



TE TUPU NGĀTAHI
SUPPORTING GROWTH

North West Redhills Riverhead Assessment of Effects on Heritage / Archaeology

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Abbreviations

Acronym/Term	Description
AEE	Assessment of Effects on the Environment
AT	Auckland Transport
AUP:OP	Auckland Unitary Plan Operative in Part
CHI	Cultural Heritage Inventory
FTN	Frequent Transit Network
FUZ	Future Urban Zone
HNZPT	Heritage New Zealand Pouhere Taonga
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
RMA	Resource Management Act 1991
NoR	Notice of Requirement (under the Resource Management Act 1991)
NZAA	NZ Archaeological Association
SH16	State Highway 16
Te Tupu Ngātahi	Te Tupu Ngātahi Supporting Growth
Waka Kotahi	Waka Kotahi NZ Transport Agency

Glossary of Acronyms / Terms

Acronym/Term	Description
Auckland Council	Means the unitary authority that replaced eight councils in the Auckland Region as of 1 November 2010.
Redhills Riverhead Assessment Package	Two Notices of Requirement (for Don Buck Road and Coatesville-Riverhead Road) and one alteration to an existing designation (Fred Taylor Drive) for the Redhills Riverhead Package of Projects for Auckland Transport.

1 Executive Summary

Assessment undertaken

1. The assessment is based on:
 - a review of the heritage databases at Auckland Council, New Zealand Archaeological Association Site Recording Scheme and Heritage New Zealand Pouhere Taonga (**HNZPT**)
 - a review of historic maps
 - published and unpublished publications on the history of the study area
 - previously undertaken archaeological investigations and research
 - landscape and environment
 - oral traditions where available
2. Assessment criteria used are from:
 - Heritage New Zealand Pouhere Taonga Act 2014 (**HNZPTA**)
 - Resource Management Act 1991 (**RMA**)
 - Auckland Unitary Plan (**AUP:OP**)
3. All cultural heritage sites, archaeological sites, and risk areas where unrecorded, sub surface archaeological features could be encountered within 200 metres of the extent of each notice of requirement (NoR) are considered as part of this assessment.
4. This assessment does not evaluate impact on Māori cultural values. Te Tupu Ngātahi have engaged with mana whenua, and Te Kawerau ā Maki has provided a Cultural Impact Assessment (CIA) which assesses the potential effects on cultural values and the landscape of Te Kawerau a Maki.

NoR RE1 Don Buck Road FTN Upgrade

Results of assessment and recommended measures

5. There are no recorded archaeological sites or heritage areas, structures or buildings within the extent of NoR RE1. There is a small stream area which has been modified recently and the risk of encountering undisturbed archaeological features is small. There are minor potential adverse effects on this archaeological resource from NoR RE1.
6. The potential for unrecorded archaeological deposits and features to be encountered needs to be taken into account for all earthworks that include topsoil stripping, not just within the extent of NoR RE1 but also other areas such as haul roads and laydown areas. Once the earthworks are finished there will be no effects on archaeological or heritage sites during operation of NoR RE1.
7. There is a very small risk of potential adverse effects due to encountering unrecorded archaeological sites, as the area was used by Māori for food gathering and transit. An Accidental Discovery Protocol with relevant conditions would mitigate this small risk.
8. Any processes regarding tikanga, especially around koiwi, should be discussed with Mana whenua before the start of the project.

Conclusion

9. In conclusion, with the proposed mitigation in place there will be no adverse effects on historic heritage and archaeology from NoR RE1.

NoR RE2 Fred Taylor Drive FTN Upgrade

Results of assessment and recommended measures

10. There is one recorded archaeological site within the extent of NoR RE2 but no historic areas, structures or buildings. The archaeological site R11/3097 is the crash site of a B17E bomber from 1942. The main impact area has been recently earthworked. There is a small risk that the debris field of the crash extends across Fred Taylor Drive. The area has been utilised in the pre-Contact and early Contact period and therefore there is a very small risk of unrecorded archaeological features being encountered. There is therefore the potential for small adverse effects on historic heritage and the archaeological resources by the proposed upgrade of Fred Taylor Drive as part of NoR RE2.
11. The potential for unrecorded archaeological deposits and features to be encountered needs to be taken into account for all earthworks that include topsoil stripping, not just within the extent of NoR RE2, but also other areas such as haul roads and laydown areas. Once the earthworks are finished there will be no effects on archaeological or heritage sites during operation of NoR RE2.
12. There is a small risk of potential adverse effects due to unrecorded archaeological sites being encountered. An archaeological authority would mitigate the risk of remnants of the B17E crash site including fragmented human remains (the site has been cleared at the time but due to the nature of the crash there is still a small risk of discoveries) and also any additional unrecorded archaeological sites being encountered.
13. Any processes regarding tikanga, especially around koiwi, should be discussed with Mana whenua before the start of the project.

Conclusion

14. In conclusion, with the proposed mitigation in place, there will be no adverse effects on historic heritage and archaeology from NoR RE2.

NoR R1 Coatesville-Riverhead Highway Upgrade

Results of assessment and recommended measures

15. There are no recorded archaeological sites or historic areas, structures or buildings within the extent of NoR R1. The area has been utilised in the pre-Contact and early Contact period and therefore there is a very small risk of unrecorded archaeological features being encountered.
16. The potential for unrecorded archaeological deposits and features to be encountered needs to be taken into account for all earthworks that include topsoil stripping, not just within the extent of NoR R1, but also other areas such as haul roads and laydown areas. Once the earthworks are finished there will be no effects on archaeological or heritage sites during operation of NoR R1.
17. There is a very small risk of potential adverse effects due to unrecorded archaeological sites being encountered. An Accidental Discovery Protocol with relevant conditions would mitigate this small risk.

18. Any processes regarding tikanga, especially around koiwi, should be discussed with Mana whenua before the start of the project.

Conclusion

19. In conclusion, with the proposed mitigation in place there will be no adverse effects on historic heritage and archaeology from NoR R1.

2 Introduction

This heritage and archaeology assessment has been prepared for the North West Redhills and Riverhead Local Arterials Notices of Requirement (**NoRs**) for Auckland Transport (**AT**) (the “**Redhills Riverhead Assessment Package**”). The NoRs are to designate land for future strategic and local arterial transport corridors as part of Te Tupu Ngātahi Supporting Growth Programme (**Te Tupu Ngātahi**) to enable the construction, operation and maintenance of transport infrastructure in the North West area of Auckland.

This report assesses the effects on cultural heritage and archaeology of the North West Redhills Riverhead Assessment Package identified in Table 2-1 below.

Table 2-1: North West Redhills Riverhead Assessment Package – Notices of Requirement and Projects

Notice	Project
NoR RE1	Don Buck Road FTN Upgrade
NoR RE2	Fred Taylor Drive FTN Upgrade (alteration to existing designation 1433)
NoR R1	Coatesville-Riverhead Highway Upgrade

2.1 Purpose and Scope of this Report

This assessment forms part of a suite of technical reports prepared to support the assessment of effects within the Redhills Riverhead Assessment Package. Its purpose is to inform the Assessment of Effects on the Environment (**AEE**) that accompanies the Redhills Riverhead Assessment Package sought by Waka Kotahi and AT.

This report considers the actual and potential effects associated with the construction, operation and maintenance of the Redhills Riverhead Assessment Package on the existing and likely future environment as it relates to effects on heritage and archaeology and recommends measures that may be implemented to avoid, remedy and/or mitigate these effects.

The key matters addressed in this report are as follows:

- a) Identify and describe the heritage and archaeological context of the Redhills Riverhead Assessment Package area;
- b) Identify and describe the actual and potential effects onto heritage and archaeology of each project corridor within the Redhills Riverhead Assessment Package;
- c) Recommend measures as appropriate to avoid, remedy or mitigate actual and potential effects onto heritage and archaeology (including any conditions/management plan required) for each project corridor within the Redhills Riverhead Assessment Package; and
- d) Present an overall conclusion of the level of actual and potential effects onto heritage and archaeology for each project corridor within the Redhills Riverhead Assessment Package after recommended measures are implemented.

2.2 Report Structure

The report is structured as follows:

- a) Overview of the methodology used to undertake the assessment and identification of the assessment criteria and any relevant standards or guidelines;
- b) Description of each project corridor and project features within the Redhills Riverhead Assessment Package as it relates to historic heritage and archaeology.
- c) Identification and description of the existing and likely future heritage landscape, separated into physical environment, Māori settlement history, European settlement history and previous archaeological projects as far as it is relevant to describe positive and adverse effects;
- d) Description of the actual and potential adverse effects on heritage and archaeology of construction of each project corridor;
- e) Description of the actual and potential adverse effects on heritage and archaeology of operation of each project corridor;
- f) Recommended measures to avoid or mitigate potential adverse effects on heritage and archaeology; and
- g) Overall conclusion of the level of potential adverse effects on heritage and archaeology of each project corridor after recommended measures are implemented.

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 for the project, likely staging 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 effects on historic heritage and archaeology. As such, they are not repeated here, unless a description of an activity is necessary to understand the potential effects, then it has been included in this report for clarity.

2.3 Preparation for this Report

Preparation for this report included desktop investigations and drive by visits. The drive by visits used only public roads and public land to get close to areas of interest pinpointed by the desktop research. Drive by visits were found sufficient for the purpose of the report and much less disruptive to landowners than site visits under Covid19 restrictions.

Sources for desktop research include:

- NZ Archaeological Association (NZAA) online site recording database Archsite
- LINZ database of historic maps and survey plans via Quickmaps
- Heritage New Zealand Heritage List/ Rārangī Kōrero
- Heritage New Zealand online reports database
- Auckland Council Geomaps GIS viewer
- Auckland Council Cultural Heritage Inventory (CHI)
- Auckland Council Archives (online resources)
- Archives New Zealand (online resources)
- Local histories – published and unpublished
- Archaeological reports
- Aerial photographs
- National Library cartographic collection
- Alexander Turnbull Tiaki online collection
- Auckland Museum pictorial collections

3 Assessment Methodology

3.1 Statutory Requirements

There are two main pieces of legislation in New Zealand that control work affecting archaeological sites. These are the HNZPTA and the RMA.

