direct effects on the [redacted] identified within, and in proximity to, the proposed electrical reticulation alignment would cease with the completion of the construction phase of work.

The mitigation measures documented within the approved CHMP will help to ensure that no direct or indirect effects occur to the previously registered Aboriginal places during the operational phase of works.

11.2.2 Unregistered Aboriginal places

Direct effects on unregistered Aboriginal places that may be identified within the Project Area would largely cease with the completion of the construction phase of work. As such, no impacts associated with the operational phase of the project on Aboriginal heritage places have been identified.

The onsite quarry as well as the wind turbines will continue to be in use throughout the operational phase of works. However, potential direct effects to unregistered Aboriginal places is unlikely to occur during the operational phase of works.

11.2.3 Intangible, non-archaeological Aboriginal heritage place(s) and/or values

Once constructed, the wind farm, with associated infrastructure, will have no further impacts from ground disturbance during the operational works. As such, there are likely to be no further additional impacts to cultural view lines and cultural linkages from the operation of the windfarm and associated infrastructure. There may be impacts from the operational noise of the windfarm that could impact on the sounds of Gunditj Mirring Country. However, GMTOAC are the only people who can make an assessment about whether changes to the landscape from this project will or will not have an effect on the significance of intangible cultural values.

Intangible heritage impacted during the operational phase of works will be managed through ongoing consultation and stakeholder engagement with GMTOAC. GMTOAC must continue to be consulted, and involved where practicable, before, during, and after the operational phase. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the operational phase of works.

The level of risk to intangible, non-archaeological Aboriginal heritage places and/or values that may be situated within the Project Area is expected to decrease to low or negligible as a result of the implementation of an approved CHMP.

11.3 Decommissioning impacts

11.3.1 Registered Aboriginal places

Direct effects on the [redacted]) identified within, and in proximity to, the proposed electrical reticulation alignment would cease with the completion of the construction phase of work.

The mitigation measures documented within the approved CHMP will help to ensure that no direct or indirect effects occur to the previously registered Aboriginal places during decommissioning and rehabilitation works.

11.3.2 Unregistered Aboriginal places

Ground disturbance during decommissioning will be limited to areas that have already been disturbed during the construction phase. Therefore, no additional impacts to unregistered Aboriginal cultural heritage material (if present) are anticipated during rehabilitation works.

11.3.3 Intangible, non-archaeological Aboriginal heritage place(s) and/or values

Impact
The decommissioning/rehabilitation phase of the wind turbines could have indirect effects on Indirect effects to cultural view lines, cultural linkages and the sounds of Gunditj Mirring Country.

Mitigation
Once the wind farm project is decommissioned, rehabilitation works can offer an opportunity to have a positive effect on intangible heritage by identifying ways in which Gunditjmara cultural values and intangible heritage may be used to produce tangible results. As such, GMTOAC should be consulted and involved in rehabilitation works as part of the project.

Furthermore, meaningful and respectful consultation with GMTOAC must be undertaken in relation to potential project opportunities for further GMTOAC coordination and participation during the rehabilitation works.

Residual impact

The level of risk to intangible, non-archaeological Aboriginal heritage places and/or values that may be situated within the activity area is expected to decrease as a result of addressing the recommendations of the CVA and implementation of an approved CHMP.

11.4 Cumulative impacts

This section provides an assessment of cumulative impacts with other currently operational wind farm developments in the same regional context as the Project.

11.4.1 Other wind farm projects

Cumulative effects on tangible and intangible Aboriginal cultural heritage may result from multiple wind farm development. For the purpose of evaluating cumulative impacts, this assessment has identified several currently operational wind farms in the same regional context as the Project. Table 43 documents those operational wind farm developments

Table 39Wind farm developments in same regional context as Project

Wind farm development	Turbine top height (metres above ground level)	Status	Number of turbines	Approximate distance to Project Area (km)
Cape Bridgewater Wind Farm	110 m	Operating since 2008	29	19.5
Cape Nelson South Wind Farm	110 m	Operating since 2009	22	19.5
Cape Nelson North and Cap Sir Willaim Grant Wind Farm	126.5 m	Operating since 2015	23	19.5
Codrington Wind Farm	81 m	Operating since 2001	14	51
Yambuk Wind Farm	106 m	Operating since 2005	20	57

__Portland Wind Energy Project EES, Cultural Heritage Study__

In 2001, a cultural heritage study was conducted for a proposed integrated windfarm consisting of sites at Cape Bridgewater, Cape Nelson, Cape Sir William Grant and Yambuk (Debney & Cekalovic, 2001). As part of the study, each of the wind farm locations were assessed and an archaeological constraints at each location was drafted.

At Yambuk, the wind turbines were sited to avoid all known Aboriginal places and areas of significance.

At Cape Bridgewater, 40 turbines were proposed, one of which would directly impact an [redacted] This particular turbine was not relocated as the Aboriginal place consisted of a low density of artefacts with additional low density artefacts likely to be located across the landscape and it would not be possible to avoid impacts to all such places. Those Aboriginal places in the general vicinity of wind turbines were to be fenced off and avoided by contractors.

At Cape Nelson, one of the proposed wind turbines would impact on a previously recorded [redacted] Similar to the conclusions at Cape Bridgewater, the wind turbine was not relocated as it would be impossible to avoid impacts to low density artefacts that will likely be recorded across the landscape.

Lastly, at Cape Sir William Grant, wind turbines could impact on two previously recorded Aboriginal places. One of these Aboriginal places, the [redacted] was within a highly disturbed context. The authors noted that those places within disturbed contexts have less scientific significance as the places have been subject to considerable disturbance.

Cape Nelson North and Cape Sir William Grant Wind Farm
The Cape Nelson North and Cape Sir William Grant Wind Farm is located 19.5 km to the southeast of the Project Area. CHMP 12857 was prepared prior to the construction of the wind farm. Prior to undertaking the assessment, several surface artefact scatters and shell middens were located within the proposed works areas. As a result of the assessment, an additional [redacted], with a total of [redacted] were recorded within the Cape Sir William Grant portion of the activity area and [redacted], containing a total of [redacted] were identified in the Cape Nelson North portion of the activity area.

Modifications were made to the proposed wind farm development to avoid Aboriginal cultural heritage places. However, some Aboriginal places were to be impacted by the proposed works. Mitigation measures to avoid/reduce harm to Aboriginal places consisted of the following:

- Build up tracks were possible to minimise ground disturbance associated within wind farm development and will minimise disturbance to a number of identified Aboriginal places as well as likely minimise disturbance to previously unregistered Aboriginal places (if present),
- Salvage excavation in turbine/hardstand locations where relative dense Aboriginal cultural heritage material is known to exist,
- Temporary fencing is to be employed to avoid accidental disturbance to known surface Aboriginal places during construction,
- Reinstatement of excavated soils to the vicinity of their original location post construction (where possible) in order to keep Aboriginal cultural heritage material (if present) as close to its original location, and
- GMTOAC to monitor particular areas and construction activities.

Codrington Wind Farm
The Codrington Wind Farm is located 51 km to the east of the Project Area. Prior to the construction of the wind farm, an archaeological survey (FP – SR Report No. 1486) was prepared for the proposed wind farm site (Cusack, An Archaeological Survey of a Proposed Wind Farm Site at Codrington, South-west Victoria, 1999).

During the archaeological survey, a total of [redacted] Aboriginal places, consisting of [redacted] were recorded. The survey concluded that the proposed wind farm site was located within an area of high archaeological potential. As such, the survey concluded that once the location of the proposed turbines was known, subsurface testing should be undertaken to establish the impact the wind farm development would have on Aboriginal cultural heritage values. Following on from the subsurface excavation and applying for consent to disturb cultural heritage places (practice undertaken prior to the establishment of the *Aboriginal Heritage Act 2006*), archaeological monitoring was to be undertaken during all ground disturbing works to monitor and record Aboriginal cultural heritage material that may be identified during the proposed construction works.

The subsurface testing program was undertaken in 2001 (Cusack, 2001). During the subsurface testing, 32 proposed turbine locations were tested. From this, a total of [redacted] new Aboriginal places were recorded, consisting of [redacted] as well as [redacted]. The initial survey and subsequent testing program concluded the following mitigation measures at those turbine locations, cable routes, and tracks that will impact on known Aboriginal places, the following must occur:

- Alternative positions for turbines and/or infrastructure must be sought. Further archaeological investigations must be conducted at the newly proposed locations
- A permit to disturb Aboriginal places must be obtained from the Framlingham Aboriginal Trust

- Salvage excavations must be conducted of [redacted] and [redacted] were to be disturbed by the proposed works
- Monitoring by a representative of the Framlingham Aboriginal Trust must be conducted during all ground disturbing works associated with the construction of the wind farm,
- Monitoring by an archaeologist, along with a representative of the Framlingham Aboriginal Trust, must be conducted in areas of archaeological sensitivity that are to be impacted by the wind farm works.

Yambuk Wind Farm

The Yambuk Wind Farm is located 57 km to the east of the Project Area. Prior to the construction of the wind farm, an archaeological survey (FP – SR Report No. 2833) was prepared (Cekalovic & Debny, 2004).

As part of the 2004 assessment, an archaeological survey of the 20 proposed turbine locations was undertaken. As a result of the survey, [redacted] Aboriginal places [redacted] were identified in the Yambuk area of proposed works. In order to mitigate against harm to these Aboriginal places, the turbine locations and aspects of infrastructure were rearranged.

11.4.2 Cumulative impacts on tangible heritage

Those operational wind farm developments within the region have minimised harm to known Aboriginal places by modifying the location of turbines and relate infrastructure. Similar mitigation measures have been employed for the Kentbruck Green Power Hub. The number of turbines has been decreased from 157 initial turbine locations to the current 105 turbine locations to avoid previously recorded Aboriginal places. Furthermore, the GMTOAC led iterative predictive model is being tested and undergoing revision so that the proposed works will not directly affect tangible heritage places.

Construction effects on tangible Aboriginal cultural heritage places can be avoided by micro-siting where this is possible and proportionate to the significance of the asset. Where construction effects are unavoidable, those tangible Aboriginal places will be mitigated through the GMTOAC approved conditions and contingencies. Impacts to Aboriginal cultural heritage places will further be mitigated by the repatriation and reburial of cultural heritage material in line with GMTOAC policy.

Those tangible Aboriginal cultural heritage places that are not within areas of direct impact will be protected from accidental harm by establishing protective fencing.

Implementation of the mitigation measures documented within this impact assessment as well as within the CHMP (subject to approval) will result in no additional negative cumulative impacts on tangible heritage within the Project Area or wider region.

11.4.3 Cumulative impacts on intangible heritage

There is potential for cumulative impacts on intangible heritage. As documented in section 9, the cultural values identified within Gunditj Mirring Country include:

- [redacted]

- [redacted]

There is potential for cumulative impacts on cultural view lines and cultural linkages if present between the Project Area and those operational windfarms located to the southwest and west of the Project Area (refer to Table 43). However, it is noted that all existing development, whether it be residential buildings, items of infrastructure, wind farms, etc, will have already impacted cultural view lines and cultural linkages. As such, there will be an element of visual change as another development is introduced to the region.

The visual assessment (refer to Chapter 12 and Appendix L through Appendix M of the EES) offers some conclusions on cumulative impacts to views in conjunction with these existing developments within the region. The visual assessment concluded:

> Overall, the Project is not predicted to significantly increase the magnitude of cumulative visual effect for most dwelling locations surrounding the Project site. The potential for the occurrence of ’direct’ and ‘indirect’ cumulative visual effect is mitigated by the screening or partial filtering of views toward approved and existing wind farms.
>
> The closest wind turbines at Cape Bridgewater Wind Farm, are approximately 20 km from the Project wind turbines with an equidistant view point around 10 km. This LCVIA has determined that wind turbines at a view distance of 10 km or greater would occupy less than 2% of a person’s vertical field of view and would not result in a significant visual effect.
>
> Sequential views from local roads would be mitigated to some extent by undulating landform and tree cover alongside road corridors and the transitory mature of shoer-term dynamic views, and the fact that these wind farm projects are not located along a single highway or thouroughfare.

GMTOAC are the only people who can make an assessment about whether changes to the landscape from this project will or will not have an effect on the significance of intangible cultural values. Intangible heritage impacted from the addition of the proposed windfarm to the landscape will be managed through ongoing consultation and stakeholder engagement with GMTOAC. GMTOAC must continue to be consulted, and involved where practicable. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the construction, operational, and decommissioning phases of works.

12. ENVIRONMENTAL MANAGEMENT AND MONITORING

The framework for identifying and responding to unexpected Aboriginal cultural heritage effects will ultimately be described within the approved CHMP.

For the purposes of the EES, the draft contingency plans for the identification and protection of unexpected finds are provided in CHMP 17882. The wording of the contingency plans were provided by GMTOAC at the time of the inception meeting for the CHMP, and are unlikely to be subject to change during the evaluation period. The GMTOAC standard contingency plans are included within the CHMP and summarised below:

Contingency 1: Matters referred to in section 61 of the Aboriginal Heritage Act

The following matters must be considered in assessing whether a CHMP relating to an activity is to be approved:

1. Whether the activity will be conducted in a way that avoids harm to Aboriginal cultural heritage.
2. If it does not appear to be possible to conduct the activity in a way that avoids harm to Aboriginal cultural heritage, whether the activity will be conducted in a way that minimises harm to Aboriginal cultural heritage.
3. Any specific measures required for the management of Aboriginal cultural heritage likely to be affected by the activity, both during and after the activity.
4. Any contingency plans required in relation to disputes, delays and other obstacles that may affect the conduct of the activity.
5. Requirements relating to the custody and management of Aboriginal cultural heritage during the course of the activity.
6. If Aboriginal cultural heritage is discovered unexpectedly during the activity, Contingency 4 (which takes into account matters referred to in section 61 of the Aboriginal Heritage Act with regard to harm avoidance and minimisation, and the development of specific measures to manage Aboriginal cultural heritage) must be implemented by the sponsor.

Contingency 2 (which sets out the contingency plans required in relation to disputes, delays and other obstacles that may affect the conduct of the activity) must be adhered to by the sponsor.

Contingency 5 (which outlines the requirements relating to the custody and management of Aboriginal cultural heritage identified during the activity) must be implemented by the sponsor.

The contingency plans presented in this section are specific to the activity and the Study Area described within the CHMP. If, following the approval of the CHMP, any changes to the activity or the Study Area requiring statutory authorisation occur, the sponsor must either apply to amend the approved CHMP or prepare a new CHMP that incorporates any changes.

Contingency 2: Dispute resolution process

Procedures for dispute resolution aim to ensure that all parties are fully aware of their rights and obligations, that full and open communication between parties occurs, and that those parties conduct themselves in good faith.

If a dispute arises in relation to the implementation of the CHMP or the conduct of the activity, the following dispute resolution procedure is required:

1. All disputes will be jointly investigated and documented by both the RAP and the sponsor.
2. The RAP and the sponsor must meet within one week of the initial notification of the dispute to seek agreement as to a suitable resolution.
3. The sponsor and the RAP must arrange for authorised representatives to be present at the meeting.
4. At the meeting, the authorised representatives of both the RAP and the sponsor must state their understanding of the issue(s) in relation to the dispute and ensure each party is aware of their position. If requested by either the RAP or the sponsor, third party mediation may be held during the meeting.
5. If the authorised representatives of the parties reach agreement, the agreed resolution to the dispute must be recorded in writing and signed by both parties (the Agreed Method Statement). If the authorised representatives of the parties do not reach agreement, the parties will participate in third-party mediation of the dispute by an agreed mediator within two weeks of the first meeting to discuss the dispute. Any agreed outcome of the mediation must be recorded in writing and signed by both parties (the Agreed Method Statement).

Any costs relating to the third-party mediation procedure outlined above must be met equally by the sponsor and RAP.

Regardless of the category of dispute, the dispute resolution process does not preclude:

6. Any legal recourse open to the parties being taken; however, the parties agree that the above resolution mechanism will be implemented before such recourse is made.

Contingency 3: Reviewing compliance and mechanisms for remedying non-compliance with the CHMP

The sponsor is responsible for reviewing compliance with the CHMP. If the answer to any of the questions in the Compliance Checklist is 'No', all works must cease immediately, and the sponsor must contact the RAP immediately to discuss the suspected non-compliance and measures for remedying non-compliance. The Sponsor must attend an on-site or in-office meeting (if requested by the RAP) to determine the most appropriate remedy for the non-compliance. The sponsor must provide all information about any suspected non-compliance to the RAP, and any act of non-compliance may result in an investigation by an Authorised Officer or Aboriginal Heritage Officer as per section 81(1)(a) of the Aboriginal Heritage Act. Any measures for remedying non-compliance must be at the direction of the RAP. Failure of parties to reach an agreed course of action in this manner will be classed as a dispute.

A record of CHMP compliance must also be maintained by the sponsor at all times, and must be available for inspection by an Authorised Officer or Aboriginal Heritage Officer as authorised under section 165A and section 181(1)(b) of the Aboriginal Heritage Act, or any other representative of the RAP or First Nations - State Relations.

The sponsor is responsible for ensuring that compliance is adhered to at all times during the activity.

All actions associated with the procedures specified in this contingency must be organised and paid for by the sponsor.

Contingency 4: Management of Aboriginal cultural heritage found during the activity

Discovery of human remains:

If any suspected human remains are found during any activity, you must contact the Victoria Police and the State Coroner's Office immediately. If there are reasonable grounds to believe that the remains are Aboriginal, the Coronial Admissions and Enquiries hotline must be contacted immediately on 1300 888 544. This advice has been developed further and is described in the following five-step contingency plan. Any such discovery at the activity area must follow these steps:

1. **Discovery:**
   - If suspected human remains are discovered, all activity in the vicinity must stop
   - The remains must be left in place and protected from harm or damage.
2. **Notification:**
   - If suspected human remains have been found, the State Coroner's Office and Victoria Police must be notified immediately
   - If there are reasonable grounds to believe that the remains are Aboriginal Ancestral Remains, the Coronial Admissions and Enquiries hotline must be contacted immediately on 1300 888 544
   - All details of the location and nature of the human remains must be provided to the relevant authorities.
   - If it is confirmed by these authorities the discovered remains are Aboriginal Ancestral Remains, the person responsible for the activity must report the existence of them to the Victorian Aboriginal Heritage Council in accordance with section 17 of the Aboriginal Heritage Act.
3. **Impact mitigation or salvage:**
   - The Victorian Aboriginal Heritage Council, after taking reasonable steps to consult with any Aboriginal person or body with an interest in the Aboriginal Ancestral Remains, will determine the appropriate course of action as required by section 18(2)(b) of the Act
   - An appropriate impact mitigation or salvage strategy as determined by the Victorian Aboriginal Heritage Council must be implemented by the sponsor.
4. **Curation and further analysis:**
   - The treatment of salvaged Aboriginal Ancestral Remains must be in accordance with the direction of the Victorian Aboriginal Heritage Council.
5. **Reburial:**
   - Any reburial site(s) must be fully documented by an experienced and qualified archaeologist, clearly marked and all details provided to FSRG.
   - Appropriate management measures must be implemented to ensure that the Aboriginal Ancestral Remains are not disturbed in the future.

Discovery of other Aboriginal cultural heritage:

If suspected Aboriginal cultural heritage, other than human remains, is identified during the works, the following procedure must be implemented:

1. **Discovery:**
   - All works within 10 m (in all directions) of the location of suspected Aboriginal cultural heritage must be immediately halted. This exclusion zone around the suspected Aboriginal Place must be protected from further disturbance and harm with an appropriate barrier (such as above-ground, temporary fencing) marked with 'no go zone' signage. The suspected Aboriginal cultural heritage must not be removed, and all personnel undertaking the activity must be notified of the suspected discovery.
2. **Notification and assessment:**
   - The person in charge of the works at the time of the discovery must notify the sponsor, the RAP and a Heritage Advisor of the suspected Aboriginal cultural heritage within one business day of its discovery, as per section 24(3) of the Aboriginal Heritage Act.
   - The Heritage Advisor, a RAP representative, and the sponsor must undertake an inspection of the suspected Aboriginal cultural heritage as soon as practicable, and within a maximum of three business days of the notification of the discovery. If a representative of the RAP is unable to participate in the inspection within the specified time period, the Heritage Advisor can undertake the inspection with the sponsor, provided that the Heritage Advisor provides photographic documentation and a written report on the inspection to the RAP within one business day of the completion of the inspection.
   - The Heritage Advisor and RAP must determine if the suspected Aboriginal cultural heritage is Aboriginal cultural heritage. If the suspected Aboriginal cultural heritage is determined not to be

Aboriginal cultural heritage, the protective barrier may be removed, and works may recommence within the exclusion zone.

If the suspected Aboriginal cultural heritage is determined to be Aboriginal cultural heritage by the Heritage Advisor and RAP, the Heritage Advisor must fully document this Aboriginal cultural heritage. If required, the exclusion zone must be modified to ensure that all the Aboriginal cultural heritage is protected from disturbance.

- The person in charge of the works must report the discovery of the Aboriginal cultural heritage to the Secretary as per Contingency 6.

3. **Management:**
   - Following the inspection, the sponsor and RAP must discuss and agree to a course of action for the management of the Aboriginal cultural heritage. The sponsor must consider avoiding harm to the Aboriginal cultural heritage as a first priority (section 61(a) of the Aboriginal Heritage Act). If it is not possible to avoid harm, the sponsor must make every attempt to minimise harm to the Aboriginal cultural heritage (section 61(b)), for example by reducing impact on the cultural heritage so that all or a part is not disturbed by the activity.
   - A written agreement documenting the measures for managing the Aboriginal cultural heritage (section 61(c)), and how to continue with works, must be made within five working days of the on-site inspection by the RAP, Heritage Advisor and sponsor. This written agreement must be prepared by the Heritage Advisor and circulated to the sponsor and RAP, and it must be approved in writing by the sponsor and RAP.
   - If harm cannot be avoided, then this written agreement may include salvage of the Aboriginal cultural heritage. Any salvage must be completed by an appropriately qualified archaeologist/Heritage Advisor, and in accordance with proper archaeological practice. An archaeological report detailing the methods, analysis and results of the excavation must be completed. The methods and scope of the salvage, and any research questions to be addressed by the salvage, must be endorsed by the RAP. RAP representatives must participate in any salvage, and a copy of the salvage report must be provided to the RAP and Victorian Aboriginal Heritage Registry within 12 months of the completion of the salvage program.
   - If any organic material (such as shell, charcoal, hearth) or deposits suitable for dating (such as radiometric, Optically Stimulated Luminescence) are identified during any salvage program, these must be collected and dated in accordance with proper scientific practice.
   - Victorian Aboriginal Heritage Registry forms and Record Edits for the Aboriginal cultural heritage must be completed within three months of the completion of any harm avoidance, minimisation or management measures.

Failure of parties to reach an agreed course of action in this manner will be classed as a dispute.

The Heritage Advisor (with the written approval of the RAP) must advise the sponsor when suspended construction works can proceed. In general, works may recommence when the required harm avoidance, minimisation or management measures have been completed in their entirety.

All actions associated with the procedures specified in this section must be organised and paid for by the sponsor.

