Attachment 9

Approved Cultural Heritage Management Plan

RRON Facility, Black Rock Water Reclamation Plant, Connewarre, Victoria

Cultural Heritage Management Plan 19285

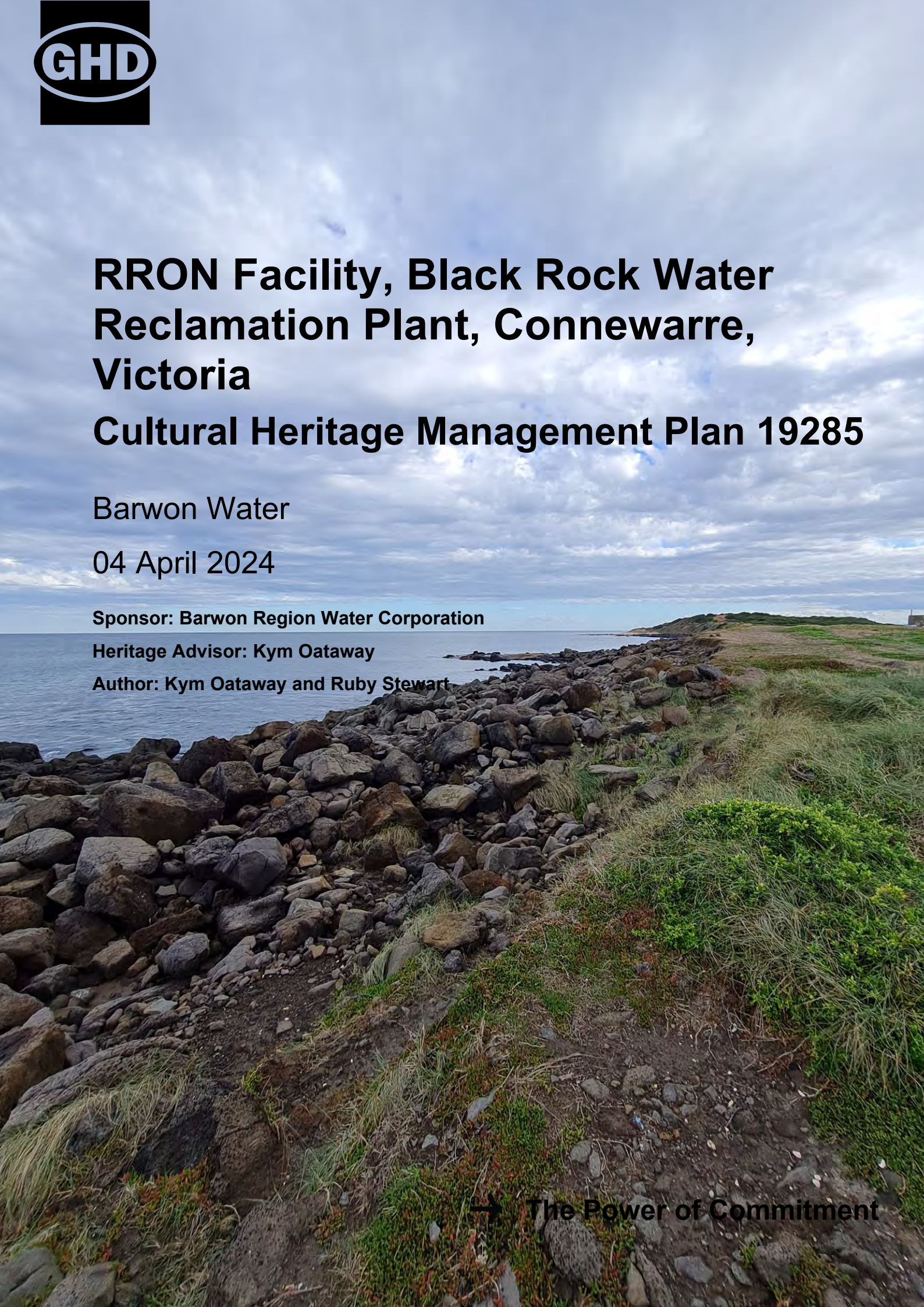
Barwon Water

04 April 2024

Sponsor: Barwon Region Water Corporation

Heritage Advisor: Kym Oataway

Author: Kym Oataway and Ruby Stewart



→ The Power of Commitment

RRON Facility, Black Rock Water Reclamation Plant, Connewarre, Victoria

Cultural Heritage Management Plan 19285

Activity Size	Medium
Assessment Type	Desktop, Standard and Complex Assessment
Registered Aboriginal cultural heritage material present in Activity Area	No
Sponsor	Barwon Region Water Corporation
ABN	86 348 316 514
Heritage Advisor	Kym Oataway, Rebecca Macklin, Asher Ford
Author	Kym Oataway and Ruby Stewart
Submission Date	04 April 2024
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Document status

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			Name	Signature	Name	Signature	Date
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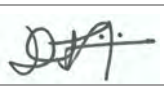
S3	1						01/02/2024
S4	2	R Stewart K Oataway	D Tutchener		D Joannides		27/02/2024
S4	3	R Stewart K Oataway	D Tutchener		A Green		04/04/2024

Wadawurrung
Traditional Owners
Aboriginal Corporation

8th of April 2024

Aboriginal Heritage Act 2006 Section 63

Cultural Heritage Management Plan – Notice of Approval

The Wadawurrung Traditional Owners Aboriginal Corporation acting as the Registered Aboriginal Party hereby approve the cultural heritage management plan referred to below:

RRON Facility, Black Rock Water Reclamation Plant, Connewarre, Victoria

Cultural Heritage Management Plan number: 19285

Sponsor: Barwon Region Water Corporation (ABN: 86 348 316 514)

Heritage Advisor: Kym Oataway

Authors: Kym Oataway and Ruby Stewart

Date: 4th of April 2024

Pages: Cover Page, Title Page, Acknowledgement Page, i-x, 1-164

Received for Approval: 4th of April 2024

Pursuant to s.64 (1) of the Act this cultural heritage management plan takes effect upon the granting of this approval and once a copy is lodged with the Secretary of DPC. *

Jesse Martin
General Manager – Cultural Heritage

Kristen Ellis
Heritage Advisor

*This notice of approval should be inserted after the title page and bound with the body of the management plan.

Acknowledgment of Country

We acknowledge Aboriginal and Torres Strait Islander peoples as the Traditional Owners of all lands throughout Australia on which we do business, and we pay our respects to Elders,
past, present and emerging.

Scope and Limitations

This report: has been prepared by GHD for Barwon Water and may only be used and relied on by Barwon Water for the purpose agreed between GHD and the Client Name as set out in section 3 of this report.

GHD otherwise disclaims responsibility to any person other than Barwon Water arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Barwon Water and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Executive summary

Compliance requirements are set out in Part 1 of the Cultural Heritage Management Plan. The Cultural Heritage Management Plan must be readily accessible to the Sponsor and their employees and contractors while carrying out the activity.

The Activity

Barwon Region Water Corporation (referred throughout as Barwon Water or BW) (the Sponsor) has commissioned GHD Pty Ltd (GHD) to prepare a Cultural Heritage Management Plan (CHMP) for the development of the Regional Renewable Organic Network (RRON) facility at the Black Rocks Reclamation Plant, Connewarre, Victoria.

The Location

The Activity Area consists of the eastern portion of the Black Rock Reclamation Plant. The Activity Area is bound by the existing Reclamation Plant to the west, agricultural land to the north and east, and the coast to the south. The Wadawurrung Traditional Owner Aboriginal Corporation (WTOAC) are the Registered Aboriginal Party (RAP) for the Activity Area location.

The Assessment

The **Desktop Assessment** identified one registered Aboriginal Place (VAHR 7721-0570) that has been previously recorded 15 m north of the Activity Area. The identifying assessment concluded that it was likely that the recorded Aboriginal cultural heritage material was not *in-situ* and has been subject to the earthworks that have occurred within the extent of the Black Rocks Water Reclamation Plant. The Activity Area is located on the volcanic plains, but adjacent to a swamp deposit that is an area of cultural heritage sensitivity. Low density artefact scatters have been identified in similar contexts. Past earth works for the Water Reclamation Plant facilities, roads and underground utilities have reduced the archaeological potential of Aboriginal cultural heritage material to be present.

A **Standard Assessment** was undertaken over three days (26-27 April and 11 July 2023) due to various alterations to the Activity Area. At the conclusion of the standard assessment, the results of the desktop assessment were upheld: Extensive ground disturbance was noted across the Activity Area from facility construction and underground utility installation. Geotechnical investigations identified fill in the centre of the Activity Area, further supporting the ground disturbing works identified during the desktop assessment. While no areas of potential were identified, a complex assessment was requested by the RAP to test any assumptions regarding the level of ground disturbance within the Activity Area.

The **Complex Assessment** comprised of 1 test pit and three shovel test pits excavated to a maximum depth of 40cm. The complex assessment results confirmed the desktop and standard assessments, demonstrating the presence of fill in all locations and no topsoil present between the fill and the sterile base. No Aboriginal cultural heritage material was identified during the complex assessment. This indicates that past land use activities have removed any Aboriginal cultural heritage that may have been present.

Aboriginal cultural heritage material within the Activity Area

No Aboriginal cultural heritage was identified during the assessment.

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Abbreviations

ACHRIS	Aboriginal Cultural Heritage Register and Information Services
AHD	Australian Height Datum
BH	Borehole
BTP	Biosolids Treatment Plant
BW	Barwon Water, reference to the Barwon Region Water Corporation
BYDA	Before You Dig Australia
CHMP	Cultural Heritage Management Plan
DEECA	Department of Energy, Environment and Climate Action
DGPS	Differential Global Positioning System
DPC	Department Premiere and Cabinet
ESC	Effective Survey Coverage
EVC	Ecological Vegetation Class
FOGO	Food Organics and Garden Organics
FP – SR	First Peoples – State Relations (*Formerly Aboriginal Victoria (AV))
GDA 2020	Geodetic Datum Australia 2020
GSV	Ground Surface Visibility
HA	Heritage Advisor
LDAD	Low Density Artefact Distribution
MGA	Map Grid of Australia
NoI	Notice of Intent to Prepare a Cultural Heritage Management Plan
PFAD	Plug Flow Anaerobic Digestion
PGC	Primary Grid Coordinate
RAP	Registered Aboriginal Party
RRON	Regional Renewable Organics Network
SLR	Single Lens Reflex
STP	Shovel Test Pit
SU	Survey Unit
TOG	Traditional Owner Group
TP	Test Pit
VAHR	Victorian Aboriginal Heritage Register
WRP	Black Rock Water Reclamation Plant
WTOAC	Wadawurrung Traditional Owner Aboriginal Corporation

A glossary of terms is presented in Appendix C

Part 1 – Cultural Heritage Management Conditions

These conditions become compliance requirements once the Cultural Heritage Management Plan is approved. Failure to comply with a condition is an offence under section 67A of the *Aboriginal Heritage Act 2006*.

The Cultural Heritage Management Plan must be readily accessible to the Sponsor and their employees and contractors when carrying out the Activity.

These management conditions must be followed to appropriately manage any Wadawurrung cultural heritage within the activity area. The Sponsor is responsible for undertaking all management conditions and contingencies herein, including payment to undertake these items. This responsibility may be delegated in writing to the Sponsor's agent where required.

The Sponsor or delegated representative is responsible for ensuring that the activity adheres to the activity description as detailed in Section 4 of the CHMP. Any change to the activity area, the activity description or the approved management conditions will require either an amendment to the CHMP or the preparation of a new CHMP.

All references to the WTOAC relate to the Wadawurrung Traditional Owners Aboriginal Corporation, or any future name of that organisation.

1. Specific Cultural Heritage Management Conditions

Condition 1 Notification of Commencement of the Activity

The Sponsor must provide Wadawurrung with at least two weeks' notification before the commencement of works. This notification should be provided via email to rap@wadawurrung.org.au.

Condition 2 Copy of the Cultural Heritage Management Plan to be retained onsite

A hard copy of (at least) the following parts of this approved Cultural Heritage Management Plan (CHMP) must be held onsite at all times during works for the activity.

PART 1 – Cultural Heritage Management Conditions

– Specific management conditions
– Contingency plans

PART 2 – Assessment

– Introduction
– Activity description
– Extent of activity area covered by the Management Plan

This information must be readily accessible to those undertaking works detailed within this document and must be able to be provided upon request. The Sponsor, site supervisor and all relevant personnel must read the information and be aware of the legal management conditions and contingency plans concerning Aboriginal cultural heritage within the activity area. The Sponsor or delegated person is responsible for ensuring that all personnel onsite are aware of the management conditions and contingency plans, and of the onsite location of the hard copy of the information from the approved CHMP.

Condition 3 Cultural Heritage Induction

A Cultural Heritage Induction must be conducted with all site workers/contractors undertaking ground disturbing works by a Heritage Advisor and WTOAC prior to those site workers/contractors undertaking any ground disturbance works. The cultural heritage induction must be conducted by a representative of the WTOAC with the assistance of a Heritage Advisor. The Heritage Advisor will be responsible for developing and providing an Induction Booklet summarising the details to be presented as part of the Cultural Heritage Induction. Should additional staff be required to undertake ground disturbance works under this CHMP additional Cultural Heritage Induction(s) will be required to be completed prior to their participation in ground disturbance works.

The Cultural Heritage Induction must be booked at least 2 weeks prior to the commencement of any ground disturbance works. The best contact email for booking the Cultural Heritage Induction can be requested from rap@wadawurrung.org.au. A booking form will need to be submitted to confirm the Cultural Heritage Induction.

The purpose of the cultural heritage induction is to:

– Describe and demonstrate the Aboriginal cultural heritage relevant to the activity area or the locality for personnel engaged in the construction of activity works
– Create an awareness of Aboriginal cultural values, and
– Inform personnel about the specific conditions of Part 1 of the management plan and the procedures set out for reporting any suspected Aboriginal cultural heritage that may be discovered or uncovered

The cultural heritage induction will include information concerning:

– A brief history of the Aboriginal occupation of the activity area and broader region
– A summary of the assessments undertaken within the activity area during the preparation of the management plan
– Specific details of all Aboriginal cultural heritage identified during the management plan assessments
– A summary of the management conditions and contingency plans contained within the management plan, and
– A discussion of the compliance responsibilities of the Sponsor and all personnel involved in work within the activity area and the requirements of the Aboriginal Heritage Act 2006

The Sponsor or site contractor must indicate during the induction both the commencement date of the activity and the likely completion date of the activity.

Information detailing the CHMP management conditions and contingency plans must be incorporated into any job safety, tool-box meetings or Environmental Management Plans developed for the activity.

This Cultural Heritage Induction must be organised by the Sponsor.

Condition 4 Heritage Inspections

Heritage Inspections will be undertaken by Wadawurrung representatives to monitor the progress of the activity and observe whether management conditions and the contingency plan contained within this CHMP are being followed. A total of 3 heritage inspections are to be undertaken during the course of the activity. Heritage inspections must occur at the following times:

– Prior to the commencement of the activity
– During the works, at a point of high ground exposure, such as post topsoil stripping
– At the completion of the activity

If Aboriginal cultural material is located during any Heritage Inspection, the relevant contingency measures detailed in Contingency 5 below must be enacted.

WTOAC must be notified two weeks in advance of the required inspections.

A Wadawurrung representative will conduct the inspection and complete the compliance checklist under Contingency 10 of this CHMP. If the inspection reveals suspected non-compliance of the CHMP, then the procedure outlined in Contingency 10 will be initiated by the Sponsor. This procedure must be organised by the Sponsor.

Condition 5 Protocol for handling sensitive information

With the exception of publicly available information, there shall be no communication or public release of information concerning Aboriginal cultural heritage without the written permission of the WTOAC. No photographs or information concerning Aboriginal cultural heritage is to be circulated to the media or via social media without the written permission of the WTOAC.

Condition 6 Notification of completion of activity

Wadawurrung must be notified at the completion of all works associated with the activity. This notification must include reference to the completion of the CHMP conditions, including all relevant dates. This notification must be provided via email to rap@wadawurrung.org.au.

2. Contingency plans

This section of the assessment contains contingency plans to facilitate appropriate heritage management during the proposed activity and to fulfil the requirements set out in Schedule 2 Clause 13 of the Aboriginal Heritage Regulations 2018.

Contingency 1 Proposed changes to the activity

The contingency plans presented in this section are specific to the activity area and the activity described within this CHMP. If, following the approval of this CHMP, changes to the activity or the activity area requiring statutory authorisation or which require any changes to the management conditions contained within the approved CHMP occur, the Sponsor must either apply to amend the approved CHMP or prepare a new CHMP which incorporates any changes.

Contingency 2 Matters referred to in Section 61 of the Act

If Aboriginal cultural heritage is unexpectedly discovered during the activity, the following contingencies (which take into account matters referred to in Section 61 of the Aboriginal Heritage Act 2006 with regard to harm avoidance and minimisation) must be implemented by the Sponsor or the relevant delegate.

Contingency 3 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 that may affect the conduct of the activity, resolution between the parties using the following dispute resolution procedure is required:

1. All disputes will be jointly investigated and documented by both WTOAC and the Sponsor.
2. Where a breach of the CHMP conditions has been identified, and there is no agreement between the parties as to how that breach is to be remedied, WTOAC and the Sponsor must meet within one week of the initial notification of the breach to seek agreement as to a suitably appropriate remedial measure.
3. The Sponsor and WTOAC must arrange for authorised representatives to be present at the meeting.
4. At the meeting, the authorised representatives of both WTOAC and the Sponsor must state their understanding of the issue(s) in dispute and ensure each party is aware of their position. If requested by either WTOAC or the sponsor, third party mediation may be held during the meeting.
5. If the authorised representatives of the parties reach agreement, the agreed corrective method for the breach must be recorded in writing and signed by both parties (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. Any costs of the mediation are to be met equally by the parties. Any agreed outcome of the mediation must be recorded in writing and signed by both parties (Agreed Method Statement).
6. The Sponsor, site supervisor, contractor and any relevant personnel will not undertake any correction or remedial activities except in accordance with the Agreed Method Statement. Any correction or remedial activities required must:
    a. Be recorded in writing and signed off by the authorised representatives of WTOAC and Sponsor.
    b. Be supervised by a WTOAC representative.
    c. Occur in accordance with the instructions of the WTOAC representative, providing they are consistent with the agreed correction activities.

WTOAC will strive to minimise delays to work schedules while not compromising Aboriginal cultural heritage, places or values.

Issues related exclusively to cultural heritage management, which do not have an impact on the conduct of the activity, will be handled through the following dispute resolution mechanism:

1. Within one week of notification to each party that a breach is deemed to exist, authorised representatives of WTOAC and the Sponsor must attempt to negotiate a resolution to any dispute related to the cultural heritage management of the activity area within two working days.
2. If the authorised representatives of the WTOAC and the Sponsor do not reach agreement, the parties will participate in third party mediation of the dispute by an agreed mediator within two weeks. Any costs of the mediation are to be met equally by both parties. Any agreed outcome of the mediation must be recorded in writing and signed by both parties (Agreed Method Statement).

Regardless of the category of dispute, the dispute resolution process does not preclude:

1. The parties seeking advice from First Peoples – State Relations to assist in resolution of the dispute; and
2. Any legal recourse open to the parties being taken; however, the parties must agree that the above resolution mechanism will be implemented before such recourse is made.

Contingency 4 Discovery of Human Remains

If any suspected human remains are found during any activity, works must cease. The Victoria Police and the State Coroner's Office should be notified immediately. If there are reasonable grounds to believe 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

a. If suspected human remains are discovered during the activity, all ongoing work in the vicinity **must cease immediately**.

b. The remains must be left in situ and safeguarded and protected from harm or damage.

2. Notification

a. If suspected human remains have been found, the State Coroner's Office and the Victoria Police must be notified immediately;

b. If there are reasonable grounds to believe the remains are Aboriginal Ancestral Remains, the Coronial Admissions and Enquiries hotline must be immediately notified on 1300 888 544;

c. All details of the location and nature of the human remains must be provided to the relevant authorities; and,

d. 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 2006.

3. Impact mitigation or salvage

a. 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 Aboriginal Heritage Act 2006; and,

b. 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

a. The treatment of any salvaged Aboriginal Ancestral remains must be in accordance with direction provided by the Victorian Aboriginal Heritage Council.

5. **Reburial**
    a. Any reburial site (s) will be clearly marked and fully documented, by an experienced and qualified archaeologist. First Peoples – State Relations (FP-SR) will be provided with specific details of the reburial.
    b. Appropriate management measures must be implemented to ensure the remains are not disturbed in the future.

Contingency 5 Discovery of Aboriginal Cultural Heritage material other than human remains

If Aboriginal cultural heritage material other than human remains is identified within the activity area at any time before, during or after the activity, the Sponsor must fulfil the following conditions:

1. At any time during construction, if suspected Aboriginal cultural heritage materials, features and/or deposits are found in the activity area, all construction that could potentially harm the suspected cultural heritage must cease, and a 10m buffer must be established around the potential find. The area must be protected from harm through the installation of temporary (mesh and wire, above ground) fencing. Only construction that is required to comply with occupational and environmental health and safety standards and/or to protect the cultural heritage can occur within this buffer zone.
2. If any Aboriginal cultural heritage material and/or deposits are found as above, a suitably qualified and experienced archaeologist must be engaged to investigate the extent, nature, and significance of the deposit with the involvement of representatives from WTOAC (to be organised by Heritage Advisor), record in detail the location and context of the material, notify FP-SR and WTOAC, and update and/or complete and submit to FP-SR a VAHR Form.
3. In order to fulfil Section 61 requirements, the Sponsor must seek to avoid harm to any Aboriginal cultural heritage. This may include adjustments to the proposed Activity design, to avoid the extent of the site. If not possible to avoid harm, the Sponsor must seek to minimise harm to Aboriginal cultural heritage. This may include minimising depth of impact, adjusting the activity footprint to avoid a section of the Aboriginal cultural heritage, or utilising alternative construction techniques. If not possible to avoid or minimise harm, the Sponsor must work with WTOAC to determine appropriate mitigation measures. Any mitigation measures must be agreed to in writing by WTOAC. Any salvage must involve the recording, collection (labelled and packaged according to provenance), and analysis of the Aboriginal cultural heritage. The archaeologist must use a DGPS (<1 m accuracy) when mapping the cultural material. Any salvage must also include, where possible and appropriate, collection of samples suitable for dating.
4. Construction may recommence when WTOAC and the archaeologist have deemed appropriate damage avoidance action or salvage has occurred. This agreement must be documented in writing.
5. In the case of a dispute, dispute resolution contingencies are presented in Contingency 3.
6. It must be reiterated that in accordance with the AH Act, all cultural heritage material must be reported to the Secretary to FP-SR and WTOAC, and a Heritage Advisor must be engaged to suitably
7. record it and submit relevant documentation to FP-SR. Significant fines occur for failing to do so, and even greater penalties exist for harming Aboriginal cultural heritage.
8. Any cultural materials associated with the protocols listed above must be subject to repatriation or reburial, following the requirements of the WTOAC.
9. The Sponsor is responsible for all costs relating to the process detailed above.

Contingency 6 Custody of cultural heritage

This contingency relates to the unexpected discovery of any material recovered from within the activity area during works.

Any Aboriginal cultural heritage material unexpectedly discovered within the activity area during works must be temporarily stored with the supervising archaeologist (as per Contingency 5.2) until analysis can be undertaken. Once analysis is complete, custody of all Aboriginal cultural heritage material must be assigned following the hierarchy listed below:

1. With WTOAC;
2. Reburial within a suitable part of the activity area;
3. Any relevant registered native title holder for the land from which the Aboriginal heritage is salvaged;
4. Any relevant native title party (as defined in the AH Act) for the land from which the Aboriginal heritage is salvaged;
5. Any relevant Aboriginal person or persons with traditional or familial links with the land from which the Aboriginal heritage is salvaged;
6. Any relevant Aboriginal body or organisation which has historical or contemporary interests in Aboriginal heritage relating to the land from which the Aboriginal heritage is salvaged.

VAHR records must be updated by the Heritage Advisor to reflect the location of the collection once the above custody arrangements have been executed.

Contingency 7 Communication

Sufficient time must be given for written correspondence to reach parties and for a response to be composed and sent (3 working days each way for mail, 1-2 days each way for express mail, and 1 day for email). Phone notification must be given when written correspondence has been posted and where possible communication should occur by phone and email. Response to any communication must occur within 3 working days, unless otherwise agreed by all parties concerned (but only up to a period of 10 working days).

Heritage Advisor Contact Details:

To be provided to the Sponsor and WTOAC prior to the commencement of the Activity.

RAP Contact Details:

Wadawurrung Traditional Owners Aboriginal Corporation

Phone: (03) 4308 0420

Email: **rap@wadawurrung.org.au**

Sponsor Contact Details:

Dr. Giles Flower – Barwon Water

Phone: 03 5226 2526

Email: giles.flower@barwonwater.vic.gov.au

Contingency 8 Access to works site

If the Heritage Advisor and/or WTOAC wishes to enter the activity area at any stage, this must be facilitated by the Sponsor. The Heritage Advisor and/or WTOAC must provide the Sponsor with at least 3 days day notice prior to the time they wish to enter the activity area. The Sponsor must ensure that the Heritage Advisor and/or WTOAC is aware of any job safety restrictions or dangers and is suitably protected, and the Heritage Advisor and/or WTOAC must comply with any job safety protocols required by the Sponsor and their contractors (if relevant). These access protocols end following completion of construction.

Contingency 9 Sensitive information and distribution

The location and nature of cultural heritage material is sensitive information and must be dealt with accordingly and kept confidential.

Copies of the approved CHMP must be distributed to the following parties:

– Secretary, Department of Premier and Cabinet (DPC);
– WTOAC;
– All owners/managers of land encompassed by the activity area;

Additionally, a copy of this CHMP must be kept on site during construction activity.

All Aboriginal place coordinates and details must be removed from this CHMP prior to its distribution to all parties other than those listed above, and relevant planning authorities.

Contingency 10 Compliance review

In the event that the conditions or contingencies set out in this CHMP are not adhered to, all works must cease, and WTOAC contacted immediately. A record of the breach must include the reasons for non-compliance. All acts of non-compliance must be reported to both WTOAC and First Peoples – State Relations (FP-SR, formerly Aboriginal Victoria), which may result in an investigation by an Authorised Officer or Aboriginal Heritage Officer. The Sponsor or nominated representative must take immediate action to remedy non-compliance in accordance with the relevant condition or contingency, including organising a meeting with WTOAC to discuss the non-compliance if requested to do so. Any remedial actions will be subject to written approval by WTOAC; any dispute during this process will be treated in accordance with Contingency 3.

A record of CHMP compliance must also be maintained by the Sponsor or nominated representative at all times and must be available for inspection by either an Authorised Officer or Aboriginal Heritage Officer under the *Aboriginal Heritage Act 2006* or any other representative of WTOAC or First Peoples – State Relations (FP-SR, formerly Aboriginal Victoria).

Table 1 Compliance checklist

Checklist Contingency	Yes/No	If no…
Ensuring Compliance		
Have all the conditions in Section 1 of the approved Cultural Heritage Management Plan been met?		All works must immediately cease and WTOAC contacted immediately. Refer to Section 1 and Contingency 10.
Contingency Plans for Discovery of Aboriginal Heritage During Works		
If suspected human remains have been identified, have all works immediately ceased and the Coroner, the VAHC and WTOAC been contacted as per the 5-step contingency plan in Contingency 4?		All works must immediately cease and WTOAC and authorities contacted immediately. Refer to Contingency 4.
If potential Aboriginal cultural heritage has been discovered, has the correct procedure been followed as per Contingency 5?		All works must immediately cease within a 10m buffer of the suspected heritage and WTOAC contacted immediately. Refer to Contingency 5.
Management of Aboriginal Cultural Heritage Identified During Works		
Has the procedure been followed for management of Aboriginal Cultural Heritage identified during works?		Refer to Contingency 5.

Part 2 – Assessment

3. Introduction

Barwon Region Water Corporation (the Sponsor) (referred to as Barwon Water or BW) has commissioned GHD Pty Ltd (GHD) to prepare a Cultural Heritage Management Plan (CHMP) for a Regional Renewable Organics Network (RRON) project at the Black Rock Water Reclamation Plant (WRP), Connewarre, Victoria. This is a mandatory CHMP under Section 46 of the *Aboriginal Heritage Act 2006* to allow the proposed works associated with the construction of RRON facility that will convert organic waste to capture carbon and produce renewable energy for use at the Black Rock Water Reclamation Plant, Connewarre, Victoria that may disturb Aboriginal cultural heritage material within the Activity Area. This CHMP also provides contingency measures for managing the unexpected discovery of any Aboriginal cultural heritage material during construction works.

3.1 Reasons for preparing the CHMP

This is a mandatory Cultural Heritage Management Plan (CHMP) under Section 46(a) of the *Aboriginal Heritage Act 2006*.

Under Section 7 of the Aboriginal Heritage Regulations 2018, a mandatory CHMP is required if:

a. all or part of the activity area for the activity is an area of cultural heritage sensitivity (CHS); and

b. all or part of the activity is a high impact activity.

3.1.1 High Impact Activity

The proposed works include the construction of a Regional Renewable Organics Network and associated road and utility upgrades. The construction of the facility is classified as a high impact activity under Regulation 46 as follows:

Regulation 46 Buildings and works for specified uses

1. The construction of a building or the construction or carrying out of works on land is a high impact activity if the construction of the building or the construction or carrying out of the works—

(a) would result in significant ground disturbance; and

(b) is for or associated with the use of the land for any one or more of the following purposes—

(iii) a car park;

(xii) an industry;

(xvii) an office

(xxvii) a utility installation, other than a telecommunications facility, if –

(D) the works affect an area exceeding 25 square meters;

(xxx) land used to generate electricity, including a wind energy facility.

3.1.2 Cultural heritage sensitivity

The Activity Area is located within an area of Cultural Heritage Sensitivity (CHS) under Regulation 25, Registered cultural heritage places and Regulation 34, Koo Wee Rup Plain as follows:

Regulation 25 Registered cultural heritage places

(1) A registered cultural heritage place is an area of cultural heritage sensitivity.

(2) Subject to subregulation (3), land within 50 metres of a registered cultural heritage place is an area of cultural heritage sensitivity.

(3) If part of the land within 50 metres of a registered cultural heritage place has been subject to significant ground disturbance, that part is not an area of cultural heritage sensitivity.

Registered Aboriginal place Black Rocks (VAHR 7527-0570) is located 15m north of the Activity Area.

Regulation 34 Koo Wee Rup Plain

(1) Subject to subregulation (2), the Koo Wee Rup Plains is an area of cultural heritage sensitivity.

(2) If part of the Koo Wee Rup Plain has been subject to significant ground disturbance, that part is not an area of cultural heritage sensitivity.

*(3) In this regulation, **Koo Wee Rup Plain** means an area identified as "Qg" and "Qm1" in the surface Geology of Victoria 1:250 000 map book.*

The north eastern corner of the Activity Area is mapped as "Qm1" swamp deposit.

3.2 Purpose of the report

The purpose of this CHMP is to assess the potential impact of the proposed activity on Aboriginal cultural heritage within the Activity Area. The CHMP outlines measures to be taken before, during and after the activity in order to manage and protect unexpected discoveries of Aboriginal cultural heritage in the Activity Area. Once approved, the conditions of this CHMP are enforceable and failure to comply with the conditions of an approved CHMP is an offence under Section 67A of the *Aboriginal Heritage Act 2006*.

3.3 Notice of Intent to prepare a CHMP

Under Section 54 of the *Aboriginal Heritage Act 2006*, on behalf of the Sponsor, a Notice of Intent (NoI) to prepare a CHMP was submitted to the Secretary of the Department of Premiere and Cabinet (DPC) on 6 December 2022 (Appendix A). The Victorian Aboriginal Heritage Register (VAHR) has allocated CHMP number 19285 to this plan.

The Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) is the Registered Aboriginal Party (RAP) whose area, includes the Activity Area. The NoI was submitted to the WTOAC on 6 December 2022. The RAP elected to evaluate the plan on 8 December 2022 Notice to Evaluate was received (Appendix B).

The NoI was submitted to City of Greater Geelong on 6 December 2022. The Sponsor is the owner and occupier of the land to which this plan relates.

3.4 Location of Activity Area

The location of the Activity Area is shown on Map 1.

The Activity Area is located in an irregular parcel of land to the northeast of the existing Black Rock Water Reclamation Plant, located approximately 70 km to the southwest of the Melbourne Central Business District.

The cadastre details of the Activity Area detailed in Table 2.

Table 2 Cadastre information for the Activity Area

Cadastre information	
Property Address	405 Blackrock Road Connewarre 3227 400 Blackrock Road Connewarre 3227
Local Government Authority	City of Greater Geelong
Locality	Connewarre
Lot/Plan	1\TP600591 1\TP886081 2\TP600593
Planning Zone	PUZ1
Coordinates (MGA 2020)	274221, 5759671 (55)
Melways	495 F4

3.5 Sponsor/Client

This CHMP is sponsored by:

Sponsor Name: Barwon Region Water Corporation

Contact Name: Giles Flower

Address: 55-67 Ryrie Street (PO Box 659) Geelong VIC 3220

ABN Number: 86 348 316 514

3.6 Heritage Advisors

Kym Oataway, (Team Leader - Heritage, GHD Pty Ltd), Josh Brown (Graduate Archaeologist, GHD Pty Ltd.), Rebecca Macklin (Archaeologist, GHD Pty Ltd) and Asher Ford (Senior Heritage Advisor, GHD Pty Ltd) all acted as Heritage Advisors and/or suitably qualified archaeologists during the completion of this CHMP. Ruby Stewart (Archaeologist, GHD Pty Ltd) authored the report, while David Tutchener (Technical Director, GHD Pty Ltd) was the technical reviewer of the CHMP.

Kym Oataway B Arch (Hons)

Kym has over thirteen years experience working as a Heritage Advisor in Australia. She has extensive experience in conducting archaeological surveys, subsurface testing programs, site salvage and monitoring programs throughout Victoria investigating both Aboriginal and historic heritage. Kym has been the project manager for the approvals of a large number of projects under State and Commonwealth legislation. She has completed over 100 cultural heritage management plans and other archaeological assessments.

David Tutchener PhD Arch

Dave has over 10 years experience in the heritage sector. He has worked in Australia and overseas both as a consultant and as a researcher. He has completed various forms of heritage assessments across Australia. David has a significant background of working for and with Traditional Owner groups in various capacities. He has published widely on topics that concern colonialism, heritage, Aboriginal Cultural Values, Significance Assessments, lithic materials, rock art and culturally modified trees. David has also provided expert advice for several policy reforms and has also provided expert witness testimony regarding EES approvals.

Asher Ford **BA (Hons Anthropology)**

Asher Ford has more than 10 years' experience in the heritage industry, undertaking projects for a wide range of clients and industries within New South Wales, Victoria, Tasmania and South Australia. He has a strong background in impact assessment, stakeholder consultation, approvals and management plans for Aboriginal and historical heritage under both Commonwealth and State legislation. Asher is a full member of the Australian Association of Consulting Archaeologists and a qualified Heritage Advisor under Section 189 (1) of the *Aboriginal Heritage Act 2006*.

Rebecca Macklin **BA (Hons Geography and Archaeology)**

Rebecca joined the GHD heritage team in 2019 and has since co-authored Due Diligence Assessments, Historical Assessments and Cultural Heritage Management Plans. Before moving to Australia, Rebecca participated in various activities as part of her undergraduate degree, including undertaking artefact cataloguing for large research projects run by University College Dublin.