This assessment considers heritage places and archaeological sites as defined in the HNZPTA, scheduled sites in the AUP:OP, and also heritage sites that are recognised in the Auckland Council's CHI.

3.1.1 Heritage New Zealand Pouhere Taonga Act 2014

HNZPT administers the HNZPTA. The HNZPTA contains a consent (authority) process for any work affecting archaeological sites, where an archaeological site is defined as:

- “6(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*
- 6(b) includes a site for which a declaration is made under section 43(1)”*

Any person, who intends carrying out work that may damage, modify or destroy an archaeological site, or to investigate a site using invasive archaeological techniques, must first obtain an authority from HNZPT. The process applies to sites on land of all tenure including public, private and designated land. The HNZPTA contains penalties for unauthorized site damage or destruction

The archaeological authority process applies to all sites that fit the HNZPTA definition, regardless of whether:

- The site is recorded in the NZAA Site Recording Scheme or registered by HNZPT;
- The site only becomes known about as a result of ground disturbance; and/ or
- The activity is permitted under a district or regional plan, or a resource or building consent has been granted.

HNZPT also maintains The New Zealand Heritage List Rārangī Kōrero of Historic Places, Historic Areas, Wāhi Tupuna/Tipuna, Wāhi Tapu and Wāhi Tapu Areas. The New Zealand Heritage List Rārangī Kōrero includes some significant archaeological sites. The purpose of The New Zealand Heritage List Rārangī Kōrero is to inform members of the public about such places and to assist with their protection under the RMA.

3.1.2 Resource Management Act 1991

The RMA promotes the sustainable management of natural and physical resources (RMA Section 2, 5(1)).

RMA Section 2, 5(2) states that:

In this Act, **sustainable management** means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

- (a) *sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs 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:

- (a) *means those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, deriving from any of the following qualities:*
- (i) archaeological;*
 - (ii) architectural;*
 - (iii) cultural;*
 - (iv) historic;*
 - (v) scientific;*
 - (vi) technological; and*
- (b) *includes—*
- (i) historic sites, structures, places, and areas; and*
 - (ii) archaeological sites; and*
 - (iii) sites of significance to Māori, including wāhi tapu; and*
 - (iv) 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.

In Auckland the AUP:OP has specific provisions for historic heritage and places of significance to mana whenua. Those places of significance to mana whenua also have the potential to contain archaeological value. It is noted that scheduled historic heritage places have a stronger protection than archaeological sites that are not scheduled in the AUP:OP.

3.1.3 Assessment Criteria

The background for the assessment criteria used in this report has been outlined as follows:

“Archaeological values relate to the potential of a place to provide evidence of the history of New Zealand. This potential is framed within the existing body of archaeological knowledge, and current research questions and hypotheses about New Zealand's past. An understanding of the overall archaeological resource is therefore required” (Heritage New Zealand Pouhere Taonga 2019:9).

The assessment criteria are split into two sections: Main Archaeological values and Additional values:

The first archaeological values look at an **intra** (within the) **site** context.

- **Condition:**
How complete is the site? Are parts of it already damaged or destroyed?
Condition varies from undisturbed to destroyed and every variation in between. It is also possible that the condition of various parts of the site varies.
- **Rarity/Uniqueness:**
Rarity can be described in a local, regional and national context. Rarity can be rare as a site, or rarely examined or today a rare occurrence in the records.
- **Information Potential:**
How diverse are the features to be expected during an archaeological excavation on the site?
How complete is the set of features for the type of site?
Can the site inform about a specific period or specific function?

The second set of archaeological values are *inter site (between sites) context* criteria:

- **Archaeological landscape / contextual value:**
What is the context of the site within the surrounding archaeological sites?
The question here is the part the site plays within the surrounding known archaeological sites. A site might sit amongst similar surrounding sites without any specific features. Or a site might occupy a central position within the surrounding sites. Though a site can be part of a complete or near complete landscape, whereby the value of each individual site is governed by the value of the completeness of the archaeological landscape.
- **Amenity value:**
What is the context of the site within the physical landscape?
This question is linked to the one above but focuses onto the position of the site in the landscape. Is it a dominant site with many features still visible or is the position in the landscape ephemeral with little or no features visible? This question is also concerned with the amenity value of a site today and its potential for onsite education.
- **Cultural Association:**
What is the context of the site within known historic events or to people?
This is the question of known cultural association either by tangata whenua or other descendant groups. This question is also concerned with possible commemorative values of the site.

Other values could include (Heritage New Zealand Pouhere Taonga 2019:9):

- Architectural
- Historic
- Scientific
- Technological
- Cultural

The last value, cultural, acknowledges if there is an impact on Māori cultural values. This assessment will not evaluate these, but rather state their relevance in relation to the other values. The HNZPTA requires an assessment of Maori values as part of archaeological authority applications. Generally, HNZPT prefers that such an assessment be provided by tangata whenua (Heritage New Zealand Pouhere Taonga 2019:10).

In addition, the AUP:OP (Part 1, Chapter B: 5.2.2) outlines a place as having historic heritage value if it has one or more of the following values:

Identify and evaluate a place with historic heritage value considering the following factors:

- (a) historical: the place reflects important or representative aspects of national, regional or local history, or is associated with an important event, person, group of people, or with an idea or early period of settlement within New Zealand, the region or locality;
- (b) social: the place has a strong or special association with, or is held in high esteem by, a particular community or cultural group for its symbolic, spiritual, commemorative, traditional or other cultural value;
- (c) Mana Whenua: the place has a strong or special association with, or is held in high esteem by, Mana Whenua for its symbolic, spiritual, commemorative, traditional or other cultural value;
- (d) knowledge: the place has potential to provide knowledge through archaeological or other scientific or scholarly study, or to contribute to an understanding of the cultural or natural history of New Zealand, the region, or locality;
- (e) technology: the place demonstrates technical accomplishment, innovation or achievement in its structure, construction, components or use of materials;
- (f) physical attributes: the place is a notable or representative example of:
 - (i) a type, design or style;
 - (ii) a method of construction, craftsmanship or use of materials; or
 - (iii) the work of a notable architect, designer, engineer or builder;
- (g) aesthetic: the place is notable or distinctive for its aesthetic, visual, or landmark qualities;
- (h) context: the place contributes to or is associated with a wider historical or cultural context, streetscape, townscape, landscape or setting.

The methodology applies to all NoRs (NoRs RE1, RE2, R1) and to both construction and operation stages.

4 Redhills Riverhead Assessment Package Overview

A brief summary of the Redhills Riverhead Assessment Package projects provided in Table 4-1 below.

Table 4-1: Redhills Riverhead Assessment Package Project Summary

Corridor	NOR	Description	Requiring Authority
Don Buck Road FTN Upgrade	RE1	Upgrade of Don Buck Road corridor to a 30m wide four-lane cross-section providing bus priority lanes and separated active mode facilities on both sides of the corridor.	Auckland Transport
Fred Taylor Drive FTN Upgrade	RE2	Upgrade of Fred Taylor Drive corridor to a 30m wide four-lane cross-section providing bus priority lanes and separated active mode facilities on both sides of the corridor.	Auckland Transport
Coatesville-Riverhead Highway Upgrade	R1	Upgrading the southern section of the corridor to a 33m two-lane low speed rural arterial cross-section with active mode facilities on the western side; and Upgrading the northern section of the corridor to a 24m two-lane urban arterial cross-section with active mode facilities on both sides of the corridor.	Auckland Transport

4.1 Physical Environment

The physical environment is low lying undulating. The study area (for all NoRs) is framed by the Ngongetepara Stream (off Brigham Creek) with the Totara Creek as a side stream and the Waiarohia Creek and Stream. The latter forms a natural boundary to the Hobsonville peninsula, called Onekiritea in pre-Contact times.

Brigham Creek and the Kumeū Stream that runs to the north of the study area forming a pathway between the Waitemata and the Kaipara harbours. The upper reaches of the Kumeū stream turn south and the study area is between these alluvium plains and the reaches of the Upper Waitemata Harbour.

The soils of the area are allophanic soils impeded (LI) (<https://soils-maps.landcareresearch.co.nz/>). These soils are made from volcanic materials and this is reflected by the area made from East Coast Bays formation (Mwe: sand and mudstone with mixed volcanic content), Puketoka formation (Pup: pumiceous mud, sand and gravel including alluvial deposits) and Taupo Pumice alluvium (Q1a: estuarine and swamp deposits) (Figure 4-1).

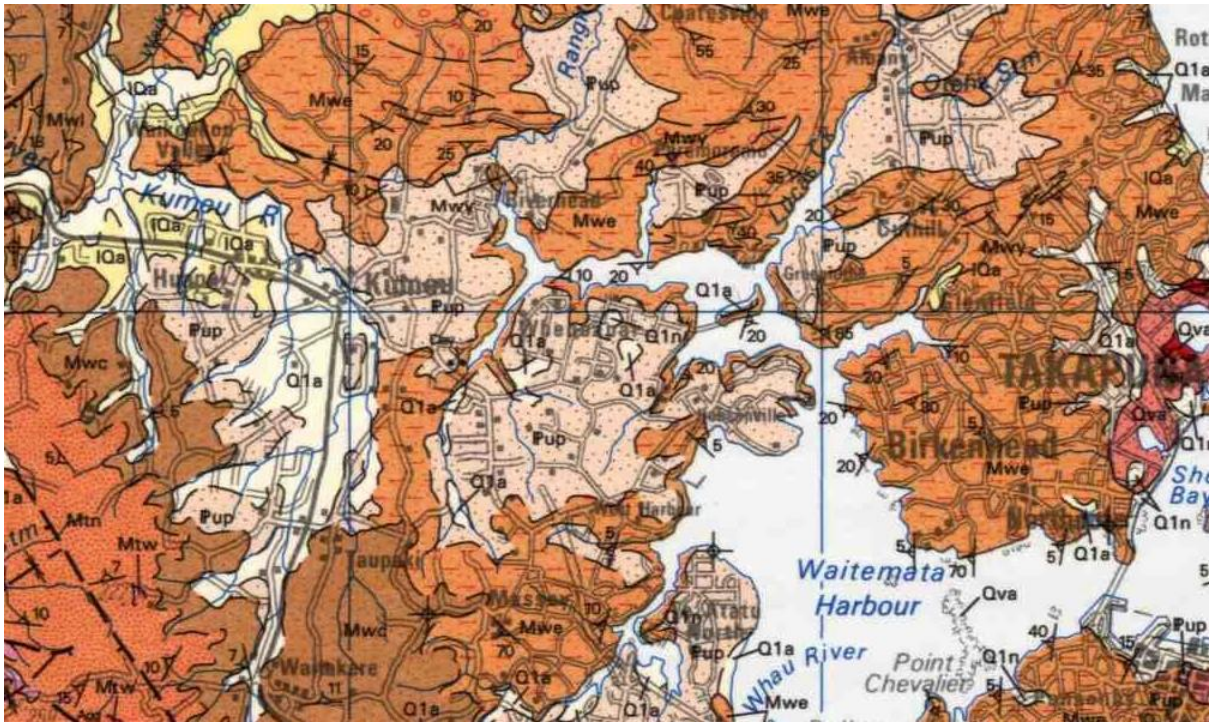


Figure 4-1: Detail of geological map, Auckland (Copyright Crown).