<u>Contingency 5: Removal, custody, curation and management of Aboriginal cultural heritage during the activity</u>

The Heritage Advisor must ensure that all Aboriginal cultural heritage (other than Aboriginal Ancestral Remains) recovered from the activity area during the activity is managed in the following way:

Recovery of Aboriginal cultural heritage:

1. The Heritage Advisor may initially retain custody of the recovered Aboriginal cultural heritage for scientific analysis for a period of up to 12 months from the completion of the activity. In the event

that the Heritage Advisor is no longer able to retain custody of the Aboriginal cultural heritage, the Heritage Advisor must return the Aboriginal cultural heritage to the RAP immediately.

2. The Heritage Advisor must fully document, package, and securely store all recovered Aboriginal cultural heritage until it is repatriated to the RAP. All Aboriginal cultural heritage must be clearly labelled with respect to its provenance.
3. The Heritage Advisor must submit all relevant documentation for this Aboriginal cultural heritage to the VAHR.
4. Within 12 months of the completion of the activity, the Heritage Advisor must contact the RAP to arrange the repatriation or reburial of all Aboriginal cultural heritage recovered within the activity area according to the RAP's direction.

The repatriation process must occur as follows:

1. All Aboriginal cultural heritage must be appropriately packaged in a durable container (at the direction of the RAP), sorted by the archaeological context from which it was recovered.
2. The packaged Aboriginal cultural heritage must be accompanied by all relevant provenance documents and artefact catalogues.
3. All relevant recording and documentation, including submission of an Object Collection Form to the VAHR, must be completed by the Heritage Advisor within two weeks of repatriation.
4. Following the repatriation of the recovered Aboriginal cultural heritage to the RAP, the RAP may elect to rebury the recovered Aboriginal cultural heritage.

The reburial process must occur as follows:

1. The burial location must be negotiated and agreed upon in writing between the sponsor and the RAP
2. The burial location must be protected from future development or disturbance
3. All Aboriginal cultural heritage must be appropriately packaged in a durable container, as directed by the RAP
4. The packaged Aboriginal cultural heritage must be accompanied all relevant provenance documents and artefact catalogues
5. The reburial of the Aboriginal cultural heritage must be conducted by a RAP representative/s
6. A Heritage Advisor must attend the reburial and record the burial location with a dGPS
7. All relevant recording and documentation, including submission of an Object Collection Form to the VAHR, must be completed by the Heritage Advisor within two weeks of reburial.

If for any reason the RAP cannot take possession of the Aboriginal cultural heritage, the custody of the Aboriginal cultural heritage must comply with the Act and be assigned in the following order of priority:

1. Any relevant registered native title holder for the land from which the Aboriginal cultural heritage has been salvaged
2. Any relevant native title party (as defined in the Act) for the land from which the Aboriginal cultural heritage has been salvaged
3. Any relevant Aboriginal person or persons with traditional or familial links with the land from which the Aboriginal cultural heritage has been salvaged
4. Any relevant Aboriginal body or organisation which has historical or contemporary interests in Aboriginal heritage relating to the land from which the Aboriginal cultural heritage has been salvaged
5. The owner of the land from which the Aboriginal cultural heritage has been salvaged
6. The Museum of Victoria.

All actions associated with the procedures specified in this section must be organised and paid for by the sponsor.

Contingency 6: Notification of discovery of Aboriginal cultural heritage

The Secretary must be notified of the discovery of any Aboriginal cultural heritage during the activity as soon as practicable and within a period not exceeding 30 days of discovery, as per section 24(2) of the Aboriginal Heritage Act.

12.1 Mitigation Measures

The final wording of mitigation measures will ultimately be decided in consultation with GMTOAC and documented within the approved CHMP.

Mitigation measures will be proposed to avoid, mitigate or manage impacts on Aboriginal tangible and intangible cultural heritage from the project. Likely effects from the project may impact on the following cultural heritage values. Types of mitigation measures have been included that will be developed and discussed in consultation with GMTOAC:

12.1.1 Likely impacts or effects on intangible cultural values

The likely impacts on GMTOAC intangible cultural values relate to impacts on Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest) Sky Country, the sounds of Gunditj Mirring Country, cultural view lines, cultural linkages and/or trauma lines both within the Project Area and wider study area. Minimisation/avoidance of harm to cultural values of Gunditjmara Country must be sought, ensuring that Gunditjmara Country and cultural values are respected and protected.

Mitigation measures to be drafted in consultation with GMTOAC outlining expectations may consist of the following:

- [redacted]
- [redacted]
- [redacted]
- [redacted]

12.1.2 Likely impacts or effects on tangible cultural values

Previously registered and identified Aboriginal places

GMTOAC have expressed a preference for the proposed works to have little to no direct impacts on tangible Aboriginal cultural heritage. The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered and unregistered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the *Aboriginal Heritage Act 2006.*

- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Previously unregistered Aboriginal places

A flow chart application of the predictive model has been drafted to infer management condition outcomes for high impact locations in areas of modelled high-moderate cultural heritage sensitivity (Figure 179).

Specific management conditions for identified Aboriginal places will comprise a compliment of the below proposed controls to be implemented where feasible:

- Micro siting / compliance inspections of targeted impact locations (e.g., Turbine locations).
- Turbine location adjustments up to 100 metres or removals from the maximum scope of the project where required by known Aboriginal place extents or micro siting results.
- Delineation of potential activities resulting from impact mitigation for specific cultural layers that may be identified through the CHMP and EES modelling (e.g., No-go zones, fencing, ground protection zones).
- Impact mitigation procedures to be constructed in negotiation with GMTOAC throughout the project based on flow chart results.

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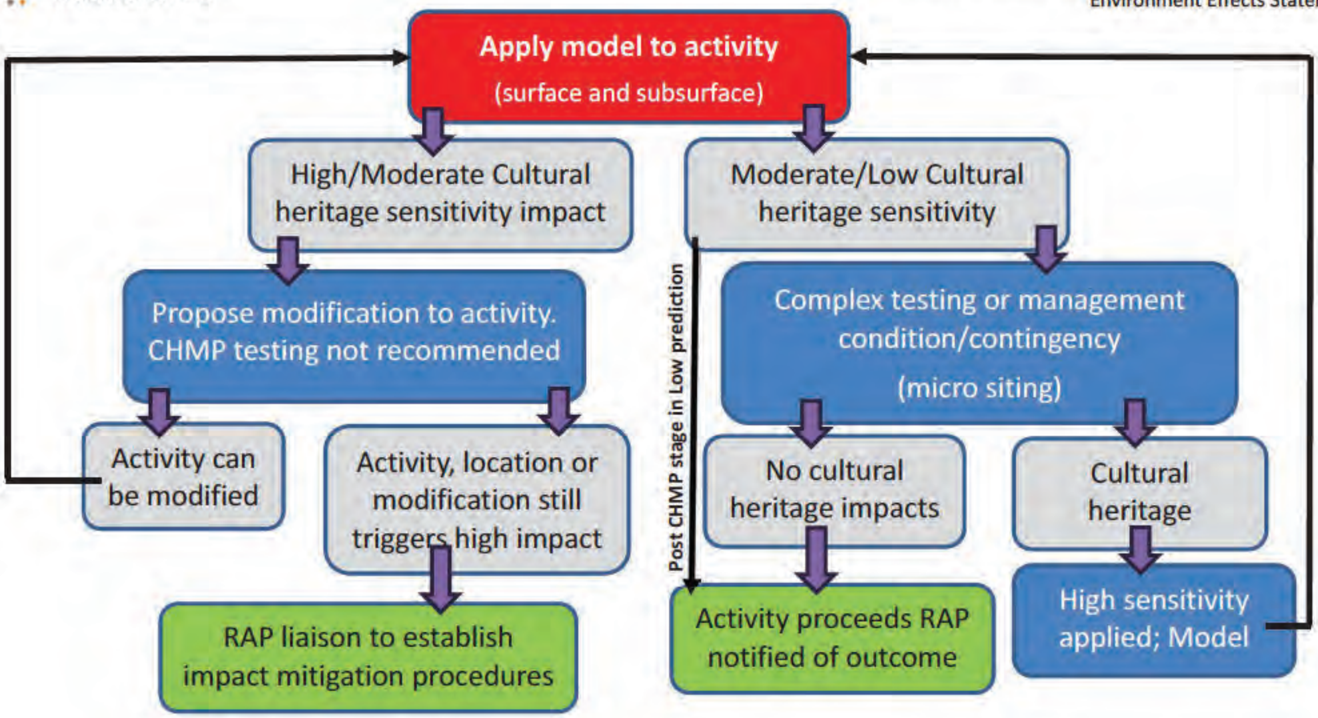

Figure 110 Impact resolution flow chart based on predictive modelling and CHMP outcomes

13. CONCLUSION

The purpose of this report is to assess the potential impacts on Aboriginal cultural heritage associated with the Project to inform the preparation of the EES required for the Project. A summary of the key assets, values or uses potentially affected by the project, and an associated assessment of Aboriginal cultural heritage impacts and recommended mitigation measures, are summarised below.

13.1 Existing conditions

At the time of preparing the Impact Assessment, the following registered Aboriginal places and newly identified Aboriginal places are located within the Project Area:

- [redacted]

In consultation with GMTOAC, there is a preference for the proposed works to have little to no direct impacts on tangible Aboriginal cultural heritage. Observations made by GMTOAC when on Country noted a correlation between the presence of Aboriginal cultural heritage material present on the ground surface within red soils (chromosols). Further discussions between GMTOAC and ALA identified the northeast (leeward) side of slopes as an area where red soils were likely to outcrop, and therefore also be associated with the presence of surface artefacts.

Therefore in order to achieve the evaluation objective for the Project as set by the Minister for Planning, a predictive model was developed that initially reviewed a correlation between the presence of red soils in relation to environmental factors such as slope, elevation, and geomorphology. The presence of red soils was mapped using aerial imagery and LiDAR data. An initial phase of testing was conducted by GMTOAC and ALA to ground-truth the red soil modelling.

At the conclusion of phase 1 testing, it was established that the red soil modelling appeared to be a reliable representation for the presence of chromosols within the Project Area. However, it was further established that there did not seem to be a correlation between the presence of chromosols on the leeward side of slopes.

The aim of the phase 2 testing was to collate further data in the eastern and western portions of the Project Area to better test the red soil mapping. Phase 2 testing was to provide more detailed landform and soil information regarding the geomorphological process and possible landform reconstruction. The results of the phase 2 testing were similar to that of phase 1: no surface or subsurface artefacts were identified in direct association with chromosol soils and subsurface artefacts were identified in two of 11 non-chromosol testing locations.

At the completion of the phase 1 and phase 2 testing, the initial hypothesis of correlation between the presence of chromosols and surface Aboriginal cultural heritage material appears to be incorrect, as more subsurface Aboriginal cultural heritage material was identified in non-chromosol locations. Given that chromosols likely overlie the entire karst landscape that developed on the underlying Gambier Limestone that was largely, or possibly completely, covered by wind-blown sand during the Last Glacial Maximum, the occurrence of chromosols at particular elevations and slopes present within the Project Area represents either areas where the younger wind-blown sand was not deposited, or where the sand has been subsequently eroded. The results of the phase 1 and phase 2 testing also suggests a distinction between surface artefact manifestations and subsurface artefact manifestations that appear to correlate with the presence or absence of chromosols, in combination with the evaluation within the landscape and position on the landform. These field observations suggest that chromosol presence, elevation, and landform element contribute to the sensitivity for Aboriginal cultural heritage.

A phase 3 predictive model was developed and included further refinement of sensitivity ratings based on the assessment of actual correlation between the specific features and the presence or absence of artefacts. Two models representing sensitivity for artefacts were produced, one for surface artefacts and one for subsurface artefacts. The 105 proposed turbine locations were assessed against the presence of chromosols, elevation, and landform element to determine sensitivities. As such, the phase 3 predictive model methodology considers the presence of chromosols as well as elevation and landform in terms of Aboriginal cultural heritage sensitivity.

Phase 3 survey results are largely in line with the hypothesis of phase 3 that was applied across the turbine locations, with areas of moderate, low/moderate, and low archaeological sensitivity mapped. Areas of mapped moderate archaeological sensitivity were largely artefact positive, with the areas mapped as being of low archaeological sensitivity were largely artefact negative. No further changes to the predictive model are proposed following the completion of the phase 3 surveys due to the consistency of the surveying with the model.

13.2 Impact assessment and mitigation

The scoping requirements for the Project were issued by the Victorian Minister for Planning in February 2020 (dated January 2020). The evaluation objective relevant to Aboriginal cultural and historical heritage is:

- *To avoid or minimise adverse effects on Aboriginal and historical cultural heritage and associated values.*

The following mitigation measures have been drafted from the background research undertaken as part of this impact assessment as well as the phase 1, phase 2 and phase 3 testing in order to achieve the evaluation objective for Aboriginal cultural heritage that could be impacted by the Project.

13.2.1 Tangible heritage

Impacts to identified Aboriginal places from the proposed works

The majority of previously registered and identified Aboriginal places within the Project Area will not be impacted by the proposed works. [redacted] will potentially be impacted by the underground reticulation works. Mitigation measures for these places are subject to approval by GMTOAC, with the final mitigation measures for the places recorded as specific management conditions within the approved CHMP. If the underground reticulation works cannot be realigned to avoid the Aboriginal cultural heritage material, the following must occur (subject to approval of the CHMP):

- The extent, nature, and significance of the components must be ascertained as part of the CHMP process.
- Specific management conditions will be implemented to minimise harm to the components of the Aboriginal Place. These specific management conditions will be drafted and approved by GMTOAC.

GMTOAC may undertake inspection(s) during the construction and installation of the underground electricity reticulation to ensure that no further Aboriginal cultural heritage material relating to [redacted] is identified during the proposed works. If further Aboriginal cultural heritage material is identified during the proposed works, the contingency measures documented within the approved CHMP must be implemented.

Avoidance of identified Aboriginal places not impacted by the proposed works

The following Aboriginal places and identified Aboriginal cultural heritage material (registration with the VAHR pending) are located within the Project Area but will not be impacted by the proposed works:

- [redacted]

- [redacted]

The preparation and approval of a CHMP would allow for an appropriate level of assessment of registered Aboriginal heritage places identified during the preparation of the CHMP. An approved CHMP would also provide appropriate management conditions to avoid, minimise or mitigate the impact to these places. The approved CHMP would also provide contingency measures, with clear instructions in the event that previously unregistered items of Aboriginal cultural heritage are identified during project works.

Mitigation measures to be drafted in consultation with GMTOAC outlining avoidance of registered and identified Aboriginal places may consist of the following:

- Prepare, gain approval, and implement contingencies of the CHMP in accordance with the Aboriginal Heritage Act 2006.
- Avoidance of previously registered and identified Aboriginal places through establishing an exclusion zone around the known extent of the Aboriginal place via a buffer around the place extent with protective fencing. The extent of the buffer will be determined in further consultation with GMTOAC. Furthermore, consultation with GMTOAC will determine if the protective temporary fencing must remain in place during operation and decommissioning/rehabilitation phases of works.

Previously unregistered Aboriginal cultural heritage material

From the testing of the predictive model a flow chart has been established. The intent of the flow chart is to better inform the siting and location of proposed turbines and associated infrastructure works to avoid areas that have moderate to high archaeological sensitivities and therefore a higher potential for surface and subsurface Aboriginal cultural heritage material to be present. The flow chart should be used in the first instance to give an indication of the proposed locations of proposed works are within an area of moderate/high sensitivity. If the proposed works are within areas identified as moderate/high sensitivity:

1. Activity must be modified (e.g. change in location and/or construction methodology) to avoid the areas of sensitivity
2. If the activity cannot be modified to avoid areas of moderate/high sensitivity, further liaison with GMTOAC must be undertaken to establish impact mitigation procedures.

13.2.2 Intangible heritage

The CVA documented the following cultural values of the Gunditj Mirring:

- [redacted]

- [redacted]

The EES contains several chapters that include mitigation measures to avoid/minimise impacts to biodiversity and habitat, flora and fauna within the Project Area, aquatic environments, landscape and visual amenity, as well as noise and vibration, that will, in turn, avoid/minimise the indirect effects the proposed works may have on the cultural values of Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest).

Furthermore, GMTOAC, must continue to be consulted, and involved where practicable, before, during, and after the construction phase. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the operational phase of works.

Once the wind farm project is decommissioned, rehabilitation works can offer an opportunity to have a positive effect on intangible heritage by identifying ways in which Gunditjmara cultural values and intangible heritage may be used to produce tangible results. As such, GMTOAC should be consulted and involved in rehabilitation works as part of the project. Meaningful and respectful consultation with GMTOAC must be undertaken in relation to potential project opportunities for further GMTOAC coordination and participation during the rehabilitation works.

13.3 Residual impacts

13.3.1 Tangible heritage

With implementation of the flow chart in the first instance followed by the implementation of mitigation measures as documented within the CHMP, there will be a negligible residual impact to the registered and identified Aboriginal places as well as unregistered Aboriginal places (if identified during proposed works) within the Project Area.

13.3.2 Intangible heritage

The level of risk to intangible, non-archaeological Aboriginal heritage places and/or values that may be situated within the Project Area is expected to decrease as a result of the ongoing consultation with GMTOAC, implementation of an approved CHMP and the recommendations of the CVA.

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APPENDIX 1 RESULTS OF THE VAHR SEARCH

Table 40 Aboriginal places recorded by distance from Project area and their components

Place name	Place type	Component Number	Distance (m)
[redacted]	Low-density artefact distribution	[redacted]	[redacted]
[redacted]	Artefact scatter; Shell midden	[redacted]	[redacted]
[redacted]	Low-density artefact distribution	[redacted]	[redacted]
[redacted]	Low-density artefact distribution	[redacted]	[redacted]
[redacted]	Low-density artefact distribution	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Artefact scatter; Shell midden	[redacted]	[redacted]
[redacted]	Shell midden; Artefact scatter	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Shell midden; Artefact scatter	[redacted]	[redacted]
[redacted]	Shell midden; Artefact scatter	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Earth feature	[redacted]	[redacted]
[redacted]	Low-density artefact distribution	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
		[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]		[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell midden, artefact scatter & earth feature	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Scarred tree	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter	[redacted]	[redacted]
[redacted]	Scarred tree	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell midden, artefact scatter & earth feature	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Artefact scatter & shell midden	[redacted]	[redacted]

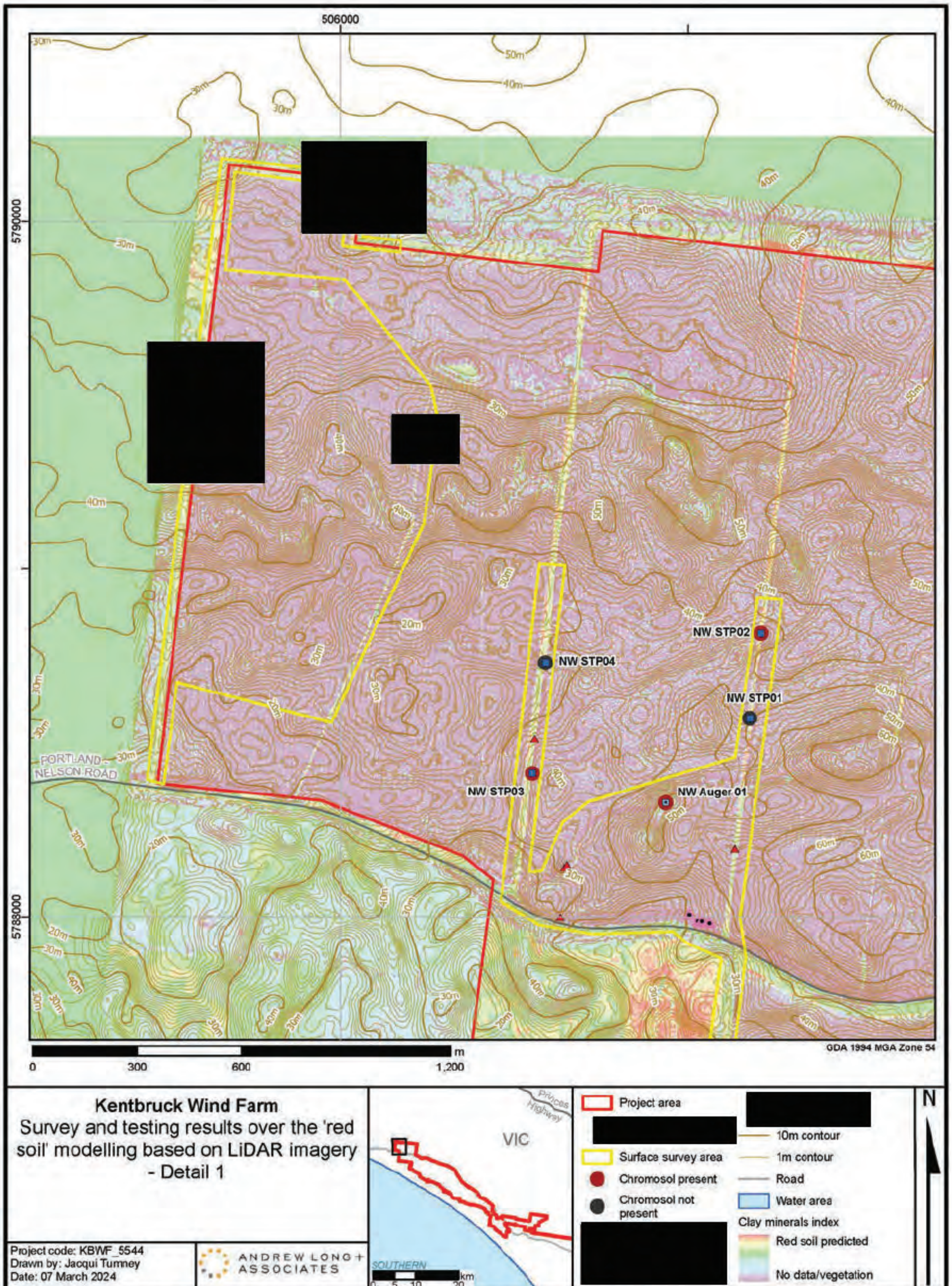
Place name	Place type	Component Number	Distance (m)
[redacted]	Artefact scatter & shell midden	[redacted]	
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Artefact scatter & shell midden		
	Shell Midden		
	Shell Midden		
	Artefact scatter & shell midden		
	Shell Midden		
	Shell Midden		
	Artefact scatter & shell midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Artefact scatter & shell midden		

Place name	Place type	Component Number	Distance (m)
		[redacted]	[redacted]
[redacted]	Shell midden, artefact scatter & earth feature	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell midden, artefact scatter & earth feature	[redacted]	[redacted]
[redacted]		[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]