Josh Brown **B Arch, GC Cultural Heritage and Museum Studies**

Josh joined GHD in 2022 as an archaeologist and heritage advisor. His qualifications include a Bachelor of Archaeology from Flinders University and a Graduate Certificate in Cultural Heritage and Museum Studies from Deakin. Since 2008 he has been involved in various volunteer projects both in and out of the field in Australia and abroad.

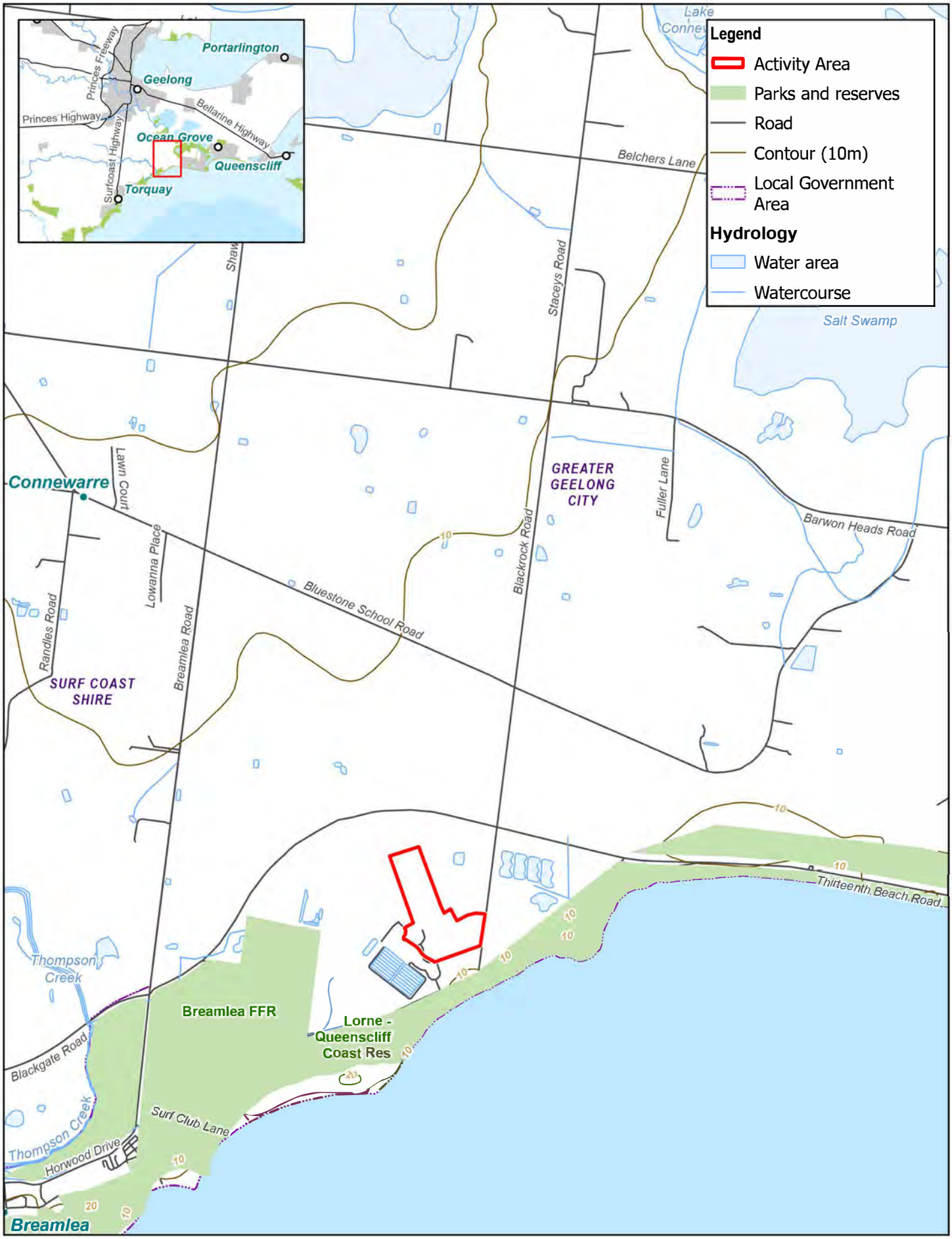
3.7 Owner/Occupier

This Activity Area is currently owned, managed, and operated by Barwon Water and is a combination of vacant land, a Biosolids Treatment Plant, access roads and a landfill.

3.8 Registered Aboriginal Party (RAP)

The Registered Aboriginal Party (RAP) for the Activity Area is the Wadawurrung Traditional Owner Aboriginal Corporation. The RAP elected to evaluate the CHMP on 8 December 2022.

As the CHMP is located in a RAP area, no Activity Advisory Group was appointed for this CHMP.



Paper Size ISO A4

0 100 200 300 400 500

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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GHD

Barwon Water
Barwon Water RRON Functional Design

Location of Activity Area

Project No. 31-12585384
CHMP No. 19285
Date 30/10/2023

MAP 1

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Print date: 30 Oct 2023 - 13:56

Data source: GHD (2023), VicMap (2023). Created by: sblades

4. Activity description

The BW RRON project is an organics processing facility that will convert organic waste into valuable end-products such as biochar, and renewable energy to be used within the Black Rock WRP.

This facility is defined as *Materials recycling,* which is included in the Industry land use term under the Greater Geelong Planning Scheme. Materials recycling is defined as: *Land used to dismantle, treat, process, store, recycle, or sell refuse, used or surplus materials* (Department of Transport and Planning, 2023).

The RRON facility is proposed to process approximately 40,000 tonnes of food organics and garden organic (FOGO) waste predominately from local Municipalities. Smaller quantities of commercial and industrial organic waste and biosolids will also be processed at the facility. The main processes proposed for the RRON include plug flow anaerobic digestion (PFAD) of the organic feedstock, and thermal processing via carbonisation of the remaining digestate. This process train will produce biogas (from the PFAD) and syngas (from carbonisation) as well as biochar, a high-value product for agriculture and production of advanced sustainable materials. It is proposed that the generated biogas is transferred to the neighbouring biosolids drying facility and utilised for heat via a biogas boiler. Thermal energy from the combustion of syngas will be used within the RRON facility to dry the digestate down to a suitable moisture content for carbonisation.

Impacts to surface of the ground and buried former land surfaces

The impacts that the proposed works may have on the ground surface and potential buried former land surfaces will be predominantly associated with the cut and fill areas for the facility as well as topsoil removal. It is expected that the proposed works will impact any potential Aboriginal cultural heritage material that exists on the ground surface, or in subsurface deposits on any buried former surfaces. Due to the existing WTP works and subsurface utilities, it is likely that there has been some previous ground disturbance.

The facility design is in a preliminary design phase, which will include the following elements at a minimum:

– Bulk Earthworks (cut and fill areas for facility footprint and access roads)
– Hardstand areas (lay down area)
– Civil works for utility installations and re-locations
– Civil works for road upgrades
– Drainage works

The construction of the BW RRON facility will include numerous structures on footings and slab construction, which are expected to reach a depth of approximately 1.25 m. These structures include a biofilter, digester, ancillary structures including an administration office.

Road works will include a carpark, weighbridges, new access roads and road upgrades. While the construction technique has not been finalised, roads and carparks will be constructed of either trafficable asphalt pavement, which will have a minimum impact of 360mm for the pavement and a potential additional impact up to 750mm for the subgrade material, or reinforced concrete pavement, which would have a minimum impact of 350mm, with a potential additional 750mm impact for the subgrade material. It is likely that a combination of these techniques is to be used, with the reinforced concrete pavement best suited to locations with heavy vehicles such as trucks.

The site access roads will include:

– Access road into the carbonisation building and the exit road of the main building will be 3m wide
– Access roads to the car park will be 3m wide
– Entry road into the main building has a proposed width of 8.75m
– The access road to the site coming in from the northeast will be 10-11m wide as it includes a weighbridge

These access roads will require an upgrade of the existing access road to the south of the facility, and reinforcing sections with the reinforced concrete pavement to support large trucks.

The building construction and access road upgrade and construction will require drainage works and new utility installations and existing utility re-location.

The works will require some vegetation removal for construction and will be finalised with general landscaping. The vegetation removal is largely removal of lawn that will be completed via topsoil scraping. In addition, the removal of some previously replanted native vegetation will occur via machinery. Final landscaping will focus on native vegetation and will be conducted by small machinery and hand tools.

The landfill to the north of the Activity Area has been designated as an excess soil stockpiling location.

A preliminary lay out of the RRON facility that was used in the development of this CHMP, can be seen in Figure 1. The most recent design plans can be seen in Appendix H.

Paper Size ISO A4

0 5 10 15 20 25

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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GHD

Barwon Water
Barwon Water RRON Functional Design

Preliminary Plans

Project No. **31-12585384**
CHMP No. **19285**
Date **30/10/2023**

FIGURE 1

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Print date: 08 Nov 2023 - 13:53

Data source: NALG (2023), GHD (2023), VicMap (2023). Created by: sblades

5. Extent of Activity Area Covered by the CHMP

The extent of the Activity Area is shown in Map 2.

The Activity Area is a combination of open land and facilities within the Black Rock Water Reclamation Plant (WRP), including an old landfill in the north, the Biosolids Treatment Plant (BTP) in the centre, access roads and an open space with an artificial mound in the southeast. The Activity Area is bound by Black Rock Road to the east, the rest of the WRP to the west, and open space to the north and south.

The south of Activity Area is mostly grass, with landscaping along the southern boundary and along the eastern boundary, with older vegetation within the road reserve and younger vegetation within the boundary of the Black Rock WRP. The trees are in a linear formation that appears to be as a result of revegetation works. The asphalted access roads run east to west from Black Rock Road to the WRP. The land fill in the north consists of open grassed area, with stockpiles of soil in the centre, a gravel access road along the western border with equipment storage.

The extent of the Activity Area was updated through the course of the assessment to appropriately capture all proposed works associated with the activity. The most significant change occurred after the initial standard assessment, when a large portion of open space to the north and east of the Activity Area was removed and additional areas to the north and west of the Activity Area were added. Additional standard assessment was undertaken to ensure that a sufficient level of assessment was completed. This change is best illustrated within Map 6.

Plate 1 ***South east corner of Activity Area, facing west***

Paper Size ISO A4

0 10 20 30 40 50

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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GHD

Barwon Water
Barwon Water RRON Functional Design

Project No. **31-12585384**
CHMP No. **19285**
Date **19/12/2023**

Extent of Activity Area

MAP 2

\\ghdnet\ghd\AU\Melbourne\Projects\31\12585384\GIS\Maps\Deliverables\12585384_Heritage_figures\12585384_Heritage_figures.aprx - 12585384_002_Extent_A4P
Print date: 10 Jan 2024 - 14:18

Data source: VicMap (2023), FPSR (2023). Created by: sblades

6. Documentation of Consultation

The Wadawurrung Traditional Owners and Aboriginal Corporation (WTOAC) are the Registered Aboriginal Party (RAP) for the Activity Area and were consulted throughout the development of this CHMP.

6.1 Consultation in relation to the assessment

WTOAC were consulted throughout the development of CHMP 19285, as documented in Table 3.

Table 3 Consultation in relation to the assessment

Date	Name	Role	Communication
06/12/2022	Kym Oataway	Heritage Advisor, GHD	Submission of NoI on behalf of Sponsor
	Victorian Aboriginal Heritage Register (VAHR)		
06/12/2022	Victorian Aboriginal Heritage Register (VAHR)		Acknowledge receipt of NoI. Issues CHMP number 19285
	Kym Oataway	Heritage Advisor, GHD	
	Giles Flower	Sponsor, BW	
07/12/2022	Kym Oataway	Heritage Advisor, GHD	NoI is submitted to WTOAC & LGA
	RAP Submissions	WTOAC	
	City of Greater Geelong		
8/12/2022	Tierney Brennan	Heritage Advisor, WTOAC	Notice to evaluate the completed CHMP is provided by WTOAC
	Kym Oataway	Heritage Advisor, GHD	
	Giles Flower	Sponsor, Barwon Water	
28/02/2023	Jesse Martin	General Manager Heritage Unit, WTOAC	Inception meeting was held to discuss the proposed activity, results of the desktop assessment, and methodology for the standard assessment.
	Anna Evans	CHMP Heritage Advisor, WTOAC	
	Macaylah Johnson	Traditional Owner Adviser, WTOAC	
	Bianca Marijanovic	CHMP Heritage Advisor, WTOAC	
	Kym Oataway	Heritage Advisor, GHD	
	Ruby Stewart	Archaeologist, GHD	
	Alister Green	Project Manager, GHD	
	Colleen Tompkins	Project Manager, GHD	
	Giles Flower	Sponsor Barwon Water	
	Tayla Hubbard	Sponsor Representative, Barwon Water	
	James Moverly	Sponsor Representative, Barwon Water	
20/07/2023	Jesse Martin	General Manager Heritage Unit, WTOAC	Standard assessment meeting was held to discuss the results of the standard assessment. A draft complex assessment was discussed to be endorsed via email.
	Albert Fagan	Elder, WTOAC	
	Billy-Jay O'Toole	Senior Traditional Owner Adviser, WTOAC	

Date	Name	Role	Communication
	Bianca Marijanovic	CHMP Heritage Advisor, WTOAC	
	Natasha Charles	Technical Officer, WTOAC	
	Kym Oataway	Heritage Advisor, GHD	
	Ruby Stewart	Archaeologist, GHD	
	Alister Green	Project Manager, GHD	
	Giles Flower	Sponsor Barwon Water	
	James Moverley	Sponsor Representative, Barwon Water	
6/09/2023	Ruby Stewart	Archaeologist, GHD	The complex assessment testing map was supplied via email.
	Anna Evans	Heritage Advisor, WTOAC	
5/10/2023	Anna Evans	Heritage Advisor, WTOAC	The complex assessment testing methodology was endorsed by the Traditional Owners via email.
	Ruby Stewart	Archaeologist, GHD	
10/11/2023	Jesse Martin	General Manager Heritage Unit, WTOAC	Complex assessment results meeting was held to discuss the results of the complex, and the conditions and contingencies of the CHMP.
	Kristen Ellis	CHMP Heritage Advisor, WTOAC	
	Albert Fagan	Elder, WTOAC	
	Josie Inches	Technical Officer, WTOAC	
	Alex Fagan	Traditional Owner Adviser, WTOAC	
	Kym Oataway	Heritage Advisor, GHD	
	Ruby Stewart	Archaeologist, GHD	
	Alister Green	Project Manager, GHD	
	Moana Quiatol	Sponsor Representative, Barwon Water	
	James Moverley	Sponsor Representative, Barwon Water	

6.2 Participation in the conduct of the assessment

All field assessment for CHMP 19285 was conducted with the participation of field representatives from WTOAC, as documented in Table 4.

Table 4 Participation in the conduct of the assessment

Date	Name/Role	Communication
26/04/2023	Ruby Stewart, Archaeologist, GHD	Standard assessment and monitoring of the geotechnical works
	Josh Brown, Graduate Heritage Advisor, GHD	
	Natasha Charles, Field Representative, WTOAC	
	Aiden Charles, Field Representative, WTOAC	
27/04/2023	Ruby Stewart, Archaeologist, GHD	
	Josh Brown, Graduate Heritage Advisor, GHD	
	Delta Greenhalgh, Field Representative, WTOAC	

Date	Name/Role	Communication
	Faith Greenhalgh, Field Representative, WTOAC	
11/07/2023	Ruby Stewart, Archaeologist, GHD	Additional standard assessment, post changes to the Activity Area
	Rebecca Macklin, Heritage Advisor, GHD	
	Kaelan Morrison Field Representative, WTOAC	
	Kallum Shields. Field Representatives, WTOAC	
27/10/2023	Ruby Stewart, Archaeologist, GHD	Complex assessment
	Asher Ford, Senior Heritage Advisor, GHD	
	BJ O'Toole, Field Representative, WTOAC	
	James Brown, Field Representative, WTOAC	

6.3 Consultation in relation oral histories and intangible cultural heritage

During the complex results meeting held on the 10 November 2023, the WTOAC Traditional Owners were asked if there was any oral history or intangible cultural heritage that they would like to provide for inclusion in the CHMP. No information was provided.

6.4 Consultation in relation to the conditions

All consultation with WTOAC regarding the conditions and contingencies of CHMP 19285 is documented within Table 5.

Table 5 Consultation of relation to the conditions

Date	Name	Role	Communication
10/11/2023	Jesse Martin	General Manager Heritage Unit, WTOAC	Complex assessment results meeting was held to discuss the results of the complex, and the conditions and contingencies of the CHMP.
	Kristen Ellis	CHMP Heritage Advisor, WTOAC	
	Albert Fagan	Elders, WTOAC	
	Josie Inches	Technical Officer, WTOAC	
	Alex Fagan	Traditional Owner Adviser, WTOAC	
	Kym Oataway	Heritage Advisor, GHD	
	Ruby Stewart	Archaeologist, GHD	
	Alister Green	Project Manager, GHD	
	Moana Quiatol	Sponsor Representative, Barwon Water	
	James Moverley	Sponsor Representative, Barwon Water	

The results and management conditions meeting was held on 10 November 2023 via videoconference. The meeting was attended by Jesse Martin (General Manager Heritage Unit), Kristen Ellis (CHMP Heritage Advisor), Albert Fagan (Elder), Alex Fagan (Traditional Owner Adviser) and Josie Inches (Technical Officer) from WTOAC, Ruby Stewart, GHD Archaeologist, Kym Oataway, GHD Heritage Advisor, Alister Green, GHD Project manager; and James Moverley and Moana Quiatol from Barwon Water as representatives of the Sponsor.

During the meeting, the results of the complex assessment were discussed. WTOAC were satisfied with the level of subsurface testing undertaken during the complex assessment. A broken piece of quartzite identified during the complex was discussed and agree to be non-artefactual, due to a lack of identifiable artefact attributes. Conditions were placed on the CHMP at the time of the final meeting, using the WTOAC Standard Conditions and Contingencies. The conditions consist of, but are not limited to:

– A copy of the CHMP to be held on site during the duration of the activity
– A cultural heritage induction to be undertaken with all relevant site personnel involved in ground disturbing works. The cultural heritage induction must be conducted by the RAP and a Heritage Advisor prior to the commencement of ground disturbing works.
– Compliance inspections will be undertaken at the before works begin, during the works and after the works, with the inspection to occur during the works timed for after topsoil stripping, at a point of high ground exposure

6.5 Summary of consultation outcomes

Notice of Intent to prepare a CHMP

On behalf of the Sponsor, the NoI was submitted to the Secretary DPC, the WTOAC RAP, and City of Greater Geelong on 6 December 2022.

Inception Meeting

A project inception meeting was held on via video conference on 28 February 2023.

The meeting was attended by Jesse Martin (General Manager Heritage Unit), Macaylah Johnson (Traditional owner Adviser), Anna Evans (CHMP Heritage Advisor) and Bianca Marijanovic (CHMP Heritage Advisor) from WTOAC, Ruby Stewart, GHD Archaeologist, Kym Oataway, GHD Heritage Advisor, Alister Green and Colleen Tompkins, GHD Project managers and James Moverly, Tayla Hubbard and Giles Flowers from Barwon Water (Sponsor). During the inception meeting, the nature of the Activity Area, the proposed activity and the results of the desktop assessment were discussed. It was agreed that monitoring would be required for the geotechnical works, or auger test pits be completed as part of the standard assessment if the geotechnical works have not been undertaken by the time the standard assessment occurred.

Standard Assessment

The standard assessment was undertaken on 26 and 27 April 2023 in conjunction with the geotechnical testing. Prior to the commencement of the standard assessment, the results of the desktop assessment were discussed, including the results of the previous CHMPs and assessments in the area, including the assessment that identified VAHR 7721-0570 and a description of the Aboriginal place. At this stage, VAHR 7721-0570 was within the Activity Area.

Additional standard assessment was undertaken on the 11 July 2023 due to changes to the Activity Area. The results of the desktop assessment and previous standard assessment were discussed, with sections of the previous Activity Area reassessed to gain additional input from WTOAC field representatives. The location of VAHR 7721-0570 was noted as no longer within the Activity Area, however its location in relation to the updated Activity Area was discussed. No Aboriginal cultural heritage material was identified during the standard assessments.

Standard Assessment Meeting

The standard assessment results meeting was held on the 20th July via videoconference. The meeting was attended by Jesse Martin (General Manager Heritage Unit), Billy-Jay O'Toole (Senior Traditional Owner Adviser), Natasha Charles (Technical Officer), Albert Fagan (Elder), and Bianca Marijanovic (CHMP Heritage Advisor) from WTOAC, Ruby Stewart, GHD Archaeologist, Kym Oataway, GHD Heritage Advisor, Alister Green GHD Project manager; and James Moverley and Giles Flowers from Barwon Water (Sponsor).

The standard assessment began with an explanation of the changes to the Activity Area that had occurred since the inception meeting. This followed with a description of the fieldwork and the different stages that occurred. The results of the standard assessment were presented, with particular note of the visible ground surface disturbance from utility installation and facility construction, and where any ground surface was visible. The results of the geotechnical investigations were also present, with note of BH 12, that identified fill within the centre of the Activity Area. This was followed with a presentation of aerial imagery documentation of previous ground surface disturbance.

The next steps were discussed. While no areas of archaeological potential where identified, the RAP determined that a complex assessment must be undertaken to test the assumptions of the topsoil scraping and previous ground disturbance. A complex assessment methodology involving 2x1m mechanical test pits on a 50m grid within areas of disturbance was discussed. A detailed testing methodology and mapped illustration of testing locations was requested.

This testing methodology provided via email to the RAP on (6 September 2023) and was endorsed by the RAP on (5 October 2023), after the methodology was changed from mechanical to manual excavation, as discussed and agreed to via email.

Complex Assessment

The complex assessment was undertaken on the 27 October 2023. Prior to the commencement of the complex assessment, the results of the previous assessments were discussed, including the previous levels of ground disturbance. One 1x1 m test pit and three 0.5x0.5 m shovel test pits were excavated and identified fill overlying sterile clay. No Aboriginal cultural heritage material was identified during the complex assessment.

Complex Assessment Meeting

The complex assessment results meeting was held on the 10th November 2023 via videoconference. The meeting was attended by Jesse Martin (General Manager Heritage Unit), Kristen Ellis (CHMP Heritage Advisor), Albert Fagan (Elder), Alex Fagan (Traditional Owner Adviser) and Josie Inches (Technical Officer) from WTOAC, Ruby Stewart, GHD Archaeologist, Kym Oataway, GHD Heritage Advisor, Alister Green, GHD Project manager; and James Moverley and Moana Quiatol from Barwon Water as representatives of the Sponsor.

The RRON facility was reintroduced, including the most recent design plans. The complex assessment consisted of the subsurface excavation of one 1 x 1 m test pit (TP) and three Shovel Test Pits (STPs), in which disturbance to varying degrees was identified throughout all locations. It was discussed that the area has been subject to extensive ground disturbance from the construction and expansions of the WRP, installation of subsurface utilities, vegetation clearing, modification to the landform, and use of imported fill. It was therefore considered likely that any Aboriginal cultural heritage material that may have been located within the Activity Area would likely have been significantly disturbed or destroyed by previous ground disturbing activities.

No Aboriginal cultural heritage was identified during the standard and complex assessments. Based on the results of the desktop, standard and complex assessment, it was considered reasonably unlikely for Aboriginal cultural heritage material to be present within the Activity Area.

It was agreed upon that WTOAC's standard conditions and contingencies would be included within the CHMP, which include Cultural Heritage Inductions, and three compliance inspections, one before the commencement of any works, and one during the works and one after the works.

7. Desktop Assessment

Pursuant to Regulation 61 and Clause 8(1), Schedule 2 of the Regulations, a desktop assessment is required to investigate the environmental, cultural, historical and archaeological context of known and potential Aboriginal cultural heritage in the Activity Area and wider geographic region. This information is used to establish a predictive model for Aboriginal heritage within the Activity Area and to inform the standard and complex assessment.

7.1 Search of the Victorian Aboriginal Heritage Register

A search of the VAHR was undertaken by Ruby Stewart on the 16 December 2022 in order to assess information relating to the Activity Area. An additional search was undertaken on the 14 October 2023 to ensure the information was current.

7.2 Geographic region

The geographic region is shown in Map 4.

The geographic region is defined by the geomorphological unit *Plains with well-developed drainage and deep regolith (Cressy)* (GMU 6.1.4) in the north, south and east, and a major roadway, Surf Coast Highway in the west. The GMU generally aligns with major waterways Thompson Creek in the south, Armstrong Creek in the north, and the edges of Hospital Swamp and Lake Connewarre to the east. This geographic region includes swamp deposits and smaller waterways, providing similar geologies and landforms that are found in the Activity Area. The geographic region has been selected on the basis that it contains a range of representative landforms, previous archaeological investigations and recorded Aboriginal cultural heritage Places that are relevant to informing the predictive model for the Activity Area.

7.3 Landforms and Geomorphology

7.3.1 Geology

The Activity Area lies within the Newer Volcanics Group unnamed basalt flows (*Neo*) and Unnamed swamp and lake deposits (*Qm1)* (Map 3).

Newer Volcanics Group were formed by basalt flows from volcanic activity from the late Miocene, or as units with an age of less than 10 My, that consist of basaltic volcanic rocks with minor amounts of felsic volcanic rocks, and includes dykes, plugs and sills (VandenBerg, 2009, p. 17). The Activity Area lies on one of these unnamed basalt flow that originated from a nearby volcanic eruption, possibly from Mount Duneed, 10km to the northwest (DPJR, 2020). Basalt flows can result in varying soils depths, that can range from friable gradational soils to strongly textured and contrasting soils (Agriculture Victoria, 2020). The lava flows created a veneer of basalt of varying thickness. Around the Activity Area soils have developed to be thicker with meters of pale clays with ironstone at shallow depths. Soils are typically black and brown sodic soils with mottled textures with basalt inclusions.

Part of the activity area is identified as “Qm1” swamp and lake deposits. These are typically Holocene deposits that comprise generally unconsolidated grey to black silt, clay and sand. Soil depth can be entirely dependent on the frequency and duration of inundation (DEECA, 2023).

7.3.2 Geotechnical investigations

The geotechnical results indicate that two key geologies, the volcanic plains in the south, west and north, and the swamp deposit in the east and north. A total of 12 boreholes were excavated within the original Activity Area of this CHMP, with only four remaining within the Activity Area, after changes had occurred (see also Map 7). The Newer Volcanic group and Swamp/Lake Deposits, with stratigraphy identified are outlined below:

Newer Volcanics

The boreholes on the newer volcanics identified mottled clay topsoils with trace amounts of sand, with low plasticity. This unit is interpreted as reworked natural soil overlying a more plastic grey-black clay. This is then overlying weathered basalt either as bedrock, or as a basalt 'floater'. Within the volcanic plains, the dark grey plastic clay is considered culturally sterile. Four of the boreholes (9-12) are within the current Activity Area, with Borehole 12 identifying fill overlying the culturally sterile clay.

Table 6 Newer Volcanics geology

Unit ID	General Description from Field Logs	Strength	Depth from (m)	Depth to (m)
Topsoil	TOPSOIL: CLAY trace sand; dark grey mottled brown, fine grained sand, trace rootlets low plasticity	F – St	0.00	0.10 – 0.20
Fill[1]	FILL: CLAY trace gravel and sand; brown mottled red and grey, fine to medium grained sand, fine to medium sub-angular to angular basalt gravel, occasional brick inclusions, low plasticity	F – VSt	0.00	0.20 – 1.60
Residual Soil	CLAY; dark grey-black, low to med plasticity	F – VSt	0.10 – 1.60	0.90 – 2.30
Newer Volcanic BASALT	BASALT; dark grey-black mottled brown, apparently vesicular, extremely weathered (recovered as gravel)	-	0.90 – 2.30	Base of unit not penetrated

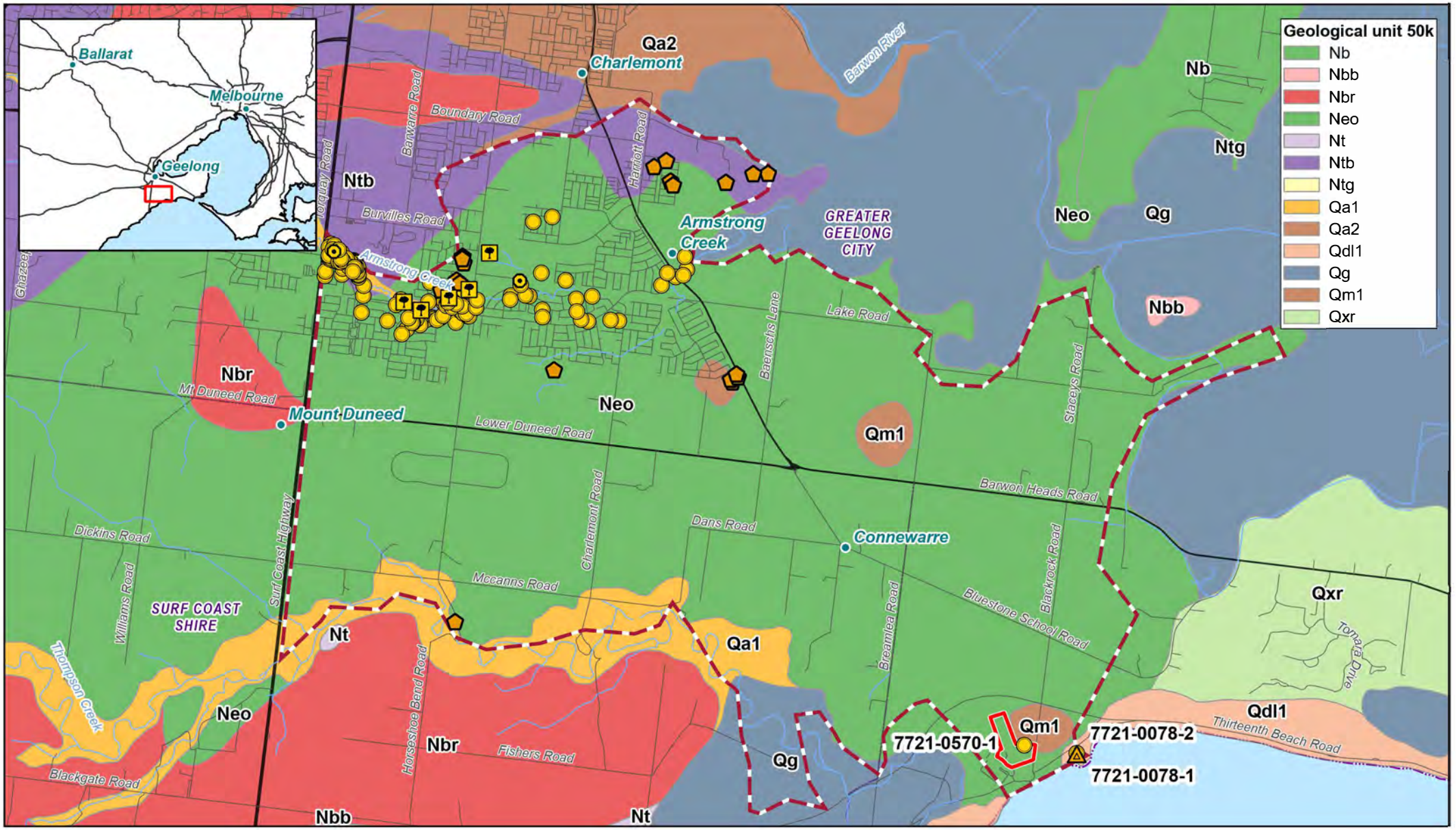
[1] Unit not encountered in all boreholes

Swamp Deposits

The swamp deposits present a similar sandy dark grey clay overlying dark-grey clay with trace sand and pale brown-red mottling, overlying a gravelly, sandy clay. Within the swamp deposits, the mottled dark grey clay is considered culturally sterile. This geology is only mapped in a small section in the east of the Activity Area and did not present in the boreholes within the Activity Area.

Table 7 Swamp deposit geology

Unit ID	General Description from Field Logs	Strength	Depth to top of layer (m bgl)	Encountered thickness (m)
Topsoil	TOPSOIL: CLAY trace sand; dark grey-black mottled brown, fine grained sand, trace rootlets, medium plasticity	F - St	0.00	0.10 – 0.20
Quaternary Swamp Deposits	CLAY trace sand; pale brown-red mottled grey, fine to coarse grained sand, medium plasticity	St - VSt	0.10 – 0.20	0.60 – 0.70
	Gravelly CLAY with sand; pale brown-pink mottled white, fine to coarse grained sand, fine to medium rounded to sub-rounded quartz and ironstone gravel, low plasticity	St - VSt	8.00	Base of unit not penetrated



Legend

- Activity Area
- Geographic region
- Artefact Scatter
- Object Collection
- Low Density Artefact Distribution
- Aboriginal Historical Pla
- Shell Midden
- Scarred Tree

Paper Size ISO A4

0 500 1,000

Metres

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

Barwon Water
Barwon Water RRON Functional Design

Geology of the Geographic Region and Activity Area

Project No. **12585384**
CHMP No. **19285**
Date **30/10/2023**

MAP 3

Data source: VicMap (2023); GHD (2023); DEECA (2023), Geoscience Australia (2023). Created by: sblades

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7.3.3 Geomorphology and Landform

The Activity Area is located within the first-tier geomorphological unit (GMU) the *Western Plains* (GMU 6). This GMU is a low lying and undulating plain that covers most of south-west Victoria of volcanic and sedimentary lithologies. This unit represents some of the youngest landscapes and while soils can vary across the unit, much of the area is covered in grassland plains (Agriculture Victoria, 2020). The second tier GMU is *Volcanic Plains* (GMU 6.1). This unit focusses on a landscape that has been formed through volcanic eruptions over the course of 5 million years, resulting in a veneer of overlapping lava flows. The lava would follow the lowest point in the landscape as it flowed and block drainage channels, resulting in poor drainage across the unit (Agriculture Victoria, 2020).

