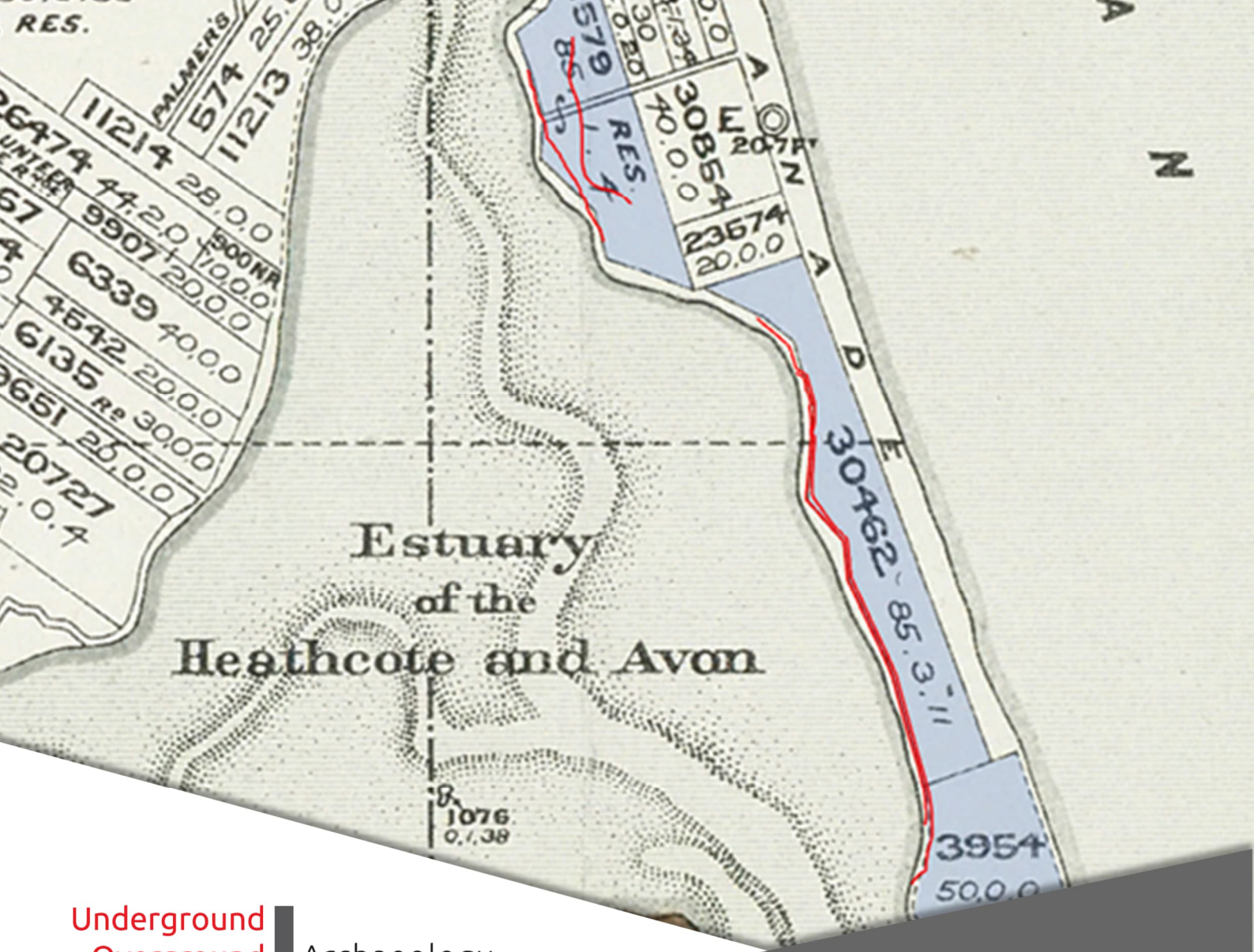

Underground Overground | Archaeology

Southshore and South New Brighton Park Erosion and Inundation Protection

Archaeological assessment

Report prepared for Christchurch City Council
Author: Rebecca Adam and Lydia Mearns
Reviewed by: Kirsa Webb and Tristan Wadsworth
Submitted: October 2023

Underground Overground Archaeology

Southshore and South New Brighton Park Erosion and Inundation Protection

Archaeological assessment

Report prepared by:
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Project Details

Site Address	South New Brighton Park and Southshore spit.
Client	Christchurch City Council c/o Jacobs
Client Contact	Ian Wiseman
Report Authors	Rebecca Adam and Lydia Mearns
Reviewed By	Kirsa Webb and Tristan Wadsworth
Report Submitted	October 2023
Report Submitted To	Christchurch City Council, Jacobs

Ownership and Disclaimer

Cover Photo: Detail from 1892 map of Christchurch Rural Sections, showing the current project areas (indicated in red) extending through part of Reserve 1579 and Rural Sections 3954 and 30462 (coloured blue). [Wilson, G.P., 1892. *Map of Christchurch and Sumner Survey Districts*. National Library of New Zealand.]

Executive Summary

Underground Overground Archaeology Ltd (UOA) has been commissioned by Jacobs on behalf of the Christchurch City Council (CCC) to provide an assessment of environmental effects (AEE) for the archaeological resources of Southshore and the South New Brighton Park for a proposed erosion and inundation protection plan. CCC are planning to realign the existing estuary walkway and create a new planted bund.

This assessment has been prepared in order to identify the potential for both recorded and unrecorded archaeological sites within the project area for the planned estuary walkway realignment, new inland planted bund and walkway, and a combination of gabion baskets, rock revetment and cobble beach along the shore edge. The report provides an assessment of archaeological values and the potential effects of the proposed works, as well as recommendations for minimising and mitigating impacts to archaeological values.

UOA have undertaken research into the historic background and previously recorded or identified heritage and archaeological sites within and around the proposed work locations, and reviewed previous archaeological reports for these areas, to determine the nature and values of any potential archaeological resources. Based on previous archaeological work in the area, there is the potential for both unrecorded and recorded archaeological sites and features associated with the pre-European Māori use of the area to be encountered in both the South New Brighton Park and Southshore (M35/294 and M35/916). UOA also undertook a site visit to the area and while we were able to identify evidence of archaeological material in the South New Brighton Park, specifically shell midden (recorded as archaeological site M35/294), no surface archaeological material was identified south of the South New Brighton Park within the estuary, or along the estuary walkway.

The research and site visit indicate that it may be possible to avoid affecting the existing archaeological sites, as we know the approximate location and extent of visible in situ material. Based on this information, the works have been redesigned to avoid impacting the in-situ midden remains associated with M35/294. Should a potential unrecorded site be encountered, the site would be damaged or destroyed and the effects would be permanent and more than minor; the effects can be partially mitigated through archaeological excavation and oversight.

Effects to archaeological sites, that is those that predate the year 1900, are considered under the Heritage New Zealand Pouhere Taonga Act 2014 which is administered by Heritage New Zealand Pouhere Taonga. The Act makes it unlawful for any person to "*modify or destroy, or cause to be modified or destroyed, the whole or any part of an archaeological site without the prior authority of Heritage New Zealand*" regardless of whether the land on which the site is located is designated or the activity is permitted under district plan rules.

Therefore, the appropriate pathway for considering these archaeological resources within the project prior to the works commencing is through the archaeological authority process and an application to Heritage New Zealand Pouhere Taonga to modify or destroy the sites within the project area that are not able to be avoided. Site avoidance is recommended where possible in order to protect sites where these are identified previously or discovered during works.

Table of Contents

List of Figures

List of Tables

1 Introduction

Underground Overground Archaeology Ltd (UOA) has been commissioned by Jacobs on behalf of the Christchurch City Council (CCC) to provide an assessment of environmental effects (AEE) for the archaeological resources of Southshore and the South New Brighton Park. CCC are planning to realign the existing estuary walkway and bund, install a new planted bund with path, under install new estuary access, gabion baskets, rock revetments and cobble beaches along the shore edge in both South New Brighton Park and Southshore.

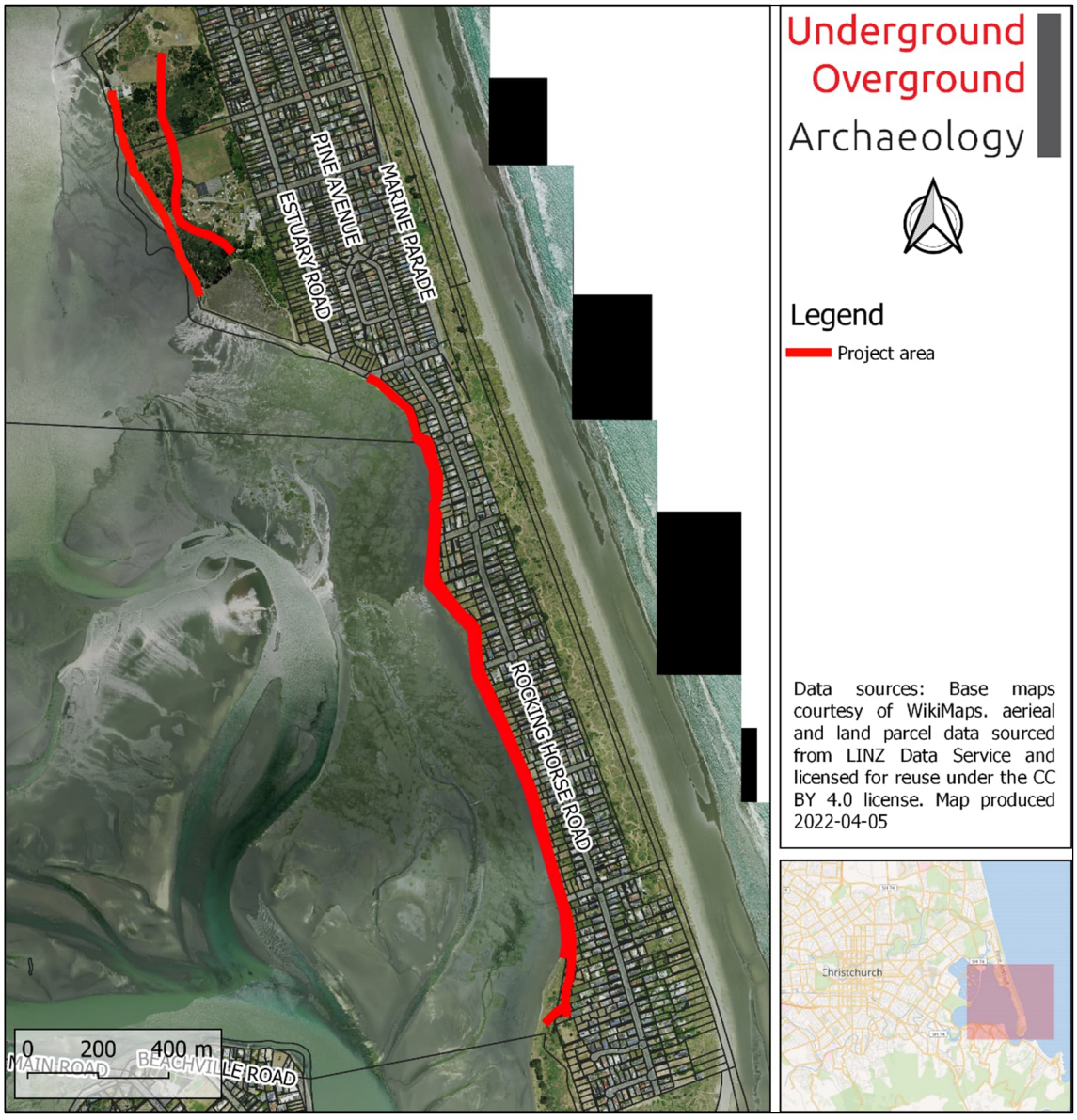


Figure 1-1. South New Brighton Park and Southshore. The project area is indicated in red.

This report has been prepared in order to identify the potential for both recorded and unrecorded archaeological sites within the area of inquiry. Archaeological sites are areas that witnessed human occupation prior to the year 1900 and are protected under the Heritage New Zealand Pouhere Taonga Act 2014. Notice is also given to sites or features that have previously been identified as having historic heritage value under the Resource Management Act 1991 (scheduled and listed sites). This assessment is not, however, a detailed evaluation of historic heritage values and instead focuses on the identification and values relating to potential archaeological sites within the project area.

This report provides high-level recommendations for managing, minimising, and mitigating potential effects and outlines the requirements of the proposed works with respect to the Heritage New Zealand Pouhere

Taonga Act 2014. The level of detail provided in this report is appropriate for the AEE and can be adapted for an application for an archaeological authority in future, when the project reaches the final design phase. It has been prepared in accordance with Heritage New Zealand Pouhere Taonga's (2019) guidelines on preparing an archaeological assessment.

The scope of this report is limited to archaeological values and does not represent the views or cultural values of tangata whenua.

2 Project Description[1]

Legacy issues from the Canterbury Earthquake Sequence (2010-2011; CES) include land subsidence and damage to existing private erosion protection structures in Southshore and council structures in South New Brighton Park which have increased the community's risk to coastal erosion and tidal inundation.

The project involves the construction, enduring maintenance and occupation of erosion protection works and inundation protection works alongside the South New Brighton Park and Southshore estuary edge. The general extent of the project is defined as follows, as identified in Figure 2-1 and Figure 2-2 below:

- South New Brighton Park estuary edge erosion and inundation protection works – approximately 600 m of coastal erosion and inundation protection structures.
- South New Brighton Park inland bund – approximately 630 m of inundation bund with a shared user track formed along the width of the crest.
- Southshore estuary edge erosion protection works – Godwit Street to south of Tern Street, approximately 1500 m of coastal erosion protection structures, and tying these into existing structures.
- Southshore inundation protection works – Ebbtide Street to south of Tern Street, approximately 1960 m of an inundation bund with a shared user track formed along the width of the crest tying into an existing bund along Caspian Street and into high ground south of Tern Street.

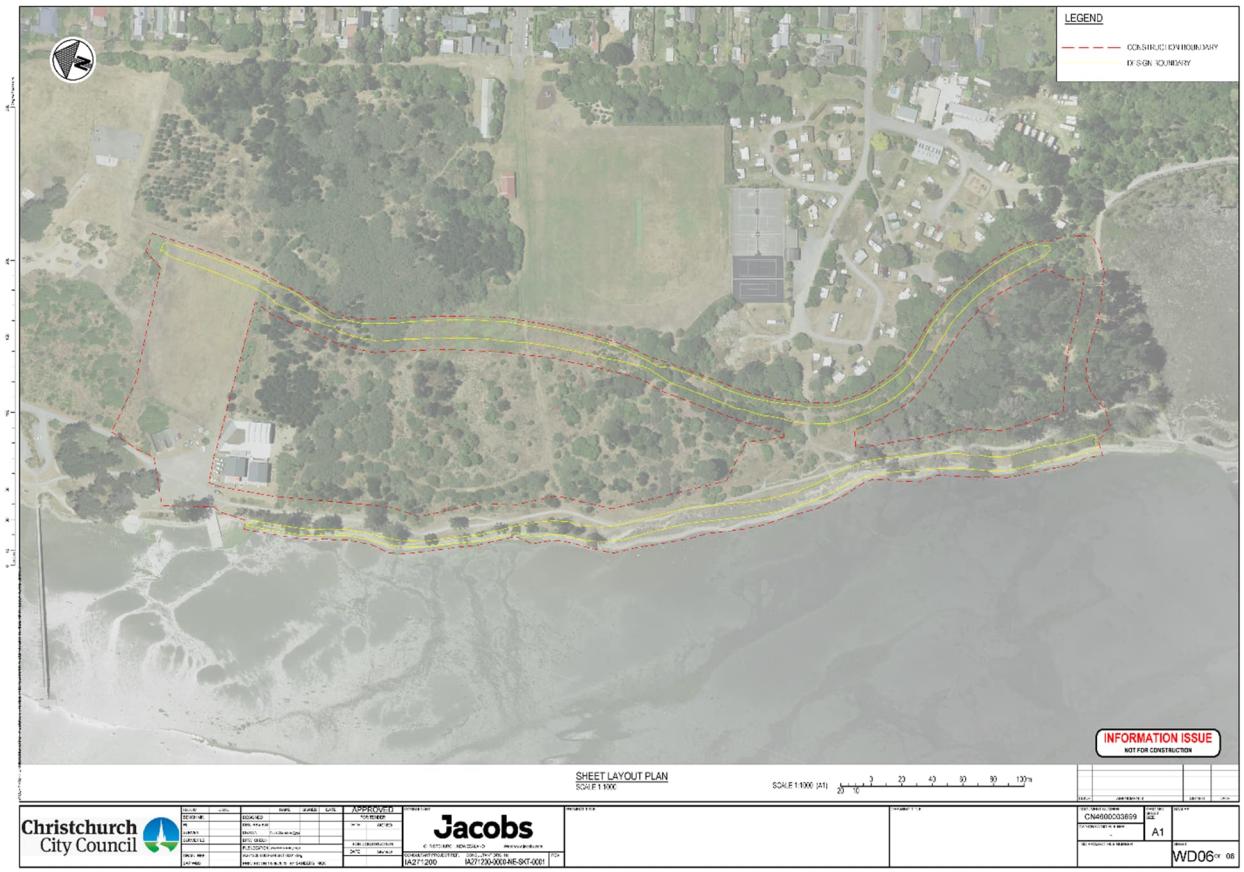


Figure 2-1. Aerial image of South New Brighton Park showing the project extent.

[1] Text partly supplied by Jacobs.

