

VOLUME 4

Airport to Botany Assessment of Archaeological Effects

December 2022

Version 1

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Glossary of Defined Terms and Acronyms

Acronym/Term	Description
AEE	Assessment of Effects on the Environment report
AUP:OP	Auckland Unitary Plan: Operative in Part
ArchSite	Archaeological Site Recording Scheme
BRT	Bus Rapid Transit
CHI	Cultural Heritage Inventory
CVA	Cultural Values Assessments
GIS	Geographic Information Systems
HHMP	Historic Heritage Management Plan
HNZPT / Heritage NZ	Heritage New Zealand Pouhere Taonga
HNZPT Act	Heritage New Zealand Pouhere Taonga Act
LINZ	Land Information New Zealand
N/A	Not Applicable
NIMT	North Island Main Trunk railway
NoR	Notice of Requirement
NoR 1	Notice of Requirement 1: Airport to Botany Bus Rapid Transit (Botany Town Centre to Rongomai Park)
NoR 2	Notice of Requirement 2: Airport to Botany Bus Rapid Transit (Rongomai Park to Puhinui Station, in the vicinity of Plunket Avenue)
NoR 3	Notice of Requirement 3: Airport to Botany Bus Rapid Transit (Puhinui Station, in the vicinity of Plunket Avenue to SH20/20B Interchange)
NoR 4a	Notice of Requirement 4a: Airport to Botany Bus Rapid Transit (SH20/20B Interchange to Orrs Road)
NoR 4b	Notice of Requirement 4b: Alteration to NZ Transport Agency Designation 6717 – State Highway 20B
NZAA	New Zealand Archaeological Association
Programme partners	Te Ākitai Waiohua, Auckland Airport, Auckland Transport and Waka Kotahi
RCA	Road Controlling Authority
RMA	Resource Management Act 1991
RP	Regional Plan
RPS	Regional Policy Statement
SEA	Significant Ecological Area

SH1	State Highway 1
SH20	State Highway 20
SH20B	State Highway 20B
SWGP	Southwest Gateway Programme
Te Tupu Ngātahi	Te Tupu Ngātahi Supporting Growth
ULDMP	Urban and Landscape Design Management Plan
Waka Kotahi	Waka Kotahi NZ Transport Agency

Executive summary

There are five Notices of Requirement (**NoRs**) associated with the Airport to Botany project (**the Project**). Archaeological research undertaken for the Project included desktop review of archaeological reports, databases maintained by the NZAA (**ArchSite**), Auckland Council Cultural Heritage Inventory (**CHI**), the New Zealand Heritage List/Rārangi Kōrero and other resources to better understand the landscape surrounding the corridor. This was followed by a field survey to assess the results of the research and to determine if any unrecorded archaeological sites or heritage items were visible.

There are 12 recorded archaeological sites within 200 m of the Project corridor, 11 of which are outside of the proposed scope of works. One site (R11/1973) was not able to be located during field survey, so it cannot be determined if it will be affected by any future works associated with the Project.

There are also six historic heritage items identified within 200 m of the Project corridor, two of which are trees which will be assessed separately in the *Airport to Botany: Assessment of Arboricultural Effects* report for the Project. One heritage item relates to a milepost on Great South Road (CHI item 20284), which was removed at some point during the 20th century. The remainder are associated with built heritage items which will be assessed separately in the *Airport to Botany: Assessment of Effects on Historic Heritage* report for the Project.

Although there are no identified archaeological or historic heritage items which will be directly affected by the Project, it is possible that previously unrecorded sub-surface archaeological sites may exist and be exposed during construction.

Based on the consideration of the statutory requirements discussed in Section 2 of this Report related to archaeology and historic heritage, the following mitigation and management measures are recommended.

- A Historic Heritage Management Plan (**HHMP**) should be prepared and implemented during construction to guide works including induction requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection and investigation;
- A General Archaeological Authority to modify or destroy potential archaeological sites that may be encountered within the Project corridor should be applied for from Heritage New Zealand Pouhere Taonga under Section 44 of the Heritage New Zealand Pouhere Taonga Act 2014. The Authority should be obtained in advance of any earthworks commencing to minimise delays should archaeological remains be exposed once works are underway; and
- Where effects on known (or unknown) archaeological sites cannot be avoided, archaeological investigation and recording of any affected archaeological sites utilising archaeological best practice should be undertaken in accordance with the Authority.

Summary of assessment of effects and recommendations

Effect	Assessment	Recommendation
Modification or destruction of previously unrecorded archaeological sites	It is possible that previously unrecorded sub-surface archaeological deposits may be encountered during works	An HHMP should be prepared and implemented during construction to guide works including induction requirements for contractors (and

		<p>sub-contractors) and procedures for archaeological monitoring, inspection and investigation</p> <p>A General Archaeological Authority to modify or destroy potential archaeological sites that may be encountered within the Project corridor should be applied for from Heritage NZ under Section 44 of the Heritage New Zealand Pouhere Taonga Act 2014.</p>
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1 Introduction

1.1 Purpose and scope of this Report

This Assessment of Archaeological Effects report (**the Report**) has been prepared to inform the Assessment of Effects on the Environment (**AEE**) for five Notices of Requirement (**NoR**) being sought by Waka Kotahi NZ Transport Agency (**Waka Kotahi**) and Auckland Transport for the Airport to Botany project (**Project**) under the Resource Management Act 1991 (**RMA**). Specifically, this Report considers the actual and potential effects associated with the construction and operation of the Project on the existing and likely future environment as it relates to archaeological and historic heritage effects and recommends measures that may be implemented to avoid, remedy and/or mitigate these effects.

This Report should be read alongside the AEE, which contains further details on the history and context of the Project. The AEE also contains a detailed description of works to be authorised within each NoR, and the typical construction methodologies that will be used to implement this work. These have been reviewed by the author of this report and have been considered as part of this assessment of archaeological and historic heritage effects. As such, they are not repeated here. Where a description of an activity is necessary to understand the potential effects, it has been included in this report for clarity.

1.2 Report Structure

In order to provide a clear assessment of each NoR, this Report follows the structure set out in the AEE. That is, each notice has been separated out into its own section, and each section contains an assessment of the actual and potential effects for the specific NoR. Where appropriate, measures to avoid, remedy or mitigate effects are recommended.

Each section is arranged in geographical order, starting from the northernmost point of the proposed NoR, to the southernmost point. Table 1 below describes the extent of each section, and where the description of effects can be found in the Report.

Table 1: Report Structure

Sections	Section number
Description of the Project	Section 2
Overview of the methodology used to undertake the assessment and identification of the assessment criteria and any relevant standards or guidelines	Section 3
Background and context	Section 4
Assessment of archaeological effects for all Project NoRs	Section 6
Overall conclusion of the level of potential adverse archaeological and historic heritage effects of the Project	Section 7

2 Project Description

2.1 Overview of the Project

The overall Project is proposed to be an 18 km fast, high capacity, reliable, and frequent Bus Rapid Transit (**BRT**) connection with twelve stations. It is part of Auckland's wider Rapid Transit Network (**RTN**) connecting Auckland Airport and its employment areas with major urban centres including Manukau and Botany.

As set out in the AEE, this Report specifically relates to a portion of the overall Project (approximately 14.9 km) which extends from the Botany Town Centre in the vicinity of Leixlep Lane to Orrs Road in the Puhinui peninsula, off SH20B. The Project primarily involves the upgrade and widening of existing transport corridors to provide for a dedicated BRT corridor and high-quality walking and cycling facilities.

Nine BRT stations are proposed as part of the Project. These stations are generally located at signalised intersections and will be staggered on either side of the intersection.

These stations are situated in the following locations:

- Smales Road;
- Accent Drive;
- Ormiston Road – Botany Junction Shopping Centre;
- Dawson Road;
- Diorella Drive;
- Ronwood Avenue (Manukau Central);
- Manukau Station;
- Puhinui Road/Lambie Drive; and
- Puhinui Station.

As part of the Project, two new structures are proposed:

- A BRT bridge crossing the North Island Main Trunk (NIMT) and connecting to the concourse level of the Puhinui Station; and
- A southbound ramp from SH20B to SH20.