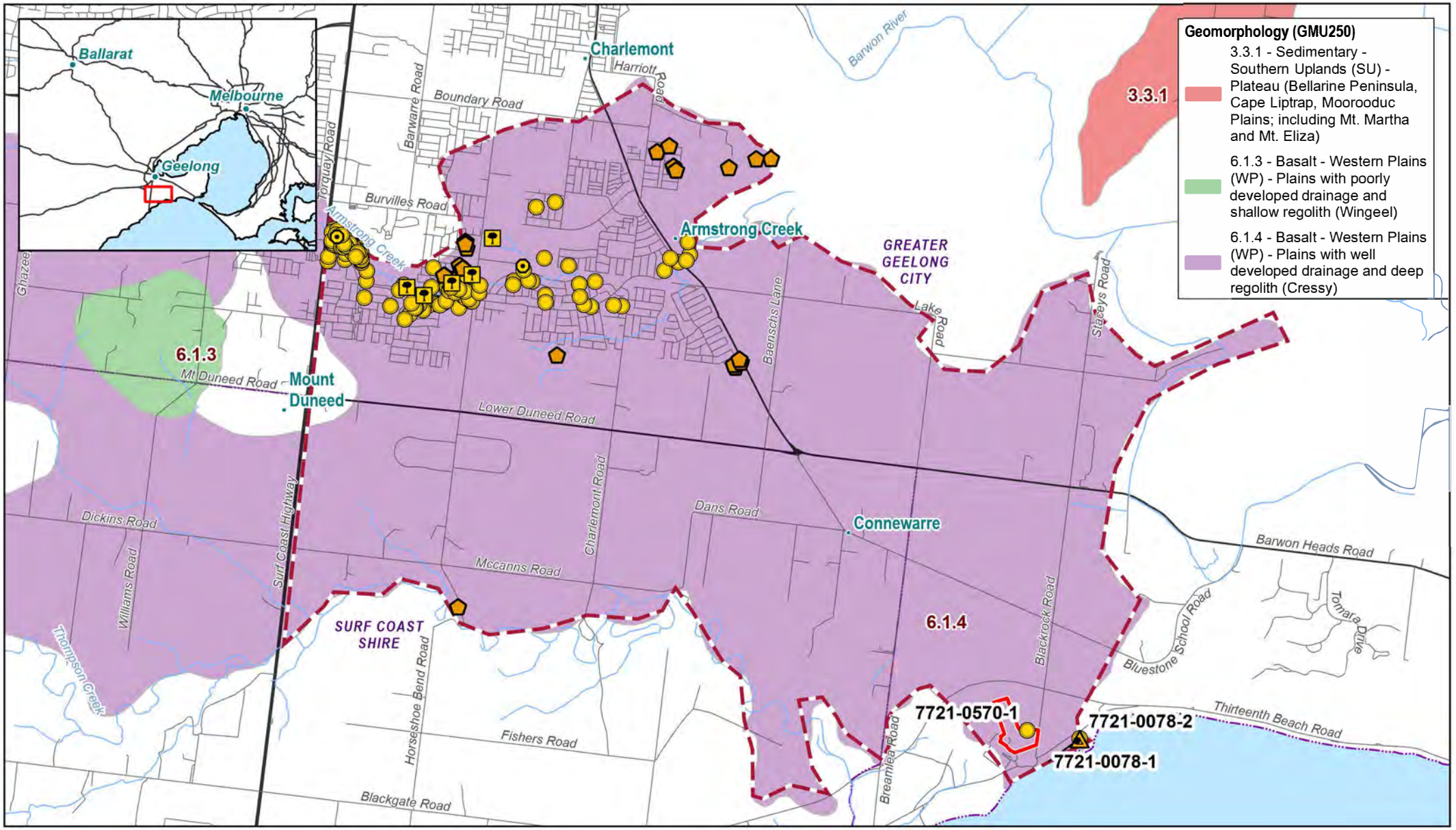
Plains with well developed drainage and deep regolith (Cressy) (GMU 6.1.4) is the third tier unit for the Activity Area and represents earlier Pliocene volcanic landscapes, from 5-2 My (Agriculture Victoria, 2020). Drainage has been well developed resulting in few wetlands on a very plain landscape. Thicker soils have been developed and are typically mottled clay and silts.

7.3.4 Summary

The Activity Area lies within the eastern half of the WRP. The land is generally flat, with no significant contour changes, with the exception of a dam in the north that appears to be a modified from a low lying swamp, as indicated by the underlying geology and mapped inundation area. West of the Activity Area is a low-lying wetland adjacent to Thompsons Creek. A rocky coastal cliff is directly south of the Activity Area, with sand dunes developing to the east and west. To the east and north of the Activity Area is a continuation of the volcanic plains.

The geotechnical results indicate that two key geologies, the volcanic plains in the south, west and north, and the swamp deposit in the east and north. The volcanic plains present a sandy dark grey clay with some disturbance over a dark grey plastic clay, overlying weathered basalt bedrock. Within the volcanic plains, the dark grey plastic clay is considered culturally sterile. The swamp deposits present a similar sandy dark grey clay overlying dark-grey clay with trace sand and pale brown-red mottling, overlying a gravelly, sandy clay. Within the swamp deposits, the mottled dark grey clay is considered culturally sterile.

The majority of the Activity Area lies within the volcanic plains, with just a small section in the east within the swamp deposit geology. Of the boreholes, three within the Activity Area demonstrated the volcanic plains geology, with fill above sterile clay.



Legend

- Activity Area
- Geographic region
- Artefact Scatter
- Object Collection
- Low Density Artefact Distribution
- Aboriginal Historical Place
- Shell Midden
- Scarred Tree

Paper Size ISO A4

0 500 1,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

N

GHD

Barwon Water
Barwon Water RRON Functional Design

Project No. **12585384**
CHMP No. **19285**
Date **30/10/2023**

Geomorphology of the Geographic Region and Activity Area

MAP 4

Data source: GHD (2023), FP-SR (2023); VicMap (2023); Geoscience Australia (2023). Created by: sblades

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7.4 Historical and Ethno-historical accounts of Aboriginal occupation of the geographic region

Information on pre-colonial Aboriginal spatial organisation is based on 19th century European accounts from the time of initial European colonisation. Many of the ethnohistories of Aboriginal people will reflect the European mindset of what the lifestyles of Aboriginal people were and are not necessarily an accurate portrayal of Aboriginal way of life and social organisation.

7.4.1 Ethno-historical accounts of Aboriginal people

Prior to European occupation of present-day Victoria, the central portion of the state was occupied by Aboriginal people who shared a common language, as well as political, social, and economic affiliations. These Aboriginal people identified themselves as *Kulin*, the common word for human being. The *Kulin* occupied all of the Port Philip region and as far north as Eurora and were divided into five groups: the *Wathaurung*; the *Woi wurung*, the *Bunurong*, the *Taungurong*, and the *Jajawong* (Presland, 1985). Three of the language groups occupied territory bordering the Port Phillip Bay: the *Wathaurung* occupied the Bellarine Peninsula to the Otway Ranges and as far east as the Werribee River including the current Activity Area; the *Woi wurung* occupied the area drained by the Yarra River and its tributaries; and the *Bunurong* who occupied the Mornington Peninsula, Western Port, Wilsons Promontory, and the southern reaches of the Dandenong Ranges. The remaining two language groups of the Kulin were the *Taungurong* that occupied the Goulburn River valley upstream of Seymour, Euroa in the north, Mount Buller in the east; and *Jajawong* that occupied the area drained by the Loddon and Avoca Rivers to St Arnaud in the west (Presland, 1985).

Social organisation

The Activity Area is located within Wadawurrung country (also known as *Watha wurrung, Wathaurung* and *Wathaurong*). Wadawurrung country (as recorded by early European colonists) extended from the Werribee River, south to the Bellarine Peninsula and along to Airey's inlet. To the north and west, Wadawurrung Country encompasses Ballarat and Beaufort (Barwick, 1984; Clark, 1990; Clark, 1995).

Clark notes that there were 25 Wadawurrung clans, that followed patrilineal moiety system, comprised of *Waa* (crow) and *Bunjil* (eaglehawk). This moiety affiliation was determined at birth by the moiety affiliation of the paternal clan (Barwick, 1984). Marriage partners were sought outside of the individual clan and to a person that belonged to the opposite moiety. Each clan was governed by a revered senior man, known within the northern Wadawurrung as an *arweet,* as *gern neetch* along the coast and as *nge-im-etch* further west (Barwick, 1984, p. 107).

The Activity Area is within the *Wada wurrung balug* clan (Clark, Aboriginal Language and Clans: An Historical Atlas of Western and Central Victoria, 1800-1900, 1990). While the accepted documentary evidence for the *Wada wurrung balug* on the coast is poor, it can be reasonably assumed that they shared many similarities with the neighbouring Bellarine people, who were more closely observed.

As articulated in Bird (1992) waterways were a focal point of human occupation within the region, and in particular the Barwon due to it providing a permanent source of freshwater during even the driest of years. Many of the waterways of the region were resource rich, providing the inhabitants with a varied and nutrient rich diet. Fish formed a particularly important component of the resource economy and were speared, netted or caught in weirs. Freshwater shellfish were collected and provided protein. Waterbirds and avian eggs also formed a supplementary part of the diet and were captured with nets and occasionally boomerangs and exploited seasonally (eggs). While the exact range of species gathered or hunted and eaten is not known, it can be reasonably assumed that shellfish were gathered and fish were speared or netted or trapped from the nearby rivers and the ocean. Rhoads (1986) present lists of potential plant and animal resources for the Bellarine Peninsula, noting their habitat and seasonal availability.

Plant use also incorporated utility functions, with reeds and other grasses used to make baskets and fishing nets (Coutts, 1981). Local clans also utilised timber in the manufacture of tools and weapons (coolamons, boomerangs, digging and throwing sticks, shields and spears); as well as for canoes and bark slabs for the construction of shelters (Coutts, 1981). One of the most common forms of evidence for these activities and uses is in the form of scar trees present throughout many areas of Aboriginal occupation.

It is also likely that land mammals, reptiles and birds were hunted on the mainland and the coast. Larger terrestrial animals – kangaroo and emu – were a relatively scarce and would not have formed a reliable component of the subsistence strategy. Possums, however, were more abundant and were utilised as both a food source and also their skins formed another economic use in the form of clothing. Other smaller animals including amphibians, reptiles, and mammals, would have also been exploited.

As detailed in Coutts (1981), apart from food, animals also provided important secondary resources. The skins of macropods and possums were used throughout southeastern Australia for clothing. Bone was utilised for functional purposes, points and fish hook, as well as decorative/ceremonial uses in the form of body adornments.

7.4.2 Historical accounts of Aboriginal people

One of the earliest Europeans to have cross-cultural interactions with the *Wada wurrung* was William Buckley, a convict that escaped from Collins Sorrento Settlement in 1803 who was allegedly adopted by the *Wada wurrung balug* (Clark, Aboriginal Language and Clans: An Historical Atlas of Western and Central Victoria, 1800-1900, 1990). Buckley is accredited for recording some of the information regarding *Wada wurrung* culture. Buckley allegedly had a camp near the mouth of Spring Creek (Morgan, 1980), approximately 10km west of the Activity Area. Buckleys Well, a fresh water spring is also noted at the mouth of Thompsons Creek, 800m west of the Activity Area.

European colonial settlement on *Wada Wurrung* land began in 1835 when John Helder Wedge carried out surveys on behalf of the Port Phillip Association. Wedge crossed the hills to Mount Moriac where grazing country was in abundance and followed the Spring Creek valley to the shoreline, where present day Torquay is sited (Moyal, 2019).

The development of the Port Phillip Protectorate in 1839 until it's closure in 1849, aimed to 'watch over' the Aboriginal people within the district, with the aim at integration into colonial society (Australian Research Data Commons, 2023). The Port Phillip Protectorate was replaced with the Central Board to watch over the interests of Aborigines that ran from 1860 to 1868. The Board created the Victorian Honorary Correspondent Supply Scheme that would distribute supplies such as food, blankets and tools to local Aboriginal people (Andrew Long and Associates, 1999). One such location was a depot was located within the township of Connewarre, approximately 3km northwest of the Activity Area, and is listed on the VAHR as Historical Reference 'Connewarre Honorary Correspondent Depot' that operated from 1865 to 1869.

7.5 Land Use history of the Activity Area

7.5.1 Historical land use

The Activity Area is located at the Black Rock Water Reclamation Plant, a water reclamation plant run by Barwon Water.

Early European accounts of the area are typically related to agricultural settlement from the 1850s onwards. A large homestead (Charlemont) was built on Thompsons Creek to the west of the Activity Area by James Noble, who ran sheep on approximately 4000 acres of the surrounding area until 1897 (Torquay Museum Without Walls, 2023).

In an 1855 Surveyors Plan (PROV, 2023) (Plate 2) shows the Activity Area has begun to be divided into smaller lots available for pre-emptive rights. The Activity Area is identified between and 'brackish Lagoon' to the east and a marsh to the west, with the coastal sand hummocks to the south west and rocky cliffs directly south. The Activity Area itself is described as 'Excellent soil, well timbered with she-oak'.

Plate 2 *Section of 1855 Surveyors Plan (PROV, 2023), Activity Area approximately in red*

In the 1888 Department of Crown Lands survey (Plate 3) (Department of Crown Lands and Survey, 1888) shows the cadastral boundaries of the Connewarre Parish, highlighting just how quickly the land was divided for European agricultural practices, and the division of the larger homesteads. The Activity Area is divided between three approximate lots, with two different owners identified.

Plate 3 *Excerpt of Connewarre Parish Map, (Department of Crown Lands and Survey, 1888), approximate Activity Area in red*

In a 1913 Map of the Geelong and Queenscliff Districts (Plate 4) (Department of Crown Lands and Survey, 1913) shows the Activity Area with four unidentified buildings in the centre. It is unknown if these building are residential or relating to agricultural activities. However, this does demonstrate the limited development within the Activity Area and surrounding land.

In a 1975 aerial (Plate 5), the land surrounding the Activity Area can be seen cleared of vegetation. Black Rock Road can be seen on the right of the Activity Area, the dam to the north and a residential property to the west of the dam.

Plate 4 ***Excerpt of Map of Geelong and Queenscliff Districts (Department of Crown Lands and Survey, 1913), approximate CHMP Activity Area in red***

Plate 5 ***1975 aerial image (DEECA, 2023), approximate Activity Area in red***

7.5.2 Black Rock Water Reclamation Plant Development

While settlement of the Activity Area was limited, Geelong and neighbouring towns such as Ocean Grove and Torquay were growing rapidly. A decision was made to construct a series of pipelines and facilities to aid the safe disposal of sewerage district (Edmonds, 2005). The outfall for the sewerage was to be located at Black Rock in Connewarre, which would eventually become the Black Rock Water Reclamation Plant.

Large-scale excavation and construction for the outfall project began in May 1912 and extended from Geelong towards Black Rock and the ocean to the south of Connewarre. Large, reinforced concrete ovoid pipes were lain, and the main sewer was excavated in close proximity to the Activity Area. The early excavations were aided by the use of horse-drawn ploughs and scoops with air compressed drills being used to break down any rock that was uncovered.

The first stages of development reached completion in late 1915 and the Geelong Waterworks and Sewerage Trust (a predecessor of Barwon Water)began “sewering” the most densely populated places first and continued linking areas into the 1920s (Edmonds, 2005). Due to the limited capacity, and ever growing population, a duplicate sewer alongside the old sewer system and outfall plant were officially completed in 1968, though the system was not put into use until 1969 (Edmonds, 2005).

When the first sewerage system was established, McKay had chosen the area of Black Rock in Connewarre as it was a “desolate location”, however, by the 1970s, the neighbouring towns of Breamlea and Barwon Heads had become a popular recreational beaches and the public and the Environmental Protection Authority (EPA) raised concerns about the effluence (Edmonds, 2005).

These concerns led to the extension of the Black Rock sewerage outfall by 184 acres in the attempt to establish a cautionary “buffer zone” in the event of contamination (Edmonds, 2005). Later, in 1989, the sewage outfall plant at Black Rock is commissioned and in March 1994, an upgrade of the plant saw the establishment of a sewerage treatment plant that officially opened on April 21st, 1997 (Edmonds, 2005).

By 1990, the Barwon Water Visitors Centre had been constructed (Plate 6), west of the Activity Area, as a first step in the new sewerage treatment plant. A formal access road lies to the south (the southern boundary of the Activity Area), with a number of informal roads traversing the Activity Area. There are no easily identifiable trees or vegetation planting.

More recent aerial images show the expansion of the Black Rock WRP. In the 2004 aerial image, the majority of the facility is to the west of the Activity Area (Plate 7). A landfill that was used from the 1988 to 2005 (Tetra Tech Coffey, 2021) can be seen capped to the north. Very little information about the landfill is available, however it was a trenched construction for compacted waste screenings from the WRP. The Activity Area itself is mostly an open, flat grassed paddock with young trees concentrated on the eastern and southern boundaries. The western edge of the Activity Area shows a landscaped entrance to the Visitors Centre, with formalised roads, entrance ramp and garden beds. A small structure is identifiable adjacent to the road in the southwest corner, with a powerline visible adjacent to the southern access road. A number of gravel tracks run from the access road to a makeshift storage area in the south, and the landfill in the north.

In 2007 (Plate 8) a large mound was constructed in the eastern edge of Activity Area. This construction is a stockpile of soils from elsewhere within the facility. Access tracks to the mound can be seen from Black Rock Road in the east and the visitors entrance road to the south, with cleared areas around the northern base of the mound. An underground utility can also be seen running from east to west across the north of the Activity Area.

The construction of the Biosolids Treatment Plant (BTP) is documented within a 2009 aerial image (Plate 9). The image shows the facility under construction, with earthworks in the north, road upgrades, facility foundations, storage areas and carpark. The ground surface appears to have been scraped and levelled. The 2011 aerial image (Plate 10) shows the BTP nearing completion, road upgrades and carpark expansions, ponds, a swale drain and mound. There is an overhead connecting pipe connecting the BTP to the rest of the WRP. A number of informal tracks can be seen, particularly in the west. A partial storage area can also be seen adjacent to the landfill in the north.

In the 2012 aerial image (Plate 11), the construction of the BTP has been finalised, with the removal of the carpark to the south. A number of earthworks can be seen west of the construction, including access track and potential utility installation. The northern edge of the Activity Area features a new access road, with a new structure constructed in the southwestern corner. A utility installation can also be seen in the northeast corner of the Activity Area.

The grass can be seen returning in a 2016 aerial image (Plate 12), with an area of potential underground utility installations in the southwestern corner. In the 2017 aerial image (Plate 13) the utility area is undergoing additional construction with a new structure.

In the more recent 2023 aerial (see Map 2 Extent Map), an additional structure has been added to the southwest corner, with topsoil scraping and landscaping removal.

Plate 6 ***1990 aerial image (State of Victoria, 2023), approximate Activity Area in red***

Plate 7 *2004 aerial image (DEECA, 2023), Activity Area in red*

Plate 8 *2007 aerial image (DEECA, 2023), Activity Area in red*

Plate 9 *2009 aerial image (DEECA, 2023), Activity Area in red.*

Plate 10 *2011 aerial image (DEECA, 2023), Activity Area in red*

Plate 11 *2012 aerial image (DEECA, 2023), Activity Area in red, utility installation areas in yellow, and old carpark in green*

Plate 12 *2016 aerial image (DEECA, 2023), Activity Area in red, areas of utility installation outlined in yellow*

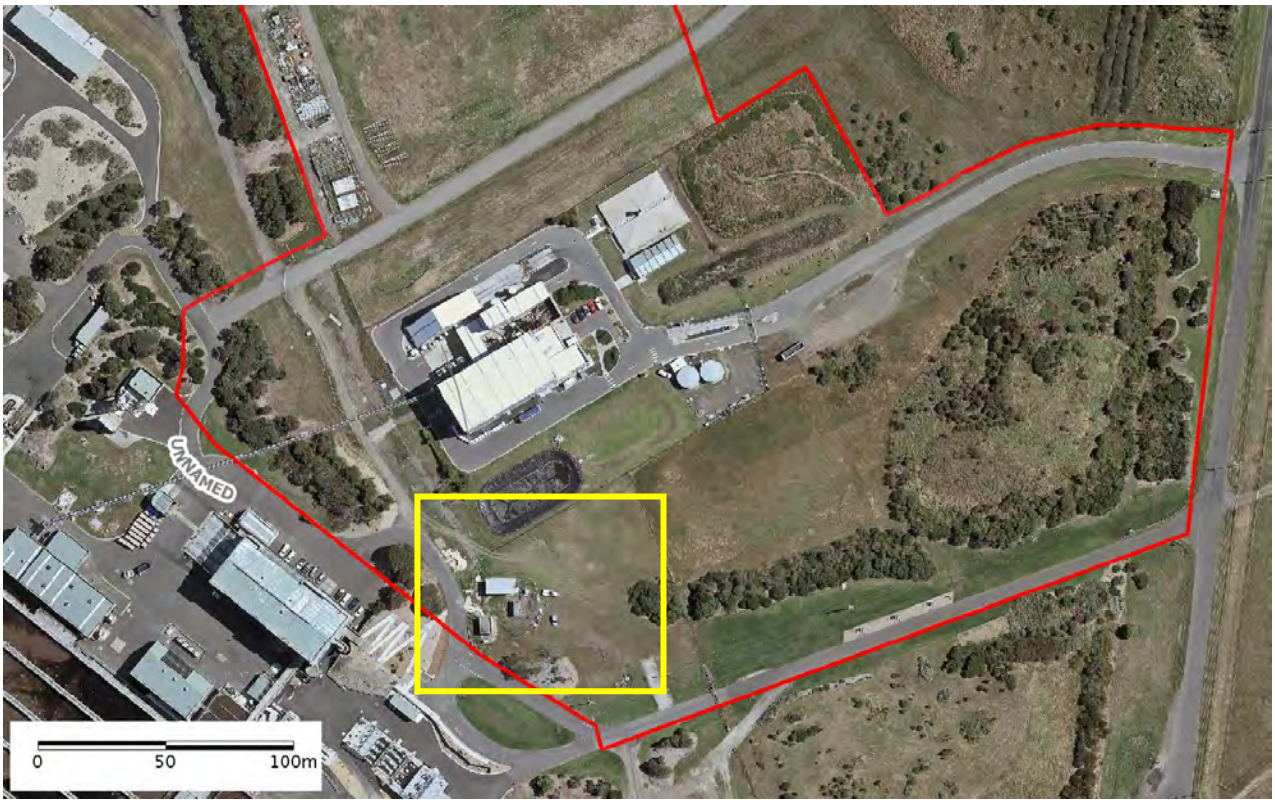


Plate 13 *2017 aerial image (DEECA, 2023), Activity Area in red, utility location in yellow*

7.5.3 Before You Dig Australia (BYDA)

A BYDA search was undertaken on 7 July 2023 in order to determine the presence of subsurface utilities and services that may have had an impact on the ground surfaces within the Activity Area. The following services are located within the Activity Area and are illustrated within Figure 2 and documented in Appendix G:

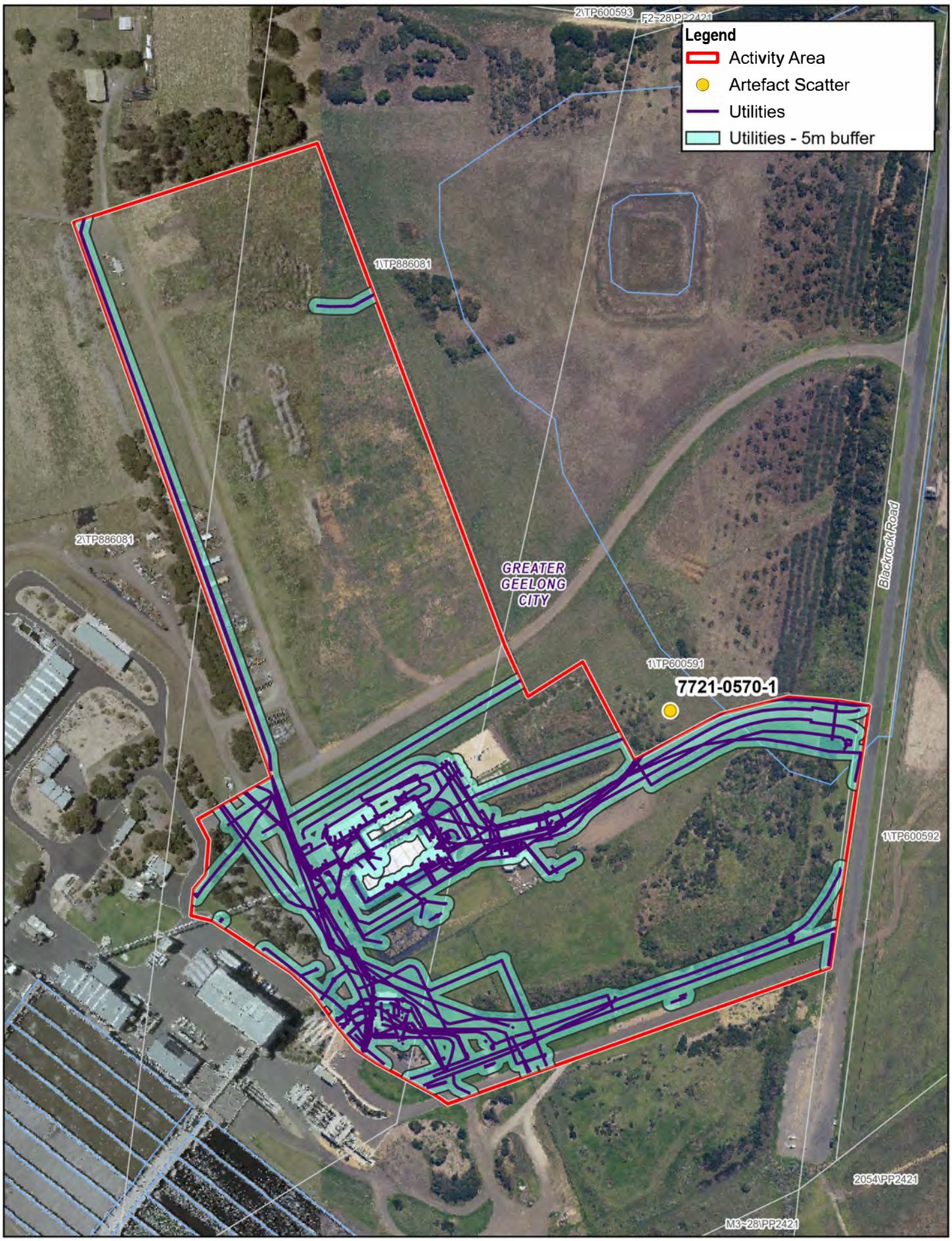
– AusNet has assets along the eastern edge of the Activity Area, along Black Rocks Road
– Barwon Water has a number of water pipes and sewer pipes in the southern half of the Activity Area, connecting assets along Black Rocks Road to the facility
– Optus have an underground cable that crosses east-west across the centre and north of the Activity Area, from Black Rock Road to the Barwon Water Facility
– CitiPower have an underground asset that runs east-west across the south of the Activity Area

A number of additional utilities are documented within Barwon Water's internal services. These are predominantly in the west and the south of the Activity Area (Figure 2), and include communications cables, high voltage cables and potable water infrastructure.

Summary

Following European occupation of the region, the Activity Area was likely used as pastural land with both dairying and wool production key early industries. This would have resulted in land clearing and vegetation removal. The land remained largely undeveloped until the beginnings of water infrastructure for Geelong and the surrounding regions.

The next key phases of activity within the Activity Area occurred from the 1990s to the present day, with the construction the Black Rock Water Reclamation Plant Visitors Centre and various treatment plant facilities. These construction activities have involved various stages of topsoil scraping, ground surface cuts, importation of fill, trenching for utilities and water retention ponds. These works have impacted the ground surface and artefact bearing topsoil, reducing the potential for Aboriginal cultural heritage material to remain (Map 5).



Paper Size ISO A4

0 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

N

GHD

Barwon Water
Barwon Water RRON Functional Design

Project No. **31-12585384**
CHMP No. **19285**
Date **30/10/2023**

Utility Locations

FIGURE 2

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Data source: FPSR (2023), GHD (2023), VicMap (2023). Created by: sblades

Paper Size ISO A4

0 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

N

GHD

Barwon Water
Barwon Water RRON Functional Design

Disturbance within the Activity Area

Project No. **31-12585384**
CHMP No. **19285**
Date **30/10/2023**

MAP 5

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Data source: Vic Map (2023), GHD (2023), Telstra (2023), Ausnet (2023), Powercor (2023), Optus (2023). Created by: sblades

7.6 Aboriginal Places in the geographic region

A search of the VAHR was undertaken by Ruby Stewart on the 16 December 2022 in order to assess information relating to the Activity Area. An additional search was undertaken by Ruby Stewart on the 09 November 2023 to ensure the information was current.

A search of the VAHR identified 156 previously recorded Aboriginal Places within the geographic region, with a total of 176 individual components (Table 8 and Map 4). Artefact scatters (n=139) are the dominant place type component within the geographic region, followed by Low Density Artefact Distributions (LDAD) (n=28) and Scarred Trees (n=5). Two Object Collection components, 1 shell midden component and 1 Aboriginal Historical Place component are also present. In total, 11 of the Aboriginal Places within the geographic region comprise more than one place type component. Concentrated areas of recorded Aboriginal Places within the geographic region are located closer to larger sources of fresh water, such as the Armstrong Creek. This could also reflect the high number of assessments that have occurred along the creek due to recent developments.

Table 8 Aboriginal Place type components within the geographic region

Aboriginal Place type Component	Number (n)	Percentage
Artefact Scatter	139	85%
LDAD	28	9%
Scarred Tree	5	2.5%
Object Collection	2	1.5%
Shell Midden	1	1%
Aboriginal Historical Place	1	1%
Total	176	

There is one previously recorded Aboriginal Place located 15m north of the Activity Area, Black Rocks Artefact Scatter (VAHR 7721-0570). The next closest registered Place is Blue Rocks 1 BPAS 28 (VAHR 7721-0078), approximately 550 m to the south east of the Activity Area.

Black Rocks VAHR 7721-0570

VAHR 7721-0570 is comprised single silcrete flaked piece, identified on highly disturbed ground and adjacent to an artificial mound of spoil from across the Water Reclamation Plant, first recorded by in 2003 by Terra Culture (Terra Culture, 2003). During a cultural heritage assessment in 2021 (Unearthed Heritage, 2021) the Place was unable to be identified. Given the changes in location technology, site cards and the original description of the location were used to attempt to reidentify VAHR 7721-0570.

It was determined that the artefact is unlikely to be in an *in-situ* context, due to the disturbance that has occurred in close proximity (Terra Culture, 2003, p. 19). No photographic evidence of the artefact could be located as part of the current CHMP assessment.

7.7 Place types within the geographic region

Artefact Scatters and Low Density Artefact Distributions

Of the artefact scatters, 89% are within 200m of Armstrong Creek. While this demonstrates an increased likelihood of artefact scatters to be present in proximity to waterways, it also demonstrates high number of assessments and development that has occurred along the Armstrong Creek corridor. This large number of artefact scatters could also be reflective of the recording standard at the time of recording. 104 artefact scatters are registered as less than 10 artefacts, which would likely be registered as an LDAD, or recorded as a single large low density artefact scatter. Notably two artefact scatters within the region contained of 500 artefacts, (VAHR 7721-0092 and VAHR 7721-1283).

Of the 139 artefact scatters within the geographic region 70% were identified within a subsurface context, with a maximum depth of artefacts identified at 600mm. The majority of artefacts were identified between 300-400mm depth.

Primary forms were dominated flakes and angular fragments with microliths and cores also present in minor quantities. Quartz and silcrete were the dominate raw material recorded both in quantity and presence, followed by quartzite. Crystal quartz, chert, tuff, flint and basalt were also recorded as present in minor quantities. VAHR 7721-1283 was unique in recording the presence of mica, greenstone and tachylyte, in addition to the quartz, silcrete, quartzite and chert. This place was also the artefact scatter with the largest number of recorded artefacts (more than 700), on the banks of Armstrong Creek.

Scarred Trees

Five scarred trees are recorded within the geographic region, with two recorded on the volcanic plains, and three recorded on floodplains. All trees were identified with one scar and in good health. Scars ranged in size between 65 to 200cm in length and 52 to 62 cm wide. The size of a scar is typically an indication of function, with suggested functions including containers or for shelters. Of the five scarred trees, four are on River Red Gum trees. The fifth tree occurs on a black wattle tree (VAHR 7721-0787 Stewarts Reserve) and was created in the 1990s. This tree is within Stewarts Reserve, an Aboriginal Historical Place (see below).

Shell Middens

One shell midden is located within the geographic region, approximately 600m southwest of the Activity Area. Blue Rocks 1 BPas 28 (VAHR 7721-0078) is a shell midden and artefact scatter recorded in 1984. It was noted that the midden was highly disturbed with no visible stratigraphy. This Place is located within a temporary swale or water filled-hollow. This landform is consistent with the volcanic plains geomorphological unit, however it is noted that it is very near a coastal clifftop.

Given the Activity Area's close proximity to the coast a higher number of shell middens would have been expected. This low number however, can be attributed to the rocky cliff transition to the water within the geographic region, particularly when compared to the sandy shores of Breamlea 1km west along the coast, where a high cluster of shell middens have been documented. These dunes would have provided more favourable camping locations, while still in close proximity to freshwater and coastal resources.

Aboriginal Historical Place

Aboriginal Historical Places are locations with a historical association or cultural significance to Aboriginal people that do not necessarily contain archaeological or physical indicators of the place (First Peoples - State Relations, 2021). These Places can represent early interaction between Aboriginal people and Europeans and can be identified from both historical records and oral history. Stewarts Reserve (VAHR 7721-0787) is located within the geographic region, approximately 7km northwest of the Activity Area, on the banks of Armstrong Creek. This Place is recorded as an Aboriginal camping ground from 1856 onwards, with food supplied by John Stewart. A scarred tree was created in the 1990s and recorded within the reserve, showing a continued cultural connection and use of this Place.

Summary

The previously recorded Aboriginal Places within the same geomorphological unit as the present Activity Area, *Plains with well developed drainage and deep regolith* (GMU 6.1.4) consist of artefact scatters in close proximity to a waterways, particularly Armstrong Creek. Lower densities of artefacts seem to be associated with the swamp deposits and more temporary water sources, with scarred trees recorded in areas of remnant mature, native vegetation. Few shell middens are present on this geomorphological unit, but this changes rapidly when moving along the coast to the east and west, into sandy dune deposits. These deposits do not exist within the Activity Area.

7.8 Previous Archaeological Assessments within the geographic region

A total of 55 previous archaeological investigations have been undertaken within the wider geographic region. Previous investigation by report type is shown in Table 9. CHMP Complex Assessments (n=25) were the most prevalent report type, which may provide a good indication of subsurface conditions followed closely by Desktop or Paper or Due Diligence or Other (n=14).

Several of these previous assessments contain characteristics of the present Activity Area or are in proximity, are summarized below.

Table 9 Previous assessments undertaken within the geographic region

Report type	Number (n)
CHMP Complex Assessment	25
Desktop or Paper or Due Diligence or Other	14
Survey	6
Salvage Excavation	4
CHMP Desktop Assessment	3
Heritage Management	2
Test Excavation and Survey	1
Total	**55**

Previous archaeological assessments within wider geographic region

Discussed within this section are previous archaeological assessments undertaken within the wider geographic region, within the same geomorphological unit, *Plains with well developed drainage and deep regolith* (GMU 6.1.4), as the Activity Area that will help to inform the predictive model for this assessment.

Terra Culture 2009 – CHMP 10565

CHMP 10565 was prepared by Terra Culture (2009) for a pump station and rising main, consisting of approximately 7.5km of pipeline between Barwon heads and Black Rock. The western most end of the activity area is approximately 600m east of the current Activity Area. The desktop assessment identified a number of sensitive landforms, including low dune sloped and swampland, and only two registered Places within 50m of the activity area. The standard assessment confirmed the presence of sensitive landforms and identified VAHR 7721-0937, a shell midden on a sand dune that had been disturbed in limited section by private driveways, utilities and road construction. The complex assessment targeted sensitive landforms and areas where Aboriginal cultural heritage material had previously been recorded. This resulted in the expansion of shell midden 7721-0937 with the identification of a subsurface component to the midden. No additional material was identified at previously registered Places VAHR 7721-0567 and VAHR 7721-0568. One quartz artefact was identified within a sandy deposit at a depth of 80cm and registered as VAHR 7721-0938. CHMP 10565 is the closest CHMP to the current Activity Area by distance, however only the western edge of CHMP 10565 lies within the volcanic plains. The majority of CHMP 10565 lies within sand dunes or sandy deposits, which were demonstrated to contain Aboriginal cultural heritage material.

Ochre Imprints 2016 – CHMP 14323

Ochre Imprints (2016) prepared CHMP 14323 for a residential subdivision in Armstrong Creek. CHMP 14323 lies approximately 5km north west of the current Activity Area, however it does share similar landforms, specifically the intersection of the volcanic plains and swamp deposits (mapped geology of Qm1), that can provide an appropriate comparison.

The desktop assessment identified that no Aboriginal Places were registered within the activity area, with sensitive landforms for the geographic region highlighted as elevated ground near major waters ways or floodplains, with particular focus on Armstrong Creek. The standard assessment identified three surface stone artefacts within a ploughed paddock, on the margins of a former swamp. A number of elevated landforms were noted as sensitive landforms during the standard assessment. The complex assessment comprised of seven test pits did not identify any Aboriginal cultural heritage material.