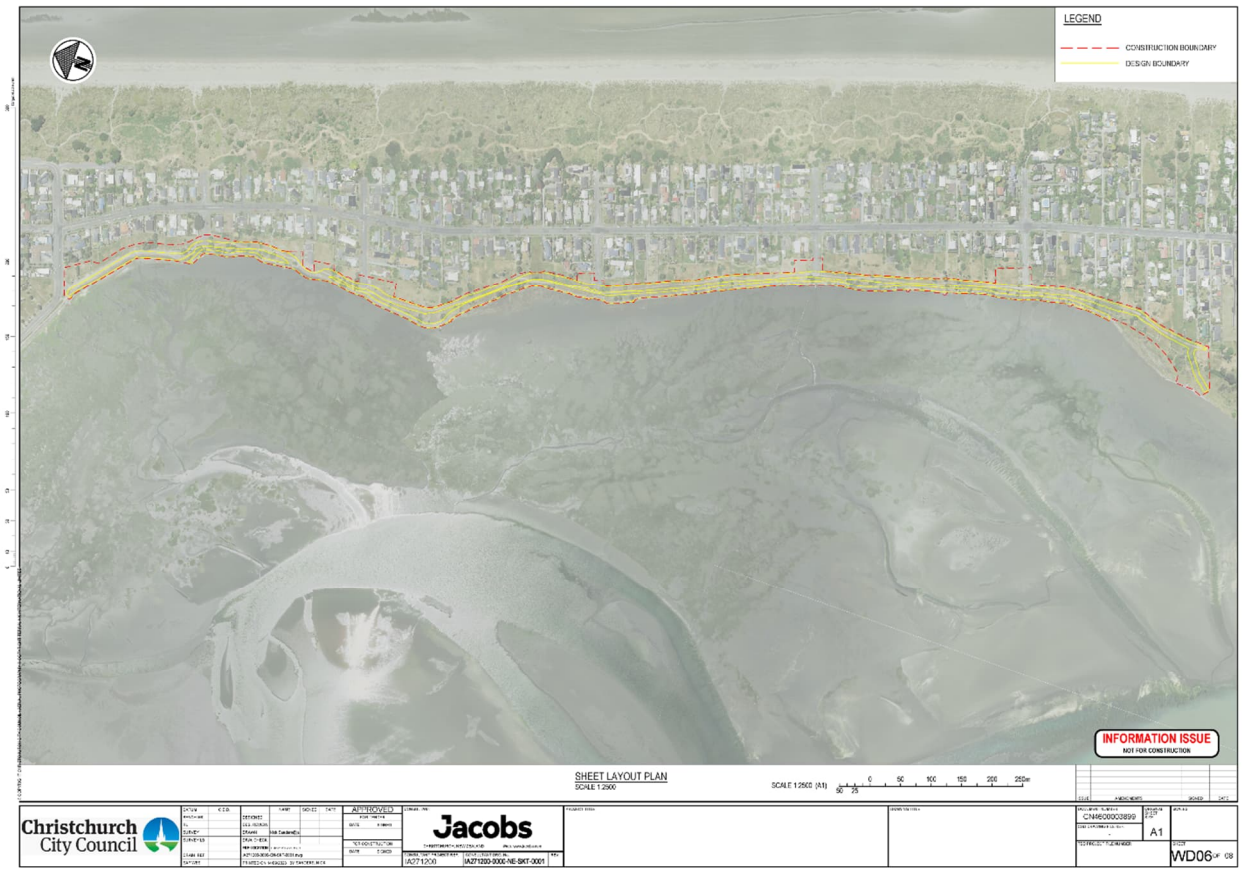


Figure 2-2. Aerial image of Southshore showing the project extent.

The proposed bund will be engineered to achieve low-permeability, earthquake resilience, and erosion resistance. It will replace the existing LINZ bund which was constructed as a landscaping feature after the demolition of the Residential Red Zone properties.

The bund and erosion protection structures will be constructed to a provide protection in a 50-year return period extreme estuary water level and will be approximately 0.3 m to 1 m high above the existing ground level. A path will be provided on top of the bund for walking and cycling. Through much of the alignment in Southshore the bund will be located approximately 5 m from the back edge of the erosion protection structures. These structures will be a mix of 350 m of cobble beach and 1230 m of rock revetments chosen as suitable to provide protection from erosion risk at the specific locations. Landscaping will be provided around the structures and throughout the project area.

In South New Brighton Park the coastal protection bund is set back within the park. The edge protection structures are a mix of cobble beach and gabion baskets. The gabion baskets are to be located in an approximately 150 m long stretch to the area south of the Pleasant Point Yacht Club. This is the location where middens have been observed and their extent investigated. These gabion baskets were chosen as they have a smaller footprint than other structures and thus can be placed in front of the identified middens and have a minimised impact on the estuarine ecological values.

The scope of the project excludes upgrades to the existing stormwater network or resolution of issues relating to pluvial flooding.

The edge protection structures, and bund alignment have been designed to afford appropriate protection to properties while at the same time create usable spaces to enhance recreational opportunities and access to the estuary, while protecting habitats and coastal marine features of significance. The works, which include the construction of gabion baskets and cobble beaches, realignment of the estuary walkway, and a new

planted bund with a path will require the following excavation or ground disturbance works, as outlined in the provided plans (typical cross sections and details provided below courtesy of Jacobs):

Planted bund with and without path

- Strip vegetation (minimum 100 mm depth)
- Minimum 300 mm deep and 5.0-6.0 m wide excavation for compacted aggregate below the bund and path.

Gabion baskets (South New Brighton Park)

- Clear vegetation and debris and dispose off-site.
- Remove existing reno mattresses, including remnant wires and rocks.
- Strip topsoil and stockpile for future respreading (minimum 100 mm depth).
- Excavate estuary bed to formation levels and place at toe of completed gabion sections, otherwise temporarily stockpile adjacent to the work area for reuse as backfill behind, below, and at the toe of gabion baskets (excavation below existing reno mattresses to a depth of approximately 1 m below current ground level).
- Place, fill and secure gabion baskets.
- Place estuary bed material from the temporary stockpile at toe to embed the gabion basket, and behind the gabion baskets, encapsulating midden on the eroded shoreline, to achieve a minimum ground elevation of 11.3 m CDD.

Cobble beach (South New Brighton and Southshore)

- Trim soil surface and remove any organic material or debris (stumps, roots, metal, plastic, bricks etc) (approximately 100 mm depth).
- Remove wire from existing reno mattress and reprofile stones (South New Brighton Park).
- Remove existing LINZ bund (approximately 500 mm of built-up soil) (Southshore).
- Excavate estuary bed to formation levels and place at toe of completed rock revetment sections, otherwise temporarily stockpile adjacent the work area for replacement once rock revetment completed (excavation up to approximately 1 m below current ground surface).
- Form relocated estuary walkway with compacted gravel (excavation to approx. 100 mm below ground level in South New Brighton Park; excavation to a minimum 300 mm deep and 4.0-5.0 m wide excavation for compacted aggregate below the bund and path in Southshore).
- Plant salt tolerant vegetation.

Rock revetment (Southshore)

- Excavation minimum 1 m below existing beach surface for toe placement
- Trim slope along estuary edge with filter layer rock
- Remove debris and organic detritus from existing rubble slope.
- Remove existing LINZ bund (approximately 500 mm of built-up soil).
- Strip vegetation (approx. 100 mm below ground level)
- Minimum 300 mm deep excavation for placement of compacted aggregate below the path
- Plant salt tolerant vegetation

Estuary access tidal stair (Southshore)

- Excavation to at least 1 m below existing beach surface

Laydown area and access route

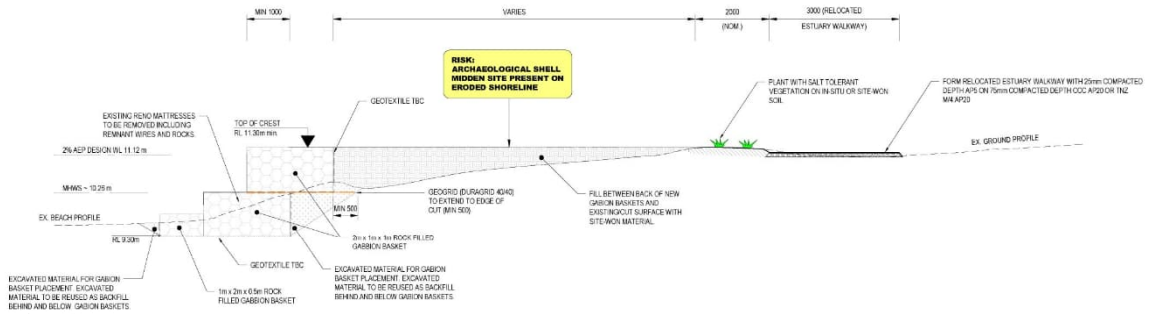
For the duration of the project, it will be necessary to set up site offices and areas for parking, supplies, stockpiles and equipment. These areas will all be within the construction boundary (red line boundary) identified on the attached site plans. There is likely to be one main compound in Southshore and one in South New Brighton Park. The Southshore one would be in Ebbtide Street, and the South New Brighton one likely at the northern end of those works. The use of these areas may require shallow excavation (a shallow site scrape to remove vegetation, approximately 100 mm deep) to place hardstand, connect power and services, or to provide a stable surface for vehicles, portacoms, and supplies. There will be increased traffic movements in

these areas which could cause ground disturbance. Within Ebbtide Street the existing road hardstand may well be used so no further excavation would be necessary.

During construction works there will be a number of temporary laydown areas, which may be at road ends such as the ends of Heron Street, Penguin Street, Plover Street, and Tern Street. These will be used for storage of machinery and materials during works while construction activities are occurring in proximity to those road ends. No major site facilities (portacoms etc) would be expected in these, and no excavation would be required.

NOTES

1. ALL LEVELS ARE IN TERMS OF CHRISTCHURCH DRAINAGE DATUM (CDD).
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



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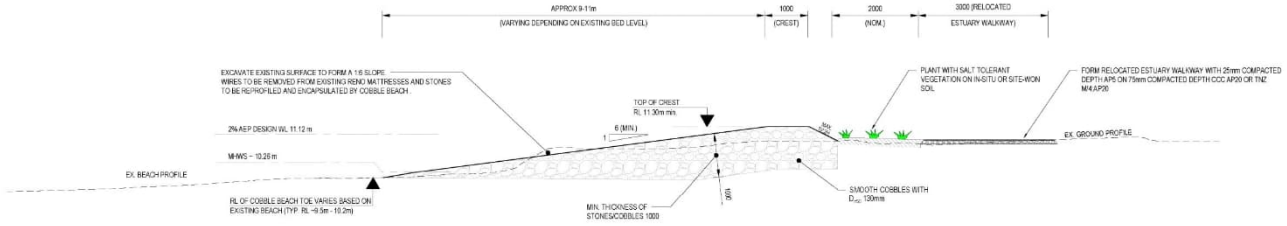

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A	INFORMATION ISSUE	JS	13/04/23

Christchurch City Council

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DATE	SIGNED

CONSULTANT: Jacobs
CHRISTCHURCH, NEW ZEALAND Web: www.jacobs.com

CONSULTANT PROJECT REF	CONSULTANT DRG. NO.	REV.
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DRAWING TITLE: TYPICAL CROSS SECTION SHEET 2

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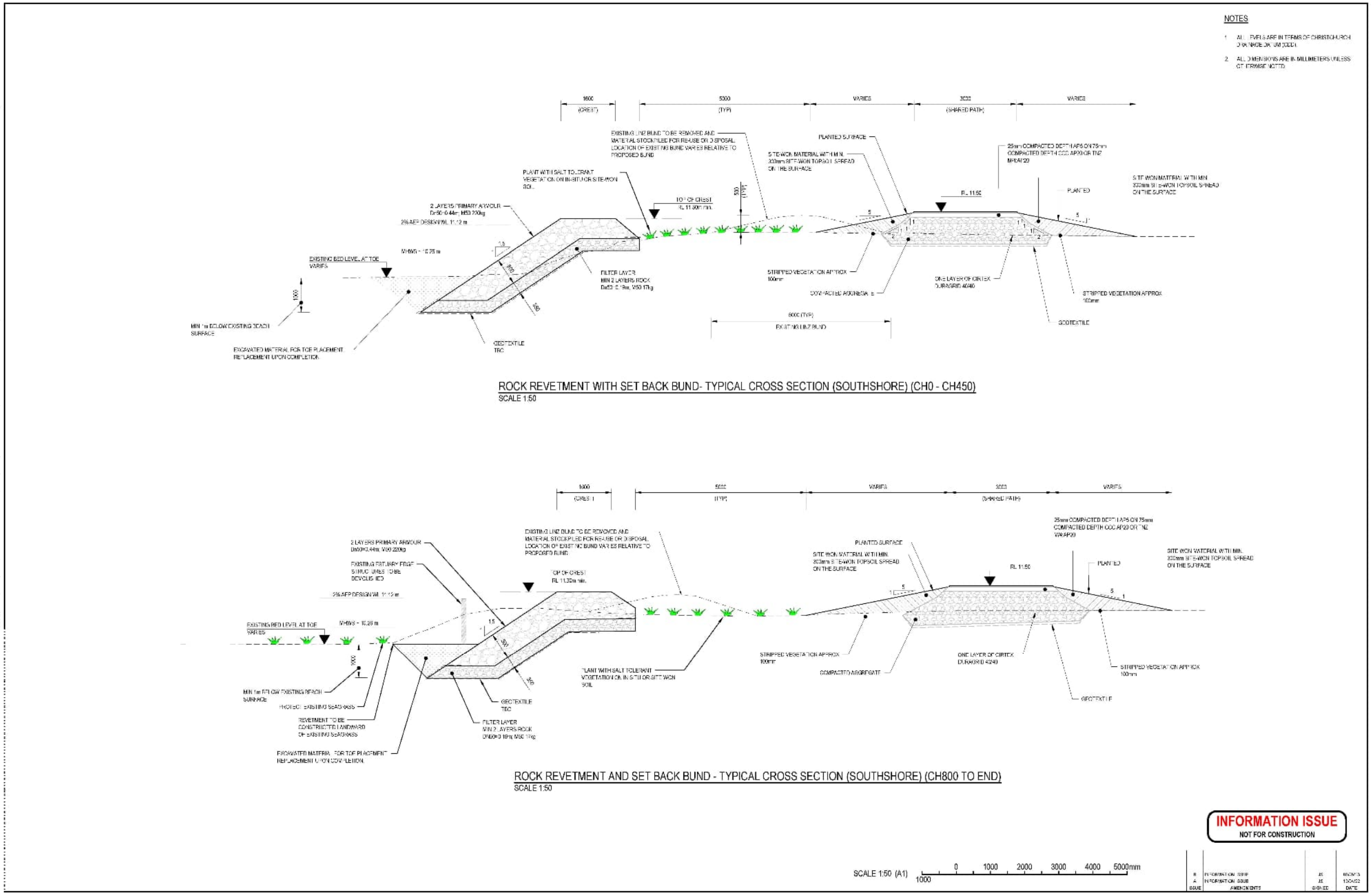

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CHRISTCHURCH CITY COUNCIL
SOUTHSHORE AND SOUTH NEW BRIGHTON PARK
EROSION AND INUNDATION PROTECTION

