



**Pakowhai Secondary
Stopbank**

Preliminary Site Investigation

Prepared for
Hawkes Bay Regional Council

Prepared by
Tonkin & Taylor Ltd

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Excutive Summary

Tonkin & Taylor Ltd (T+T) has been commissioned by Hawkes Bay Regional Council to undertake a ground contamination Preliminary Site Investigation (PSI) for the proposed Pakowhai Secondary Stopbank construction. A summary of the findings is below:

- A review of site history information has shown the site has generally comprised agricultural, rural residential and horticultural land uses for at least the past 75 years. Some potentially contaminating (HAIL) activities have been undertaken on site during this time. In particular, activities have included the use of agrichemicals on orchards, vineyards, market gardens and the golf course, waste disposal to land in various forms/locations, potential former sheep dips, fuel storage, and a closed private landfill site. Some of the HAIL activities are outside of the proposed earthworks area.
- Limited soil sampling was undertaken to target some of the potential HAIL activities and areas where soil disturbance is proposed. There were no exceedances of human health or environmental criteria in any of the 21 analysed samples, with one exception. One sample immediately adjacent to a farm waste pit contained asbestos above the risk-based criteria. The extent of asbestos in soils in an around the waste pit has not been assessed and it is possible that asbestos may be present in higher concentrations. As a minimum, works in this area would need to be undertaken under 'Asbestos-related works' controls.
- HBRC have been granted an Order in Council (OiC) to reduce the regulatory pathways for the flood mitigation works, following Cyclone Gabrielle. The OiC contaminated land provisions are triggered for the proposed Pakowhai Secondary Stopbank area.
- Additional investigation is required, prior to the development of the stopbank, to further assess risks and implications associated with potential contamination in particular parts of the site where soil disturbance is proposed.
- Alternatively, where works transect HAIL activities, they could be modified to limit ground disturbance and, potentially, requirements for further sampling.
- We recommend that a Contamination Site Management Plan (CSMP) is prepared as an appendix to the CEMP for the Pakowhai Secondary Stopbank construction. The CSMP will be informed by the further soil testing (if required) and will address the requirements of Condition 17 of the OiC to manage potential adverse effects on human health and the environment during and on completion of the stopbank construction.

1 Introduction

Hawkes Bay Regional Council (HBRC) has commissioned Tonkin & Taylor Ltd (T+T) to undertake a Preliminary Site Investigation for the proposed Pakowhai Secondary Stopbank (referred to below as 'the site'). The location of the site is presented in Figure 1.1 below.

This report has been prepared in general accordance with the requirements for a PSI referred to in the NESCS regulations¹, and as outlined in the MfE's Contaminated Land Management Guidelines².

The persons undertaking, managing reviewing and certifying this investigation are suitably qualified and experienced practitioners (SQEP), as required by the NESCS and defined in the NESCS Users' Guide³ (April 2012).

This report was undertaken in accordance with our proposal of 23 April 2024.

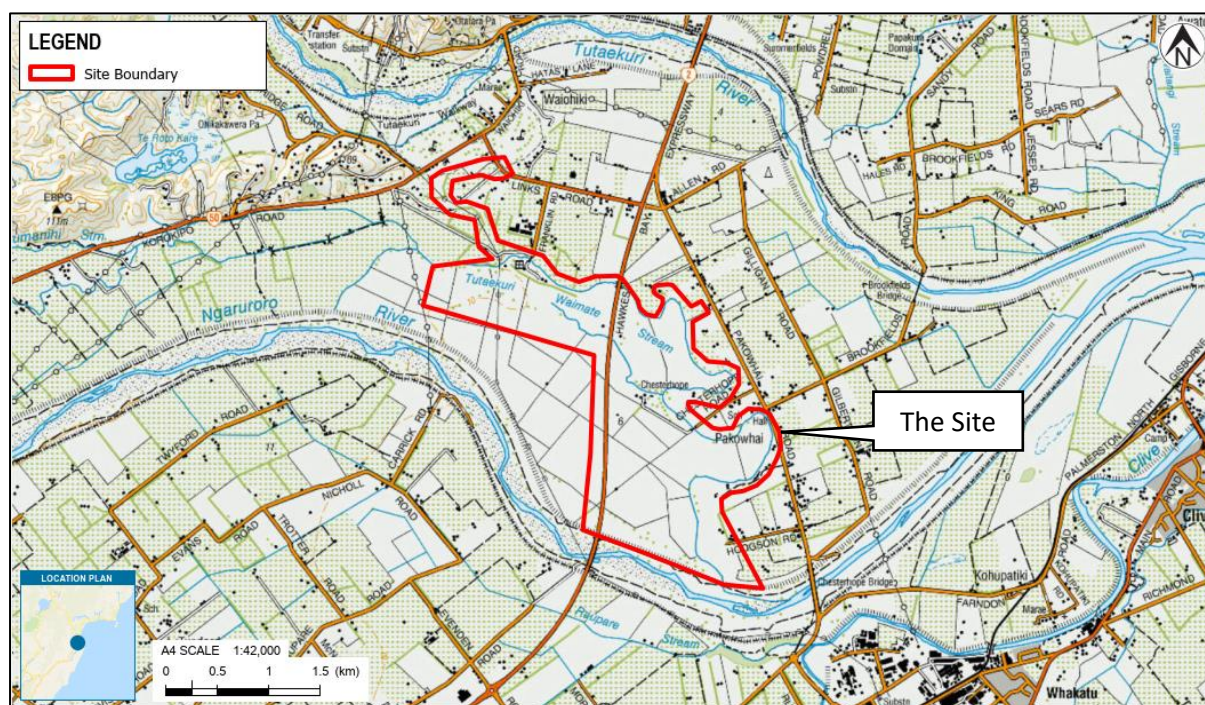


Figure 1.1 Pakowhai Secondary Stopbank site location. Topomap sourced from Land Information New Zealand (crown copyright reserved).

1.1 Background

We understand HBRC proposes to realign the Pakowhai Secondary Stopbank as part of the post Cyclone Gabrielle flood mitigation works. The proposed works require soil disturbance to source additional material from borrow areas, within the wider site, and to realign, rehabilitate and extend the existing stopbank. Proposed locations of works are shown in Figure 1.2 below.

¹ Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

² Ministry for the Environment, 2021. Contaminated Land Management Guidelines No 1 – Reporting on Contaminated Sites in New Zealand.

³ Ministry for the Environment, April 2012, User's Guide - National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health.

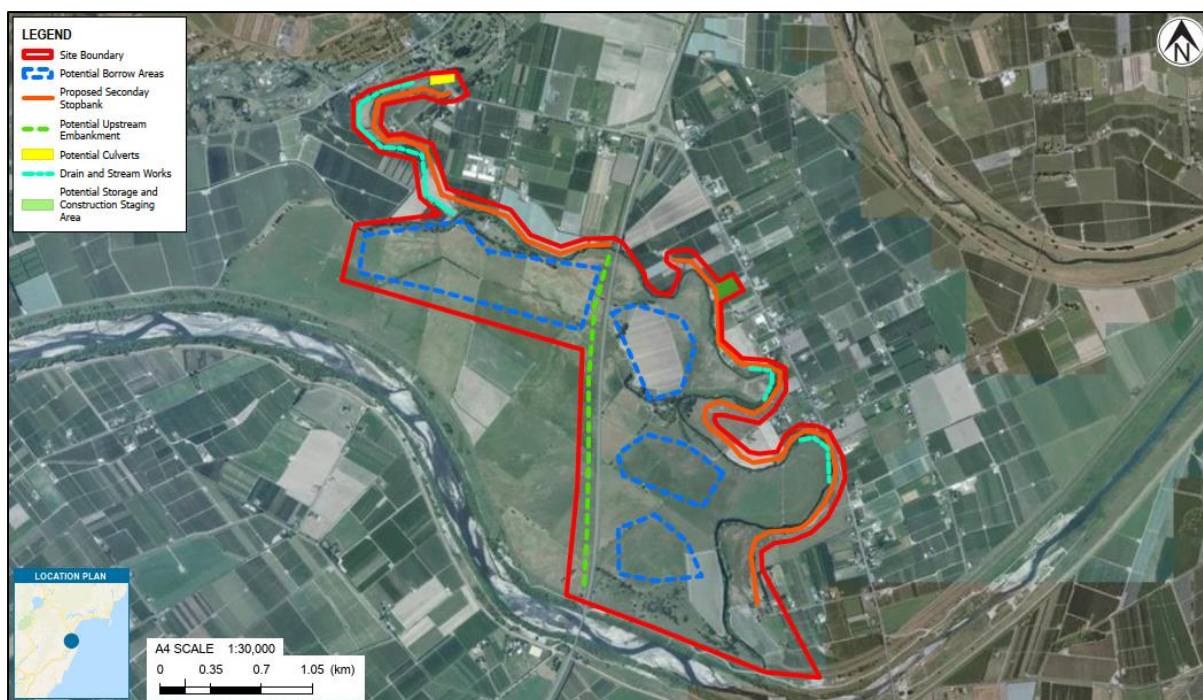


Figure 1.2: Proposed Extent of Works for the Pakowhai Secondary Stopbank.

As shown in Figure 1.2, the works will include:

- Construction of the secondary stopbank along the Tūtaekurī-Waimate Stream, from Links Road to State Highway 2, and from State Highway 2 to the Ngaruroro River.
- Potential stream realignment in three areas along the Tūtaekurī Waimate Stream.
- Improving drainage at Links Road with potential culverts on the northern-most portion of the site.
- Sourcing material from four potential borrow areas for the construction works.
- Potential for further upstream embankment works along the western boundary of State Highway 2.
- No offsite disposal of soil is required as part of the works.

HBRC have been granted an Order in Council (OIC) to reduce the regulatory pathways for the flood mitigation works, following Cyclone Gabrielle. The OIC replaces the typical consenting pathway under the district and regional plans, and includes a specific contaminated land related condition:

- **Condition 17: Works on contaminated land**, Outlines site management plan requirements. *Note: the condition requires all practicable measures must be taken to prevent the discharge of soil and stormwater from contaminated land to watercourses – if this won't apply, then the effects of any discharge from contaminated land will need to accompany the resource consent application to justify a change to this condition.*

1.2 Objective and scope of work

The objective of this investigation was to identify activities within the proposed Pakowhai Secondary Stopbank project area that may have resulted in ground contamination, and assess the likelihood, potential magnitude and extent of any contamination as a result of those activities. These activities are defined by the Ministry for the Environment in the Hazardous Activities and Industries List (HAIL).

Ultimately, this investigation aimed to identify whether the NESCS regulations apply to the site and, if so, whether the OIC contaminated land provisions apply to the proposed stopbank construction works.