Historically the area was covered in Kauri forest like the rest of West Auckland, but with contact since European settlement this forest has given way to 'undulating fern lands' (Figure 4-2).

The modern use for farming and grazing shows that the volcanic content of the soils adds fertility to the general silty clay soils. The question is therefore how the area was used in pre-Contact times. The fertility of the soil would have supported growing of taro and other crops and swamps were seen as 'food baskets' for the availability of birds, eels and other resources like raupo. Is the observed deforestation during pre-Contact times simply a matter of burning the forest or is it a sign of horticulture that left little archaeological signatures?

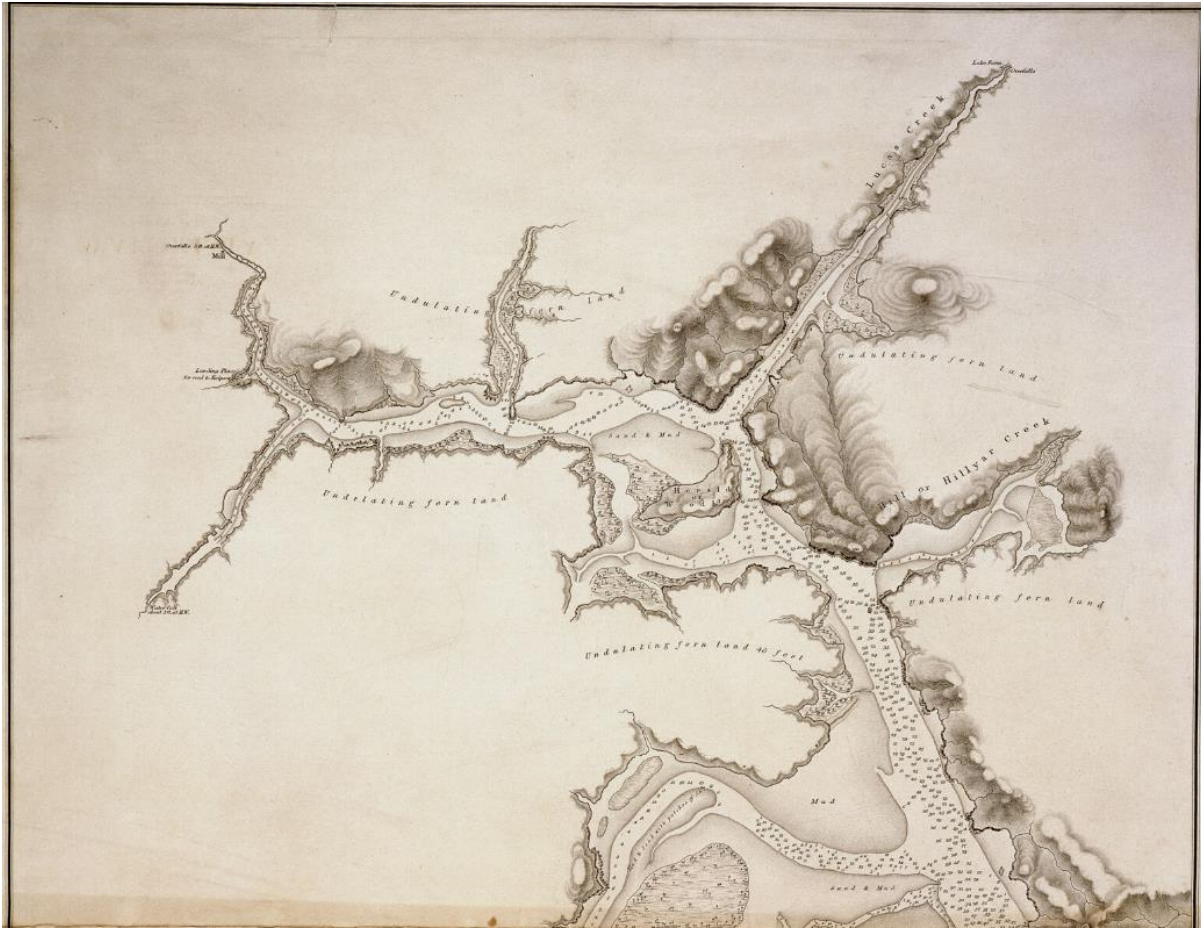


Figure 4-2: Detail of: 'Waitemata River from Kauri Point Auckland Harbour to its sources, surveyed by Comr. B. Drury and the officers of H.M.S. Pandora 1854'-(Auckland Libraries Heritage Collections Map 3909).

4.2 Pre-Contact Settlement

Whenuapai is on the cross roads for several portages between Kaipara and Waitemata Harbour and close to one of the portages between Waitemata and Manukau harbours, Ngongitepata and Te Whau (Hooker 1997). A canoe landing place on the Waitemata Harbour close to the study area is indicative of one of these pathways leading inland towards the Kaipara Harbour (Figure 4-2). The meaning of the 'Whenua pai' might be 'fertile' or 'good' land (Simmons 1980) which contradicts the view of the early European settlers of the land being of poor quality as it is low lying, often flooded and clay soils (Rutherford 1940). An alternative, possibly older Māori name of the area is Waimarie which could be translated as 'calm water' (Simmons 1980). Most recorded archaeological sites are along the harbour or creek edges indicating that exploitation of kai moana was an important food source.

Like most places in Tāmaki Makaurau many different iwi have a relationship with the place. Te Kawerau, Wai o Hua and Ngāti Whātua and their many hāpu had a particular influence in the study area. The most recent of these inter tribals conflicts was attacks by Ngāpuhi under Hongi Heke. Armed with muskets they inflicted a defeat on Ngāti Whātua as utu for being defeated in the previous century. For some years few people lived in the district as Ngāpuhi did not establish settlements¹.

¹ <https://www.kaiparamoana.com/k-rero-o-mua-our-history>

One of the first visits by a European to the area was by Samuel Marsden in 1820 who reported that plenty of food was around the Kaipara. Ngāti Whātua settlements near Kumeū are reported for this period (Dunsford 2002; Stone 2001). A land claim map from 1867 might indicate one of the areas of settlement (see figure below).