Upgrades to existing structures are proposed at the:

- Bridge over Otara Creek (NoR 1);
- Bridge over SH1 (NoR 2);
- Bridge over NIMT (NoR 3); and
- Bridge over Waokauri Creek (NoR 4a).



Figure 1: Overview of the Project and NoR extents

Table 2: Overview of NoRs

Notice	Description	Requiring Authority
NoR 1	Bus Rapid Transit corridor and high quality walking and cycling facilities from Botany Town Centre to Rongomai Park	Auckland Transport
NoR 2	Bus Rapid Transit corridor and high quality walking and cycling facilities from Rongomai Park to Puhinui Interchange, in the vicinity of Plunket Avenue	Auckland Transport
NoR 3	Bus Rapid Transit corridor and high quality walking and cycling facilities from Puhinui Interchange, in the vicinity of Plunket Avenue to SH20/SH20B Interchange	Auckland Transport
NoR 4a	Bus Rapid Transit corridor and high quality walking and cycling facilities from SH20B/20 Interchange to Orrs Road	Auckland Transport
NoR 4b	Alteration to designation 6717 to provide for the widening of SH20B, including a southbound on-ramp onto SH20, high quality walking and cycling facilities and enable a Bus Rapid Transit corridor	NZ Transport Agency

2.2 Overview and description of each NoR

The following sections provide an overview of the NoRs that make up the Project. For more detail, refer to the AEE.

2.2.1 NoR 1

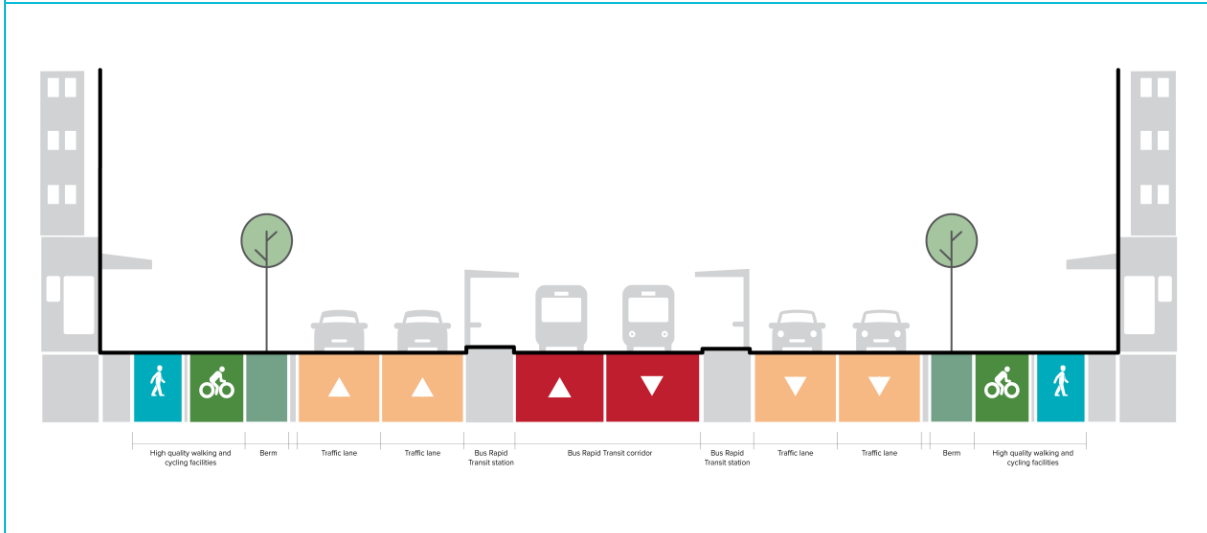
As set out in Table 3 below, the proposed works in NoR 1 include the widening of existing Te Irirangi Drive to accommodate a centre-running BRT corridor, two vehicle lanes in each direction and high quality walking and cycling facilities.

Table 3: Overview of NoR 1

NoR 1 – Botany Town Centre to Rongomai Park	
Key features	
BRT Corridor	Centre-running along Te Irirangi Drive
BRT Stations	<ul style="list-style-type: none"> • Smales Road Station; • Accent Drive Station; and • Ormiston Road Station.
Walking and cycling facilities	Walking and cycling facilities on both sides of the corridor
General traffic	Two lanes in each direction (existing)
Access	There is an existing central median along the majority of Te Irirangi Drive which restricts right-turn access

Speed environment	50km/h
Signalised intersections	<ul style="list-style-type: none"> • Te Irirangi Drive and Smales Road; • Te Irirangi Drive and Accent Drive; • Te Irirangi Drive and Bishop Dunn Avenue; and • Te Irirangi Drive and Ormiston Road.
Stormwater infrastructure	<ul style="list-style-type: none"> • Swales; and • Wetlands.

NoR 1 typical cross section



2.2.2 NoR 2

As set out in

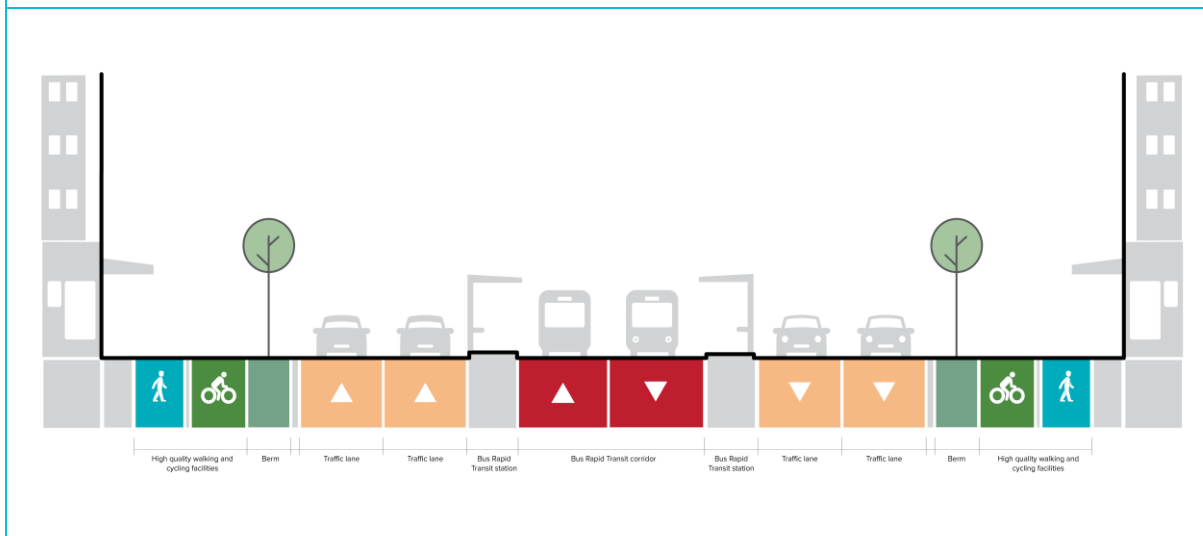
Table 4 below, the proposed works in NoR 2 include the widening of several existing roads to accommodate a centre-running BRT corridor, vehicle lanes and high quality walking and cycling facilities.