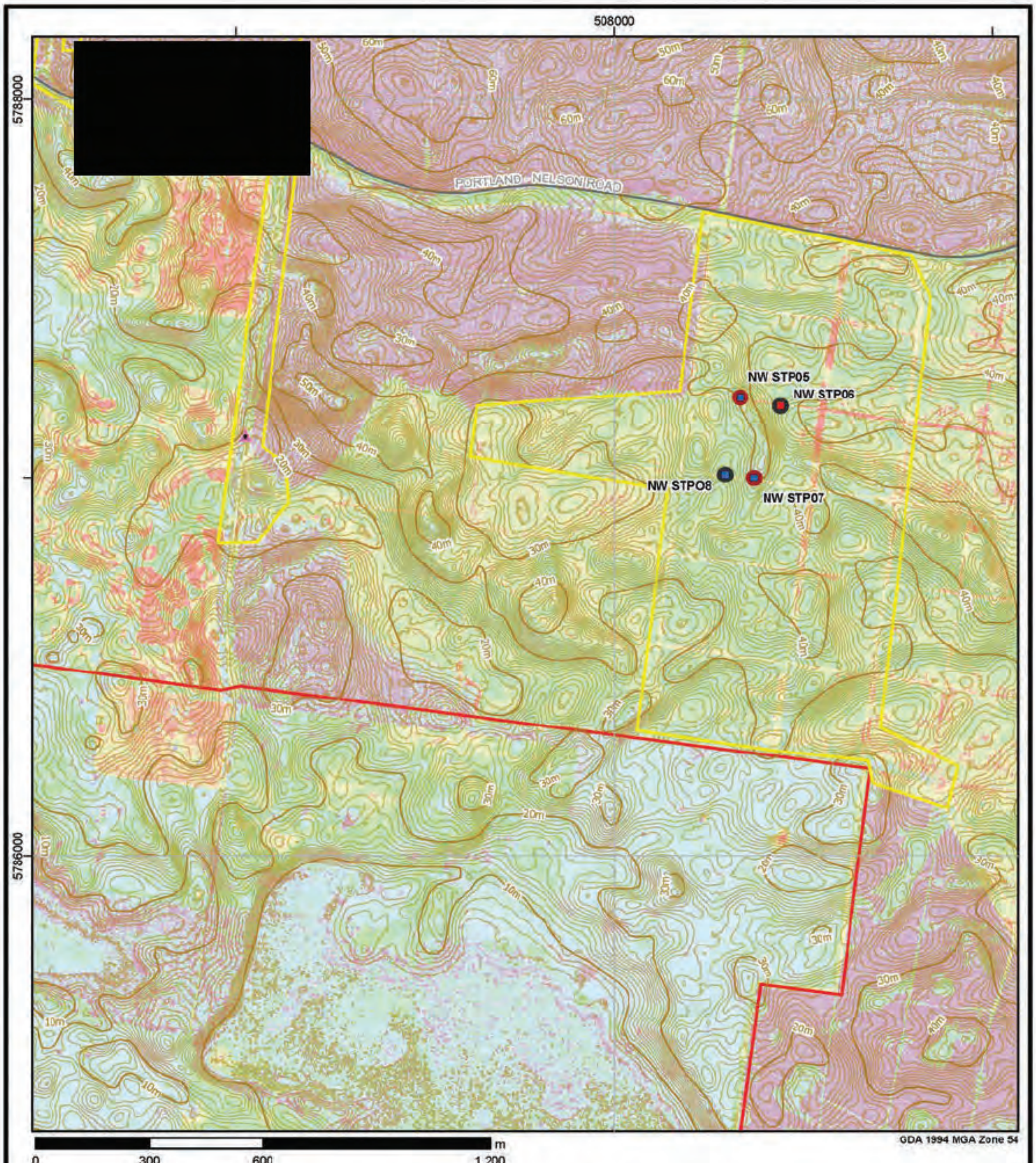
Place name	Place type	Component Number	Distance (m)
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]
[redacted]	Shell Midden	[redacted]	[redacted]

Place name	Place type	Component Number	Distance (m)
[redacted]	Shell Midden	[redacted]	
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		
	Shell Midden		

APPENDIX 2 RESULTS OF THE ASSESSMENTS AND RED SOIL MODEL TESTING WITH RED SOIL MODELLING



Data sources: Aerial and source imagery: Client-supplied LiDAR 2022; VicMap topographic data: © State of Victoria (DELWP, 2018-2023). The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.



Kentbruck Wind Farm

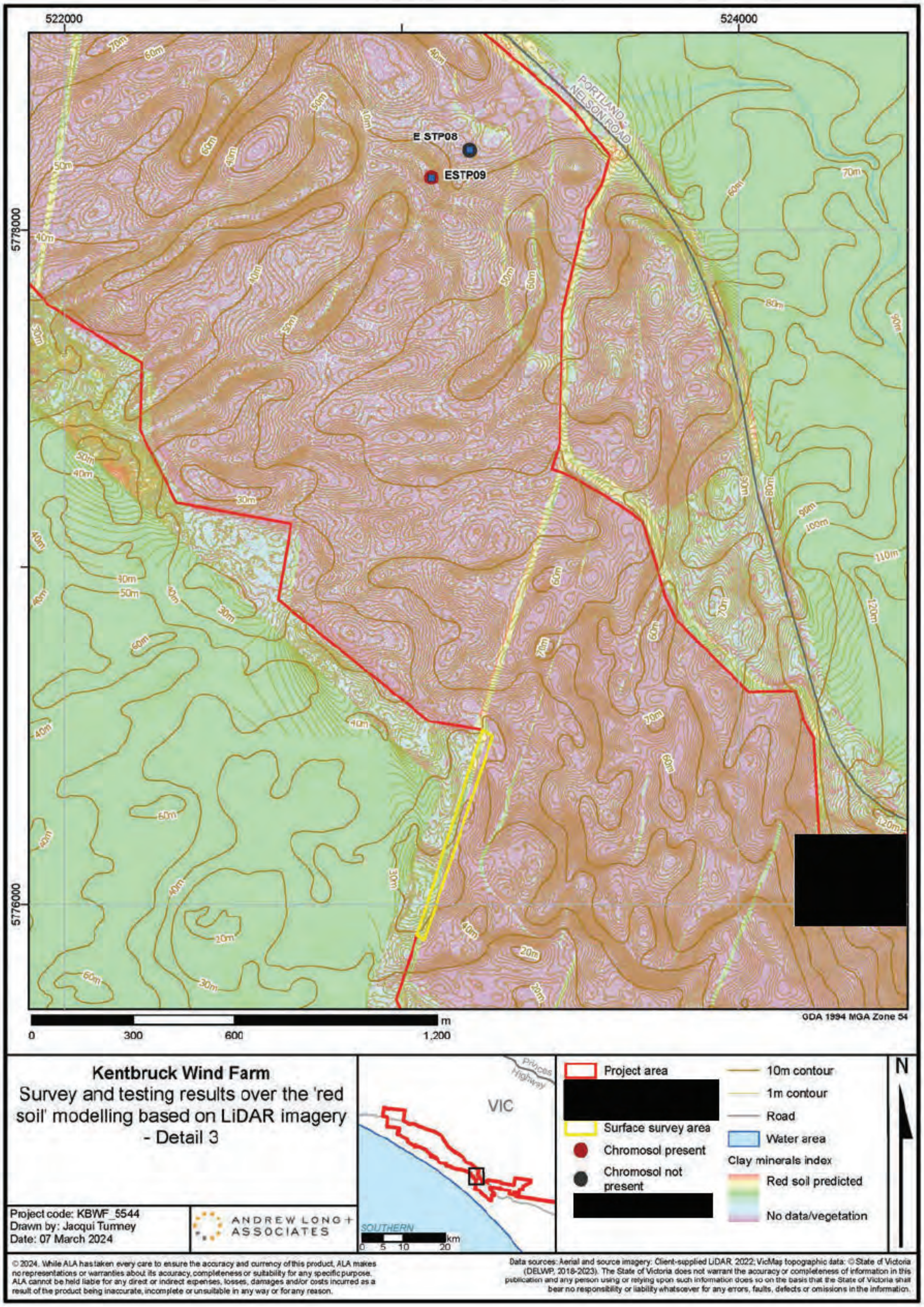
Survey and testing results over the 'red soil' modelling based on LiDAR imagery - Detail 2

Project area
Surface survey area
Chromosol present
Chromosol not present
[redacted]
10m contour
1m contour
Road
Water area
Clay minerals index
Red soil predicted
No data/vegetation
N

Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

Data sources: Aerial and source imagery: Client-supplied LiDAR 2022; VicMap topographic data: © State of Victoria (DELWP, 2018-2023). The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.


522000
524000
5778000
5776000
PORTLAND - NELSON ROAD
E STP08
ESTP09
[redacted]
0 300 600 1,200 m
GDA 1994 MGA Zone 54
Kentbruck Wind Farm
Survey and testing results over the 'red soil' modelling based on LiDAR imagery - Detail 3
Princes Highway
VIC
SOUTHERN
0 5 10 20 km
Project area
[redacted]
Surface survey area
Chromosol present
Chromosol not present
[redacted]
10m contour
1m contour
Road
Water area
Clay minerals index
Red soil predicted
No data/vegetation
N
Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024
ANDREW LONG + ASSOCIATES
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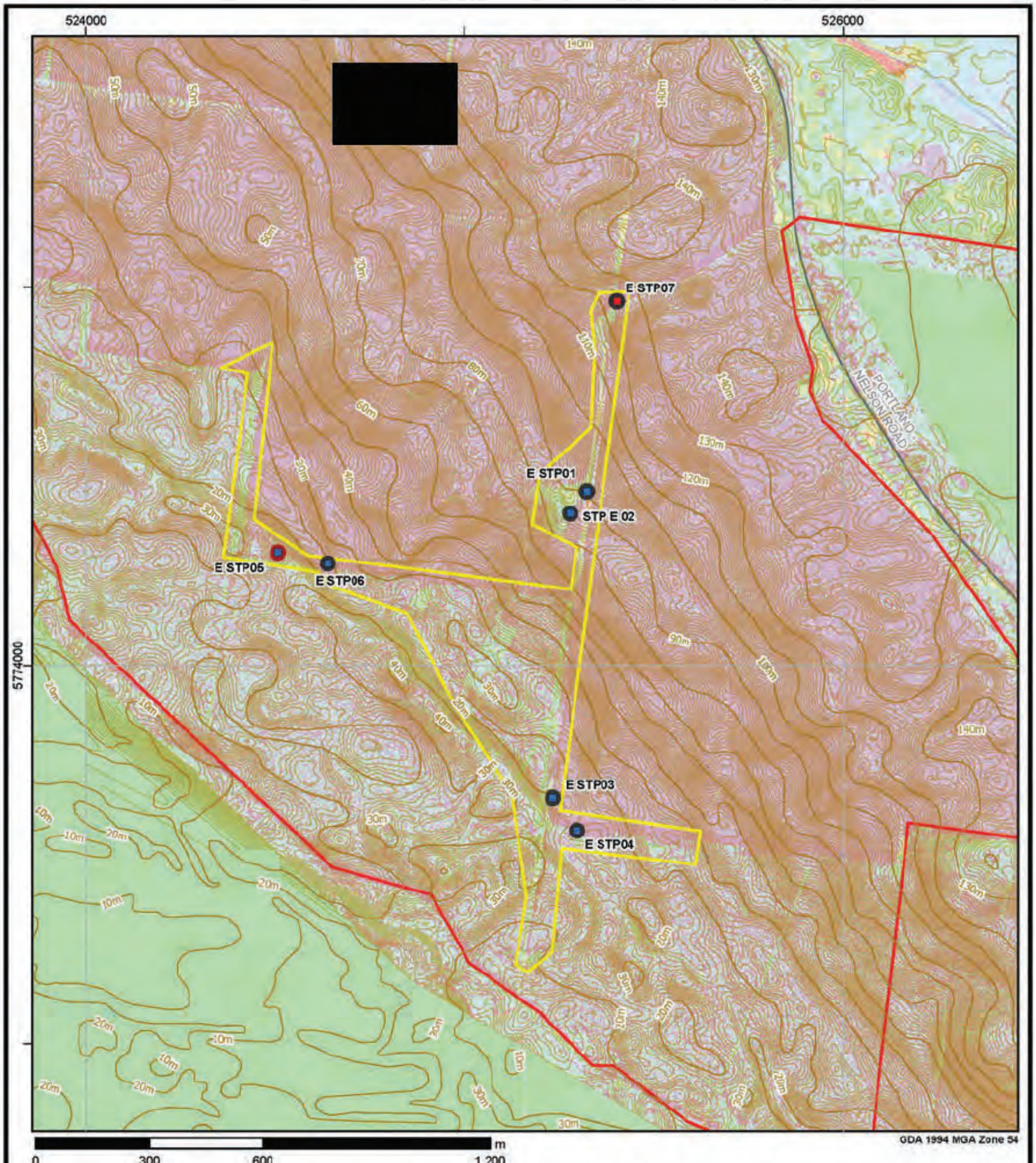


Kentbruck Wind Farm
Survey and testing results over the 'red soil' modelling based on LiDAR imagery - Detail 4

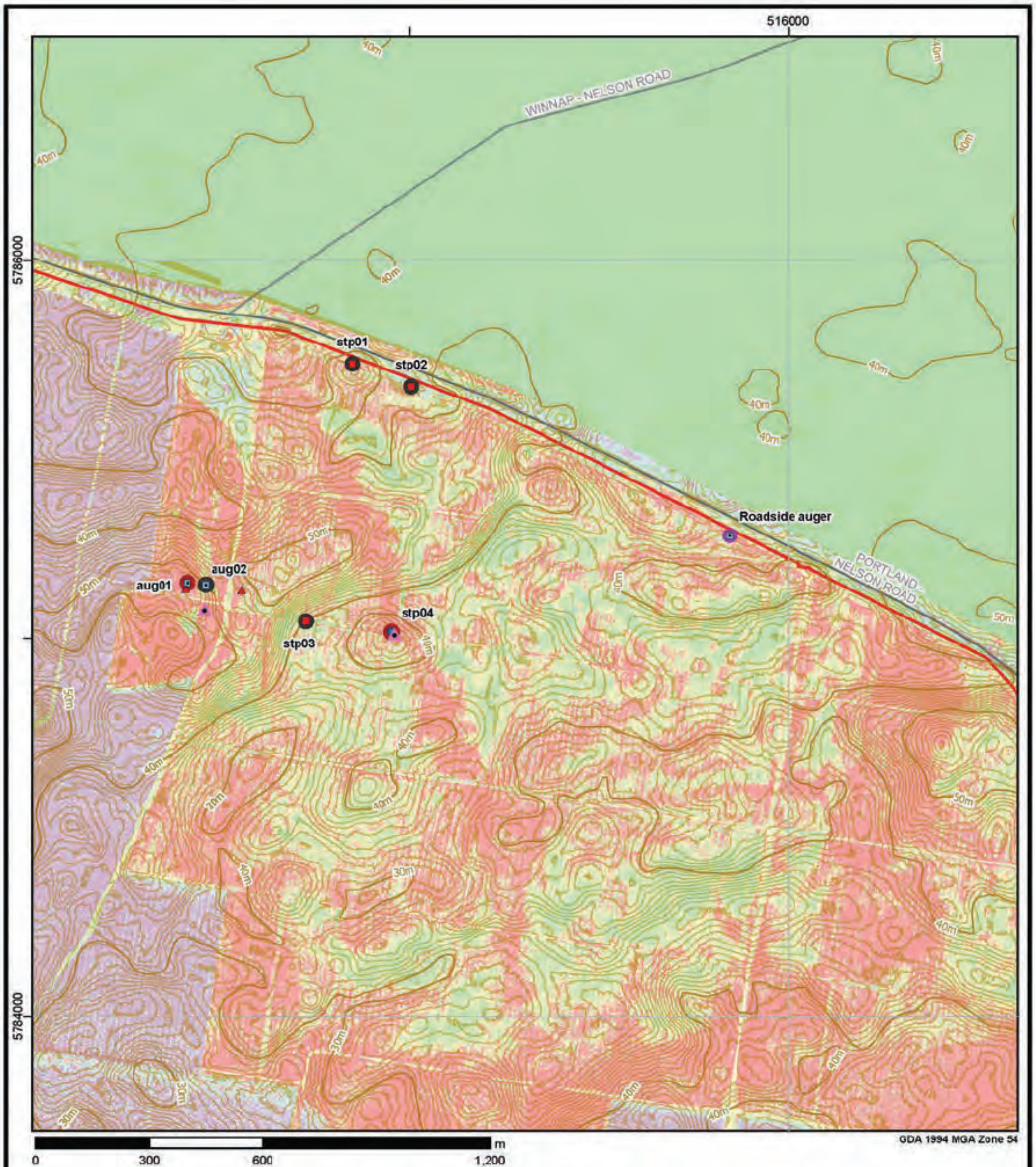
Project area
[redacted]
Surface survey area
Chromosol present
Chromosol not present
[redacted]
10m contour
1m contour
Road
Water area
Clay minerals index
Red soil predicted
No data/vegetation

N

Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

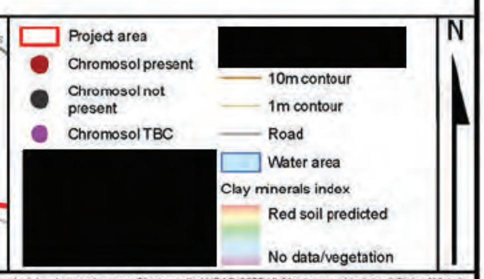
ANDREW LONG + ASSOCIATES

Data sources: Aerial and source imagery: Client-supplied LiDAR 2022; VicMap topographic data: © State of Victoria (DELWP, 2018-2023). The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.



Kentbruck Wind Farm

Survey and testing results over the 'red soil' modelling based on LiDAR imagery - Detail 5



Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

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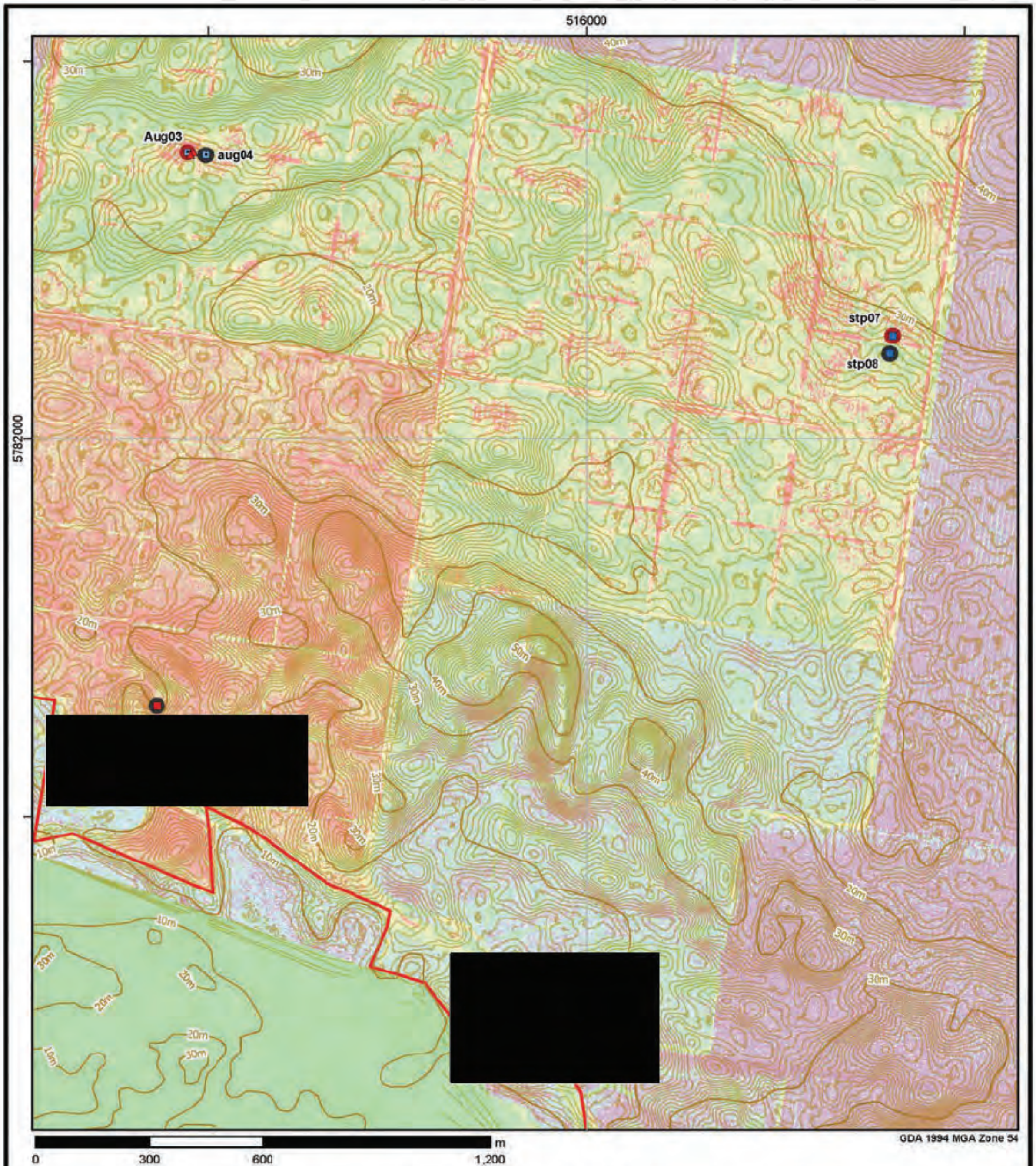


Kentbruck Wind Farm
Survey and testing results over the 'red soil' modelling based on LiDAR imagery - Detail 6

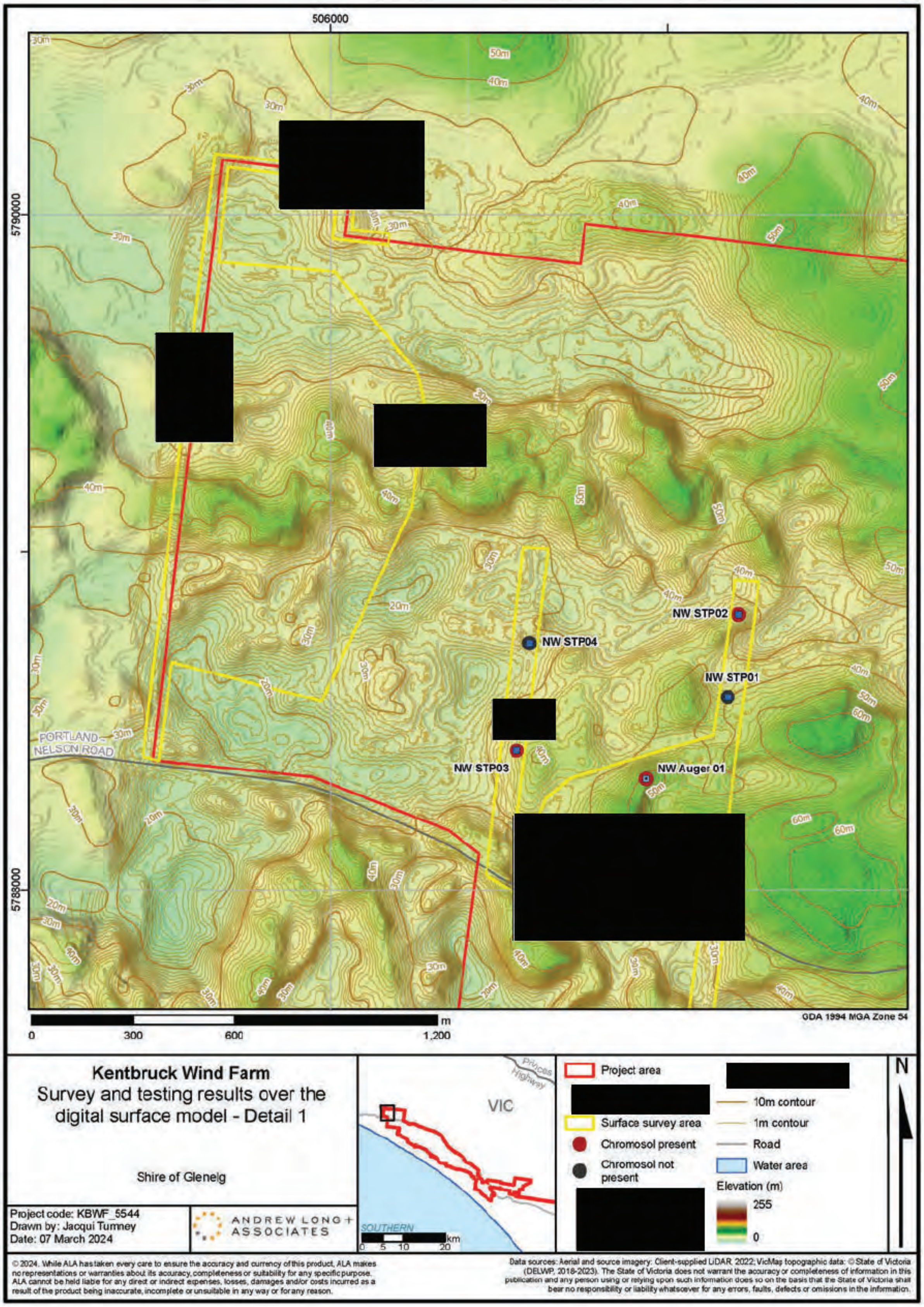
Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