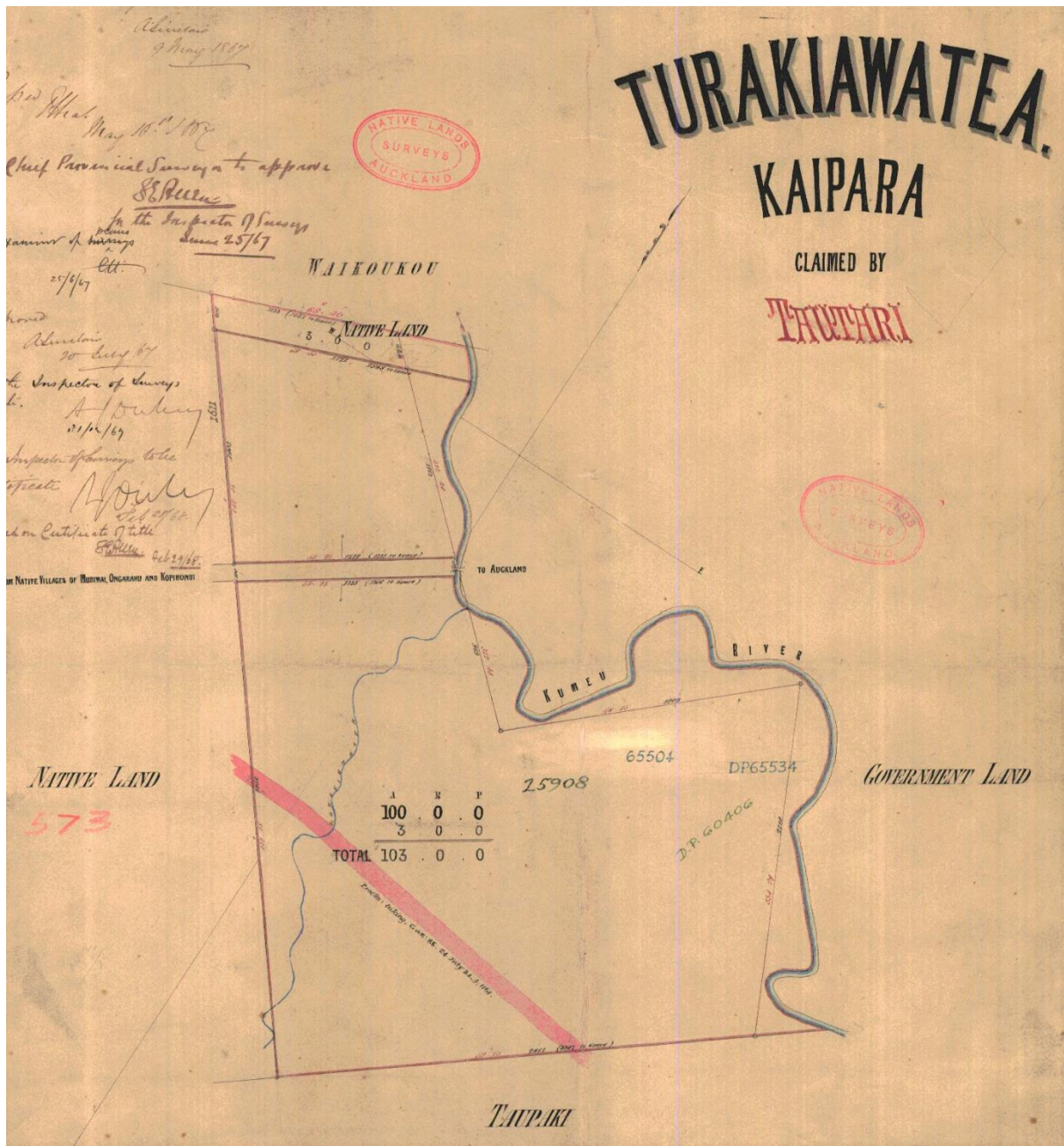


Figure 4-3: Detail of ML533, 1867, shows an area of a Maori claim along the stream called Turakiawatea. The red line indicates the area taken for the railway. This includes the area of Kumeū. It seems possible that one of the pre-Contact settlements was located within the area.

4.3 Post Contact Settlement

For a short moment in time Governor Hobson considered Hobsonville as an area to start the Auckland settlement (Foster and Felgate 2011).

Between 1844 and 1865 pre-emptive waiver transactions, Crown purchases and Native Land Court sales reduced Māori customary land occupation in the Kaipara area to about a third².

The Waiparera Block is close to the study area. It was sold to the Crown in 1853 (Turton 1877). It is one example how the land changed hands. Brigham's land claim and later Crown Grant in 1857 is another example. Brigham's Creek is named after this land speculator.

Dense Kauri forest within the Kumeū area and throughout the Waitakere Ranges drew European commerce into the area. Within a few decades all timber able to be milled was cut down (Morris 1996). Gum diggers followed the timber mills, but little is known of this activity through historic sources.

Towards the end of the 19th century the clay on the Hobsonville peninsula and surrounding areas was used for brick and pipe works which supplied the growing Auckland with this valuable building resource.

4.4 Archaeological Background

The NZAA Site Record Scheme has several site records close to the study area. It is mainly coastal shell midden and a few early historic structures. Historic structures including historic houses are recorded in the CHI. Several sites from both these databases are scheduled in the AUP:OP.

Each NoR has been buffered by 200 metres and all recorded historic sites as well as archaeological site potential are discussed individually in relation to these individual buffer zones. The following figures show the previously recorded archaeological sites on ArchSite (the NZAA Site Recording Scheme online), on CHI (Cultural Heritage Inventory of the Auckland Council online) and the relevant sites only in relationship to the 200m buffers of all NoRs discussed in this report (the study area).

² <https://www.kaiparamoana.com/wai312-claim-to-settlement>

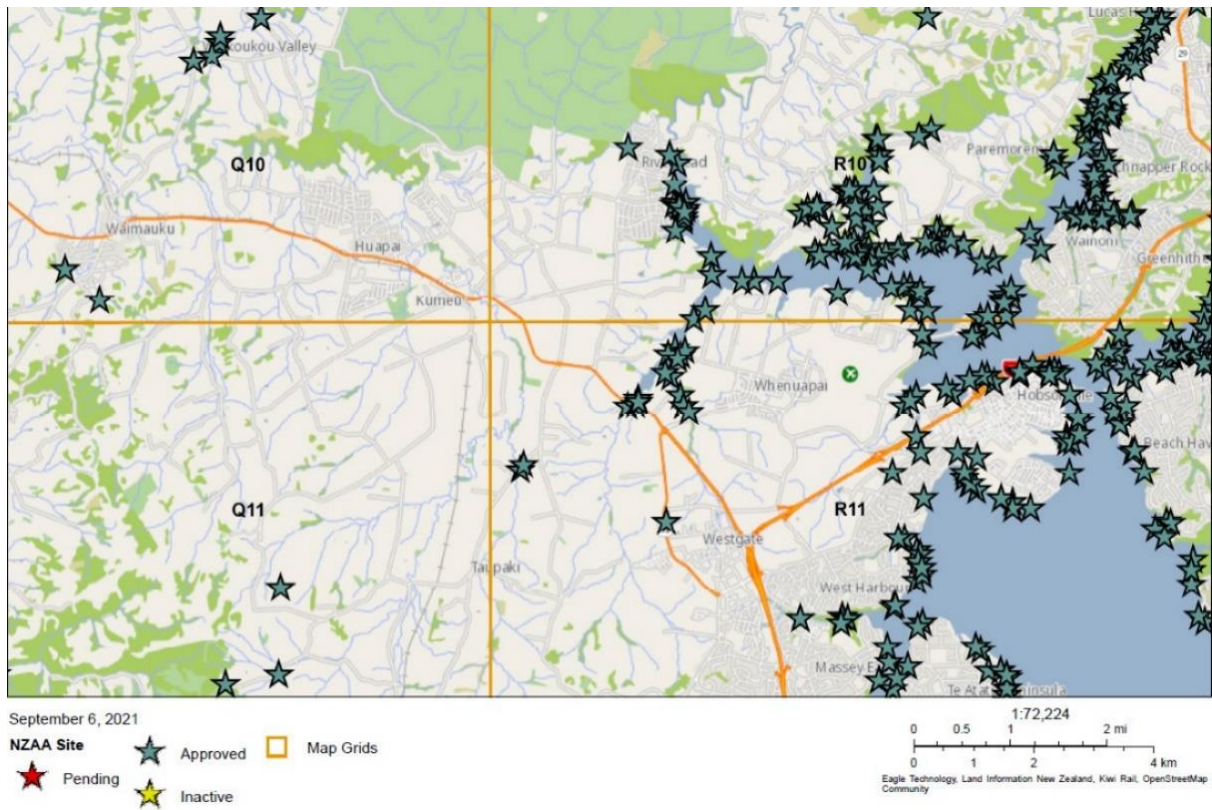


Figure 4-4: Archsite site distribution in the vicinity of the study area.

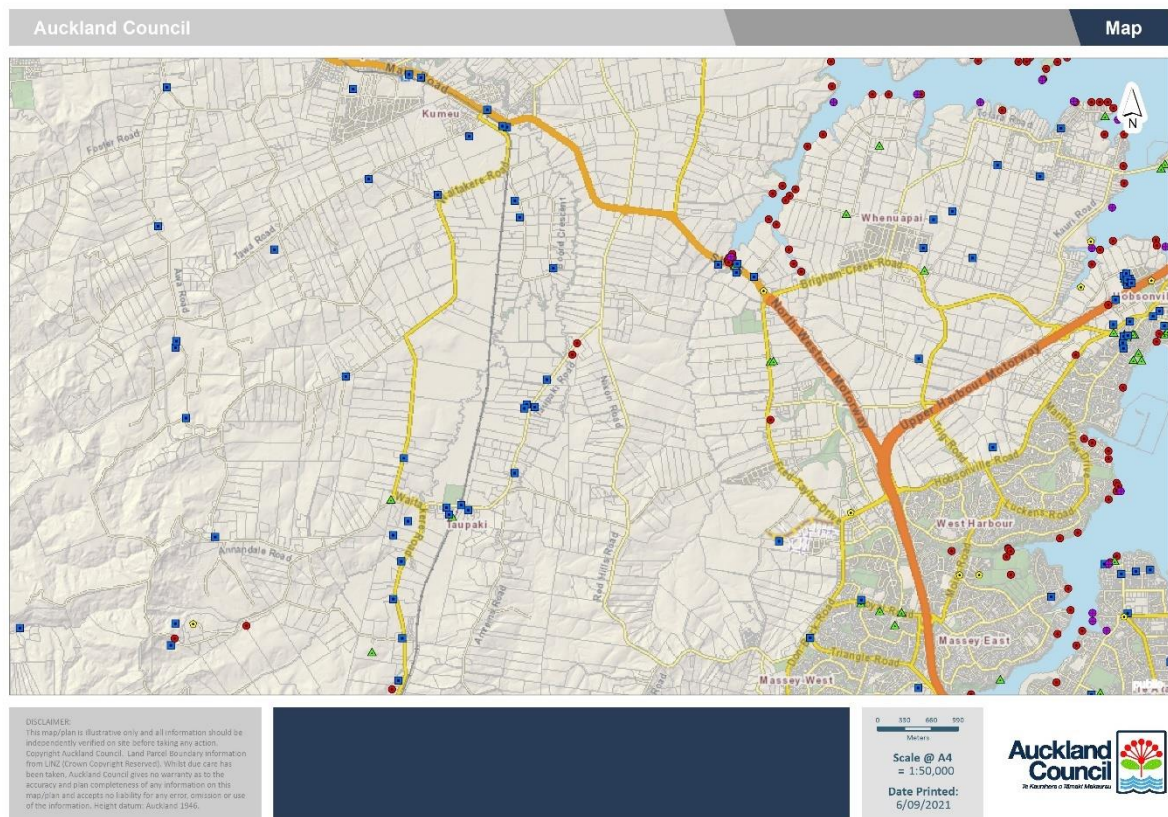


Figure 4-5: CHI sites in the vicinity of the study area.