Table 4: Overview of NoR 2

NoR 2 – Rongomai Park to Puhinui Station, in the vicinity of Plunket Avenue	
Key features	
BRT Corridor	<p>Centre-running for the majority of the corridor along Te Irirangi Drive, Great South Road, Ronwood Avenue, Manukau Station Road, Lambie Drive, and Puhinui Road</p> <p>West-running on Davies Avenue along the edge of Hayman Park</p>
BRT stations	<ul style="list-style-type: none"> • Dawson Road Station; • Diorella Drive Station; • Ronwood Avenue Station; • Manukau Station; and • Corner of Lambie Drive and Puhinui Road Station.
Walking and cycling facilities	Walking and cycling facilities on both sides of the corridor

<p>General traffic</p>	<ul style="list-style-type: none"> • Two lanes in each direction along Te Irirangi Drive, Great South Road, Ronwood Avenue, Manukau Station Road, and Lambie Drive; • One-way single lane along Davies Avenue; and • One lane in each direction along Puhinui Road.
<p>Access</p>	<p>Existing central medians limit right turn access on Te Irirangi Drive, Great South Road, Ronwood Avenue, and Lambie Drive.</p> <p>New signalised intersection at Mitre 10 and Bunnings Warehouse on Lambie Drive.</p> <p>Priority access for fire engine movements across the BRT corridor at Papatoetoe Fire Station.</p>
<p>Speed environment</p>	<ul style="list-style-type: none"> • 30 km/h on Ronwood Avenue and Davies Avenue; and • 50 km/h on Te Irirangi Drive, Great South Road, Manukau Station Road, Lambie Drive and Puhinui Road.
<p>Signalised intersections (new intersections in bold)</p>	<ul style="list-style-type: none"> • Te Irirangi Drive and Dawson Road; • Te Irirangi Drive, Boundary Road and Hollyford Drive; • Te Irirangi Drive and Diorella Drive; • Te Irirangi Drive, Great South Road and Cavendish Drive; • Great South Road and Ronwood Avenue; • Ronwood Avenue and Davies Avenue; • Davies Avenue, Wiri Station Road and Manukau Station Road; • Manukau Station Road and Lambie Drive; • Mitre 10 and Bunnings Warehouse; • Lambie Drive and Ronwood Avenue; • Lambie Drive and Cavendish Drive; • Lambie Drive and Puhinui Road; and • Puhinui Road and Plunket Avenue.
<p>Stormwater infrastructure</p>	<ul style="list-style-type: none"> • Swales; and • Wetlands.

NoR 2 typical cross section



2.2.3 NoR 3

As set out in Table 5 below, the proposed works in NoR 3 include the widening of the existing Puhinui Road to accommodate a centre-running BRT corridor, vehicle lanes and high quality walking and cycling facilities. As part of the proposed works, a BRT bridge over the NIMT is proposed to connect to the Puhinui Station.

Table 5: Overview of NoR 3

NoR 3 – Puhinui Station, in the vicinity of Plunket Avenue to SH20/20B Interchange	
<p>The map displays the proposed NoR 3 corridor along Puhinui Road. A blue line indicates the proposed Airport to Botany Bus Rapid Transit Corridor and high quality walking and cycling facilities. A red dashed line shows the NoR 3 - proposed designation boundary. A blue circle marks the proposed Bus Rapid Transit station at Puhinui Station. A blue line with a bridge structure indicates the proposed bridge structure over the NIMT. The map also shows Plunket Avenue, Cavendish Drive, and the SH20/20B Interchange. A key map in the top left corner shows the location of NoR 3 within the larger project area. A legend at the bottom left explains the symbols used. A scale bar at the bottom right indicates distances up to 500 metres.</p>	
Key features	
BRT Corridor	Centre-running along Puhinui Road connecting to the Puhinui Station concourse via a new BRT bridge structure
BRT Stations	Puhinui Station
Walking and cycling facilities	<ul style="list-style-type: none"> Walking and cycling facilities on both sides of the corridor; and Walking and cycling facilities will be provided along Cambridge Terrace, Bridge Street and Kenderdine Road.
General traffic	One lane in each direction on Puhinui Road
Access	Limited right turn access
Speed environment	50 km/h
Signalised intersections	<ul style="list-style-type: none"> Puhinui Road and Noel Burnside Road; and

	<ul style="list-style-type: none"> Puhinui Road and Wyllie Road.
Stormwater infrastructure	Wetland
NoR 3 typical cross section	

2.2.4 NoRs 4a and 4b

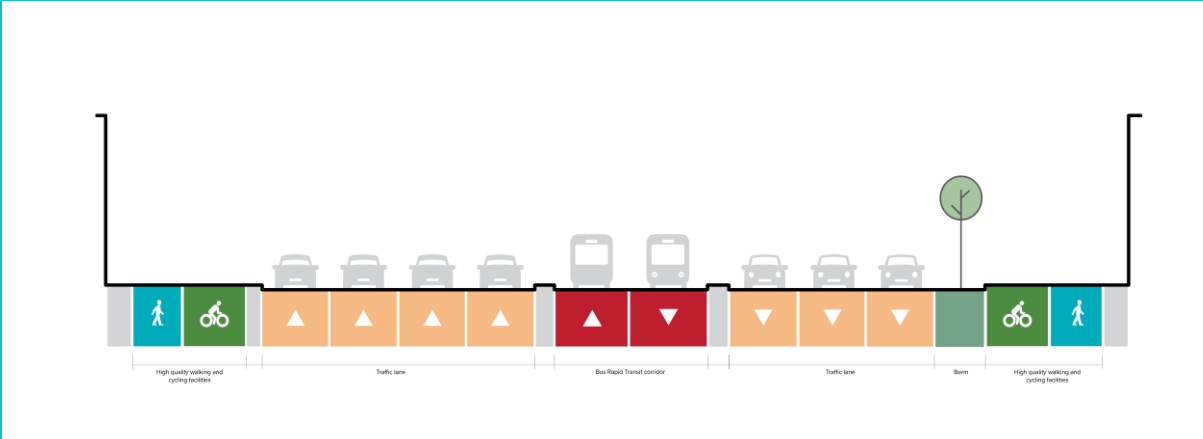
As set out in Table 6 below, the proposed works in NoRs 4a and 4b include the widening of SH20B to accommodate a centre-running BRT corridor until the Manukau Memorial Gardens. From this point, the BRT corridor shifts south of SH20B until Orrs Road. Proposed works also include high quality walking and cycling facilities, eastbound lanes to Auckland Airport and a ramp from SH20B onto SH20 for southbound traffic.

Table 6: Overview of NoRs 4a and 4b

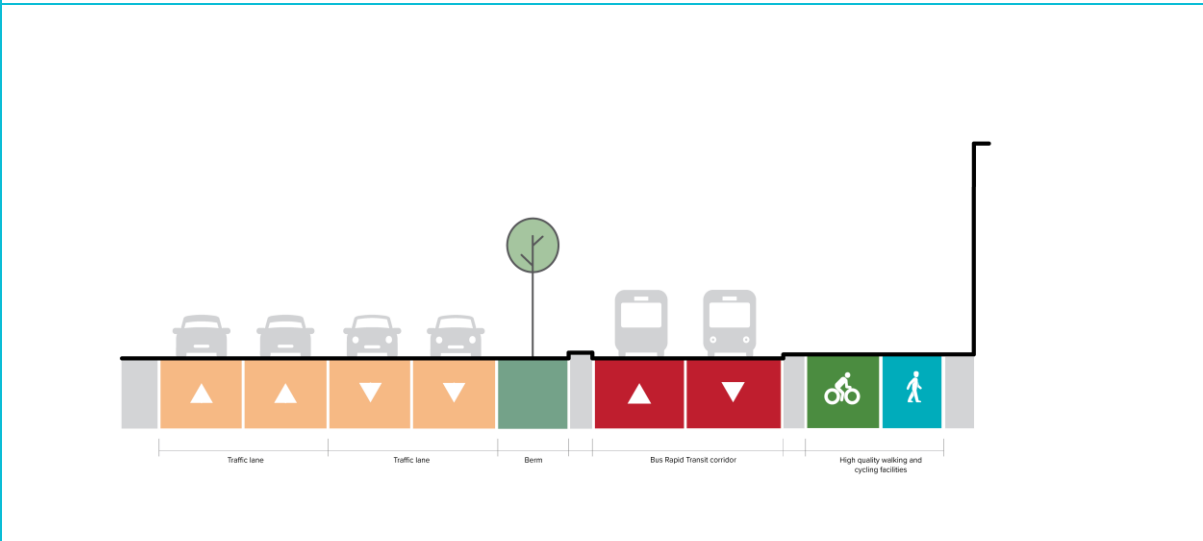
NoRs 4a and 4b – SH20/20B Interchange to Orrs Road	
Key features	
BRT corridor	<ul style="list-style-type: none"> Centre-running on Puhinui Road through to the Manukau Memorial Gardens intersection (approx. 600 m west of SH20/20B Interchange); and South running to Orrs Road.
Walking and cycling facilities	Walking and cycling facilities on southern side of the corridor
General traffic	<ul style="list-style-type: none"> Two lanes in each direction; and New southbound ramp from SH20B onto SH20.
Access	<ul style="list-style-type: none"> Limited access; and Access maintained via signals at Manukau Memorial Gardens and Campana Road.