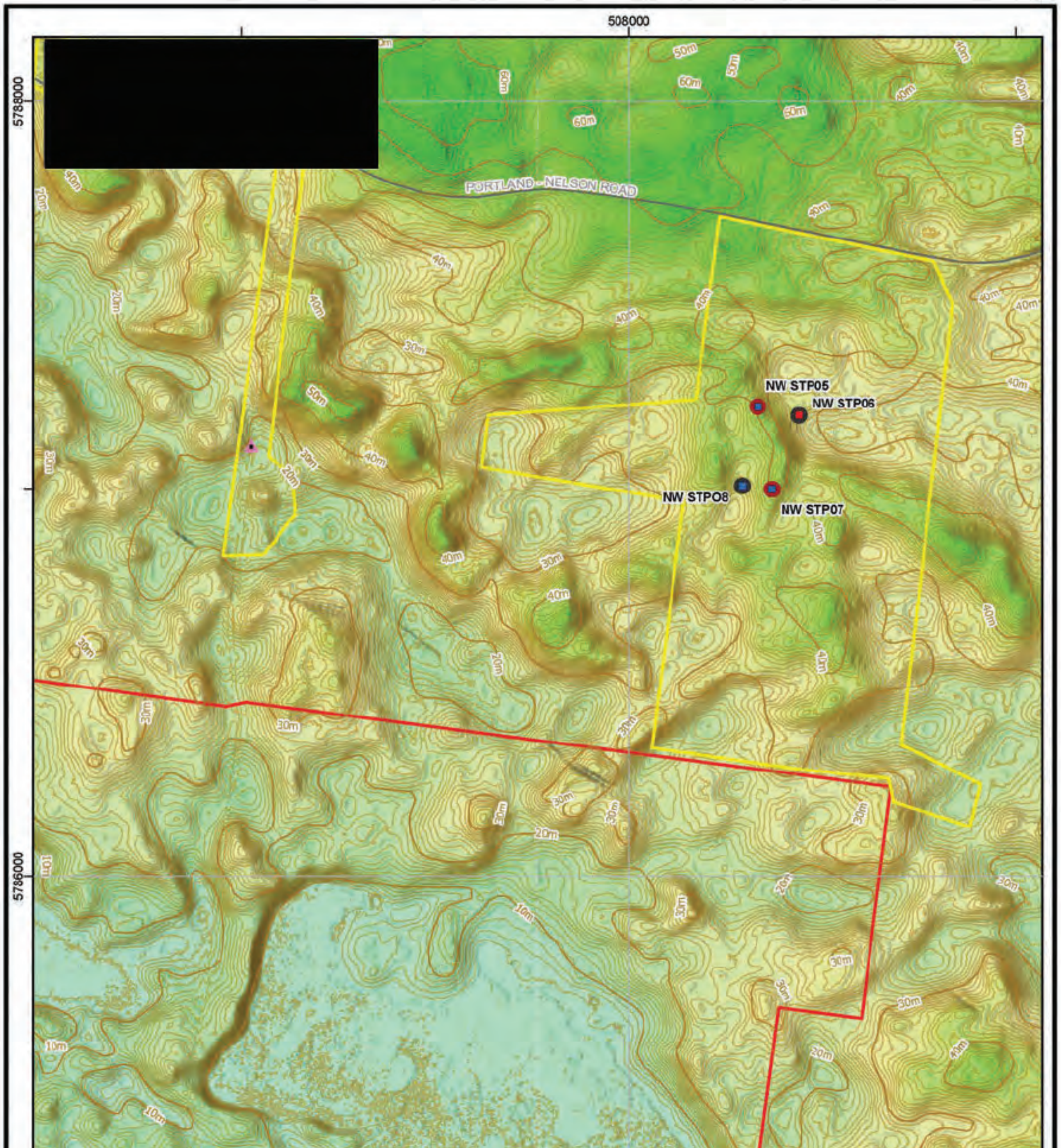
Project area
Chromosol present
Chromosol not present
[redacted]
1m contour
Road
Water area
Clay minerals index
Red soil predicted
No data/vegetation
[redacted]
N

Data sources: Aerial and source imagery: Client-supplied LiDAR 2022; VicMap topographic data: © State of Victoria (DELWP, 2018-2023). The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.

APPENDIX 3 RESULTS OF THE ASSESSMENTS AND RED SOIL MODEL TESTING WITH ELEVATION



Kentbruck Wind Farm
Survey and testing results over the digital surface model - Detail 1



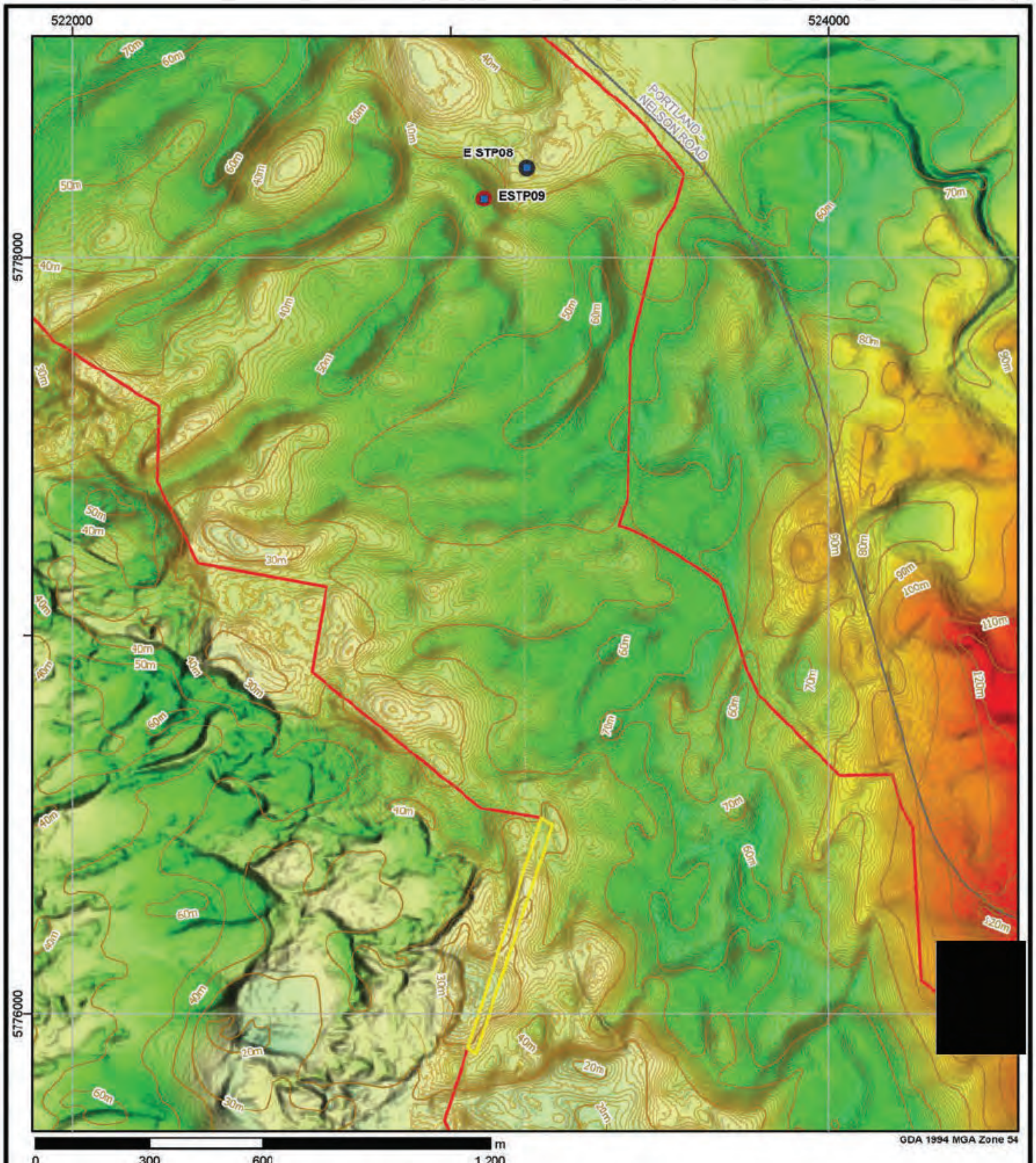
Kentbruck Wind Farm
Survey and testing results over the digital surface model - Detail 2

Shire of Glenelg

Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

Data sources: Aerial and source imagery: Client-supplied LiDAR 2022; VicMap topographic data: © State of Victoria (DELWP, 2018-2023). The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.



Kentbruck Wind Farm
Survey and testing results over the digital surface model - Detail 3

Shire of Glenelg

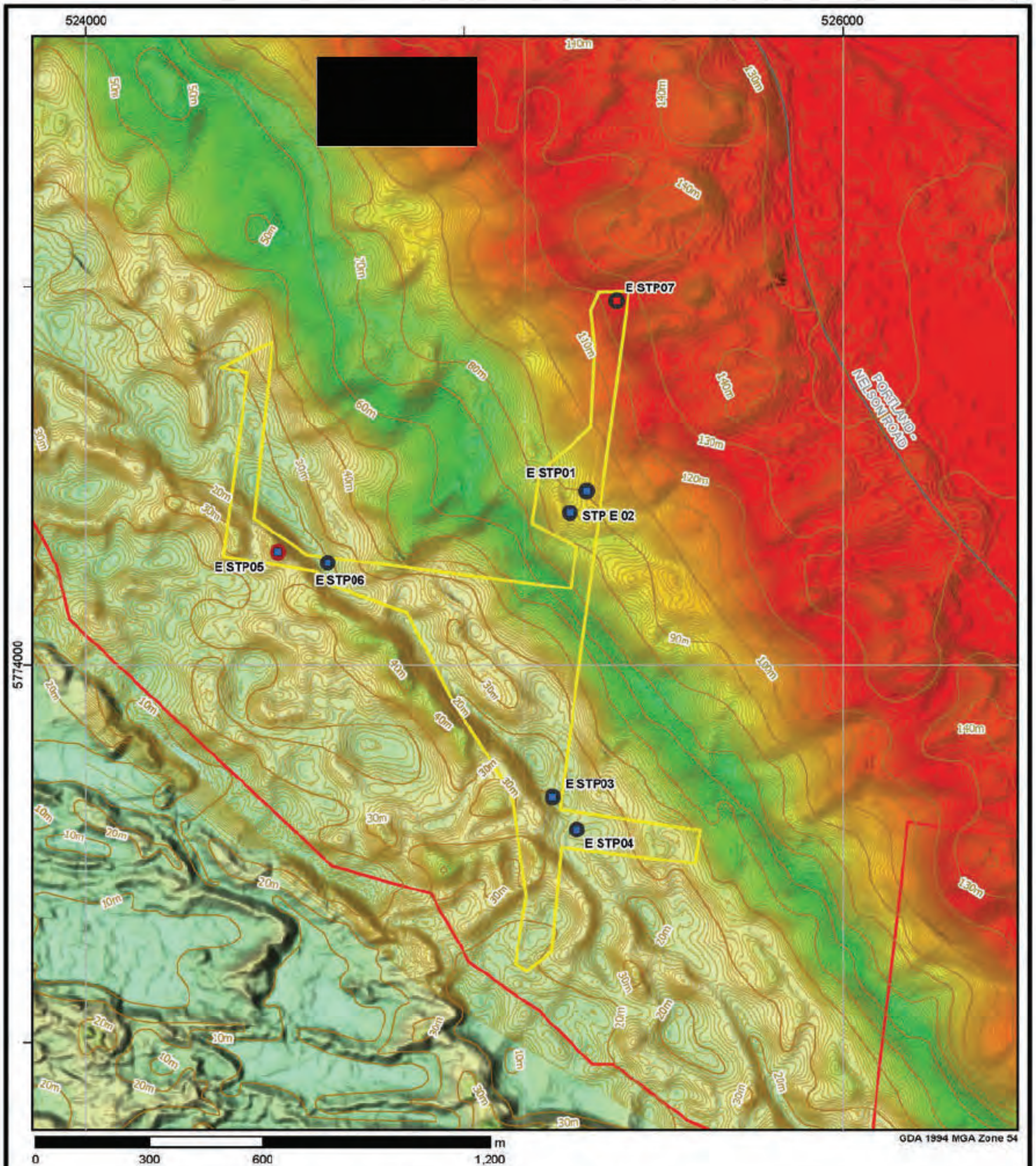
Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

Project area
[redacted]
Surface survey area
Chromosol present
Chromosol not present
[redacted]
10m contour
1m contour
Road
Water area
Elevation (m)
255
0

N

Data sources: Aerial and source imagery: Client-supplied LiDAR 2022; VicMap topographic data: © State of Victoria (DELWP, 2018-2023). The State of Victoria does not warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that the State of Victoria shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.



Kentbruck Wind Farm
Survey and testing results over the digital surface model - Detail 4

Shire of Glenelg

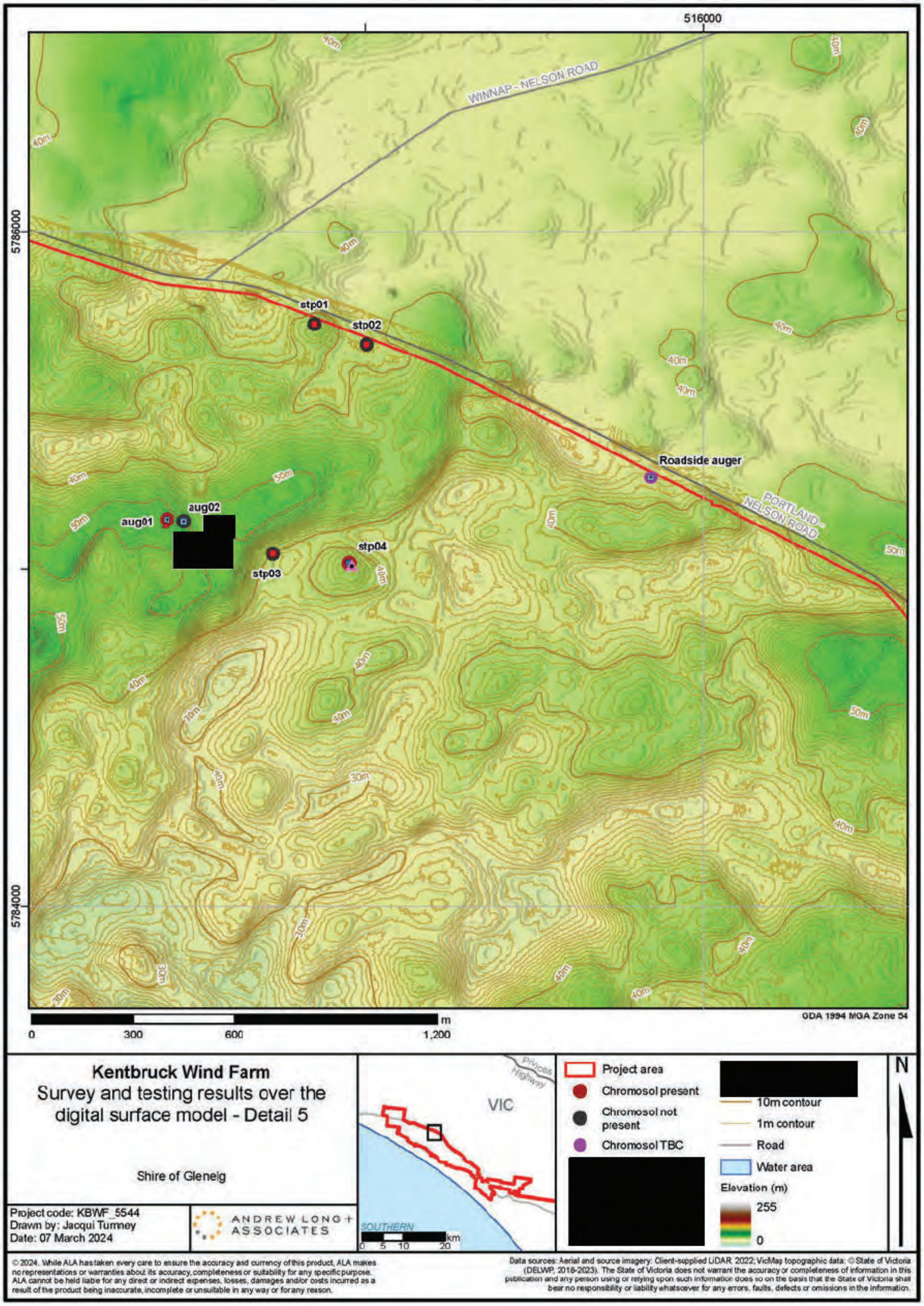
Project code: KBWF_5544
Drawn by: Jacqui Tumney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

Project area
[redacted]
Surface survey area
Chromosol present
Chromosol not present
[redacted]

10m contour
1m contour
Road
Water area
Elevation (m)
255
0

N


516000
5786000
5784000
WINNAP - NELSON ROAD
PORTLAND - NELSON ROAD
stp01
stp02
stp03
stp04
aug01
aug02
[redacted]
Roadside auger
40m
50m
30m
0
300
600
1,200
m
GDA 1994 MGA Zone 54
Kentbruck Wind Farm
Survey and testing results over the digital surface model - Detail 5
Shire of Glenelg
Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024
ANDREW LONG + ASSOCIATES
VIC
Princes Highway
SOUTHERN
0 5 10 20
km
Project area
Chromosol present
Chromosol not present
Chromosol TBC
[redacted]
10m contour
1m contour
Road
Water area
Elevation (m)
255
0
N
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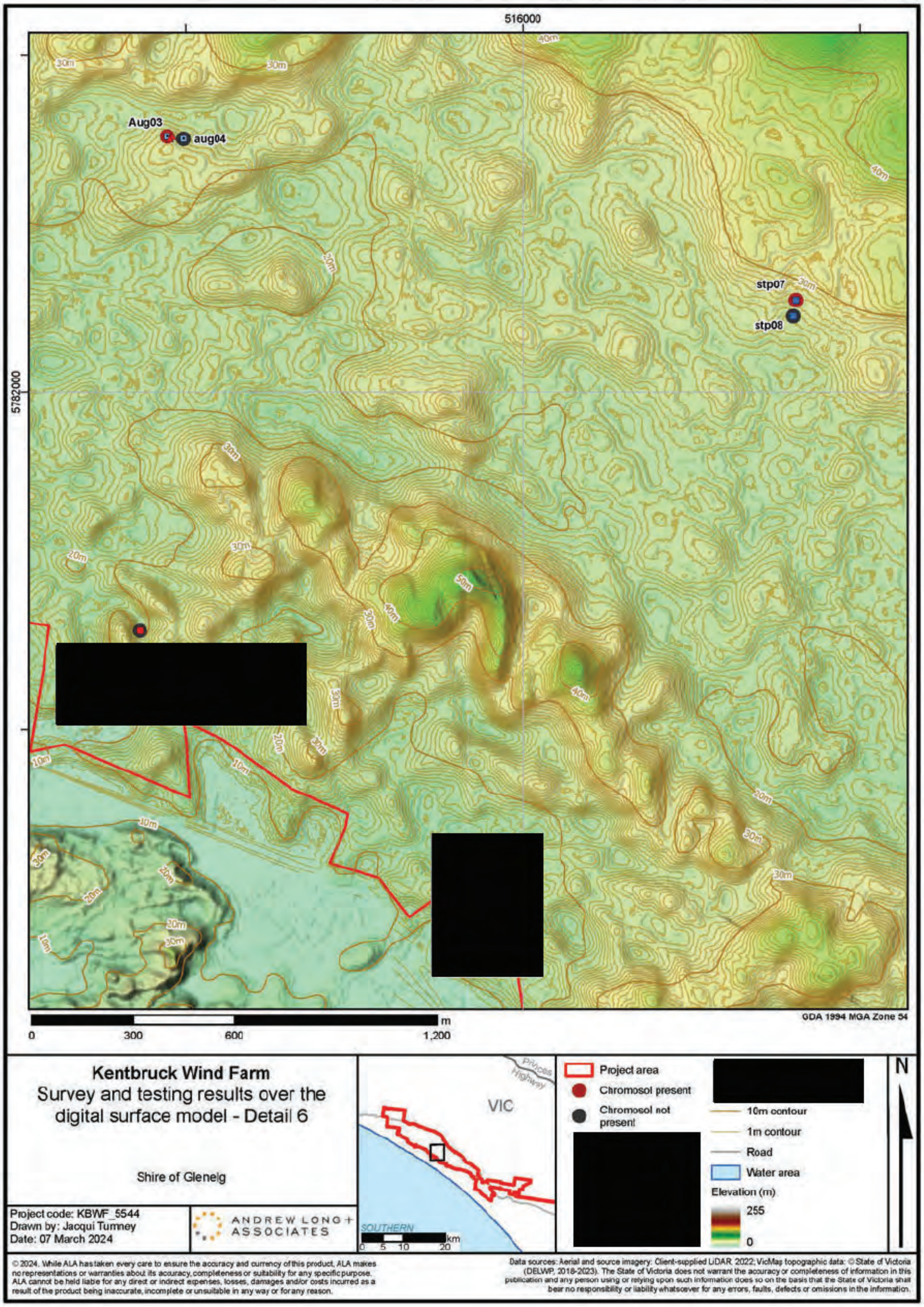
516000
5782000
Aug03
aug04
stp07
stp08
30m
40m
20m
50m
10m
[redacted]
[redacted]
0
300
600
1,200
m
GDA 1994 MGA Zone 54
Kentbruck Wind Farm
Survey and testing results over the digital surface model - Detail 6
Shire of Glenelg
Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024
ANDREW LONG + ASSOCIATES
Princes Highway
VIC
SOUTHERN
0 5 10 20 km
Project area
Chromosol present
Chromosol not present
[redacted]
10m contour
1m contour
Road
Water area
Elevation (m)
255
0
[redacted]
N
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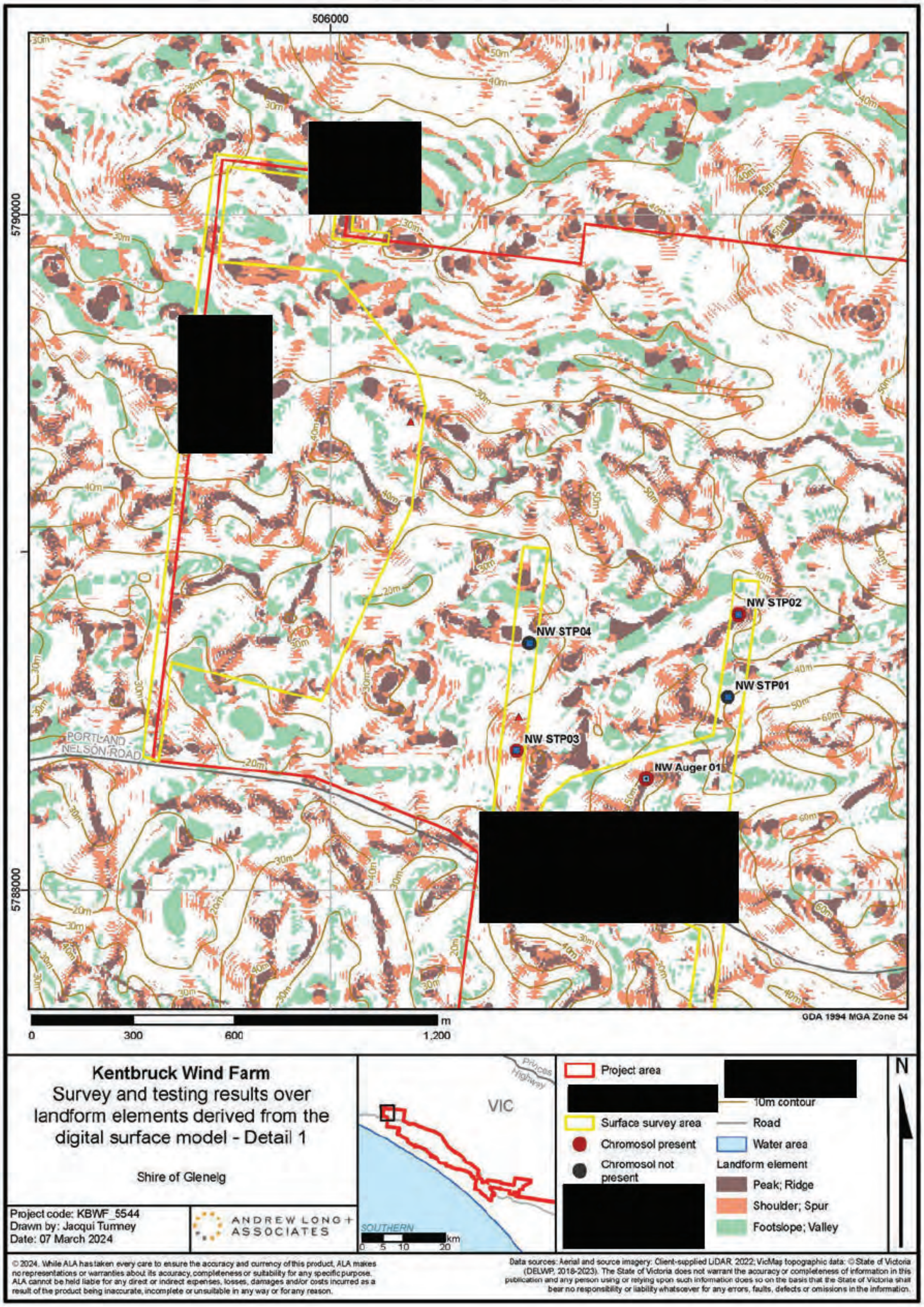
APPENDIX 4 RESULTS OF THE ASSESSMENTS AND RED SOIL MODEL TESTING WITH LANDFORM