TYPICAL CROSS SECTION
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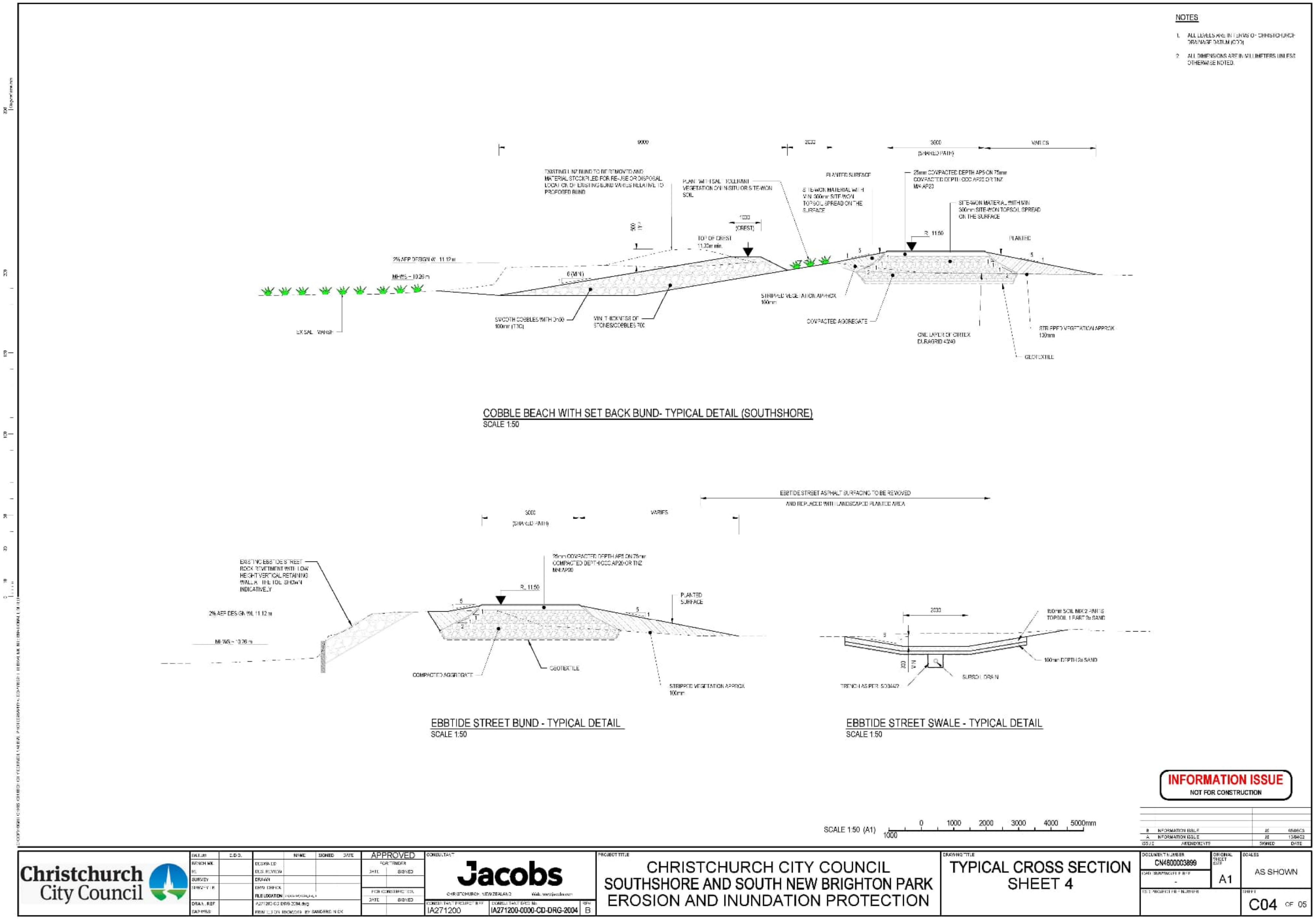
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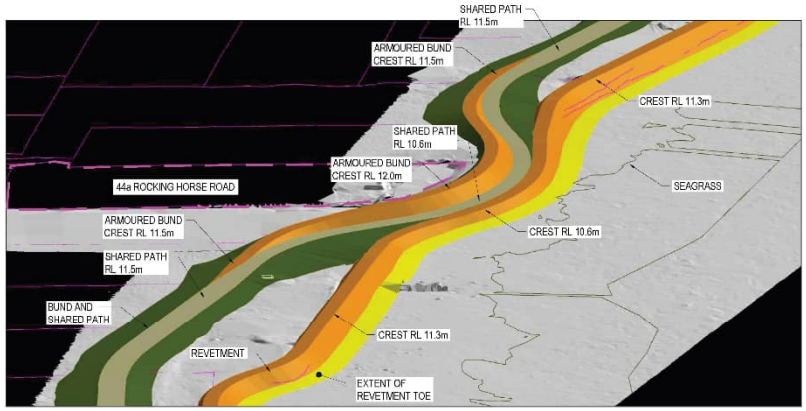

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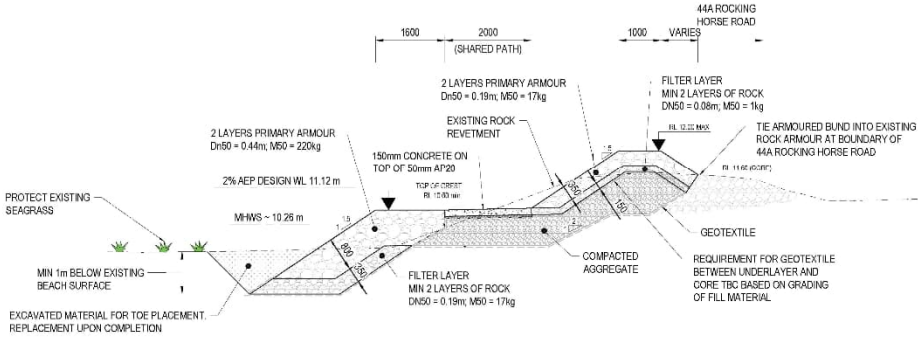

44a ROCKING HORSE ROAD TYPICAL DETAIL
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CHRISTCHURCH CITY COUNCIL
SOUTHSHORE AND SOUTH NEW BRIGHTON PARK
EROSION AND INUNDATION PROTECTION

TYPICAL CROSS SECTION
SHEET 5

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DOCUMENT NUMBER CN4800003899
ORIGINAL SHEET SIZE A1
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3 Statutory Requirements

An assessment of environmental effects (AEE) is being compiled from various resources, including archaeological, as part of the requirements for resource consent.

The legislative requirements relating to archaeological sites and artefacts are detailed in the following sections. There are two main pieces of legislation that provide protection for archaeological sites: the Heritage New Zealand Pouhere Taonga Act 2014 and the Resource Management Act 1991. Artefacts are further protected by the Protected Objects Act 1975.

3.1 Heritage New Zealand Pouhere Taonga Act 2014

The Heritage New Zealand Pouhere Taonga Act 2014 came into effect in May 2014, repealing the Historic Places Act 1993. The purpose of this act is to promote identification, protection, preservation, and conservation of New Zealand's historical and cultural heritage. Heritage New Zealand Pouhere Taonga administers the act and was formerly known as the New Zealand Historic Places Trust (Pouhere Taonga).

Archaeological sites are defined by this act as

(a) any place in New Zealand, including any building or structure (or part of a building or structure), that--:
  (i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and
  (ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
(b) includes a site for which a declaration is made under section 43(1)

Additionally, Heritage New Zealand has the authority (under section 43(1)) to declare any place to be an archaeological site if the place

(a) was associated with human activity in or after 1900 or is the site of the wreck of any vessel where that wreck occurred in or after 1900; and
(b) provides, or may be able to provide, through investigation by archaeological methods, significant evidence relating to the historical and cultural heritage of New Zealand.

Archaeological sites are protected under Section 42 of the act, and it is an offense to carry out work that may "modify or destroy, or cause to be modified or destroyed, the whole or any part of that site if that person knows, or ought reasonably to have suspected, that the site is an archaeological site", whether or not the site has been previously recorded. Each individual who knowingly damages or destroys an archaeological site without having the appropriate authority is liable, on conviction, to substantial fines (Section 87).

Any person wishing to carry out work on an archaeological site that may modify or destroy any part of the site, including scientific investigations, must first obtain an authority from Heritage New Zealand (Sections 44(a,c)). The act stipulates that an application must be sought even if the effects on the archaeological site will be no more than minor as per Section 44(b). A significant change from the Historic Places Act (1993) is that "an authority is not required to permit work on a building that is an archaeological site unless the work will result in the demolition of the whole of the building" (Section 42(3)).

Heritage New Zealand will process the authority application within five working days of its receipt to assess if the application is adequate or if further information is required (Section 47(1)(b)). If the application meets the requirements under Section 47(1)(b), it will be accepted and notice of the determination will be provided within 20 to 40 working days. Most applications will be determined within 20 working days, but additional time may be required in certain circumstances. If Heritage New Zealand requires its own assessment of the Māori values for the site, the determination will be made within 30 working days. If the application relates to a particularly complex site, the act permits up to 40 days for the determination to be made. Heritage New Zealand will notify the applicant and other affected parties (e.g., the land owner, local authorities, iwi, museums, etc.) of the outcome of the application.

Once an authority has been granted, modification of an archaeological site is only allowed following the expiration of the appeals period or after the Environment Court determines any appeals. Any directly affected party has the right to appeal the decision within 15 working days of receiving notice of the determination. Heritage New Zealand may impose conditions on the authority that must be adhered to by the authority holder (Section 52). Provision exists for a review of the conditions (see Section 53). The authority remains current for a period of up to 35 years, as specified in the authority. If no period is specified in the authority, it remains current for a period of five years from the commencement date.

The authority is tied to the land for which it applies, regardless of changes in the ownership of the land. Prior to any changes of ownership, the land owner must give notice to Heritage New Zealand and advise the succeeding land owner of the authority, its conditions, and terms of consent.

An additional role of Heritage New Zealand is maintaining the New Zealand Heritage list, which is a continuation of the Register of Historic Places, Historic Areas, Wāhi Tapu, and Wāhi Tapu Areas. The list can include archaeological sites. The purpose of the list is to inform members of the public about such places and to assist with their protection under the Resource Management Act 1991.

3.2 Resource Management Act 1991

The Resource Management Act 1991 (RMA) defines historic heritage as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, and it may include historic sites, structures, places, and areas; archaeological sites; and sites of significance to Māori. It should be noted that this definition does not include the 1900 cut-off date for protected archaeological sites as defined by the Heritage New Zealand Pouhere Taonga Act 2014. Any historic feature that can be shown to have significant values must be considered in any resource consent application.

The heritage provisions of the RMA were strengthened with the Resource Management Amendment Act 2003. The Resource Management Amendment Act 2003 contains a more detailed definition of heritage sites and now considers historic heritage to be a matter of national importance under Section 6. The act requires city, district, and regional councils to manage the use, development, and protection of natural and physical resources in a way that provides for the well-being of today's communities while safeguarding the options of future generations.

Under the RMA, local authorities are required to develop and operate under a district plan, ensuring that historic heritage is protected. This includes the identification of heritage places on a heritage schedule (or list), designation of heritage areas or precincts and documentation of the appropriate regulatory controls. All heritage schedules include, but are not limited to, all items on the New Zealand Heritage List/Rārangi Kōrero. Additional sites of significance to the local authority may also appear on the schedule.

The regulatory controls for historic heritage are specific to each local authority. However, most local authorities will require RMA resource consent for any alterations, additions, demolition, or new construction (near a listed place) with Heritage New Zealand being recognised as an affected party. Repair and maintenance are generally considered permitted activities.

3.3 Protected Objects Act 1975

The Protected Objects Act 1975 was established to provide protection of certain objects, including protected New Zealand objects that form part of the movable cultural heritage of New Zealand. Protected New Zealand objects are defined by Schedule 4 of the act and include archaeological objects and taonga tūturu. Under Section 11 of the Protected Objects Act 1975, any newly found Māori cultural objects (taonga tūturu) are automatically the property of the Crown if they are older than fifty years and can only be transferred from the Crown to an individual or group of individuals through the Māori Land Court. Anyone who finds a complete or partial taonga tūturu, accidentally or intentionally is required to notify the Ministry of Culture and Heritage within:

(a) 28 days of finding the taonga tūturu; or
(b) 28 days of completing field work undertaken in connection with an archaeological investigation authorised by the Heritage New Zealand.

4 Methodology

In order to assess the archaeological resources of the area of inquiry, UOA conducted detailed documentary research, and examined records of previous archaeological work undertaken within the vicinity of the area of inquiry.

UOA consulted numerous sources of documentary evidence in order to determine the historical context of the area of inquiry. The results of the documentary research are provided in Section 5. The sources utilised in this research include:

- Sources regarding the Māori occupation and developments
- Local histories
- 19th century newspapers available through the Papers Past website
- Survey plans and land titles via LandOnline
- Historic aerial photographs
- Heritage New Zealand Pouhere Taonga Digital Library

Previously recorded archaeological sites and reports on prior archaeological work carried out near the area of inquiry can provide information that is valuable for assessing archaeological potential. UOA carried out a search of ArchSite (the New Zealand Archaeological Site Recording Scheme) to identify if there are any previously recorded sites on or near the project area. ArchSite is an online database that contains information about recorded archaeological sites in New Zealand. ArchSite uses GIS (Geographic Information System) technology to manage and display archaeological site location data. It is the national database of archaeological sites in New Zealand. A search of the Heritage New Zealand Pouhere Taonga Digital Library was carried out to understand the archaeological work carried out in the area previously. The results of the ArchSite and digital library search are documented in Section 6.

A site survey was undertaken to the area of planned works by Rebecca Adam on 25, 28 and 31 March 2022. The results of the site survey are documented in Section 6.5.

The assessment of archaeological and other values is based on criteria established by Heritage New Zealand (2019):

- The **condition** of the site(s).
- Is the site(s) unusual, **rare or unique**, or notable in any other way in comparison to other sites of its kind?
- Does the site(s) possess **contextual value**? Context or group value arises when the site is part of a group of sites which, taken together as a whole, contribute to the wider values of the group or archaeological, historic or cultural landscape. There are potentially two aspects to the assessment of contextual values; the relationship between features within a site, and the wider context of the surroundings.
- **Information potential**. What current research questions or areas of interest could be addressed with information from the site(s)? Archaeological evaluations should take into account current national and international research interests, not just those of the author.
- **Amenity value** (e.g., educational, visual, landscape). Does the site(s) have potential for public interpretation and education?
- Does the site(s) have any special **cultural associations** for any particular communities or groups (e.g., Māori, European, Chinese.)

The overall level of significance was determined based on the evaluation of the criteria listed above; however, it is not possible to fully understand the archaeological significance of subsurface sites, features, and materials that may be uncovered during the site works. It is important to recognise that the significance of a site may change on the basis of what is found during the work programme.

After determining the history of the site(s) and evaluating its archaeological value, UOA assessed the effects of the proposed erosion and inundation plan on the archaeological resources of the area of inquiry. Specifically, UOA considered the following matters as outlined by Heritage New Zealand (2019):

- How much of the site(s) will be affected, and to what degree, and what effects this will have on the values of the site(s).
- Whether the proposed activity may increase the risk of damage to the site(s) in future. For example, change from farming to residential use may make sites vulnerable to increased pedestrian and vehicular activity.
- Whether a re-design may avoid adverse effects on the site(s). It is recognised that detailed evaluation of alternatives is beyond the scope of the archaeological assessment, however, some consideration of alternatives may be considered where possible.
- Possible methods to protect sites, and avoid, minimise or mitigate adverse effects is discussed. These will form the basis of any recommendations in the final section.
- Measures of reducing the potential adverse effects on the site(s), management of the archaeological resources, and mitigation of information loss were considered.

5 Historical Background

Traditional accounts relate successive migrations to Te Wai Pounamu (the South Island) from Te Ika a Māui (the North Island). The earliest groups noted in oral traditions include Kāhui-Tipua, Hawea and Te Rapuwai, and Ngāi Tahu scholars have considered these groups as at least semi-mythical, as traditions regarding them are typically aetiological narratives explaining the origins of such things as kūmara or the Moeraki Boulders. Traditions regarding later groups (Waitaha, Ngāti Mamoe, and Ngāi Tahu) are by contrast primarily related to human events, rather than supernatural (Tau and Anderson, 2008: 43).

The first human settlers of Te Wai Pounamu for which traditional accounts and whakapapa are clear, were Waitaha, descendants of the explorer Rākaihautū who arrived in the waka *Uruao*. They were followed by Ngāti Māmoe, who migrated from Te Ika a Māui around the late 16th/early 17th centuries. The relationship between Waitaha and Ngāti Māmoe was complicated, with periods of peace and intermarriage as well as conflict, but Ngāti Māmoe gradually came to establish mana whenua over much of Te Wai Pounamu. In the early to mid-17th century another North Island group, Ngāi Tahu, migrated to the South Island. As with their predecessors, Ngāi Tahu came to establish mana whenua over most of Te Wai Pounamu through both conflict and intermarriage (Anderson, 1998; Tau and Anderson, 2008).

Te Kōrero Karoro is the name for the long, narrow spit that extends between the sea on the east and Te Ihutai (Avon-Heathcote Estuary) on the west, which is today known as Southshore or the South New Brighton Spit. It is an area of cultural significance to Māori, as it provided ready access to Te Ihutai (Avon Heathcote Estuary) and connected to Ōtākaro (Avon River), and Ōpāwaho (Heathcote River) which was part of a larger fishery and river network used by Māori, famous for its abundance and variety of fish and shellfish. Te Ihutai remains an area of immense cultural and historical importance to Māori today. Te Kōrero Karoro was also part of a network of ara tawhito (traditional travel routes) that connected Kaiapoi pā in the north and Horomaka/Te Pātaka-a-Rākaihautū (Banks Peninsula) in the south (Te Rūnanga o Ngāi Tahu, 2023).

The main settlement area on Te Kōrero Karoro was the Te Kai a Te Karoro pā located at what is today the South New Brighton Park (Figure 5-1). Karoro is the Māori name for seagulls in general and also specifically refers to the southern black-backed gull which is prevalent in the area. Te Kai-a-Te-Karoro was one of several interconnected Ngāi Tahu settlements located near Te Ihutai which took advantage of the estuary's rich mahinga kai resources (Te Rūnanga o Ngāi Tahu, 2023). One of the first European explorers to the area who left a written record, James Robinson Clough known as Rapahina to local Māori, was recorded seeing the pā during a trip up the Ōtākaro in the late 1830s/1840 (Jacobson, 1914: 148; Taylor, 1952: 46). Remains of the pā were still clearly visible in the early 1900s and archaeological remains have been identified there during the latter 20th century (see Section 6; Taylor, 1952: 46; Te Rūnanga o Ngāi Tahu, 2023).