Speed environment	60 km/h
Signalised intersections	<ul style="list-style-type: none"> • SH20/SH20B Interchange; • Puhinui Road and Manukau Memorial Gardens; and • Puhinui Road and Campana Road.
Stormwater infrastructure	<ul style="list-style-type: none"> • Swales

NoR 4b typical cross section



NoR 4a typical cross section



3 Assessment Methodology

3.1 Preparation for this Report

Work undertaken for this Report commenced in January 2022. In summary, the preparation for this work has included:

- Desktop research of the route using multiple online and paper resources. These are listed in the methodology section to follow;
- Field Surveys were undertaken on 8 and 24 March 2022. These field surveys concentrated on known archaeological sites and historic heritage items, along with waterways along the Project corridor; and
- Several workshops were undertaken with relevant experts for this project to ensure all potential effects on archaeology and historic heritage were addressed.

3.2 Statutory Requirements

3.2.1 Heritage New Zealand Pouhere Taonga Act 2014

All archaeological sites, whether recorded or not, are protected by the provisions of the Heritage New Zealand Pouhere Taonga Act 2014 (**HNZPT Act**) and may not be destroyed, damaged or modified without an Authority issued by Heritage New Zealand Pouhere Taonga (**HNZPT**).

An archaeological site is defined in the HNZPT 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).

Any HNZPT Act Authorities will be applied for at a later date, after detailed design and before any ground disturbance and construction works.

3.2.2 Resource Management Act 1991

The RMA requires District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while safeguarding the options of future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified as a matter of national importance (Section 6(f)).

Historic heritage is defined in section 2 of the RMA as:

Those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from any of the following qualities: archaeological, architectural, cultural, historic, scientific, or technological.

Historic heritage includes:

- *historic sites, structures, places, and areas; and*
- *archaeological sites; and*
- *sites of significance to Māori, including wāhi tapu; and*
- *surroundings associated with the natural and physical resources.*

These categories are not mutually exclusive, and some archaeological sites may include above ground structures or may also be places that are of significance to Māori.

3.2.3 Auckland Unitary Plan: Operative in Part

The Auckland Unitary Plan: Operative in Part (**AUP:OP**) contains several applicable provisions regarding historic heritage. In the AUP:OP, archaeological sites are defined in accordance with the definitions outlined in the HNZPT Act.

A scheduled historic heritage place can be an individual feature, or encompass multiple features and/or properties, and may include public land, land covered by water and any body of water. A historic heritage place may include cultural landscapes, buildings, structures, monuments, gardens and plantings, archaeological sites and features, traditional sites, sacred places, townscapes, streetscapes and settlements. The criteria for the identification and scheduling of these places is discussed in chapter B5 2.2 of the AUP:OP.

Additionally, there are heritage provisions in chapters E26 Infrastructure and E11/E12 land disturbance of the AUP:OP.

3.3 Methodology

The following resources were considered in this assessment:

- All recorded sites in the NZAA Site Recording Scheme in the general vicinity were accessed through ArchSite (<https://archsite.org.nz>, accessed 7 March 2022) and incorporated into the project specific GIS workspace maintained by CFG Heritage;
- The HNZPT digital library (<https://www.heritage.org.nz/protecting-heritage/archaeology/digital-library>, accessed 7 March 2022) was searched for records of archaeological investigations in the area;
- The HNZPT List / Rārangī Kōrero (<https://www.heritage.org.nz/the-list>) was searched on 7 March 2022 to see if any listed items were within the scope of works;
- Old maps and survey plans held by Land Information New Zealand (**LINZ**) were accessed on 7 March 2022 using QuickMap software;
- Aerial Photographs held by LINZ (<https://data.linz.govt.nz/>), Auckland Council (<https://geomapspublic.aucklandcouncil.govt.nz/>) and Retrolens (<https://retrolens.co.nz/>) were searched on 7 March 2022;
- Local soil information was searched on the S-Map Online database maintained by Landcare Research (<https://smap.landcareresearch.co.nz/>) on 7 March 2022;

- Potential vegetation based on soil information was obtained from the Land Resource Information Systems database (<https://lris.scinfo.org.nz/>, accessed 7 March 2022);
- The Auckland Council CHI (<https://chi.net.nz/>), the Auckland Council GeoMaps GIS viewer (<https://geomapspublic.aucklandcouncil.govt.nz/>) and Auckland Unitary Plan Viewer (<https://unitaryplanmaps.aucklandcouncil.govt.nz/>) were accessed on 7 March 2022 and searched for any areas of cultural significance. Additional unitary plan changes were accessed on 7 March 2022 to see if any additional changes have been proposed which are not currently displaying in the Auckland Council GIS layers;
- Papers Past online database (<https://paperspast.natlib.govt.nz/>) was accessed 8 March 2022 for historic newspaper articles;
- The National Library of New Zealand's DigitalNZ website (<https://digitalnz.org/>) was accessed 7 March 2022 for old drawings, photographs, and plans;
- The *Airport to Botany Route Protection Specialist Briefing Pack 16-12-21* (provided by the Project Team) was reviewed; and
- Field surveys of the proposed NoRs were undertaken on 8 and 24 March 2022.

3.4 Limitations and accuracy of data

Archaeological sites have been recorded since the 1950s and the quality of site information is variable. Sites were initially recorded on 100 yard grid references, which were converted to 100 m grid references as the map data became metricated in the 1980s. This has led to sites potentially only having a 200 m accuracy.

Since the mid-1990s, sites recorded by hand-held GPS' are generally located to ± 5 m. To ensure all archaeological sites that could be impacted by works are assessed, a 200 m buffer was placed around the Project area and all sites contained within that buffer were subject to categorical desktop assessment to understand if they were likely to be impacted by the proposed extent of works. Any sites within 200 m of the Project which could not be ruled out by this method will be considered as within the Project corridor until able to be proven otherwise.

Field survey was limited to publicly accessible land with any items only viewed from the road reserve.

This Report only assesses tangible archaeological and heritage values within the proposed extent of works. The Report does not address Te Ao Māori or intangible values associated with the cultural landscape. It is acknowledged that only Manawhenua can comment on these values.

4 Background/Context

4.1 Pre-European and historic Māori land use

4.1.1 NoR 1

On the eastern side of the Pakuranga Creek in the vicinity of Botany is a large lava field associated with Te Puke ō Tara and Matanginui, known collectively as the East Tāmaki Volcanic Field (Rickard 1985). This area was well researched by Rickard and others in the 1980s prior to development in the area, where an extensive stone field system was recorded, and other related horticultural areas were observed. Unfortunately, much of this has been destroyed in the interim by development, and fine-grained mapping and recording do not seem to exist for this once extensive gardening area. Elsewhere there would have been kumara and taro gardening where feasible, with settlements associated with these discrete gardening areas.

4.1.2 NoR 2

Extensive Māori occupation of this area from the 15th century onwards was centred around the volcanic cone pā of Matukutururu / Wiri Mountain (R11/32) and Matukutūreia / McLaughlins Mountain (R11/25). Gardening was conducted on the Matukurua stonefield sand their fertile volcanic soils, supported by exploitation of the estuarine shellfish beds and other marine resources of the inner Manukau Harbour (Bickler et. al. 2013; Sullivan 1975).

Further east, pre-European Māori gardening has been recorded associated with Te Puke ō Tara (Rickard 1985). As set out in NoR 1, this area was well researched by Rickard and others in the 1980s prior to development in the area, where an extensive stone field system was recorded with growing structures, walls and other related horticultural areas were observed. Unfortunately, in the interim much of this has been destroyed through development, and fine grained mapping and recording do not seem to exist for this once extensive gardening area.

4.1.3 NoR 3

As set out in NoR 2, there was extensive Māori occupation of this area from the 15th century onwards was centred around the volcanic cone pā sites of Matukutururu / Wiri Mountain (R11/32) and Matukutūreia McLaughlins Mountain (R11/25). Gardening was conducted within the Matukurua stonefields and their fertile volcanic soils, supported by exploitation of the estuarine shellfish beds and other marine resources of the inner Manukau Harbour (Bickler et. al. 2013; Sullivan 1975). The areas outside of these main gardening areas were likely also used for kumara and taro cultivation where suitable, with associated habitation areas located nearby.