506000
5790000
5783000
[redacted]
[redacted]
[redacted]
NW STP02
NW STP04
NW STP01
NW STP03
NW Auger 01
PORTLAND-NELSON ROAD
0 300 600 1,200 m
GDA 1994 MGA Zone 54
Kentbruck Wind Farm
Survey and testing results over landform elements derived from the digital surface model - Detail 1
Shire of Glenelg
Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024
ANDREW LONG + ASSOCIATES
VIC
Princes Highway
SOUTHERN
0 5 10 20 km
Project area
[redacted]
[redacted]
10m contour
Surface survey area
Road
Chromosol present
Water area
Chromosol not present
Landform element
Peak; Ridge
Shoulder; Spur
Footslope; Valley
[redacted]
N
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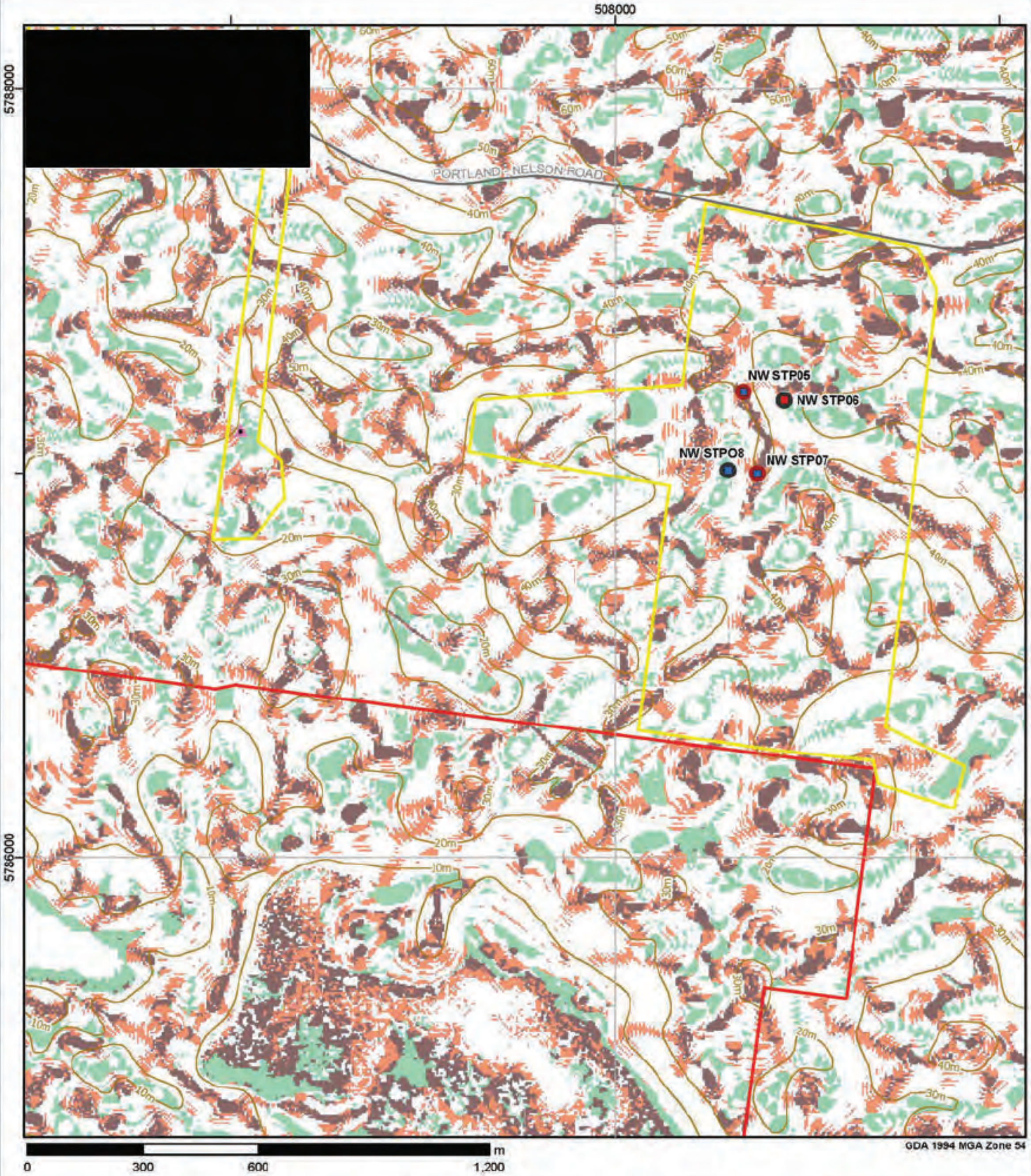

Kentbruck Wind Farm
Survey and testing results over landform elements derived from the digital surface model - Detail 2

Shire of Glenelg

Project area
Surface survey area
Chromosol present
Chromosol not present
[redacted]
10m contour
Road
Water area
Landform element
Peak; Ridge
Shoulder; Spur
Footslope; Valley
N

Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

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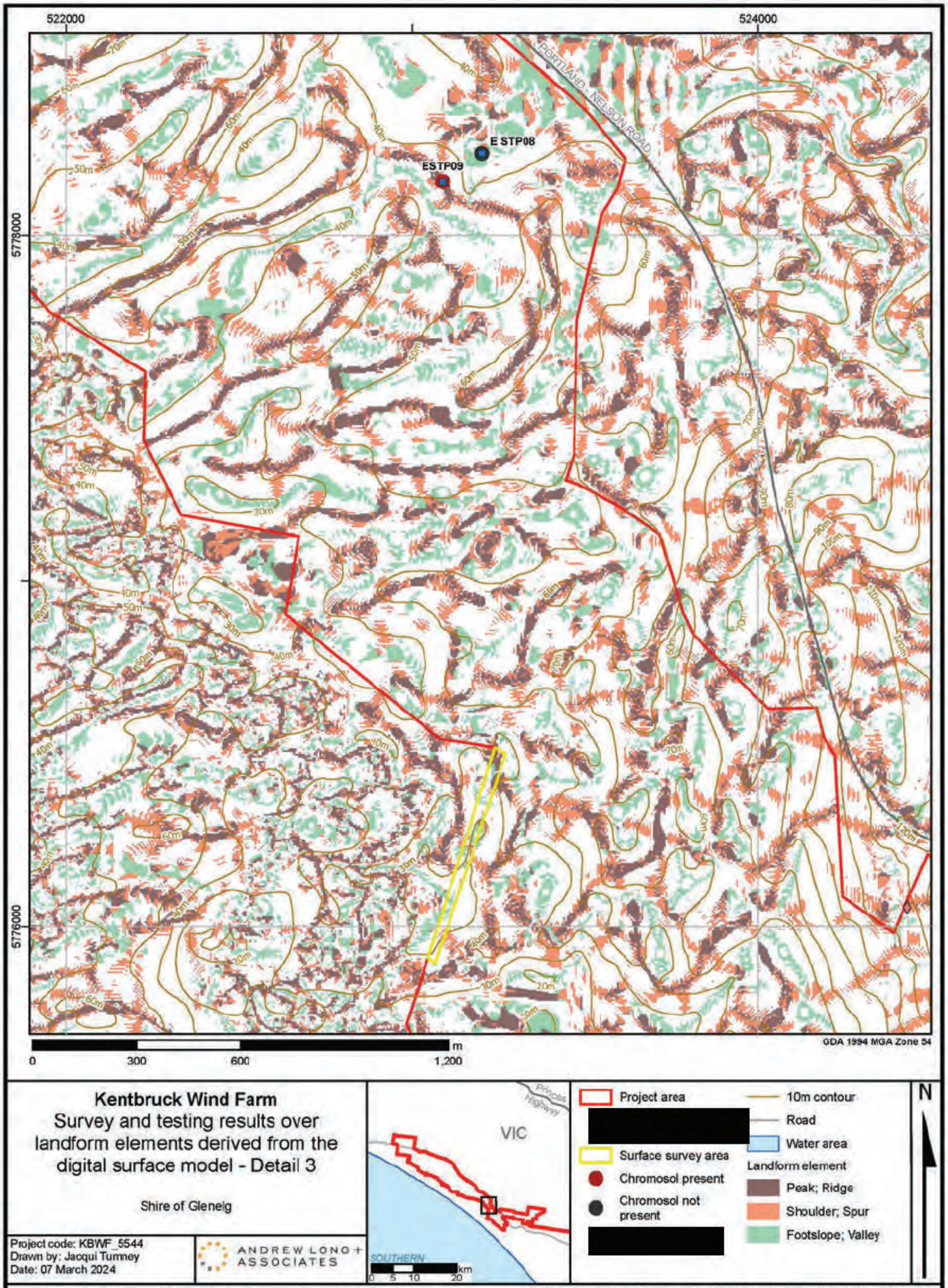

Kentbruck Wind Farm
Survey and testing results over landform elements derived from the digital surface model - Detail 3

Shire of Glenelg

Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

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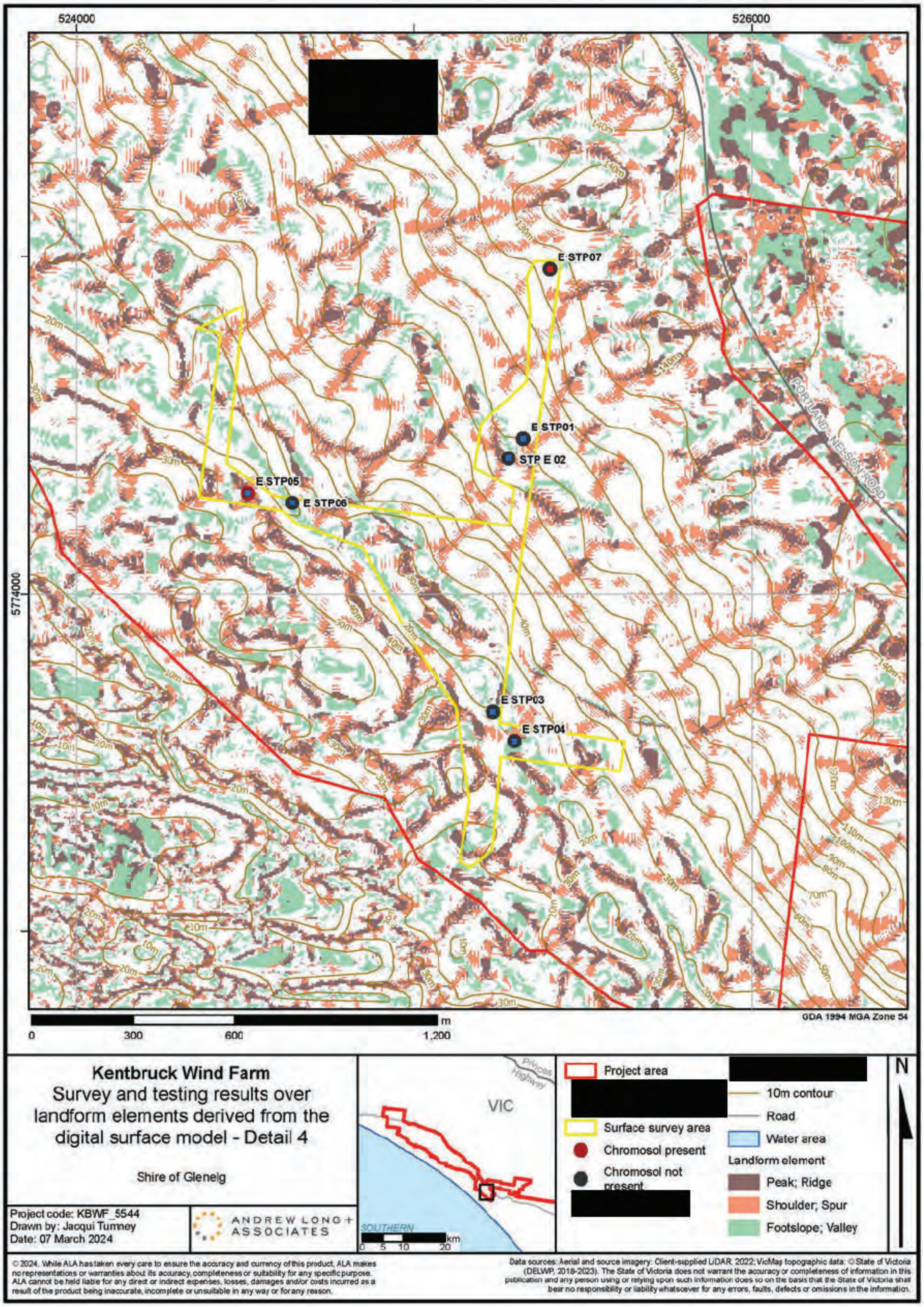
524000
526000
5774000
[redacted]
E STP07
E STP01
STP E 02
E STP05
E STP06
E STP03
E STP04
PORTLAND - NELSON ROAD
0 300 600 1,200 m
GDA 1994 MGA Zone 54
Kentbruck Wind Farm
Survey and testing results over landform elements derived from the digital surface model - Detail 4
Shire of Glenelg
Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024
ANDREW LONG + ASSOCIATES
VIC
Princes Highway
SOUTHERN
0 5 10 20 km
Project area
[redacted]
Surface survey area
Chromosol present
Chromosol not present
[redacted]
[redacted]
10m contour
Road
Water area
Landform element
Peak; Ridge
Shoulder; Spur
Footslope; Valley
N
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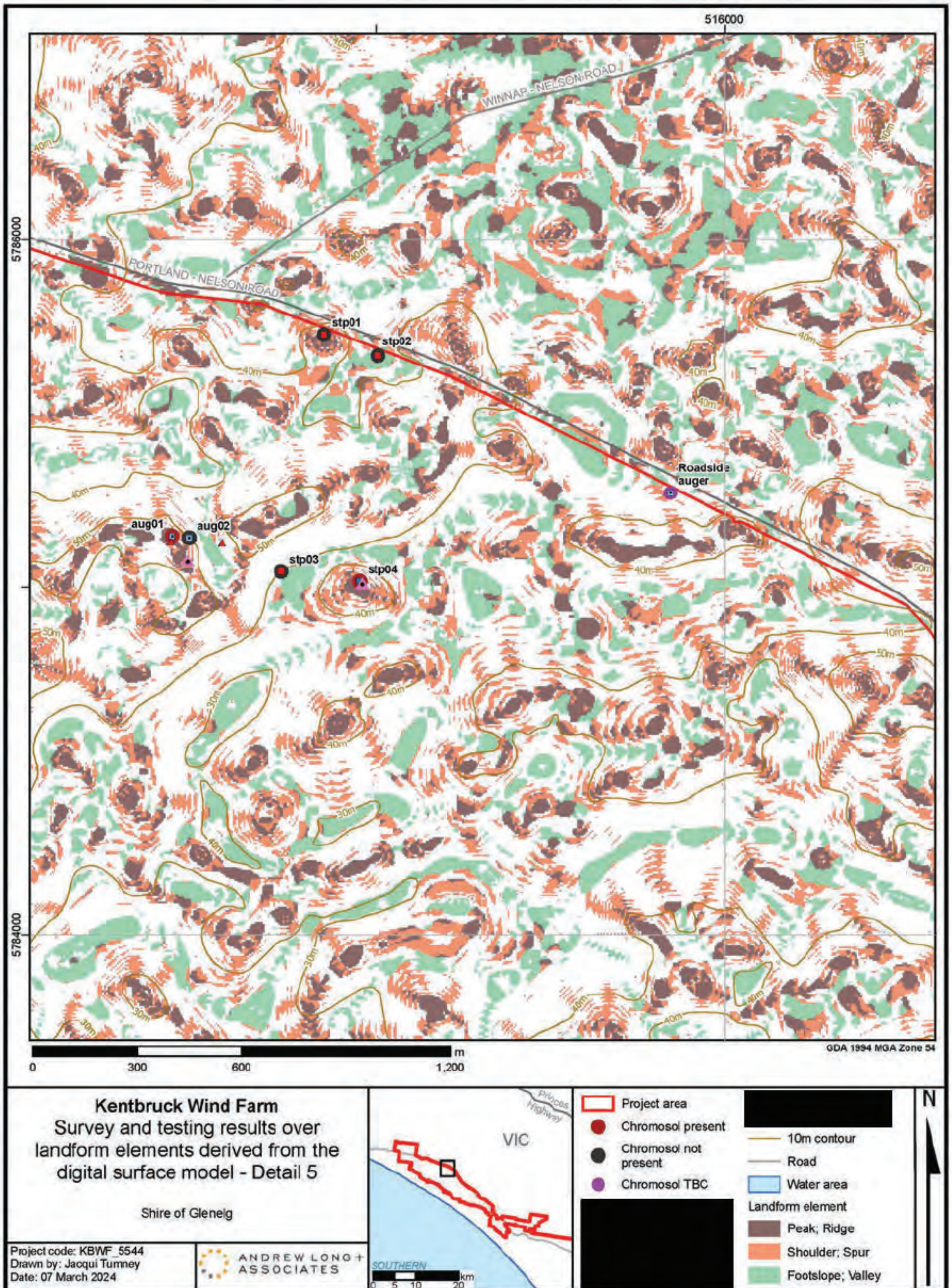

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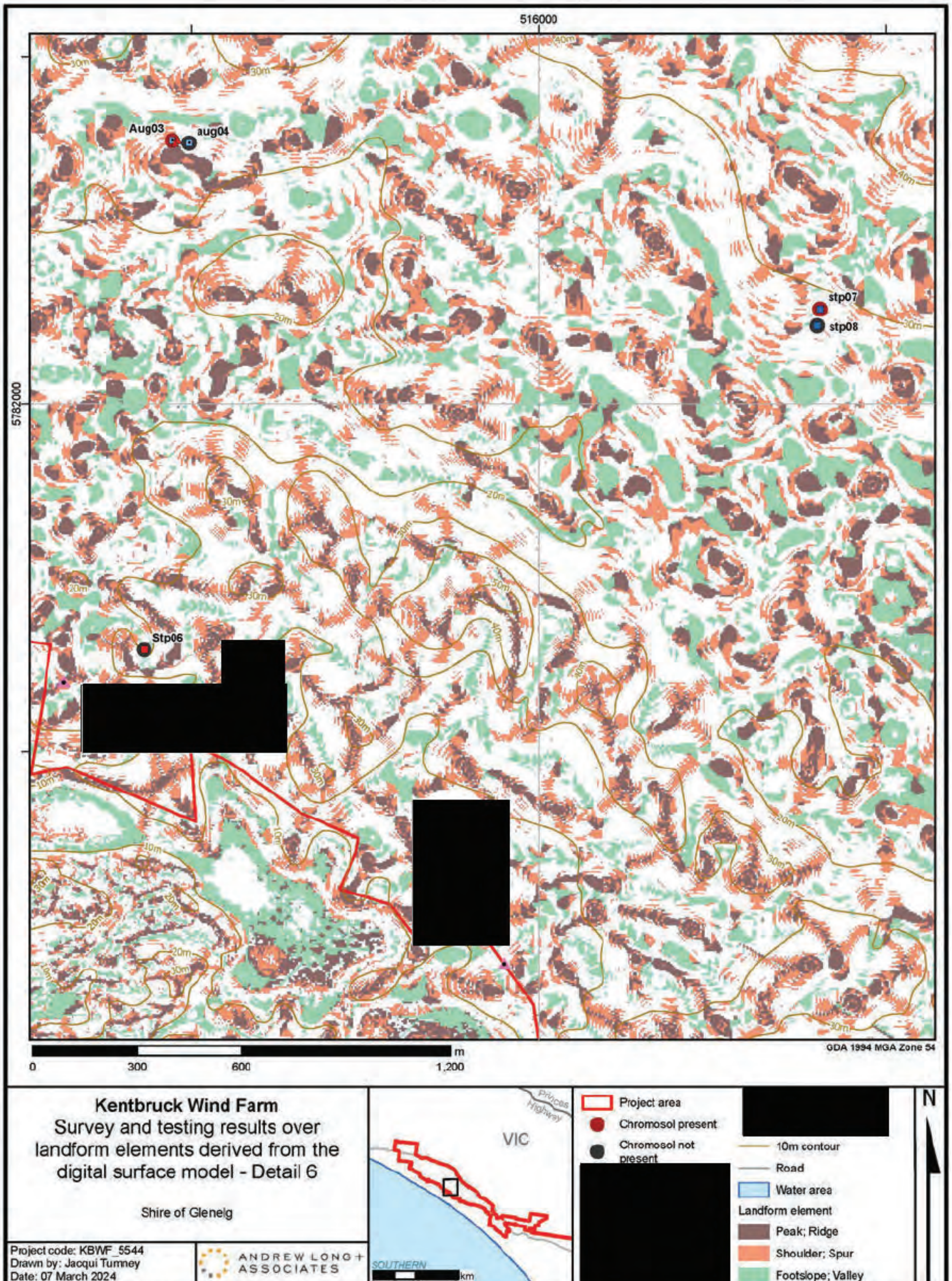

Kentbruck Wind Farm
Survey and testing results over landform elements derived from the digital surface model - Detail 6

Shire of Glenelg

Project code: KBWF_5544
Drawn by: Jacqui Turnney
Date: 07 March 2024

ANDREW LONG + ASSOCIATES

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APPENDIX 5 TRANSMISSION LINE OPTIONS ASSESSMENT

Background

Section 3.4 of the Scoping Requirements for Kentbruck Green Power Hub Environment Effects Statement requires that the Project's EES document the likely environmental effects of the Project's feasible alternatives, including routes and configurations for the transmission line. The depth of investigation should be proportionate to the potential of the alternatives to minimise potentially significant adverse effects and to meet the Project objectives.