The results of CHMP 14323 complex assessment did not conform to the results of the desktop and standard assessments, determining that the artefacts identified represented the occasional discard of stone artefact, likely within the drier months when the water levels were lower. The lack of Aboriginal cultural heritage within the elevated lower slopes was attributed to past activities displacing any material that was present, but also more prominent elevated land a short distance to the west near Armstrong Creek. The stone artefacts were registered as VAHR 7721-1338, an LDAD of quartz, silcrete and crystal quartz.

A surface salvage was a condition of CHMP 14323 to recover the identified artefacts. The salvage could not relocate VAHR 7721-1338, however two additional quartz artefacts were identified and registered as VAHR 7721-1421 (Ochre Imprints, 2020).

Unearthed Heritage – CHMP 17053

Unearthed Heritage (2020) prepared CHMP 17053 for the development of a residential subdivision, approximately 5.5km northwest of the current Activity Area. CHMP 17053 shares similar landforms, specifically the intersection of the volcanic plains and an inundation area, that can provide an appropriate comparison.

Isolated or low densities of stone artefacts were determined to be the most likely Aboriginal Places within the activity area, due to distance from major water ways. The standard assessment identified areas of low-moderate potential due to level of previous ground disturbance but did not identify any Aboriginal cultural heritage material. The complex assessment consisted of two test pits, 29 Mechanical test pits and 8 shovel test pits with base depth reached at between 110-360mm.

One quartzite flake was identified at a depth of 50mm within a silty clay context of the volcanic plains. The artefact was registered as VAHR 7721-1426. Harm could not be avoided to VAHR 7721-1426, and the artefact was collected and was to be repatriated after the completion of the CHMP activity.

Previous archaeological assessments within the Activity Area

Du Cros and Associates 1993 – Archaeological Survey

An assessment completed in 1993 (du Cros and Associates) covered the larger Black Rock Water Reclamation Plant area, including the current Activity Area.

The preliminary investigation noted that most sites within the vicinity of the Black Rock WRP consisted of shell middens and artefact scatters in a surface context. It was noted that most sites within the Bellarine Peninsula were located within 1km of the coast – however it was noted that this observation is due to poor preservation in inland locations, coastal erosion exposing sites at a higher frequency, and survey sampling of reports at the time.

The field survey identified three Aboriginal Places, one new place (VAHR 7721-0136), one previously registered (VAHR 7721-0137) and one place that is likely to be previously registered place VAHR 7721-0138. All three Places contained shell midden material and stone artefacts. These Places that were recorded were consistent with site recorded within the broader region.

A number of areas of archaeological sensitivity were identified (Figure 3), which included “the undisturbed areas along the western edge of the study area; remaining foredunes; and the sandy section in the north east corner of the study area” (du Cros and Associates, 1993, p. 12). None of these areas are located within the current Activity Area.

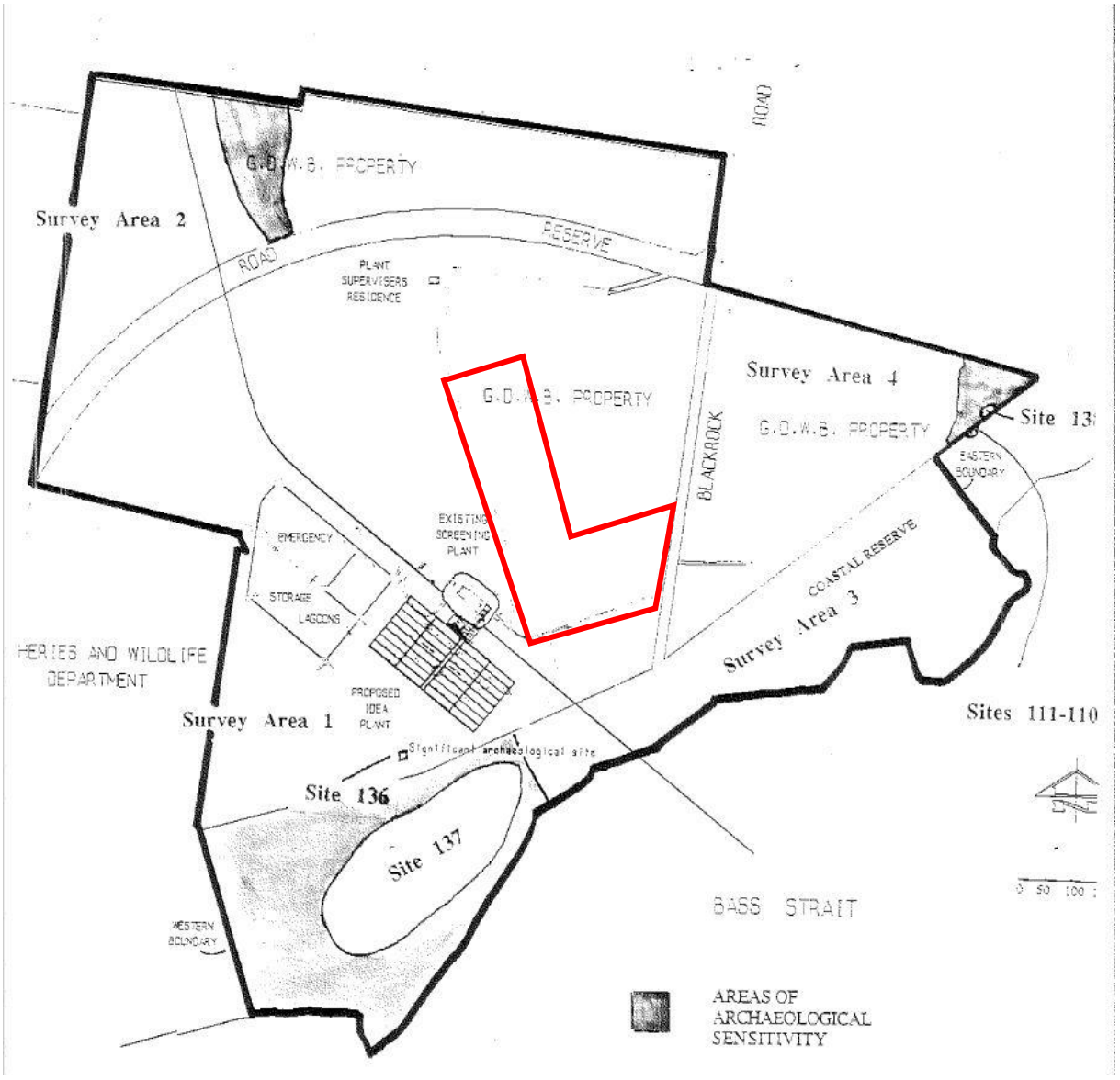


Figure 3 ***Study Area and areas of archaeological sensitivity from Figure 8 du Cros and Associates (1993, p. 29). Approximate activity area of CHMP 19285 in red.***

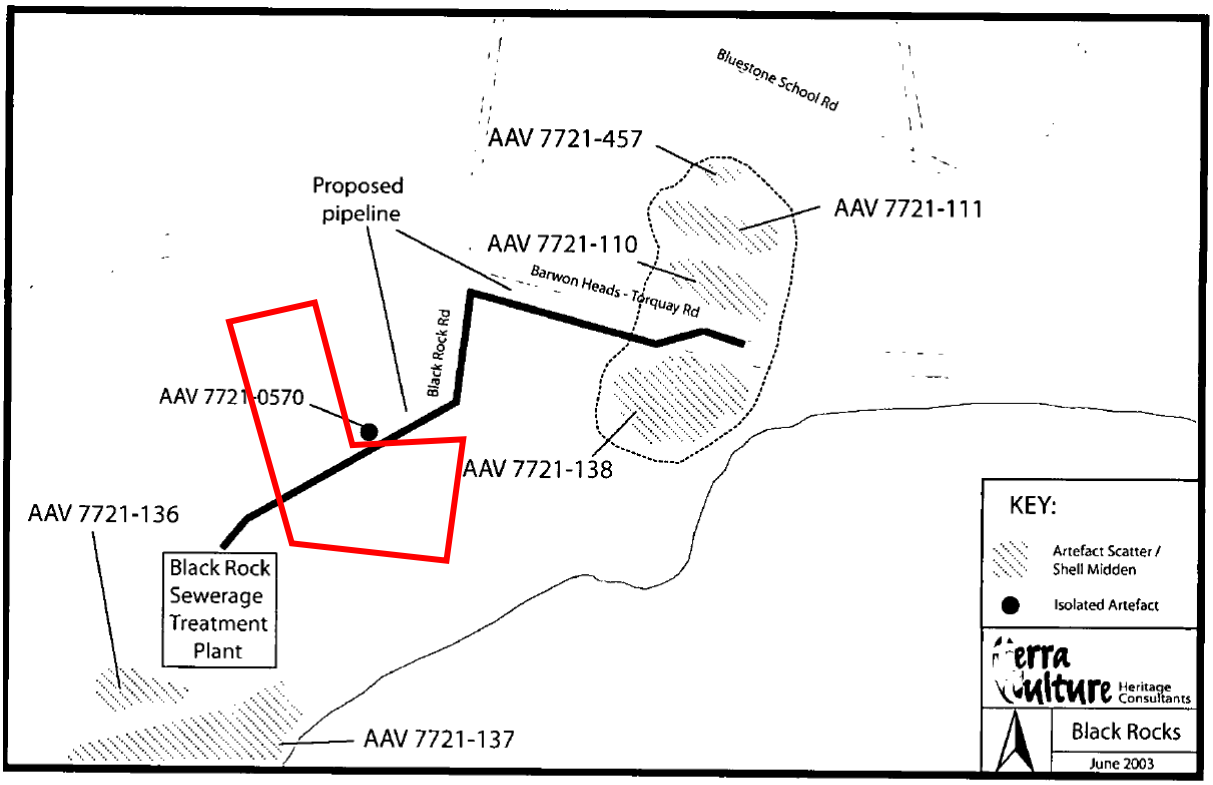
Terra Culture 2003

An archaeological survey was conducted in 2003 (Terra Culture, 2003) for the replacement of 1.5km section of a sewer main adjacent to the Black Rocks Sewer Treatment Plant (BRSTP). This sewer main runs through the centre of the current Activity Area and is noted on the BYDA (section 7.5.3). The report identified that a range of landforms were sensitive to archaeological material, including clifftops and sand dunes, the margins of Murtnaghurt swamp and Barwon River. It was also noted that site types could include artefact scatters, isolated artefacts, shell middens and even Ancestral Remains in older dunes.

A survey was conducted to locate and assess any archaeological sites within the alignment. Even with poor ground surface visibility, two Aboriginal Places were identified, one previously registered place and one new registration. One previously registered place was VAHR 7721-0138 adjacent to Barwon Heads-Torquay Road (Figure 4).

The new registration was VAHR 7721-0570, within the grounds of the BRSTP and 15m north of the current Activity Area. The ground surface was a dark cracking clay similar to nearby swamp deposits. It was identified as an isolated artefact on highly disturbed ground and determined to not be *in-situ*. It was determined that the artefact was likely dispersed through previous works associated with the development of the BRSTP.

No additional assessment was conducted. A number of recommendations were made, including seeking consents from the Wathaurong Aboriginal Cooperative to disturb places within the sewer main alignment. A recommendation was made for monitoring of excavations near registered Places by both a Traditional Owner representative and an archaeologist. No reports associated with this monitoring or potential results have been identified.



Map 9: The location of previously recorded Aboriginal archaeological sites and the isolated artefact found during the survey, according to recorded GPS locations. The dotted line incorporates AAV sites (7721-138, 7721-110, 7721-111 and 7721-457).

Figure 4 Map 9 from Terra Culture (2003), approximate Activity Area of CHMP 19285 in red

Unearthed Heritage 2021 – Cultural Heritage Assessment

A cultural heritage assessment was undertaken for the Black Rock Water Reclamation Plant (Unearthed Heritage, 2021) which included the current Activity Area. The desktop assessment identified three Aboriginal Places were located within the study area – VAHR 7721-0136, VAHR 7721-0138 and VAHR 7721-0571 – with more sites located within close proximity to the study area. The assessment concluded that Aboriginal Places a most likely in areas adjacent to fresh water, with shell middens likely in elevated sandy deposits over low-lying landforms with swampy deposits present.

A survey was conducted to relocated registered Aboriginal Places, and to assess the potential for additional Aboriginal Places to be present within the study area. No new Aboriginal cultural heritage material was identified and VAHR 7721-0570 was unable to be relocated. Large areas of ground disturbance were identified within the study area, leading to mapped locations of archaeological sensitivity (Figure 5). The closest area of archaeological potential to the current Activity Area correlates to VAHR 7721-0570, which is 15m outside of the current Activity Area. These areas of potential also have an approximate correlation to the areas identified by du Cros (Figure 3) (du Cros and Associates, 1993), particularly in the eastern most point of the study area, and the south-west corner, that have been noted as sand deposits.

Figure 5 *Figure 4.5, Areas of archaeological potential from Unearthed Heritage (2021, p. 32), approximate Activity Area for current CHMP in green*

Summary

There is one registered Aboriginal place previously recorded 15m north of the Activity Area, VAHR 7721-0570 Black Rocks. This artefact scatter is a single silcrete flake recorded in 2003 and has not been relocated through any additional assessments. Three previous assessments have assessed the Black Rock WRP with partial overlap with the current Activity Area (du Cros and Associates, 1993; Terra Culture, 2003; Unearthed Heritage, 2021). Each assessment identified high levels of previous ground disturbance, with areas of archaeological sensitivity typically tied to dunes or sandy deposits on the outer edges of the Black Rock WRP, and outside the Activity Area. Terra Culture (2003) first identified VAHR 7721-0570 and determined that the artefact was not *in-situ* due to the level of previous ground disturbance, which was also supported by Unearthed Heritage (2021).

Within the wider geographic region, previous archaeological assessments have identified Aboriginal cultural heritage within a surface or subsurface context in proximity to large waterways (e.g., higher density artefact scatters near Armstrong Creek) and smaller, temporary water sources (low density of artefacts near swamp deposits). Subsurface artefacts have still been very shallow with most artefacts identified between 300 and 400 mm, due to shallow topsoils within the volcanic plans.

Of the previous archaeological assessments undertaken within the same geomorphological unit as the Activity Area (GMU 6.1.4), landforms of archaeological potential have been identified as elevated rises adjacent to waterways as well as the stony rises or elevations within the plains. Elevated landforms are not present within the Activity Area, although a swamp in located to the north and within the eastern margins of the Activity Area.

7.9 Predictive modelling

A place prediction model has been developed based on the review of the geographic region that includes ethnographic histories of Aboriginal people, previously recorded Aboriginal Places, environmental factors, and previous assessments.

It is predicted that the following Aboriginal place types have the potential to be found within the Activity Area:

Artefact distributions: Previous archaeological assessments within the volcanic plains have identified artefact scatters adjacent to large waterways such as Armstrong Creek, or on elevated land such as stony rises or ridgelines. Given the lack of these landforms within the Activity Area, and the high level of previous ground disturbance, there is very low potential for artefact scatters to be within the Activity Area.

LDADs and low density artefact scatters: LDADs and low density artefact scatters have previously been recorded on the volcanic plains adjacent to swamps and temporary waterways. These landforms exist within the Activity Area however the previous ground disturbance would have reduced the likelihood that these Places exist and if so, they are unlikely to be *in-situ*. There is low potential for LDADs or a low density artefact scatters to be within the Activity Area.

A wide variety of Aboriginal Places has been identified within the geographic region, however the conditions for the Aboriginal Places to be present does not exist within the Activity Area, for example there are no mature trees within the Activity Area that could be a scarred tree and there are no sandy deposits or dunes for shell middens. This is likely due the natural geology of the Activity Area and to extensive land clearing, construction, upgrades, and maintenance of roads, and installation of subsurface utilities within the region.

Given the previous disturbance within the Activity Area, importantly the different stages of construction and expansion of the WRP, there is low potential for low densities of stone artefacts to be present within the Activity Area, likely in a disturbed context.

7.10 Conclusions from the desktop assessment

The Activity Area consists of land within the Black Rock Water Reclamation Plant. It is located on the volcanic plains, with a known swamp deposit in the northern and eastern section. It is within 250m of the coastline; however no sand deposits or dunes have been identified.

The Activity Area is located within the plains with well-developed drainage (GMU 6.1.4). With the underlying geology identified as the newer volcanics and basalt flows in the south and west of the Activity Area, with an unnamed swamp deposit in the north and the east of the Activity Area.

One Aboriginal Place, Black Rocks (VAHR 7721-0570) has been previously recorded 15 m north of the Activity Area. The place is a single silcrete flake identified in a disturbed context recorded in 2003. The place has been reinspected and has not been relocated and no additional Aboriginal cultural heritage material has been identified.

Aboriginal Places within the geographic region have been concentrated near major waterways such as Armstrong Creek and the coastline. This is reflection of the high number of assessments in the Armstrong Creek township and development. However, assessments have been increasing completed to the south and into the volcanic plains, with fewer Aboriginal Places identified on this landform. Where Places have been identified on the volcanic plains, they have been low densities of artefacts near swamp deposits of high features of the landscape such as stony rises.

Past land use activities have impacted the ground surface and reduced the potential for Aboriginal cultural heritage material to be present. Early colonisation of the Activity Area included large-scale vegetation clearing and the agricultural use of the land, such as ploughing and dam construction. From the 1990s there have been extensive construction activities for the development and explanation of the Black Rock WRP. These include specific facilities such as the landfill in the north, the BTP in the centre and extensive utility installation in the west and the south. Less obvious ground disturbance was identified through aerial imagery analysis, looking at the larger impact of topsoil scraping and ground levelling. Map 5 details the results of this ground disturbance and shows the limited locations within the Activity Area that are likely to contain Aboriginal cultural heritage material.

With the identification of VAHR 7721-0570 15 m north of the Activity Area, there remains low potential that Aboriginal cultural material in the form of disturbed stone artefacts may be located within the Activity Area.

Under Regulation 62 of the *Aboriginal Heritage Regulations 2018*, as the desktop assessment has predicted that it is reasonably possible for Aboriginal cultural heritage material to be present within the Activity Area, a standard assessment must be undertaken.

8. Standard Assessment

The desktop assessment has shown that there is a low potential for Aboriginal cultural heritage material to be present within the Activity Area. This is based on the previous extensive ground disturbance within the Activity Area associated with the construction of the WRP facilities, utility installation, road construction, landscaping, vegetation clearing, and results from previous assessments from Unearthed Heritage (2021).

The standard assessment was undertaken on 26 And 27 April 2023. The participants included Natasha Charles and Aiden Charles, Faith Greenhalgh and Delta Greenhalgh, WTOAC field representatives, as well as Josh Brown, Heritage Advisor, GHD, and Ruby Stewart, Archaeologist, GHD.

Hunter Oldfield and Dana Fleischer, Geotechnical Engineers, GHD and Moe Hammoud, East Drilling, were present for the geotechnical works. Ben Long from Barwon Water was also present for the for a short period of time on both days.

Due to Activity Area changes, additional standard assessment was conducted on 11 July 2023. The participants included Kaelan Morrison and Kallum Shields, WTOAC field representatives, Rebecca Macklin, Heritage Advisor/Archaeologist, GHD, and Ruby Stewart, Archaeologist, GHD.

Discussions were held with field representatives following the pedestrian survey to discuss potential for Aboriginal cultural heritage material in the Activity Area and of any oral history relevant to the Activity Area.

8.1 Aims

The aims of the standard assessment:

– To relocate VAHR 7721-0570 Black Rocks
– To identify and record the presence of any surface Aboriginal cultural heritage material within the Activity Area
– To identify any areas of Aboriginal archaeological potential within the Activity Area
– To identify areas of ground disturbance

8.2 Methodology

The standard assessment consisted of a pedestrian survey in three survey units (SU), however after changes to the Activity Area, additional survey unit (SU4) was added and SU1 and SU2 were removed from the Activity Area. A small section of SU2, the approximate area of a Artificial Mound 2, was incorporated into SU4. Details of SU3 and 4 are within section 8.4 and Map 6, while details of SU1 and SU2 are within Appendix I.

As the first stage standard assessment was associated with a monitoring program for the geotechnical investigation, each borehole location and immediate surrounds was assessed for cultural heritage. Due to the small size of the borehole and the sampling methodology, it was not practicable to sieve the samples. Any soil not removed for the geotechnical samples remained on site. Each survey unit was then walked with field survey participants 2 m apart along linear transects, targeting different landforms and areas of isolated exposure within the Activity Area in a systematic sampling approach in accordance with proper archaeological practice as defined by Burke and Smith (2017). Areas of disturbance and exposure were also targeted.

Additional standard assessment consisted of pedestrian survey targeting different landforms and areas of isolated exposure within the Activity Area in a systematic sampling approach in accordance with proper archaeological practice as defined by Burke and Smith (2017). Areas of Disturbance were also targeted as areas of exposures appeared to be associated with utility activities.

During the field survey component, a photographic record of the Activity Area was made using a digital SLR camera. Field notes were taken that documented the various features of the Activity Area including the landforms, areas of ground exposure, slope, any areas of archaeological sensitivity and location of surface Aboriginal cultural heritage material if present.

A Trimble Differential Global Positioning System (DGPS), with a sub one meter accuracy, was used for recording locations during the assessment, as per FP – SR Guidelines.

Discussions were held with WTOAC field representatives, at the beginning of each day, stating the results of the desktop assessment including previous ground disturbance to the area, the proposed works and changes to the Activity Area. Additional discussions were held following the standard assessment to discuss likely formation processes for VAHR 7721-0570 Black Rocks and the potential for additional Aboriginal cultural material. Any oral history relating to the Activity Area was also requested, if known and comfortable to be shared.

8.3 Obstacles

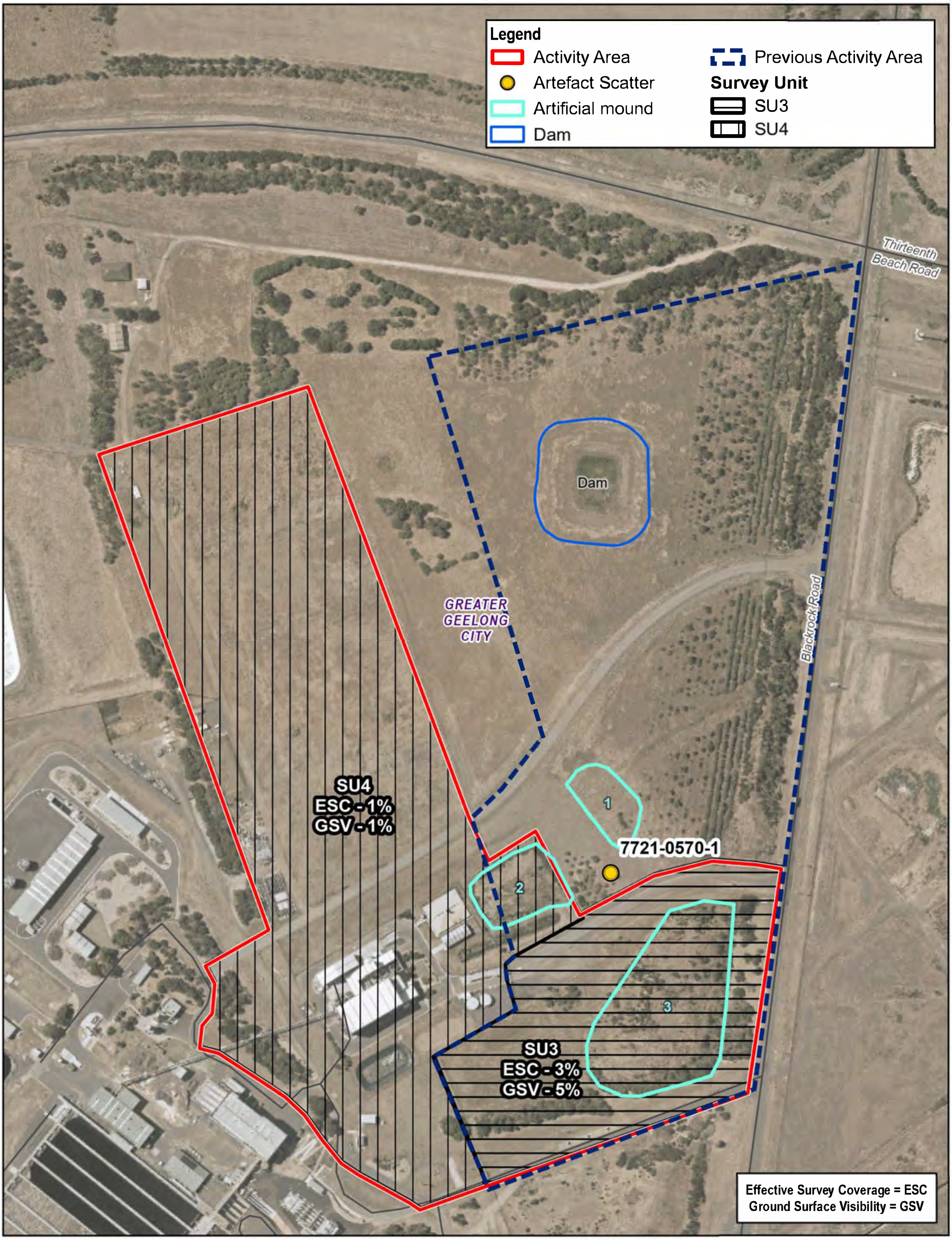
The Biosolids Treatment Plant is within the centre of the Activity Area and was not able to be accessed during the standard assessment. However, the construction of this facility is well documented in aerial images (see section 7.5.2) and the key features of the facility were visible through the fencing. No additional obstacles to the standard assessment were encountered.

8.4 Results of the ground surface survey

The standard assessment was conducted on 26 and 27 April. After the standard assessment was undertaken, changes were made to the Activity Area. This resulted in the removal of SU1 and 2 from the Activity Area and the addition of SU4. SU1 and 2 are described in Appendix I, While SU3 and 4 are detailed below.

The Activity Area was subject to pedestrian survey utilising a systematic sampling approach. For the purpose of the standard assessment, the Activity Area was divided into survey units (Map 6). For the first standard assessment, each survey unit encompassed a potential location for the RRON facility, and the geotechnical boreholes. A total of 12 geotechnical boreholes (BH) were completed within the previous extent of the Activity Area (Map 7). Due to changes in the Activity Area, additional standard assessment was completed that resulted in the addition of SU4, which incorporated a small section of SU2.

No caves, rock shelters or cave entrances are present within the Activity Area.



Paper Size ISO A4

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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GHD

Barwon Water
Barwon Water RRON Functional Design

Project No. **31-12585384**
CHMP No. **19285**
Date **10/01/2024**

Standard Assessment Results

MAP 6

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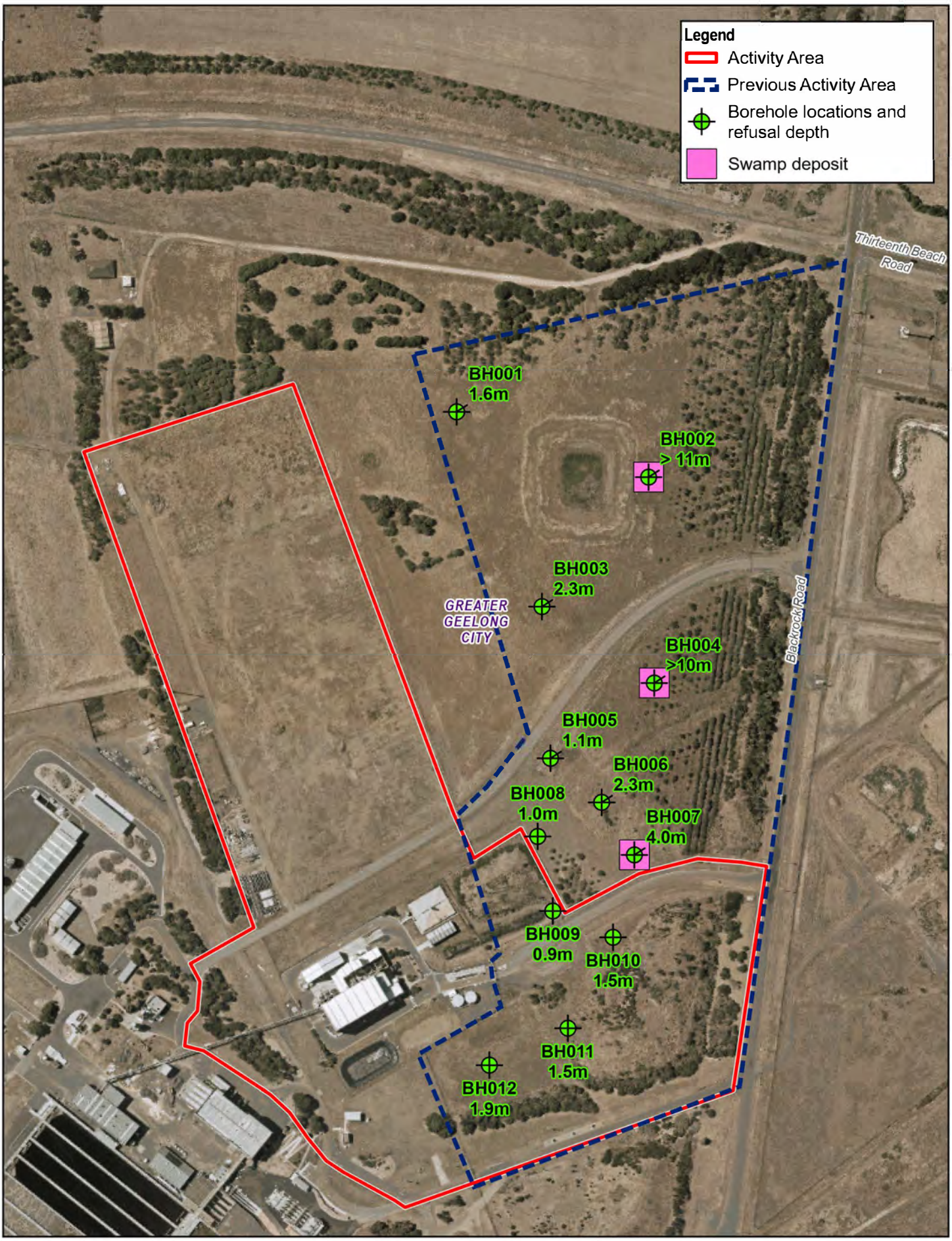
Data source: FP-SR (2023), GHD (2023), VicMap (2023). Created by: sblades



Paper Size ISO A4

0 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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GHD

Barwon Water
RRON Functional Design

Project No. **31-12585384**
CHMP No. **19285**
Date **10/01/2024**

Location of Geotechnical Boreholes

MAP 7

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Data source: GHD (2023), VicMap (2023). Created by: sblades

8.4.1 Survey Unit 3

Survey Unit 3 includes the southern most access road to the WRP, landscaping and a large artificial mound, a levelled grassed area, gravelled carpark and the Biosolids Treatment Plant (BTP) access road. SU3 was surveyed during the initial standard assessment and remains within the Activity Area.

Ground surface visibility within SU3 was very low due to grass cover. On Artificial Mound 3 (Map 6) there is evidence of replanting (Plate 14) with additional landscaping and garden beds (Plate 22 and Plate 17) around the southern and eastern edges of the Activity Area. The majority of the landscaping have occurred in the south east of the SU3, adjacent to the southern most access road (Plate 18 to Plate 23), which is also the main access road to the facility. Adjacent to the road is evidence of an open drain and utility connections.

The areas surrounding the mound is a very even and flat ground surface (Plate 21 to Plate 22), that has been artificially levelled through earthworks for the neighbouring facilities. This is supported by the aerial images in section 7.5 and the fill identified through geotechnical investigations, indicating that topsoil has been removed in some sections, and fill has been imported in others, to create a level surface.

Adjacent to the access road to BTP, a drain has been cut into the ground surface to direct water into a swale pond (Plate 24 to Plate 26). The exposed soil in the drain was a dark grey-black clay, with gravel from the road construction.

Geotechnical Investigations

Boreholes 9-12 were drilled within SU3 for the RRON facility location. BH 10-12 are located within open grassed areas in the south of the activity area, with BH10 and BH11 adjacent to Artificial Mound 3 (Map 6 and Map 7). The borehole logs within this area confirm the geological mapping (Map 3), with BH10-12 meeting auger refusal on extremely weathered basalt between 1.5 and 1.9m. BH09 was located in the northern edge of the survey unit, just south of Artificial Mound 2 and a swale drain. It was consistent with the geological mapping and met auger refusal at 0.9m. As the works are unlikely to impact the location of BH09, details are not discussed below, but can be found in Appendix F.

The surface layer of the bore identified in BH10 and BH11 that was consistent with the other boreholes as a dark grey-black clay with traces of sand and grass rootlets, overlying a dark grey-black clay. BH12 identified a fill layer of 50cm overlying a dark grey-black clay. No topsoil was identified under the fill layer (Table 10). Borehole logs are in Appendix F.

Table 10 Geotechnical Borehole summaries

BH 10		BH 11		BH 12	
0-0.20	Topsoil: CLAY trace sand, dark grey-black mottled brown and red; fine grained sand	**0-0.20**	Topsoil: CLAY with sand, dark grey-black mottled red; fine grained sand; trace rootlets	**0-0.50**	FILL: CLAY trace sand and gravel, dark brown mottled black, dark red and orange; fine to coarse grained sand; fine to medium, sub-angular to angular gravel of basalt; trace rootlets
0.20-1.5	CLAY with sand trace gravel, dark grey-black mottled brown; fine to coarse grained sand; fine sub-round to sub-angular gravel	**0.20-1**	CLAY with sand trace gravel, dark grey-black; fine to coarse grained sand; fine sub-round to subangular gravel	**0.50 – 1**	CLAY with sand trace gravel, dark grey-black; fine to coarse grained sand; fine sub-round to subangular gravel
	Refusal at 1.5m	**1-1.5**	Sandy CLAY trace gravel, dark grey-black; fine to coarse grained sand; fine, sub-rounded to subangular gravel of basalt	**1-1.9**	Sandy CLAY trace gravel, dark grey spotted white; fine grained sand; fine sub-round to subangular gravel; possibly calcareous
			Refusal at 1.5m		**Refusal at 1.9m**

Plate 14 *SU3, north of artificial mound 3 facing east toward access road (R. Stewart 26.04.2023)*

Plate 15 *SU3, facing north towards access road (R. Stewart 26.04.2023)*

Plate 16 *Top of Artificial Mound 3, facing west towards visitors centre and BTP (R. Stewart 26.04.2023)*

Plate 17 *South east of SU3, facing east. Artificial Mound 3 and landscaping (R. Stewart 26.04.2023)*

Plate 18 *Eastern edge of SU3, facing north, showing utilities and landscaping (R. Stewart 26.04.2023)*

Plate 19 *Southern access road, facing west (R. Stewart 26.04.2023)*

Plate 20 *Centre of SU3, facing west. Location of BH 12 (R. Stewart 26.04.2023)*

Plate 21 *Centre of SU3, facing north toward BTP. Representative of GSV in SU1 (R. Stewart 26.04.2023)*

Plate 22 *Centre of SU3, facing south towards southern access road and landscaping (R. Stewart 26.04.2023)*

Plate 23 *Southern access road, drainage and utilities, facing south (R. Stewart 26.04.2023)*

Plate 24 *Drain cut adjacent to access road, facing east (R. Stewart 26.04.2023)*

Plate 25 *Drain cut adjacent to swale, facing west towards BTP (R. Stewart 26.04.2023)*

Plate 26 *Swale drain, facing west towards BTP (R. Stewart 26.04.2023)*

Plate 27 *Artificial Mound 2, facing west (R. Stewart 26.04.2023)*

Plate 28 Artificial Mound 2, facing north. Sample of mound GSV (R. Stewart 26.04.2023)

8.4.2 Survey Unit 4

The Biosolids Treatment Plant (BTP) is in the centre of the Activity Area and SU4. The BTP consists of the facility buildings, an associated mound (Artificial Mound 2), two ponds, associated access road and car park. The BTP is separated by a cyclone fence. The grounds of BTP were not accessible during the standard assessment, however, the extent of the disturbance was visible through the fence line and documented in aerial imagery (see section 7.5.2).