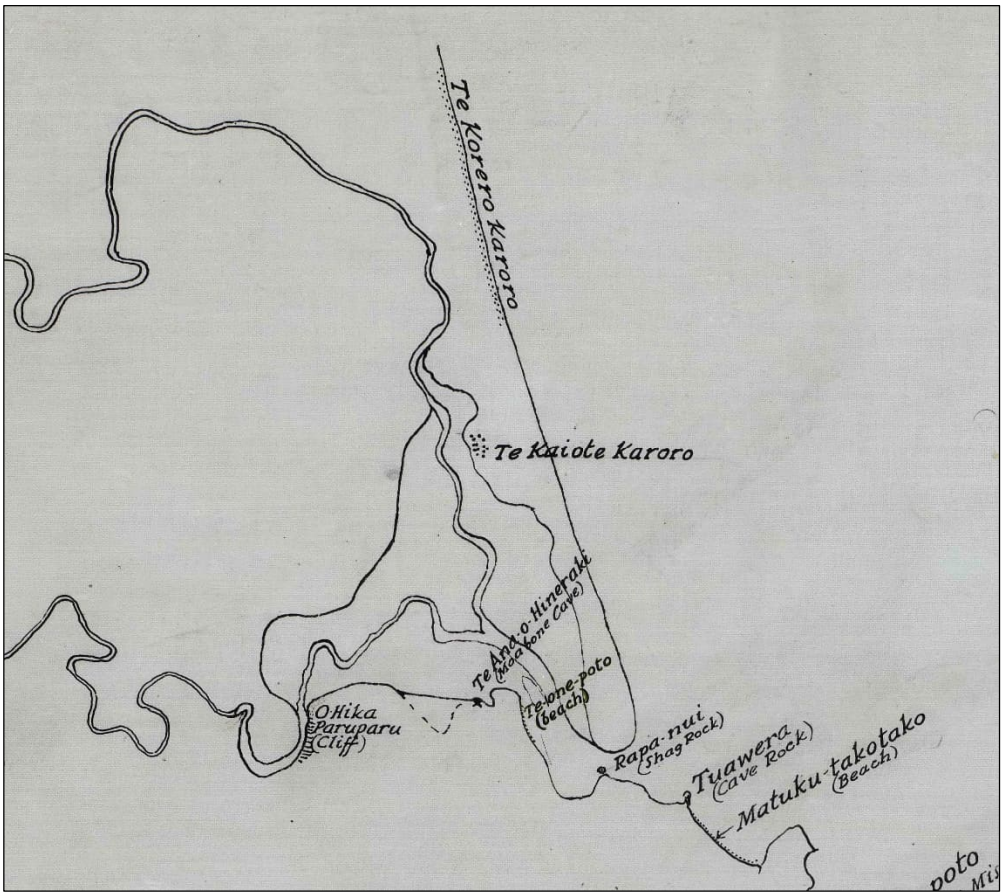

Figure 5-1. Detail from Stack's 1894 map of Māori place names, indicating Southshore/South New Brighton Spit to be known as Te Kōrero Karoro and identifying the location of Te Kai a Te Karoro pā. Image: Stack, 1894.

Following the acquisition of the land by the British Crown under the Kemp purchase in 1848, the land around Christchurch was subdivided into rural sections or large pastoral runs and leased/sold to European settlers. The land comprising the South New Brighton and Southshore areas within the project area was surveyed in 1850 as part of Pastoral Run 239, a large block of land extending along the coast between the Styx River in the north and the Avon-Heathcote Estuary in the south. Pastoral Run 239 (and the adjoining Runs 72 and 9) were initially leased by brothers-in-law William Derisley Wood and William Chisnall. The sandy terrain of this area resulted in the land becoming known as the Sandhills (Figure 5-2). Wood and Chisnall worked the Sandhills run as a dairy station, from which they supplied much of early Christchurch with milk. Peter Kerr, who initially worked as Wood and Chisnall's station manager, later purchased the run from them in partnership with Dr. Moore in the mid-1850s (Acland, 1946: 48-49). Although the Sandhills run is known to have been occupied and developed upon from the 1850s onwards no evidence could be found to suggest that the land comprising the current project area was occupied beyond pastoral use during this time.

Figure 5-2. Detail from Black Map 95, showing the South New Brighton and Southshore areas part of the Sandhills run. Image: Archives New Zealand, 1856.

From the early 1860s parts of the Sandhills Run began to be surveyed into reserves set aside for public convenience and into rural sections which were sold as freehold land. The land comprising the current project area was surveyed as part of Reserve 1579 and Rural Sections 3954 and 30462 (Figure 5-3). An overview of the occupation and developments of these sections is outlined below. In addition to the reserves and rural sections surveyed in the area, a strip of land also appears to have been surveyed extending along the banks of the Avon-Heathcote estuary and along the coastline. This area appears to have been surveyed as a convenience to allow for public access to the waters of the estuary and ocean. Information regarding any known developments of this land is included in the histories of the adjoining sections below.

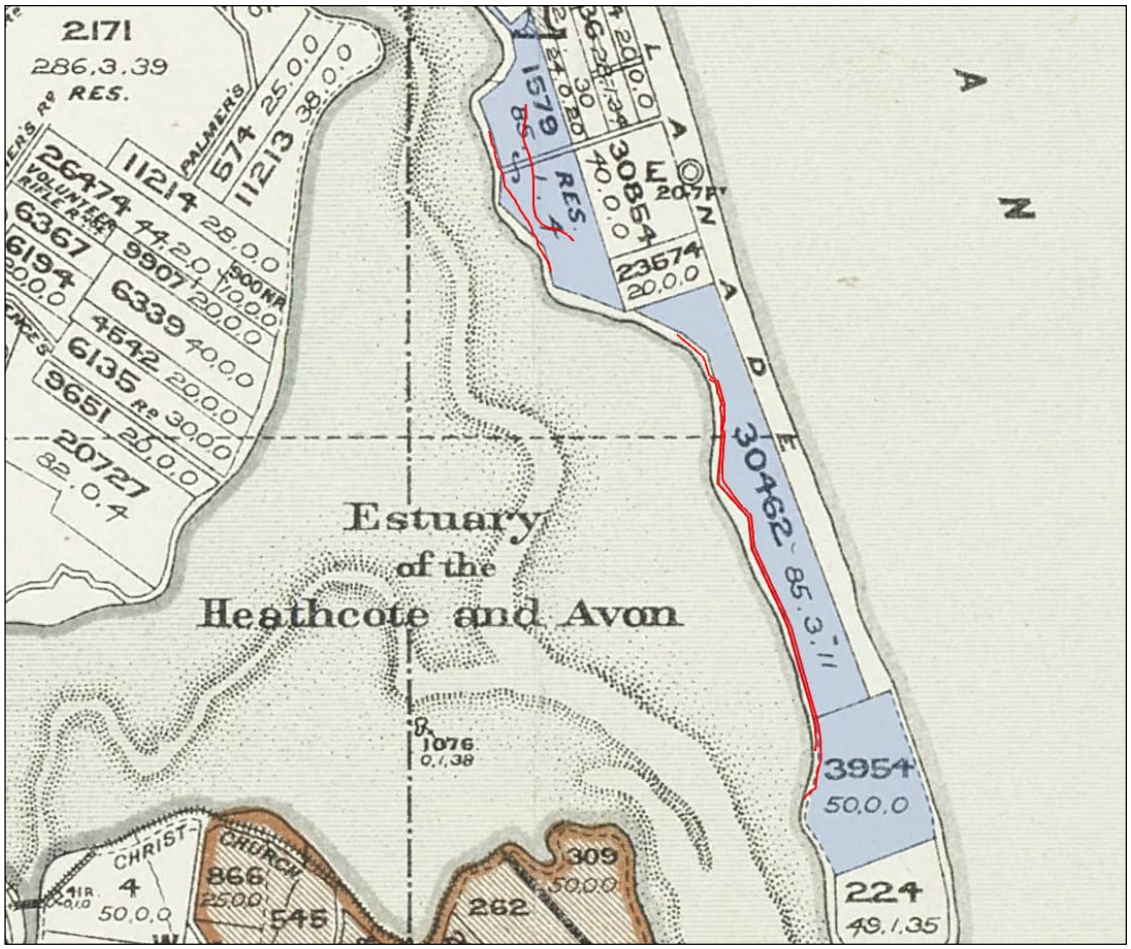

Figure 5-3. Detail from 1892 map of Christchurch Rural Sections, showing the current project areas (indicated in red) extending through part of Reserve 1579 and Rural Sections 3954 and 30462 (coloured blue). Image: Wilson, 1892.

5.1 Reserve 1579

The portion of Reserve 1579 comprising the current project area is just one of a number of blocks of land (totalling over 1000 acres) in the New Brighton area reserved by the Government during the 1860s and designated as 'Reserve 1579'. Due to the size of the reserve, it is difficult at times to know which portion of the reserve is being referred to in historic records. The Selwyn County Council were recorded having various portions of Reserve 1579 planted with trees, set aside as recreation reserves (for example Rawhiti Domain), or leased to tenants during the 19th century (*Lyttelton Times*, 2/5/1884: 4, 1/6/1887: 2, 14/7/1892: 2, 26/11/1896: 3; *Press*, 6/8/1883: 3; 29/8/1883: 3, 16/3/1894: 3; *Star*, 29/10/1889: 3). It appears that the relevant portion of Reserve 1579 was planted with trees in the late 1870s to combat the prevalent easterly winds which caused extensive sand drift in the South New Brighton area and to assist in soil stabilisation (Penney, 1982: 172). No further developments are known to have occurred within the portion of Reserve 1579 comprising the current project area during the 19th century.

Following the formation of the New Brighton Borough Council in 1897, portions of Reserve 1579 began to be vested under the authority of the Borough Council, including the portion of Reserve 1579 which forms part of the current project area (*Lyttelton Times*, 13/2/1897: 5, 20/10/1897: 2; *Star*, 7/2/1898: 3). Like the County Council before them, the Borough Council also began leasing the portions of Reserve 1579 under their authority to tenants during the early 20th century (*Lyttelton Times*, 23/1/1907: 11). It appears that the relevant portion of Reserve 1579 comprising the current project area was first let to Mr Marriott in 1914 while Mr Harwood was given the sole right to cut down any of the dead trees in the reserve for a period of three months (Penney, 198: 172). It was during Mr Marriott's lease of the reserve that the first developments appear to have occurred on the property. In 1914 the New Brighton Power Boat Club decided to construct a jetty off the northwestern point of the reserve to facilitate their amateur boat races held in the estuary and Avon River. The various members of the club each brought 10 feet of timber of a predetermined width to the reserve on

a certain date in 1914 and together constructed the first jetty off the reserve. It was at this time that the area became known as Pleasant Point (Penney, 1982: 173). The construction of the jetty slowly increased the popularity of the area, and soon the New Brighton Council were contributing to the cost of further developments, such as the sinking of a well, erection of a fireplace, gates, bathing shelters, levelling the sandhills to form a car park and kiosk (Penney, 1982: 173). The area was soon a well-known recreation area that was later to be known as the South New Brighton Park.

The South New Brighton Park has been referred to historically as the Pleasant Point Domain, Jellicoe Park, and the South Brighton Domain. In June 1953, following a public meeting convened by the South Brighton Progress League (later the Residents Association), the Council resolved that the then Pleasant Point Domain and Jellicoe Park be renamed South New Brighton Park. It appears the name was applied to the reserve area from Beatty Street to Ebbtide Street. The name 'South Brighton Domain' does however still gets used (Cecil, 2015).

Aerial imagery taken between 1925 and 2015 shows the developments which occurred within the South New Brighton Park in the latter 20th and early 21st centuries (Figure 5-4, Figure 5-5, Figure 5-6, Figure 5-7, Figure 5-8, and Figure 5-9). Aerial imagery from the 1920s and 1940s shows the majority of the park area covered with trees. These are likely those planted during the 1870s to combat wind and soil erosion. The cleared areas within the park appear to be playing fields. The South New Brighton Pier is also evident extending off Pleasant Point from the 1920s. Although this is likely the same location as the jetty constructed in 1914 much of the infrastructure of the jetty was reconstructed during the latter 20th century. The trees within the South New Brighton Park appear to have been frequently removed during the latter decades of the 20th century, with only a few patches left by the early 21st century. The South Brighton Holiday Park first appears in aerial imagery from 1980s.

Figure 5-4. Aerial imagery from 1925-1929, showing the developments within the boundaries of South New Brighton Park (approximate boundaries outlined in blue) and indicating the approximate location of the current project area (in red). Image: Canterbury Maps, 2022.

Figure 5-5. Aerial imagery from 1940, showing the developments within the boundaries of South New Brighton Park (approximate boundaries outlined in blue) and indicating the approximate location of the current project area (in red). Image: LINZ, 1940a.

Figure 5-6. Aerial imagery from 1950, showing the developments within the boundaries of South New Brighton Park (approximate boundaries outlined in blue) and indicating the approximate location of the current project area (in red). Image: LINZ, 1950.

Figure 5-7. Aerial imagery from 1961, showing the developments within the boundaries of South New Brighton Park (approximate boundaries outlined in blue) and indicating the approximate location of the current project area (in red). Image: LINZ, 1961.

Figure 5-8. Aerial imagery from 1984, showing the developments within the boundaries of South New Brighton Park (approximate boundaries outlined in blue) and indicating the approximate location of the current project area (in red). Image: LINZ, 1984.

Figure 5-9. Aerial imagery from 2015-2019, showing the developments within the boundaries of South New Brighton Park (approximate boundaries outlined in blue) and indicating the approximate location of the current project area (in red). Image: Canterbury Maps, 2022.

5.2 Rural Section 3954

Rural Section 3954, a 50-acre section fronting the Avon-Heathcote Estuary and the sea, was granted by the Crown to George Duncan Lockhart in 1862 (LINZ, 1860: 3954). George Buckley took ownership of the property from Lockhart in 1864 before selling it to Henry Joseph Hall and Dr. Henry Horsford Prins in 1866. Prins took over sole ownership of the Rural Section in 1867 and the property remained in the Prins family until 1905 when Frederick Pratt purchased it (LINZ, 1860: 3954). The 1898-1899 rate book for Rural Section 3959 indicates that no developments were present on the 50-acre rural section in 1899 (Christchurch City Council, 1898-1899: 682). No information could be found to indicate that any developments or occupation occurred on Rural Section 3954 during the 19th century beyond agricultural pursuits.

The rural section was subdivided into residential allotments in 1921, however, aerial imagery shows no developments had occurred on the property by 1940 (Figure 5-10; LINZ, 1921). Rocking Horse Road was extended through Rural Section 3954 in the latter 1950s to facilitate the first residential development of the section (Canterbury Maps, 2022).

Figure 5-10. Aerial imagery from 1940, showing no developments within the boundaries of Rural Section 3954 (outlined in blue). Image: LINZ, 1940b.

5.3 Rural Section 30462

Rural section 30462, an 85-acre section fronting the Avon-Heathcote Estuary and the ocean esplanade, was purchased by Edward Mitchell sometime before 1886 (LINZ, 1886). Mitchell, a stockowner, owned a significant portion of land in the greater New Brighton area, including Point Farm to the north of the relevant section where his New Brighton homestead was located (*Press,* 13/1/1883: 4). Due to his declining health Mitchell advertised Rural Section 30462 for sale in 1883, at which time he described the property as being well adapted for seaside residences and as containing a good artesian supply of water. The advertisement does not suggest that any further development had occurred on the section by this time (*Press,* 13/1/1883: 4). The property did not sell in 1883 and Mitchell continued to own the section until his death in 1886 (*Press,* 20/4/1886: 1). Henry Layton Bowker purchased the rural section in 1888 and ran a sheep farm on the property until after World War I (Rowlands, et al., 2006; LINZ, 1888).

The rural section was subdivided into residential allotments in 1916, however, aerial imagery shows no developments had occurred on the property by 1940 except a formed portion of Rocking Horse Road extending into the north of the section (Figure 5-11; LINZ, 1916). The first residential development of the section is evident in aerial imagery from the latter 1950s, by which time Rocking Horse Road had been extended through the full length of the section (Canterbury Maps, 2022).

Figure 5-11. Aerial imagery from 1940, showing the minimal developments within the boundaries of Rural Section 30462 (outlined in blue). Image: LINZ, 1940b.

6 Previous Archaeological Investigations

There are numerous recorded archaeological sites in the South New Brighton and Southshore areas. Figure 6-1 provides an overview of the distribution of the recorded sites in the Southshore and South New Brighton areas and Table 6-1 provides a summary of the sites located within these areas. Sites and archaeological investigations located within or directly adjoining the current project area are described further in Sections 6.1 to 6.4.

Figure 6-1. Archaeological sites recorded in the South New Brighton and Southshore areas. The project area is indicated in green.

Table 6-1. Summary of recorded archaeological sites in the South New Brighton and Southshore areas.