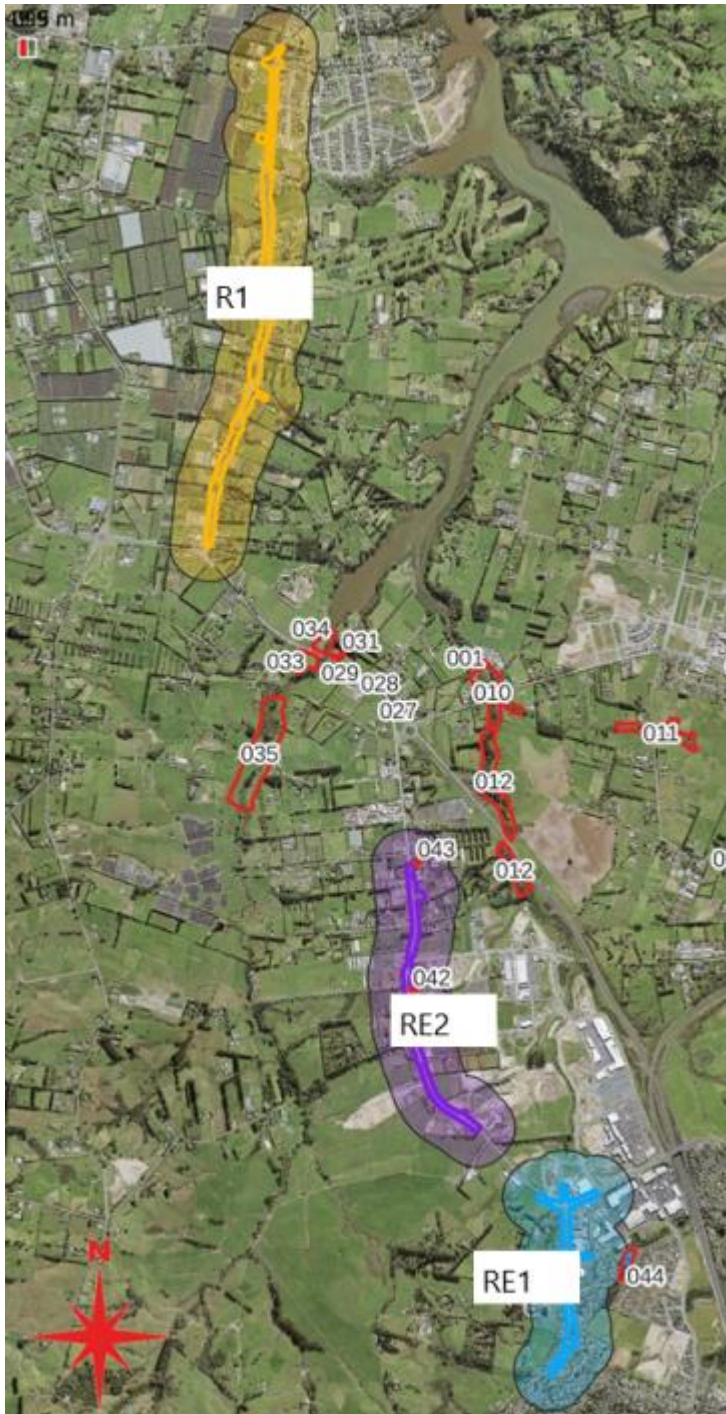


Figure 4-6: NoRs corridors (RE1, RE2, RE3 in various colours) with 200m buffer zones (hatched areas surrounding NoR corridors), all heritage sites (numbered 042 and 043) and high risk area (numbered 044) within these buffer zones.

Details of the sites and the risk areas are discussed within each NoR (see below).

4.5 Previous Archaeological Investigations

A number of assessments and monitoring exercises have taken place in the area between Hobsonville and Kumeū (see bibliography (Macready 2019)). Only a handful of these projects added

anything significant to our knowledge of the study area (Foster and Felgate 2011; Hawkins and Campbell 2020; Shackles 2019).

Investigations of site damages to a few shell midden along the northern coastline along Hobsonville showed a long occupation history using continuous kai moana exploitation (Shackles 2019).

Another investigation focused on the homestead and its development of one of the early settlers in the area, the Ocklestons (Foster and Felgate 2011). It paints a vivid picture of the changes and continuations of the rural life on the edge of Auckland, which is today replaced by suburbia. The 1940 aerial shows the study area dominated by orchards and grazing (Figure 4-7).

A similar case study was undertaken during moving a heritage house from its original position (Hawkins and Campbell 2020).

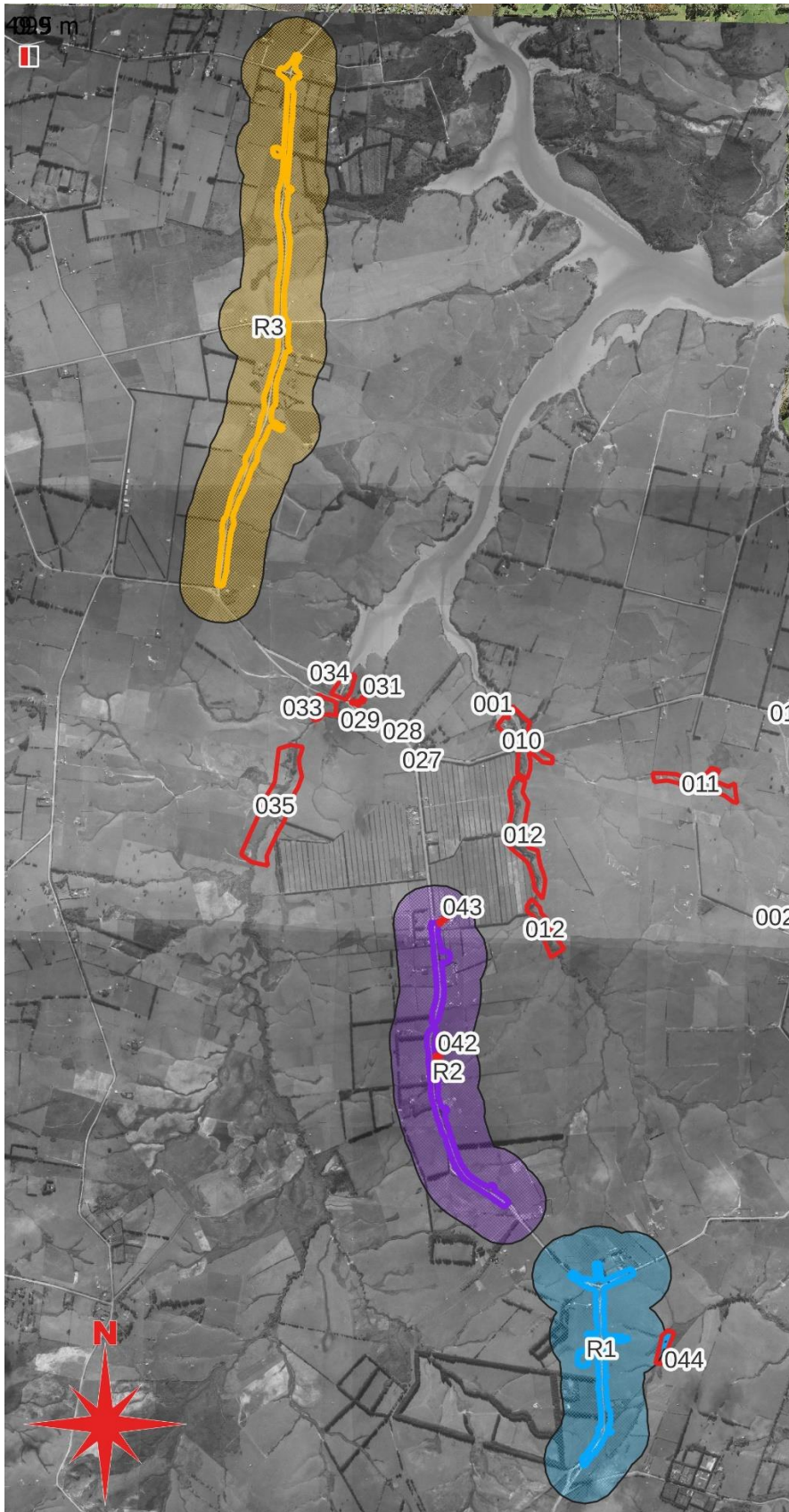


Figure 4-7: Rural character of the study area in 1940. Many shelterbelts of orchards can be seen as well as large areas of grazing.

5 Positive Effects

The nature of historic heritage, especially archaeological features, recorded and unrecorded, is that all disturbances including construction has a negative effect that cannot be remediated only mitigated.

Nonetheless construction around wetlands and streams will allow environmental archaeological research to be undertaken that could clarify the dates, sequence and details of the anthropogenic vegetation change from forest to open fern lands.

Any pre-Contact horticulture like frequent harvesting of fern root rhizomes or taro fields has not been observed in the study area. Large linear developments like the proposed transport corridors are a rare opportunity to close this gap in our knowledge.

6 NoR RE1: Don Buck Road FTN Upgrade

It is proposed to submit a NoR (NoR RE1) to designate the land required to implement the upgrade of Don Buck Road to a four-lane local arterial with bus priority lanes and separated cycle lanes and footpaths on both sides of the corridor.