The southwestern extent of the Activity Area consists of a number of utility installations. There are four electrical substations, water infrastructure, utility location signage, junction boxes and drainage (Plate 29 to Plate 43). These locations align with the utility mapping in Figure 2. These locations provided samples of a disturbed ground surface (Plate 41) showing a grey-brown sandy clay. A drainage pit under repair (Plate 42) demonstrated a subsurface soil profile of a reddish-brown clay overlying a dark grey-brown clay, which supports the results of the geotechnical borehole in SU3.

The western edge of the Activity Area is a paved access road between the BTP and the BW Site office and Visitors Centre, which can be seen cut into the ground surface with differing levels for the road and landscaping (Plate 45 and Plate 46). The adjoining gravel access road (Plate 43) contains additional utility connections and drainage, and sewer hatches (Plate 44).

The northern section of the Activity Area comprises an access road and an old landfill (Plate 47 to Plate 51). The area is grassed, with stockpiles of soil, with a gravel access track running north to south along the western edge, with equipment storage.

Plate 29 *Southwest corner of Activity Area, facing west toward BW site office, with substation in foreground (R. Stewart 11.07.2023)*

Plate 30 *Substation in west, facing south (R. Stewart 11.07.2023)*

Plate 31 *Substation facing south, with drainage and water infrastructure in the background (R. Stewart 11.07.2023)*

Plate 32 *Facing south towards water infrastructure, with drainage to the west (R. Stewart 11.07.2023)*

Plate 33 *Facing southeast towards entrance gate, with water infrastructure in the foreground (R. Stewart 11.07.2023)*

Plate 34 *Water Infrastructure facing west (R. Stewart 11.07.2023)*

Plate 35 *Facing east along the southern access road, with landscaping to the north (R. Stewart 11.07.2023)*

Plate 36 *South of Activity Area, facing north to BTP, substation to the west (R. Stewart 11.07.2023)*

Plate 37 *Southwest of Activity Area, facing east towards artificial mound 3, BTP to the north (R. Stewart 11.07.2023)*

Plate 38 *Utility notices, facing east towards artificial mound 3 (R. Stewart 11.07.2023)*

Plate 39 *Facing west towards visitors centre, with utility connections (R. Stewart 11.07.2023)*

Plate 40 *Facing north, utility connection and gravel access road, BTP to east (R. Stewart 11.07.2023)*

Plate 41 *Facing west towards visitors centre, sample of good GSV around utility signs (R. Stewart 11.07.2023)*

Plate 42 *Open utility pit in west of Activity Area – Upper context of reddish brown likely fill, lower grey-black consistent with natural soil profile (see geotechnical logs) (R. Stewart 11.07.2023)*

Plate 43 *Gravel access track and utilities, west of Activity Area, facing north (R. Stewart 11.07.2023)*

Plate 44 *Utility locations, northwest of Activity Area, BTP and Landfill to east, facing north (R. Stewart 11.07.2023)*

Plate 45 *Western edge of Activity Area, facing north, landscaping and altered ground surface levels (R. Stewart 11.07.2023)*

Plate 46 *Ground level changes, west of Activity Area facing east towards BTP (R. Stewart 11.07.2023)*

Plate 47 *Facing north towards Landfill (R. Stewart 11.07.2023)*

Plate 48 *East of Activity Area, facing west, land fill to the north and BTP to the south (R. Stewart 11.07.2023)*

Plate 49 *East of Activity Area, facing east, Artificial Mound 2 to south (R. Stewart 11.07.2023)*

Plate 50 *Centre of landfill, facing north, gravel access track (R. Stewart 11.07.2023)*

Plate 51 *Centre of landfill, facing south towards BTP (R. Stewart 11.07.2023)*

8.5 Landforms

Previous ground disturbance within the Activity Area has resulted in a heavily modified landscape within the volcanic plains and the swamp. The Activity Area has a very flat and level ground surface. The ground surface rises where access roads have been constructed, indicating that the road base had been built up, above the natural ground surface. There are two mounds within the Activity Area, with sharp changes in elevation indicating that they are artificial in nature, this is also supported by the aerial images in section 7.5.2. The north of the Activity Area is an old landfill, with a slightly undulating surface reflective of the landfill capping. There is a rise in the west that drops down to the entry to the Black Rock WRP site office, indicating that the natural ground surface is no longer present.

8.6 Previous ground disturbance

The extent of previous ground disturbance through the Activity Area was evident during the standard assessment and supports the results of the desktop assessment.

There are two access road that run east-west through the Activity Area. The access roads have been raised above the current ground surface, with scrapping of topsoil and road base. The northern access road includes a gravel parking area that has been built up with imported soils.

The ground surface within the Activity Area is unnaturally flat, indicating substantial topsoil modifications have taken place. This is evidenced by the flat surfaces in each SU, that only change for road construction, where landscaping has occurred and where artificial mounds have been created. This interpretation is supported by the fill identified in the geotechnical boreholes.

There are two artificial mounds within the Activity Area, that are a likely combination of excess topsoil and spoil from works within the WRP.

SU3 contains two main access roads, landscaping, a large artificial mound, gravel carpark and drainage adjacent to the BTP. SU4 includes a landfill to the north, significant landscaping and stockpiling in the west, the BTP and associated access and artificial mound, and a large number of utilities in the south and western edges.

A number of underground utilities exist within the Activity Area, including communications, water and sewerage services, gas and electricity. These can be seen in the BYDA maps in Appendix G and also in Figure 2. These utilities have all been trenched to varying depths. The majority of the utilities are concentrated in the west and south of the Activity Area, and along the access road, connecting services from Black Rock Road to the BTP in the centre, and additional WRP facilities west of the Activity Area. Evidence of these utilities was seen through various signage, access hatches, junction boxes and drainage panels (Plate 29 to Plate 44).

8.7 Areas of archaeological potential

The Activity Area is reflective of a heavily modified landscape, with large areas of visible ground disturbance and known changes to the Activity Area through earthworks and underground utilities.

The remainder of the Activity Area has been subject to ground disturbance though earthworks, the installation of utilities and various stages of vegetation removal. This work has removed the likelihood for Aboriginal cultural heritage material to be present. The topsoil is incredibly shallow and aligns with the desktop assessment that there is very low to no potential for Aboriginal cultural heritage in a disturbed soil profile on the volcanic plains.

No areas of potential were identified within the Activity Area.

8.8 Effective survey coverage

The calculation for effective survey coverage attempts to quantify the effectiveness of the field survey component of the assessment and is largely derived from Witter's PhD thesis (Witter, 1990) as well as standards and guidelines for the recording of Aboriginal objects in other States within Australia (National Parks and Wildlife Service, 1999) (Department of Environment, Climate Change and Water, 2010) and effective field survey coverage as defined by Burke and Smith (2004).

Survey coverage variables are used to measure the ground surveyed during the standard assessment as well as the type of archaeological visibility present within the surveyed area. The analysis of survey coverage is used to determine if the opportunity to observe Aboriginal cultural heritage material, in or on the ground, was achieved during the survey.

Two variables are used to assess ground surface visibility during the standard assessment: the area of ground exposed within the Activity Area and the type of ground visibility, also referred to as archaeological visibility. These variables are defined as:

Exposure: defined by Burke and Smith as *what reveals* (Burke & Smith, The Archaeologist's Field Handbook, 2004). Exposure is an estimate of the total area surveyed that contained exposures of bare ground. Exposure is different to visibility as exposure estimates an area that has the likelihood of revealing subsurface cultural heritage material or artefact bearing deposits rather than being an observation of bare ground.

Visibility: defined by Burke and Smith as *what conceals* (Burke & Smith, The Archaeologist's Field Handbook, 2004). This variable is an estimate of the amount of ground that has the *potential* for exposed ground to contain subsurface archaeological finds/features/deposits. On its own, visibility is not a reliable indicator of subsurface cultural heritage material.

From these two variables, an estimate of the archaeological potential of exposure area within each Survey Unit is calculated (the Effective Coverage Area). The effective survey coverage calculation is a percentage estimate of the proportion of each Survey Unit that provides the potential to physically view Aboriginal cultural heritage material (refer to Table 11). The effectiveness of the pedestrian survey was constrained by poor ground surface visibility due to the presence of grass cover and prior areas of disturbance across the Activity Area.

Exposures in the Activity Area was generally limited to areas of utility installations or gravelled areas. While there was some slight variability, exposures and visibility across the Activity Area was typically poor across all survey units and less than 10% of ground surfaces in many areas. For the purposes of calculating overall effective coverage, visibility and exposure have been estimated and rounded to the nearest 10th of percentage, in this case 10%. The effective survey coverage of the standard assessment has been estimated as 1% of the area surveyed.

Table 11 Effective survey coverage

Survey Unit	Area of landform (m²)	Exposure (%)	Visibility (%)	Effective coverage area (ECA) (m²) = (area of survey unit x exposure x visibility)	Effective Survey Coverage (%) (= ECA / area of survey unit x 100)
Survey Unit 3	33 617	5	5	140	3
Survey Unit 4	91 672	3	1	12	1
Total	125 289	3	1	40	1

8.9 Oral history

No oral history in relation to the Activity Area or the larger region was provided during the standard assessment.

8.10 Conclusions from the standard assessment

No Aboriginal cultural heritage material was identified during the field survey. This is due to the highly modified landscape that is the within the Activity Area and the poor ground surface visibility.

No mature indigenous trees were noted within the Activity Area. No scarred trees are present within the Activity Area.

No caves, rock shelters or cave entrances are present within the Activity Area.

During the standard assessment, it was confirmed that the landforms within the Activity Area consisted of the volcanic plains and swampy plains, which had been heavily modified by previous ground disturbance. Based on the landform within the Activity Area, the following conclusions were made:

- No areas of potential have been identified within the Activity Area
- Within the southeast of the Activity Area an artificial mound has been formed through scraping of the topsoil to level surfaces and with the spoil from works within the WRP
- Access roads from Black Rock Road into the WRP have been raised above the current ground surface, with utilities and drainage constructed into the sides
- Underground utilities are concentrated in the southwest of the Activity Area, connecting through to facilities to the west
- Open areas within the Activity Area have been levelled through scraping of topsoil and addition of fill in SU3, results supported by the geotechnical investigations

At the conclusion of the pedestrian survey, extensive ground disturbance was noted from the construction of the facilities within the WRP, installation of underground utilities and earth works to level the ground surfaces. The topsoil was very shallow and heavily clayed, consistent with the geology identified in the desktop assessment. The ground disturbance has reduced or removed any artefact bearing deposits.

The results of the standard assessment support the results of the desktop assessment. The desktop assessment concluded that there is low to no potential for in situ Aboriginal cultural heritage material to be present within the Activity Area due to the previous ground disturbance.

Under Regulation 64 of the *Aboriginal Heritage Regulations 2018*, a complex assessment is required if the desktop or standard assessments shows that there is potential for Aboriginal cultural heritage material to be present within the Activity Area and it is not possible to determine the nature, extent, and significance of the Aboriginal cultural heritage without undertaking a complex assessment.

While no areas of potential were identified as a result of the assessment, a complex assessment was determined necessary by WTOAC to test these assumptions.

9. Complex Assessment

The complex assessment was undertaken by Asher Ford and Ruby Stewart, from GHD with the help and support of Billy-Jay O'Toole and James Brown, WTOAC field representatives on 27 October, 2023.

Asher Ford, GHD Senior Heritage Advisor, supervised the subsurface testing component of this CHMP. Asher is a full member of the Australian Association of Consulting Archaeologists and meets the qualifications for a Heritage Advisor under Section 189 (1) of the *Aboriginal Heritage Act 2006*.

9.1 Aims

The aims of the complex assessment are:

– To determine the presence of natural ground surfaces beneath the fill material;
– To establish the stratigraphy and subsurface nature of landforms, if present, within the Activity Area;
– To determine the nature and extent of any Aboriginal Places identified within the Activity Area; and
– To test the site prediction model established at the conclusion of the desktop assessment

9.2 Methodology

The complex assessment consisted of controlled manual excavations in the form of one 1 m x 1 m test pit (TP) and three 50 cm x 50 cm shovel test pits (STPs) (refer to Map 8). The test pit was excavated within the plains landform within the Activity Area. The shovel test pits were excavated in order to supplement the results of the test pit; detailing the stratigraphic profile of the Activity Area and to determine the presence or absence of Aboriginal cultural heritage within the Activity Area. Subsurface excavations were not undertaken in areas that would not be affected by the proposed activity.

Hand shovels, mattock, crow bar and trowels were used to excavate the TP and STPs in stratigraphic layers in 5 cm spits. All excavated sediment was hand-sieved through a 5 mm mesh.

During the subsurface excavations, a photographic record of the soil profile of each TP and STP was made using a digital SLR camera. The location of TP and STPs were recorded using a Trimble DGPS with a sub-metre accuracy as per FP-SR Guidelines.

Field notes were taken that documented the soil stratigraphy, sediments, evidence of disturbance and the presence of any Aboriginal cultural heritage. A Munsell chart was used to determine the soil colour and pH was measured (the data catalogues for the subsurface excavations are located in Appendix D.

The subsurface excavation was undertaken in line with First People – State Relations (2016) *Aboriginal Heritage Act 2006 - Practice Note on Subsurface Excavation*.

9.3 Limitations and Obstacles

Two key obstacles were encountered during the complex assessment. The majority of the Activity Area had been previously disturbed or had subsurface services present, and testing was designed to avoid all underground services. The compact nature of the ground surface also proved difficult to excavate manually.

9.4 Oral history

No oral history was provided by Billy-Jay O'Toole and James Brown , WTOAC field representatives, regarding the Activity Area or the wider landscape during the complex assessment.

9.5 Results

The location of the TP and STPs during the complex assessment were targeted areas of least disturbance within the Activity Area, overlapping with the highest impact within the proposed works area (Map 8). The results of the subsurface excavations are documented in section 9.5.1 and Appendix D.

9.5.1 Test Excavations

In compliance with Regulation 65 (4) of the *Aboriginal Heritage Regulations 2018*, the controlled excavation of one 1 x 1 m test pit (TP01) was undertaken within the plains landform in the Activity Area to establish stratigraphy and general subsurface nature of the landform which was confirmed during the standard assessment. The location of TP01 was impacted by the limited area that had not been previously subjected to ground disturbance as identified in aerial images (section 7.5.2), were devoid of subsurface services/utilities, and was within an area of proposed impacts.

Test Pit 1 (TP01)

The location for TP01 was situated on the plains landform within the Activity Area. The location of TP01 was identified initially due the lack of disturbance identified from the aerial imagery, and within the plains landform (Map 8 and Appendix D). TP01 was located approximately 23m west of the large artificial mound and 17 m south of the gravel carpark and access road.

TP01 was excavated to a depth of approximately 200mm when the surface presented was significantly harder and with increasing amounts of angular bluestone chips (also described as road base). After a discussion between all field team members, a sondage in the south eastern corner of TP01 was excavated to determine the depth of the fill, the presence of a sterile clay base, and if any artefact bearing deposits were present. The sondage was excavated to a depth of 350-400mm where sterile clay base was identified (Plate 52 to Plate 55).

A total of three stratigraphic contexts were identified (see Table 12). Context 1 is an undulating layer of black unconsolidated sandy clay with frequent inclusions of bluestone chips (up to 50mm) and infrequent inclusions of lime stone and brick fragments and weathered basalt pieces (approximately 50 mm) (Munsell 10 YR 2/2, pH 8). Context 1 was interpreted as a fill layer consisting of disturbed and redeposited natural clay with modern inclusions. A gradual horizon change was present between Context 1 and Context 2 with the presence of the angular road base fragments increasing towards Context 2.

Context 2 consists of a lens of light grey-brown silt and angular blue stone fragments approximately 50 mm (Munsell 10 YR 4/3, pH 8). This lens was undulating across the test pit, with a varying thickness of between 30 to 100 mm. This lens sat directly on top of Unit 3.

Context 3 consist of dark grey consolidated clay base with few ironstone inclusions (Munsell 2.5 YR 2/1, pH 8). This context description is consistent with the descriptions of the basal clay (section 7.3) and is interpreted as a natural soil. This context is considered archaeologically sterile, with no artefact bearing deposit identified within the test pit stratigraphy.

Given the highly disturbed nature of the fill overlying sterile clay base, it was determined that an artefact bearing context was not present within the test pit stratigraphy. This combined with how difficult the stratigraphy was to excavate, the test pit was completed at the sondage.

No Aboriginal cultural heritage material was recorded within TP01.

Table 12 Summary of Test Pit 01 results

Context	Depth (mm)	Stratigraphy	Inclusions	Munsell	pH	Artefacts	Interpretation
Context 1	0 – 220	Unconsolidated sandy clay, dark grey with brown mottling	Frequent angular road base pieces, weathered basalt, limestone and rootlets	10 YR 2/2	8	None	Fill layer
Context 2	220-300	Brown silty clay and angular road base fragments	50% road base	10 YR 4/3	8	None	Fill layer, possibly carpark base
Context 3	300 +	Stiff dark grey clay	iron nodules, infrequent	10 YR 2/1	8	None	Basal clay

Plate 52 TP01 base, with sondage in south east corner

Plate 53 *TP01, south wall of TP and sondage*

Plate 54 *Southern wall of sondage within TP01*

Plate 55 Eastern wall of sondage within TP01

Shovel Test Pits (STPs)

A total of three STPs were excavated within the Activity Area, one in the south eastern edge of the proposed works area, and two within the western edge. Each STP contained a grey-brown silty clay fill, overlying either basalt (STP01 and 03) or dark grey clay base (STP02). Full stratigraphic details are presented in Appendix D. No Aboriginal cultural heritage material was identified.

STP01 was located approximately 23 m west of the large artificial mound, and 17 m north of the landscaping along the entrance road. This area was used as a car park and a storage area during the construction of the BTP (see section 7.5.2) and was expected to contain fill, similar to identified within Borehole 12, located 27 m to the west (Map 7).

Two stratigraphic contexts were identified within STP01 (Plate 56). Context 1 consists of a brown silty clay modern material, including brick fragments and roof tile. This context was identified as fill likely brought in from outside of the site due to the differences in soil colour and texture compared to the natural clay. Context 2 is a basalt base (Plate 57). It is most likely that this is a basalt floater within the natural clay rather than bedrock, however the floater was larger than the STP and no edge could be identified.

STP02 is located in the western extent of the proposed works, 14 m south of the BTP and 47 m east of a high voltage distribution substation. Context 1 (Plate 58) is very similar to Context 1 within STP01, a silty brown clay with modern inclusions, however with smaller fragments of brick (≤30mm) and with inclusions of glass, ceramic and plastic to a depth of 300mm. Context 2 is stiff dark grey clay consistent with natural sterile basal clay (Plate 59) identified within TP01.

STP03 is also located in the western extent of the proposed works, 25 south of STP02 and 3m north of the landscaping. Two stratigraphic contexts were identified. Context 1 is comprised of brown silty clay, and very shallow (0-80mm) (Plate 60). Few inclusions were identified, however small angular fragments of road base (≤ 40mm) and brick were present. Context 2 is a basalt base (Plate 61). It is most likely that this is a basalt floater within the natural clay rather than bedrock, however the floater was larger than the STP and no edge could be identified.

Plate 56 *STP01, southern wall with brick fragment in centre*

Plate 57 *Base of STP01*

Plate 58 *STP02, facing south*

Plate 59 *Base of STP02*

Plate 60 *STP03 facing south*

Plate 61 *Base of STP03*

9.5.2 Aboriginal Places

No Aboriginal Places were identified during the complex assessment. The results of the subsurface testing, in combination with previous ground disturbance, and installation of services, indicates that there is no potential for Aboriginal cultural heritage material to be present within the Activity Area.

9.6 Conclusions of the complex assessment

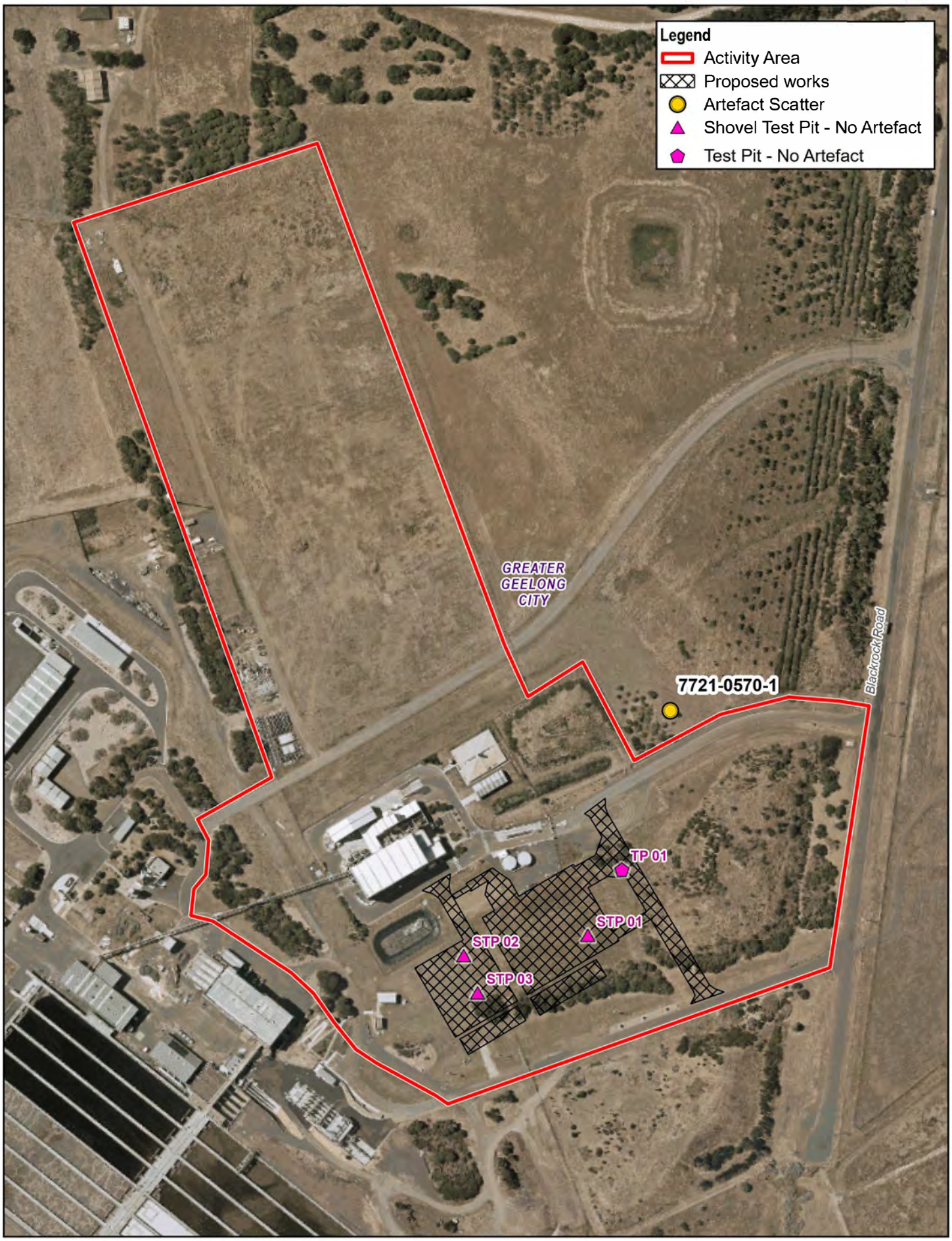
One 1 x 1 m TP and three 0.5 x 0.5 m STPs were excavated during the complex assessment. The locations for subsurface testing were constrained by the presence of previous disturbance, existing subsurface services and landscaping features.

The subsurface excavations tested and upheld the conclusions of the standard and desktop assessment, that extensive ground disturbance from previous Black Rock WRP facility construction and underground services has removed the potential for Aboriginal cultural heritage material to be present by creating an artificial landscape. Fill was identified within all test pits, with TP01 presenting a disturbed and redeposited natural clay over road base, with STP01-03 demonstrating a fill layer over natural clay or bed rock. No artefact bearing deposits were identified, with fill sitting directly upon sterile clay base or basalt bedrock.

The dark grey sterile clay base, is consistent with the geology of the volcanic plains (7.3.1) and with the soils identified within the geotechnical boreholes (7.3.2 and 8.4.1).

The complex assessment results are consistent with previous assessment within the Activity Area (du Cros and Associates, 1993; Terra Culture, 2003; Unearthed Heritage, 2021), that identified areas of potential on the outer edges of the Black Rock WRP, where disturbance was at a minimum and sandy deposits were present. These areas of potential were not within the current Activity Area.

It is concluded that there is no archaeological potential within the Activity Area and it is reasonably unlikely for Aboriginal cultural heritage material to be present within the Activity Area.



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Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
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Barwon Water
Barwon Water RRON Functional Design

Project No. **31-12585384**
CHMP No. **19285**
Date **30/10/2023**

Complex Assessment Results

MAP 8

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Data source: FP:SR (2023), GHD (2023), VicMap (2023). Created by: sblades

10. Details of Aboriginal Cultural Heritage in the Activity Area

10.1 Assessment of the Aboriginal cultural heritage

No Aboriginal cultural heritage has been identified within the Activity Area. Registered Aboriginal Place VAHR 7721-0570 Black Rocks Artefact Scatter was in the original Activity Area of this CHMP. Due to changes in the Activity Area, this Place is no longer within the Activity Area. Place details can be found in Appendix E.

11. Consideration of Section 61 matters – Impact Assessment

Schedule 2 Clause 3 of the Aboriginal Heritage Regulations 2018 documents that contingency plans for matters referred to in Section 61 of the *Aboriginal Heritage Act 2006* must be considered within a CHMP.

Section 61 considerations are not appropriate because no Aboriginal cultural heritage was identified during the assessment. No specific management measures are required.

The Section 61 matters appropriate to the proposed activity are set out below.

11.1 Consideration of Section 61 matters

In accordance with Section 61 of the *Aboriginal Heritage Act 2006*, this CHMP considers the following mandatory matters:

11.1.1 Are there any contingency plans required in relation to disputes, delays and other obstacles that may affect the conduct of the activity?

Contingency plans are documented in full in Section 2 of this CHMP.

11.1.2 What are the requirements relating to the custody and management of the Aboriginal cultural heritage during the course of the activity?

The requirements for the custody and management of Aboriginal cultural heritage material discovered during proposed works are document in full in the Contingencies in Section 2 of this CHMP.

11.2 Consideration of Cumulative Impacts

This section considers the proposed activity and the resulting magnitude of effect the activity will have on Aboriginal cultural heritage material within the wider geographic region. First Peoples – State Relations (Formerly Aboriginal Victoria) *Guide to preparing a Cultural Heritage Management Plan* documents:

> *An assessment of the likely impacts on Aboriginal cultural heritage of the activity should also include consideration and assessment of the cumulative impact of the activity on Aboriginal cultural heritage in the activity area in relation to the Aboriginal cultural heritage of the region* (First People - State Relations, 2016).

However, there is no formal guidance or accepted methodology for how to determine cumulative impacts.

To truly quantify cumulative impacts, the extent of Aboriginal cultural heritage material within a region would need to be known. The amount of Aboriginal cultural heritage within an area is finite, largely based on the results of recorded field survey and subsurface excavation from which a data base was produced. Therefore, the base datum from which an assessment can be quantified is based on Aboriginal cultural heritage material that has been identified and recorded. Anything other than Aboriginal cultural heritage material that is in situ, is considered to increase the negative cumulative impact.

Another limitation to the determination of cumulative impacts on Aboriginal cultural heritage material is that many site cards for Aboriginal Places recorded prior to the change in legislation in the 1990s, and brought about by the *Aboriginal Heritage Act 2006*, does not indicate the status of the place type, i.e. whether or not the artefactual material was removed or kept in situ at the time of identification.

11.2.1 Previously recorded Aboriginal cultural heritage within the geographic region

A search of the VAHR identified 159 previously recorded Aboriginal Places within the geographic region, with a total of 177 individual components (Table 8 and Map 4). Artefact scatters (n=137) are the dominant place type within the geographic region, followed by Low Density Artefact Distributions (LDAD) (n=13) and Scarred Trees (n=5). Concentrated areas of recorded Aboriginal Places within the geographic region are located closer to larger sources of fresh water, such as the Armstrong Creek. This could also reflect the high number of assessments that have occurred along the creek due to recent developments.

11.2.2 Baseline conditions

Following on from European settlement to the Connewarre area, the land was cleared of native vegetation in order to undertake agricultural and pastoral land use practices. Towns were then solidified as agricultural towns, or for recreational purposes. Due to the rocky stretch of coast to the south of Activity Area the area was not targeted for recreational development, with the sandy beaches to the east and west targeted for early recreational development in towns such as Torquay and Barwon Heads.

From 1990s to the present day, various stages of construction for the Black Rock Water Reclamation Plant including the Visitors Centre and various treatment plant facilities. These construction activities have involved various stages of topsoil scraping, ground surface cuts, importation of fill, trenching for utilities and water retention ponds. These works have impacted the ground surface and artefact bearing topsoil, reducing the potential for Aboriginal cultural heritage material to remain in situ.

11.2.3 Calculation of cumulative impacts

As no Aboriginal cultural heritage material was identified during the preparation of this CHMP, there are no further cumulative impacts to Aboriginal cultural heritage material within the geographic region.

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Appendix A

Notice of intent to prepare a CHMP

Notice of Intent to prepare a Cultural Heritage Management Plan for the purposes of the *Aboriginal Heritage Act 2006*

This form can be used by the Sponsor of a Cultural Heritage Management Plan to complete the notification provisions pursuant to s.54 of the *Aboriginal Heritage Act 2006* (the "Act").

For clarification on any of the following please contact Victorian Aboriginal Heritage Register (VAHR) enquiries on 1800-726-003.

SECTION 1 - Sponsor information

Sponsor:	Barwon Water		
ABN/ACN:	86 348 316 514		
Contact Name:	Giles Flower		
Postal Address	55-67 Ryrie Street Geelong, VIC 3220		
Business Number:	1300 656 007	Mobile:	0432 744 300
Email Address:	giles.flower@barwonwater.vic.gov.au		

Sponsor's agent (if relevant)

Company:			
Contact Name:			
Postal Address			
Business Number:		Mobile:	
Email Address:			

SECTION 2 - Description of proposed activity and location

Project Name:	Barwon Water RRON, Black Rock Reclamation Plant, Connewarre
Municipal district:	Greater Geelong City Council

Clearly identify the proposed activity for which the cultural heritage managment plan is to be prepared (ie. Mining, road construction, housing subivision)

Utility installation (not telco)

SECTION 3 - Cultural Heritage Advisor

Name	Company	Email address
Kym Oataway	GHD	Kym.Oataway@ghd.com

SECTION 4 - Expected start and finish date for the cultural heritage management plan

Start Date:	06-Dec-2022	Finish Date:	06-Dec-2023

Submitted on: 06 Dec 2022

SECTION 5 - Why are you preparing this cultural heritage management plan?

☑ A cultural heritage management plan is required by the Aboriginal Heritage Regulations 2007

What is the high Impact Activity as it is listed in the regulations?

Is any part of the activity an area of cultural heritage sensitivity, as listed in the regulations? 1

☐ Other Reasons (Voluntary)

☐ An Environment Effects Statement is required

☐ A Cultural Heritage Management Plan is required by the Minister for Aboriginal Affairs.

☐ An Impact Management Plan or Comprehensive Impact Statement is required for the activity

SECTION 6 - List the relevant registered Aboriginal parties (if any)

This section is to be completed where there are registered Aboriginal parties in relation to the management plan.

WADAWURRUNG Traditional Owners Aboriginal Corporation Registered Aboriginal Party

SECTION 7A - List the relevant Aboriginal groups or Aboriginal people with whom the Sponsor intends to consult (if any)

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party.***

Wadawurrung Traditional Owners Aboriginal Corporation Registered Aboriginal Party

SECTION 7B - Describe the intended consultation process (if any)

*This section is to be completed only if the proposed activity in the management plan is to be carried out in an area where there is **no Registered Aboriginal Party.***

The Sponsor intends to consult with the RAP during every stage of the CHMP, including all meetings and fieldwork.

SECTION 8 – State who will be evaluating this plan (mandatory)

The plan is to be evaluated by:

☐ Joint - Registered Aboriginal Party AND The Secretary

☑ A Registered Aboriginal Party

If checked, list the relevant Registered Aboriginal Party Evaluating:

☐ The Secretary

☐ Victorian Aboriginal Heritage Council

SECTION 9 – Preliminary Aboriginal Heritage Tests (PAHTs)

List the Reference Number(s) of any PAHTs conducted in relation to the proposed activity:

SECTION 10 - Notification checklist

Submitted on: 06 Dec 2022

Ensure that any relevant registered Aboriginal party/ies is also notified. A copy of this notice with a map attached may be used for this purpose.
(A registered Aboriginal party is allowed up to 14 days to provide a written response to a notification specifying whether or not it intends to evaluate the management plan.)

In addition to notifying the Deputy Director and any relevant registerd Aboriginal party/ies, a Sponsor must also notify any owner and/or occupier of any land within the area to which the management plan relates. A copy of this notice with a map attached may be used for this purpose.

Ensure any municipal council, whose municipal district includes an area to which the cultural heritage management plan relates, is also notified. A copy of this notice, with a map attached, may also be used for this purpose.


Chilwell
Geelong
Newcomb
Thomson
Belmont
Whittington
Moolap
Breakwater
Settlement Road
Curlewis
Leopold
Barwon River
Bellarine Highway
Marshall
Grovedale
Reedy Lake
Wallington
Lake Connewarre
Charlemont
Armstrong Creek
Torquay Road
Fenwick
Ocean Grove Education Area
Mount Duneed
Ocean Grove
Connewarre
Surf Coast Highway
Barwon Heads
Breamlea
Breamlea Flora and Fauna Reserve
Lorne - Queenscliff Coastal Reserve
Torquay
NORTH
0
2
4
Kilometres

Appendix B

Notice to evaluate the CHMP

Wadawurrung
Traditional Owners
Aboriginal Corporation

December 8, 2022

Barwon Water
Giles Flower
Wadawurrung Country
55-67 Ryrie Street, Geelong, VIC 3220

To Whom It May Concern,

RE: NOTICE OF INTENT TO PREPARE A CULTURAL HERITAGE MANAGEMENT PLAN

I am writing to acknowledge your written notice of intention to prepare a management plan, received on December 7, 2022 for the proposed works for Barwon Water RRON, Black Rock Reclamation Plant, Connewarre (CHMP #19245).

Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) is the Registered Aboriginal Party (RAP) for the proposed activity area and:

1. Pursuant to s.55(2) of the *Aboriginal Heritage Act* 2006 give notice that they elect to evaluate the plan when it is completed.
2. Pursuant to s.60 of the *Aboriginal Heritage Act* 2006 give notice that they will do the following-
   (a) Consult with the sponsor in relation to the assessment of the area for the purposes of the plan;
   (b) Consult with the sponsor in relation to the conditions to be included in the plan; and
   (c) Participate in the conduct of the assessment.

To commence consultation for the CHMP, please book in a Project Establishment meeting at rap@wadawurrung.org.au. This meeting will include a discussion of the activity including any design plans and proposed impacts; a detailed discussion of the activity area including size, salient features, geology/geomorphology, and land use history; details of the geographic region being used in the ACHRIS search; details of any sites and relevant CHMPs that may contribute to prediction models for Aboriginal cultural heritage in the Activity area; and details of the next phase of assessment being proposed. All relevant images including maps, plans and photographs should be provided at least 2 business days prior to your meeting, however 7 days prior is preferrable. The desktop assessment will be needed to be provided in full.