Archaeological site	Site type	Location	Description
M35/294	Midden/oven	Jellicoe Domain, Christchurch	The location of the Te Kai O Te Karoro pā site. Midden shell is reported to have been present on the ground surface and bleeding through the sand dunes in the 1960s.
M35/916	Midden/oven	36B Rocking Horse Road, Christchurch	Shell midden comprising pipi, cockle, mudsnail and venus shell over an area of about 4 m

Archaeological site	Site type	Location	Description
M35/925	Māori horticulture	2b Penguin Street, Christchurch	Buried charcoal-rich topsoil at 0.4 m below modern ground surface.
M35/927	Unclassified – occupation layer	380a Estuary Road, Christchurch	Buried charcoal-rich topsoil at 0.2 m below modern ground surface.
M35/1059	Unclassified – occupation layer	7 Kingfisher Lane, Christchurch	A charcoal-stained soil at 0.3 m below modern ground surface
M35/1088	Unclassified – occupation layer	90b Rocking Horse Road, Christchurch	A dark stained sand containing charcoal at 0.35 m below modern ground surface
M35/1211	Unclassified – occupation layer	7 Malta Crescent, Christchurch	A buried topsoil layer that may be associated with pre-European occupation
M35/1323	Unclassified – occupation layer	34 Malta Crescent, Christchurch	A buried topsoil layer that contained shell fragments and traces of charcoal at 0.2 m below modern ground surface
M35/1618	Unclassified – occupation layer	8 Caspian Street, Christchurch	A charcoal-rich modified ground surface 0.2 m below modern ground surface
M35/1749	Midden/oven	371/373 Estuary Road, Christchurch	A layer of black, charcoal-stained sand containing shell (largely pipi) and small fragments of oven stones at 0.65 m below ground surface
M35/1801	Midden/oven	81 Rocking Horse Road, Christchurch	A midden consisting of charcoal-stained sand and shellfish (cockle and mudsnail) at 0.19-0.24 m below ground surface
M35/1867	Midden/oven	370 Pine Avenue, Christchurch	A charcoal rich soil with fragments of shell 0.37 m below ground surface
M35/2146	Māori horticulture	368 Estuary Road, Christchurch	A brown sandy loam with charcoal fleck inclusions at 0.17-0.25 m below ground surface
M36/260	Artefact find	164 Rocking Horse Road, Christchurch	A buried topsoil layer with shell fragment and fire cracked rock and a small quartz flake at 0.3 m below ground surface
M36/263	Māori horticulture	111a Rocking Horse Road, Christchurch	A buried charcoal-rich topsoil at 0.2 m below ground surface
M36/264	Māori horticulture	1a Tern Street, Christchurch	A buried charcoal-rich topsoil layer at 0.8 m below ground surface
M36/274	Māori horticulture	148b Rocking Horse Road, Christchurch	A buried charcoal-rich topsoil with corroded iron fragment and sheep bone at 0.2 m below ground surface
M36/348	Māori horticulture	178 Rocking Horse Road, Christchurch	A buried topsoil layer at 0.3-0.35 m below ground surface
M36/353	Unclassified – occupation layer	100c Rocking Horse Road, Christchurch	A buried topsoil layer at 0.45 m below ground surface, believed to be associated with vegetation burn-off immediately prior to or during pre-European occupation in the Southshore area.
M36/544	Unclassified – occupation layer	143b Rocking Horse Road, Christchurch	A charcoal-rich topsoil layer at 0.45-0.60 m below ground surface
M36/649	Midden/oven	192b Rocking Horse Road, Christchurch	A lens of shell midden 50-80 mm thick, located 0.57 m below ground surface

One of the most consistently recorded features found within the South New Brighton and Southshore areas is a buried topsoil layer. Samples from this layer (taken from 39, 151B and 214 Rocking Horse Road) were analysed for their pollen contents by Mark Horrocks (Microfossil Research), and the layer has subsequently been determined to have formed during the period of European settlement, most likely during the 20th century. The locations of these samples were not recorded by Underground Overground Archaeology as archaeological sites as the conclusion was that they represented a 20th century deposition and can be considered representative of the buried topsoil/cultural layer sites recorded across Southshore. Buried topsoil layers in the vicinity of the planned works are discussed further in Section 6.5. Excerpts of Mark Horrocks' report are quoted here:

> *"The samples were prepared for pollen analysis by the standard acetolysis method (Moore et al. 1991). At least 150 pollen grains and spores were counted for each sample and slides were scanned for types not found during the counts.*
>
> *Microscopic fragments of charcoal are also extracted during pollen preparation, providing evidence for fire…*

The three Rocking Horse Rd samples contained microscopic fragments of charcoal, with sample 214 having a noticeably much higher concentration than the other two. Together with negligible amounts of pollen of indigenous trees, this reflects a disturbed local landscape largely cleared of forest by human fire activity. The sample pollen assemblages are generally similar, very strongly suggesting that the sampled deposits are of similar origin and contemporaneous.

The pollen assemblages are dominated by European-introduced dryland pollen types, especially grasses (Poaceae), with very small amounts of pollen from wetland taxa. Although some of the grass pollen is likely from indigenous New Zealand grasses colonising the local sand dunes, the very large amounts in the samples very strongly suggest that most are from European-introduced pasture grasses. Other exotics include pine (Pinus) trees, dandelion/puha (Taraxacum/Sonchus), lupin (Lupinis arboreus) and willow (Salix). Dandelion is European-introduced while puha is indigenous; both are invasive herbaceous plants and pollen of the two can be difficult to differentiate. Lupins are invasive leguminous shrubs, often found colonising sand dunes. Grasses and pine are wind-pollinated, with pollen produced in great abundance and dispersed long distances, reflecting the regional pastural/farming vegetation. The other exotic pollen types are insect-pollinated, however, with pollen produced in small amounts and dispersed short distances, thus largely reflecting the local vegetation.

The large amounts of European-introduced pollens in the three Rocking Horse Rd samples indicate that the deposits originated as a result of European activity in the region, which commenced in the mid-1800s. There is lack of pollen (and fern spore) types indicating Maori landscape disturbance, which overlapped early European activity, in particular bracken (Pteridium) which has long-distance spore dispersal. This strongly suggests that deposition occurred well into the European settlement period." (Horrocks, 2015)

6.1 M35/294

Archaeological site M35/294 is located within Jellicoe Domain (South New Brighton Park) and records the site of the Te Kai O Te Karoro pā (Figure 6-2). In 1958 midden shell was recorded by Tony Fomison to have been apparent on the ground surface, exposed through the dune tops and around the pine tree roots, as well as the foreshore section of the estuary. Fomison notes that the southernmost occurrence of this was a foot thick (~300 mm) midden stretching 130 feet (40 m) along the estuary shore. Katherine Watson attempted to relocate the site in 2003 and was not able to identify any archaeological remains, noting that "…there was a thick cover of pine needles throughout the area indicated. Also, the foreshore is now covered in stones and wire to prevent erosion" (ArchSite, 2019).

The removal of a toilet block at 74 Beatty Street was undertaken in April 2015. Under archaeological authority 2015/923eq the excavation for the demolition (up to 600 mm) was monitored by an archaeologist. No archaeological features or artefacts were recorded during this work (Hickey, 2015).

A new boat ramp was constructed at 74 Beatty Street in July 2015. Under archaeological authority 2015/530eq the excavation for the construction of the ramp (up to 650 mm) was monitored by an archaeologist. No archaeological features or artefacts were recorded during this work (Hickey and Williams, 2015).

The removal of a toilet block at the motor camp at 59 Halsey Street was undertaken in March 2017. Under archaeological authority 2017/462eq the excavation for the demolition (up to 400 mm) was monitored by an archaeologist. Shell was observed on the surface but appeared to be natural. No archaeological features or artefacts were recorded during these works (Dooley and Gibson, 2017).

A new clubhouse and boat ramp facility was constructed at 74 Beatty Street in January 2019. Under archaeological authority 2016/326eq the excavation for the rebuild (up to 2 m) was monitored by an archaeologist. No archaeological features or artefacts were recorded during this work (Trendafilov and Gibson, 2019).

Figure 6-2. Recorded archaeological site M35/294 located within the project area (indicated in red). Image: ArchSite, 2022.

6.2 M35/1801

Archaeological site M35/1801 is located at 81 Rocking Horse Road in immediate proximity to the project area (Figure 6-3). On 16 December 2013, earthworks for the installation of a low-pressure wastewater tank were carried out at 81 Rocking Horse Road as part of SCIRT project 10861. These works took place under authority 2012/321eq. During these works, a midden deposit was exposed below the driveway at 81 Rocking Horse Road at 0.24 m below the ground surface. The shell within the midden was not densely packed and there was no indication of shell nesting within either layer. Visible shell included cockle and mudsnail. The visible extent of the midden was roughly 1 m in diameter, and a bulk sample was taken from its approximate centre (Underground Overground Archaeology, 2017).

Figure 6-3. Recorded archaeological sites M35/925, M35/1088, M36/353 located adjoining the project area (indicated in red). Image: ArchSite, 2022.

6.3 M36/649

Archaeological site M36/649 is located at 192b Rocking Horse Road directly adjoining the current project area (Figure 6-4). On 2 July 2014, earthworks for the installation of a low-pressure wastewater tank were carried out at 192b Rocking Horse Road as part of SCIRT project 10861. These works took place under authority 2012/321eq. During these works, a lens of shell midden was exposed. The lens was visible within the western, eastern and southern baulks of the tank trench, and extended southwards into the wastewater trench for 1.26 m (Underground Overground Archaeology, 2017).

Figure 6-4. Recorded archaeological sites M36/274, M36/264, M36/260, and M36/348 located adjoining the project area (indicated in red). Image: ArchSite, 2022.

6.4 M35/916

Archaeological site M35/916 is located at 36b Rocking Horse Road in immediate proximity to the project area (Figure 6-5). The removal of the dwelling at 36b Rocking Horse Road was undertaken in March 2013. Under archaeological authority 2015/358eq the excavation for the demolition was monitored by an archaeologist. A shell midden containing pipi, cockle, mudsnail and venus shell was found in the southeastern corner of the property during the removal of the building foundations. It was recorded as one large shell deposit with 300 mm thick lenses of shell, found at a depth of 300 mm from the surface. The midden is spread over approximately 4 m. A single sample of pipi shell was submitted for dating and the results were 804+/- 20 BP, or 1451-1543 calAD (68.2%), or 1434-1628 calAD (95.4%) (ArchSite, 2016).

A test pit was dug at 36b Rocking Horse Road in October 2014. Under archaeological authority 2015/056eq the excavation for the test pit was monitored by an archaeologist. No archaeological features or artefacts were recorded during this work (Anderson et al., 2014).

A test pit was excavated at 40a Rocking Horse Road near the existing walkway in April 2022. Under archaeological authority 2022/052 the works were monitored by an archaeologist. No archaeological features or artefacts were recorded during this work (T. Wadsworth Pers. Comm., 2022).

Figure 6-5. Recorded archaeological sites M35/916, M35/1059, M35/1618 located adjoining the project area (indicated in red). Image: ArchSite, 2022.

6.5 Buried topsoil layers

It is considered likely that the cultural/buried topsoil layer, which has been encountered several times across Southshore, is part of the same 20th century formation which is described above. The relevant archaeological sites are briefly outlined below. It is considered unlikely that these sites related to the pre-European occupation of Southshore.

6.5.1 M35/1618

Archaeological site M35/1618 is located at 8 Caspian Street in immediate proximity to the project area. A buried topsoil was found at a depth of 0.5-0.6 m below ground surface (Alderson, 2015). During works at 8 Caspian Street a buried topsoil was encountered at 0.2 m below the ground surface (Lawrence and Barker, 2017).

No archaeological features or artefacts were recorded during works at 1 Caspian Street and 4 Caspian Street (Hughes, 2014; Hennessey et al., 2018).

6.5.2 M35/1059

Archaeological site M35/1059 is located at 7 Kingfisher Lane in immediate proximity to the project area. A layer of dark brown, charcoal-stained sandy soil was observed approximately 300 mm below the ground surface. The layer was approximately 150 mm thick and was charcoal stained (Webb, 2013a). During works at 5 Kingfisher Lane a buried topsoil containing traces of charcoal was found at a depth between 550-700 mm below ground surface (Mainwaring, 2017).

No archaeological features or artefacts were recorded during works at 62 Rocking Horse Road, 66c Rocking Horse Road or 5 Kingfisher Lane (Dooley and Hickey, 2018, Kurmann, 2015a, Lawrence, 2014).

6.5.3 M35/925

Archaeological site M35/925 is located at 2b Penguin Street within the current project area. A buried topsoil was noted in the northern and southern parts of the site at approximately 0.4 m below the ground surface (Cable, 2012).

6.5.4 M35/1088

Archaeological site M35/1088 is located 90b Rocking Horse Road within the current project area. A thick dark brown soil layer was encountered approximately 410 mm below the ground surface. The layer was 120-150 mm thick containing charcoal inclusions but no archaeological artefacts (Carter, 2013).

6.5.5 M36/353

Archaeological site M36/353 is located at 100c Rocking Horse Road directly adjoining the current project area. A buried topsoil was recorded at a depth of 0.45 m (O'Connell, 2016). During works at 104a Rocking Horse Road a charcoal peat layer was exposed below the surface (Hickey and Dooley, 2018).

6.5.6 M36/274

Archaeological site M36/274 is located at 148b Rocking Horse Road within the current project area. An extensive 200 mmm thick buried charcoal-rich paleosol was found at an approximately 200 mm depth. Also found were a corroded iron fragment and sheep bone (Harsveldt, 2013b).

6.5.7 M36/264

Archaeological site M36/264 is located at 1a Tern Street within the current project area. A buried charcoal-rich topsoil was recorded at a depth of 0.8 m below the modern ground surface (Harsveldt, 2013a).

No archaeological artefacts or features were exposed during works at 1 Tern Street (Hughes, 2013).

6.5.8 M36/260

Archaeological site M36/260 is located at 164 Rocking Horse Road directly adjoining the current project area. A buried topsoil layer, 300 mm deep, containing one shell fragment, some fire cracked rock, and a small quartz flake is reported to have been found at 164 Rocking Horse Road in 2012 (ArchSite, 2018). During works at 164a Rocking Horse Road a 120 mm thick buried topsoil layer was found at a depth of between 400mm and 520 mm below ground surface of the site (Harsveldt, 2015). During works at 170 Rocking Hose Road a layer of sand stained black with charcoal at 600-700 mm depth. There were pebbles and possibly fire cracked rock in this layer and the layer was 150 mm thick (Hickey and Dooley, 2018). During works at 1/166a Rocking Horse Road some black organic staining was evident in one of the excavation areas. The staining did not contain any charcoal (Hickey, 2016).

No archaeological artefacts or features were exposed during works at 164b Rocking Horse Road), 162 Rocking Horse Road or 166b Rocking Horse Road (McCreary, 2014; McCreary and Hughes, 2015; Webb, 2013b).

6.5.9 M36/348

Archaeological site M36/348 is located at 178 Rocking Horse Road directly adjoining the current project area. A buried topsoil was recorded at a depth of 300-350 mm below the modern ground surface during the removal of the dwelling (ArchSite, 2014). During works at this address in January 2019 a dark brown sandy loam buried topsoil with lenses of charcoal rich burnt sand was found across the site at a depth of 400-500 mm (Cable, 2016).

No archaeological material was found during the works during works at 178c Rocking Horse Road or 178a Rocking Horse Road (Erskine, 2018; Kurmann, 2015b; Schwenzer, 2013).

7 Results of the Site Survey

On 25 and 28 March 2022 a site visit was undertaken to the project areas at Southshore and the South New Brighton Park. Portions of the project area in the South New Brighton Park were difficult to navigate and at times inaccessible due to the trees, tussocks, bramble bushes and other plant life. The project area along Southshore was investigated at low tide to ensure that any archaeological remains in the estuary would be visible where possible.

The areas investigated in this assessment have been organised by area: In the South New Brighton Park, the north and south fields (for access, site offices, and stockpiling), the inland planted bund walkway, and the realigned walkway; in Southshore, the realigned walkway and planted bund.

7.1 South New Brighton Park

7.1.1 North field

The north field was a 114 m by 63 m area covered in patchy grass (Figure 7-1). The exposed soil was primarily sand with some small gravel inclusions (Figure 7-2). No archaeological material was identified in this area.

Figure 7-1. Showing the north field, facing southwest. Scale is in 100 mm increments.

Figure 7-2. Soil exposed under grass in north field. Scale is in 100 mm increments.

7.1.2 South field

The south field was a 125 m by 135 m area. This area was in use as a sports field with paint lines recently marked out. Towards the northeast entrance was a playground and a large tree stump (Figure 7-3, Figure 7-4). To the north of the area was a disused bathroom block, and to the south a series of courts adjoining the South New Brighton Holiday Park (Figure 7-5). The exposed soil was sandy with stony inclusions. No archaeological material was identified in this area.

Figure 7-3. Facing south, showing playground near entrance of field.

Figure 7-4. Facing southwest, showing a large tree stump and playing fields. On the far left in the midground are the courts.

Figure 7-5. Facing northeast, showing field area.

7.1.3 Inland planted bund walkway

The inland planted bund runs approximately from within the north field down to the south field, running along the west and south edges of the holiday park. This area had a large amount of pine needle coverage, tussock grass, trees, and bramble bushes obscuring the ground and making access difficult (Figure 7-6, Figure 7-7, Figure 7-8). Some parts of the location were able to be accessed by narrow walking tracks, however only portions of these followed the planned bund path (Figure 7-9). Where areas of ground were exposed, the soil was sandy with occasional broken shell fragments (Figure 7-10). At the far south end of the planned inland planted bund, which was closest to the Jellicoe Marsh, there was a higher concentration of shell fragments. It is possible that this is related to recorded archaeological site M35/294 (Section 6.1), which was described by Tony Fomison as "bleeding through the dune tops and around the pine tree roots" (ArchSite, 2019). During this site visit shell was found concentrated at the base of trees on and around sloped areas near the Jellicoe Marsh (Figure 7-11, Figure 7-12).

Figure 7-6. Showing vegetation coverage.

Figure 7-7. Showing vegetation coverage.

Figure 7-8. Facing south showing the south field in the top left corner, and grass growth across the rest of the area.

Figure 7-9. Facing north, showing the dirt path along the boundary of the South Brighton Holiday Park.

Figure 7-10. Exposed sandy soil with occasional shell fragments. Scale is in 100 mm increments.

Figure 7-11. Broken natural shell exposed on path near the Jellicoe Marsh. Scale is in 100 mm increments.

Figure 7-12. Shell, likely midden material, eroding near the base of the tree. Scale is in 100 mm increments.

7.1.4 Estuary Bund and Walkway

The existing path along the estuary showed signs of significant erosion. Large amounts of shell were seen along this area, eroding out of the ground and exposed below the path level in several locations (Figure 7-13, Figure 7-14, Figure 7-15). A large amount of shell was seen concentrated around exposed tree roots and scattered across the exposed beach sand between the bank and the reno mattress (Figure 7-16).