The scope of work for this investigation comprised the following:

- Review of published geological information and other information (including previous contaminated land related reports) held by T+T for the area.
- Review of historical aerial imagery on the Hastings District Council online GIS viewer and available from Napier City Council, Retrolens, Koordinates and Land Information New Zealand, between 1936 and 2023.
- Review of the Hawkes Bay Regional Council's online hazard portal^[3] for HAIL^[4] information.
- Liaison with Hawkes Bay Regional Council and Hastings District Council around contaminated land related information they held for the alignment and borrow areas.
- A site walkover inspection of accessible areas along the stopbank alignment and proposed borrow areas.
- Collection of surface soil samples during the site walkover inspection, targeting areas with higher potential for contamination, based on the site history review and site observations.
- Laboratory analysis for contaminants of concern, based on the site history review and site observations.
- Review of ground contamination related environmental regulations and planning documents to identify relevant consenting requirements for the proposed activity.
- Preparation of this PSI report.

This report documents our findings and comments on the potential for ground contamination at the site, in the context of the proposed development, including potential consenting implications.

^[3] <https://gis.hbrc.govt.nz/Hazards/>

^[4] 'HAIL' refers to Ministry for the Environment's Hazardous Activities and Industries List (HAIL) which identifies activities and industries that have the potential to have resulted in ground contamination.

2 Site description

2.1 Location and legal description

For the purpose of this investigation, 'the site' is defined as the proposed Pakowhai Secondary Stopbank footprint and associated activities where construction activities will be undertaken during the development. This area is shown on Figure A.1 within Appendix A.

The total site area, including the borrow areas, is approximately 370 hectares. The site is located in the area between the Tūtaekurī and Ngaruroro Rivers, in the Hawkes Bay Region. The site area sits around halfway between Napier and Hastings and is intersected by the Hawkes Bay Expressway. The Waitangi Regional Park and Waitangi Estuary is approximately 4 km east of the site. The Napier Golf Club is present immediate north of the site. The site is classified as a combination of 'Rural' and 'Plains Production' zones under Hastings District Council (HDC) District Plan.

Table 2.1 below contains the properties details for the properties within the site area:

Table 2.1: Property description

Address	Legal Description	Record of Title
Stopbank Realignment Properties*		
1133 Links Road	Lot 1 DP 20523	HBM1/1078
1135 Links Road	Lot 2 DP 16843	HBM1/46
1153 Links Road	Lot 1 DP 16843	HBM1/45
1215 Korokipo Road (Highway 50)	Lot 1 DP 2039	HBV1/904
	Lot 1 DP 28285	HBV1/904
	Waiohiki 2C Block	HBE1/961
	Lot 1 DP 2972	HBE1/962
1275 Korokipo Road (Highway 50)	Part Lot 1 DP 15678	HBP3/796
70 Franklin Road	Lot 1 DP 22965, Lot 2 DP 2721, Section 2 SO 9891	HBP3/795
56 Franklin Road	Lot 2 DP 12012, Section 1 SO 9891	HBP3/465
71 Franklin Road	Lot 1 DP 12546, Section 15 Block XI Heretaunga SD, Lot 2 DP 309041	HBV3/989
1023 Links Road	Lot 2 DP 460806	604769
2058 Pakowhai Road	Lot 2 DP 20869, Lot 2 DP 512396	788862
2046 Pakowhai Road	Lot 1 DP 12698	HBD4/1162
Pakowhai Road	Section 43 Block XII Heretaunga SD	HB23/46
2026 Pakowhai Road	Lot 3 DEEDS 437	HBM2/373
2008 Pakowhai Road	Lot 1 DEEDS 437, Lot 2 DEEDS 437	HBL1/145
1986 Pakowhai Road	Lot 39 DEEDS 80, Lot 40 DEEDS 80	HBV1/547
1980 Pakowhai Road	Lot 2 DP 374026	298724
1972 Pakowhai Road	Lot 1 DP 374026	298723
22 Chesterhope Road	Lot 2 DP 389718	360055
76 Chesterhope Road (Part Lot 2 DEEDS 376 and Lot 3 DP 6071 access from 1844 Pakowhai Road)	Lot 2 DP 6071	HBH3/1148
	Part Lot 2 DEEDS 376	HB163/81
	Lot 3 DP 6071	HBH3/1148

Address	Legal Description	Record of Title
Stopbank Realignment Properties*		
47 Chesterhope Road	Lot 1 DP 10514	HBA1/885
	Lot 2 DP 10514	HBA1/886
	Lot 3 DP 10514	HBA1/887
	Lot 4 DP 10514	HBA1/1341
1914 Pakowhai Road	Part Lot 26 DEEDS 80, Part Lot 27A DEEDS 80	HBC2/745
1912 Pakowhai Road	Section 1 Block XII Heretaunga SD, Part Lot 3 DEEDS 376	HB118/214
1856 Pakowhai Road	Lot 35 DEEDS 493, Lot 40 DEEDS 493	HB47/125
74 Hodgson Road	Lot 14 DEEDS 632, Lot 15 DEEDS 632	HB54/265
66 Hodgson Road	Part Lot 12 DEEDS 632	HB147/95
43 Hodgson Road	Lot 13 DEEDS 632	HBL2/450
1762 Pakowhai Road	Part Pakowhai Maori Reserve 1 Block	HBW4/46
Proposed Borrow Area Properties*		
76 Chesterhope Road	Lot 4 DP 543135, Lot 3 DP 543135, Lot 2 DP 543135	916895
	Lot 1 DP 543135	916894

*The area required for stopbank realignment and borrow areas will encompass only a portion of the listed properties, not the entirety of the property area.

2.2 Site condition

Site walkover inspections were undertaken across 9, 10, and 21 May 2024 by a contaminated land specialist. Only the southern portion of the wider site was accessible for the site walkover at the time of the initial site visit, while the walkover for the northern portion of the site was completed on 21 May 2024. An additional site visit was completed by an engineering geologist on 24 July 2024 as part of the geotechnical phase of the project. The purpose of the walkover (and interviews) was to gather general information on topography and land use (both on site and the surrounding area) as well as making observations for evidence of potential ground contamination. Relevant observations made at the time of the inspection (and interviews) are summarised below. Key site features are shown on Figure A1 in Appendix A and selected photographs are included as Photographs 1-22, Appendix B.

The site is currently used for rural residential, horticultural and pastoral farming uses. The following observations relevant to this investigation are as follows:

- The Pakowhai area has been significantly affected by the Cyclone Gabrielle storm event in early 2023. Evidence of the storm/flood damage in the form of stockpiled silt materials and building debris, was present in areas within the site. See Photograph Appendix B.1.
- The Tūtaekurī-Waimate Stream flows through the entire site from north-west to south-east, extending through a number of the properties within the wider site area.
- The Pakowhai Memorial Hall is located adjacent to the Tūtaekurī-Waimate Stream, at the intersection of Pakowhai Road and Brookfields Road. The hall building is constructed of a combination of; concrete block, timber weatherboard, fibreboard, and plaster coated cladding. Fibre cement fragments were observed on the ground surface at the rear of the building, likely to have been from the broken fascia board on the rear portion of the building. See Photograph Appendix B.2 and Photograph Appendix B.3. Testing of fragments confirmed

the presence of asbestos containing material (ACM, refer to Section 6.2) in one of two samples tested from this location.

- An aboveground storage tank (AST) was observed near the packing sheds at the orchard property located at 43 Hodgson Road, the property adjacent to the site, approximately 220 m from the site. See Photograph Appendix B.4. The exact use of this tank is unknown, but it appears to collect rainwater from the roof of the packing sheds.
- A damaged shed containing farm machinery, timber pallets, and hay bales was observed at the property at 1854 Pakowhai Road, adjacent to the stream. The shed was constructed of corrugated iron and clearlite sheets. One 200 L drum, labelled 'Caltex', and five 'jerry cans' (~30 L each), all in good condition, were temporarily stored along the fence line near to the farm shed. A slight hydrocarbon odour was detected near the containers, but no staining was observed on the ground surface. See Photograph Appendix B.5 and Photograph Appendix B.6.
- A farm waste pit measuring approximately 11 m by 3.5 m was observed within the property at 76 Chesterhope Road, to the rear of the farm sheds at the centre of the property. The material observed within the pit includes, building debris (wood and treated timber, cladding corrugated iron sheets), wire, timber pallets, scrap metal pieces, a metal barrel, a plastic container backpack weed sprayer, and general domestic rubbish. A stockpile of concrete blocks (around 5 to 10 m³) was adjacent to the pit together with a slightly larger soil stockpile, which appeared to have been excavated to form the pit. See Photograph Appendix B.7 and Photograph Appendix B.8.
- A former vegetable and fruit garden, associated with the homestead, is present on the eastern side of 76 Chesterhope Road, near the northern-most proposed borrow area. At the time of the site visit the garden was overgrown with weeds. Only the concrete foundation of a former glasshouse remains; all glass and timber panels have been removed. See Photograph Appendix B.9 and Photograph Appendix B.10.
- A blue 20 L metal drum was observed in a sparse area of vegetation near to the vegetable and fruit garden. Hydrocarbon staining was observed the top of the drum, but not on the surrounding ground. See Photograph Appendix B.11.
- An existing stopbank along the Tūtaekurī-Waimate Stream was observed to the west of the area containing the 20 L metal drum. See Photograph Appendix B.11.
- A rectangular concrete structure, potentially the base of a former shed, was observed near to the sheds on the property at 76 Chesterhope Road, along the main accessway. See Photograph Appendix B.12.
- An AST (most likely containing diesel for farm vehicles) is present at 76 Chesterhope Road, near to the farm sheds and access track.
- An area of earthworks was observed to the rear of the property at 2026 Pakowhai Road, adjacent to the Tūtaekurī-Waimate Stream. At the time of the site visit stockpiles of soil and gravels, with grass growth, could be seen on site, as well as a large articulated dump truck. See Photograph Appendix B.13.
- A woolshed and sheep yards are present at the end of Franklin Road. A farm waste pit was observed in a paddock adjacent to the sheep yards. Waste contained within the pit included; wood and treated timber, fencing wire, paint cans and plastic. See Photograph Appendix B.14 and Photograph Appendix B.15.
- Corrugated iron agrichemical storage sheds were observed at the woolshed at the end of Franklin Road and also on the south-west portion of 70 Franklin Road (adjacent to the Tūtaekurī-Waimate Stream). The storage shed at 70 Franklin Road had been inundated with silt by Cyclone Gabrielle and was no longer in use. See Photograph Appendix B.15 and Photograph Appendix B.16.