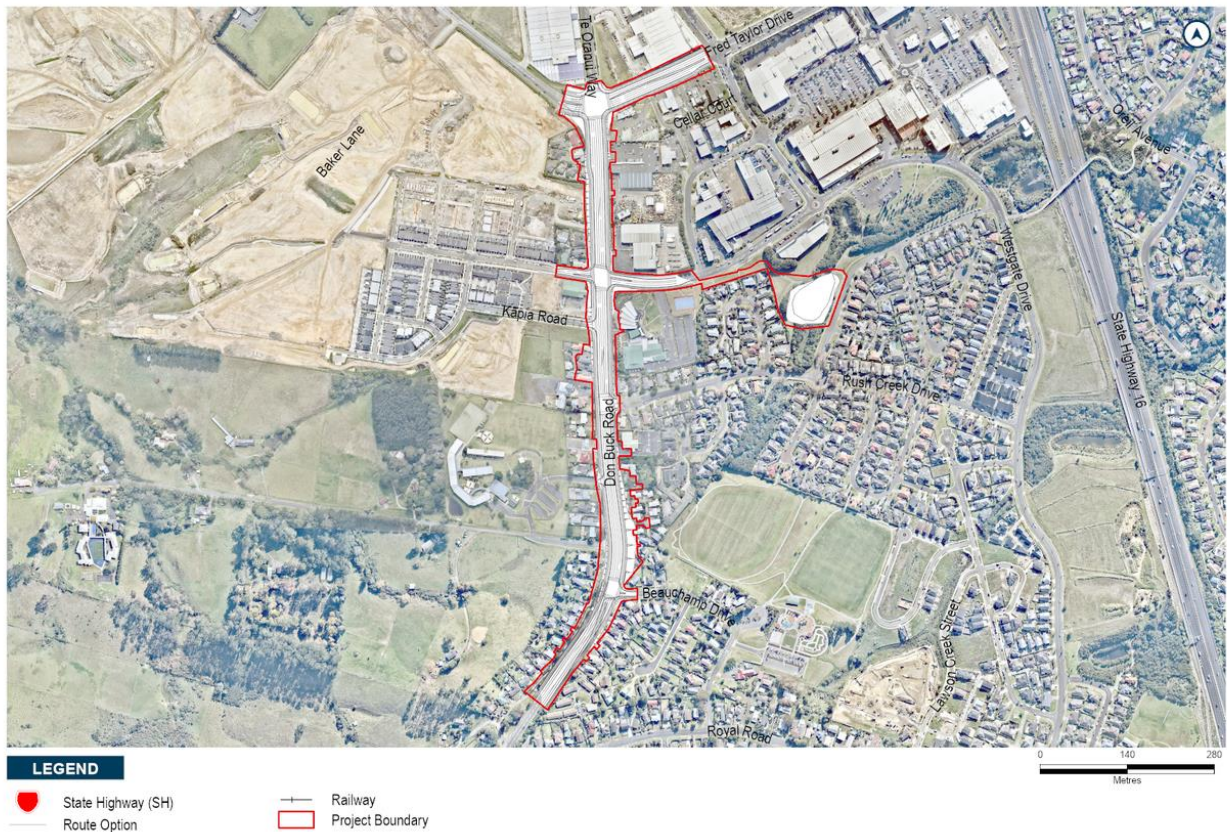


Figure 6-1: Overview of the Don Buck Road FTN Upgrade

6.1 Project Corridor Features

Don Buck Road is an existing two-lane arterial extending from Fred Taylor Drive in the north to Swanson Road and Universal Drive in the south. The extent of the proposed upgrade included is from Fred Taylor Drive in the north and Royal Road to the south. The corridor currently functions as a north-south arterial road running parallel to SH16 and is anticipated to facilitate future growth in Redhills, whilst also connecting people to rapid transit stations, regional active mode corridors and the SH16 motorway interchanges. The corridor is also intended to support active modes, freight, and public transport priority for the future FTN network.

This section of Don Buck Road is proposed to be upgraded from a corridor width of 27-35m to a 30m wide four-lane local arterial with buses priority lanes and separated cycle lanes and footpaths on both sides of the corridor. Intersections located along the corridor are proposed to be signalised.

An overview of the proposed design is provided in Figure 6-1 below. Furthermore, an overview of the proposed form and function is set out in Table 6-1 below.

6.2 Existing and Likely Future Environment

6.2.1 Planning context

The land adjacent to Don Buck Road is comprised of various business, residential and open space zoning. The following outlines the key elements of the planning context for the Don Buck Road FTN Upgrade:

- The eastern side of Don Buck Road above Westgate Drive is zoned under the AUP:OP as Business – Light Industry. To the south of Westgate Drive, the eastern side of Don Buck Road contains an Open Space – Community Zone (occupied by Massey Leisure Centre), with the remaining land zoned as Residential – Mixed Housing Zone.
- The western side of Don Buck Road is within the I610 Redhills Precinct and is predominantly zoned Residential – Mixed Housing Urban, with a portion of land in the northern section of the corridor zoned Residential – Terraced Housing and Apartment Buildings Zone (**THAB**). Land further to the west of Don Buck Road forms part of the Redhills Precinct.

Table 6-1 below provides a summary of the existing and likely future environment as it relates to the Don Buck Road FTN Upgrade.

Table 6-1: Don Buck Road FTN Upgrade Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment ³	Likely Future Environment ⁴
Urban (Business)	Business (Industrial)	Low	Urban (Business)
Urban (Residential)	Residential – Mixed Housing Urban Zone Residential – Terraced Housing and Apartment Zone	Low	Urban (Residential)
Open Space	Open Space – Community Zone	Low	Open Space

6.2.2 Heritage Environment

This section describes in detail the heritage features within a 200 m buffer of NoR RE1.

³ Based on AUP:OP zoning/policy direction

⁴ Based on AUP:OP zoning/policy direction



Figure 6-2: NoR RE1. The risk area around the stream is shown as 044. The picture also shows the 200 m buffer zone around the NoR of the road.

Within NoR RE1 and the 200 m buffer zone no archaeological sites are recorded. No notable trees are recorded in this part of the study area, nor are any historic overlays, structures or buildings recorded in the AUP:OP or the CHI.

The only heritage item within the study area of NoR RE1 is a possible risk zone whereas yet unrecorded archaeological features may be encountered around a small stream / wetland identified above. However, the site visit and the comparison of the modern aerial to the 1940 aerial shows that major modifications of the stream and surrounding the stream have taken place. It is therefore less likely that any intact archaeology would have survived those modifications.

Overall, there is little risk that any cultural heritage or archaeology will be encountered within or close to NoR RE1.



Figure 6-3: Risk area 044 overlaid onto a modern aerial.

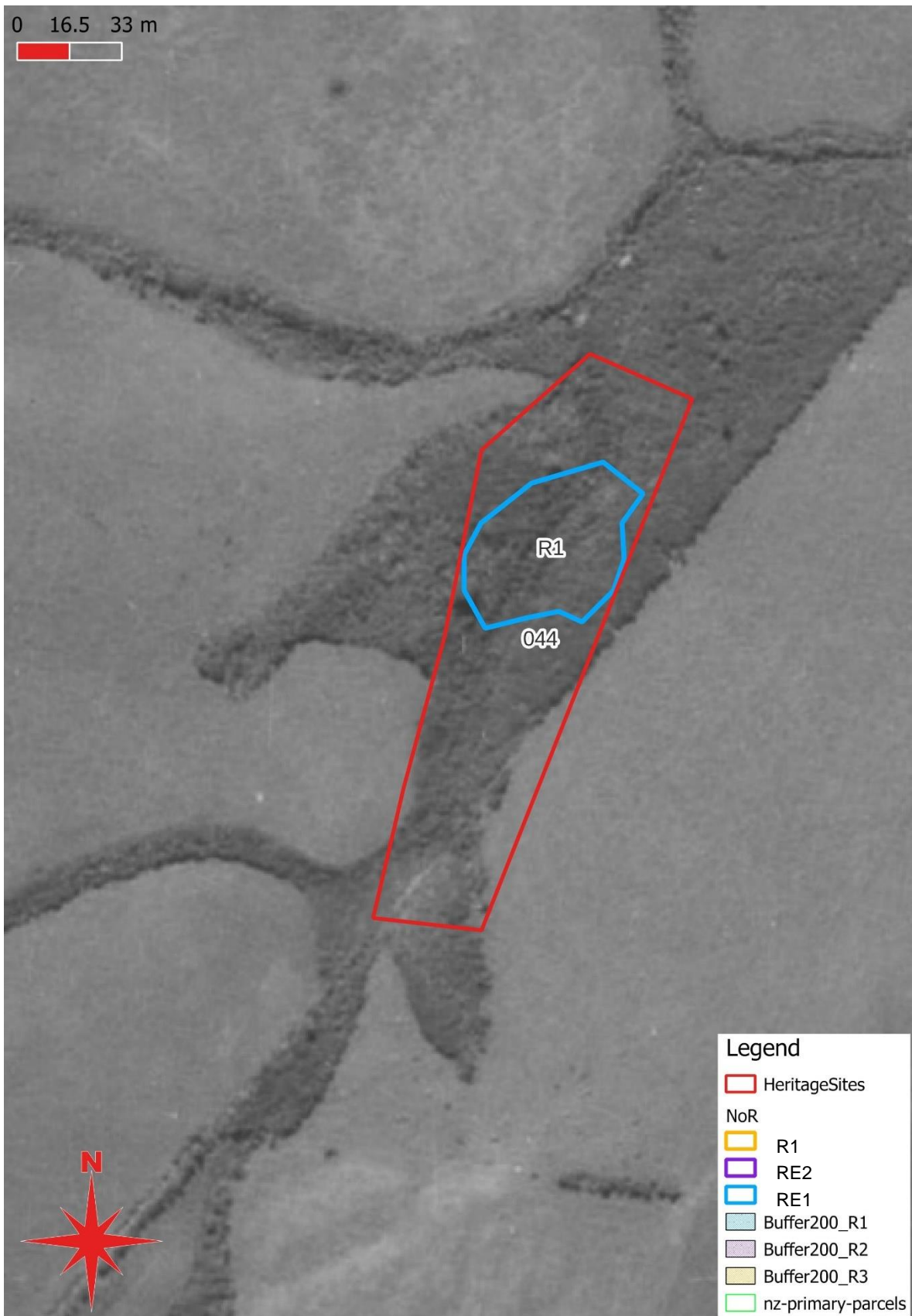


Figure 6-4: Risk area 044 overlaid onto the 1940 aerial. It shows a largely unmodified wetland and small stream surrounded by grazing fields.



Figure 6-5: View onto largely modified park area looking towards risk area 044. It shows the highly modified nature of the modern environment.

6.3 Assessment of Effects on Historic Heritage and Archaeology and Measures to Avoid, Remedy or Mitigate Actual or Potential Adverse Effects

6.3.1 Assessment of Construction Effects and Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

There are no actual adverse effects on historic heritage or archaeology as there are no archaeological sites recorded within NoR RE1 or within the 200 m buffer zone.

However, there is always a small risk that archaeological features may be encountered in an area that we know has been utilised by Māori in the past, especially so close to the upper Waitemata Harbour, particularly around the small stream/wetland mentioned above.