Based on the description of the midden site M35/294 (Section 6.1) and the location of the shell identified in this site survey in relation to the recorded location of M35/294 (Figure 7-13), it is considered likely that this shell is part of the midden recorded by Tony Fomison in 1958. Although the midden was not able to be identified in 2003, it was noted at the time that the foreshore was covered in stones and wire (reno mattress) to prevent erosion. During the site survey for this assessment, it was noted that the foreshore has now been eroded past the reno mattress by several metres, eroding the bank up to the current path location, therefore exposing the midden that was not able to be found in 2003 (Figure 7-17).

The scattered shell exposed along the beach sand between the path and the reno mattress comprised both whole and fragmented portions of shell; this is possibly the remains of more midden material which has been fully eroded from the bank by tidal movements and has subsequently become trapped between the bank and the reno mattress (Figure 7-18). This scattered shell material was identified along two stretches of eroded beach area, although in situ midden was only identified in the northern section (Figure 7-13; Figure 7-20). Although a large amount of natural shell was identified during this site survey along the foreshore, it is worth noting that most of this shell material was comprised of mudsnails, while the midden material included various bivalves, such as cockle and pipi. The shell recorded in the estuary west of the reno mattress, especially south of the South New Brighton Park, is likely natural shell left behind at low tide. The path itself was primarily sand and gravel, with grass and trees along the edges.

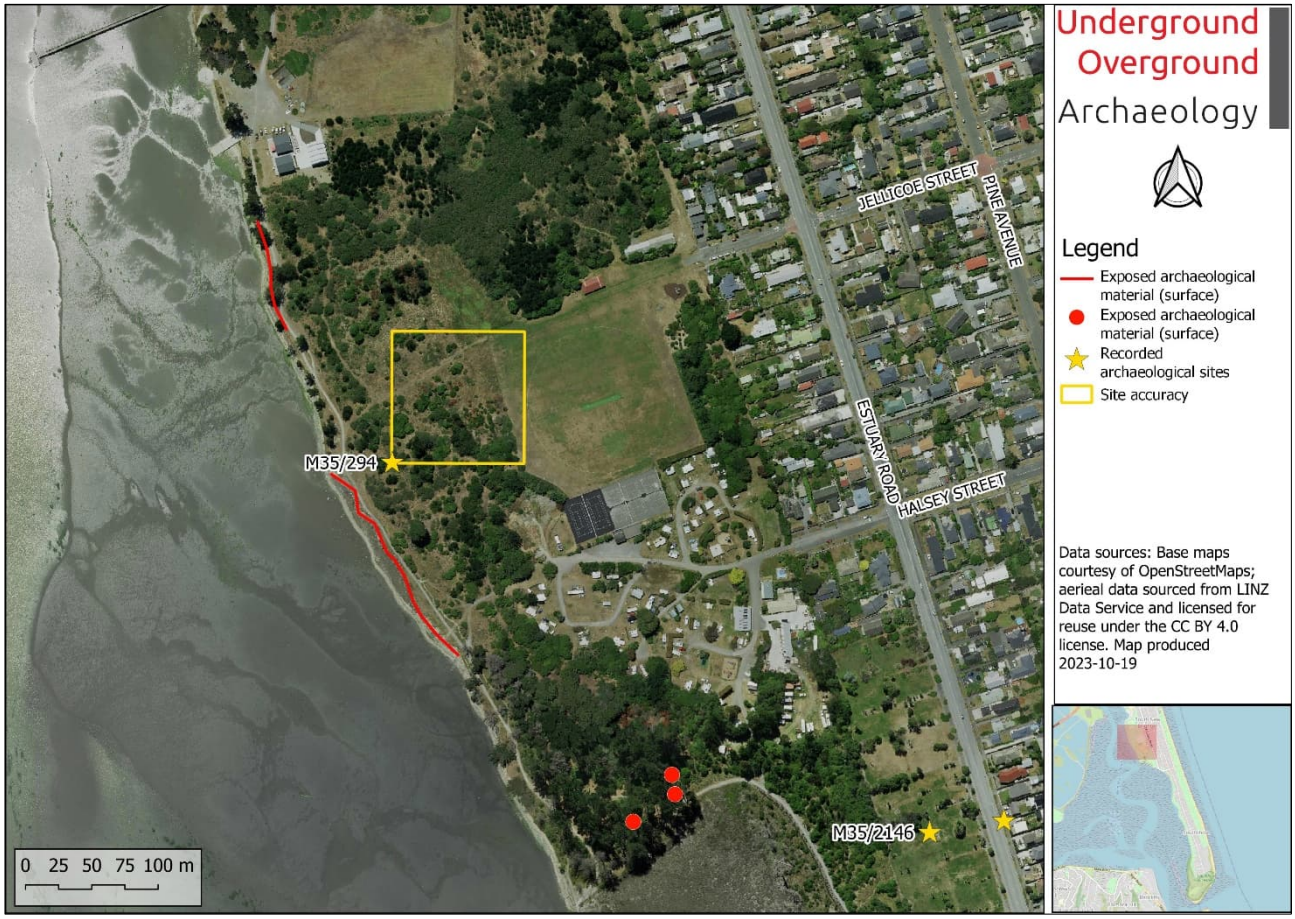

Figure 7-13. Map showing location and extent of exposed archaeological material in relation to planned works and previously recorded archaeological sites.

Figure 7-14. Facing east showing midden eroding from path. Scale is in 100 mm increments.

Figure 7-15. Broken and whole shell fragments left behind in the estuary at low tide, west of the sea wall. This is likely a combination of midden and natural shell material. Scale is in 100 mm increments.

Figure 7-16. Facing southeast, showing midden shell exposed around tree roots next to path. Scale is in 100 mm increments.

Figure 7-17. Looking south along the estuary shoreline showing the path (far left), exposed midden (scale stick shows approximate location of surface material), eroded bank (mid ground), and reno mattress (far right). Scale is in 100 mm increments.

Figure 7-18. In northern area next to South New Brighton Park, looking south along the estuary shoreline showing remains of eroded midden material. Scale is in 100 mm increments.

Figure 7-19. In southern area next to South New Brighton Park, looking east towards existing path, showing exposed shell material on eroded sandy shore. Scale is in 100 mm increments.

7.1.4.1 Site investigation

Following the initial site survey in March 2022, further investigations were conducted around the South New Brighton Park area. On 9 December 2022 a sub-surface archaeological survey was carried out along an approximately 5 m wide corridor of the South New Brighton estuary coast from South New Brighton Park to Jellicoe Marsh (Figure 7-20). The sub-surface survey was undertaken by UOA and involved shovel excavation of test pits in order to identify the extent of any in situ archaeological material.

A total of 58 test pits were excavated during the sub-surface survey, seven of which contained archaeological material; most of these were concentrated towards the south end of the project corridor in test pits 50 to 56, which exposed shell midden at shallow depths. Two middens were visibly eroding from the ground surface along the estuary edge to the north of the project area, and these have been labelled Midden 1 and Midden 2 on the map below. Test pits 14 and 15 exposed disturbed, possibly redeposited midden along the estuary edge, and are associated with Midden 2. Modern rubbish was also noted in exposed areas of Midden 2 along the shore edge; this midden is most likely heavily disturbed or redeposited.

To the south of Midden 2 was an area of what appeared to be imported clay, most likely associated with an area of erosion control reno mattresses or possibly a land fill capping material, based on the modern rubbish found within and below this layer (Figure 7-24). This area was raised approximately a metre above the ground surface at the path level. Due to these heights test pits 19-27 were excavated further inland. No archaeological material was observed within these test pits.

The area around test pits 50 and 51-58 showed a large amount of exposed midden material eroding from the surface, which was scattered over a wide area; these areas are referred to as Midden 4 and Midden 3 respectively in the maps below (Figure 7-21, Figure 7-25). Test pit 50 was excavated within the area of Midden 4, but there was no indication of archaeological material below the surface; it is possible that the midden material has fully eroded or remains in situ further around the tree. The visible extent of Midden 4 was recorded. Midden 3 was visible eroding on the ground surface. Test pits revealed the approximate extent of the midden below the surface, where archaeological material was encountered at depths between 50 mm and 100 mm. Fire-cracked rocks were also observed sporadically on the ground surface (Figure 7-22). Apart from walking and bike tracks that have been formed around and over the midden, there was no indication of previous disturbance to these middens. A summary of test pits containing archaeological material is in Table 7-1 below; a full summary of the test pits is outlined in Table 14-1 in Appendix A.

Figure 7-20. Map showing locations of all test pits.

Figure 7-21. Left: Facing north, showing exposed midden material eroding from the surface around TP 50, east of the estuary and north of the Jellicoe Marsh. Right: Facing northeast, showing eroded midden across the surface of the dune, east of the estuary. Scales are in 100 mm increments.

Figure 7-22. Fire-cracked rocks found with eroded midden on dunes east of the estuary. Scales are in 100 mm increments and 10 mm increments.

Figure 7-23. Map showing locations of Midden 1 and Midden 2, and test pits where archaeological material was encountered.

Figure 7-24. Map showing area of raised imported soil.

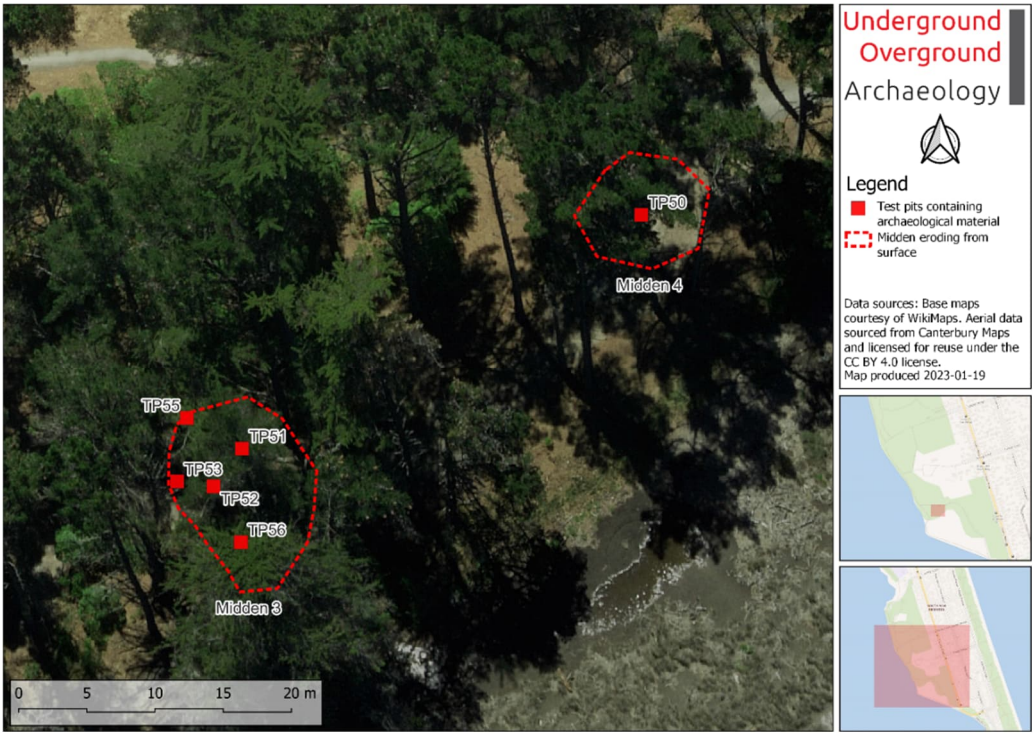

Figure 7-25. Map showing locations of Midden 3 and Midden 4, as well as test pits where archaeological material was encountered.

Table 7-1. Summary of test pits excavated for sub-surface archaeological survey along the South New Brighton Park estuary edge.

Test pit #	Stratigraphy (mm)	Notes	Photos
TP 14	450 deep. 0-100 topsoil 100-400 dark grey stony sand with brick frags 400 + fragment shell midden with plastic.	Fragmented shell midden, modern disturbance. East side of path	 Figure 7-26. TP14 facing west. Scales are in 100 mm increments.  Figure 7-27. TP 14 stratigraphy, facing west. Scales are in 100 mm increments.
TP 15	500 deep. 0-100 topsoil. 100-300 mottled dark brown soil with roots. 300 + light grey sand.	1 bird bone and shells. Probably associated with redeposited midden layer.	 Figure 7-28. TP 15 facing west. Scales are in 100 mm increments.

Test pit #	Stratigraphy (mm)	Notes	Photos
			 **Figure 7-29. TP 15 stratigraphy, facing west. Scales are in 100 mm increments.**
TP 50	At 0 mm shell midden on surface around tree. 0-50 mm olive grey sand.	No arch- Under tree overlooking marsh. No evidence of shell under surface.	 **Figure 7-30. Facing north, showing eroded midden material at base of tree. TP 50 is in the mid ground. Scales are in 100 mm increments.**  **Figure 7-31. Stratigraphy exposed in TP 50, facing west. Scales are in 100 mm increments.**

Test pit #	Stratigraphy (mm)	Notes	Photos
TP 51	50 deep. At 0 mm shell midden on surface around tree. 0-50 mm shell midden in matrix of dark grey sand.	Archaeology - Under tree by marsh, removed top 50, shell material below surface.	 **Figure 7-32 TP 51 facing north. Scales are in 100mm increments.**  **Figure 7-33 TP 51 stratigraphy facing north. Scales are in 100mm increments.**
TP 52	50 deep. At 0 mm shell midden on surface around tree. 0-50 mm shell midden in matrix of dark grey sand.	Archaeology- West of TP 51. Top 50 removed, shell below surface.	 **Figure 7-34. TP 52 facing north. Scales are in 100mm increments.**

Test pit #	Stratigraphy (mm)	Notes	Photos
			 Figure 7-35. TP 52 stratigraphy facing north. Scales are in 100mm increments.
TP 53	20 deep. 0-20 mm dark grey sand 20 mm + shell midden in matrix of dark grey sand.	Archaeology – West of TP 52. Low density shell.	 Figure 7-36. TP 53 stratigraphy facing northwest. Scales are in 100 mm increments.  Figure 7-37. TP 53 stratigraphy, facing southeast. Scales are in 100 mm increments.

Test pit #	Stratigraphy (mm)	Notes	Photos
TP 55	50 deep. 0-50 mm dark grey sand and leaf litter 50 mm+ shell midden	Archaeology - North of TP 51, 50 removed, shell below.	 **Figure 7-38. TP 55 facing north. Scales are in 100 mm increments.**  **Figure 7-39. TP 55 stratigraphy facing north. Scales are in 100 mm increments.**
TP 56	180 deep. 0-180 mm grey sand with fine roots 180 mm + shell midden	Archaeology- midden at 180mm under grey sand with roots	 **Figure 7-40. TP 56 facing east. Scales are in 100 mm increments.**

Test pit #	Stratigraphy (mm)	Notes	Photos
			 Figure 7-41. TP 56 stratigraphy facing east. Scales are in 100mm increments.

7.2 Southshore

The site survey of the Southshore project area begin on Ebbtide Street at the intersection with Estuary Road and continued south along the estuary walkway from 29 Ebbtide Street to approximately 184c Rocking Horse Road. The work area is approximately 2.14 km in length. The current walkway along Ebbtide Street was a gravel path atop a built-up bund with grass on one side and a rock wall along the other (Figure 7-42). South of Ebbtide Street the path adjusts to run several metres further inland (Figure 7-43).

The rock wall along Ebbtide Street was made up of quarry rock, while the wall south of Ebbtide Street was made up of various demolition debris, including bricks, cement blocks, portions of cement walls, old cement boat ramps, rock boulders, and derelict 20th century wooden structures (Figure 7-44, Figure 7-45). The wall was occasionally interrupted by modern wooden walkways overtop stormwater pipes (Figure 7-46); in some locations the wall was very minimal, and the path/bund area only slightly raised above the estuary water level.

In the estuary from approximately 64a Rocking Horse Road and Penguin Street an area of tussock growth obscured the estuary ground surface (Figure 7-47). A large amount of natural shell was present at the base of the estuary, primarily mudsnail but other shells were also present (Figure 7-48). Several 20th century wooden, metal, and concrete structures were seen in proximity to the planned works (Figure 7-49). On the land side of the works (where the existing path is situated) areas of exposed ground on the path and where the grass growth was patchy showed compact sandy soil with stony inclusions. No pre-1900 archaeological material was identified during this portion of the site survey.

Figure 7-42. Facing south, showing walkway along Ebbtide Street. The estuary is on the right.

Figure 7-43. Facing north, showing the path several metres away from the rock wall.

Figure 7-44. Facing southeast, showing the sea wall made up of cement blocks, bricks, and parts of concrete walls.

Figure 7-45. Facing east, showing derelict wooden structures at the estuary edge.

Figure 7-46. Facing south, showing wooden jetty and storm water pipe extending into the estuary.

Figure 7-47. Facing northeast, showing grasses covering a large area of the base of the estuary.

Figure 7-48. Showing natural shells left behind at low tide in the estuary. Scale is in 100 mm increments.

Figure 7-49. Showing timber and concrete structures in the estuary. Scale is in 100 mm increments.

8 Results

The results of the historical research and previous archaeological work in and around the area of inquiry predominantly represent the early use of the area by Māori prior to Pākehā arrival, and the urban development of the area in the 20th century. There are several recorded Māori archaeological sites in proximity to the project area, and the historical evidence suggests that the coastal area of South New Brighton and Southshore has been utilised as a part of a larger fishery and river network. The previously recorded archaeological sites in the wider area represent primarily marine and estuarine resource gathering and consumption.