- A pylon is present within an apple orchard at 70 Franklin Road. See Photograph Appendix B.17. A further three towers are present to the south, withing and near to a proposed borrow on the wider property of 76 Chesterhope Road.
- Two small ASTs were adjacent to the sheds and portable toilet, beyond a demolished house, at 70 Franklin Road. Only one appeared to contain diesel, while the other appeared to be empty. The surface of the empty tank rusted, and it appeared older than the tank that was full. While staining of the surrounding ground was not observed, vegetation beneath the ASTs appeared in poor condition, possibly as a result of recent weed spraying. See Photograph Appendix B.18.
- An area at the rear of 56 Franklin Road, adjacent to the access of 70 Franklin Road, contained piles of discarded tractors, tyres, timber pallets, corrugated iron, plastic, and green waste (some appeared to have been burnt prior to putting on pile). A circuit board (potential piece of computer or laptop) was on top of the green waste material. Further materials had been discarded along the hedge line (outside of the project site). See Photograph Appendix B.19 and Photograph Appendix B.20.
- Earthworks were being undertaken by an excavator on the boundary of 1153 Links Road and the golf course property. Large stockpiles (total volume unconfirmed) of what appears to be topsoil were observed on the golf course property, adjacent to the site. See Photograph Appendix B.21.
- A split petrol and diesel AST is present on the golf course property, by the maintenance sheds, outside of the project site area by approximately 75 m. The AST was within a concrete bund and had a cover, the ground beneath was unable to be observed at the time of the site visit. From discussions with the Turf Manager of the Napier Golf Club, we understand the AST was installed following Cyclone Gabrielle, where a former AST was inundated and displaced. See Photograph Appendix B.22.

2.3 Surrounding land use and environment

The Pakowhai Secondary Stopbank site is located in the area along, and adjacent to the Tūtaekurī-Waimate Stream, extending from north-west to south-east, between the Tūtaekurī and Ngaruroro Rivers. The northern-most portion of the site is adjacent to the Napier Golf Club property on Links Road, and the southern-most portion of the site is adjacent to the Ngaruroro River. The Hawkes Bay Expressway intersects the centre of the site from north to south.

General land uses in the surrounding area include;

- North – Horticultural properties (orchards and vineyards), with Links Road, the Napier Golf Club and the Tūtaekurī River. The city of Napier is beyond.
- South – Ngaruroro River and surrounding recreational area, with horticultural properties (orchards and vineyards) beyond, with an industrial area to the south-east, and the city of Hastings further south.
- East – Horticultural properties (orchards and vineyards) and the confluence of the Tūtaekurī, Ngaruroro and Clive Rivers, prior to the discharge into the Waitangi Estuary.
- West – Pastural land, horticultural properties (orchards and vineyards) and the Ngaruroro River.

3 Geology and hydrology

3.1.1 Published geology

The published geology beneath the site is described by Lee, Begg and Bland⁴ as Holocene River Deposits including silts, sands and gravels from the Heretaunga Formation, as shown below in Figure 3.1.

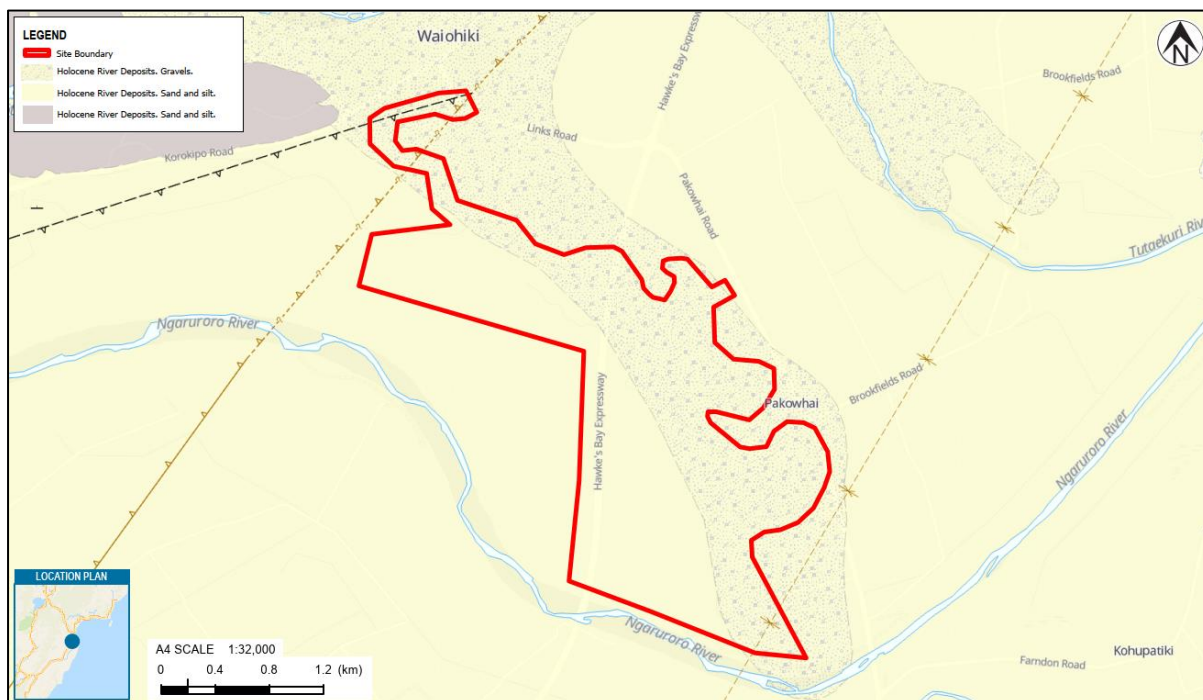


Figure 3.1 Published geology of the Pakowhai Area (source: Lee J.M., et al) as per footnote.

3.1.2 Hydrogeology and hydrology

Boreholes completed as part of the nearby geotechnical investigation⁵ for Waiohiki Stopbank, encountered groundwater between 4.7 m below ground level (m bgl) 1.7 m bgl across the site. Refer to the geotechnical report for further information.

One bore within the site (Well 17482, on the stream reserve across at the end of Franklin Road) is part of the HBRC's State of the Environment Monitoring Programme and the groundwater level monitored monthly. The groundwater level has ranged between 0.48 and 1.17 m bgl from May to August 2024⁶.

The review of GNS national water table⁷ and surface topography suggests that surface water and shallow groundwater flows in a generally easterly/south-easterly direction (i.e., towards The Tūtaekurī-Waimate Stream).

The Tūtaekurī-Waimate Stream extends through the eastern portion of the site and discharges to the Ngaruroro River which ultimately discharges to the South Pacific Ocean, located 7 km east of the site (refer Figure 1.1).

⁴ Lee J.M., Begg J.G., Bland K.J. 2020. Geological map of the Napier-Hastings urban area 1:75 000. GNS Science geological map 7a. Lower Hutt, New Zealand. GNS Science

⁵ Tonkin & Taylor Ltd, January 2024. Waiohiki Stopbank Geotechnical Factual report.

⁶ Hawke's Bay Regional Council, 2024. <https://www.hbrc.govt.nz/environment/groundwater/>

⁷ GNS Science. (2018). National water table model [Dataset]. GNS Science. <https://doi.org/10.21420/KZ52-NT28>

4 Site history

Historical information relating to the site has been collected from a variety of sources including the contamination enquiry to HBRC, historic aerial photographs, previous investigations and discussion with onsite residents and the Golf Club's Turf Manager. This history focuses on on-site activities, except for the aerial photograph review where comments are also provided on readily observable surrounding land use. The information reviewed is summarised in below.

In summary, the site has generally comprised agricultural, rural residential and horticultural land uses for at least the past 75 years. Historical aerial images show the site originally occupied by agricultural and rural residential prior to horticultural activities establishing in the northern, eastern, and southern portions of the site from the mid-1960s.

The Napier Golf Course has been present to the north of the site since sometime before 1936 with the golf course occupying a small section of the northernmost portion of the site. A tee box and what appear to be driving range nets are included within the site boundary. However, fairways, a tee box, and the storage of fuel (petrol and diesel) and agrichemicals (course maintenance facilities), are located to the north of the site, and outside of the site boundary.

Buildings and structures within the site include; dwellings, farm sheds, stock yards, potential sheep dips, agrichemical storage sheds and farm waste pits, associated with the agricultural and horticultural activities. Majority of the site is within the property at 76 Chesterhope Road (known as Chesterhope Station) which has a long history of sheep farming activities.

A closed private landfill is present to the rear of 2008 Pakowhai Road. The landfill was to be filled with demolition materials to extend and level the site, to allow for the extension of market gardening activities.

A Contaminated Land Site Investigation⁸ with soil sampling was undertaken in 2018 at the former Chesterhope Station, as part of the proposed development of a new hospice facility (Cranford Hospice). This information has been made available to T+T and HBRC by the Cranford Hospice Foundation. The investigation identified a number of HAIL activities having been undertaken on the site throughout its history as a farm from the 1880s. Activities identified on site included; a former sheep dip (within the wider property but 1km from the proposed development area), spray use for pastoral weed control, waste disposal to land and use of asbestos and lead-based paints in buildings.

Soil sampling, completed as part of the investigation, was undertaken in surface and underlying soils and results of the collected samples found concentrations of lead and zinc below the residential human health criteria (NESCS SCS 25 % produce) and low-level concentrations of PAH were detected below the human health criteria in an area of fill encountered. Further details of the previous investigation are included in Appendix C3.

A Geotechnical Investigation⁹ was also completed concurrently with the 2018 Contamination Investigation. The geotechnical investigation comprised 3 borehole locations (to a maximum depth of 15 m bgl), cone penetration tests, 2 hand auger borehole locations and scala penetrometer tests. The site geology encountered in the boreholes comprised, topsoil and fill (reworked material containing brick fragment and shell) in the surface material above a clayey silt layer at 1 m bgl, which overlay an interbedded layer of sand and silt.

⁸ Tonkin & Taylor Ltd, 2018. Cranford Hospice Development – Chesterhope Road, Pakowhai, Contaminated Land Site Investigation. Prepared for Cranford Hospice Foundation T+T Ref: 1006665.4000.v1

⁹ Tonkin & Taylor Ltd, 2018. Proposed Cranford Hospice redevelopment – Chesterhope Road – Geotechnical Report for Resource Consent. Prepared for Cranford Hospice Foundation T+T Ref: 1006665.1000.v1

Recent impacts from the 2023 Cyclone Gabrielle are evident in isolated areas within the site as damage to buildings and stockpiles of silt and debris. The property at 71 Franklin Road holds a Resource Consent to discharge of cleanfill associated with the flood clean-up works.

Discussions with onsite residents at the time of geotechnical walkover, completed 24 July 2024, identified an area of buried building rubble, reportedly containing asbestos containing materials, at the rear of 1980 Pakowhai Road. A sheep burial site was also identified at the rear of 1854 Pakowhai Road, to the south of the woolshed and stockyards.

5 Potential for ground contamination

Based on the review of historic information for the site, as well as the site walkover, there are a number of activities associated with the site that have the potential to cause ground contamination. The inferred locations of these activities are presented on Figure A.1 in Appendix A.

The activities, potential contaminants and an assessment of the potential magnitude of the effects are presented in Table 5.1.