Fieldwork can be tentatively scheduled prior to the Project Establishment meeting, however, is not to occur prior to the meeting being completed. Please note that the RAP will not be held responsible for scheduled fieldwork timeframes being different to that required to complete the agreed assessment. Further meetings may be requested during the course of the fieldwork, in order to inform assessment requirements.

Follow up meeting(s) will be required post completion of fieldwork in order to establish that the assessment methodology has been completed as agreed; to discuss Section 61 requirements to avoid harm to Aboriginal Cultural Heritage, and, if not possible, measures to minimise harm to Aboriginal Cultural Heritage; and to determine applicable conditions for the CHMP.

Yours sincerely,

Paul Davis
CEO

Tierney Brennan
RAP Heritage Advisor

ABN 11 312 302 330
ICN 3330
99 Mair St East, Ballarat VIC 3350
p +61 3 4308 0420
86 Mercer St, Geelong VIC 3320
p +61 3 5222 5889
e reception@wadawurrung.org.au
w wadawurrung.org.au

Appendix C

Glossary

Glossary

Whenever possible, the definitions provided within the *Aboriginal Heritage Act 2006* and Aboriginal Heritage Regulations 2018.

Aboriginal ancestral remains: the whole or part of the remains of an Aboriginal person. This does not include remains that are buried in a public cemetery that is in current use or an object made from bodily material that is not readily recognisable as being of bodily material (*Aboriginal Heritage Act 2006)*.

Aboriginal cultural heritage: an Aboriginal place, object and ancestral remains (*Aboriginal Heritage Act 2006)*.

Aboriginal object: as defined by the *Aboriginal Heritage Act 2006*, an Aboriginal object is:

a. An object in Victoria or he coastal waters of Victoria that –

Relates to the Aboriginal occupation of any part of Australia, whether or not the object existed prior to the occupation of that part of Australia by people of non-Aboriginal descent; and

Is of cultural heritage significance to Aboriginal people generally or of a particular community or group of people in Victoria; or

b. An object, material or thing in Victoria or the coastal waters of Victoria –

That is removed or excavated from an Aboriginal place; and

Is of cultural heritage significance to Aboriginal people generally or of a particular community or group of people in Victoria –

c. But does not include –

d. An object that has been made, or is likely to have been made, for the purpose of sale (other than an object mad for barter or exchange in accordance with Aboriginal tradition);

Or

e. Aboriginal ancestral remains (*Aboriginal Heritage Act 2006)*.

Aboriginal place: as defined under Section 5 of the *Aboriginal Heritage Act 2006* as:

an area of 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.

For the purposes of subsection (1), ***area*** includes any one or more of the following –

a. An area of land;

b. An expanse of water;

c. A natural feature, formation or landscape;

d. An archaeological site, feature or deposit;

e. The area immediately surrounding any thing referred to in paragraphs (c) and (d), to the extent that it cannot be separated from the thing without diminishing or destroying the cultural heritage significance attached to the thing by Aboriginal people;

f. Land set aside for the purpose of enabling Aboriginal ancestral remains to be re-interred or otherwise deposited on a permanent basis;

g. A building or structure (*Aboriginal Heritage Act 2006)*.

Aerial Photography Taking photographs of natural or cultural features from the air in order to study the features in their entirety, from a birds eye perspective.

Aeolian Deposit soil and sediments deposited by wind.

Alluvial Deposit soil and sediments deposited by running water. For example, streams, rivers, flood waters. Alluvial soils are predominantly rich in nutrients and good for agriculture.

Artefact a portable object manufactured, modified, or used by humans.

Artefact Scatter is a surface scatter of stone artefacts is defined as being the occurrence of five (5) or more items of cultural material within an area of approximately 100 square metres (AAV 1993:lj). Artefact scatters are often the only physical remains of places where Aborigines have camped, prepared and eaten meals and worked stone material.

Assemblage a collection or gathering of artefacts retrieved from an archaeological site within the same archaeological context.

Association objects found in close proximity to each other within the same context.

Back dirt the excavated, discarded sediment from a site that has been shifted for artefacts and has no further archaeological significance. Used to refill test pits in an action known as “back filling”.

B.C.E. Before Common Era

Blade a lengthy piece of flake, typically twice as long as it is wide.

Burial Site where human remains have been discovered. In an aboriginal context, burial sites are more likely to be associated with sandy soils, near bodies of water, trees and rock shelters.

Chert a fine grained sedimentary rock. A universally preferred rock type for constructing stone tools.

Conchoidal relates to stone tool construction, a specific fracture type created when a chert is struck with a hard instrument and a flake is removed. The fracture pattern produces a flake that appears bent.

Core a larger piece of stone typically used to create a flake. Identified by the scars of flake removal on its surface.

Cortex an outer mineral layer of rock/stone. May be exposed in the course of weathering and tool making.

Culture the concept of culture is defined as the “set of distinctive spiritual, material, intellectual and emotional features of society or a social group” including, “art and literature, lifestyles, ways of living together, value systems traditions and beliefs.” (UNESCO, 2001)

Cultural heritage significance: archaeological, anthropological, contemporary, historical, scientific, social or spiritual significance; and significance in accordance with Aboriginal traditions (*Aboriginal Heritage Act 2006)*.

Datum point a specific, fixed location from which all measurements on a site are calibrated from. A benchmark.

Debitage the by-products left over from the manufacture of stone tools.

Excavation the digging up and careful recording of sites of archaeological importance.

Feature a physical structure or item, for example; a post hole, pit, floor, that was created by humans but is not portable and has not been removed from the site.

Flake material removed from a core. Indication of a bulb of percussion and striking platform are typically present. Usually used as a tool.

Formal Tools An artefact consciously shaped by flaking, retouching or grinding to create a predetermined tool. Tool types can include scrapers, backed pieces and axes.

Geology the science concerned with the origin, evolution and structure of the earth.

Geomorphology a branch of geology concerned with the origin, evolution and physical features of the surface of the earth.

Harm: anything that damages, defaces, desecrates, destroys, disturbs, injures or interferes with Aboriginal cultural heritage (*Aboriginal Heritage Act 2006)*.

Hearth usually a sub-surface feature found eroding from a river bank or a sand dune. Typically indicates a place where Aboriginal peoples cooked food. Hearth remains are identifiable by the presence of charcoal and sometimes clay balls. Remains of burnt bone or shell are sometimes preserved within the hearth.

Heritage Advisor: a person who has the qualifications and experience required under Section 189 of the *Aboriginal Heritage Act 2006*.

In situ referring to an artefact that has remained in its original position since the time the artefact was neglected.

Manuport a natural object found in the incorrect geological context. Most likely transported and discarded by humans.

Midden A deposit of debris located near a settlement area. Contains by-products of human activity (shell, bone, organic waste).

Mound an accumulation of soil/dirt, most likely hearth debris that was deposited from a fire pit over time to form an earthen formation. Mounds can be composed of a selection of materials, for example; charcoal, burnt clay, bones and stone artefacts.

Off-site data evidence gathered from a range of disciplines to provide important evidence about the overall human exploitation of the activity area.

Pictograph painted designs usually found on rock surfaces of natural or abstract symbolic aboriginal motifs.

Registered Aboriginal party as defined under Section 5 of the *Aboriginal Heritage Act 2006* as;

A registered Aboriginal party has the following function –

a. To act as a primary source of advice and knowledge for the Minister, Secretary and Council on matters relating to Aboriginal Places located in or Aboriginal objects originating from the area for which the party is registered;

b. To advise the Minister regarding , and to negotiate, the return of Aboriginal cultural heritage that relates to the area for which the party is registered;

c. To consider and advise on applications for cultural heritage permits;

d. To evaluate and approve or refuse to approve cultural heritage management plans that relate to the area for which the party is registered;

e. To enter into cultural heritage agreements;

f. To apply for interim and ongoing protection declarations;

fa. To provide general advice regarding Aboriginal cultural heritage relating to the area for which the party is registered;

fb. To perform functions under this Act in relation to cultural heritage management plans, cultural heritage permits, cultural heritage agreements, preliminary Aboriginal heritage tests, Aboriginal cultural heritage land management agreements and Aboriginal intangible heritage agreements;

fc. To perform functions under this Act in relation to cultural heritage permits, including the granting of permits;

fd. To advise the Minister administering the **Planning and Environment Act 1987** on proposed amendments to planning schemes which may affect the protection, management or conservation of places or objects of aboriginal cultural heritage significance;

fe. To report to the Council annually on the performance of its functions under this Act, including any fees and charges paid to or imposed by the party in respect of the year;

ff. To nominate information about Aboriginal cultural heritage to be restricted information on the register;

g. To carry out and other functions conferred on registered Aboriginal parties by or under this Act.

Retouch lightly striking of a flake to shape into a usable stone tool.

Sacred as defined under Section 5 of the *Aboriginal Heritage Act 2006* as; means scared according to Aboriginal tradition

Scarred Tree removal of strips of bark from a tree by aboriginal peoples for use as tools, utensil or canoes. Usually a mature tree dating from aboriginal activity in the area, difficult to determine from natural scarring.

Scraper a flake that exhibits evidence of retouch creating a consistent edge. Types of scraper include 'end' and 'edge'.

Secret as defined under Section 5 of the *Aboriginal Heritage Act 2006* as; means secret according to Aboriginal tradition

Secret or sacred object includes an Aboriginal object directly associated with a traditional Aboriginal burial.

Sediment soils transported over distances (alluvial, Aeolian etc) and have accumulated in a new area.

Shell Midden a surface scatter comprised primarily of shell debris. Can contain a mixture of stone artefacts, charcoal and bone. Usually located in coastline regions.

Stratigraphy The study of the layers (strata) of soils and sediments at an archaeological site.

Surface survey the process of searching for archaeological remains by physically walking and searching the landscape.

Test pit a small excavation dug into a study area to determine the depth and character of the soil. Assists in determining the likelihood of areas of cultural heritage.

Transect decided segments of land put aside for sampling located throughout a survey area. Primary function is to collect data which is representative of the survey area.

Traditional owners as defined under Section 5 of the *Aboriginal Heritage Act 2006* as

1. For the purpose of this Act, a person is a traditional owner of an area if –
    a. The person is an Aboriginal person with particular knowledge about traditions, observances, customs or beliefs associated with the area; and
    b. The person –
        i. Has responsibility under Aboriginal Tradition for significant Aboriginal Places located in, or significant Aboriginal objects originating from, the area; or
        ii. Is a member of a family or clan group that is recognised as having responsibility under Aboriginal Places located in, or significant Aboriginal objects originating from, the area.
2. For the purposes of this Act, a person is a traditional owner of Aboriginal ancestral remains if the person is an Aboriginal person who –
    a. Has responsibility under Aboriginal tradition for the remains; and

b. Is a member of a family or clan group that is recognised as having responsibility under Aboriginal tradition for the remains.

3. For the purpose of this Act, a person is a traditional owner of a secret or sacred object if the person is an aboriginal person who –

   a. Has responsibility under Aboriginal tradition for the object; and

   b. Is a member of a family or clan group that is recognised as having responsibility under aboriginal tradition for the object.

Trench an archaeological excavation unit, when the length is longer than the width.

Weathering the natural alteration of an object or rock over time via chemical or physical means.

Appendix D

Excavations Catalogue

No.	Grid Coordinates GDA94, Zone 55		Depth (mm)	Description	Munsell	pH	Artefacts	Photo
	Easting	Northing						
TP01 Size: 1m x 1m Depth: 0.4m	274183.15	5759589.88	0 – 220	FILL - Unconsolidated sandy clay, dark grey with brown mottling. Frequent angular road base pieces, weathered basalt, limestone and rootlets.	10 YR 2/2	8	No	
			220-300	FILL Brown silty clay and angular road base fragments (50%)	10 YR 4/3	8	No	
			300 +	Stiff dark grey clay, iron nodules, infrequent	10 YR 2/1	8	No	
STP01 Size: 0.5m x 0.5m Depth: 0.2m	274162.60	5759550.47	0-200	FILL brown silty clay with brick, limestone, roof tile fragments	10 YR 4/3	8.5	No	
			200+	Basalt base	-	-	No	

No.	Grid Coordinates GDA94, Zone 55		Depth (mm)	Description	Munsell	pH	Artefacts	Photo
	Easting	Northing						
STP02 Size: 0.5m x 0.5m Depth: 0.3m	274087.70	5759538.37	0-290	FILL brown silty clay with brick, limestone, ceramic, glass and plastic	10 YR 4/3	9	No	
			290+	Siff dark grey clay base	2.5 YR 2/1	8	No	
STP03 Size: 0.5m x 0.5m Depth: 0.1m	274096.17	5759515.78	0-80	Brown silty clay with brick fragments and grass rootlets	10 YR 4/3	9	No	
			80+	Basalt base	-	-	No	

Appendix E

Details of Aboriginal cultural heritage previously within the Activity Area

E-1 Details of Aboriginal Cultural Heritage previously within the Activity Area

E-1-1 Assessment of the Aboriginal cultural heritage

No Aboriginal cultural heritage material was identified during the course of this assessment.

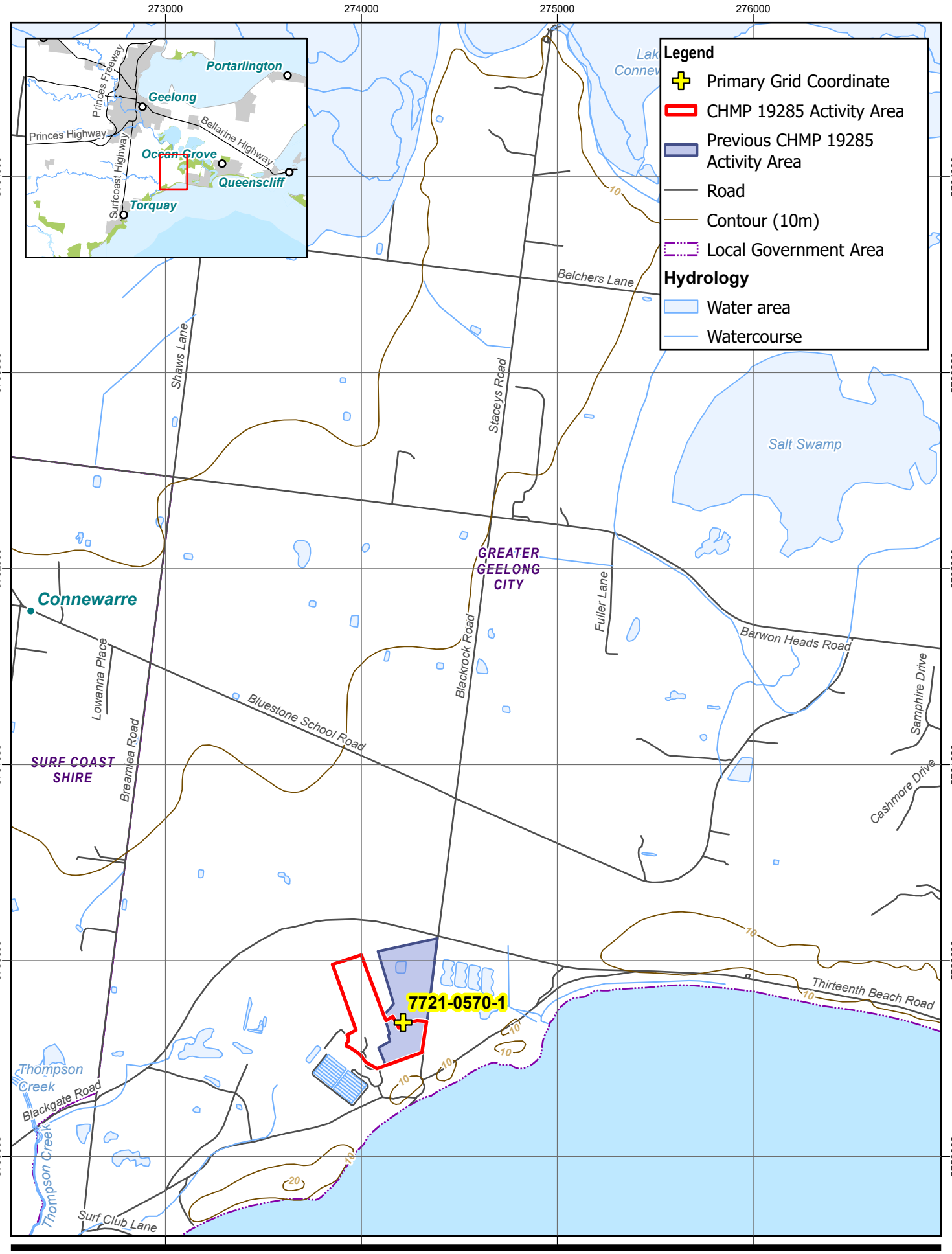
One previously identified Aboriginal Place was located within the previous extent of the Activity Area, VAHR 7721-0570 Black Rocks (Terra Culture, 2003; Unearthed Heritage, 2021). This Aboriginal Place is an artefact scatter, registered in 2003 and comprises a single silcrete flake in a surface context. The site card notes that the artefact was identified in a shallow depression adjacent to an artificial mound. The location details were updated following a place inspection as part of a cultural heritage assessment by Unearthed Heritage (2021).

This place was revisited during the standard assessment and was unable to be relocated. No further Aboriginal cultural heritage material was identified. Subsequent changes to the Activity Area removed the place from the Activity Area and no further assessment was conducted.

Plate 62 ***Location of VAHR 7721-0570, facing east (R. Stewart 26.04.2023)***

Plate 63 *Location of VAHR 7721-0570, facing west (R. Stewart 26.04.2023)*

Plate 64 *Location of VAHR 7721-0570, facing north (R. Stewart 26.04.2023)*



Paper Size ISO A4

0 100 200 300 400 500

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

VAHR 7721-0570 - Black Rocks
Artefact Scatter

Easting: 274212
Northing: 5759684

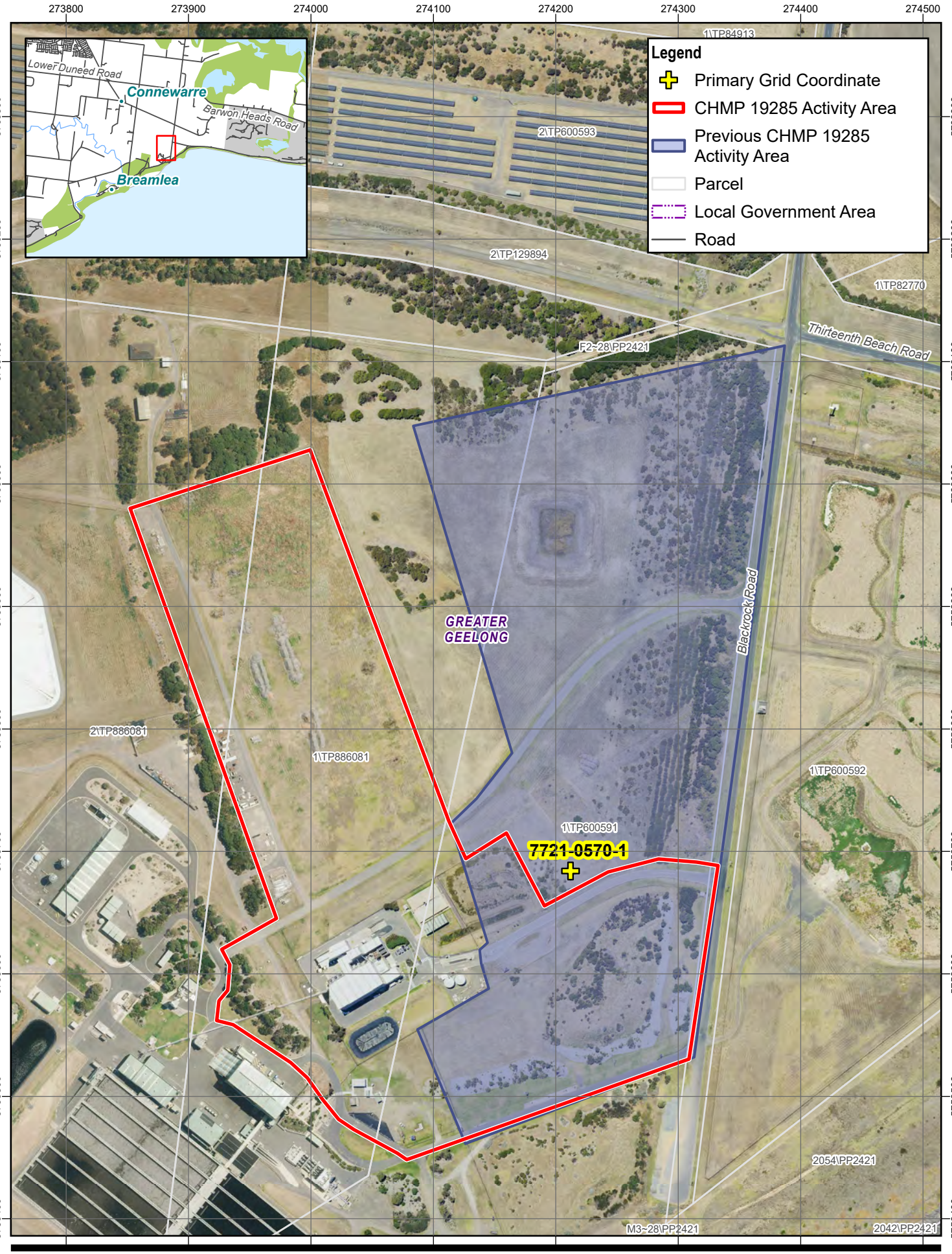
Map sheet number: 7721-2-1-4

Project No. **31-12585384**
Revision No. **-**
Date **7/8/2023**

Location Plan

\\ghdnet\ghd\AU\Melbourne\Projects\31\12585384\GIS\Maps\Deliverables\12585384_Heritage_figures\12585384_Heritage_figures.aprx - VAHR_7721_0570_LocationPlan_A4P_RevA
Print date: 08 Aug 2023 - 14:55

Data source: VicMap (2023), FP-SR (2022); GHD (2023). Created by: sblades



Paper Size ISO A4

0 50 100 150

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

VAHR 7721-0570 - Black Rocks
Artefact Scatter

Easting: 274212
Northing: 5759684

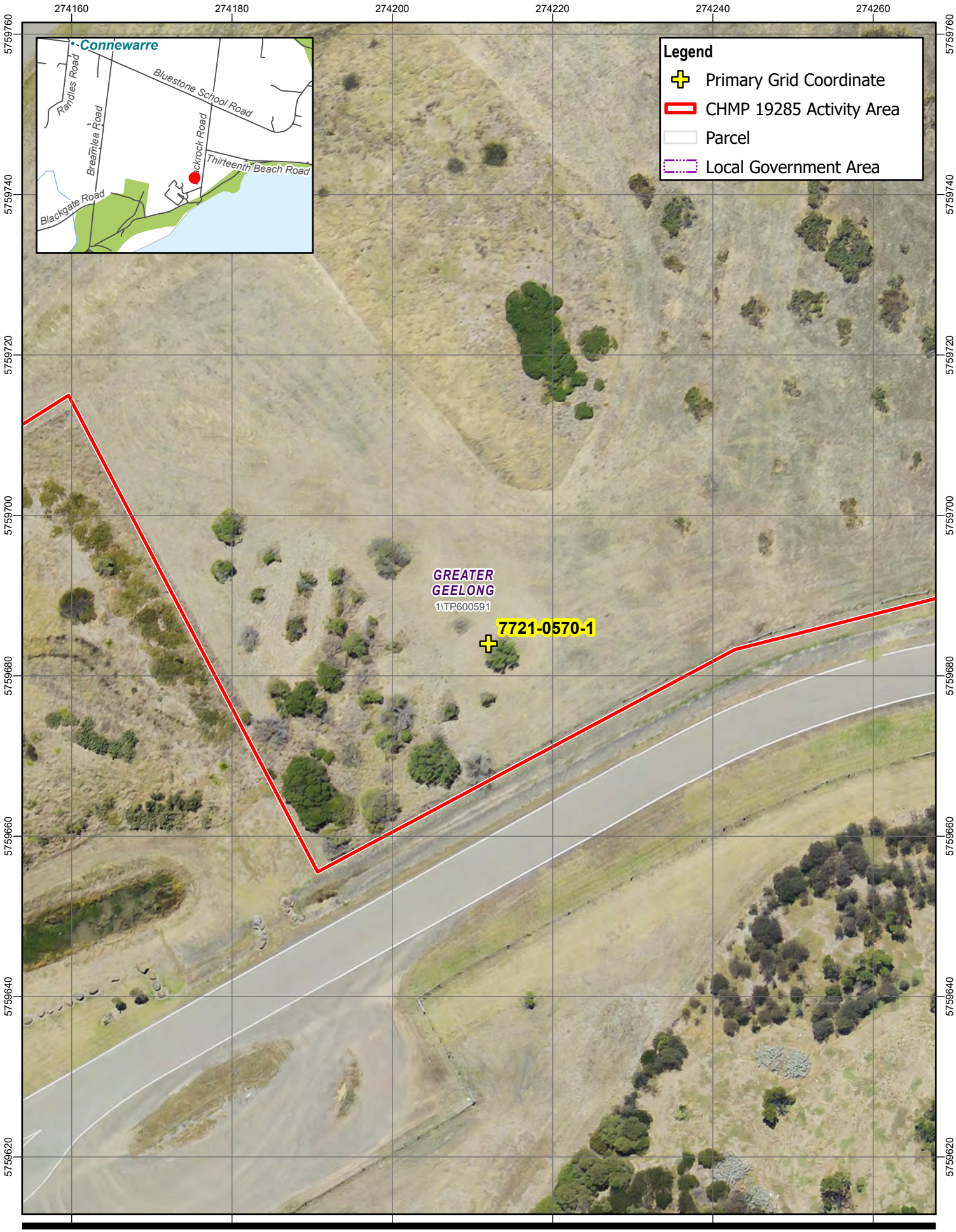
Map sheet number: 7721-2-1-4

Project No. **31-12585384**
Revision No. **-**
Date **7/8/2023**

Context Plan

\\ghdnet\ghd\AU\Melbourne\Projects\31\12585384\GIS\Maps\Deliverables\12585384_Heritage_figures\12585384_Heritage_figures.aprx - VAHR_7721_0570_ContextPlan_A4P_RevA
Print date: 08 Aug 2023 - 14:44

Data source: VicMap (2023), FP-SR (2022); GHD (2023). Created by: sblades



Paper Size ISO A4

0 5 10 15 20 25

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

VAHR 7721-0570 - Black Rocks
Artefact Scatter

Easting: 274212
Northing: 5759684

Map sheet number: 7721-2-1-4

Project No. **31-12585384**
Revision No. **-**
Date **7/8/2023**

Extent Plan

\\ghdnet\ghd\AU\Melbourne\Projects\31\12585384\GIS\Maps\Deliverables\12585384_Heritage_figures\12585384_Heritage_figures.aprx - VAHR_7721_0570_ExtentPlan_A4P_RevA
Print date: 07 Aug 2023 - 02:35

Data source: VicMap (2023), FP-SR (2022); GHD (2023). Created by: sblades

Appendix F

Geotechnical Borehole Logs

BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH001

SHEET 1 OF 1

Position : 274115.0 E 5760007.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°	**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud	**Checked :** CJ
Date Started : 27/4/2023	**Date Completed :** 27/4/2023	**Logged by :** HO	**Date :** 03/05/2023

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL							
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
1	Solid Flight Auger	Nil	GNE	B (0.3-0.8m) U63 (0.7-1.2m) recovery 330mm PP 1.7/1.5/1.6 kg/cm2 SV 71/34kPa 19mm vane SPT(1.2m) 13/7/14 N=21 recovery 290mm	0.10		CI	TOPSOIL: CLAY trace sand, dark grey; fine grained sand; trace rootlets	w<PL	F		4 3	0.00: TOPSOIL
							CH	CLAY, dark grey; trace rootlets	w<PL	S		1 1 1 1 2 1 1 1 2 1 2 3	0.10: NATURAL
								0.50m, less rootlets					
					1.30		CI	Recovered as: CLAY with gravel, dark grey mottled dark brown and red; fine to coarse, sub-rounded to sub-angular gravel of basalt; iron staining	w<PL	VSt		16 8 8 20	1.30: EXTREMELY WEATHERED BASALT
					1.60			End of Borehole at 1.6 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.					
2													
3													
4													
5													

See standard sheets for details of abbreviations & basis of descriptions

GHD
Lvl 8, 180 Lonsdale Street, Melbourne VIC 3000
T: 61 3 8687 8000 F: 61 3 8687 8111 E: melmail@ghd.com.au
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 12585384

BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water		**HOLE No. BH002**	
Project : RRON Functional Design			
Location : Black Rock Water Reclamation Plant, Connewarre, Victoria		**SHEET 1 OF 3**	
Position : 274249.0 E 5759961.0 N MGA94 55 **Surface RL:** N/A AHD	**Angle from Horiz. :** 90°		**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck **Contractor :** East Drilling	**Driller :** Moe Hammoud		**Checked :** CJ
Date Started : 27/4/2023 **Date Completed :** 27/4/2023	**Logged by :** HO		**Date :** 03/05/2023

DRILLING					MATERIAL								
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
0	Solid Flight Auger	Nil		B (0.2-0.8m)	0.10		CH	TOPSOIL: CLAY trace sand, dark grey-black; fine grained sand; trace rootlets	w≈PL	F-St		6	0.00: NATURAL
							CH	CLAY, dark grey-black; trace rootlets	w≈PL	VS		3 1 0	
					0.50					S		1 2	
					0.80					F		1 2 3	
1				U63 (1.0-1.5m) recovery 400mm PP 1.2/1.0/1.2 kg/cm2 SV 46/40kPa 19mm vane	1.50					St		2 2 2 3 3 3 5 6	
2				U63 (2.5-2.8m) recovery 300mm PP >6/>6/4.5 kg/cm2 SV 157/34kPa 19mm vane	2.50			2.80m, trace BASALT gravel in U63 sample		St-VSt			
3			▽		3.50		Cl	CLAY trace sand and gravel, pale brown-red; fine to coarse grained sand; fine, sub-rounded to sub-angular gravel of ironstone and quartz	w>PL	St-VSt			3.50: Groundwater encountered at 3.50m (22/04/2023 at 1:25 pm)
4				U63 (4.0-4.5m) recovery 220mm PP >6/>6/>6 kg/cm2 SV(4.22m) refusal	4.00			4.50m, becoming pale red		VSt			
5													

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Job No. **12585384**

BOREHOLE LOG SHEET

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH002

SHEET 2 OF 3

Position : 274249.0 E 5759961.0 N MGA94 55 **Surface RL:** N/A AHD **Angle from Horiz. :** 90° **Processed :** DF

Rig Type : 2017 Fraste **Mounting:** Truck **Contractor :** East Drilling **Driller :** Moe Hammoud **Checked :** CJ

Date Started : 27/4/2023 **Date Completed :** 27/4/2023 **Logged by :** HO **Date :** 03/05/2023

DRILLING					MATERIAL							
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40 Recorded Blows	Comments/ Observations
							CI	CLAY trace sand and gravel, pale brown-red; fine to coarse grained sand; fine, sub-rounded to sub-angular gravel of ironstone and quartz (continued)	w>PL	VSt		
				SPT(5.5m) 15/16/16 for 390mm HB recovery 380mm	5.50		CI	CLAY trace sand and gravel, pale white-grey mottled yellow-orange, red and dark grey; fine to coarse grained sand; sub-rounded to rounded gravel of ironstone and quartz	w>PL	H		5.50: SPT testing not possible below this depth, due to limited AWJ rods
6	Solid Flight Auger	Nil			8.00		CI	Recovered as: Gravelly CLAY trace sand, pale brown-pink mottled white; fine to coarse grained sand; fine to medium, rounded to sub-rounded gravel of quartz	w>PL	H		
7												
8												
9												
10												

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BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH002

SHEET 3 OF 3

Position : 274249.0 E 5759961.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°		**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud		**Checked :** CJ
Date Started : 27/4/2023	**Date Completed :** 27/4/2023	**Logged by :** HO		**Date :** 03/05/2023

DRILLING					MATERIAL								Note: * indicates signatures on original issue of log or last revision of log
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	**Description** SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	**DCP Test Results** blows per 100mm 20 40 Recorded Blows		**Comments/ Observations**
11	Solid Flight Auger	Nil			11.00		CI	Recovered as: Gravelly CLAY trace sand, pale brown-pink mottled white; fine to coarse grained sand; fine to medium, rounded to sub-rounded gravel of quartz (continued)	w>PL	H			
								End of Borehole at 11 metres. Limit of auger capacity Borehole backfilled with drilling spoil from the hole.					
12													
13													
14													
15													

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BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water		**HOLE No. BH003**	
Project : RRON Functional Design			
Location : Black Rock Water Reclamation Plant, Connewarre, Victoria		**SHEET 1 OF 1**	
Position : 274174.0 E 5759870.0 N MGA94 55 **Surface RL:** N/A AHD	**Angle from Horiz. :** 90°		**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck **Contractor :** East Drilling	**Driller :** Moe Hammoud		**Checked :** CJ
Date Started : 27/4/2023 **Date Completed :** 27/4/2023	**Logged by :** HO		**Date :** 03/05/2023

DRILLING					MATERIAL							
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
													Note: * indicates signatures on original issue of log or last revision of log
1	Solid Flight Auger	Nil	GNE	B (0.3-0.9m) U63 (1.0-1.5m) recovery 360mm PP 1.2/1.1/1.3 kg/cm2 SV 34/26kPa 19mm vane	0.10 1.50 2.20 2.30		CI-CH CH CI	TOPSOIL: CLAY, dark grey mottled dark brown; trace rootlets CLAY, dark grey mottled dark brown; trace rootlets 0.50m, less rootlets CLAY trace gravel, yellow-brown; fine to medium, sub-rounded to sub-angular gravel of basalt; slight rootlets End of Borehole at 2.3 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.	w≈PL w≈PL w ≈ PL	F St St		3 4 3 2 2 2 2 3 2 3 2 2 3 3 3 4 6	0.00: NATURAL 2.20: EXTREMELY WEATHERED BASALT
2													
3													
4													
5													

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BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH004

SHEET 1 OF 2

Position : 274253.0 E 5759816.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°	**Processed :** DF
Rig Type : 2017 Fraste	**Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud	**Checked :** CJ
Date Started : 26/4/2023	**Date Completed :** 26/4/2023	**Logged by :** HO	**Date :** 03/05/2023

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL							
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description: SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results: blows per 100mm (20, 40) / Recorded Blows	Comments/ Observations
1	Solid Flight Auger	Nil	▼	U63 (0.5-1.0m) recovery 430mm PP 1.5/1.6/1.6 kg/cm2 SV 48/9kPa 19mm vane	0.10		CI	TOPSOIL: CLAY trace sand, dark grey mottled pale brown; fine grained sand	w≈PL	F	4 2	0.00: NATURAL
							CH	CLAY trace sand, dark grey mottled pale brown; fine grained sand	w≈PL	S	2 1 1 1 1 1 1 2 1	
				SPT(1.0m) 1/2/5 N=7 recovery 510mm	1.00		CH	CLAY, dark grey-brown	w ≈ PL	S	2 1 2 4	
					1.40					St	5 6	
2												2.00: Groundwater observed at 2.00m bgl at 1:00PM after initial observation of 7.00m at 12:00PM (26/04/2023)
				SPT(2.5m) 3/5/9 N=14 recovery 510mm	2.50		CI	CLAY trace sand, grey mottled brown and dark red; fine-grained sand	w ≈ PL	St		
3												
4				SPT(4.0m) 8/9/11 N=20 recovery 310mm	4.00				w<PL	VSt		
5					5.50							