This appendix describes the feasible transmission line alternatives that have been considered by Neoen for this Project, and the potential impacts on Aboriginal Heritage of each alternative. The preferred option for the Project, referred to as "Option 1B", has been assessed in detail in this report, so is not subject to any further assessment in this appendix. Instead, this appendix considers the potential environmental effects of the following transmission line alternatives (see Figure 111):

- Option 1A ("Heywood Underground-Overhead Combined"): Follows the same route as Option 1B (the preferred option) underground through Cobboboonee National Park / Forest Park, however it then transitions to an overhead transmission line for the remainder of the alignment to the Heywood Terminal Station.

- Option 2A ("Portland Overhead"): A wholly overhead option that connects to the existing Heywood-Portland 500 kV line north of Portland. Runs southeast from the wind farm site through rural landholdings. No final route was determined for this option as landowner agreements were unable to be secured for the entire length of transmission line. This option therefor includes several route options.

- Option 2B ("Portland Underground"): Follows the same route as Option 2A but is wholly underground.

Transmission line Project objectives

The fundamental objective of the Project is to provide a source of clean, renewable energy to help power homes and businesses in Victoria and throughout eastern Australia which are connected to the National Electricity Market (NEM). Neoen's environmental and social objectives for the Project, as described in Section 2.2 of the EES, stem from the need to develop the Project in accordance with the principles of ecologically sustainable development. Neoen's objectives relating specifically to the transmission line component of the Project are to:

- Deliver renewable electricity from the Project to the NEM
- Seek opportunities to co-locate infrastructure with existing compatible land uses such as existing easements and transport routes
- Avoid or minimise potential adverse impacts on the natural environment

- Avoid or minimise potential adverse impacts on Aboriginal and historical heritage
- Avoid or minimise potential adverse impacts on nearby residents associated with visual amenity, noise, traffic, and air quality
- Avoid impacts to business and commercial operations
- Avoid or minimise potential impacts on productive agricultural land
- Avoid or minimise the risk of bushfire
- Ensure an appropriate land use outcome by avoiding areas of sensitivity and potential land use conflicts
- Be able to obtain necessary agreements with landowners and land managers to install and operate infrastructure
- Be able to obtain planning and environmental approvals from all necessary authorities
- Provide a constructable and cost effective grid connection.

Umwelt (2023) has prepared a Transmission Line Options Assessment which describes all the transmission line options considered by Neoen to date, including those which were not found to be viable and were removed from the Project before the EES process commenced or very early in the EES process. The Options Assessment uses an objective, criteria-based approach to assessing each option. The assessment criteria and scoring metrics were developed in accordance with the transmission line objectives provided above.

This appendix describes the potential Aboriginal heritage impacts of the feasible transmission line options identified in the options assessment report, providing information for use by Umwelt in the options assessment in relation to the Aboriginal heritage -related criteria.

Description of the alternative transmission line options

The Project being pursued by Neoen, and subject to full impact assessment in this report, comprises a preferred transmission line route as described in Section 3.2.5 of this report (underground through Cobboboonee National Park and Forest Park, and farmland to the Heywood Terminal Station – Option 1B). An alternative configuration to this option has also been considered by Neoen, which follows the same route as Option 1B however it involves an overhead section between Cobboboonee Forest Park and the Heywood Terminal Station.

Two other options which were identified as feasible in the Transmission Line Options Assessment, but are no longer being pursued by the Project due to a lack of landowner and community support, are Options 2A and 2B which run southeast from the wind farm site and connect to the Heywood-Portland 500 kV line north of Portland. Option 2A is wholly overhead, while Option 2B is wholly underground.

The three transmission line options are described as follows:

- Option 1A: The underground transmission line would extend east from the main wind farm substation and traverse Cobboboonee National Park and Forest Park beneath an existing road. From there, the transmission line would transition to an overhead line as it travels through freehold land to reach Heywood Terminal Station.
- Option 2A: The overhead transmission line would extend southeast from the main wind farm substation and traverse several freehold rural landholdings used primarily for grazing. This option would require development and construction of a new terminal station adjacent to the existing Heywood-Portland 500 kV line north of Portland.
- Option 2B: The underground transmission line would extend southeast from the main wind farm substation and traverse several freehold rural landholdings used primarily for grazing. This option

would require development and construction of a new terminal station adjacent to the existing Heywood-Portland 500 kV line north of Portland.

The three options are shown in Figure 111.

Summary of the assessment methodology

The impact assessment for the three proposed route options was desktop-based assessment only utilising the following resources:

- Protected Matters Search Tool
- Native Title Tribunal
- Aboriginal Cultural Heritage Register and Information System (ACHRIS) that documents
    - Registered Aboriginal places
    - Areas of Aboriginal cultural heritage sensitivity

Limitations and obstacles

Only Aboriginal Heritage previously registered places and areas of Aboriginal cultural heritage sensitivity were assessed as part of the Transmission Line Options Assessment. An assessment of prior land use and ground condition was limited to desktop resources, focussing on available historical aerial imagery. The results and conclusions from the CVA were not made available to ALA at the time that this options assessment was prepared. The scoring matrix for intangible cultural values was derived from the high level values provided by the CVA PowerPoint presentation and documented in Section 8.5.3.

Historic (non-Aboriginal) Heritage was assessed separately; however, has been included in Table 42 below.

Existing conditions

This section provides a summary of the existing conditions relevant to each of the defined route options.

Option 1A - Heywood Underground-Overhead Combined

Protected Matters Search Tool

There are no Aboriginal places on the World Heritage List, National Heritage List, or Commonwealth Heritage List within the Option 1A alignment. Further, the Option 1A alignment is not located within Commonwealth land.

The eastern terminus of the Option 1A alignment is located approximately 9 km to the west of the World Heritage Listed site Budj Bim Cultural Landscape.

Native Title Tribunal Determinations

Option 1A is located within the Gunditjmara Part A Native Title Determination (Federal Court Number VID6004/1998, VID655/2006).

ACHRIS search

Registered Aboriginal places

No previously registered Aboriginal places have been recorded within the Option 1A alignment. It is noted that the eastern terminus of Option 1A is located [redacted] to the [redacted] of Heywood Terminal Station [redacted] During the assessment of CHMP 12660 for the Heywood Terminal Station Extension Project, the Aboriginal place could not be reidentified.

Areas of Aboriginal cultural heritage sensitivity

Option 1A crosses through several areas of Aboriginal cultural heritage sensitivity consisting of the following:

- Named Waterways as defined by Regulation 26 of the *Aboriginal Heritage Regulations 2018*
    - Johnstone Creek
    - Mount Kincaid Creek
    - Surrey River
    - Area of swamp/wetland
- Parks as defined by Regulation 32 of the *Aboriginal Heritage Regulations 2018*
    - Cobboboonee National Park
- Koo Wee Rup Plain as defined by Regulation 34 of the *Aboriginal Heritage Regulations 2018*
- Volcanic Cone as defined by Regulation 37 of the *Aboriginal Heritage Regulations 2018*

Option 2A - Portland Overhead

Protected Matters Search Tool
There are no Aboriginal places on the World Heritage List, National Heritage List, or Commonwealth Heritage List within the Option 2A alignment. Further, the Option 2A alignment is not located within Commonwealth land.

The eastern terminus of the Option 2A alignment is located approximately 22 km to the southwest of the World Heritage Listed site Budj Bim Cultural Landscape.

Native Title Tribunal Determinations
Option 2A is located within the Gunditjmara Part A Native Title Determination (Federal Court Number VID6004/1998, VID655/2006).

ACHRIS search
Registered Aboriginal places
No previously registered Aboriginal places have been recorded within the Option 2A alignment.

Areas of Aboriginal cultural heritage sensitivity
Option 2A crosses through several areas of Aboriginal cultural heritage sensitivity consisting of the following:

- Koo Wee Rup Plain as defined by Regulation 34 of the *Aboriginal Heritage Regulations 2018*
- Sand sheets as defined by Regulation 41 of the *Aboriginal Heritage Regulations 2018*

Option 2B - Portland Underground

Protected Matters Search Tool
There are no Aboriginal places on the World Heritage List, National Heritage List, or Commonwealth Heritage List within the Option 2B alignment. Further, the Option 2A alignment is not located within Commonwealth land.

The eastern terminus of the Option 2B alignment is located approximately 22 km to the southwest of the World Heritage Listed site Budj Bim Cultural Landscape.

Native Title Tribunal Determinations
Option 2B is located within the Gunditjmara Part A Native Title Determination (Federal Court Number VID6004/1998, VID655/2006).

ACHRIS search
Registered Aboriginal places
No previously registered Aboriginal places have been recorded within the Option 2B alignment.

Areas of Aboriginal cultural heritage sensitivity
Option 2A crosses through several areas of Aboriginal cultural heritage sensitivity consisting of the following:

- Koo Wee Rup Plain as defined by Regulation 34 of the *Aboriginal Heritage Regulations 2018*
- Sand sheets as defined by Regulation 41 of the *Aboriginal Heritage Regulations 2018*

Identification of impact pathways

This section provides a summary of the impact pathways relevant to Aboriginal Heritage.

Table 41 Metrics of the three transmission line route alignments

Transmission line route option	Presence of Aboriginal places	Intangible cultural values	Areas of Aboriginal cultural heritage sensitivity	Native Title Land
Option 1A- Heywood Underground-Overhead Combined	None	Few to none	20% or less of the alignment length overlaps with an area of CHS and/or more than 20% of the alignment is in an area of previous ground disturbance	Intersects with Native Title land
Option 2A - Portland Overhead	None	Some	Between 20% and 40% of the alignment length overlaps with an area of CHS and/or has 20% or less of the alignment in areas of previous ground disturbance	Intersects with Native Title land
Option 2B - Portland Underground	None	Few to none	Between 20% and 40% of the alignment length overlaps with an area of CHS and/or has 20% or less of the alignment in areas of previous ground disturbance	Intersects with Native Title land

Table 41 summaries the identified potential impacts to Aboriginal heritage with the three transmission route option alignments. The summaries in the table above are based on the provided scoping metrics. The summary of the options assessment scoring matrix is documented in Table 42.

Aboriginal places

None of the three transmission line route option alignments contain known registered Aboriginal cultural heritage places.

Intangible cultural values

In terms of intangible cultural values, Option 2A rated higher (a metric score of 2) than the other two options (Option 1A and 1B with metric scores of 1) as the proposed alignment is overhead and has more potential to impact on intangible heritage values. As the remaining two route option alignments are underground, there would be few to no intangible cultural values within the alignment that would impact on Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest).

Areas of mapped cultural heritage sensitivity
Option 1A ranked lower (a metric score of 1) than the remaining two options (Option 2A and 2B with metric scores of 2) as Option 1A is located underneath the existing alignment of Boiler Swamp Road that would have been subject to previous ground disturbance from the construction of the existing roadway and maintenance to the roadway over time (refer to Figure 112 through Figure 115).

Native Title land
All three of the transmission line route alignments intersect Native Title land.

Impact assessment

Potential impacts to Aboriginal places, intangible cultural values, areas of cultural heritage sensitivity, and native title land would occur during the construction phase of works. No further impacts would be anticipated during the operational and decommissioning phases of works. As such, only construction impacts have been addressed below.

Construction impacts

Option 1A - Heywood Underground-Overhead Combined

Aboriginal places
Option 1A is proposed to be located completely beneath the ground surfaces. A total of 17.6 km of the proposed 26.6 km alignment would be located beneath the existing Boiler Swamp Road. There is lower potential for in situ Aboriginal cultural heritage material to be present beneath the existing roadway as the construction of the roadway would have likely removed in situ surface or subsurface Aboriginal cultural heritage material that may have been present.

It is further noted that the underlying geology of Boiler Swamp Road consists of late Tertiary basalt flows overlying Gambier Limestone. Soil stratigraphy is typically characterised by clay intermixed with ironstone. The anticipated depth of culturally sterile deposits are unlikely to be as deep as within the GMUs of the proposed turbine area.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the Option 1A transmission route option alignment.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Option 1A transmission route option alignment, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

Intangible cultural values

Impact

Indirect effects to Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest) as well as potential indirect effects to Sky Country, cultural view lines, the cultural linkages and the sounds of Gunditj Mirring Country during the construction phase of the project.

Mitigation

Intangible cultural values have a higher chance of being impacted on the portions of the Option 1A transmission route alignment that are above ground.

The EES includes mitigation measures to avoid/minimise impacts to biodiversity and habitat, flora and fauna, aquatic environments, landscape and visual amenity, as well as noise and vibration, that will, in turn, avoid/minimise the indirect effects to the cultural values of Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest).

Furthermore, GMTOAC, must continue to be consulted, and involved where practicable, before, during, and after the construction phase. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the construction phase of works.

Residual impact

Residual impacts are those that remain once mitigation and management measures have been implemented. The level of risk to intangible, non-archaeological Aboriginal heritage places and/or values that may be situated within the Option 1A transmission route option alignment is expected to decrease as a result of the implementation of an approved CVA.

Areas of mapped cultural heritage sensitivity

Areas of mapped cultural heritage sensitivity have the potential to contain unregistered Aboriginal cultural heritage material.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the Option 1A transmission route option alignment. The construction methodology (open cut trenching) would impact on surface and subsurface soils to the required depth of excavation in those locations that have not been previously impacted by construction.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction and installation of the Option 1A transmission route option alignment.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction and installation of the Option 1A transmission route option alignment would be expected to decrease as a result of the preparation and implementation of an approved CHMP.

Native Title land

Option 1A transmission route option alignment intersects with land that is subject to native Title determination with the Gunditjmara and is held by the GMTOAC. Neoen is sponsoring the GMTOAC to prepare a Cultural values Assessment to inform preparation of an Indigenous Land Use Agreement (ILUA) as well as the related CHMP. Relevant lease and license arrangements for elements of the Project on Crown land would be finalised with DTP following planning approvals being obtained.

Option 2A - Portland Overhead

Option 2A is proposed to be located wholly overhead. An overhead alignment has less potential to impact on surface or subsurface Aboriginal cultural heritage material, with those places where ground disturbing works will occur (i.e. at the location of pylons) where cultural heritage material, if present, could be impacted.

Aboriginal places

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the Option 2A transmission route option alignment.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Option 2A transmission route option alignment, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

Intangible cultural values

Impact

Indirect effects to Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest) as well as potential indirect effects to Sky Country, cultural view lines, the cultural linkages and the sounds of Gunditj Mirring Country during the construction phase of the project.

Mitigation

Intangible cultural values have a higher chance of being impacted on by Option 2A transmission route alignment as the entire alignment is overhead/ above ground.

The EES includes mitigation measures to avoid/minimise impacts to biodiversity and habitat, flora and fauna of the Option 2A transmission route option alignment, aquatic environments, landscape and visual amenity, as well as noise and vibration, that will, in turn, avoid/minimise the indirect effects to the cultural values of Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest).

Furthermore, GMTOAC, must continue to be consulted, and involved where practicable, before, during, and after the construction phase. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the construction phase of works.

Residual impact

Residual impacts are those that remain once mitigation and management measures have been implemented. The level of risk to intangible, non-archaeological Aboriginal heritage places and/or values that may be situated within the Option 2A transmission route option alignment is expected to decrease as a result of the implementation of an approved CVA.

Areas of mapped cultural heritage sensitivity
Areas of mapped cultural heritage sensitivity have the potential to contain unregistered Aboriginal cultural heritage material.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the Option 2A transmission route option alignment. The construction methodology (open cut trenching) would impact on surface and subsurface soils to the required depth of excavation in those locations that have not been previously impacted by construction.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction and installation of the Option 2A transmission route option alignment.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction and installation of the Option 2A transmission route option alignment would be expected to decrease as a result of the preparation and implementation of an approved CHMP.

Native Title land
Option 2A transmission route option alignment intersects with land that is subject to native Title determination with the Gunditjmara and is held by the GMTOAC. Neoen is sponsoring the GMTOAC to prepare a Cultural values Assessment to inform preparation of an Indigenous Land Use Agreement (ILUA) as well as the related CHMP. Relevant lease and license arrangements for elements of the Project on Crown land would be finalised with DTP following planning approvals being obtained.

Option 2B - Portland Underground

Aboriginal places
Option 2B is proposed to be located wholly underground, following the same alignment as Option 2A. The entire alignment of route option 2B is located within agricultural land.

Previously registered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the Option 2B transmission route option alignment.

Mitigation

As no previously registered Aboriginal places will be impacted by the proposed works, there are no mitigation measures that need to be implemented during the construction phase of works.

Residual Impact

There are no residual impacts as no previously registered Aboriginal places will be impacted by the proposed works.

The CHMP will contain general management conditions designed to increase awareness amongst project staff and contractors of the potential for Aboriginal cultural heritage to be present within the Option 2B transmission route option alignment, and contingency measures which provide clear guidelines regarding the processes that must be implemented should Aboriginal cultural heritage be discovered during the construction of the project. GMTOAC provide the general management conditions and contingency plans for the unexpected discovery of Aboriginal cultural heritage during the activity, and are included in Part 1 of CHMP 17882 (subject to approval).

Intangible cultural values

Impact

Indirect effects to Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest) as well as potential indirect effects to Sky Country, cultural view lines, the cultural linkages and the sounds of Gunditj Mirring Country during the construction phase of the project.

Mitigation

Intangible cultural values have a higher chance of being impacted on overhead alignments. As the Option 2B transmission route alignment is entirely underground, there is less chance of intangible cultural values being impacted.

Furthermore, the EES includes mitigation measures to avoid/minimise impacts to biodiversity and habitat, flora and fauna, aquatic environments, landscape and visual amenity, as well as noise and vibration, that will, in turn, avoid/minimise the indirect effects to the cultural values of Nyamat Mirring (Sea Country), Bochara Mirring (Glenelg River Country), and Woorrowarook Mirring (Forest Country – Cobbobboonee Forest).

Furthermore, GMTOAC, must continue to be consulted, and involved where practicable, before, during, and after the construction phase. GMTOAC Research Principles and Guidelines must be employed to ensure that Gunditjmara Country and cultural values are respected and protected during the construction phase of works.

Residual impact

Residual impacts are those that remain once mitigation and management measures have been implemented. The level of risk to intangible, non-archaeological Aboriginal heritage places and/or values that may be situated within the Option 2B transmission route option alignment would be expected to decrease as a result of the implementation of an approved CVA.

Areas of mapped cultural heritage sensitivity

Areas of mapped cultural heritage sensitivity have the potential to contain unregistered Aboriginal cultural heritage material.

Previously unregistered Aboriginal cultural heritage material

Impact

No previously identified or recorded Aboriginal places are located within the Option 2B transmission route option alignment. The construction methodology (open cut trenching) would impact on surface and subsurface soils to the required depth of excavation in those locations that have not been previously impacted by construction.

Mitigation

The CHMP (subject to approval) documents the contingencies that must be undertaken in the instance that suspected Aboriginal cultural heritage material is identified during the construction and installation of the Option 2A transmission route option alignment.

Residual Impact

The level of risk to unregistered Aboriginal cultural heritage places that may be situated within areas subject to the construction and installation of the Option 2A transmission route option alignment would be expected to decrease as a result of the preparation and implementation of an approved CHMP.

Native Title land

Option 2B transmission route option alignment intersects with land that is subject to native Title determination with the Gunditjmara and is held by the GMTOAC. Neoen is sponsoring the GMTOAC to prepare a Cultural values Assessment to inform preparation of an Indigenous Land Use Agreement (ILUA) as well as the related CHMP. Relevant lease and license arrangements for elements of the Project on Crown land would be finalised with DTP following planning approvals being obtained.