Table 5.1: Potentially contaminating activities, Pakowhai Secondary Stopbank

Land use/activity	Potential contaminants	Magnitude, possible extent, and likelihood of contamination	HAIL reference
Waste disposal to land, burning of waste in farm pits and burial of stock.	Depends on type of waste – biological hazards (bacteria, viruses), metals, polycyclic aromatic hydrocarbons (PAH), asbestos, semi-volatile organic compounds, (including pesticides) and solvents.	<p>There is potential for contamination of soils surrounding a number of waste disposal areas including:</p> <ul style="list-style-type: none"> • Historic farm pits, potentially visible as small disturbances within paddocks in historic aerial images on the southern portion of the site. • Currently used farm pits were observed during site walkover at 76 Chesterhope Road, near the homestead buildings (sample location SS01) and at sample location SS15 on Franklin Road portion of the property, near the woolshed. • Soil disturbance and stockpiling on the rear of the property at 2026 Pakowhai Road. • Buried building debris, containing asbestos containing materials, at 1980 Pakowhai Road adjacent to the Tūtaekurī-Waimate Stream, based on discussions with landowners. • Burial of sheep at the rear of 1854 Pakowhai Road, based on discussions with landowners. • The Resource Consent for the discharge of cleanfill (Class 4 and 5) as part of the Severe Weather Emergency Recovery (Waste Management) Order 2023, at 71 Franklin Road. • Other potential buried waste disposal locations across the site (not identified as part of this investigation). <p>Contamination extent and magnitude associated with waste disposal to land will be dependent on a number of factors such as waste type and age. Contamination is expected to be in soils immediately surrounding the waste and within the waste itself.</p>	G5

Land use/activity	Potential contaminants	Magnitude, possible extent, and likelihood of contamination	HAIL reference
Horticultural use including orchards, market gardening, domestic greenhouse, pastoral weed control and the golf club (fairway and tee box).	Arsenic, lead, copper, mercury; wide range of organic compounds including acidic herbicides, organophosphates, and organochlorines (e.g., endosulfan on golf greens).	Orchards and market gardens have been present on the northern, eastern, and southern portions of the site for at least the past 75 years. The golf course has been present on the northern portion of the site for at least the past 88 years. Associated contamination is expected to be confined to near surface soils (typically to 400 mm depth) and would be most highly concentrated around chemical storage or mixing areas. Storage for agrichemicals was observed on site, within the woolshed off Franklin Road, and at the apple orchard at 70 Franklin Road.	A10
Fuel storage in above ground storage tanks (ASTs), drums, and storage containers.	Petroleum hydrocarbons (BTEX, PAHs) and lead.	There is potential for contamination beneath the ASTs/drums and/storage container. Contamination is expected to be highest in near surface soils and isolated to the area immediately surrounding these features. However, we note that no significant evidence of contamination was observed in these areas.	A17
Closed landfill site.	Unknown but a broad range of contaminants possible depending on the specific nature and source of the waste. Contaminants may include metals, hydrocarbon, and asbestos (amongst others) based on information about landfill site. There is also potential for land fill gas generation if the waste includes a significant proportion of organic material.	A 'closed landfill site', is recorded within the site boundary, on the HBRC Selected Land Use Register. Demolition materials were to be used to level the site so that market gardening activities could extend. At the time of the 2006-2007 council visit, completed upon expiry of the consent, the fill site was being covered with gravels and soil to bring to the level of the surrounding ground. There was to be no further demolition material brought to site. There is potential for contamination of soils immediately surrounding the landfill (as well as the site itself). There is also potential for localised impacts to surface water and shallow groundwater as a result of leachate migration.	G3

Land use/activity	Potential contaminants	Magnitude, possible extent, and likelihood of contamination	HAIL reference
Sheep dips	Arsenic, organochlorines (e.g., aldrin, dieldrin, DDT, lindane) and organophosphates, carbamates, and synthetic pyrethroids.	<p>Three potential former sheep dip structures have been identified within the site area during the historic information review and site walkover.</p> <p>Two structures that appear to be former sheep dips are visible in the 1940 and 1964 historic aerial images. Both structures have since been replaced by orchard or market gardening activities and are no longer visible. A broken rectangular concrete structure was present at sample location SS14, which may have been the former sheep dip for 76 Chesterhope Road, referred to in the 2018 investigation. There may have also been a dip structure associated with the stockyards near to the homestead building.</p> <p>There is potential for contamination of soils surrounding the sheep dips. The highest concentrations are expected around/beneath the dip structure itself. Contamination would likely decrease with distance from the dip, but may be present at lower concentrations within the adjacent holding pens.</p>	A8
Demolished and current buildings that were constructed pre-2000.	Asbestos and Lead (Pb).	<p>Buildings and structures have been present on the site and surrounds when asbestos building material and lead-based paints were in use. Asbestos and lead may have been released during past maintenance, weathering, or demolition, resulting in soil contamination.</p> <p>There is potential for asbestos and lead to be present in near surface soils around the curtilage surrounding the building footprints or within the footprints of former buildings. Asbestos containing building materials were observed during the site walkover on the hall building (confirmed by laboratory testing, refer to Section 6).</p>	Potential I - <i>Only if the land was subject to intentional or accidental release of a hazardous substance in sufficient quantity to be a risk to human health or the environment.</i>
Pylons.	Zinc.	Four large pylons are present within the northwestern portion of the site. Weathering, and past maintenance of the galvanised structure, such as sand or garnet blasting, may have resulted in the release of Zinc into shallow soils, with zinc concentrations decreasing with distance from the tower.	

6 Soil sampling

Surface soil sampling, was undertaken at 21 locations across the project site. The objective of the soil sampling was to undertake a preliminary assessment of potential contaminant concentrations in soils that may be disturbed as part of the development of the stopbank.

The sample locations targeted areas with higher potential for contamination (within the proposed earthworks areas) , based on the site history review and site observations, as follows:

- SS01 and SS15 were positioned adjacent to farm waste pits to target potential contamination in surface soils.
- SS02 within a former domestic orchard and garden area.
- SS03, SS05, SS08 and SS12 were positioned in the location of the proposed stopbank to provide general coverage of soils near the stream.
- SS04 within proposed borrow area and near to sparsely vegetated area with 20 L oil tank present.
- SS06 in area of former orchard or vineyard.
- SS07 adjacent to farm shed, general coverage near stream.
- SS09, SS10, SS16 and SS17 were positioned in the location of the proposed borrow areas.
- SS11 was positioned at rear of Pakowhai Memorial Hall in the location where ACM fragments were found on the ground surface.
- SS13 was positioned to target an area of disturbed soil and potential burn pit, adjacent to a proposed borrow area.
- SS14 was positioned adjacent to a historic concrete structure, potentially a former sheep dip.
- SS18 was positioned within an existing apple orchard beneath a row of trees and in the location of the proposed stopbank.
- SS19 was positioned beneath a pylon, in the area of the proposed drain and stream works.
- SS20 was positioned within an existing vineyard beneath the vines and in the area of the proposed stopbank and drain and stream works.
- SS21 was positioned within a former vineyard, where the rows had been cleared and the area now vacant, in the area of the proposed stopbank.

The sample locations, together with the proposed stopbank and associated works areas, are indicated in Figure A.2, Appendix A.

6.1 Soil sampling procedure

Sampling was undertaken on 9, 10 and 21 May 2024 by T+T in general accordance with the requirements of the NESCS¹⁰ and CLMG No. 5¹¹, using the following procedure:

- Freshly gloved hands, and a hand-trowel, were used to collect samples directly from the surface soils (from a depth of approximately 0.0-0.1 m bgl).
- Samples were placed into laboratory supplied sample containers.
- The trowel was decontaminated between sample locations using clean water and Decon 90 (a phosphate-free detergent).

¹⁰ Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

¹¹ Ministry for the Environment. Updated 2021. Contaminated Land Management Guidelines No. 5: Site investigation and Analysis of Soils. Ministry for the Environment, Wellington.

- Samples were delivered to IANZ accredited Analytica Laboratories under chain of custody documentation for analysis.

6.2 Analytical results

With respect to the potential for ground contamination (Section 5), samples were analysed as follows:

- Twenty-one samples for heavy metals, based on horticultural land use, waste disposal to land and general use of fill for site development.
- Five samples for OCP, based on the potential use of pesticides associated with horticultural land use.
- Two samples for PAH, based on the observed burnt waste within the farm waste pits.
- Two samples for TPH, based on the nature of waste disposed to land and the presence of the 20 L oil tank.
- Two samples for semi-quantitative asbestos where building debris was observed within a farm waste pit, and where fibre cement fragments were observed on the ground surface.
- Two bulk material samples of fibre cement sheeting were collected from the ground surface and analysed for asbestos presence or absence.

The assessment criteria were selected in accordance with the requirements of the regulatory framework, in particular, in accordance with the MfE Methodology¹². Commercial/industrial land use criteria have been adopted given the proposed use of the site as a stopbank, and with respect to the earthwork contractors and future maintenance staff. Predicted background concentrations specific to the area¹³ have been used to provide context and New Zealand criteria for the protection of ecological receptors¹⁴ have been used to assess environmental risk.

The upper limit for fill construction from the Hawke's Bay Stopbank Construction¹⁵ has been used to assess site-won material for re-use during the proposed construction works.

Class A Landfill Screening Criteria¹⁶ has been used to assess material for disposal to the Ōmarunui Landfill if necessary, during the works. Additional sampling may be required prior to disposal. Acceptance of material into the landfill is at the discretion of the landfill operator.

A summary table of the analytical results for the tested samples is included as Table E1 in Appendix E and full laboratory transcripts are included in Appendix F. The results indicate:

- All heavy metal concentrations were below the human health criteria for a commercial/industrial land use and below New Zealand ecological soil guideline values.
- Seven samples (SS01, SS02, SS05, SS08, SS09, SS10 and SS11) contained heavy metals (arsenic, lead, and/or zinc) concentrations above the predicted background concentrations. Heavy metal concentrations in all remaining samples analysed were below the predicted background concentrations.

¹² Ministry for the Environment, 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment. Criteria for commercial/industrial and residential (25% produce) land use used.

¹³ Landcare Research Limited, 2016. PBC - Predicted Background Soil Concentrations, New Zealand, <https://iris.scinfo.org.nz/layer/48470-pbc-predicted-background-soil-concentrations-new-zealand/>

¹⁴ Landcare Research, 2019. UPDATED Development of soil guidance values for the protection of ecological receptors (Eco-SGVs) – Technical document.

¹⁵ Tonkin & Taylor Ltd, 2023. Upper Limits for Contaminants in Hawke's Bay Stopbank Fill. Prepared for Hawke's Bay Regional Council, T+T ref: 1017353.2102R v1.

¹⁶ Ministry for the Environment, 2004. Module 2: Hazardous Waste Guidelines, Landfill Waste Acceptance Criteria and Landfill Classification. Screening Criteria for Class A Landfills.