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BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water
Project : RRON Functional Design
Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH004

SHEET 2 OF 2

Position : 274253.0 E 5759816.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°	**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud	**Checked :** CJ
Date Started : 26/4/2023	**Date Completed :** 26/4/2023	**Logged by :** HO	**Date :** 03/05/2023

DRILLING					MATERIAL								Note: * indicates signatures on original issue of log or last revision of log
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40 Recorded Blows		Comments/ Observations
6				SPT(5.5m) 8 for 150mm recovery 240mm				CLAY trace sand, grey mottled brown; fine grained sand	w<PL	St-Vst			5.50: SPT test incomplete due to limited AW rods
7	Solid Flight Auger	Nil	▽		7.00		Cl	CLAY, brown mottled dark grey	w>PL	St			7.00: No further sampling possible due to lack of rods and collapsing hole Groundwater table initally encountered at 7.00m bgl (26/04/2023 12:00PM)
8					8.00		Cl	Sandy CLAY, pale brown-white; fine to coarse grained sand	w>PL	St			
9								9.00m, becoming pale grey-white					
10					10.00			End of Borehole at 10 metres. Limit of auger capacity Borehole backfilled with drilling spoil from the hole.					
11													

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BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : ~~128~~ Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH005

SHEET 1 OF 1

Position : 274180.0 E 5759763.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°		**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud		**Checked :** CJ
Date Started : 27/4/2023	**Date Completed :** 27/4/2023	**Logged by :** HO		**Date :** 03/05/2023

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL								
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
0	Solid Flight Auger	Nil	GNE	SPT(0.5m) 3/5/12 for 410mm HB recovery 340mm B (0.5-1.0m)			(CL)	FILL: CLAY trace sand, dark grey-brown mottled pale brown; fine grained sand; rootlets	(w ≈ PL)	(St-VSt)		4 3	0.00: FILL
					0.50		CH	CLAY with sand trace gravel, dark grey-brown; fine to coarse grained sand; fine sub-round to sub-angular gravel	w<PL	St-VSt		13 14 5 5 5	0.50: NATURAL
					0.70					VSt		12 10	
1					1.00 1.10		CI	CLAY trace gravel, dark grey-brown; fine to medium, sub-rounded to sub-angular gravel of basalt	w<PL	VSt		21	1.00: EXTREMELY WEATHERED BASALT
								End of Borehole at 1.1 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.					
2													
3													
4													
5													

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BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water
Project : RRON Functional Design
Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH006

SHEET 1 OF 1

Position : 274216.0 E 5759732.0 N MGA94 55 **Surface RL:** N/A AHD **Angle from Horiz. :** 90° **Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck **Contractor :** East Drilling **Driller :** Moe Hammoud **Checked :** CJ
Date Started : 27/4/2023 **Date Completed :** 27/4/2023 **Logged by :** HO **Date :** 03/05/2023

DRILLING					MATERIAL								Note: * indicates signatures on original issue of log or last revision of log
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
1	Solid Flight Auger	Nil	GNE	SPT(1.0m) 2/2/5 N=7 recovery 200mm	0.30		(CL)	FILL: CLAY trace gravel and sand, brown mottled red and grey; fine to medium grained sand; fine to medium, sub-angular to angular gravel of basalt; brick inclusions	(w<PL)	(F)		1 1 3 5 8 6 3 3 5 3 6 6 5 4 3 4 2	0.00: FILL (mound of fill approximately 1.5m high)
										(St)			
2				B (1.6-2.0m)	1.60		CH	CLAY with sand trace gravel, dark grey-black; fine to coarse grained sand; fine sub-round to sub-angular gravel; trace rootlets	w ≈ PL	F-St			1.60: NATURAL Unable to recover sufficient soil for bulk sample due to basalt floaters
					2.00		CI	CLAY trace sand, dark grey mottled white; fine grained sand; possibly carbonaceous	w ≈ PL	F-St			2.30: EXTREMELY WEATHERED BASALT
3					2.30			End of Borehole at 2.3 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.					
4													
5													

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BOREHOLE LOG SHEET

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH007

SHEET 1 OF 1

Position : 274239.0 E 5759695.0 N MGA94 55 **Surface RL:** N/A AHD **Angle from Horiz. :** 90° **Processed :** DF

Rig Type : 2017 Fraste **Mounting:** Truck **Contractor :** East Drilling **Driller :** Moe Hammoud **Checked :** CJ

Date Started : 26/4/2023 **Date Completed :** 26/4/2023 **Logged by :** HO **Date :** 03/05/2023

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL							
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description: SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results: blows per 100mm (20, 40) / Recorded Blows	Comments/ Observations
0	Solid Flight Auger	Nil	GNE	B (0.2-0.8m)	0.10		CI	TOPSOIL: CLAY trace sand, dark grey-brown; fine-grained sand; trace rootlets	w≈PL	St	3 5	0.00: NATURAL
							CH	CLAY with sand trace gravel, dark grey-brown; fine-grained sand; fine sub-round to sub-angular gravel; trace rootlets	w≈PL	S-F	4 5 2 2 1 2 2 2 5	
1				SPT(1.0m) 3/6/9 N=15 recovery 460mm	1.00		CH	Sandy CLAY, dark grey-brown; fine-grained sand	w ≈ PL	St-VSt	6 11 13 13 15 19	
				U63 (1.5-2.0m) recovery 445mm PP 3.5/4.1/4.1 kg/cm2 SV 83/25kPa 19mm vane								
2					2.50		CI	CLAY trace sand and gravel, dark grey mottled dark brown; fine to coarse grained sand; fine to coarse, sub-angular to angular gravel of basalt	w ≈ PL	St-VSt		2.50: EXTREMELY WEATHERED BASALT
				SPT(2.5m) 16/14/18 N=32 recovery 470mm								
3												
4					4.00			End of Borehole at 4 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.				
5												

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GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH008

SHEET 1 OF 1

Position : 274171.0 E 5759708.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°	**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud	**Checked :** CJ
Date Started : 27/4/2023	**Date Completed :** 27/4/2023	**Logged by :** HO	**Date :** 03/05/2023

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DRILLING					MATERIAL								
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
1	Solid Flight Auger	Nil	GNE	U63 (0.2-0.7m) recovery 380mm PP >6/>6/>6 kg/cm2 SV refusal	0.10		CL	TOPSOIL: CLAY dark grey-black; trace rootlets	w<PL	St		3 4	0.00: NATURAL
							CH	CLAY with sand trace gravel, dark grey-black; fine to coarse grained sand; fine sub-round to sub-angular gravel; trace rootlets	w<PL			5 6 6 6	
					0.60					VSt-H		18	
					0.70		CI	Recovered as: CLAY trace sand, dark brown; fine to medium grained sand	w<PL	VSt-H		26	0.70: EXTREMELY WEATHERED BASALT
					1.00			End of Borehole at 1 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.					
2													
3													
4													
5													

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BOREHOLE LOG SHEET

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH009

SHEET 1 OF 1

Position : 274177.0 E 5759655.0 N MGA94 55 **Surface RL:** N/A AHD **Angle from Horiz. :** 90° **Processed :** DF

Rig Type : 2017 Fraste **Mounting:** Truck **Contractor :** East Drilling **Driller :** Moe Hammoud **Checked :** CJ

Date Started : 26/4/2023 **Date Completed :** 26/4/2023 **Logged by :** HO **Date :** 03/05/2023

DRILLING					MATERIAL								
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
0	Solid Flight Auger	Nil	GNE	B (0.2-0.8m) U63 (0.5-0.9m) recovery 300mm PP >6/>6/>6 kg/cm2 SV refusal	0.20		CI	FILL: CLAY trace sand and gravel, dark grey mottled brown; fine grained sand; fine to coarse, sub-rounded to sub-angular gravel of basalt; trace rootlets	(w<PL)	(St)		5 4	0.00: FILL
							CH	CLAY with sand trace gravel, dark grey-black; fine to coarse grained sand; fine gravel	w ≈ PL	St		4 5 8 6	0.20: Possible NATURAL
					0.70		CI	CLAY trace sand, dark grey mottled brown and dark red; fine grained sand	w ≈ PL	VSt		5 9 13	0.90: DCP refusal at 0.90m 0.90: EXTREMELY WEATHERED BASALT
					0.90			End of Borehole at 0.9 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.					
1													
2													
3													
4													
5													

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BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : ~~133~~ Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH010

SHEET 1 OF 1

Position : 274224.0 E 5759637.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°	**Processed :** DF
Rig Type : 2017 Fraste **Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud	**Checked :** CJ
Date Started : 26/4/2023	**Date Completed :** 26/4/2023	**Logged by :** HO	**Date :** 03/05/2023

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL							
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
1	Solid Flight Auger	Nil	GNE	SPT(0.5m) 3/6/7 N=13 recovery 170mm U63 (1.0-1.5m) recovery 440mm PP 4.5/3.6/3.9 kg/cm2 SV 163/37kPa 19mm vane	0.20 0.30 1.50		CL CH	TOPSOIL: CLAY trace sand, dark grey-black mottled brown and red; fine grained sand CLAY with sand trace gravel, dark grey-black mottled brown; fine to coarse grained sand; fine sub-round to sub-angular gravel	w<PL w<PL	F F F-St		2 3 3 6 6 6 4 3 3 3 2 4 5 4 3 2	0.00: NATURAL 1.50: Possible EXTREMELY WEATHERED BASALT
2								End of Borehole at 1.5 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.				2	
3													
4													
5													

See standard sheets for details of abbreviations & basis of descriptions

GHD
Lvl 8, 180 Lonsdale Street, Melbourne VIC 3000
T: 61 3 8687 8000 F: 61 3 8687 8111 E: melmail@ghd.com.au
CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 12585384

BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : 134 Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH011

SHEET 1 OF 1

Position : 274197.0 E 5759570.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°		**Processed :** DF
Rig Type : 2017 Fraste	**Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud	**Checked :** CJ
Date Started : 26/4/2023	**Date Completed :** 26/4/2023		**Logged by :** HO	**Date :** 03/05/2023

DRILLING					MATERIAL								
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
1	Solid Flight Auger	Nil	GNE	B (0.2-0.9m) U63 (0.4-0.9m) recovery 260mm PP 4.5/5/5.2 kg/cm2 SV 115/26kPa 19mm vane	0.20		CI	TOPSOIL: CLAY with sand, dark grey-black mottled red; fine grained sand; trace rootlets	w<PL	F-St		3 3	0.00: TOPSOIL
							CH	CLAY with sand trace gravel, dark grey-black; fine to coarse grained sand; fine sub-round to sub-angular gravel	w = PL	St		4 6 9 7 9 6 5 8	0.20: NATURAL
					1.00		CI	Sandy CLAY trace gravel, dark grey-black; fine to coarse grained sand; fine, sub-rounded to sub-angular gravel of basalt	w = PL	F			1.00: DCP refusal at 1.00m 1.50: EXTREMELY WEATHERED BASALT
					1.50			End of Borehole at 1.5 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.					
2													
3													
4													
5													

Note: * indicates signatures on original issue of log or last revision of log

See standard sheets for details of abbreviations & basis of descriptions

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CONSULTING GEOTECHNICAL ENGINEERS AND GEOLOGISTS

Job No. 12585384

BOREHOLE LOG SHEET

GEO_BOREHOLE_DCP BARWON WATER - RRON.GPJ GHD_GEO_TEMPLATE_VICTORIA.GDT 3/5/23

Client : Barwon Water

Project : RRON Functional Design

Location : Black Rock Water Reclamation Plant, Connewarre, Victoria

HOLE No. BH012

SHEET 1 OF 1

Position : 274137.0 E 5759547.0 N MGA94 55	**Surface RL:** N/A AHD	**Angle from Horiz. :** 90°	**Processed :** DF
Rig Type : 2017 Fraste	**Mounting:** Truck	**Contractor :** East Drilling	**Driller :** Moe Hammoud	**Checked :** CJ
Date Started : 26/4/2023	**Date Completed :** 26/4/2023	**Logged by :** HO	**Date :** 03/05/2023

Note: * indicates signatures on original issue of log or last revision of log

DRILLING					MATERIAL							
SCALE (m)	Drilling Method	Hole Support \ Casing	Water	Samples & Tests	Depth / (RL) metres	Graphic Log	USC Symbol	Description SOIL TYPE, colour, structure, minor components (origin)and ROCK TYPE, colour, grain size, structure, weathering, strength	Moisture Condition	Consistency / Density Index	DCP Test Results blows per 100mm 20 40	Recorded Blows	Comments/ Observations
0	Solid Flight Auger	Nil	GNE	SPT(0.5m) 5/6/7 N=13 recovery 140mm	0.00		(CI)	FILL: CLAY trace sand and gravel, dark brown mottled black, dark red and orange; fine to coarse grained sand; fine to medium, sub-angular to angular gravel of basalt; trace rootlets	(w<PL)	(St-VSt)		4 5	0.00: FILL
				B (0.7-1.2m) U63 (1.0-1.5m) recovery 430mm PP >6/>6/>6 kg/cm2 SV refusal	0.50		CH	CLAY with sand trace gravel, dark grey-black; fine to coarse grained sand; fine sub-round to sub-angular gravel	w<PL	St		13 11 9 5 5 6 4 6	0.50: Possible NATURAL
1					1.00		CI	Sandy CLAY trace gravel, dark grey spotted white; fine grained sand; fine sub-round to sub-angular gravel; possibly calcareous	w<PL	St St-VSt		5 6 11 7 6 8 10	1.90: EXTREMELY WEATHERED BASALT
					1.20								
					1.90			End of Borehole at 1.9 metres. Auger Refusal (Basalt floater?) Borehole backfilled with drilling spoil from the hole.					
2													
3													
4													
5													

See standard sheets for details of abbreviations & basis of descriptions

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Job No. 12585384

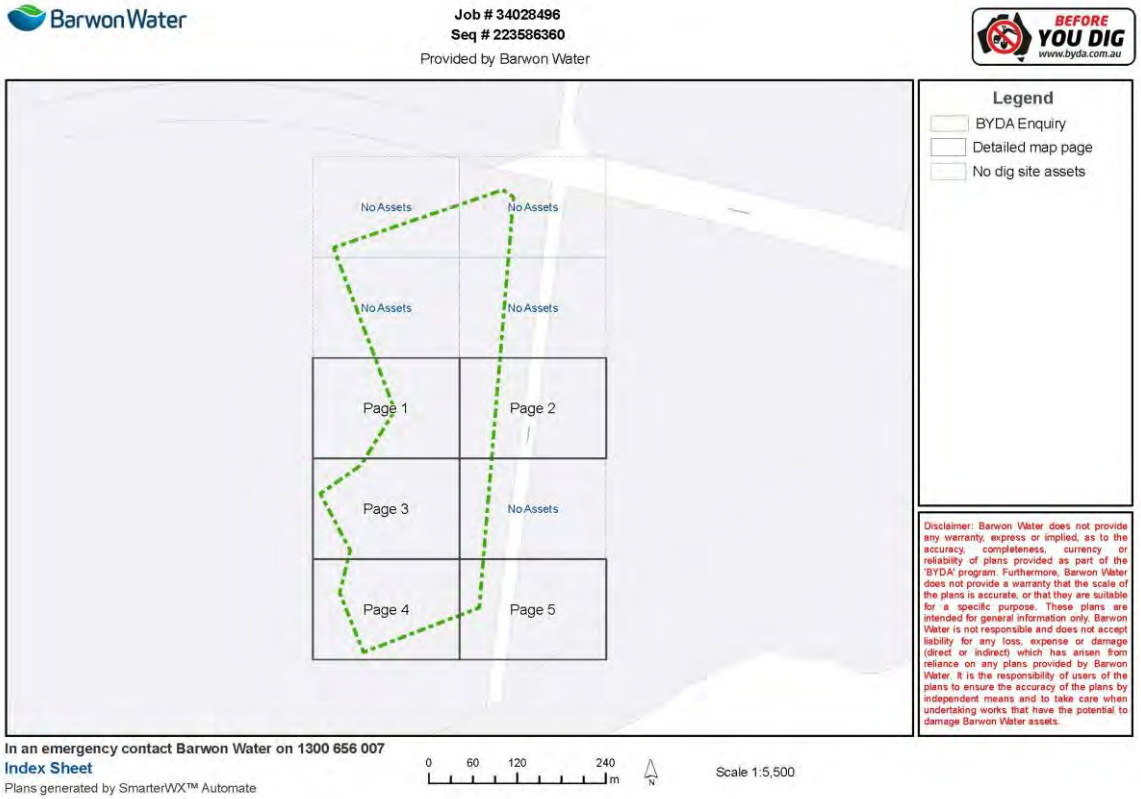
Appendix G

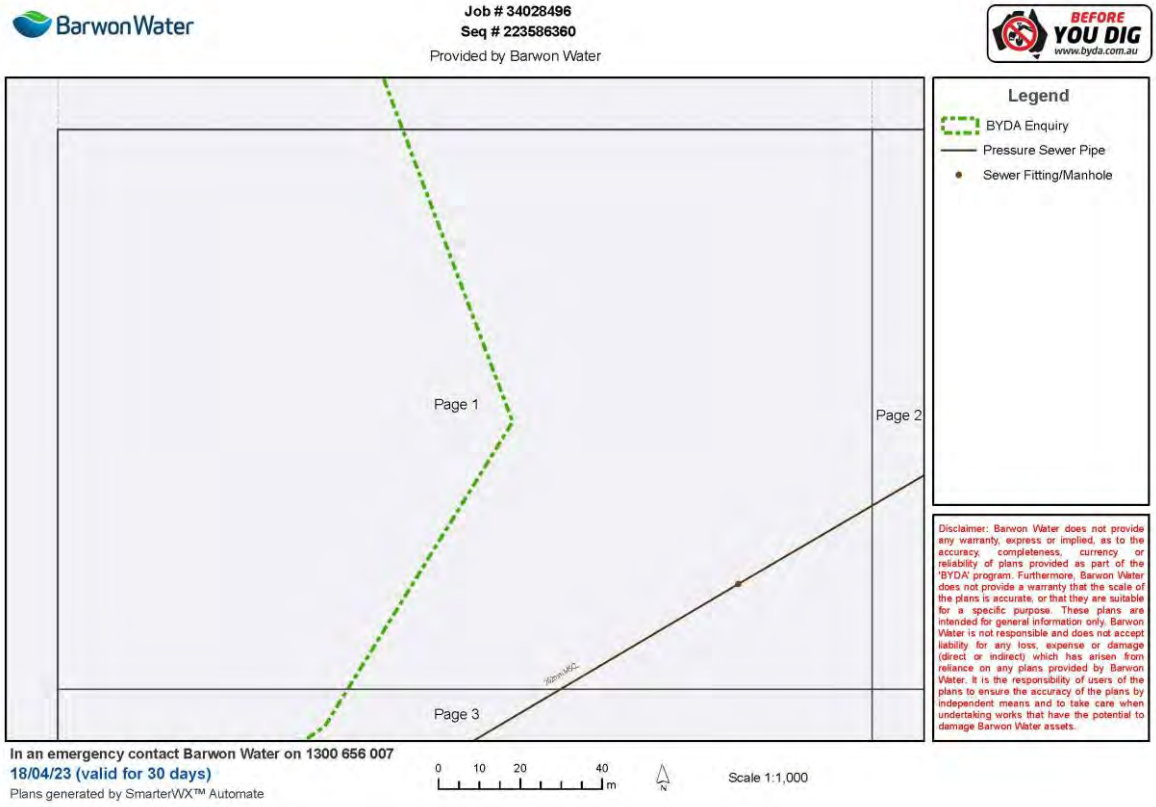
Before You Dig Australia

Ausnet


0m
700m
1400m
2100m
2800m
AusNet services
Warning - Gas HP2 Distribution Assets Present
Refer Conditions of Works Document
NOTE: AusNet Sevices has taken care to ensure that the locations of Gas Mains shown on this plan are accurate however some variations from records do exist and complete accuracy is not guaranteed. It is essential that the position of pipes be proved on site by hand excavation. AusNet Sevices shall not be liable for any loss damage claim or demand incurred either directly or indirectly resulting from any act or omission which was made in reliance in whole or in part upon this plan.
Warning - Take Precautions if Printing this Plot in Black & White.
All planned mains shall be treated as live mains, as mains under pressure may be in existence.
Gas Transmission Pipeline
Gas Distribution Mains
Planned Gas Assets
Abandoned Gas Assets
Requested Area

Barwon Water





BarwonWater

Job # 34028496
Seq # 223586360
Provided by Barwon Water

BEFORE YOU DIG www.byda.com.au

Legend
- BYDA Enquiry
- Water Pipe
- Gravity Sewer Pipe
- Pressure Sewer Pipe
- Water Fitting
- Sewer Fitting/Manhole

In an emergency contact Barwon Water on 1300 656 007
18/04/23 (valid for 30 days)
Plans generated by SmarterWX™ Automate

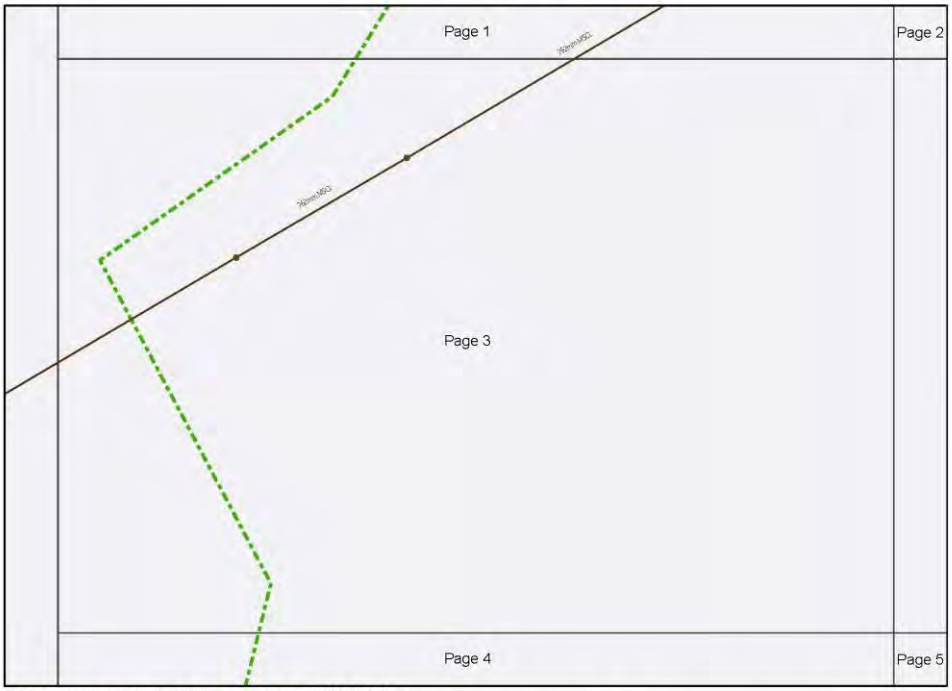
0 10 20 40 m

Scale 1:1,000

BarwonWater

Job # 34028496
Seq # 223586360
Provided by Barwon Water

BEFORE YOU DIG www.byda.com.au



Legend
- BYDA Enquiry
- Pressure Sewer Pipe
- Sewer Fitting/Manhole

In an emergency contact Barwon Water on 1300 656 007
18/04/23 (valid for 30 days)
Plans generated by SmarterWX™ Automate

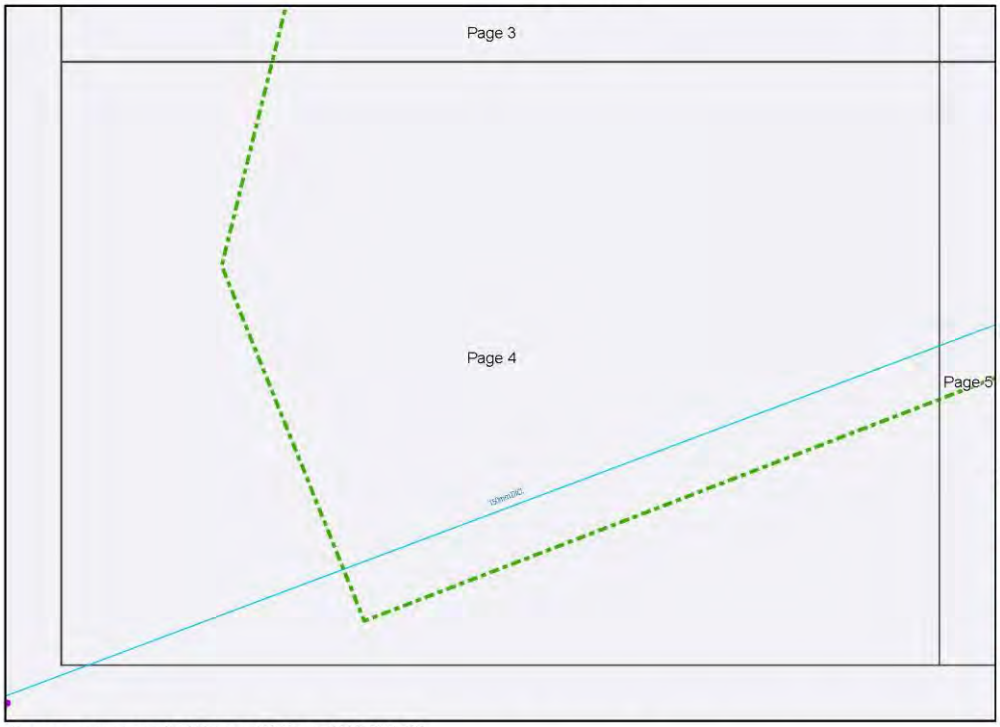
0 10 20 40 m

Scale 1:1,000

BarwonWater

Job # 34028496
Seq # 223586360
Provided by Barwon Water

BEFORE YOU DIG www.byda.com.au



Legend
- BYDA Enquiry
- Water Pipe
- Recycled Water Pipe
- Recycled Water Fitting

Disclaimer: Barwon Water does not provide any warranty, express or implied, as to the accuracy, completeness, currency or reliability of plans provided as part of the 'BYDA' program. Furthermore, Barwon Water does not provide a warranty that the scale of the plans is accurate, or that they are suitable for a specific purpose. These plans are intended for general information only. Barwon Water is not responsible and does not accept liability for any loss, expense or damage (direct or indirect) which has arisen from reliance on any plans provided by Barwon Water. It is the responsibility of users of the plans to ensure the accuracy of the plans by independent means and to take care when undertaking works that have the potential to damage Barwon Water assets.

In an emergency contact Barwon Water on 1300 656 007
18/04/23 (valid for 30 days)
Plans generated by SmarterWX™ Automate

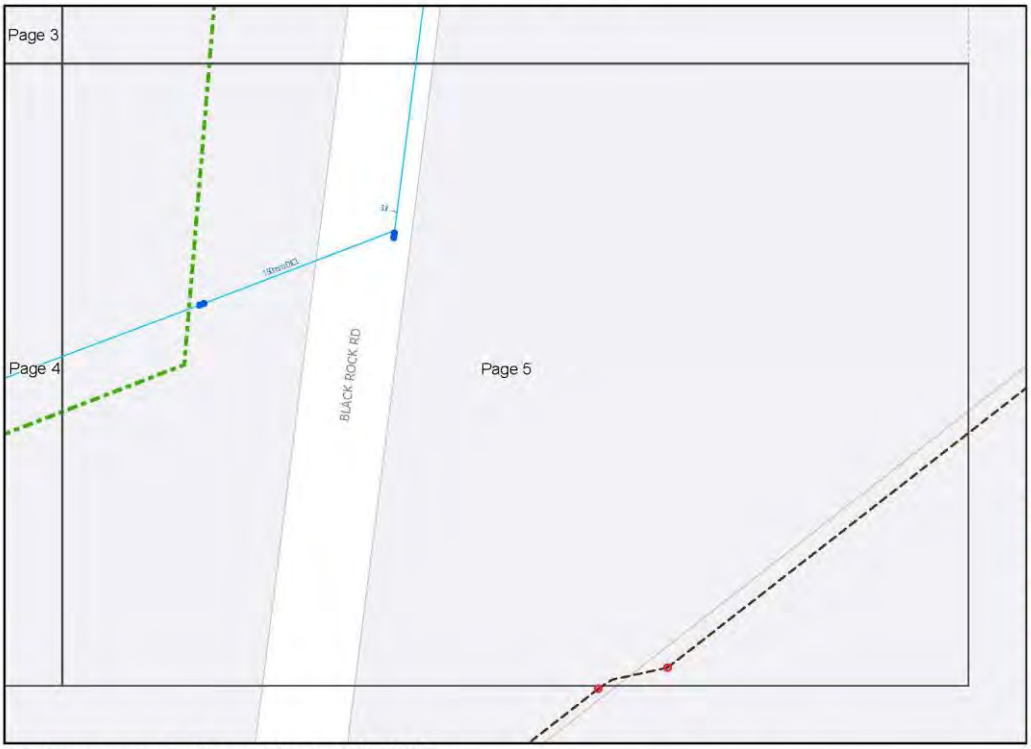
0 10 20 40 m

Scale 1:1,000

BarwonWater

Job # 34028496
Seq # 223586360
Provided by Barwon Water

BEFORE YOU DIG www.byda.com.au



Legend
- BYDA Enquiry
- Water Pipe
- Water Fitting

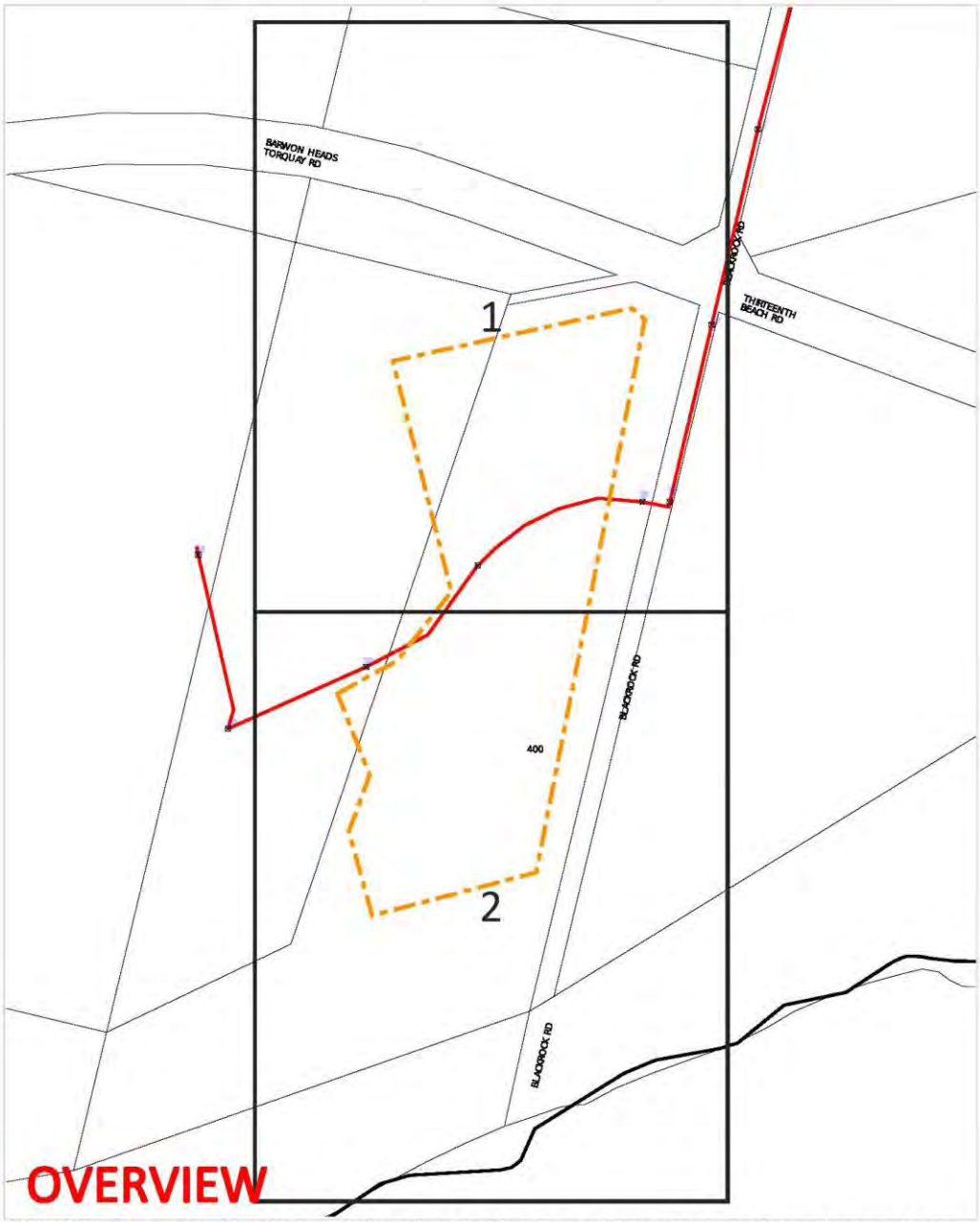
Disclaimer: Barwon Water does not provide any warranty, express or implied, as to the accuracy, completeness, currency or reliability of plans provided as part of the 'BYDA' program. Furthermore, Barwon Water does not provide a warranty that the scale of the plans is accurate, or that they are suitable for a specific purpose. These plans are intended for general information only. Barwon Water is not responsible and does not accept liability for any loss, expense or damage (direct or indirect) which has arisen from reliance on any plans provided by Barwon Water. It is the responsibility of users of the plans to ensure the accuracy of the plans by independent means and to take care when undertaking works that have the potential to damage Barwon Water assets.