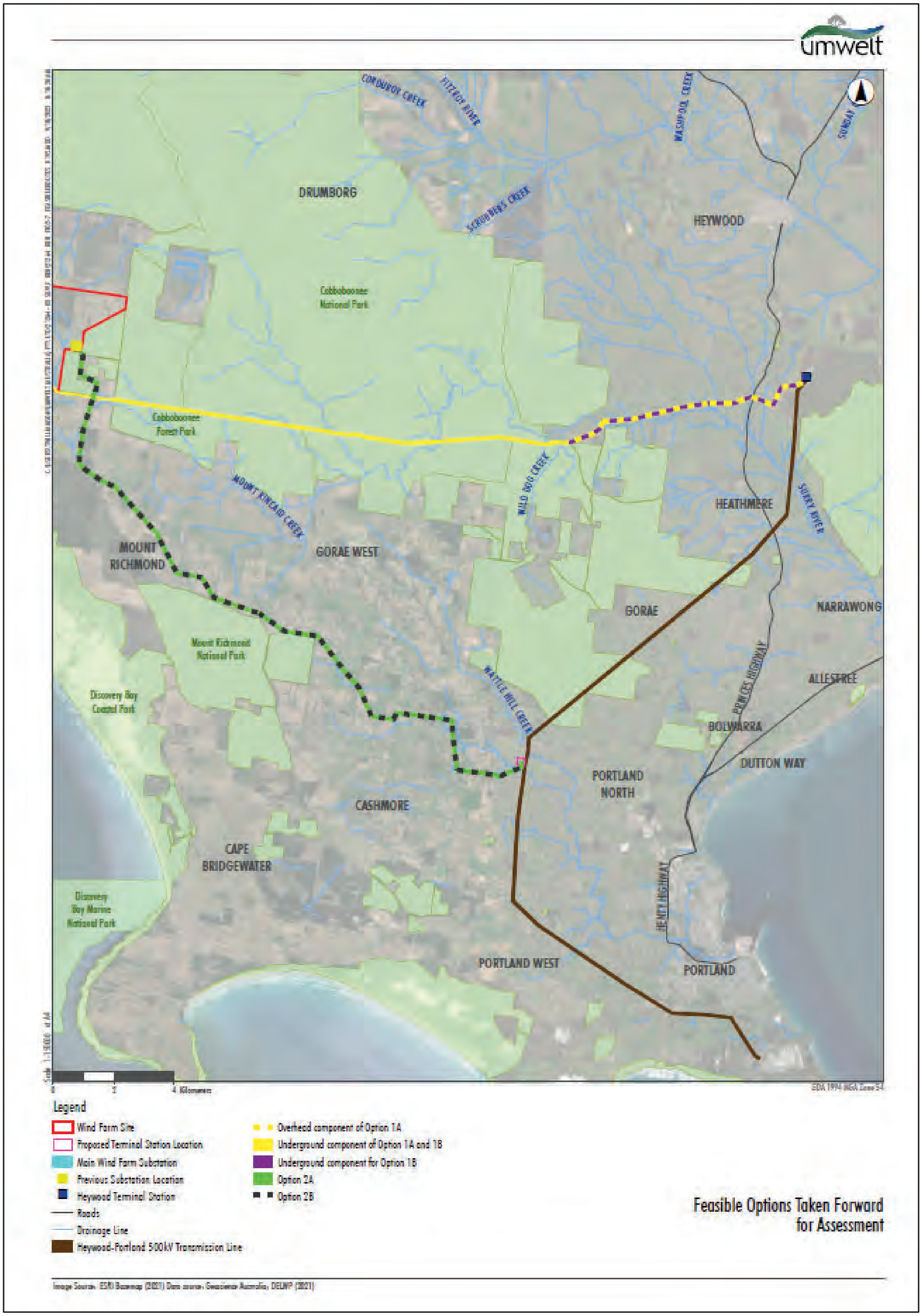

Figure 111 **Feasible options taken forward for assessment (Client provided)**

SUMMARY OF OPTIONS ASSESSMENT

Table 42 Options Assessment Scoring Matrix for Heritage

Parameter	Weighting	Criteria	Metrics				Transmission line options – metrics			Transmission line options - scores		
			High (Score of 3)	Medium (Score of 2)	Low (Score of 1)	N/A (Score of 0)	1A Heywood UG	2A Portland OH	2B Portland UG	1A Heywood UG + OH	2A Portland OH	2B Portland UG
Heritage	10%	Registered historic heritage sites (listed on the Victorian Heritage Inventory (VHI), Victorian Heritage Register (VHR), and/or Heritage Overlay of the Glenelg Planning Scheme)	Intersects with listed VHR sites of State or National significance	Intersects with listed VHI sites of higher than local significance	Intersects with listed VHI and or HO sites of local significance	Does not intersect with any listed heritage sites or sites have been destroyed/ in an area of SGD	0	0	0	0	0	0
	10%	Aboriginal places listed on the Victorian Aboriginal Heritage Register (VAHR) or identified through Project investigations	Intersects with known Aboriginal places of high significance (nature or preservation – e.g., scarred trees, large intact/complex subsurface 2	Intersects with known Aboriginal places of moderate significance (nature or preservation – e.g. surface scatters subject to some level of disturbance/turbation)	Intersects with known Aboriginal places of low significance (nature or preservation – e.g. isolated occurrences or places which have been subject	Does not intersect with any known Aboriginal places or intersects with delisted or salvaged places where no further potential exists	0	0	0	0	0	0

Parameter	Weighting	Criteria	Metrics				Transmission line options – metrics			Transmission line options - scores		
			High (Score of 3)	Medium (Score of 2)	Low (Score of 1)	N/A (Score of 0)	1A Heywood UG	2A Portland OH	2B Portland UG	1A Heywood UG + OH	2A Portland OH	2B Portland UG
			artefact scatters)		to high levels of disturbance)							
	10%	Intangible cultural values	Significant intangible cultural values occur within the alignment (e.g. - trauma lines or Aboriginal historic places associated with CVA)	Some intangible cultural values occur within the alignment (e.g. - physical aspects or places highlighted in the CVA)	Few or no intangible cultural values occur within the alignment (general in nature)	N/A	1	2	1	1	2	1
	10%	Areas mapped as areas of cultural heritage sensitivity (CHS) under the *Aboriginal Heritage Act 2006*, which are considered to have a high likelihood of containing unidentified Aboriginal cultural heritage material	40% or more of the alignment length overlaps/Intersects with an area of CHS with no known SGD	Between 20% and 40% of the alignment length overlaps with an area of CHS and/or has 20% or less of the alignment in areas of SGD	20% or less of the alignment length overlaps with an area of CHS and/or more than 20% of the alignment is in an areas of previous ground disturbance	Not associated with any area of CHS; or CHS has been demonstrably destroyed/removed completely by SGD	1	2	2	1	2	2
	10%	Native Title land requiring provision under an Indigenous Land Use Agreement (ILUA) with the Gunditj Mirring	Intersects with Native Title land	N/A	N/A	Does not intersect with any Native Title land	3	3	3	3	3	3

Parameter	Weighting	Criteria	Metrics				Transmission line options – metrics			Transmission line options - scores		
			High (Score of 3)	Medium (Score of 2)	Low (Score of 1)	N/A (Score of 0)	1A Heywood UG	2A Portland OH	2B Portland UG	1A Heywood UG + OH	2A Portland OH	2B Portland UG
		Traditional Owners Aboriginal Corporation										

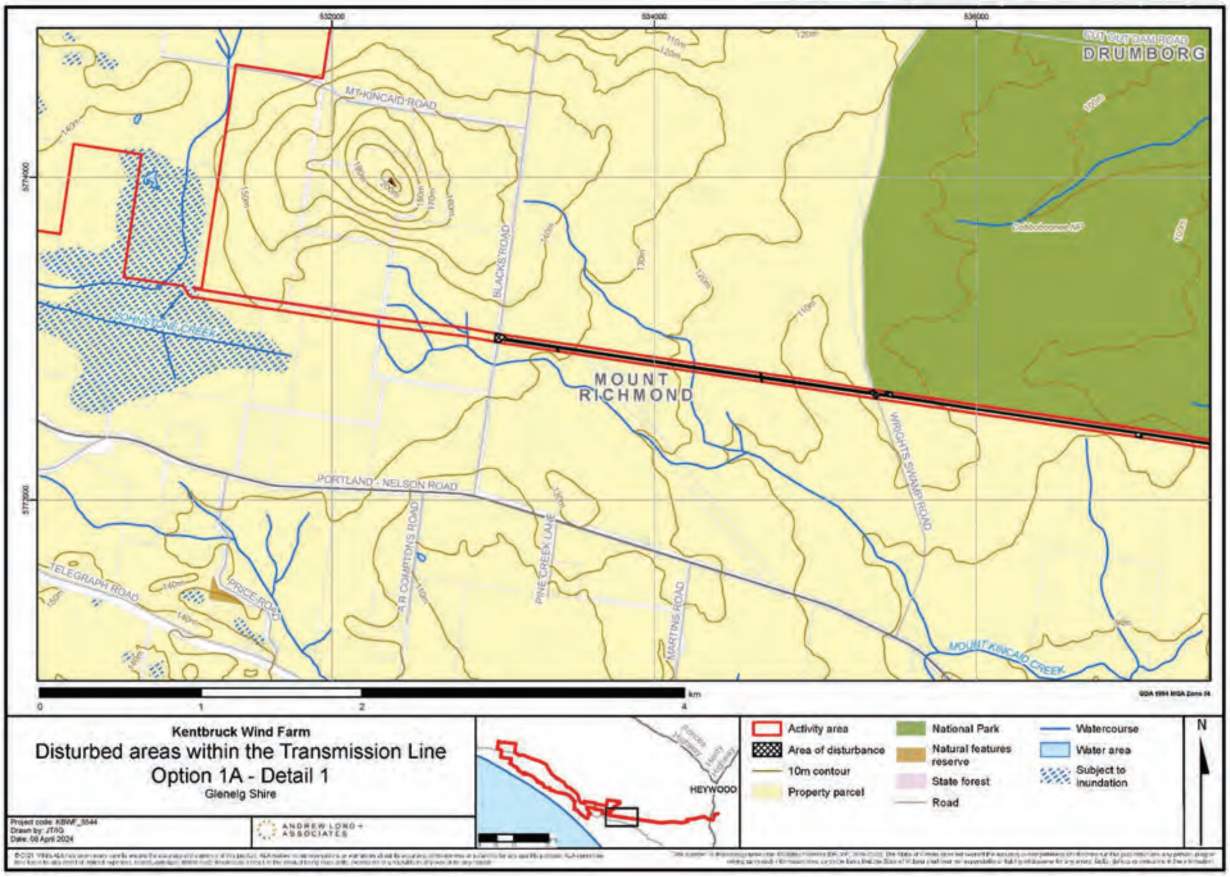

Figure 112 Location of previous ground disturbance along Option 1A route option alignment – Detail 1

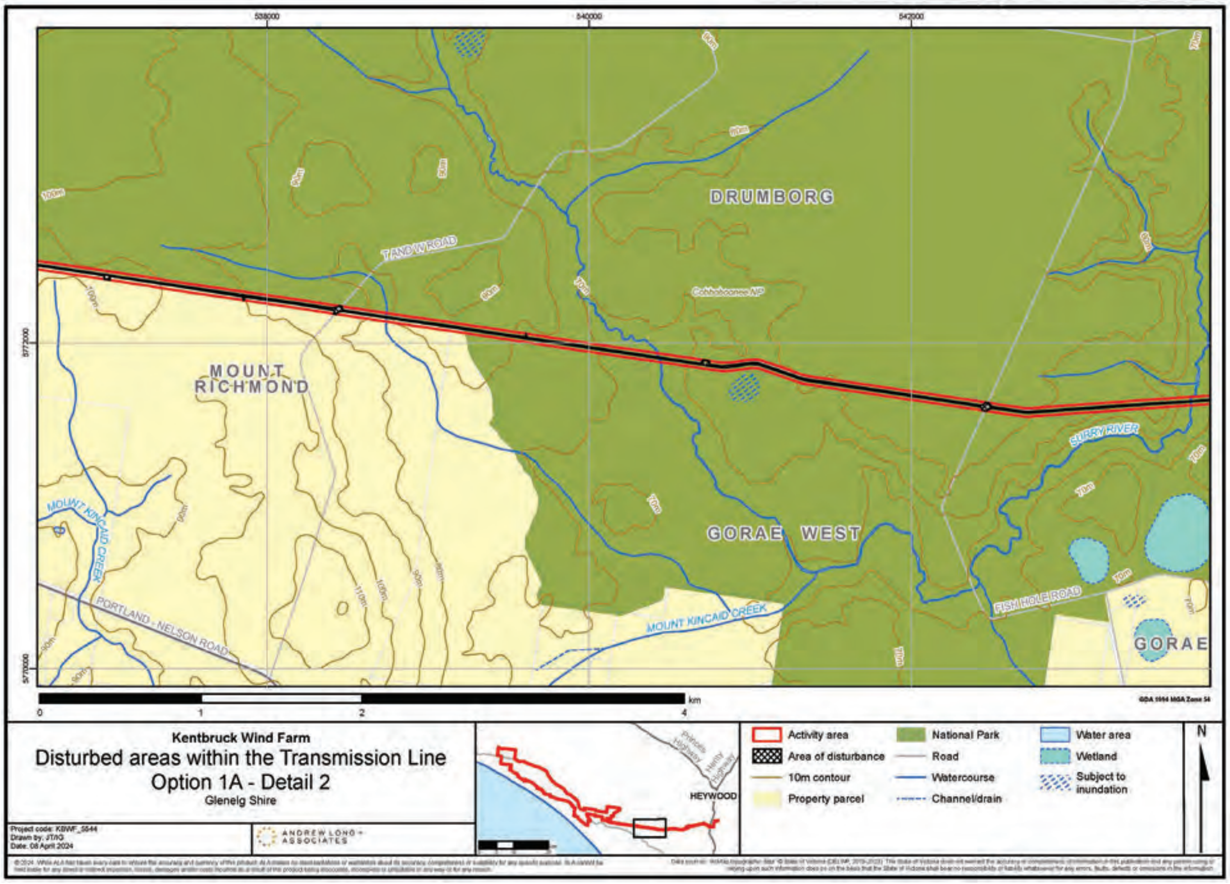

Figure 113 Location of previous ground disturbance along Option 1A route option alignment – Detail 2

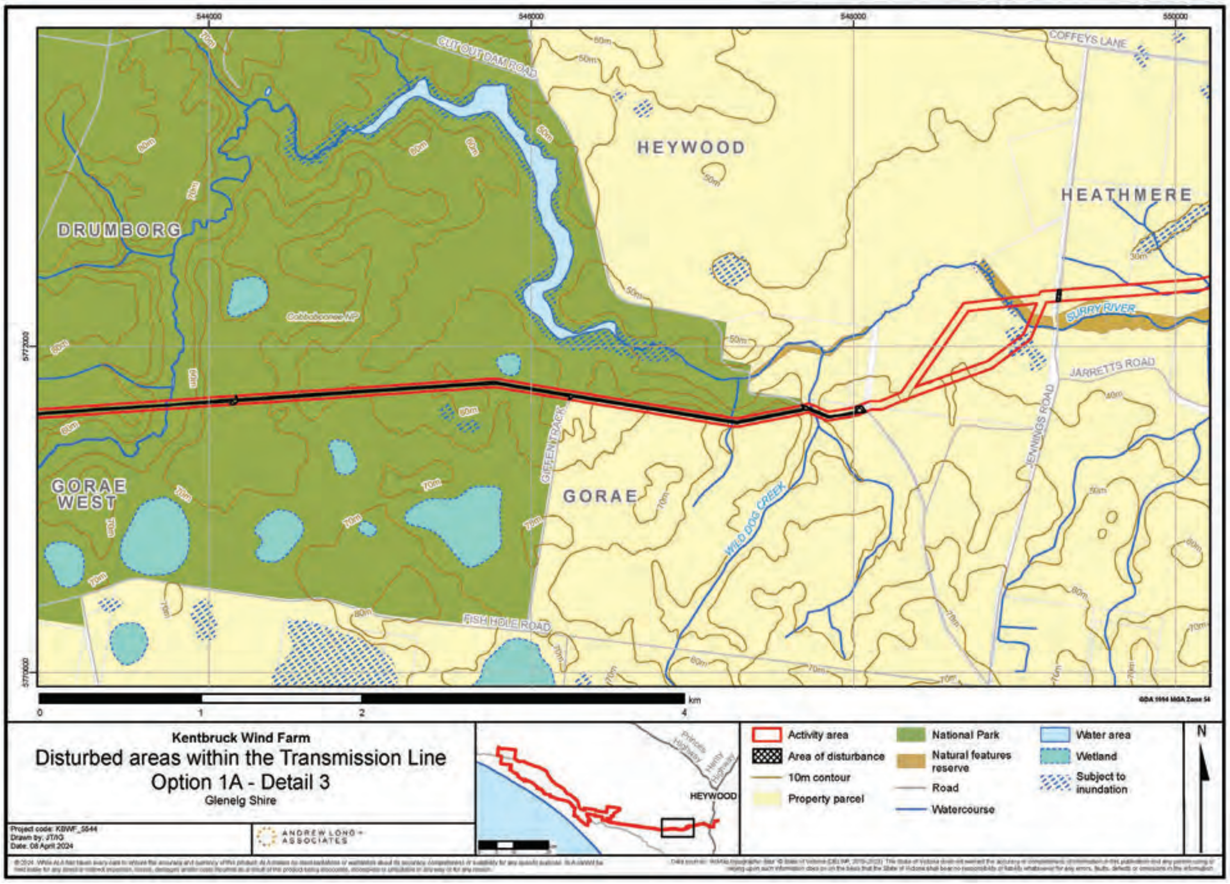

Figure 114 Location of previous ground disturbance along Option 1A route option alignment – Detail 3

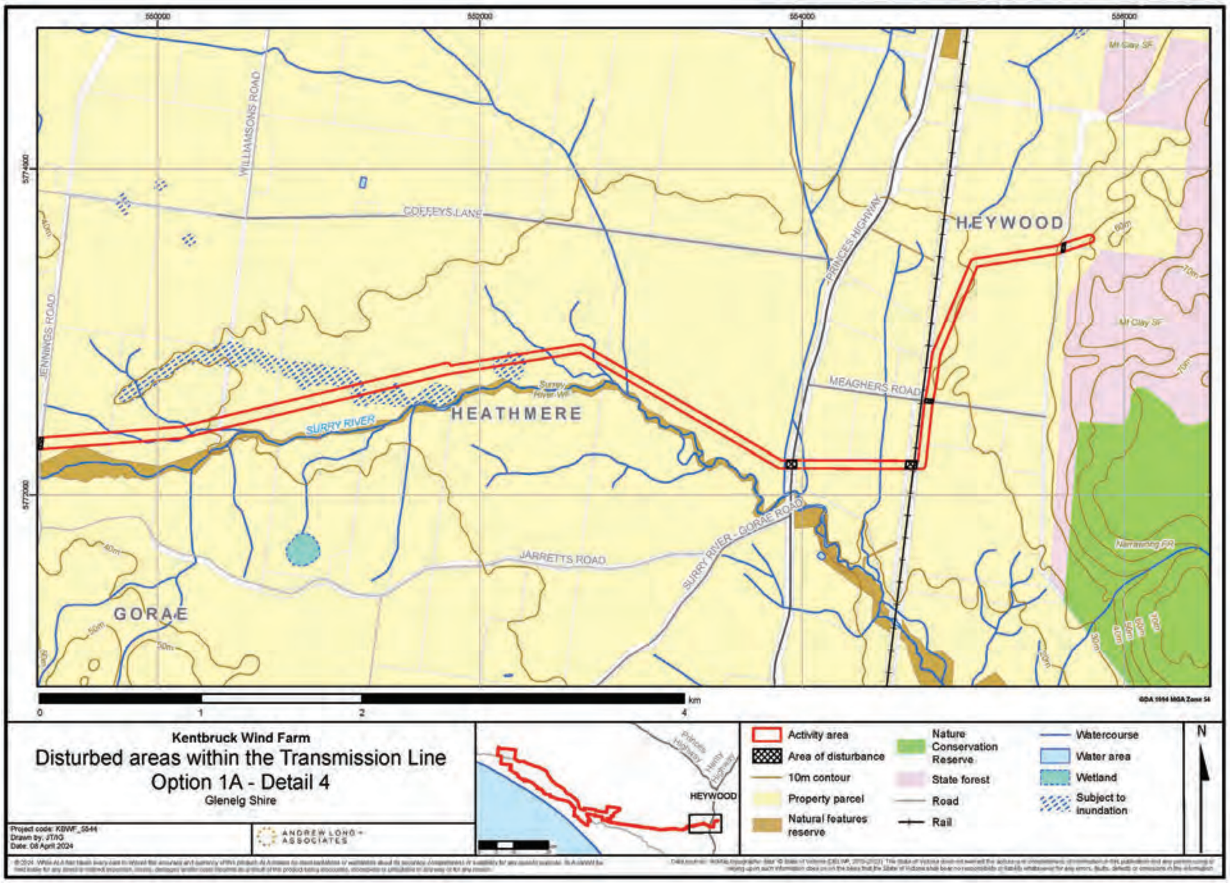

Figure 115 Location of previous ground disturbance along Option 1A route option alignment – Detail 4

APPENDIX 6 EES TESTING TABLES FOR PREDICTIVE MODEL

Table 43 Shovel test pit excavation data

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
STP 01	Transgressive dune	Surface - vehicular	1	0	650	loose	Sand, fine sand	A	Gradual	Single grain	dry	Fine sandy top soil with minor vehicle erosion and disturbance. Subject to Aeolian erosion. Non-chromosol.	7.5YR 5/6	7	Y
			2	650	1500	Loose	Sand, fine sand	A3	Abrupt	Massive	low	Subsurface Holocene dune?	7.5YR 4/6	6	N
			3	1500	1530	Compact	Sand, fine sand	B	Sharp	Granular	dry	Compacted compressed sand, possible coffee rock forming above limestone base. Non-chromosol.	7.5YR 5/6	8.5	N
			4	1530	1530	Cemented	Rock	C		Blocky, subangular	dry	Limestone rock floor. Unable to excavate further.	7.5YR 8/2	8.5	N
STP 02	Saddle/ deflation hollow	Plantation / vehicular	1	0	250	Loose	Sand, fine sand	A1	Abrupt	Single grain	low	Active pedogeneses soil from earliest holocene dune? Plantation impacts and vehicle erosion. Non-chromosol.	10YR 3/1	7	N
			2	250	500	Loose	Sand, fine sand	A3	Gradual	Single grain	dry	No known erosion or disturbance impacts (unlike STP1). Non-chromosol.	7.5YR 5/6	7	Y