- Lead was found to exceed the Class A Landfill screening criteria in sample SS11, collected adjacent to the Pakowhai Memorial Hall. Aside from the lead result in SS11, no other compounds exceeded landfill screening criteria.
- Some individual OCP compounds (DDT isomers) were detected above the laboratory limit of reporting in one of the five samples (SS18) analysed. Concentrations were low and well below human health, environmental, and landfill screening criteria.
- PAH was not detected above the laboratory limit of reporting in the two samples analysed. Low levels of heavy end TPH (C15-C36) only were detected in the two samples analysed (SS01 and SS04). The concentrations did not exceed the human, environmental or landfill screening criteria.
- Asbestos fibres (chrysotile, white asbestos) were detected in one soil sample (SS01) from a low-lying area containing a farm waste pit to the rear of the farm buildings at 76 Chesterhope Road. The result of 0.009 % w/w for asbestos fibres exceeds the risk-based criteria of 0.001 % w/w and falls within the 'Asbestos-related works' scenario.
- Chrysotile asbestos was detected in one of the Bulk material samples (PA_Bulk02) collected from the Pakowhai Memorial building. Asbestos was not detected in the corresponding soil sample (SS11) collected from this area.

7 Implication of ground contamination

7.1 General

The result of this investigation indicates that ground contamination is unlikely to present a significant constraint to the proposed development of the Pakowhai Secondary Stopbank. However, some regulatory implications and requirements apply. These are set out below.

If development plans for the Pakowhai Secondary Stopbank are to change and/or additional areas incorporated, this report must be reviewed and updated to reflect the updates to proposed development plans to ensure that the implication and conclusions remain valid.

7.2 Regulatory considerations

7.2.1 Flood Mitigation Order in Council

As detailed in Section 1.1, HBRC have been granted an Order in Council (OIC) to reduce the regulatory pathways for the flood mitigation works, following Cyclone Gabrielle.

The flood mitigation OIC contains conditions relating to the discharge of contaminants and the use of contaminated land. The purpose of these conditions is to minimise human health and environmental effects from the disturbance and/or discharge of contaminated land. Assessment against contaminated land related rules of the regional and district plans is therefore not required because the OIC sets out standardised conditions and matters of controls to be addressed, as follows:

Condition 17 Works on contaminated land

- 1 *This clause applies if the consent holder undertakes earthworks or any other soil disturbance on contaminated land.*
- 2 *The consent holder must ensure that any soil and other materials that are removed from the site and identified as being contaminated are taken to a facility legally authorised to receive soil and materials of that kind.*
- 3 *The consent holder must take all practicable measures to—*
 - a) *prevent the discharge of soil and stormwater from contaminated land to watercourses; and*
 - b) *maintain the integrity of any structure designed to contain contaminated soil or other contaminated materials; and*
 - c) *replace the soil to an erosion-resistant state at the completion of the relevant works.*

Matters of control

Contaminated land (human health)

- d) *Potential adverse effects on human health from disturbance or use of contaminated soil.*
- e) *Measures to avoid, remedy, or mitigate those effects, including—*
 - i *posed by contaminants; and*
 - ii *timing of remediation; and*
 - iii *standard of remediation on completion of works.*

The OIC defines contaminated land as land where the NESCS regulations apply. Because soil disturbance is proposed in areas where HAIL activities have occurred, the NESCS regulations apply and therefore the OIC contaminated land provisions (Condition 17) are triggered for the proposed Pakowhai Secondary Stopbank construction.

We recommend that a Contamination Site Management Plan (CSMP) is prepared to address the requirements of Condition 17 and manage potential adverse effects on human health and the environment during and on completion of the stopbank construction. Condition 7(3) (e (ii)) requires that procedures for the management of hazards from the discharge of any contaminant are included in the Construction Environmental Management Plan (CEMP), which is required by Condition 10. Therefore, we recommend that the CSMP forms an appendix to the CEMP.

7.2.2 Health and Safety at Work (Asbestos) Regulations

The Health and Safety at Work (Asbestos) Regulations (2016)¹⁷ were enacted on 4 April 2016, herein referred to as the Asbestos Regulations.

In order to help achieve compliance with the Asbestos Regulations, WorkSafe New Zealand has prepared an Approved Code of Practice (ACoP): Management and Removal of Asbestos (September 2016). The ACoP refers readers to the “New Zealand Guidelines for Assessing and Managing Asbestos in Soil” (herein referred to as the Asbestos-in-Soil Guidelines) which were published in November 2017 by BRANZ Ltd.

BRANZ also defines the level of oversight and controls (including personal protective equipment, decontamination, etc.) that is required to be implemented dependent on the concentration of asbestos fibres/fines or fragments that are present in the soil.

Asbestos was detected in a soil sample collected near a farm waste pit, above the risk-based criteria of 0.001 % w/w. The extent of asbestos in soils in an around the waste pit has not been assessed and it is possible that asbestos may be present in higher concentrations in surface soils in the vicinity. Additional soil testing is required to meet BRANZ sampling density guidance and further assess asbestos in soils risk associated with the farm waste pits and surrounding buildings constructed of asbestos containing materials (including the Pakowhai Memorial Hall building) if soil disturbance is proposed in these areas. As a minimum, works in the vicinity of the farm waste pit would need to be undertaken under ‘Asbestos-related works’ controls.

7.3 Additional investigation or alternative options

Further investigation is required in areas where soil disturbance is proposed to assess the nature and extent of ground contamination associated with the confirmed and potential HAIL activities identified as part of this investigation. In particular, soil sampling and analysis is required in the following areas, assuming these areas will be disturbed as part of the works:

- Area of waste materials stockpiled at 56 Franklin Road.
- Former private landfill site at 2008 Pakowhai Road.
- Area of soil disturbance and stockpiling at rear of 2026 Pakowhai Road.
- Stock burial area at the rear of 1854 Pakowhai Road.
- Area of buried building materials on 1980 Pakowhai Road.
- Asbestos in soils concentrations in/around the farm waste pits and around buildings constructed of asbestos containing materials (including the Pakowhai Memorial Hall building).

We note that additional HAIL activities have been identified in other parts of the wider site; however, as earthworks are not proposed in these areas, they have not been considered further.

The additional investigation would assess associated risks and, if required, inform management/remediation options and offsite disposal locations as part of the stopbank construction works.

¹⁷Ministry of Business, Innovation, and Employment, February 2016. *Health and Safety at Work (Asbestos) Regulations*.

The further investigation would inform (and could be documented in) the CSMP (refer to Section 7.2.1).

Alternatively, the following could be considered to avoid soil disturbance and mitigate requirements for further works in the abovementioned HAIL areas where possible:

- Localised realignment/relocation of the proposed stopbank or associated earthworks areas.
- Avoidance of soil disturbance by placing a layer of separation geotextile over the existing ground and constructing the stopbank/roads, etc above the existing ground (noting that potential stopbank seepage and/or settlement implications would require assessment prior to adopting this approach).

8 Conclusions

Tonkin & Taylor Ltd (T+T) has been commissioned by Hawkes Bay Regional Council to undertake a Preliminary Site Investigation for the Pakowhai Secondary Stopbank. The intention of the PSI was to identify whether the NESCS regulations apply to the site and, if so, whether the OiC contaminated land provisions apply to the proposed stopbank construction works.

A summary of the findings is below:

- The site has been occupied by rural, rural residential and horticultural land uses for at least 75 years.
- Potentially contaminating activities included in the MfE HAIL have been undertaken on site including; the presence of potential orchards/vineyards/market gardens, the disposal of waste to land in various forms/locations (including asbestos containing materials), potential sheep dipping activities, as well as the storage of fuel. However, some of the HAIL activities have been identified in parts of the wider site where earthworks are not proposed. If the areas of proposed earthworks are to change and intersect with these activities, additional investigation may be required to assess these activities further.
- Limited soil sampling was undertaken to target some of the potential HAIL activities and areas where soil disturbance is proposed. There were no exceedances of human health or environmental criteria in any of the 21 analysed samples, with one exception. One sample immediately adjacent to a farm waste pit contained asbestos above the risk-based criteria. The extent of asbestos in soils in an around the waste pit has not been assessed and it is possible that asbestos may be present in higher concentrations. As a minimum, works in this area would need to be undertaken under 'Asbestos-related works' controls.
- Additional investigation is required, prior to the development of the secondary stopbank, to further assess risks and implications associated with potential contamination from waste disposal to land, a former private landfill site, the area where stock have been buried, surrounding the Pakowhai Memorial Hall building and, in and around farm waste pits where building debris have been buried if soil disturbance is proposed in these areas. Alternatively, where works transect these HAIL activities, there could be localised realignment/relocation of the proposed stopbank or associated earthworks areas to limit ground disturbance and, potentially, requirements for further sampling.
- HBRC have been granted an Order in Council (OiC) to reduce the regulatory pathways for the flood mitigation works, following Cyclone Gabrielle. Because soil disturbance is proposed in areas where HAIL activities have occurred, the NESCS regulations apply and therefore the OiC contaminated land provisions are triggered for the proposed Pakowhai Secondary Stopbank construction.
- We recommend that a Contamination Site Management Plan (CSMP) is prepared as an appendix to the CEMP for the Pakowhai Secondary Stopbank construction. The CSMP will be informed by the further soil testing and will address the requirements of Condition 17 of the OiC to manage potential adverse effects on human health and the environment during and on completion of the stopbank construction.

9 Applicability

This report has been prepared for the exclusive use of our client Hawkes Bay Regional Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Recommendations and opinions contained in this report are based on our visual observations and sampling of material within the proposed works area. The nature and continuity of the subsoil away from the test and sample locations is inferred but it must be appreciated that actual conditions may vary from the assumed model.