An induction of all earthwork contractors to the signs of archaeological features and preparation and implementation of an Accidental Discovery Protocol with input by mana whenua would mitigate any potential adverse effects.

It is recommended that all areas of earthworks or topsoil stripping undertaken during construction are included in the Accidental Discovery Protocol.

6.3.2 Assessment of Operational Effects and Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

There are no adverse effects which will arise as a result of operation of NoR RE1.

No measures are recommended to avoid operational effects as there are no adverse effects.

6.4 Conclusions

In conclusion there are no actual adverse effects on historic heritage or archaeology from NoR RE1.

The small risk of potential adverse effects as a result of unrecorded archaeological features being discovered during construction can be mitigated by an induction of all earthwork contractors to the signs of archaeological features and the preparation and implementation of an Accidental Discovery Protocol.

Any processes regarding tikanga, especially around koiwi, should be discussed with Mana whenua before the start of the project.

7 NoR RE2: Fred Taylor Drive FTN Upgrade

It is proposed to submit a NoR (NoR RE2) to designate the land required to implement the upgrade of Fred Taylor Drive to a four-lane corridor with separated walking and cycling facilities.

7.1 Project Corridor Features

Fred Taylor Drive is an existing two-lane arterial corridor which extends from the existing Brigham Creek Interchange in the north to SH16 in the south (via an intersection with Don Buck Road). This corridor runs through a mix of residential and industrial land uses and forms an important connection as the spine of the Redhills network.

It is proposed to upgrade the corridor between Hailes Road and Dunlop Road to accommodate a 30m wide four-lane FTN arterial with separated walking and cycling facilities⁵. The existing corridor designation is approximately 30m wide on average, with the proposed upgrade expected to remain within the existing designation 1433 to the extent possible with localised widening occurring at intersections. The Fred Taylor Drive FTN Upgrade also includes the upgrade of the intersections with Kakano Road and Northside Drive to signals.

The upgraded Fred Taylor Drive corridor will have multiple purposes. These are to provide access from Redhills to both a future rapid transit station and the strategic highway network; and the FTN facilities will provide a multimodal corridor into Westgate metropolitan centre. The proposed corridor will also support an active mode shift with separated cycle lanes and footpath on both side and public transport priority lanes. An overview of the proposed design is provided in Figure 7-1 below.



Figure 7-1: Overview of Fred Taylor Drive FTN Upgrade

⁵ The Fred Taylor Drive FTN Upgrade has an interdependency with the North West Strategic Transport Network, therefore the portion of Fred Taylor Drive north of Hailes Road forms part of the upgrade to Brigham Creek Interchange.

7.2 Existing and Likely Future Environment

7.2.1 Planning context

The northern section of Fred Taylor Drive is within the Redhills North FUZ, with an area of land zoned under the AUP:OP as Open Space – Sport and Active Recreation Zone (Fred Taylor Park) adjacent the road corridor. The southern section of Fred Taylor Drive is zoned under the AUP:OP as THAB zone on the western side, and forms part of the I610 Redhills Precinct. The eastern side is zoned Business – Light Industry Zone and Business – Mixed Use Zone and forms part of the I615 Westgate Precinct.

Table 7-1 below provides a summary of the existing and likely future environment as it relates to the Fred Taylor Drive FTN Upgrade.

Table 7-1: Fred Taylor Drive FTN Upgrade Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment ⁶	Likely Future Environment ⁷
Business	Business (Light Industrial)	Low	Urban (Business)
	Business (Mixed Use)	Low	
Residential	Residential – Terraced Housing and Apartment Zone	Low	Urban (Residential)
Open Space	Open Space – Sport and Active Recreation	Low	Open Space
Undeveloped greenfield areas	Future Urban	High	Urban

7.2.2 Heritage Environment

This section describes in detail the heritage features within a 200 m buffer of NoR RE2.

⁶ Based on AUP:OP zoning/policy direction

⁷ Based on AUP:OP zoning/policy direction

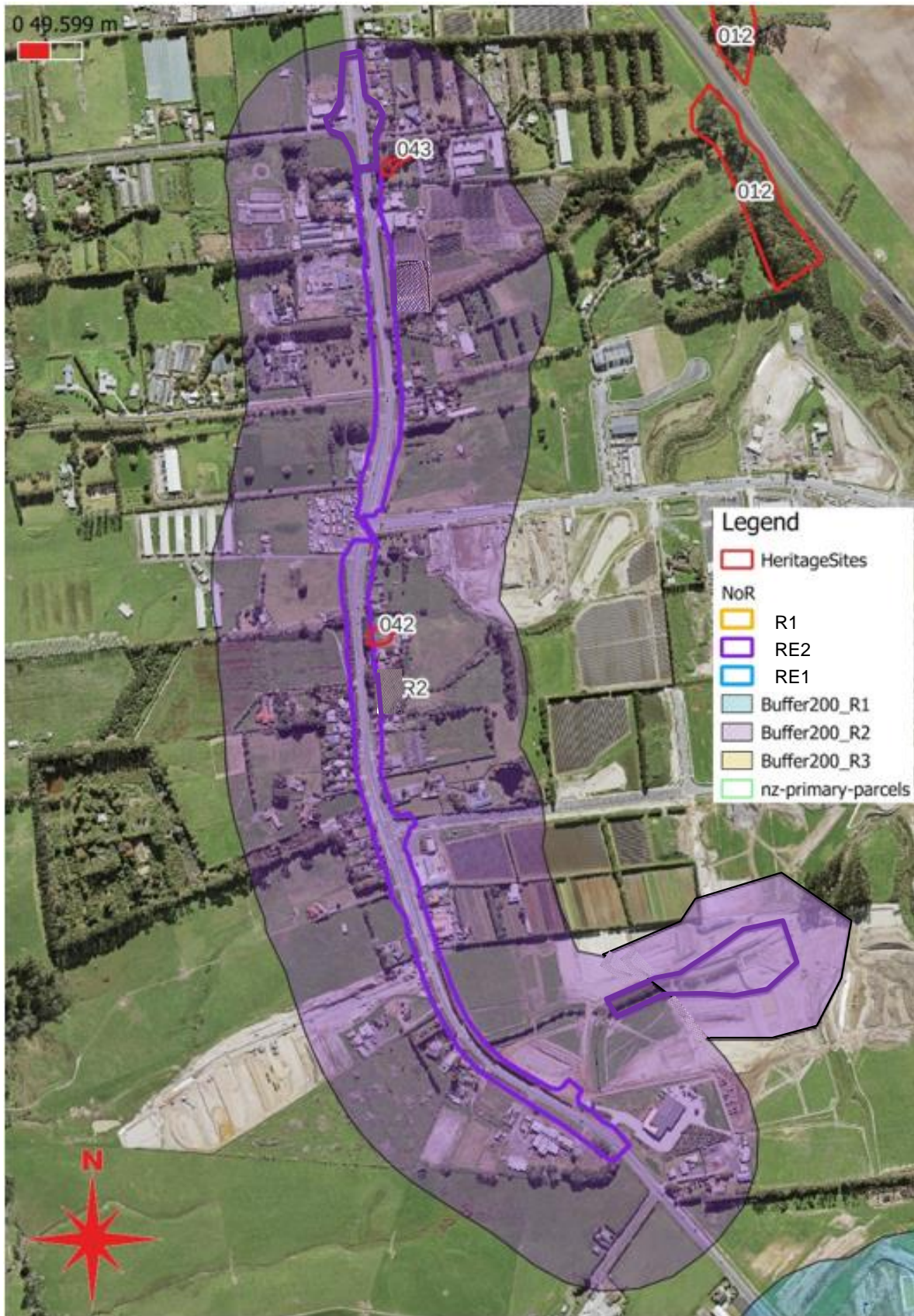


Figure 7-2: NoR RE2 and 200 m buffer zone. The figure also shows two trees (043) recorded in the CHI and one archaeological site (042).

Within NoR RE2 and the 200 m buffer zone one archaeological site (042) is recorded (R11/3097; CHI#20445). No notable trees are recorded in this part of the study area, nor are there any historic overlays, structure or buildings recorded in the AUP:OP. Two trees (043) are recorded in the CHI (#2164 and 2165).

The archaeological site is a post 1900 site and refers to the crash site of a B17 bomber during WWII (Figure 17 to 22). The main area of the crash site has been subject to large scale earthworks. Nothing is visible on the surface anymore from the remaining debris field.

The possible extent of the site R11/3097 is explained in the CHI 20445 record:

“Site of crash of USAAF Boeing B-17 Flying Fortress reg. no. 41-2667 on June 9, 1942. As the aircraft bellied before eventually coming to rest the crash site extended over a considerable distance over 81-85 and 89 Fred Taylor Drive and the Kopupaka reserve. The force of the impact and subsequent explosion reportedly blew large pieces of debris, including one of the bombs, around a quarter of a mile away from where the aircraft came to rest across what is now Fred Taylor Drive. The main debris field and bomb crater were located at 81 Fred Taylor drive.”

The important part of this description is that the debris field crossed Fred Taylor Drive and is therefore much larger than the recorded extent of the site R11/3097. Elements of this debris field could still be within the road or in close vicinity to the road and therefore within NoR RE2. Nonetheless the main debris field has recently been developed and there is no archaeology left in the ground.

Details of this development can be found here:

Bickler, S., 2019, 81 *Fred Taylor Drive, Archaeological Assessment of Effects*. Unpublished report for NZRPG Management Ltd, Auckland.

Fragmented human remains of the 11 crew and passengers could be possibly found along the entire debris field.

Overall there is little risk to encounter any cultural heritage or archaeology within or close to the NoR RE2, apart from the risk to encounter a small part of the debris field of the B17 crash site which could include fragmented human remains. Despite the clean-up efforts at the time, due to the nature of the crash it is possible not all human remains were found and collected.



Figure 7-3: Two trees recorded as CHI 2164 and 2165. They are not on the notable tree list of the AUP:OP.



Figure 7-4: Recorded crash site of a B17 bomber (042).



Figure 7-5: Crash site overlaid onto 1940 aerial, two years before the crash occurred.