4.1.4 NoRs 4a and NoR 4b

This portion of the Manukau has a long and established history of Māori occupation, which has been summarised by Campbell et al. (2013). Areas of rich volcanic soils suitable for cultivation, extensive marine resources and freshwater supplies made the peninsula a highly desirable location for settlement. Inlets such as the Oruarangi, Pūkaki and Puhinui Creeks gave access to inland areas including the Waokauri Portage between Pūkaki Creek and Curlew Bay negating the need to use the portage at Otahuhu if the Māngere Inlet was to be avoided (Hooker 1997).

The landscape of the area is dominated by its former and existing volcanic cones, the formation of which is associated with the Māori deity Mataaoho, and the tradition of ‘Te Riri a Mataaoho’ (the wrath of Mataaoho). Many geographic features recall these origins including: Te Pane a Mataaoho (the head of Mataaoho), known as Māngere Mountain; and Te Ihu a Mataaoho (the nose of Mataaoho), an early name for the westernmost point of Ihumatao including Maungataketake (Ellett’s Mountain). These craters, together with those of the wider Māngere-Otahuhu area are known collectively as Nga Tapuwae a Mataaoho (the footprints of Mataaoho).

A Māori settlement existed on the eastern mouth of the Pūkaki Creek known as Papahināu¹ which, although known to exist in the 19th century, has evidence of occupation as far back as the 15th century (Foster and Sewell, 1995). This settlement is essentially concentrated on Lot 182 PSH of Manurewa. Papahināu was temporarily abandoned during the 19th century due to the Ngāpuhi raids between 1823 and 1835, after which it was repopulated. European interactions appear to have begun around this time as European implements and artefacts have been found in a number of contexts in the settlement. In 1863, Te Ākitai Waiohua refused the oath of allegiance to the Crown and departed for the Waikato, which ended the settlement at Papahināu (Sullivan 1973; Foster and Sewell 1995: 15, 56).

4.2 Historic settlement and European land purchases

4.2.1 NoR 1

Following centuries of Māori settlement in East Tāmaki, organised European settlement began during the 1850s with the Crown sale of blocks of land to new immigrants for farming. By the early 1860s all the farms surveyed around the Pakuranga Creek as part of the Parish of Pakuranga had been sold by the Crown, except for two allotments, 32 and 33, which were noted as set aside as a native reserve. Roads in the area terminated abruptly at the creek and its tributaries, suggesting access to river landings as a principal mode of transport during this early European period, using the Tāmaki River to access Auckland. Throughout the remainder of the 19th and 20th centuries the land around NoR 1 was primarily used for farming, until the development of the Te Irirangi Drive arterial route, which facilitated housing and commercial development in the past 30 years.

4.2.2 NoR 2

Following the musket wars of the early 19th century, several European traders and settlers, as well as missionaries, began to make contact with the Manukau area and Māori came under increasing pressure to relinquish land. In 1836 the Church Missionary Society catechist, William Fairburn, acquired 80,000 acres of land in Manukau. The Crown purchased large tracts throughout South Auckland from the early 1840s, and private purchasers bought up newly available lots after the Crown right of pre-emption over Māori land was waived in 1844 (Stone 2001).

The area where NoR 2 is located was then transferred to the Clendon Grant in 1842, with European settlement and farming occurring after 1845 when the Clendon Grant was subdivided (Campbell and Clough 2004). Little information is available about the settlement of this area following the subdivision, but most of this area appears to have remained as farms until the mid-20th century when industrial

¹ There have been different spellings used for this settlement, with one of the prevalent alternatives being Papahinū. This appears to be due to inaccuracies when the original land surveys were undertaken in the 19th century, with the area originally being called Papahina, then Papa-a-hināu. Sullivan (1973) infers that it could be the result of a Māori habit of shortening a name for ease of conversation, and it most likely refers to the area as being a flat and covered in hināu. It will be referred to as Papahināu in this report.

and commercial buildings began to be constructed following the completion of State Highway 1 (**SH1**). This development would have obscured any surface archaeological evidence of previous land use.

4.2.3 NoR 3

Historic settlement in the area was similar to NoR 2. By 1840, the area had passed into European ownership, being part of the extensive Fairburn Grant. This area was then transferred to Clendon's Grant in 1842, with European settlement and farming occurring after 1845 when Clendon's Grant was subdivided (Campbell and Clough 2004). Little information is available about the settlement of this area following the subdivision, but most of this area remained as farms until the 1950s, when it was converted into a mix of housing, industrial and commercial properties. This development would have obscured any surface archaeological evidence of previous land use.

4.2.3.1 Cambria Park US Marine Camp

West of the North Island Main Trunk, The US military set up a temporary camp, known as Cambria Park US Marine Camp, between 1942 and 1945. This camp took advantage of the proximity of Puhinui Train Station for the movement of troops and materiel. The camp is recorded on the CHI as item 17015, however the location in the CHI database is incorrectly on the western side of SH20. The extent of the camp is shown in Figure 2 and Figure 3.

4.2.4 NoRs 4a and 4b

Between 1847 and 1849 Wesleyan missionaries set up the Ihumatao Mission Station on three hectares of land beneath Maungataketake / Ellet's Mountain. This mission station serviced the larger area, including the Papahinaiu papakāinga on the eastern banks of the Pūkaki Stream. This led to the construction of a chapel in 1862 to service the papakāinga. The use of the chapel was short lived, as Te Ākitai Waiohua refused the oath of allegiance to the Crown and departed for the Waikato, ending the settlement at Papahinaiu which was subsequently confiscated. This abandonment of the area by the Tainui aligned hapu led to the closing of the Ihumatao mission (Farley et al. 2015).



Figure 2: 1944 south west orientated oblique aerial of Cambria Park Military Camp. Auckland Council Footprints Archive (item 02151)

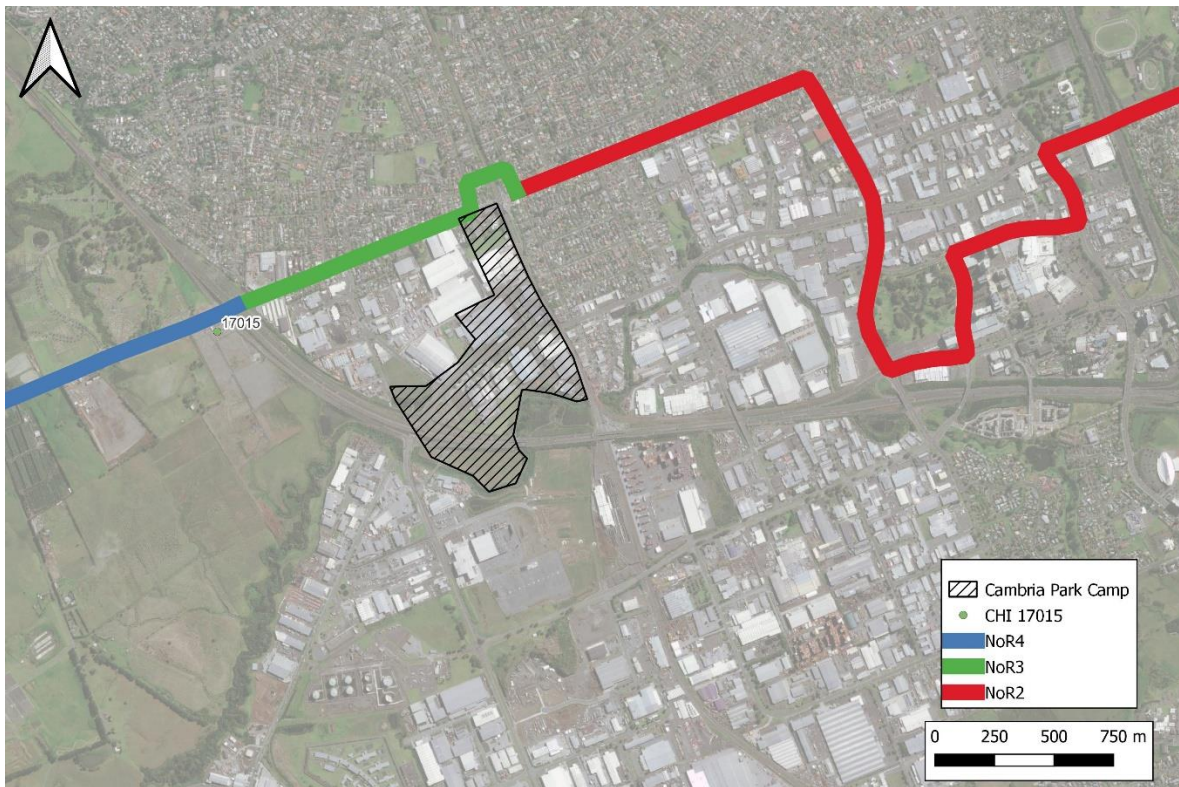


Figure 3: Location of Cambria Park Military Camp in relation to the CHI item location and the indicative routes of NoRs 2, 3 and 4.