We understand and agree that our client will submit this report as part of an application for resource consent and that Hawke's Bay Regional Council as the consenting authority will use this report for the purpose of assessing that application.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:




.....
Kasey Pitt
Contaminated Land Consultant



.....
Tim Morris
Project Director

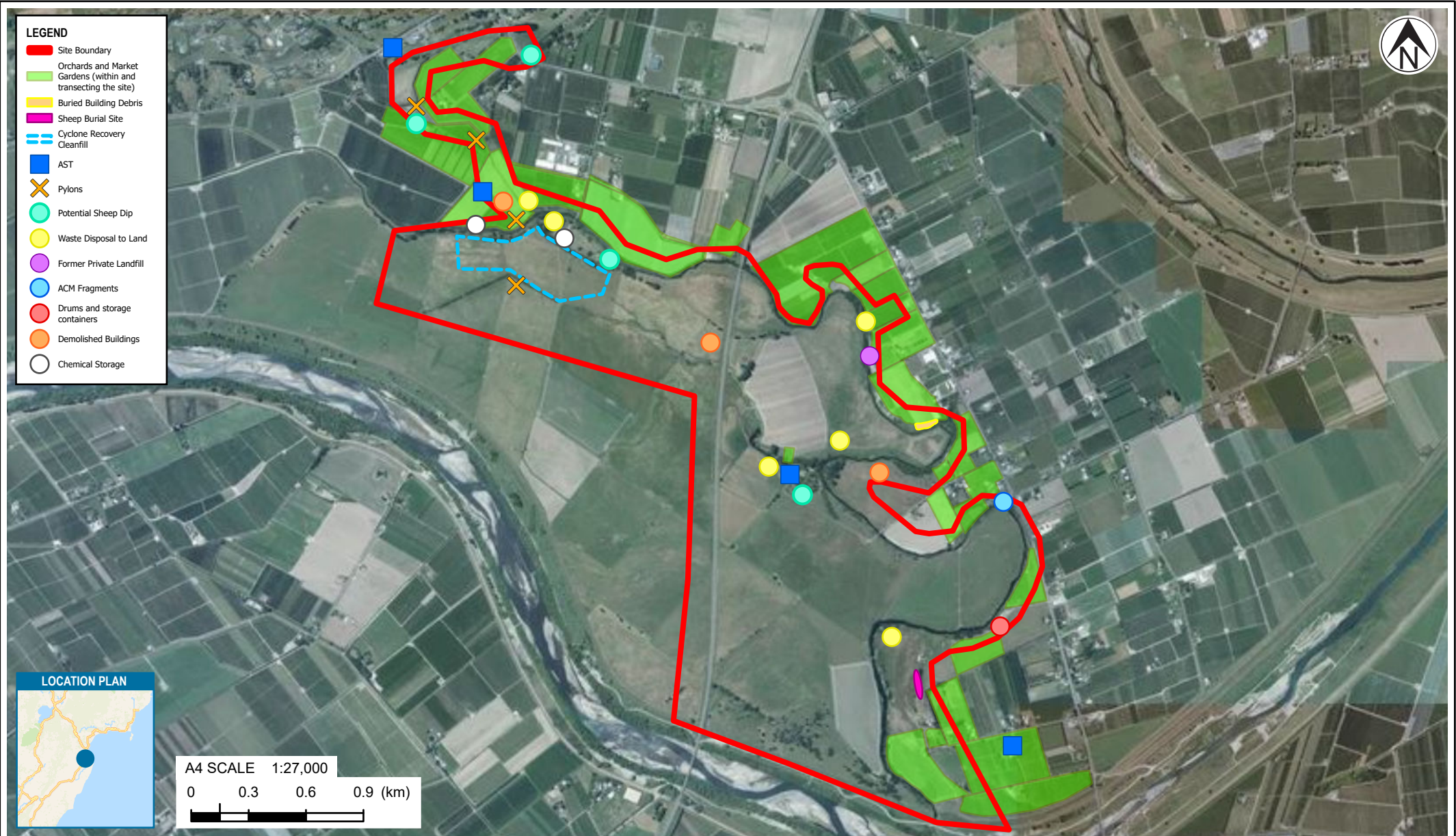
Report certified by a suitably qualified and experienced practitioner as prescribed under the NES (Soil) Users Guide (April 2012).



.....
Alex Davies-Colley
Senior Environmental Consultant

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Appendix A Figures

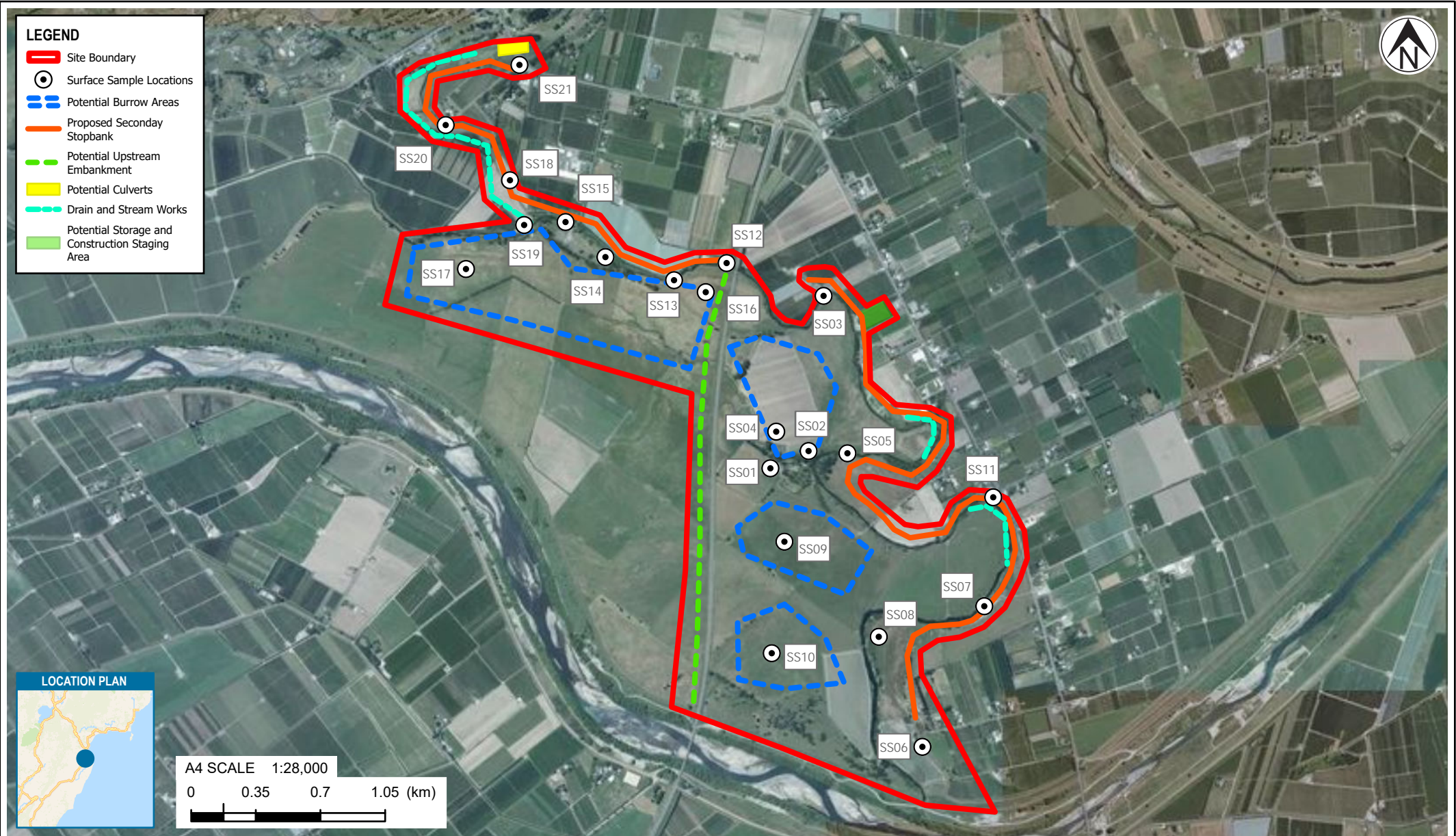


NOTES:
 aerial: NZ Navigation Map: Eagle Technology, LINZ, StatsNZ, NIWA, Natural Earth, © OpenStreetMap contributors.

REVISIONS	NO.	BY
First version (14/08/24)	1	KAPI

PROJECT No. 1017353.2403		
DESIGNED	KAPI	AUG.24
DRAWN	KAPI	AUG.24
CHECKED		
<i>[Signature]</i>		09.09.2024
APPROVED		DATE

CLIENT	HAWKE'S BAY REGIONAL COUNCIL	
PROJECT	PAKOWHAI STOPBANK PSI	
TITLE	KEY SITE FEATURES	
SCALE (A4)	1:27,000	FIG No. FIGURE A.1
REV	0	



REVISIONS	NO.	BY
First version (14/08/24)	1	KAPI

PROJECT No. 1017353.2403		
DESIGNED	KAPI	AUG.24
DRAWN	KAPI	AUG.24
CHECKED		
<i>[Signature]</i>		09.09.2024
APPROVED	DATE	

CLIENT	HAWKE'S BAY REGIONAL COUNCIL	
PROJECT	PAKOWHAI STOPBANK PSI	
TITLE	SURFACE SOIL SAMPLE LOCATIONS	
SCALE (A4)	1:28,000	FIG No. FIGURE A.2
REV	0	

Appendix B Site photographs



Photograph Appendix B.1: Silt stockpiles present along the Tūtaekurī Waimate Stream.



Photograph Appendix B.2: Rear of Pakowhai Hall building beside Tūtaekurī Waimate Stream. Broken fibre cement fascia along rear of building and three fragments visible on ground surface.



Photograph Appendix B.3: Fibre cement fragments (ACM) on ground surface to the rear of the Pakowhai Memorial Hall.



Photograph Appendix B.4: Aboveground storage tank (AST) at 43 Hodgson Road.



Photograph Appendix B.5: Damaged farm shed at 1854 Pakowhai Road.



Photograph Appendix B.6: Drum and jerry cans (potential low-volume fuel storage) near to the damaged farm shed at 1854 Pakowhai Road.



Photograph Appendix B.7: Farm waste pit at 76 Chesterhope Road.



Photograph Appendix B.8: Area surrounding the farm waste pit at 76 Chesterhope Road, showing stockpiled concrete and soil.



Photograph Appendix B.9: Fruit trees within the former gardens at 76 Chesterhope Road.



Photograph Appendix B.10: Concrete foundation of the former glasshouse at 76 Chesterhope Road.



Photograph Appendix B.11: 20L metal drum in sparsely vegetated area. Existing stopbank in the rear of image.



Photograph Appendix B.12: Rectangular concrete structure near sheds at 76 Chesterhope Road. Stockpiled topsoil adjacent to farm waste pit visible to the right of image.



Photograph Appendix B.13: Earthworks occurring to the rear of 2026 Pakowhai Road, adjacent to the Tūtaekuri Waimate Stream, viewed from across the stream at 76 Chesterhope Road.



Photograph Appendix B.14: Waste pit in paddock near sheep yards at end of Franklin Road, sample location SS15.



Photograph Appendix B.15: Agrichemical storage shed at woolshed at end of Franklin Road.



Photograph Appendix B.16: Agrichemical storage shed at 70 Franklin Road, inundated with silt during the cyclone and no longer in use.



Photograph Appendix B.17: Pylon within orchard at 70 Franklin Road. Sample location SS19.



Photograph Appendix B.18: Two small AST's at 70 Franklin Road.



Photograph Appendix B.19: Discarded tractor and waste materials at 56 Franklin Road.



Photograph Appendix B.20: Greenwaste pile at 56 Franklin Road, burnt log to left of time and circuit board at centre.



Photograph Appendix B.21: Stockpiles of topsoil in area of earthworks occurring on golf course property, adjacent to 1153 Links Road.