Although there are many recorded archaeological sites indicating the presence a cultural layer across the Southshore area, subsequent analysis has determined that the layer was formed during the period of European settlement. No cultural evidence is present in this layer, and it is not possible to confirm that it is pre-1900 in nature.

During the June 2022 site survey shell midden was encountered eroding from the bank along the estuary edge of the South New Brighton Park, and from the base of trees towards the Jellicoe Marsh. The extent of these middens was identified during the December 2022 sub-surface site survey. This shell midden has been interpreted as part of recorded archaeological site M35/294. Areas of eroded shell midden were identified between the existing reno mattress and the intact bank edge. To the north, this shell is associated with areas of in situ midden (recorded in Figure 7-23 as Midden 1 and Midden 2). To the south, no in situ midden was identified, but shell material similar in nature to the that found eroding from Middens 1 and 2 was found across the beach. Shell in the estuary observed west of the gabion baskets appeared to primarily consist of mudsnail (including numerous live mudsnail at low tide); the scattered shell in the southern eroded area comprised similar shell content to Middens 1 and 2 and was in reasonably close proximity to these middens. Based on these observations, it is considered likely that the shell in the southern erosion area comprises a mixture of fully eroded midden and natural shell. No midden was identified in adjacent test pits, though the possibility of midden remaining in situ in this area cannot be discounted.

The archaeological material encountered during the survey along the estuary edge is within the project area and will be affected by the planned works. In order to avoid damaging or destroying the exposed in situ portions of M35/294, the erosion and inundation protection works near Middens 1 and 2 will comprise of replacing the existing reno mattresses and replacing them with gabion baskets. Sand material excavated during this replacement process will be used to cover the exposed eroded and in situ areas of Midden 1 and 2.

Although the eroded shell south of Middens 1 and 2 is considered likely to be, at least in part, eroded midden, it was not possible to conclusively determine that material was cultural in origin during the site visit. The works to install a cobble beach in this area will involve excavation of the eroded sand area, removing most, if not all, of the exposed shell on the surface. If this shell represents midden, then it is likely that the site has already been fully eroded; however, there is a possibility that excavations extending into the bank east of the area of erosion may encounter in situ areas of midden that were not observed during the site surveys.

It is likely that the planned works may encounter further as yet unrecorded archaeological material relating to M35/294, as well as recorded site M35/916. Both midden sites are in close proximity to, or within the area of planned works. Although the site survey did not encounter surface archaeological material, it is possible that archaeological material remains related to M35/294 are in situ within the planned works area. M35/916 is a shell midden site located at 36b Rocking Horse Road; evidence of this site was not observed during the site survey but has previously been recorded below the ground surface at a depth of 300 mm below the ground surface. Excavation works that extend below 300 mm in this area (between 36a and 40a Rocking Horse Road approximately) may encounter archaeological material relating to M35/916 and may result in damage to the archaeological site.

It is possible that other unrecorded archaeological sites associated with Māori occupation exist both within and near the area of planned works.

Although the construction of residential buildings and their subsequent removal following the Christchurch earthquakes may have impacted or destroyed some archaeological deposits south of Ebbtide Street, this disturbance was minimal, and it is possible that archaeological material remains in this area, either in situ or in a redeposited context. It is possible that further archaeological material relating to the Māori occupation of the area may be encountered, including midden features, ovens, and cultural layers. The locations and approximate extents of recorded archaeological sites M35/294 and M35/916 are known; based on the current plans for this project, M35/294 will be impacted by the planned works, and M35/916 may be impacted by the planned works.

9 Constraints and Limitations

This report is an assessment of the impacts of the proposed erosion and inundation protection plan on the archaeological values of the area. This report does not include a statement of the cultural significance of the area of inquiry, nor are the views of tāngata whenua represented in this report.

Statements are made as to the location and nature of recorded archaeological sites and their values. The archaeological information is derived from both published materials including the HNZPT Digital Archaeological Report Library and New Zealand Archaeological Association (NZAA) ArchSite database.

Archaeological site location data should be regarded as a guide only as the locational accuracy of archaeological sites recorded in ArchSite is variable. Accuracy for some recorded sites is only to 100 m grid squares and many of these have been recalculated from earlier 100-yard coordinates which can increase the location error. Archaeological sites that have been visited since the advent of GPS may have more accurate recorded locations. The full extent of recorded sites is often not known, and the single point coordinate provided by ArchSite is often based on only the visible surface archaeological remains. This does not necessarily represent the true subsurface extent of archaeological sites as defined in the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA), as most archaeological remains lie below the ground surface.

A site survey was undertaken across most of the project area, however large portions of the South New Brighton Park were covered in trees and other vegetation, which obscured the ground surface. Some areas were not able to be accessed due to the overgrowth.

10 Archaeological Values

The significance of an archaeological site is determined by, but not limited to, its condition, rarity or uniqueness, contextual value, information potential, amenity value, and cultural association. This section will consider the archaeological values of archaeological sites M35/294 and M35/916. A brief evaluation of the sites is provided in Table 10-1 and Table 10-2 based on the criteria defined by HNZPT (2019).

Table 10-1. Summary of archaeological value for M35/294.

Value	Criteria	Assessment
Condition		The condition of the site is poor-moderate. The midden was identified due to erosion of the foreshore and by tree growth, and it appears that much of the midden along the foreshore no longer remains in situ. Some portions remain intact, however, and the condition and extent of other archaeological material relating to this site is not known as it is below the ground surface. Based on the amount of modification South New Brighton Park has seen during the 20th century (including tree removal and planting) any archaeological features that survive may be disturbed or in otherwise poor condition.
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	The site type itself is not notably rare or unique in the wider Christchurch area but may be considered unique in Southshore, due to a lack of recorded Māori archaeological sites in the area.
Contextual Value	Does the site(s) possess contextual value? Context or group value arises when the site is part of a group of sites which taken together as a whole, contribute to the wider values of the group or archaeological, historic or cultural landscape. There are potentially two aspects to the assessment of contextual values; firstly, the relationship between features within a site, and secondly, the wider context of the surroundings or setting of the site. For example, a cluster of Māori occupation sites around a river mouth, or a gold mining complex.	The contextual value of the site is moderate; there are a few other confirmed Māori sites in the immediate area of the park (outside of the project area). This site is associated with the Te Kai a Te Karoro pā, which is known in oral traditions and was still visible in the early 1900s.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)? Archaeological evaluations should take into account current national and international research interests, not just those of the author.	The information potential of the site will depend on what archaeological material remains in situ, but overall is likely to be moderate-high. The exposed midden and any in other in situ material related to this site are part of the wider landscape of Te Kai a Te Karoro and the Southshore area. Further investigation of these features and/or associated features will expand on information on aspects such as the extent of the archaeological landscape, activities/occupation and changes in occupation of Te Kai a Te Karoro over time.
Amenity Value	Amenity value (e.g. educational, visual, landscape). Does the site(s) have potential for public interpretation and education?	Any amenity value associated with the remains of M35/294 would depend on the extent of the finds but would likely be limited to highlighting the use of the landscape during pre-European period. The modern use of the area as a park may provide an opportunity for public interpretation and education. As such, the amenity value of the site is considered moderate.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups, e.g. Māori, European, Chinese.	Ngāi Tūāhuriri Rūnanga are best situated to comment on the cultural values of the site.
Other values		The site is unlikely to have other values.
Overall values		The overall value of this site is moderate to high.

Table 10-2. Summary of archaeological value for M35/916.

Value	Criteria	Assessment
Condition		The condition of much of the site is unknown, as the extent of the archaeological material in situ is not known. Based on the previous works on this site, any below-surface archaeological material that survives could be expected to do so in relatively good condition.

Value	Criteria	Assessment
Rarity or Uniqueness	Is the site(s) unusual, rare or unique, or notable in any other way in comparison to other sites of its kind?	The site type itself is not notably rare or unique in the wider Christchurch area but may be considered unique in Southshore, due to a lack of recorded Māori archaeological sites in the area.
Contextual Value	Does the site(s) possess contextual value? Context or group value arises when the site is part of a group of sites which taken together as a whole, contribute to the wider values of the group or archaeological, historic or cultural landscape. There are potentially two aspects to the assessment of contextual values; firstly, the relationship between features within a site, and secondly, the wider context of the surroundings or setting of the site. For example, a cluster of Māori occupation sites around a river mouth, or a gold mining complex.	The contextual value of the site is moderate; although many of the recorded archaeological sites in the immediate area are likely related to the 20th century European occupation of Southshore, there are several confirmed Māori sites in the wider Southshore area, including midden sites and the Te Kai a Te Karoro pā.
Information Potential	What current research questions or areas of interest could be addressed with information from the site(s)? Archaeological evaluations should take into account current national and international research interests, not just those of the author.	The information potential of the site will depend on what archaeological material remains in situ, but overall is likely to be moderate-high. The midden and any other in situ material related to this site are part of a larger fishery and river network that was utilised by Māori into the 19th century. Further investigation of this feature and/or associated features (as yet undiscovered) may expand on information on aspects such as the extent of the archaeological landscape, activities/occupation and changes in occupation of Te Kai a Te Karoro over time.
Amenity Value	Amenity value (e.g. educational, visual, landscape). Does the site(s) have potential for public interpretation and education?	Any amenity value associated with the remains of M35/916 would depend on the extent of the finds but would likely be limited to highlighting the use of the landscape during pre-European period. The modern use of the area as a public walking track may provide an opportunity for public interpretation and education. As such, the amenity value of the site is considered moderate.
Cultural Associations	Does the site(s) have any special cultural associations for any particular communities or groups, e.g. Māori, European, Chinese.	Ngāi Tūāhuriri Rūnanga are best situated to comment on the cultural values of the site.
Other values		The site is unlikely to have other values.
Overall values		The overall value of this site is moderate to high.

11 Assessment of Effects

In considering the potential effects of the proposed works on sites M35/294 and M35/916 and other unrecorded sites, the following questions were taken into account:

- How much of the site will be affected and to what degree? What are the effects on the values of the archaeological sites?
- Will the proposal increase the risk of future damage to the site?
- Would a redesign of the proposal avoid the effects?
- What are the possible methods to avoid, minimize and/or mitigate the adverse effects of the proposal?

The criteria used to assess the magnitude of potential effects is as follows:

- Positive Effects
- Nil Effects
    - No effects at all.
- Less than Minor Adverse Effects
    - Adverse effects that are discernible day-to-day effects, but too small to adversely affect the overall archaeological values.
- More than Minor Adverse Effects
    - Adverse effects that are noticeable that may cause an adverse impact to archaeological values but could be potentially mitigated or remedied.
- Significant Adverse Effects that could be remedied or mitigated
    - An effect that is noticeable and will have a serious adverse impact on archaeological values but could potentially be mitigated or remedied.
- Unacceptable Adverse Effects
    - Extensive adverse effects that cannot be avoided, remedied or mitigated.

11.1 Extent of Effects

This assessment has identified that at least two previously identified archaeological sites associated with pre-European Māori occupation are within the area of planned works, and at least one of these will be affected by the planned works.

Exposed portions of archaeological site M35/294 were identified during the site survey for this assessment, and the extent of these areas is largely known. This site will be affected by the planned works, including both positive and potential adverse effects. The planned erosion protection will put a halt to the ongoing erosion and destruction of M35/294; the project will therefore help to protect the archaeological site and have a **positive effect** on the archaeological resources of the area.

The project works that are likely to impact the exposed portions of M35/294 include the enabling works and the construction methodology requiring heavy vehicle movements in the vicinity of the midden, tree stump removal and stripping vegetation, trimming soil surface of existing eroded edge, removal of organic material and debris, and excavation for the new path and bund. As M35/294 has been identified both on the ground surface and immediately below the ground surface, any alteration to these areas (as shown in Figure 7-13, and Figure 7-23 to Figure 7-25) will damage the archaeological site and negatively impact archaeological site values, resulting in **more than minor adverse effects.** The project works include the installation of a rocky beach between the existing reno mattress and the eroding bank, including excavation through areas of intact portions of the bank where in-situ midden has not been identified. This will affect already eroded portions of the shell midden, M35/294, but has been designed to avoid impacting identified locations of in-situ midden. While the eroded midden is still archaeological in nature, this material has lost most of its original contextual information, and therefore has a lower archaeological value than the midden which remains in situ. Any disturbance of this eroded material resulting from the reinstatement of the salt marsh, or the installation of

the rocky beach will be negative, but given the reduced archaeological values, this effect will likely be **minor or less than minor**, and the negative effects can be mitigated.

The construction methodology has taken this into consideration and the erosion control along the South New Brighton Park estuary edge has been designed in order to have the least impact on the in situ archaeological material. The installation of gabion baskets generally follows the location of the existing erosion control, which will minimise the impact by requiring little excavation of the eroded archaeological material, and no excavation of the exposed in-situ archaeological material within the eroding bank. Due to the reduced archaeological values, the removal of eroded archaeological material will have a **minor or less than minor** effect. The sand removed during the excavation for the installation of the gabion baskets will be placed over top of the remaining eroded, exposed, and partially in situ archaeological material, encompassing it and providing protection from foot traffic and weather exposure. This will have a **positive effect** on the archaeological resources of the area; however, in order to install the gabion baskets, heavy machinery and foot traffic are likely to be required in the immediate area, which may have a negative impact on the archaeological resources. This negative impact can most likely be mitigated through archaeological oversight, and by placement of material to provide working surfaces for the heavy machinery. Methods of avoidance can be explored prior to works taking place.

It is likely that further portions of site M35/294 remain in situ below the ground surface, and the extent of these remains is not known. It is possible that other, as yet unrecorded archaeological features are located within the project area below the ground surface; the extent of any such sites is not known as they are below the surface. Based on the exposed archaeological material relating to this site, archaeological material that remains in situ could be expected to do so in relatively good condition and at a shallow depth (from just below the ground surface and up to 600 mm or deeper). Any ground disturbance work, including heavy vehicle movements in the vicinity of the midden, tree stump removal and stripping vegetation, trimming soil surface of existing eroded edge, removal of organic material and debris, and excavation for the new path and bund may therefore negatively impact unrecorded sites or unexposed portions of M35/294, resulting in **more than minor adverse effects**.

M35/916 is an archaeological site that has been recorded as a result of previous earthworks at 36a Rocking Horse Road. The midden was located 300 mm below the ground surface over an area of approximately 4 m. Later works on adjacent properties (36b and 40a Rocking Horse Road) did not encounter this midden deposit. The current plans across this area (36b to 40a Rocking Horse Road, approximately) indicate the new planted bund with path will follow the original path alignment reasonably closely. It is possible that this site may be reencountered during the planned works. In particular, the planned excavation to at least 300 mm below the ground level for the new path and bund may have a negative effect on M35/916. If the site is encountered it will most likely be damaged and portions of the site may be destroyed, which would have a negative impact on the archaeological values of this site, and result in **more than minor adverse effects**. If the excavation for the new path and bund is limited to a maximum depth of 300 mm *or less*, it is unlikely that archaeological site M35/916 will be affected, reducing the impact to **Nil** (should the site not be encountered) **or less than minor adverse effects**.

Other planned works in this location (36a to 40a Rocking Horse Road approximately) – including stripping vegetation, removal of the existing LINZ bund, and excavation within the estuary to at least 1 m below the current beach surface – are unlikely to have any impact on M35/916 or other as yet unrecorded archaeological sites. The vegetation stripping is only to a depth of 100 mm and is unlikely to encounter M35/916. The current beach level is already approximately 1 m below the existing bank height; further excavation in these areas is unlikely to encounter as yet unrecorded in situ archaeological deposits.

11.2 Risk of Future Effects

If any subsurface archaeological features are encountered during earthworks for the planted bund or realigned estuary walkway, stepped access, rock revetment, cobble beach and gabion baskets, including M35/294 and

M35/916, the archaeological material will likely need to be removed during the course of the works which would damage the site and have a negative impact on the site values.

The planned planted bund with walkway (in both the Southshore and South New Brighton Park areas) will raise the walking track level by up to a metre from the ground level using introduced and repurposed material; this material will prevent future surface erosion caused by foot traffic and may reduce the risk of archaeological material becoming exposed on the surface in the future. There is a possibility that earthworks outside of the planted bund and walking track will expose archaeological features, but not completely remove them, such as during vegetation removal and where deeper excavations are not required. This could lead to exposed features, particularly within the South New Brighton Park area where the archaeological material is known to be very shallow where present. Such exposed features may become subject to future damage through erosion, especially as the area is frequented as a walking track. This would have a gradual adverse effect on the archaeological values.

The reinstatement of the coastal walkway will increase public access to this area. It is possible that damage to exposed archaeological sites could arise through visitor impacts or fossicking. It may be possible to minimise visitor damage through site interpretation which discourages fossicking, but this may also have the unintended consequence of drawing attention to the archaeological nature of the area and increasing site vandalism. Any site interpretation should be carefully designed to mitigate such damage.

11.3 Redesign

Midden material associated with M35/294 is currently exposed between the existing path and the reno mattress; the current plans incorporate this entire area as part of the gabion basket and cobble beach, and the current design requires shallow excavation of the path area, the removal of topsoil and organic material in some locations, and excavation of the raised bank area and the exposed sandy beach between the existing reno mattresses and the bank edge along the southern section of the South New Brighton Park estuary edge. The gabion baskets design generally follows the area already impacted by the existing reno mattresses, although heavy machinery movements may have an adverse effect on the in-situ shell midden. Eroded midden material, currently between the eroded bank edge and the existing reno mattresses, will be impacted by these works; it may be possible to avoid concentrated areas of eroded midden during the works with archaeological oversight. It may also be possible, through building up the ground surface prior to works taking place and marking out specific areas to be avoided by machinery or foot traffic, to avoid unintended impact on in-situ archaeological material. The displaced sand from this installation will be used to cover and protect the remaining areas of exposed archaeological material. If the proposed works can avoid removal of topsoil from the eroding edge of the bank in areas where the shell midden is exposed, this will reduce the negative impact of the work to **less than minor adverse effects**.