4.3 Archaeology

4.3.1 NoR 1

The 1980s saw an increase in more intensive surveys focussing on specific areas where there was significant threat of both residential and industrial development. Rickard (1985) undertook an in-depth field survey of a small portion of the East Tāmaki Volcanic Field to the northern end of NoR 1, and recorded a number of gardening features, including stone mounds and gardens. Although this survey only covered a small area of undisturbed ground, she proposed that prior to the development of the area in the 1960s, an extensive Māori horticultural complex would have existed in the vicinity of these volcanic fields. An archaeological investigation of the Shaw Block by Slocombe and Vert (1989) focussed on three earth mounds which appeared different to nearby pre-European Māori gardening mounds and proved to be modern. Aside from these mounds, an earth oven and terraces were investigated.

Other assessments in recent years associated with the development of the area are linked with the construction of the Te Irirangi Drive arterial route (Bioresearches 1997b, 1998b; Prince and Clough 1996; Foster 1999). Generally, these assessments found little surface evidence of archaeological sites, with mainly historic features encountered (Bioresearches 1997b), which have since been destroyed. The exception is a midden identified by Prince and Clough (1996), but the location description is vague and was recorded using a 100 m grid reference. One findspot (R11/2088) was encountered during the construction of a housing development in the form of the broken Māori spear (Druskovich 2000). It should be noted that sub-surface features and artefacts can be obscured through development and not destroyed, and it is possible that there are portions along NoR 1 that have not been extensively earth worked.

4.3.2 NoR 2

Most archaeological survey in the vicinity of NoR 2 has been piecemeal and generally associated with greenfield development. Much of NoR 2 was subject to development in the 1950s and 1960s prior to any opportunity for large scale archaeological survey.

In the eastern portion of NoR 2, there were several surveys associated with the development of Te Irirangi Drive as an arterial route in the 1990s (Clough and Prince 1996). There were several midden and cooking sites identified through this work, along with some historic stone walls and artefact findspots.

In the central portion of NoR 2, one archaeological survey has been undertaken, on the corner of Great South Road and Te Irirangi Drive prior to the construction of the Countdown supermarket (Campbell and Clough 2004). This property had been previously modified through road construction, and no archaeological evidence was identified. Other small-scale surveys in the areas have also failed to find evidence of pre-European archaeological sites (Bioresearches 1995, 1997a, 1998a; Coster, 1997; Foster 1997; Harlow 2000). The only archaeological sites identified and investigated in the vicinity are associated with St Johns Redoubt (Farley 2009).

In the western portion of NoR 2, there do not appear to have been any archaeological surveys. This is likely a result of the area being developed during the 1950s and 1960s predominantly for low density housing, but no further major development.

4.3.3 NoR 3

Archaeological investigation and survey in the immediate area of NoR 3 has been limited, with most archaeological survey and investigation focussed on the remaining greenfield areas. Works to the west are discussed in the NoRs 4a and NoR 4b section, with other investigations to the south concentrating on Matukutūreia / McLaughlin's Mountain (R11/25) and the Matukurua stonefields (Bickler et. al. 2013; Sullivan 1975).

4.3.4 NoRs 4a and 4b

A great deal of archaeological research has been carried out in the area, which has been summarised in Cruickshank (2019). Along SH20B (between the Pūkaki Creek and SH20), there have been three investigations and several surveys. Foster and Sewell (1995) undertook an archaeological investigation of sites R11/229 and R11/1800 on the Pūkaki Creek which revealed an early 19th century historic period Māori occupation of the Papahināu settlement. This overlaid an earlier midden layer, dated to AD 1450–1690. The upper layer of the site was occupied from at least the early 19th century until 1823 and then reoccupied from 1835 until 1863 (Sullivan 1973; Foster and Sewell 1995: 15, 56). Fourteen houses were excavated, defined by rows of postholes and bedding trenches, all one room and of similar size and layout, some stratigraphically superimposed on others in two phases. European tools and artefacts became increasingly common in the late phase. Late phase houses had square cut postholes indicating the use of iron tools but retained the traditional layout of early phase houses. One late house had no European artefacts and is thought to have been a storage structure (Foster and Sewell 1995: 25). Food sources seem to have remained pretty much the same in both phases, with only the very occasional pig bone found from the late phase (Foster and Sewell 1995: 58).

Clough and Associates undertook archaeological investigations for the Auckland Airport Park and Ride located on Puhinui Road in 2019 and 2020. Five archaeological sites were encountered during works, four of which are associated with pre-European Māori use of the landscape, and one (R11/3292) was a black beer bottle dump (Farley 2020). The final report is still in preparation for the Auckland Airport Park and Ride project.

CFG Heritage Ltd undertook investigations associated with the SH20B short term improvements through 2020 and 2021. This project was designed to avoid known archaeological sites, especially within the indicative extent of Papahināu. One site (R11/3340) was encountered within the road reserve, associated with pre-European Māori cooking. It should be noted that through this area, topsoil was encountered beneath the road surface, so it is possible that sub-surface archaeological sites could exist beneath the road surface outside of the extent of works (Ussher 2021). The final report is still in preparation for the SH20B short term improvements project.

Sullivan (1973) undertook the first intensive survey of the Pūkaki Creek and recorded 61 sites along both banks. Prior to the survey, she had noted only one site from aerial photography, R11/45, Pūkaki Pā. Sullivan noted that the pā is not an isolated site but part of a much larger complex of sites along the Pūkaki Creek (1973).

In 2013, CFG Heritage Ltd undertook a desktop study and field survey of the area of the proposed works as part of the Puhinui Master Plan. This portion of the survey primarily concentrated on those sites associated with Papahināu. This was assessed by CFG Heritage Ltd as a landscape rather than individual sites and deemed to be of high significance.

4.4 Desktop research

4.4.1 NoR 1

There are four recorded archaeological sites and one associated historic heritage extent of place within 200 m of NoR 1. Two of the sites have been recorded as destroyed, and one is outside of the scope of works. There is one site (R11/1973) which was recorded within a tributary of the Pakuranga Creek opposite Brinlack Drive. This site requires field survey to assess its condition.

Table 7. Recorded archaeological sites within 200 m of NoR 1.

NZAA_ID	Source	Site Type	Ethnicity	Effect	Reason
R11/1973	CINZAS	Midden/Oven	Māori	Unknown	Could be within extent of works
R11/2088	On Screen	Findspot	Māori	Nil	Destroyed
R11/2152	CINZAS	Agricultural/Pastoral	Colonial	Nil	Destroyed
R11/2429	CINZAS	Historic - Domestic	Colonial	Nil	Outside scope of works



Figure 4: Extent of NoR 1 showing recorded archaeological sites within 200 m.

4.4.2 NoR 2

There are two historic heritage items within 200 m of NoR 2. The first is an Oak Tree outside 9 Cavendish Drive (item 19157). This will be assessed in the *Airport to Botany: Assessment of Arboricultural Effects* report but is unlikely to be affected by these works. The second item is a reported location of milepost 13 outside 656 Great South Road (item 20284). This location was

provided from a 1936 Automobile Association map and this milepost, along with the others along Great South Road, is no longer standing.