Photograph Appendix B.22: AST by maintenance sheds at golf club (offsite), looking south towards the site.

Appendix C Historical information review

C1 Historical aerial photographs

Historical aerial photographs from Napier City Council, Retrolens, Koordinates and Land Information New Zealand (LINZ) have been reviewed as stated in Table Appendix C.1. Relevant features of the site and surrounding land are summarised from each aerial photograph in Table Appendix C.2. Copies of the aerial photographs are included in Appendix G.

Table Appendix C.1 : Summary of aerial photograph review

Date, run number and source	Key site features	Surrounding land features
1936 Napier City Council	<ul style="list-style-type: none"> • This photograph only covers the northern portion of the site. • The northern-most portion of the site runs through a section of the golf course (adjacent to Links Road) containing fairway. • Vegetated stream channels are present within the northern portion of the site. • Two buildings are present within the northern site boundary, one near the northern-most portion of the site and the second to the south-west, on the opposite side of the stream. 	<ul style="list-style-type: none"> • The surrounding area is predominantly occupied by rural, rural residential and agricultural activities.
1949 Retrolens	<ul style="list-style-type: none"> • The site is largely occupied by agricultural land use and in pasture. Some paddock areas appear to be separated by planted hedgerows. • The Tūtaekurī Waimate Stream extends within and along the boundary of the entire site. A large portion of the streambank is planted with established vegetation. • A large homestead with a large garden, greenhouse, and multiple farm sheds, is present in the central portion of the site. • A stockyard area, or potential sheep dip, is visible adjacent to the site boundary at 1112 Links Road. • A large shed and a circular stock yard's structure are visible in the southern portion of the site. • An orchard and market gardens are present on the southern portion of the site, and immediately adjacent to the site. • Occasional rural residential dwellings are present within the site boundary. 	<ul style="list-style-type: none"> • Large glass houses are present on Chesterhope Road, adjacent to the eastern site boundary. • The Tūtaekurī River is present to the north of the site and the Ngaruroro River is present to the southern site boundary.
1950	<ul style="list-style-type: none"> • No significant changes to prior image. 	<ul style="list-style-type: none"> • No significant changes to prior image.

Date, run number and source	Key site features	Surrounding land features
Thomas Kay (Koordinates)		
1964 Retrolens	<ul style="list-style-type: none"> • Developments are occurring on the orchard property in the southern portion of the site. A second dwelling is now visible, and majority of the trees have been removed. • An orchard with rows of what appears to be large fruit trees, has been established in the area previously in pasture at the end of Hodgson Road. • A market garden has been developed on a property, off Hodgson Road, to the east of the area with new fruit trees. • A few depressions are visible on the southern portion of the site that may be former farm waste pits. • An additional shed is now present at the homestead property near the middle of the site. • A potential dwelling and shed are present at 1153 Links Road, which are just within the site boundary. 	<ul style="list-style-type: none"> • Further orchards have been established between the central portion of the site and Links Road. • Trees have been planted between fairways within the golf club. • Some rural residential development has occurred within the surrounding area, particularly to the north of the site. • The stockyard or sheep dip at 1112 Links Road, is no longer visible.
1972 Retrolens	<ul style="list-style-type: none"> • Further trees have been removed from the original orchard property, off Hodgson Road. • The orchard on the southern portion of the site, first showing in the prior image, has expanded to paddocks to the immediate north, west and south of the original extent. 	<ul style="list-style-type: none"> • Further properties adjacent to the site, along Pakowhai Road, have been converted into to orchards and market gardens.
1980 Retrolens	<ul style="list-style-type: none"> • The orchard on the southern portion of the site is now in pasture, with no trees remaining on the visible area of the property. Market gardening activities remain in two areas off Hodgson Road. • No significant changes to the remainder of the site observed. 	<ul style="list-style-type: none"> • Further orchards and vineyards have been established between the central portion of the site and Links Road, as well as along Chesterhope Road. • Additional residential development has occurred to the north of the site.
1988 Retrolens	<ul style="list-style-type: none"> • The former orchard property has been replanted with fruit trees and shelter belts. • The areas south and southwest of the orchard site has also now been planted with fruit trees. • The dwelling and shed on the golf club property is no longer present. 	<ul style="list-style-type: none"> • Further orchards and vineyards have been established in the area surrounding the site, particularly to the east.

Date, run number and source	Key site features	Surrounding land features
	<ul style="list-style-type: none"> Orchards and vineyards have been established on the north and northwest portions of the site, along the Tūtaekurī Waimate Stream. 	
1996 Retrolens	<ul style="list-style-type: none"> No significant changes observed across the site. 	<ul style="list-style-type: none"> The greenhouses seen on Chesterhope Road are no longer present.
2010 Land Information New Zealand	<ul style="list-style-type: none"> A woolshed, stock yards and a residential dwelling and shed have been constructed on the northern portion of the site, at the end of Franklin Road. The section of orchard on the southern portion of site, along the Tūtaekurī Waimate Stream, is no longer present and the soil in the area appears to have recently been turned over. Two additional areas across the site also appear to have been prepared for future planting. Orchard activities have extended to southernmost portion of the site, extending from the orchard properties on Hodgson Road. State Highway 2 has been realigned and now extends through the central portion of site. 	<ul style="list-style-type: none"> Further orchards and vineyards have been established in the area surrounding the site. State Highway 2 has been established through former orchards and vineyards, between the site and the Tūtaekurī River, before re-joining with Pakowhai Road at the Links Road intersection.
2023 Land Information New Zealand	<ul style="list-style-type: none"> This image shows the site soon after Cyclone Gabrielle. A large amount of silt, deposited by flooding, encompasses majority of the site and areas of ponding are visible in low lying areas. No significant changes to land use or structures on site have been observed in this image. 	<ul style="list-style-type: none"> As for the site, the surrounding area has been greatly affected by the Cyclone Gabrielle flooding, with deposited silt and ponded water visible. A large round-about has been constructed at the intersection of State Highway 2, Pakowhai Road and Links Road. Further second of the northern vineyard properties have been used for this development.

C2 Council contamination information

A review of the Hawkes Bay Regional Council's (HBRC) Listed Land Use Register (LLUR), available on the Hazard Portal¹⁸, was completed on 7 May 2024. The information provided by HBRC is included in Appendix G and states that there is one site included on the HBRC's LLUR within the site area.

A 'closed landfill site' is recorded within the site boundary on the LLUR, with the area categorised as 'Verified HAIL – Risk Not Quantified'. According to the information provided, the closed landfill is

¹⁸ Hawkes Bay Regional Council. Hazard Portal [Hawke's Bay Hazard Portal \(hrc.govt.nz\)](https://hrc.govt.nz), accessed 7 May 2024.

located on the rear portion of 2008 Pakowhai Road, adjacent to the banks of the Tūtaekurī Waimate Stream.

The landfill site, was reportedly a privately consented disposal site (approximately 6,500 m³) for demolition materials to extend market gardening activities. Fill materials observed during council site visits between 2005 and 2006 included 'household rubbish', garden pruning's and two derelict cars and truck chassis which were not permitted as part of the consent. The 2006-2007 council visit was at the expiry of the consent, the fill site was being covered with gravels and soil to bring to the level of the surrounding ground. There was to be no further demolition material brought to site.

The LLUR response included the following information for properties within 1 km of the site:

- An oil discharge incident is recorded, approximately 700 m north of the site, at Hatas Lane (now Waiohiki Road). The site is categorised as 'Verified HAIL – Risk Not Quantified'.
- A transport depot is recorded approximately 380 m east (i.e., down gradient) of the site, at 1987 Pakowhai Road. The site is categorised as 'Verified HAIL – Risk Not Quantified'.
- A service station is recorded approximately 50 m east (i.e., down gradient) of the site, at 1911 Pakowhai Road. The site is categorised as 'Verified HAIL – Risk Not Quantified'.

No further LLUR sites are recorded within the site, or in the immediately surrounding area.

C3 Previous Investigation

A Contaminated Land Site Investigation¹⁹ was undertaken in 2018 at the former Chesterhope Farm, as part of the proposed development of a new hospice facility (Cranford Hospice). The investigation comprised both a Preliminary Site Investigation (PSI) and Detailed Site Investigation (DSI). A Geotechnical Investigation²⁰ was also completed concurrently with the Contamination Investigation.

The PSI identified a number of HAIL activities having been undertaken on the site throughout its history as a farm from the 1880's. Activities identified on site included; a former sheep dip (within the wider property but 1 km from the proposed development area), spray use for pastoral weed control, waste disposal to land in unknown farm waste pits, and use of asbestos and lead-based paints in buildings.

Soil sampling, completed as part of the DSI portion of the investigation, was undertaken in surface and underlying soils surrounding the former farmhouse building (no longer present), within the former produce garden, and within the proposed earthworks area for general coverage. The results of the 19 collected samples found concentrations of lead and zinc below the residential human health criteria (NESCS SCS 25 % produce) in soil adjacent to the former farmhouse and other structures across the project site. Low level concentrations of PAH were detected below the human health criteria in an area of fill encountered near the farmhouse, within a geotechnical borehole (BH3). Asbestos was not detected in samples analysed from around the farmhouse.

C4 Interviews with onsite personnel and residents

An onsite resident, spoken to by the engineering geologist during the walkover of 24 July 2024, noted mentioned the presence of buried building rubble, including asbestos containing materials, at 1980 Pakowhai Road, adjacent to the bank of the Tūtaekurī Waimate Stream.

¹⁹ Tonkin & Taylor Ltd, 2018. Cranford Hospice Development – Chesterhope Road, Pakowhai, Contaminated Land Site Investigation. Prepared for Cranford Hospice Foundation T+T Ref: 1006665.4000.v1

²⁰ Tonkin & Taylor Ltd, 2018. Proposed Cranford Hospice redevelopment – Chesterhope Road – Geotechnical Report for Resource Consent. Prepared for Cranford Hospice Foundation T+T Ref: 1006665.1000.v1

A sheep burial site was identified to the south of the woolshed and stockyards, at the rear of 1854 Pakowhai Road.

An interview was conducted with the Turf Manager for the Napier Golf Club to identify the products they use on the golf course and associated potential for contamination. The Turf Manager has worked for the Napier for the past 25 years and the following summarises her knowledge for this period of time.

The Turf Manager provided a list of the agrichemicals currently used on the golf course which includes fungicides, herbicides, insecticides, additives, and fertilizers. Agrichemicals are stored within a chemical container which has been used for the past 10 years. Used chemical containers are triple rinsed with the excess sprayed on site, before being sent to Agrecovery for recycling. Grass clipping from the course remain on the property and are spread across the course.

Fuel for machinery is stored within a bulk above ground storage tank, the current fuel tank was put in place in April 2023, following the Cyclone Gabrielle flooding.