Figure 7-6: Photo from the inquiry into the crash showing the extent of the debris field (CHI archives).



Figure 7-7: View onto the crash site from the ground (CHI archives).



Figure 7-8: Marked up view over the debris field used for the official inquiry into the crash (CHI archives). It clearly shows that the debris field extends across Fred Taylor Drive.



Figure 7-9: Large scale earthworks over the archaeological site to the east of Fred Taylor Drive. There is nothing left of the archaeological site on the eastern side of the road.

7.3 Assessment of Effects on Historic Heritage and Archaeology and Measures to Avoid, Remedy or Mitigate Actual or Potential Adverse Effects

7.3.1 Assessment of Construction Effects and Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

There are no actual adverse effects on historic heritage or archaeology.

However, there is a potential risk that elements of the debris field of a B17E bomber crash site from 1942, including fragmented human remains, could be encountered.

There is also always a small risk that additional archaeological features could be encountered in an area that we know has been utilised by Māori in the past, especially so close to the upper Waitemata Harbour.

Induction of all earthwork contractors to the signs of archaeological features, especially relating to the B17 crash site, preparation and implementation of an Accidental Discovery Protocol with input by mana whenua, and a precautionary archaeological authority would mitigate the potential adverse effects.

It is recommended that all areas of earthworks or topsoil stripping during construction are included in the Accidental Discovery Protocol.

The archaeological authority under the HNZPTA would mitigate the potential loss of heritage value of the remaining debris field of the crash site of a B17 bomber which is of local significance and linked to important worldwide events (WWII).

7.3.2 Assessment of Operational Effects and Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

There are no adverse effects which will arise as a result of operation of NoR RE2.

No measures are recommended to avoid operational effects as there are no adverse effects.

7.4 Conclusions

In conclusion there are no actual adverse effects on historic heritage or archaeology from NoR RE2.

The small risk of potential adverse effects can be mitigated by induction of all earthwork contractors to the signs of archaeological features, an Archaeological Authority relating to site R11/3097 and as yet unknown archaeological features, and the preparation and implementation of an Accidental Discovery Protocol.

Any processes regarding tikanga, especially around koiwi, should be discussed with Mana whenua before the start of the project.

8 NoR R1: Coatesville-Riverhead Highway Upgrade

It is proposed to submit a NoR (NoR R1) to designate the land required to implement the upgrade of Coatesville-Riverhead Highway to a two-lane rural arterial corridor in the southern section and an urban arterial corridor in the northern section, with separated walking and cycling facilities along the entire corridor length.

8.1 Project Corridor Features

Coatesville-Riverhead Highway is an existing arterial extending from SH16 in the south to its intersection with Dairy Flat Highway in the north east, with the extents of the proposed upgrade from SH16 in the south to its intersection with Riverhead Road in the north. The southern section of the alignment from SH16 to Short Road runs through rural land uses which are expected to remain. The northern section (close to and within the Riverhead township) runs through low-medium density residential land uses on the east and future urban zoned land on the west.

The Coatesville-Riverhead Highway Upgrade Project involves:

- Upgrading the southern section of the corridor to a 33m two-lane low speed rural arterial with active mode space on the western side; and
- Upgrading the northern section of the corridor to a 24m two-lane urban arterial with walking and cycling facilities on both sides of the corridor.

It includes upgrades to the intersections with Old Railway Road and Riverhead Road and is expected to tie in with a future roundabout at SH16 as part of the Waka Kotahi NZTA SH16 Safety Improvements Project.

The proposed upgrade will provide a key north-south connection from Riverhead to the strategic road network and proposed Rapid Transit Corridor⁸ and City Centre to Westgate rapid transit services⁹ at Westgate. Furthermore, the upgrades will support active mode use and reduce safety risks on the corridor.

An overview of the proposed design is provided in Figure 8-1 below.

⁸ A North West Strategic Package Project

⁹ Other proposed transport project not being delivered by Te Tupu Ngātahi



Figure 8-1: Overview of the Coatesville-Riverhead Highway Upgrade

8.2 Existing and Likely Future Environment

8.2.1 Planning context

The southern section of Coatesville-Riverhead Highway from SH16 to Short Road runs through rural land uses predominantly zoned under the AUP:OP as Rural – Mixed Rural Zone on both sides of the existing corridor. The northern section (close to and within the Riverhead township) runs through land zoned as Residential – Single House Zone and to the east and future urban zoned land on the west.

Table 8-1 below provides a summary of the North West existing and likely future environment as it relates to the Coatesville-Riverhead Highway Upgrade.

Table 8-1: Coatesville-Riverhead Highway Existing and Likely Future Environment

Environment today	Zoning	Likelihood of Change for the environment ¹⁰	Likely Future Environment ¹¹
Rural	Rural	Low	Rural
Residential	Residential	Low	Urban (Residential)
Future Urban Zone / Undeveloped greenfield areas	Future Urban	High	Urban

8.2.2 Heritage Environment

This section describes in detail the heritage features within a 200 m buffer of the NoR area.

¹⁰ Based on AUP:OP zoning/policy direction

¹¹ Based on AUP:OP zoning/policy direction



Figure 8-2: Extent of NoR R1 and 200 m buffer zone. No heritage sites and no high risk areas are within the NoR or the buffer zone or in the vicinity.

There are no recorded archaeological sites or historic overlays recorded in the AUP:OP. No CHI sites are shown either.

An early map of the harbour survey (Figure 4-2) shows a canoe landing area, presumably the start of an “ara” (pathway) from the upper harbour to the Kumeū River (Figure 8-3). This potential pathway would cross NoR R1. Nonetheless pathways are rarely recognised in the archaeological record.



Figure 8-3: On the right-hand side of the picture a small creek of the upper harbour is shown. This is the location of a canoe landing. Any potential pathway would lead west towards the Kumeū River.

8.3 Assessment of Effects on Historic Heritage and Archaeology and Measures to Avoid, Remedy or Mitigate Actual or Potential Adverse Effects

8.3.1 Assessment of Construction Effects and Recommended Measures to Avoid, Remedy or Mitigate Construction Effects

There are no actual adverse effects on historic heritage or archaeology.

However, there is always a small risk that archaeological features may be encountered in an area that we know has been utilised by Māori in the past, especially so close to the upper Waitemata Harbour.

An induction of all earthwork contractors to the signs of archaeological features and the preparation and implementation of an Accidental Discovery Protocol with input by mana whenua would mitigate the potential adverse effects.

8.3.2 Assessment of Operational Effects and Recommended Measures to Avoid, Remedy or Mitigate Operational Effects

There are no adverse effects which will arise as a result of operation of NoR R1.

No measures are recommended to avoid operational effects as there are no adverse effects.

8.4 Conclusions

In conclusion there are no actual adverse effects on historic heritage or archaeology from NoR R1.

The small risk of potential adverse effects from accidentally discovering archaeological features can be mitigated by an induction of all earthwork contractors to the signs of archaeological features and the preparation and implementation of an Accidental Discovery Protocol.

Any processes regarding tikanga, especially around koiwi, should be discussed with Mana whenua before the start of the project.

9 Conclusion

There are no actual adverse effects of NoR RE1, RE2 and R1 on historic heritage or recorded archaeological sites.

The footprint of the recorded archaeological site R11/3097 could possibly extend into NoR RE2. To mitigate this potential adverse effect, it is recommended that a precautionary archaeological authority is obtained to record any element of the crash site including potentially fragmented human remains that might be discovered in NoR RE2.

The areas surrounding both NoRs RE1 and R1 were utilised in pre-Contact and early Contact periods and there is always a slim probability that archaeological features might be discovered. An Accidental Discovery Protocol is recommended as mitigation. The induction of all earthwork contractors should be part of this Accidental Discovery Protocol.

There are no residual historic heritage or archaeological adverse effects with the recommended mitigation processes in place.

10 References

- Druskovich, Brent. 2016. *Archaeological Monitoring and Analysis at the Former Sinton House, 238 SH 16 Kumeu - RII/2828*. Auckland.
- Dunsford, D. 2002. *Doing It Themselves: The Story of Kumeu, Huapai and Taupaki*. Auckland: Publishing Press Ltd.
- Foster, Russell, and Matthew Felgate. 2011. *Archaeological Investigation of Field Cottage and Ocklestone House*. Auckland.
- Hawkins, Stuart, and Matthew Campbell. 2020. *120 Hobsonville Road, R11/2965 (HNZPTA Authority 2019/697): Final Report*. Auckland.
- Heritage New Zealand Pouhere Taonga. 2019. *Archaeological Guidelines Series No.2: Guidelines for Writing Archaeological Assessments*. Wellington. <http://www.heritage.org.nz/protecting-heritage/archaeology/archaeological-guidelines-and-templates>.
- Hooker, B. 1997. "Portages of Early Auckland." *Auckland Waikato Historical Journal* 70: 26–31.
- Macready, Sarah. 2019. *SH16 IMPROVEMENTS, BRIGHAM CREEK TO WAIMAUKU: PRELIMINARY ARCHAEOLOGICAL ASSESSMENT*. Auckland.
- Morris, M. 1996. *Horses and Flying Fortresses*. Auckland: M.Morris.
- Rutherford, J., ed. 1940. *The Founding of New Zealand: The Journals of Felton Mathew, First Surveyor-General of New Zealand, and His Wife, 1840-1847*. Dunedin: A.H. and A.W. Reed.
- Shackles, Richard. 2019. *COASTAL WALKWAY SUNDERLAND-HUDSON PRECINCT, HOBSONVILLE POINT: ARCHAEOLOGICAL MONITORING AND INVESTIGATION REPORT*. Auckland.
- Simmons, David R. 1980. "George Graham's Maori Place Names of Auckland." *Rec. Auckland Inst. Mus.* 16: 11–39.
- Stone, Russell C J. 2001. *From Tamaki-Makau-Rau to Auckland*. Auckland: Auckland University Press.
- Turton, H Hanson. 1877. *Maori Deeds of Land Purchases in the North Island of New Zealand*. Wellington: Government Printer.