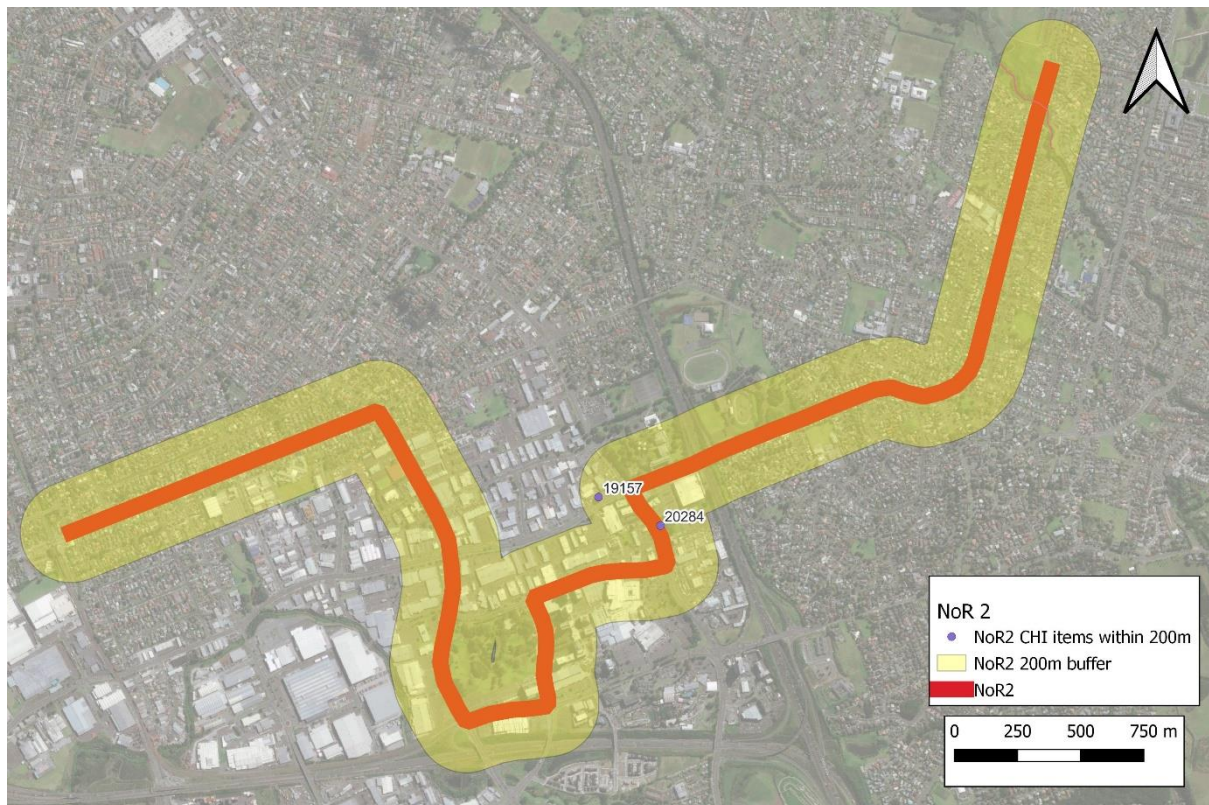


Figure 5: Map of NoR 2 showing location of CHI items within 200 m.

4.4.3 NoR 3

There were seven items identified on the CHI within 200 m of NoR 3. Three of these (items 12484, 12519 and 22166) are associated with Cambria House, and will be assessed in the *Airport to Botany: Assessment of Effects on Built Heritage* report. Two of the items are associated with the Cambria Park military base (15944 and 17015).

A flowering gum (item 19196) is located on the corner of Puhinui Road and Vision Place. There is a tree visible in a 1939 aerial photograph at the driveway of Lot 2 Pt Allot 44 PSH of Manurewa, and it is assumed that it is the same tree, and that it was planted at some point after 1917 when the property was subdivided from the original lot. This tree is within the designation and will be assessed in the *Airport to Botany: Assessment of Arboricultural Effects* report.



Figure 6: SN139/33/10 (1939) with blue arrow showing location of tree assumed to be the flowering gum at corner of current Vision Place.

The remaining item (item 19381) is a footbridge associated with the Puhinui Station which has subsequently been destroyed. This footbridge will also be discussed in further detail in the built heritage assessment for this Project.

An eighth item has been included in this assessment, The Cambria Park US Marine Camp (item 17015) as discussed in Section 4.2.3.1. Although this is not a scheduled item, part of the known extent may extend into the road reserve, and it is possible that associated material may be encountered during construction. This site will require assessment under the AUP:OP guidelines (2019) to see if it meets the criteria for scheduling. Works then may also be subject to Chapter D17 of the AUP:OP.

Table 8. Archaeological sites and historic heritage items within NoR 3.

NZAA_ID	CHI	Source	Site Type	Ethnicity	Effect	Reason
	15944	CHI	Monument	Historic	Moderate	Within scope of works
R11/3217	12484	Archsite	Cambria Park Historic Homestead	Historic	Moderate	Grounds and HHEP within scope of works
	12519	CHI	Notable tree		Nil	Outside scope of works
	17015	CHI	Cambria Park US Marine Camp	Historic	Moderate	Portion within scope
	19196	CHI	Notable tree		High	Within scope of works

	19381	CHI	Footbridge	Historic	Nil	Destroyed
	22166	CHI	Gardeners Cottage	Historic	High	Within scope of works



Figure 7: NoR 3 showing location of heritage items within 200 m

4.4.4 NoRs 4a and 4b

There are eight recorded archaeological sites within 200 m of NoRs 4a and 4b. Five of the sites are associated with pre-European Māori land use, with the remaining three associated with early historic settlement of the area. Five of the sites are listed as being destroyed, with R11/3241 located within the Manukau Memorial Gardens, and the remaining four in the Auckland Airport Park and Ride development.

There is also one item in the CHI recorded within 200 m of NoRs 4a and 4b, item 17015, a WWII US military base. This location is incorrect and is discussed in the NoR 3 section above.

Table 9: Recorded archaeological sites within 200 m of NoR 4a and NoR 4b

NZAA_ID	Source	Site Type	Ethnicity	Effect	Reason
R11/1353	Handheld GPS	Māori horticulture	Māori	Nil	Outside scope of works
R11/1354	On Screen	Historic - domestic	Non-Māori	Nil	Outside scope of works
R11/2185	Handheld GPS	Midden/Oven	Māori	Nil	Outside scope of works
R11/3241	Handheld GPS	Midden/Oven	Māori	Nil	Destroyed
R11/3288	Handheld GPS	Agricultural/Pastoral	Non-Māori	Nil	Destroyed

R11/3290	Handheld GPS	Midden/Oven	Māori	Nil	Destroyed
R11/3291	Handheld GPS	Midden/Oven	Māori	Nil	Destroyed
R11/3292	Handheld GPS	Artefact Find	Non-Māori	Nil	Destroyed