It is not possible to redesign the remaining works in order to avoid other sub-surface features associated with M35/294, and M35/916, or as yet unknown sites as these features and sites are below ground, and the extent of these features is not known.

11.4 Avoid, Minimise and/or Mitigate

If the planned earthworks can be reduced in depth (between 36a-40a Rocking Horse Road approximately) or excluded in some areas (such as the South New Brighton Park area) the works are less likely to have a negative impact on the archaeological sites. These changes would reduce the effect to **less than minor or nil**.

Aside from the known extent of M35/294 and M35/916, if previously unknown or unrecorded archaeological material is encountered while construction is in progress, options will be explored for redesigning the project and/or construction methodology to avoid or minimise damage to that material. It may not be possible to avoid damaging the site, resulting in a negative effect that is **more than minor**, however, the negative effects arising through the loss of cultural material and archaeological information may be mitigated through archaeological investigation and recording. The magnitude of the residual effect would be dependent on the extent of the damage to the site.

Mitigation measures to reduce the impact of works on the archaeological resources of the area, including both recorded and previously unknown sites, would include archaeological recording of known and as yet unrecorded archaeological features; however, there would still be a **residual permanent negative effect** through the loss of cultural material.

With regard to the possible methods to mitigate the adverse effects of the proposal it should be noted that "the recovery of information is a method of *mitigating the loss of archaeological information, not for the loss of the site itself*" (Heritage New Zealand Pouhere Taonga, 2019: 10, authors' emphasis added). The project should take this into account and be prepared for archaeological investigation as part of the course of works. Standard archaeological techniques should be used for the recovery of archaeological information. These include, but are not limited to, the following:

- stand-over archaeological monitoring
- surveying and mapping of archaeological sites;
- stratigraphic profile drawing;
- photography of archaeological features;
- measurements and drawing of archaeological features;
- recovery of archaeological samples;
- analysis and interpretation of any archaeological samples recovered, in line with standard archaeological practice; and
- preparation of a written report on recorded archaeological sites.

The above would be considered minimum requirements for the mitigation for the loss of archaeological information arising from the project. Further mitigation measures could include funding of the publication of archaeological reports, articles, or conference papers, and/or public displays or interpretation about the archaeological, cultural narrative and historical information about the area. Much of the area is currently being used as a recreational walking track, which presents a good opportunity for public interpretation through the installation of information panels along the walkway to be viewed by the public. The appropriateness of such displays would depend on the nature of the archaeological material encountered and should be undertaken in consultation with Ngāi Tūāhuriri.

12 Conclusions and Recommendations

Underground Overground Archaeology Ltd (UOA) has been commissioned by Jacobs on behalf of the CCC to provide an assessment of environmental effects for the archaeological resources of South New Brighton Park and Southshore for a proposed erosion and inundation protection plan. CCC are planning to realign the existing estuary walkway, create new planted bund, and construct estuary edge erosion protection structures. UOA has undertaken research into the historic background and previous archaeological work and this assessment has identified that archaeological material relating to recorded archaeological site M35/294 will be affected by the planned works, and that subsurface material relating to archaeological site M35/916 and/or as-yet unrecorded archaeological sites may be affected during works.

These works have been redesigned to avoid the most negative effects, although the works cannot be redesigned around the location of any as yet unrecorded archaeological sites that may be encountered during the works. The redesigned methodology will provide protection to the exposed and eroding shell midden in the South New Brighton Park area, and if excavation of topsoil and vegetation removal can be avoided in these areas, the effect of these works would be **minor or less than minor**. If, during the works, previously unrecorded archaeological material is encountered that cannot be redesigned around, the resulting effect would be **permanent and more than minor.** The negative effects can be partially mitigated with options that include: the recording of the site using archaeological methods, dissemination of the archaeological information through publication of archaeological reports, articles, or conference papers, and/or public displays or interpretation about the archaeology, cultural narrative and historical information about the place. As a public walkway, the estuary bund provides an excellent opportunity for informative displays. The residual effects on archaeological values, with appropriate mitigation measures in place, would still be permanent, and may not be less than minor.

The appropriate pathway for considering the effects to archaeological resources within the project is through the archaeological authority process and it is recommended that an application to Heritage New Zealand be made to modify or destroy the sites within the project area ahead of works. Following minor modifications this assessment can accompany an archaeological authority application as required by the Heritage New Zealand Pouhere Taonga Act 2014.

As such, UOA makes the following general recommendations:

1. As a first principle, every practical effort should be made to avoid damage to any archaeological or heritage site, whether known, or discovered during any redevelopment of the site.
    a. It is recommended that vegetation removal, and topsoil stripping near the eroding bank edge be excluded from the planned works along the shoreline of the South New Brighton Park in areas where in-situ shell midden has been identified, to prevent the destruction of exposed portions of M35/294.
    b. It is recommended that excavation depths be reduced, or that excavation be excluded from the planned works within the South New Brighton Park, to reduce the chance of encountering shallow archaeological material associated with M35/294.
    c. It is recommended that excavation depths between 36a and 40a Rocking Horse Road (approximately) be reduced to less than 300 mm for the new bund and walkway.
2. It is recommended that an archaeological authority should be sought from Heritage New Zealand Pouhere Taonga prior to the commencement of the work.
3. Mitigation measures for the adverse effects on archaeological values shall be implemented and could include enhancement of heritage site interpretation and the cultural narrative.
4. Following consultation with Heritage New Zealand and Tangata Whenua, an archaeological management plan (AMP) shall be prepared by a suitably qualified and experienced archaeologist, which will then submitted for certification to CCC. This will be prepared prior to the commencement of work to guide the project management team and contractors about the archaeological requirement of the project.

5. The AMP shall describe the measures that will be taken to avoid or mitigate effects on archaeological sites with any conditions required in any authority granted by Heritage New Zealand Pouhere Taonga. In particular the AMP shall include:
    a. Measures that will be taken to protect or avoid archaeological sites (or in situ archaeological remains) from damage during construction;
    b. Mitigation measures in the form of archaeological investigation and recording;
    c. Areas where monitoring of construction works by an archaeologist will be required;
    d. Protocols to be followed if cultural sites, kōiwi (human remains) or taonga are encountered during construction works;
    e. The roles and responsibilities associated with managing the archaeological aspects of the project;
    f. Provisions for training contractors in the operational guidelines, procedures pertaining to the archaeological aspects of the project;
    g. Provision for any revisions required to the AMP during the course of the project; and
    h. Reporting requirements, including updates to the NZAA archaeological site recording scheme (ArchSite) as new archaeological information becomes known.
6. If at any stage during the redevelopment Māori material is discovered, local iwi should be consulted in the first instance. If Māori material does exist in the area to be developed, damage to this should be minimised. Any Māori artefacts will be, prima facie, property of the Crown and will be submitted to the appropriate institutions in accordance with the Protected Objects Act 1975.
7. A full record of any archaeological investigations that are undertaken should be prepared and submitted to Christchurch City Council and Heritage New Zealand Pouhere Taonga within one year of the completion of archaeological site works.

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14 Appendix A: Sub-surface survey results

Table 14-1. Summary of test pits excavated along the South New Brighton Park and estuary edge.

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
TP 1	280-300 deep. Exposed grey sand.	No arch. Lots of roots.	
TP 2	250 deep. Grey sand.	No arch. Some roots.	
TP 3	300 deep. Grey sand.	No arch. Roots.	
TP 4	100 deep.	No arch. Compacted ground with associated path.	
TP 5	600 deep. 0-300 grey-brown sand, small roots. 300-600+ grey sand, fewer roots.	No arch.	
TP 6	400 deep. 0-70 humic, organic medium brown 70-350 dark grey sand 350-400 + light grey sand	No arch.	
TP 7	650 deep. 0-100 dark brown compact sand 100-210 light yellow sand 210-650+ light brown sand	No arch.	
TP 8	450 deep. 0-330 light brown sand, fine roots, small stones. 330-450 + light brown fine sand, large roots.	No arch.	
TP 9	600 deep. 0-50 humic fine roots. 50- 600 + fine light sand, no inclusions.	No arch.	
TP 10	560 deep. 0-130 medium brown sand, topsoil. 130 + light brown-grey sand.	No arch.	
TP 11	500 deep. 0-120 light brown topsoil and roots. 120-500+ light grey sand no inclusions.	No arch.	
TP 12	500 deep. 0-120 dark brown humic topsoil fine roots. 120-500+ light grey fine sand. 1 x red rock.	No arch.	
TP 13	650 deep. 0-30 dark brown topsoil with grass and roots. 30-300 light grey sand with roots. 300-650 + fine light brown sand, no inclusions.	No arch.	

[2] Photographs are not included for those test pits where archaeological material was not identified.

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
TP 14	450 deep. 0-100 topsoil 100-400 dark grey stony sand with brick frags 400 + fragment shell midden with plastic.	Fragmented shell midden, modern disturbance. East side of path	 **Figure 14-1. TP14 facing west. Scales are in 100 mm increments.**  **Figure 14-2. TP 14 stratigraphy, facing west. Scales are in 100 mm increments.**
TP 15	500 deep. 0-100 topsoil. 100-300 mottled dark brown soil with roots. 300 + light grey sand.	1 bird bone and shells. Probably associated with redeposited midden layer.	 **Figure 14-3. TP 15 facing west. Scales are in 100 mm increments.**

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
			 Figure 14-4. TP 15 stratigraphy, facing west. Scales are in 100 mm increments.
TP 16	500 deep. 0-100 topsoil. 100-200 light grey/brown with roots. 200 + medium brown, no inclusion.	No arch.	
TP 17	350 deep. 0-200 topsoil. 200 + dark brown soil with large roots.	No arch.	
TP 18	200 deep. 0-80 topsoil. 80 + very solid clay	No arch.	
TP 19	600 deep. 0-150 humic topsoil. 150 – 500 fine dry sand. 500+ compact and coarse sand	No arch.	
TP 20	550 deep. 0-100 clay and topsoil. 100-550 modern fill with ground, heaps of organic, silty clay matrix, polystyrene and plastic. 550+ light brown, grey sand.	No arch. Polystyrene with plastic in silty clay matrix.	
TP 21	500 deep. 0-100 clay and topsoil. 100 + light grey brown	No arch.	
TP 22	120 deep. 0-100 topsoil with brick. 100 + hard yellow clay.	No arch. Abandoned after hitting hard clay.	
TP 23	100 deep. Topsoil into hard clay.	No arch. Abandoned after hitting hard clay.	
TP 24	100 deep. Stony topsoil 100 into hard clay.	No arch. Abandoned after hitting hard clay.	
TP 25	500 deep. 0-140 mixed dark grey-brown sand. 140 organic matter. 140-400 medium brown sand. 400-500 + light brown sand.	No arch.	
TP 26	300 deep. 0-300 + imported silty, stony clay topsoil.	No arch, tiny brick fragments.	
TP 27	400 deep. 0-100 topsoil.	No arch.	

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
	100-200 tan brown sand with roots. 200 + dark grey brown sand.		
TP 28	570 deep. 0-60 dark grey topsoil roots grass. 60-400 fine medium brown silty sand > polystyrene. 400-570 + coarse brown, grey sand.	No arch, polystyrene in middle layer.	
TP 29	500 deep. 0-100 medium brown topsoil and grass 100-500 dry light grey brown sand fading to wet dark grey sand.	No arch.	
TP 30	400 deep. 0-100 topsoil. 100+ grey brown sand with old roots etc,.	No arch.	
TP 31	500 deep. 0-100 topsoil and grass roots. 100-220 fine dry light brown sand. 220-280 compact dark brown-dark grey sand. 280-500 brown grey yellow coarse sand	No arch.	
TP 32	750 deep. 0-100 topsoil 100-300 light brown soil 300+ dark brown sand with roots	Metal bolt at base of top soil. Unable to confirm if archaeological.	
TP 33	700 deep. 0-130 topsoil 130-300 medium brown sand 300-700+ dark brown-black sand with charcoal fragments	No arch. Charcoal fragments in bottom layer/ likely European.	
TP 34	600 deep. 0-100 topsoil and roots, 100-470 fine medium brown sand 470-600 dark brown sand with charcoal fragments and wood	No arch. Charcoal fragments with wood.	
TP 35	550 deep. 0-100 topsoil 100+ dark brown soil with roots and bark. No obvious charcoal.	No arch.	
TP 36	600 deep. 0-100 topsoil. 100 + dark brown sand with charcoal.	No arch. Charcoal - likely European.	
TP 37	500 deep. 0-100 topsoil. 100 + dark brown sand with some charcoal.	Plastic at base.	
TP 38	500 deep. 0-100 topsoil with roots and sand. 100 + medium brown with charcoal and roots. West face shows wood.	No arch, Below topsoil charcoal.	
TP 39	500 deep. 0-100 topsoil.	No arch.	

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
	100 + medium brown sand with no charcoal.		
TP 40	500 deep. 0-100 topsoil. 100 + medium brown sand with modern glass at base.	No arch.	
TP 41	340 deep. 0-100 topsoil, 1 piece white plainware ceramic 100 + bone and shell, charcoal 100-150 grey sand 150-250 dark brown-black sand with light sand. 250-340 + medium brown with large roots.	No arch. Bone, shell and charcoal in 100 +	
TP 42	500 deep. 0-100 topsoil and glass 100-150 wood and dry roots 150- 500 + dark brown grey sand getting darker further down	No arch.	
TP 43	430 deep. 0-100 topsoil – stony 100 + stony loamy sand to base, asbestos at base.	No arch, Asbestos at base of test pit.	
TP 44	400 deep. 0-100 topsoil. Sandy loam with gravel to base, dark brown.	No arch.	
TP 45	300 deep. 0-100 topsoil. 100 + hard silty clay, light brown	No arch.	
TP 46	400 deep. 0-100 topsoil. 100 + medium brown stony sandy loam with roots.	No arch.	
TP 47	500 deep. 0-100 topsoil. 100 + medium brown stony sandy loam with roots and charcoal.	No arch. Charcoal.	
TP 48	400 deep 0-100 topsoil with massive roots. 100+ stony sand, medium brown loam with brick fragments at base.	No arch. Brick fragments at base of pit. After 48 (to 49) didn't dig TP as 5m from what appears to be a modern bund. Continues to marsh with heavy tree growth and concrete.	
TP 49	300 deep. At 0 mm shell on surface around tree. 0-300 mm light brown sand.	No arch. Dug at top of bund by tree with shell around roots. Light brown sand to base. Large roots to base. No evidence of shell material below surface.	

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
TP 50	At 0 mm shell midden on surface around tree. 0-50 mm olive grey sand.	No arch- Under tree overlooking marsh. No evidence of shell under surface.	 **Figure 14-5. Facing north, showing eroded midden material at base of tree. TP 50 is in the mid ground. Scales are in 100 mm increments.**  **Figure 14-6. Stratigraphy exposed in TP 50, facing west. Scales are in 100 mm increments.**
TP 51	50 deep. At 0 mm shell midden on surface around tree. 0-50 mm shell midden in matrix of dark grey sand.	Archaeology - Under tree by marsh, removed top 50, shell material below surface.	 **Figure 14-7 TP 51 facing north. Scales are in 100mm increments.**

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
			 **Figure 14-8 TP 51 stratigraphy facing north. Scales are in 100mm increments.**
TP 52	50 deep. At 0 mm shell midden on surface around tree. 0-50 mm shell midden in matrix of dark grey sand.	Archaeology- West of TP 51. Top 50 removed, shell below surface.	 **Figure 14-9. TP 52 facing north. Scales are in 100mm increments.**  **Figure 14-10. TP 52 stratigraphy facing north. Scales are in 100mm increments.**

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
TP 53	20 deep. 0-20 mm dark grey sand 20 mm + shell midden in matrix of dark grey sand.	Archaeology – West of TP 52. Low density shell.	 **Figure 14-11. TP 53 stratigraphy facing northwest. Scales are in 100 mm increments.**  **Figure 14-12. TP 53 stratigraphy, facing southeast. Scales are in 100 mm increments.**
TP 54	300 deep. 0-200 Built up organic matter. 200 + Olive grey sand.	No archaeology.	
TP 55	50 deep. 0-50 mm dark grey sand and leaf litter 50 mm+ shell midden	North of TP 51, 50 removed, shell below.	 **Figure 14-13. TP 55 facing north. Scales are in 100 mm increments.**

Test pit #	Stratigraphy (mm)	Notes	Photos[2]
			 **Figure 14-14. TP 55 stratigraphy facing north. Scales are in 100 mm increments.**
TP 56	180 deep. 0-180 mm grey sand with fine roots 180 mm + shell midden	Archaeology- midden at 180mm under grey sand with roots	 **Figure 14-15. TP 56 facing east. Scales are in 100 mm increments.**  **Figure 14-16. TP 56 stratigraphy facing east. Scales are in 100mm increments.**
TP 57	300 deep. 0-300 mm grey sand with fine roots	No archaeology - scattered occasional shell.	
TP 58	200 deep. 0-200 mm grey sand with fine roots and organics	No archaeology- Occasional shell.	