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			3	500	720	Loose	fine sand	A3	Gradual	Massive	dry	Possible subsurface Holocene dune. No known erosion or disturbance impacts. Non-chromosol.	7.5YR 4/6	6	N
			4	720	870	compact	fine sand	B	Sharp	Granular	dry	No known erosion or disturbance impacts. Non-chromosol.	7.5YR 4/6	7.5	N
			5	870	870	Cemented	Rock	C		Blocky, subangular	dry	No known erosion or disturbance impacts. Non-chromosol.	7.5YR 8/2	8.5	N
STP 03	low undulation of transgressive dunes	Plantation / vehicular	1	0	250	Loose	Sand, fine sand, humic, loamy sand	A1	Abrupt	Granular	Low	Active pedogeneses soil from earliest holocene dune? Plantation impacts and vehicle erosion. Non-chromosol.	10YR 3/1	7	N
			2	250	560	Loose	Sand, fine sand	A3	Abrupt	Massive	dry	Leached traditional layer above natural dune (plantation impact?)	10YR 7/2	7	N
			3	560	700	Loose	sand, fine sand	A3	Clear	Massive	dry	Thin dune trousition erosion? Or lesser deposition. Non-chromosol.	7.5YR 5/6	7	Y
			4	700	1120	Loose	Sand, fine sand	A3	Gradual	Massive	dry, low	More water retention. Non-chromosol.	7.5YR 4/6	6	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			5	1120	1660/ 1700	Compact	sand, fine sand	A3	Abrupt	Granular	dry	Gradual transition to compacted sand but only slightly. No real B-horizon.	7.5YR 4/6	7.5	N
			6	1660/ 1700	1700	Cemented	Rock	C		Blocky, subangular	dry	Limestone base	7.5YR 8/2	8.5	N
STP 04	Dune crest, eroded dune	Plantation / vehicular	1	0	310	loose	Sand, fine sand, humic, slightly loamy sand	A	Clear	Granular	dry	Chromosol topsoil. Transitionally massive (to next context). Terra rossa.	5YR 3/4	9	N
			2	310	400	loose	Sand, fine sand	B	Abrupt	Granular	dry	pH affected by limestone? Chromosol.	5YR 4/6	8	N
			3	400	400	Cemented	Rock	C		Blocky, subangular	dry	Limestone base. Base for Calcareous dune	7.5YR 8/2	8.5	N
STP 05	Transgressive dune, crest of lower elevations	Plantation	1	0	500	Loose	Sand, medium sand, humic, loamy sand	O	Abrupt	Massive	dry	Granular only in denser root structure. High pedogenesis soil impacted by plantation and burning. Significant root system.	10YR 2/1	9	Y
			2	500	1100	loose	Sand, fine sand	A1	Clear	Massive	dry	Consistent Holocene dune landform. [redacted]	7.5YR 5/6	8	Y

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			3	1100	2000	loose	sand, fine sand	A2	Gradual	single grain	dry	Auger sample within the STP. Fine pale sand, former buried dune?, Pleistocene? Aeolian deposition. Limestone particulates.	10YR 7/3	8	N
			4	2000	3350	loose	sand, fine sand	A3		Single grain / massive (difficult to distinguish)	dry	Auger sample within the STP. consistent dense sterile dune structure. Unable to reach significant sterile layer. Could be buried drift dune or former beach front.	7.5YR 8/6	8	N
STP 06	Dune saddle, deflation hollow?	Plantation	1	0	300	loose	silty sand, fine sand, loamy sand	O	Abrupt	Granular	dry	Roots and organics, high pedogenesis. Likely major long term plantation impacts. Non-chromosol.	5YR 2.5/2	8.5	N
			2	300	500	loose	Sand, fine sand	A2	Abrupt	Single grain	dry	Leached layer resulting from plantation impacts. Natural dune.	10YR 5/2	7	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			3	500	630	loose	sand, fine sand	A1	Abrupt	Massive	dry	Natural dune. Granular only in denser root structure. High pedogenesis soil impacted by plantation and burning. Significant root system.	10YR 2/1	9	N
			4	650	1255	loose	sand, fine sand	A1/ A2	Clear	Massive	dry	[redacted] Holocene dune landform. Auger within STP.	10YR 6/3	8	Y
			5	1255	2200	loose	sand, fine sand	A3	Gradual	Massive	dry	Auger sample with the STP. Fine pale sand, former buried dune?, Pleistocene? Aeolian deposition. Limestone particulates.	10YR 7/3	8	N
			6	2200	3220	loose	sand, medium sand	A3		Massive	dry	Auger sample within the STP. Consistent dense sterile dune structure. Unable to reach significant sterile layer. Could be buried drift dune or former beach front.	7.5YR 8/6		N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
STP 07	Mid-slope of dune	Plantation	1	0	250	loose	Sand, fine sand, humic, slightly loamy sand	A	Clear	Granular	dry	Chromosol topsoil. Transitionally massive (to next context). Terra rossa chromosol.	5YR 3/4	6.5	N
			2	250	600	loose	sand, fine sand	B	Abrupt	Massive	dry	pH affected by limestone? Terra rossa chromosol.	5YR 4/6	7	N
			3	600	600	Cemented	Rock	C		Blocky, subangular	dry	Limestone base. Base for Calcareous dune	7.5YR 8/2		N
STP 08	Dunes - low slope	plantation	1	0	250	loose	sand, fine sand, loamy sand	O	Abrupt	Granular	dry	Active pedogeneses soil from earliest Holocene dune? Plantation impacts and vehicle erosion. Non-chromosol.	10YR 3/1	7	N
			2	250	1050	loose		A	Gradual	Massive	dry	No known erosion or disturbance impacts. Non-chromosol.	7.5YR 5/6	7	N
			3	1050	1740	loose		A2	Gradual	Massive	dry	Possible subsurface Holocene dune. No known erosion or disturbance impacts. Non-chromosol.	10YR 7/3	7	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			4	1740	1750	loose	Sand, fine sand	A3	Abrupt	Massive	dry	No known erosion or disturbance impacts. Non-chromosol. Slight colour variations due to landform location.	7.5YR 6/6	7	N
			5	1750	1750	Cemented	Rock	C		Blocky, subangular	dry	Limestone base	7.5YR 8/2	8.5	N
NW STP 01	Slope of Rise	Plantation	1	0	130	Weak	Medium sand/humic	A	Abrupt		Moderate	Frequent woodchip inclusions	7.5YR 2.5/1	8	N
			2	130	770	Weak	Sand/Medium sand	A1/ A2	Sharp		Moderate	Frequent roots present.	10YR 6/6	7	N
			3	770	1200	Cemented	Limestone	B			Moderate	Undulating karst limestone surface, which was deepest in the S-W corner.	10YR 7/3	8.5	N
NW STP 02	Top of Rise	Plantation	1	0	520	Friable	Silty Sand/Humic	A	Sharp		Moderate	Frequent rootlets, occasional small wood inclusions	10YR 2/2	8	N
			2	520	590	Cemented	Limestone	B			Moderate	Degrading karst limestone.	10YR 7/3	8.5	N
NW STP 03	Top of Rise	Plantation	1	0	110	Loose	Silty Sand/Humic	A	Sharp		Moderate	Some rootlets, frequent small-medium silicate pebble inclusions.	7.5YR 3/4	8.5	N
			2	110	120	Cemented	Limestone	B			Moderate	Karst limestone.	10YR 7/4	8	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
NW STP 04	Low Rise	Roots	1	0	190	Weak	Silty Sand/Humic	A	Abrupt		Moderate	Heavy root disturbance, frequent small charcoal inclusions, worms present.	7.5YR 2.5/1	8.5	N
			2	190	1250	Friable	Medium sand	A1	Clear		Moderate	Heavy root disturbance, frequent small charcoal inclusions, worms present.	10YR 5/6	7.5	N
			3	1250	1550	Friable	Medium sand	A2	Sharp		Moderate	Heavy root disturbance, frequent small charcoal inclusions, worms present.	7.5YR 5/8	7.5	N
			4	1550	1600	Cemented	Limestone	B			Moderate	Limestone karst base.	10YR 6/3	8	N
NW STP 05	Top of Dune	Plantation	1	0	300	Friable	Sandy Silt	A	Irregular		Low/ Moderate	Friable sandy silt, occasional worms and cemented sand nodules.	10YR 3/1	7.5	N
			2	300	310	Cemented	Sand	B			Dry	Cemented sand/limestone karst base.	10YR 8/2	8	N
NW STP 06	Bottom of Dune	Pine Plantation	1	0	350	Friable	Sandy Silt	A	Irregular		Low/ Moderate	Grass cover, occasional worms, roots and rootlets present.	7.5YR 4/3	7	N
			2	350	620	Friable	Silty Sand	A	Irregular		Low	Frequent small charcoal fragments throughout.	7.5YR 5/4	7	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			3	620	1050	Friable	Silty Sand				Low	[redacted] Frequent small charcoal flecks present. STP ceased due to depth, auger sondage continued.	7.5YR 6/8	7	Y
NW STP 07	Top of Rise	Pine Plantation	1	0	530	Friable	Sandy Silt	A	Wavy		Low	Limestone lens at bottom of silty sand. Gras cover, frequent limestone inclusions.	10YR 3/1	8	N
			2	530	880	Friable	Sandy Silt	B			Low	Limestone karst base reached.	10YR 5/2	7.5	N
NW STP 08	Bottom of Dune	Pine Plantation	1	0	150	Friable	Sandy Silt	A	Irregular		Low	Grass cover, frequent pine cone fragments present.	10YR 2/2	8	N
			2	150	900	Friable	Silty Sand					Frequent pine cone fragments, moderate small charcoal fragments present. STP ceased due to depth, auger sondage continued.	5YR 6/8	7.5	N
E STP 01	Duneslope	Tree Roots	1	0	560	Friable	Silty Sand/Humic	A	Gradual		Moderate	Heavy root disturbance, frequent small-medium bark inclusions.	10YR 2/1	8	N
			2	560	1500	Friable	Fine Sand	A1	Diffuse		Low		10YR 5/8	7	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			3	1500	2350	Loose	Fine Sand	A2	Clear		Dry		10YR 5/6	7	N
			4	2350	2450	Weak	Fine Sand	A3			Dry		10YR 7/3	8	N
E STP 02	Bottom of Dune	Pine Plantation	1	0	700	Friable	Sandy Silt	A	Irregular		Low	Grass cover, very frequent pine debris.	10YR 2/1	7.5	N
			2	700	1000	Friable	Sandy Silt/Sandy Clay	A1			Moderate	Moderate pine debris. STP ceased due to depth, auger sondage continued.	10YR 3/4	7	N
E STP 03	Undulating Land	Fill	1	0	160	Firm	Sandy Silt/Humic	Fill	Gradual			Moderate number of small-medium limestone inclusions. Spillover from nearby fill pile. Root disturbance.	7.5YR 2.5/2	8.5	N
			2	160	570	Firm	Sandy Silt	A	Gradual			Heavy root disturbance.	10YR 3/2	8.5	N
			3	570	820	Friable	Sandy Silt	A1	Sharp			Heavy root disturbance.	10YR 3/4	8	N
			4	820	910	Cemented	Limestone	B				Limestone karst.	10YR 7/2	8	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
E STP 04	Bottom of Dune	Pine Plantation	1	0	200	Friable	Sandy Silt	A	Smooth		Moderate	Grass cover, very frequent pine debris, occasional worms.	10YR 3/2	6	N
			2	200	1000	Friable	Clayey Sand				Moderate	Moderate small charcoal inclusions. STP ceased due to depth, auger sondage continued to 1750 mm.	10YR 6/8	6	N
E STP 05	Top of Rise	Plantation	1	0	80	Weak	Sandy Silt/Humic	A	Sharp			Some root disturbance.	10YR 2/1	8.5	N
			2	80	180	Cemented	Limestone	B				Limestone karst base.	10YR 7/3	8.5	N
E STP 06	Bottom of Dune	Pine Plantation	1	0	50	Weak	Sandy Silt		Smooth		Moderate	Grass cover, moss, very frequent pine debris, occasional worms, moderate sandstone, snail shell and decayed wood inclusions.	10YR 2/1	7.5	N
			2	50	150	Friable	Sandy Silt		Smooth		Moderate	Moderate charcoal fragments, frequent pine debris, moderate snail shell and sandstone inclusions.	10YR 4/2	7.5	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			3	150	900	Friable	Silty Sand		Smooth		Moderate	Moderate charcoal fragments, frequent pine debris, moderate snail shell and sandstone inclusions.	10YR 2/1	7.5	N
			4	900	1000	Friable	Sand		Smooth		Moderate	Moderate charcoal fragments, frequent pine debris, moderate snail shell and sandstone inclusions. STP ceased at 1000 mm due to depth, auger sondage continued.	10YR 5/2	7.5	N
E STP 07	Saddle of Slope	Plantation	1	0	160	Weak	Silty Sand/Humic	A	Clear		Moderate	Some root disturbance.	10YR 2/1	7.5	N
			2	160	630	Weak	Medium Sand	A1	Diffuse		Moderate	Some root disturbance.	10YR 4/4	7	Y
			3	630	1300	Weak	Medium Sand	A2	Sharp		Moderate	Some root disturbance.	10YR 3/6	8	Y
			4	1300	1330	Cemented	Limestone	B			Dry	Limestone karst.	10YR 7/3	8	N
E STP 08	Base of Rise	Plantation	1	0	180	Weak	Sandy Silt/Humic	A	Sharp		High	Heavy root disturbance.	10YR 2/1	6.5	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			2	180	2000	Weak	Medium Sand	A1	Diffuse		Mode rate	Heavy root disturbance.	10YR 4/6	7.5	N
			3	2000	3300 +	Weak	Medium Sand	A2			Mode rate	Abandoned due to max auger depth.	10YR 5/8	8	N
E STP 09	Top of Rise	Pine Plantation	1	0	300	Friable	Sandy Silt	O	Irregular		Mod	Grass and moss cover, frequent pine needles and debris, small-medium sandstone nodules, occasional worms, moderate decaying wood, frequent roots and rootlets.	10YR 3/2	8	N
			2	300	400	Friable	Sandy Silt/Silty Sand	A	Irregular		Mod	Frequent pine debris, small-medium sandstone nodules, occasional small charcoal fragments, frequent roots and rootlets present.	10YR 5/3	8	N

Pit ID	Landform	Disturbance	Context	Starting Depth (mm)	Base Depth (mm)	Consistency	Composition	Soil Horizon	Boundary	Structure	Moisture	Comments	Munsell	pH	Artefact Y/N
			3	400	600	Friable	Sand/Silty Sand				Mod	Frequent pine debris, small-medium sandstone nodules, occasional small charcoal fragments, frequent roots and rootlets present. Limestone karst base reached.	10YR 8/3	7.5	N

Table 44 Auger excavation data

Auger ID	Landform	Disturbance	Diameter (mm)	Maximum Depth (mm)	Context	Consistency	Composition	Moisture	Structure	Soil Horizon	Boundary	Comments	Munsell	pH
Aug-01	Crest of dune and chromosol	Plantation	100	350	1	Loose	Sand	Dry	Single grain	A	Gradual	Chromosol	2.5YR 2.5/2	7
					2	loose	sand, fine sand	Dry	Massive	B	Abrupt	Chromosol	2.5YR 2.5/4	7
					3	Cemented	Rock	Dry	Blocky, subangular	C		Chromosol		

Aug-02	Mid-lows lope leeward side of dune	Plantation	100	2250	1	loose	sand, fine sand	Dry	Single grain	O	Gradual	Active pedogeneses soil from earliest Holocene dune? Plantation impacts and vehicle erosion	10YR 3/1	7
					2	Loose	sand, fine sand	Dry	Single grain	A1	Gradual	Non-chromosol	10YR 5/3	7
					3	loose	Sand, fine sand	Dry	Massive	A2	Gradual	Non-chromosol	10YR 7/3	6
					4	Loose	Sand, fine sand	Dry	Massive	A3	Gradual	Non-chromosol	7.5YR 6/6	6
					5	Loose	Loose	Dry	Massive	B	Sharp	Chromosol? To limestone base	2.5YR 3/6	7.5
					6			Dry		C		Limestone rock base		
Aug-03	Crest - high slope of	Plantation	100	600	1	Loose	Sand, medium sand	Dry	Single grain	A	Gradual	Chromosol	5YR 2.5/2	6.5

	transgressine dune													
					2	Loose	Sand, fine sand	Dry	massive	B	Abrupt	Chromosol	5YR 4/6	6
					3	Cemented	Rock	Dry	Blocky, subangular	C		Limestone base		
Aug-04	Mid-low slope on leeward side of dune	Plantation	100	2250	1	loose	sand, fine sand	Dry	Massive	O	Gradual	Non-chromosol	10YR 4/2	5
					2	Loose	Sand, fine sand	Dry	Massive	A	Clear	Non-chromosol	10YR 5/3	6
					3	Loose	Sand, fine sand	Dry	Massive	A2	Gradual	Non-chromosol	10YR 8/8	6
					4	Loose	Sand, fine sand	Dry	Massive	A3	Gradual	Non-chromosol	7.5YR 6/6	6
					5	Compact	Sandy clay	Dry	Granular	B		Chromosol base	5YR 6/6	6

NW Auger 01	Top of Dune		150	130	1	Loose	Sandy Silt/Humic	Low		A			10YR 2/1	8.5
					2	Cemented	Limestone	Low		B		Limestone Karst.	10YR 7/2	8
NW STP04	Low Rise		100	1600	1	Weak	Silty Sand/Humic	Moderate		A	Abrupt	Heavy root disturbance, frequent small charcoal inclusions, worms present.	7.5YR 2.5/1	8.5
					2	Friable	Medium sand	Moderate		A1	Clear	Heavy root disturbance, frequent small charcoal inclusions, worms present. STP ceased at 1200 mm, auger continued below.	10YR 5/6	7.5
					3	Friable	Medium Sand	Moderate		A2	Sharp	Heavy root disturbance, frequent small charcoal inclusions, worms present.	7.5YR 5/8	7.5
					4	Cemented	Limestone	Moderate		B		Limestone karst base reached.	10YR 6/3	8

NW STP06	Bottom of Dune		100	1750	1	Friable	Sandy Silt	Low/Moderate		A	Irregular	Grass cover, occasional worms, roots and rootlets present.	7.5YR 4/3	7
					2	Friable	Silty Sand	Low		A	Irregular	Frequent small charcoal fragments throughout.	7.5YR 5/4	7
					3	Friable	Silty Sand	Low				One flint artefact approximately 750 mm depth. Frequent small charcoal flecks present. STP ceased due to depth, auger sondage continued.	7.5YR 6/8	7
					4	Friable	Silty Sand	Low		A1			7.5YR 4/3	7.5
					5	Friable	Silty Sand	Low		A2			7.5YR 6/6	7
					6	Friable-Cemented	Silty Sand-Limestone	Low		A3-B		Limestone karst base reached.	7.5YR 7/8	8
NW STP08	Bottom of Dune		100	2800	1	Friable	Sandy Silt	Low		A	Irregular	Grass cover, frequent pine cone fragments present.	10YR 2/2	8

					2	Friable	Silty Sand					Frequent pine cone fragments, moderate small charcoal fragments present. STP ceased due to depth, auger sondage continued.	5YR 6/8	7.5
					3	Friable/Firm	Sand	Low/Moderate					7.5YR 7/4	8.5
					4	Friable/Firm	Sand	Low/Moderate					7.5YR 6/3	8
					5	Friable/Firm/Cemented	Sand/Clayey Sand	Low/Moderate				Occasional clayey nodules.	10YR 7/6	8.5
					6	Friable/Firm/Cemented	Sand	Low/Moderate				Occasional cemented sandstone and limestone inclusions. Ceased due to failure.	10YR 8/3	8
E STP01	Duneslope		150	2450	1	Friable	Silty Sand/Humic	Moderate		A	Gradual	Heavy root disturbance, frequent small-medium bark inclusions.	10YR 2/1	8
					2	Friable	Fine Sand	Low		A1	Diffuse		10YR 5/8	7
					3	Loose	Fine Sand	Dry		A2	Clear		10YR 5/6	7

					4	Weak	Fine Sand	Dry		A3				
E STP02			100	3200	1	Friable	Sandy Silt	Low		A	Irregular	Grass cover, very frequent pine debris.	10YR 2/1	7.5
					2	Friable	Sandy Silt/Sandy Clay	Moderate		A1		Moderate pine debris. STP ceased due to depth, auger sondage continued. Occasional roots, rare limestone fragments.	10YR 3/4	7
					3	Friable/Firm	Sandy Clay	Moderate		A2	Irregular	Occasional roots, occasional limestone fragments.	5YR 5/8	8
					4	Friable/Firm	Sandy Clay	Moderate		A3	Irregular	Sandy clay with moderate-frequent small limestone inclusions. Limestone increasing with depth.	10YR 6/6	7.5

					5	Friable/Firm	Clayey Sand	Moderate		B		Sand contents increasing with depth.	10YR 7/4	7.5
					6	Weak/Friable	Sand	Dry		B1		Fine dry sand. Ceased due to failure.	10YR 8/3	7.5
E STP04	Bottom of Dune	Pine Plantation	100	1750	1	Friable	Sandy Silt	Moderate		A	Smooth	Grass cover, very frequent pine debris, occasional worms.	10YR 3/2	6
					2	Friable	Clayey Sand	Moderate		A1		Moderate small charcoal inclusions. STP ceased due to depth, auger sondage continued to 1750 mm.	10YR 6/8	6
					3	Friable	Clayey Sand	Moderate		A2		Occasional small limestone fragments present.	10YR 5/8	6.5
					4	Friable/Firm	Clayey Sand	Moderate		A3		Limestone fragments becoming more frequent with depth. Limestone karst base reached.	7.5YR 5/8	7
E STP06	Bottom of Dune	Pine Plantation	100	3300	1	Weak	Sandy Silt	Moderate			Smooth	Grass cover, moss, very frequent pine debris, occasional worms,	10YR 2/1	7.5

												moderate sandstone, snail shell and decayed wood inclusions.		
					2	Friable	Sandy Silt	Moderate			Smooth	Moderate charcoal fragments, frequent pine debris, moderate snail shell and sandstone inclusions.	10YR 4/2	7.5
					3	Friable	Silty Sand	Moderate			Smooth	Moderate charcoal fragments, frequent pine debris, moderate snail shell and sandstone inclusions.	10YR 2/1	7.5
					4	Friable	Sand	Moderate			Smooth	Moderate charcoal fragments, frequent pine debris, moderate snail shell and sandstone inclusions. STP ceased at 1000 mm due to depth, auger sondage continued.	10YR 5/2	7.5

					5	Friable	Sand	Moderate					10YR 6/6	7
					6	Friable	Sand	Moderate					10YR 6/8	7
					7	Friable	Sand/Clayey Sand					Clay content increasing	5YR 5/8	7.5
					8	Firm	Sandy Clay	Moderate/High					2.5YR 4/8	7.5
					9	Friable	Coarse Sand/Clayey Sand	Moderate				Excavation ceased due to failure.	10YR 6/6	7.5
E STP07	Saddle on Slope		150	1330	1	Weak	Silty Sand/Humic	Moderate		A	Clear	Some root disturbance.	10YR 2/1	7.5
					2	Weak	Medium Sand	Moderate		A1	Diffuse	Some root disturbance.	10YR 4/4	7
					3	Weak	Medium Sand	Moderate		A2	Sharp		10YR 3/6	8
					4	Cemented	Limestone	Dry		B		Limestone karst base reached.	10YR 7/3	8
E STP08	Base of RIse		150	3300	1	Weak	Sandy Silt/Humic	Moderate		A	Sharp	Heavy root disturbance.	10YR 2/1	6.5
					2	Weak		Moderate		A1	Diffuse	Note: Base of STP reached at 1200 mm, following	10YR 4/6	7.5

												depths augered.		
					3	Weak	Medium Sand	Moderate		A2		Abandoned due to maximum auger depth reached.	10YR 5/8	8
Road side Auger	Undulating Dunes		150	800	1	Weak	Sandy Silt	High		A	Gradual		10YR 4/2	6
					2	Weak	Medium Sand	Moderate		A1	Gradual		7.5YR 5/8	6.5
					3	Weak	Medium Sand	Moderate		A2	Sharp		7.5YR 4/6	7
					4	Cemented	Limestone	Dry		B		Karst limestone.	10YR 7/3	8.5