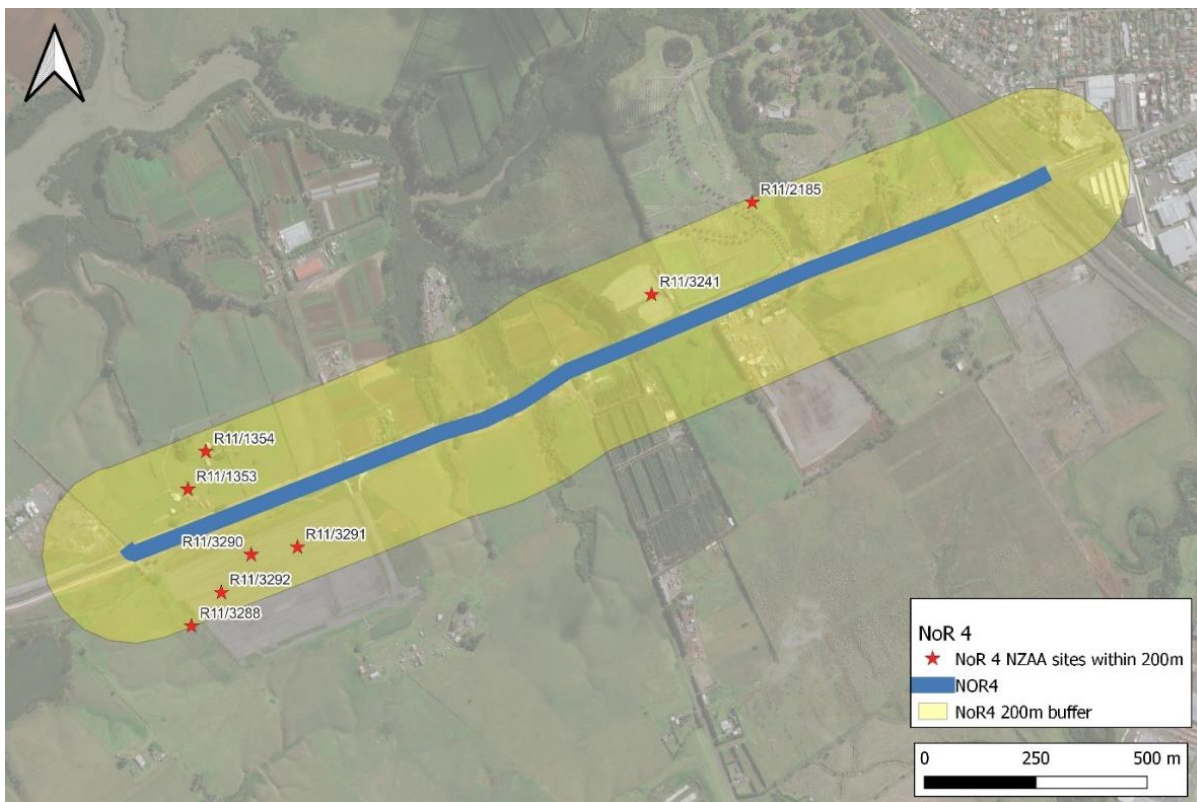


Figure 8: NoR 3 showing location of heritage items within 200 m

4.5 Field work

A foot survey was undertaken of all the NoRs on 8 and 24 March 2022. No additional archaeological sites or heritage items were identified.

5 Summary of archaeological sites

In summary, there are currently 12 recorded archaeological sites and nine CHI items listed within 200 m of the proposed NoRs. Of these 21 sites/items, there are four in NoR1, two in NoR 2, seven in NoR 3 and eight in NoRs 4a and 4b. These sites/items are summarised in the table below:

Table 10: Summary of historic heritage sites within 200 m of the proposed designations

NoR	Site	NZAA	CHI	Relationship to NoR	Condition
1	Midden	R11/1973		Unknown	Unknown
1	Artefact Findspot	R11/2088		Outside designation boundary	Destroyed
1	Stone wall	R11/2152		Outside designation boundary	Destroyed
1	House	R11/2429		Outside designation boundary	Unknown
2	Gum Tree		19157	Within designation boundary	To be assessed by arborist
2	Mile Marker 13		20284	Within designation boundary	Destroyed
3	Monument		15944	Within designation boundary	Good
3	Cambria Park historic homestead		12484	Outside designation boundary	Unknown
3	Notable Tree		12519	Outside designation boundary	To be assessed by arborist
3	Cambria Park US Marine Camp		17015	Within designation boundary	Unknown, presumed destroyed
3	Notable Tree		19196	Within designation boundary	To be assessed by arborist
3	Footbridge		19381	Within designation boundary	Destroyed
3	Gardeners Cottage		22166	Within designation boundary	To be assessed by built heritage expert
4	Māori horticulture site	R11/1353		Outside designation boundary	Unknown
-	House	R11/1354		Outside designation boundary	Unknown
-	Midden	R11/2185		Outside designation boundary	Unknown
-	Midden	R11/3241		Outside designation boundary	Destroyed
-	Historic postholes	R11/3288		Outside designation boundary	Destroyed
-	Midden	R11/3290		Outside designation boundary	Destroyed
-	Midden	R11/3291		Outside designation boundary	Destroyed
-	Artefact Findspot	R11/3292		Outside designation boundary	Destroyed

6 Assessment of archaeological effects

The following assessment relates only to archaeological values. It is recognised that other interested parties, in particular Manawhenua, may hold different values regarding the proposed works. As set out in the AEE, Manawhenua have shared these values with the Project Team through regular hui and site visits where relevant.

6.1 Positive archaeological effects

The proposed designation boundary has avoided all known archaeological sites with the exception of R11/1973, which was not able to be relocated and is likely destroyed. It should also be noted that the assessment of the Gardeners Cottage (item 22166) has been deferred to the Built Heritage Assessment for this Project. Although any archaeological sites encountered within the proposed area of works (either known or unknown) are likely to be destroyed, the subsequent archaeological investigations undertaken would help provide information about the sites. This information could be presented to the public through interpretive panels or displays.

6.2 Assessment of construction effects

As set out in the AEE, although an in-depth construction methodology has not been developed at this stage, the proposed Project corridor will be wider than the existing road reserves in most instances. As such, it is fair to assume that the entire extent of works would be subject to topsoil stripping and pavement removal, with some cut and fill required. Any archaeological material that may be encountered within the extent of works would therefore be destroyed and would not be able to be preserved or avoided.

6.3 Recommended measures to avoid, remedy or mitigate construction effects

6.3.1 All NoRs

Based on the consideration of the statutory requirements discussed above related to archaeology and historic heritage for NoRs 1, 2, 3, 4a and 4b, the following mitigation and management measures are recommended:

- A HHMP should be prepared alongside other relevant disciplines (e.g. urban design) and implemented during construction to guide works including induction requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection and investigation;
- A General Archaeological Authority to modify or destroy potential archaeological sites that may be encountered within the Project corridor should be applied for from HNZPT under Section 44 of the HNZPTA. The Authority should be obtained in advance of any earthworks commencing to minimise delays should archaeological remains be exposed once works are underway; and
- Where effects on known (or unknown) archaeological sites cannot be avoided, undertaking archaeological investigation and recording any affected archaeological sites using archaeological best practice should be undertaken in accordance with the Authority.

6.4 Assessment of operational effects

Although there are no operational effects on archaeological sites identified, it should be noted that this does not include built heritage, which will be assessed separately through the *Assessment of Effects on Built Heritage* report for this Project.

Notwithstanding the above, it is noted through the AEE that Manawhenua will be invited as partners to develop an Urban and Landscape Design Management Plan (**ULDMP**).

The ULDMP sets out opportunities to acknowledge the connection Manawhenua have to the Project area (tangible and intangible) through the future design of the Project.

7 Conclusions

There were 12 recorded archaeological sites within 200 m of the five NoRs associated with the Project, 11 of which are outside of the scope of works. One site (R11/1973) was not able to be relocated during field survey, so it cannot be determined if it will be affected by any future works associated with this Project.

There are also nine historic heritage items identified within 200 m of the project corridor, two of which are trees which will be assessed separately in the *Airport to Botany: Assessment of Arboricultural Effects* report. One was a milepost on Great South Road (item 20284), which was removed at some point during the 20th century. The remainder are associated with built heritage items which will be assessed separately in the *Airport to Botany: Assessment of Historic Heritage* report.

Although there were no identified archaeological or historic heritage items which will be directly affected by this project, it is possible that previously unrecorded sub-surface archaeological sites may exist and be exposed during construction.

Based on the consideration of the statutory requirements discussed above related to archaeology and historic heritage and the assessment of potential adverse effects identified for the project, the following mitigation and management measures are recommended.

- An HHMP should be prepared and implemented during construction to guide works including induction requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection and investigation;
- A General Archaeological Authority to modify or destroy potential archaeological sites that may be encountered within the Project corridor should be applied for from Heritage NZ under Section 44 of the Heritage New Zealand Pouhere Taonga Act 2014. The Authority should be obtained in advance of any earthworks commencing to minimise delays should archaeological remains be exposed once works are under way; and
- Where effects on known (or unknown) archaeological sites cannot be avoided, undertaking archaeological investigation and recording of any affected archaeological sites using archaeological best practice should be undertaken in accordance with the Authority.

Effect	Assessment	Recommendation
Modification or destruction of previously unrecorded archaeological sites	It is possible that previously unrecorded sub-surface	An HHMP should be prepared and implemented during construction to guide works including induction

Effect	Assessment	Recommendation
	archaeological deposits may be encountered during works	<p>requirements for contractors (and sub-contractors) and procedures for archaeological monitoring, inspection and investigation</p> <p>A General Archaeological Authority to modify or destroy potential archaeological sites that may be encountered within the Project corridor should be applied for from Heritage NZ under Section 44 of the Heritage New Zealand Pouhere Taonga Act 2014.</p>

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