In an emergency contact Barwon Water on 1300 656 007
18/04/23 (valid for 30 days)
Plans generated by SmarterWX™ Automate

0 10 20 40 m

Scale 1:1,000

Optus



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Sequence Number: 223586358 Date Generated: 18 Apr 2023

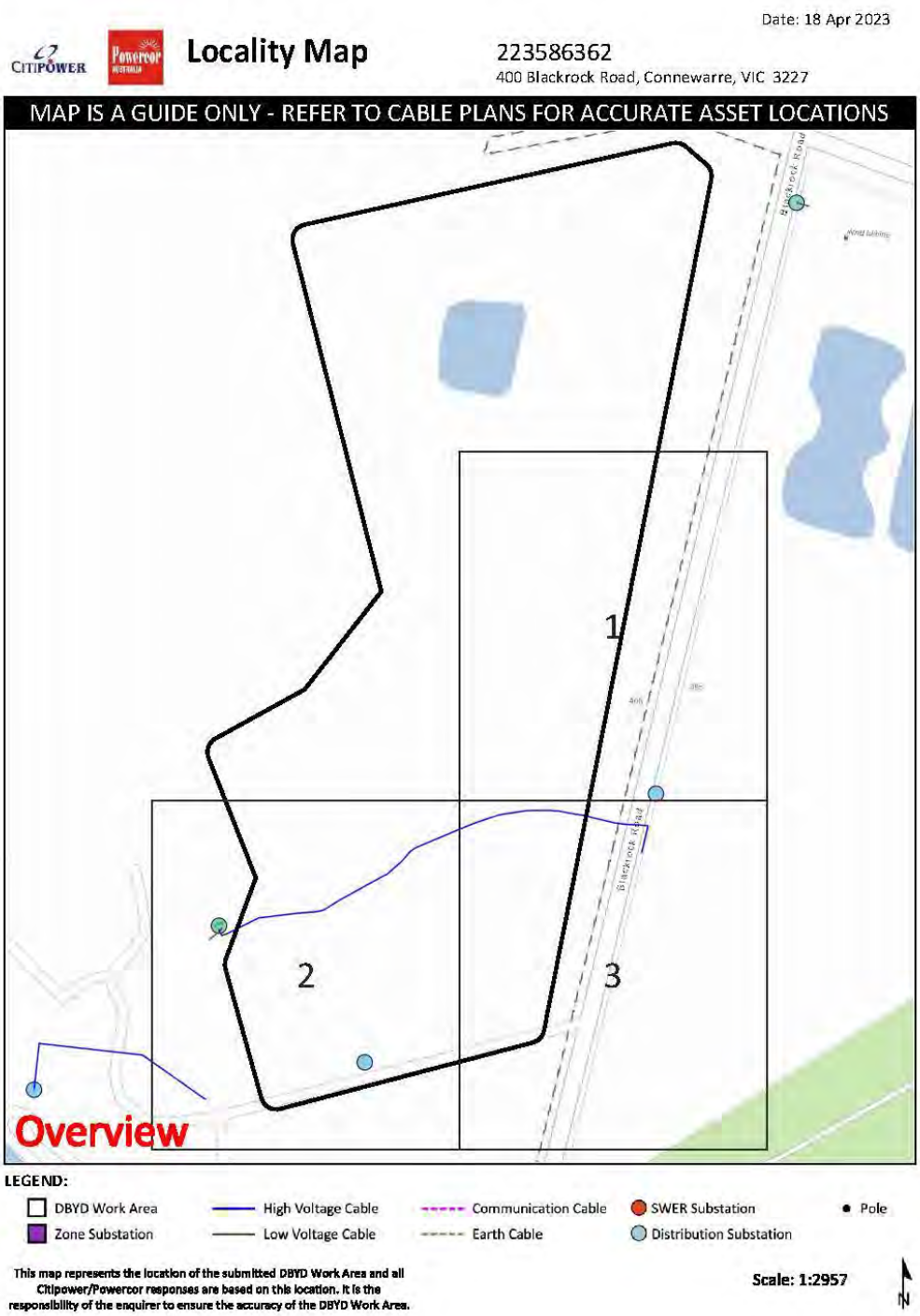
OPTUS

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

DIAL BEFORE YOU DIG www.1100.com.au

Plans generated 18 Apr 2023 by Pelicancorp TicketAccess Software | www.pelicancorp.com

CitiPower


Date: 18 Apr 2023
Locality Map
223586362
400 Blackrock Road, Connewarre, VIC 3227
MAP IS A GUIDE ONLY - REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS
Blackrock Road
1
2
3
Overview
LEGEND:
DBYD Work Area
Zone Substation
High Voltage Cable
Low Voltage Cable
Communication Cable
Earth Cable
SWER Substation
Distribution Substation
Pole
This map represents the location of the submitted DBYD Work Area and all Citipower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.
Scale: 1:2957
N

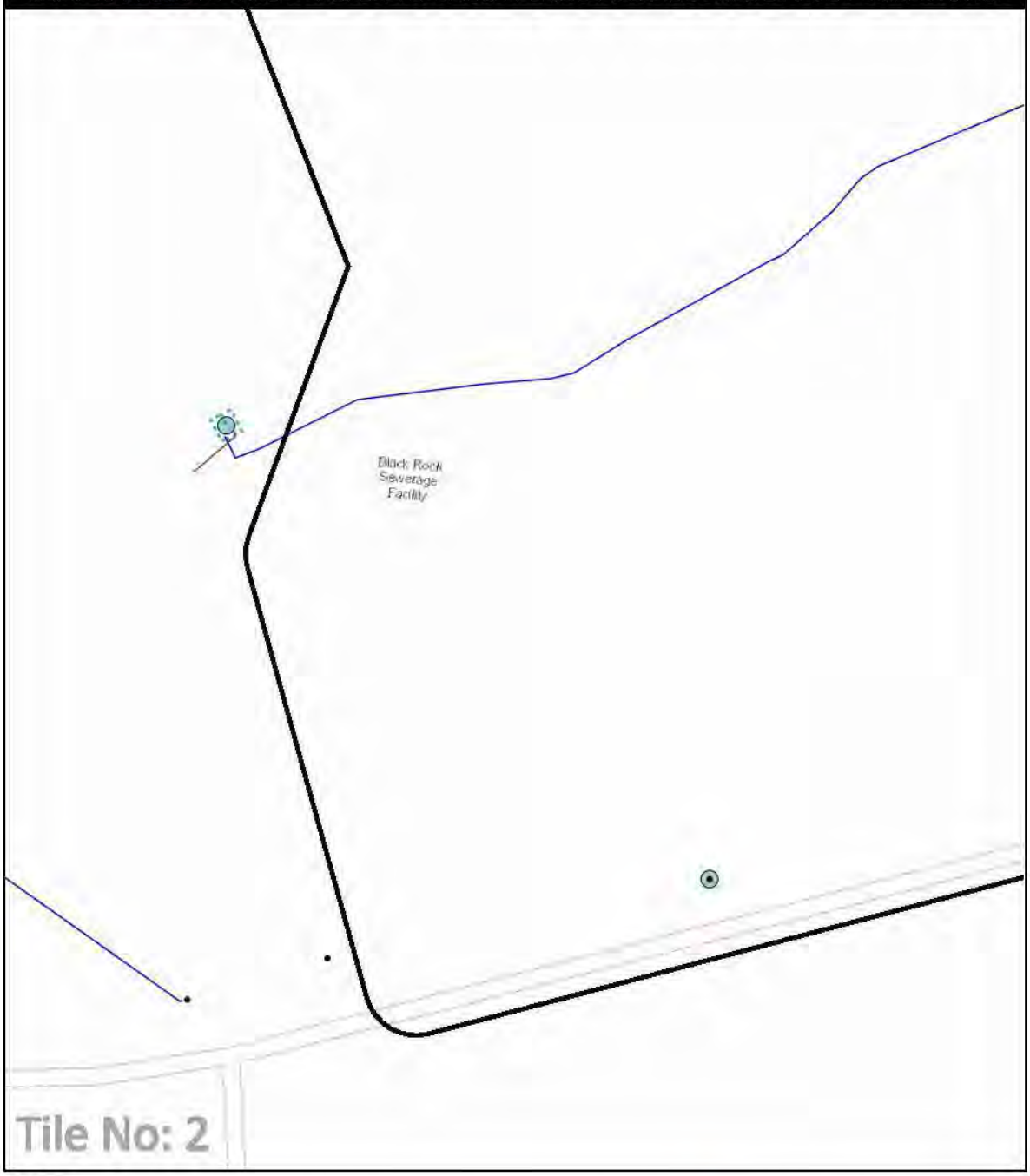
Date: 18 Apr 2023

Locality Map

223586362

400 Blackrock Road, Connewarre, VIC 3227

MAP IS A GUIDE ONLY - REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS



LEGEND:

- DBYD Work Area
- Zone Substation
- High Voltage Cable
- Low Voltage Cable
- Communication Cable
- Earth Cable
- SWER Substation
- Distribution Substation
- Pole

This map represents the location of the submitted DBYD Work Area and all Citipower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.

Scale: 1:1000

N

Date: 18 Apr 2023

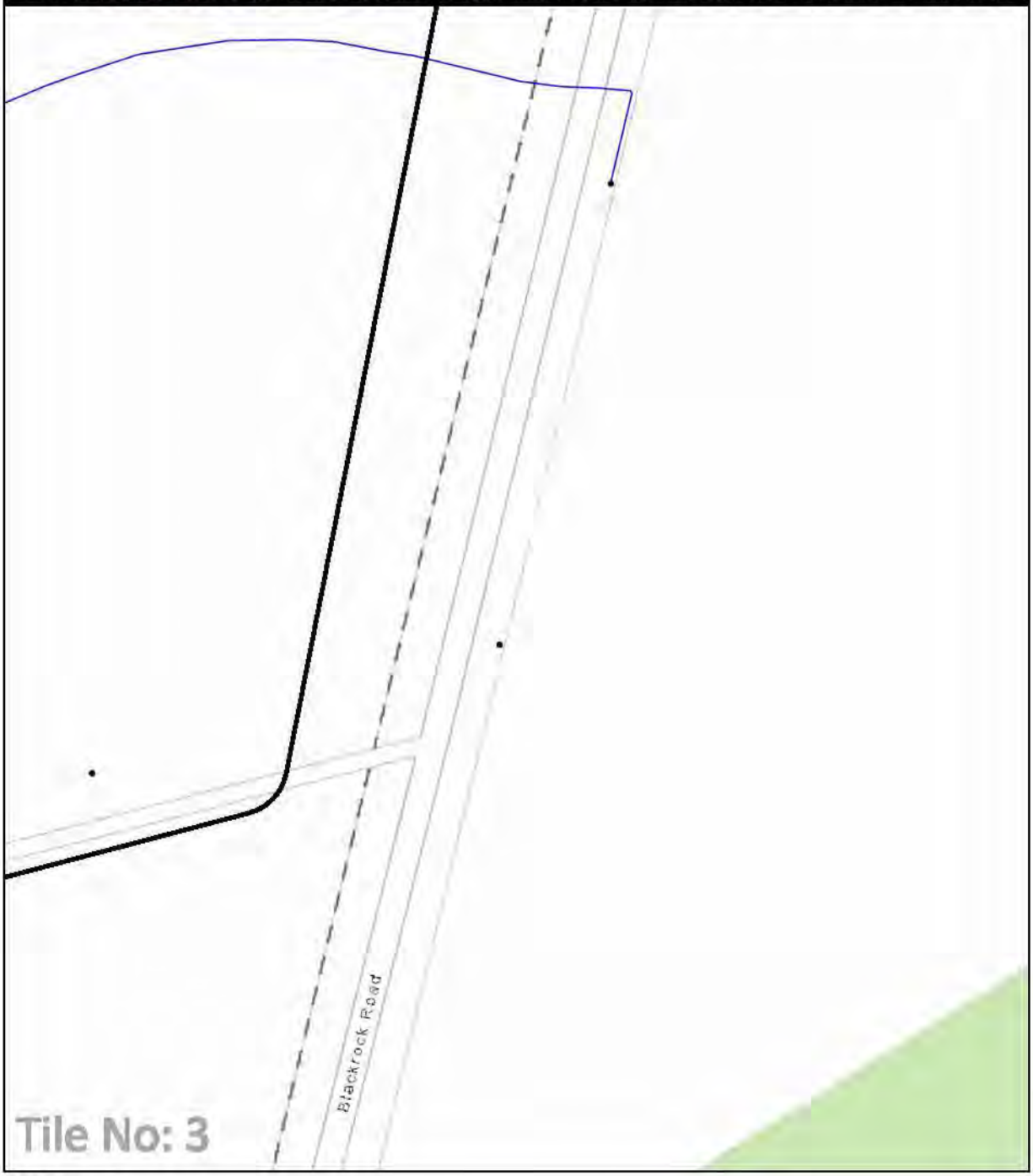
CITIPOWER Powercor AUSTRALIA

Locality Map

223586362

400 Blackrock Road, Connewarre, VIC 3227

MAP IS A GUIDE ONLY - REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS



LEGEND:

- DBYD Work Area
- Zone Substation
- High Voltage Cable
- Low Voltage Cable
- Communication Cable
- Earth Cable
- SWER Substation
- Distribution Substation
- Pole

This map represents the location of the submitted DBYD Work Area and all Citipower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.

Scale: 1:1000

N

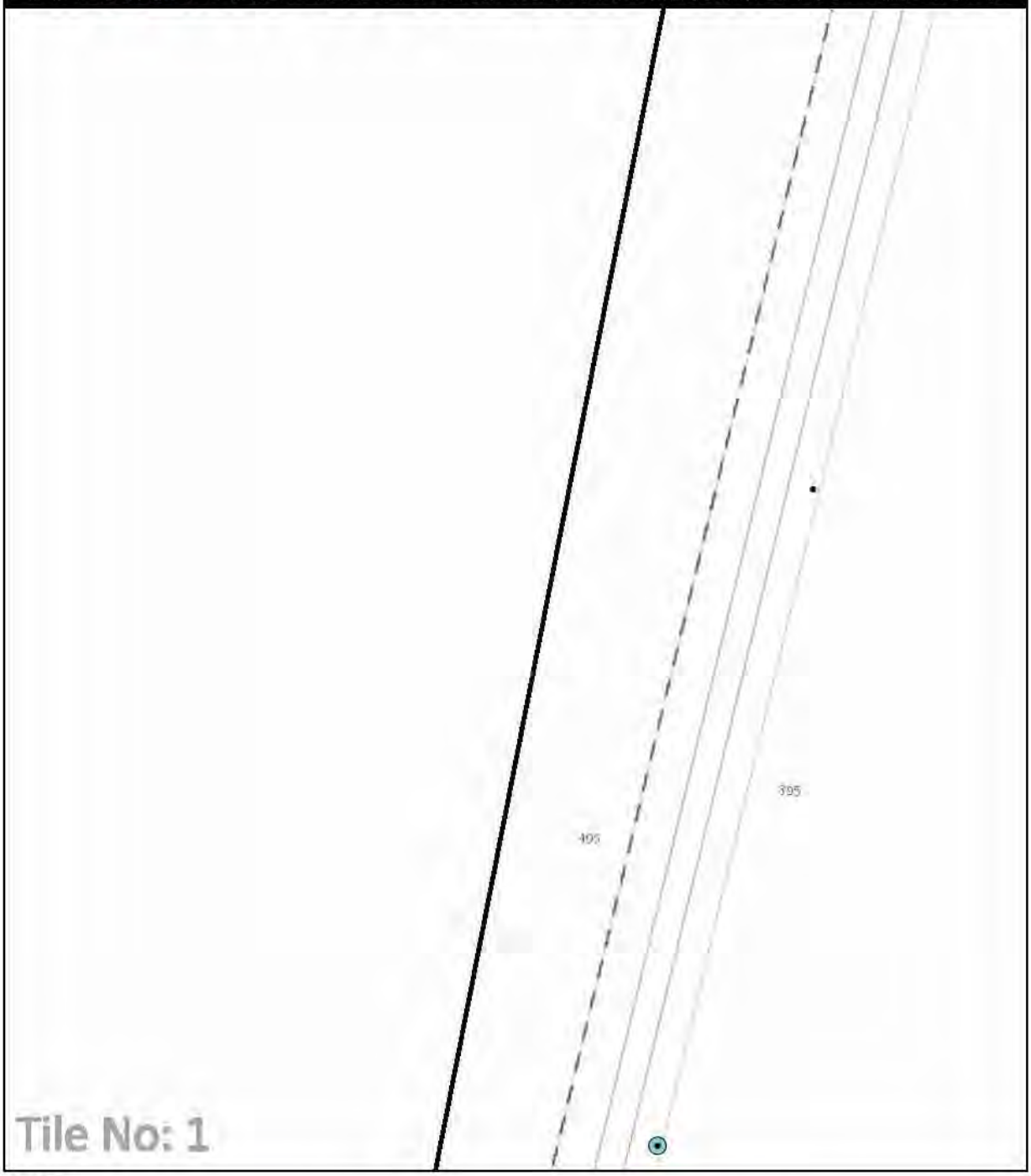
Date: 18 Apr 2023

Locality Map

223586362

400 Blackrock Road, Connewarre, VIC 3227

MAP IS A GUIDE ONLY - REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS



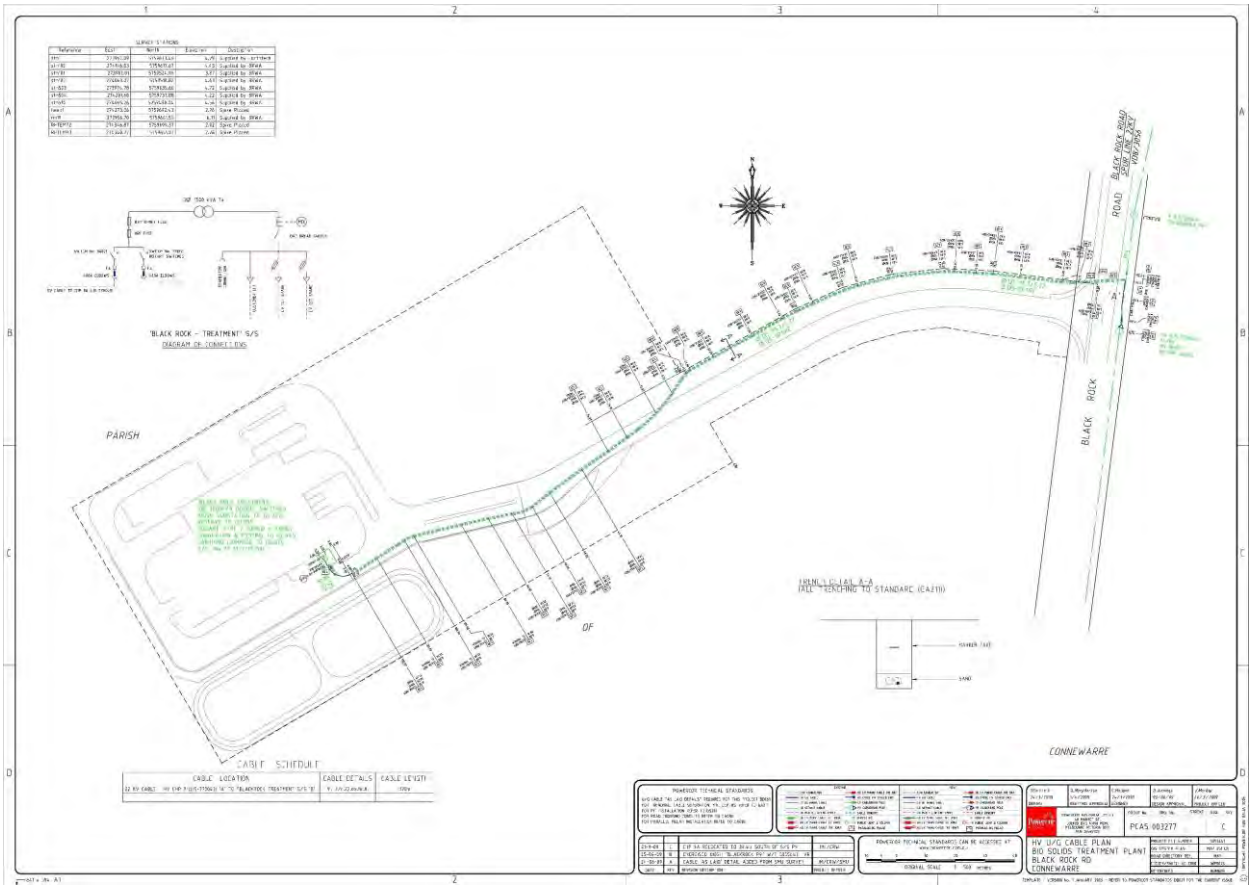
LEGEND:

- DBYD Work Area
- Zone Substation
- High Voltage Cable
- Low Voltage Cable
- Communication Cable
- Earth Cable
- SWER Substation
- Distribution Substation
- Pole

This map represents the location of the submitted DBYD Work Area and all Citipower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.

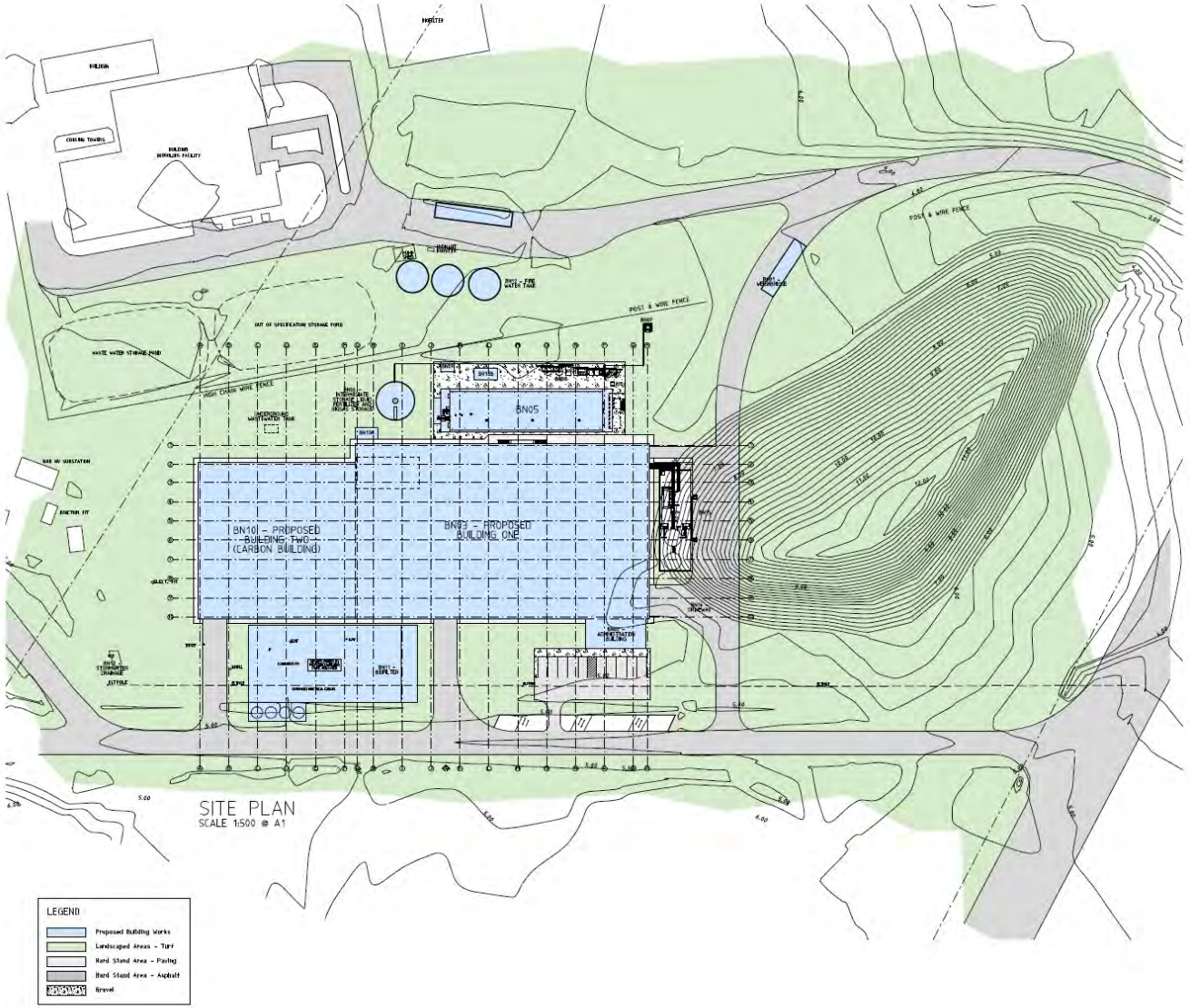
Scale: 1:1000

N


BLACK ROCK ROAD
BLACK ROCK
PARISH
CONNEWARRE
CABLE SCHEDULE
HV U/G CABLE PLAN
BIO SOLIDS TREATMENT PLANT
BLACK ROCK RD
CONNEWARRE

Appendix H

Preliminary Design Plans

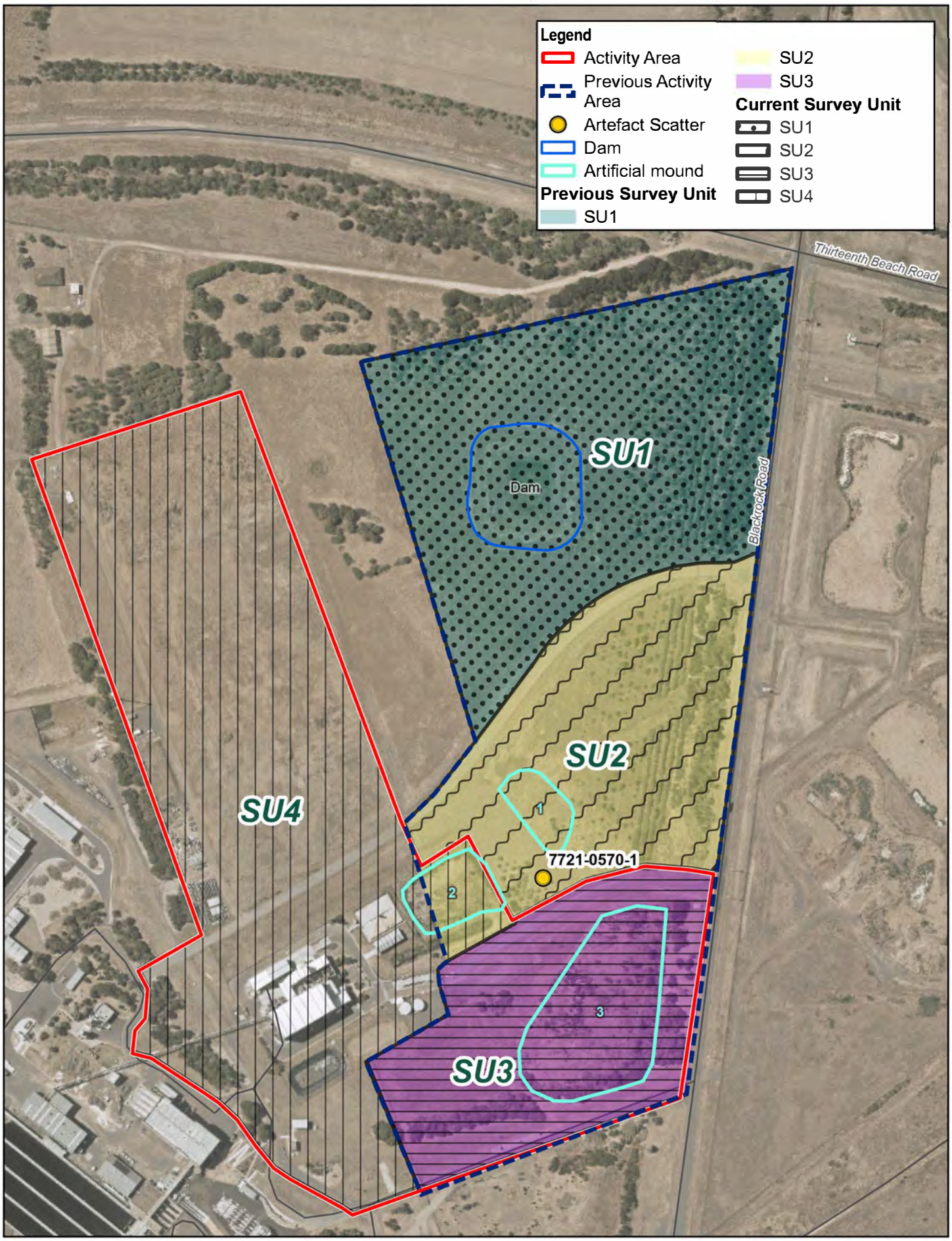

BN05
BN10 – PROPOSED BUILDING TWO (CARBON BUILDING)
BN03 – PROPOSED BUILDING ONE
POST & WIRE FENCE
HIGH CHAIN WIRE FENCE
SITE PLAN
SCALE 1:500 @ A1
LEGEND
Proposed Building Works
Landscaped Areas – Turf
Hard Stand Area – Paving
Hard Stand Area – Asphalt
Gravel

Appendix I

Previous Survey Units

I-1 Previous Survey Units

This appendix details the standard assessment results of SU 1 and 2, that were removed from the Activity Area after the standard assessment had occurred. SU1 was removed in its entirety, while a small portion of SU2 was incorporated into SU4. This overlap can be seen in Map 9 below, in the approximate location of Artificial Mound 2.



Paper Size ISO A4

0 10 20 30 40 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

N

GHD

Barwon Water
Barwon Water RRON Functional Design

Project No. **31-12585384**
CHMP No. **19285**
Date **11/01/2024**

Previous Survey Units

APPENDIX I

\\ghdnet\ghd\AU\Melbourne\Projects\31\12585384\GIS\Maps\Deliverables\12585384_Heritage_figures\12585384_Heritage_figures.aprx - 12585384_A1_PrevSurveyUnits_A4P
Print date: 11 Jan 2024 - 15:30

Data source: FP-SR (2023), GHD (2023), VicMap (2023). Created by: sblades

I-1-1 Survey Unit 1

SU1 is an open paddock in the northern section of the Previous Activity Area (Plate 65) with young vegetation to the north and the west for a revegetation works, a patch of mature vegetation in the western edge of the Activity Area. The area was sparsely grassed and recently mown, with dark grey-black clay visible in patches (Plate 66). Along the western edge of the SU and Activity Area is an old landfill and buffer zone to ensure works do not impact the landfill. A slight rise to the west is present (Plate 67), that aligns with the edge of the landfill buffer, indicating that works have likely scraped the ground surface in the remainder of the paddock. A slight rise can also be seen in the south of SU1 where the access road has been constructed (Plate 68 and Plate 69).

A dam has also been modified within SU1. The dam wall has been built up from soils taken from the centre of the dam to either modify a natural depression or to create the dam (Plate 70). The ground surface on both sides of the wall is at similar levels, before dipping down into the dam centre (Plate 71). The differences in soil can be noted, the dark grey-black clay of the ground surface and the lighter brown/reddish clay of the dam wall. This area is within the mapped swamp deposits, with the identified soils similar to the results of the BH2 (see below). The dam has been in place since at least 1975 (see section 7.5) and contains an old concrete overflow drain (Plate 72).

Geotech Investigations

Boreholes 1-3 were drilled within Survey Unit 1 and Option 1 for the RRON facility location. BH1 and 3 were located to the west of SU1, in open grassed areas (Map 7). BH2 was located in the east, between a revegetation area and the dam wall (Map 7). The borehole logs within this area confirm the geological mapping, with BH1 and BH3 meeting auger refusal on extremely weathered basalt and BH2 reaching a swamp deposit. Where a topsoil was identified, as a dark grey-black clay with traces of sand and grass rootlets, overlying a dark grey-black clay. Borehole logs are in Appendix F.

After the initial standard assessment, this SU was removed from the Activity Area.

Plate 65 ***Northwest of Activity Area, facing south, with the dam in the left of image (R. Stewart 27.04.2023)***

Plate 66 *Sample of GSV within SU1 (R. Stewart 17.04.2023)*

Plate 67 *Southwest of SU1, facing north. Patch of mature trees in centre, slight rise to west as edge of landfill buffer. (R. Stewart 26.04.2023)*

Plate 68 *Southwest of SU1 facing south into SU2. Slight rise to west and to south at access road. (R. Stewart 27.04.2023)*

Plate 69 *South of SU1, facing west (R. Stewart 26.04.2023)*

Plate 70 *Top of dam wall facing west (R. Stewart 26.04.2023)*

Plate 71 *Top of dam wall, facing north (R. Stewart 26.04.2023)*

Plate 72 Overflow drain in dam wall, southeast corner of dam, facing west (R. Stewart 26.04.2023)

I-1-2 Survey Unit 2

After the initial standard assessment, this SU was removed from the Activity Area, including VAHR 7721-0570 Black Rocks. However, the results and photos have been included below. Artificial Mound 2 was originally included in SU2, but after the changes to the Activity Area, it was incorporated into SU4.

Survey Unit 2 is a flat open paddock, with young trees and landscaping in the east, an access road to the north and the south, two artificial mounds, and drainage for a swale pond. Ground surface visibility was variable, with the majority of the SU very low due to grass cover. Areas of best ground surface visibility were surrounding VAHR 7721-0570 where a number of exposures were present (see section below and Plate 80 to Plate 86). The eastern edge of SU2 is mostly replanted trees, with a large gap due to utility installation.

Two access roads border SU2. The northern road (Plate 73 and Plate 74) demonstrates a slope into SU1 and SU2. The centre road demonstrates a greater variation in ground surface (Plate 75 and Plate 76), with different ground surface on both the north (SU2) and south (SU3) of the access road.

Two artificial mounds are within SU2. Artificial Mound 1 is a relatively low and long mound about 1.6m high. The ground surface was had had very low GSV due to grass cover, with rubble and debris through. Rubble included concrete and brick fragments with basalt floaters. On the northern edge of the mound, ruts are visible in the grass where topsoil has been scraped into the mound (Plate 78 and Plate 79). The identification of this mound as artificial was confirmed through the geotechnical results (see below).

Artificial Mound 2 of the BTP is in the centre of the Activity Area within SU2. The mound is on the western edge of SU2, with the swale to the south and a small depression to the east. This depression is the location for the registered Aboriginal Place. The mound was described in the report that first recorded the Aboriginal place (VAHR 7721-0570) (Terra Culture, 2003), and again the 2021 Heritage Assessment (Unearthed Heritage, 2021). The mound has heavy grass and shrub cover and was fenced from access.

The underlying geology of SU2 was identified as the newer volcanics in the west and the unnamed swamp deposits in the east, which was confirmed through the geotechnical works (see section below).

VAHR 7721-0570 Black Rocks

VAHR 7721-0570 Black Rocks is located within SU2. The VAHR coordinates were revisited, and the surrounding area searched to attempt to relocate the Aboriginal Place. The description of the artefact location from two previous reports slightly differ and given that the accuracy of the coordinates provided on the VAHR, a minimum of 5m in each direction was surveyed for the Aboriginal Place. The Aboriginal Place was not relocated, and no additional Aboriginal cultural heritage material was identified.

The area is lightly vegetated with young trees and shrubs, adjacent to a large Artificial Mound 3 (Plate 80 to Plate 83) with variable grass cover. Some exposures were present which appeared to be where shrubs or young trees had died or been removed (Plate 84 to Plate 86).

After the initial standard assessment VAHR 7721-0570 was removed from the Activity Area, this place is now located 15m outside of the Activity Area.

Geotechnical Investigations

Boreholes 4-8 were drill within Survey Unit 2. BH 4-8 are located within open grassed areas, with BH8 and BH9 adjacent to an artificial mound, and BH6 located on Artificial Mound 1 (Map 7). The borehole logs within this area confirm the geological mapping, with BH5 to BH8 meeting auger refusal on extremely weathered basalt. BH4 demonstrated a swamp deposits, in the north and east of the Activity Area. A topsoil was identified in BH 7 and BH8 that was consistent with the other survey units as a dark grey-black clay with traces of sand and grass rootlets, overlying a dark grey-black clay. BH5 and BH6 all identified a fill layer of up to 1.6m. This depth comes from BH6, which was located on a mound of approximately 1.5m high. No topsoil was identified under the fill layer. Borehole logs are in Appendix F.

Plate 73 Northern most access road, facing west. (R. Stewart 26.04.2023)

Plate 74 *Northern most access road, facing east (R. Stewart 26.04.2023)*

Plate 75 *South of SU2 with centre access road, facing east. (R. Stewart 26.04 2023)*

Plate 76 *South of SU2, facing south to centre access road and SU3. (R. Stewart 26.04.2023)*

Plate 77 *North east of SU2, facing north into SU1. (R. Stewart 26.04.2023)*

Plate 78 *GSV and disturbance on the edge of Artificial Mound 1 (R. Stewart 26.04.2023)*

Plate 79 *GSV on Artificial Mound 1 (R. Stewart 26.04.2023)*

Plate 80 *Location of VAHR 7721-0570, facing east (R. Stewart 26.04.2023)*

Plate 81 *Location of VAHR 7721-0570, facing west (R. Stewart 26.04.2023)*

Plate 82 *Location of VAHR 7721-0570, facing north (R. Stewart 26.04.2023)*

Plate 83 *Location of VAHR 7721-0570, facing south (R. Stewart 26.04.2023)*

Plate 84 *Example of GSV in SU2 and exposure at Location of VAHR 7721-0570, facing east (R. Stewart 26.04.2023)*

Plate 85 *Exposure near location of VAHR 7721-0570, facing south, artificial mound to the west (R. Stewart 26.04.2023)*

Plate 86 *Exposure near location VHAR 7721-0570, facing west towards artificial mound 2 (R. Stewart 26.04.2023)*

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