They noted that the fuel and agrichemical storage locations are outside the site extent and that during the floods of Cyclone Gabrielle, the fuel tank was inundated with silt, and that the agrichemical storage container was displaced by the floods.

C5 On site and nearby consents

Resource consents related to the site are summarised in Table Appendix C.2 below.

The consents identified in Table Appendix C.2: are largely related to water takes, with one active consent for 71 Franklin Road (adjacent to the woolshed) relating to the discharge of cleanfill associated with the flood clean-up works, these consents are considered unlikely to have resulted in soil contamination-at the Pakowhai Secondary Stopbank site. This is due to their nature, location, and/or likely extent of the contaminants.

Table Appendix C.2: Ground contamination-related resource consents

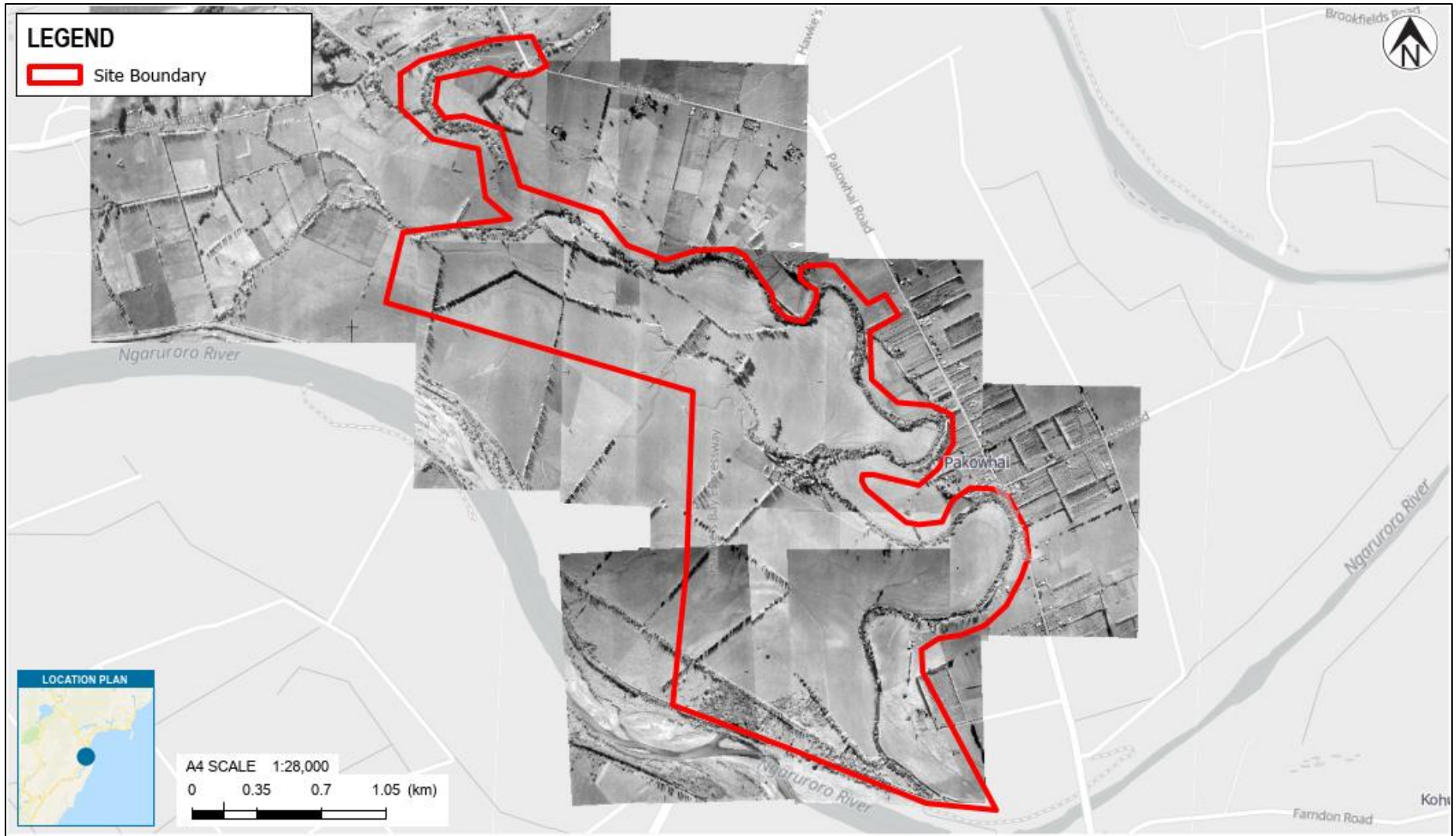
Location*	Consent ID	Type of consent	Activity description	Issuing Authority	Status/Expiry
Onsite (North to South)					
Part Waiohiki 1C1D Block	AUTH-115509-03	Water Permit	To take water from well no. 1335 (250 mm diameter) and well no. 1631 (200 mm diameter) to irrigate 30 hectares of golf greens, tees, and fairways.	Hawkes Bay Regional Council	Granted Expiry: 31 May 2026
1275 Korokipo Road	AUTH-115781-01	Water Permit	To take water from well no. 1667 (200 mm diameter) to irrigate 7 hectares of kiwifruit orchard.		Granted Expiry: 31 May 2026
Lot 2 DP 12012	AUTH-115682-01	Water Permit	To take water from the Tūtaekurī-Waimate Stream to irrigate 7.8 hectares of horticulture.		Granted Expiry: 31 May 2026
Lot 2 DP 12012 70 Franklin Road	AUTH-130438-01	Land Use Consent	To drill bore 17482 (150 mm diameter) for ground water monitoring purposes.		Granted No expiry details
	AUTH-119016-01	Water Permit	To take and use water from the Tūtaekurī-Waimate Stream to frost protect 2.5 hectares of stone fruit.		Granted Expiry: 31 May 2026
Pt Lot 1 DP 6071	AUTH-108944-01	Land Use Consent	To drill an 80 mm bore (No. 4105) to provide a supply of stock water.		Granted No expiry details
Pt Lot 1 DP 6071 71 Franklin Road	AUTH-108943-01	Land Use Consent	To drill an 80 mm bore (No. 4104) to provide a supply of stock water.		Granted No expiry details
	AUTH-108942-01	Land Use Consent	To drill an 80 mm bore (No. 4103) to provide a supply of stock water.		Granted No expiry details
	AUTH-130236-01	Discharge Permit	To discharge class 4 and 5 clean fill to land as provided by the Severe Weather Emergency Recovery (Waste Management) Order 2023.		Granted Expiry: 31 May 2028
	AUTH-115207-04	Water Permit	To take and use water from the Tūtaekurī-Waimate River to irrigate and frost protect 17.5 hectares of kiwifruit and pip fruit.		Granted Expiry: 31 May 2026

Lot 1 DP 21401, Lot 1 DP 16776, Lot 1 & 2 DP 21289, Lot 1 DP 23643, Pt Lot 2 DP & Pt Lot 1 DP 6071, Pt Lot 3 DP 2197 & Pt Lot 1 DP 2721	AUTH-120657-03	Water Permit	To take and use water from well no's 15288 (100 mm diameter), 16516 (150 mm diameter) and 1733 (250 mm diameter) and from the Waima and Tūtaekurī-Waimate Streams for irrigation and frost protection of 159 hectares of crops and viticulture, and for spray filling and wash-down purposes.		Granted Expiry: 31 May 2026
Lot 6 DP 437 PT Lot 1 DP 6071	AUTH-103964-01	Land Use Consent	To drill a bore (diameter unknown) No. 2606 for investigation purposes.		Granted No expiry details
Lot 1 DP 374026	AUTH-115674-01	Water Permit	To take water from the Tūtaekurī-Waimate Stream 3 hectares of horticulture.		Granted Expiry: 31 May 2026
Pt Lot 6 DP 437	AUTH-117454-01	Land Use Consent	To drill a 100 mm diameter bore (no.5872) for irrigation purposes.		Granted No expiry details
Lot 1 DP 374026	AUTH-115674-01	Water Permit	To take water from the Tūtaekurī-Waimate Stream 3 hectares of horticulture.		Granted Expiry: 31 May 2026
Lot 3 DP 10514	AUTH-115660-02	Water Permit	To take water from the Tūtaekurī-Waimate Stream to irrigate 2 hectares of pasture and/or market garden.		Granted Expiry: 31 May 2026
Pt Lot 2 Deeds 376	AUTH-115499-02	Water Permit	To take and use water from the Tūtaekurī-Waimate Stream to irrigate 13 hectares of process crops.		Granted Expiry: 31 May 2026
Adjacent to Lot 15 Deeds 632	AUTH-115215-01	Water Permit	To take water from the Tūtaekurī-Waimate Stream to irrigate 6 hectares of process crops.		Granted Expiry: 31 May 2026
Adjacent to Lot 40 Deeds 80	AUTH-115202-01	Water Permit	To take water from the Tūtaekurī-Waimate River to irrigate 5 hectares of process crops and orchard.		Granted Expiry: 31 May 2026
Sec 43 Balk XII Heretaunga SD	AUTH-115081-01	Water Permit	To take water from the Tūtaekurī-Waimate Stream to irrigate 7 hectares of orchard.		Granted Expiry: 31 May 2026
Riverbed adjacent to Lot 2 DP 20869	AUTH-108483-01	Land Use Consent	To construct a permanent bridge in the bed of the Tūtaekurī-Waimate Stream, on the Northern boundary of Chesterhope Station and a temporary bridge in the bed of the Tūtaekurī-Waimate Steam on the northern boundary of Chesterhope Station.		Granted Expiry: 31 October 2031

Pt Lot 6 DP 437	AUTH-117455-01	Land Use Consent	To drill a 100 mm diameter bore (no.5873) for irrigation purposes.		Granted No expiry details
Pt Lot 6 DP 437 Lot 2-4 Deposited Plan 543135	AUTH-117454-01	Land Use Consent	To drill a 100 mm diameter bore (no.5872) for irrigation purposes.		Granted No expiry details
	AUTH-117535-01	Water Permit	To take water from well no. 5872 (100 mm diameter) and well number 5873 (100 mm diameter) to irrigate 60 hectares of process crops and potatoes.		Granted Expiry: 31 May 2026
	AUTH-130027-02	Land Use Consent	To drill bore 17407 (100 mm diameter) for irrigation purposes.		Granted No expiry details
Pt Lot 1 DP 6071	AUTH-108941-01	Land Use Consent	To drill an 80 mm bore (No. 4102) to provide a supply of stock water.		Granted No expiry details
Lot 2 DP 10514	AUTH-121905-01	Land Use Consent	To drill bore no. 16424 (100 mm diameter) for irrigation.		Granted No expiry details
66 Hodgson Road	AUTH-115220-01	Water Permit	To take water from well no. 9019 (100 mm diameter) to irrigate 4 hectares of process crops.	Granted Expiry: 31 May 2026	

*Legal description used for properties without street addresses.

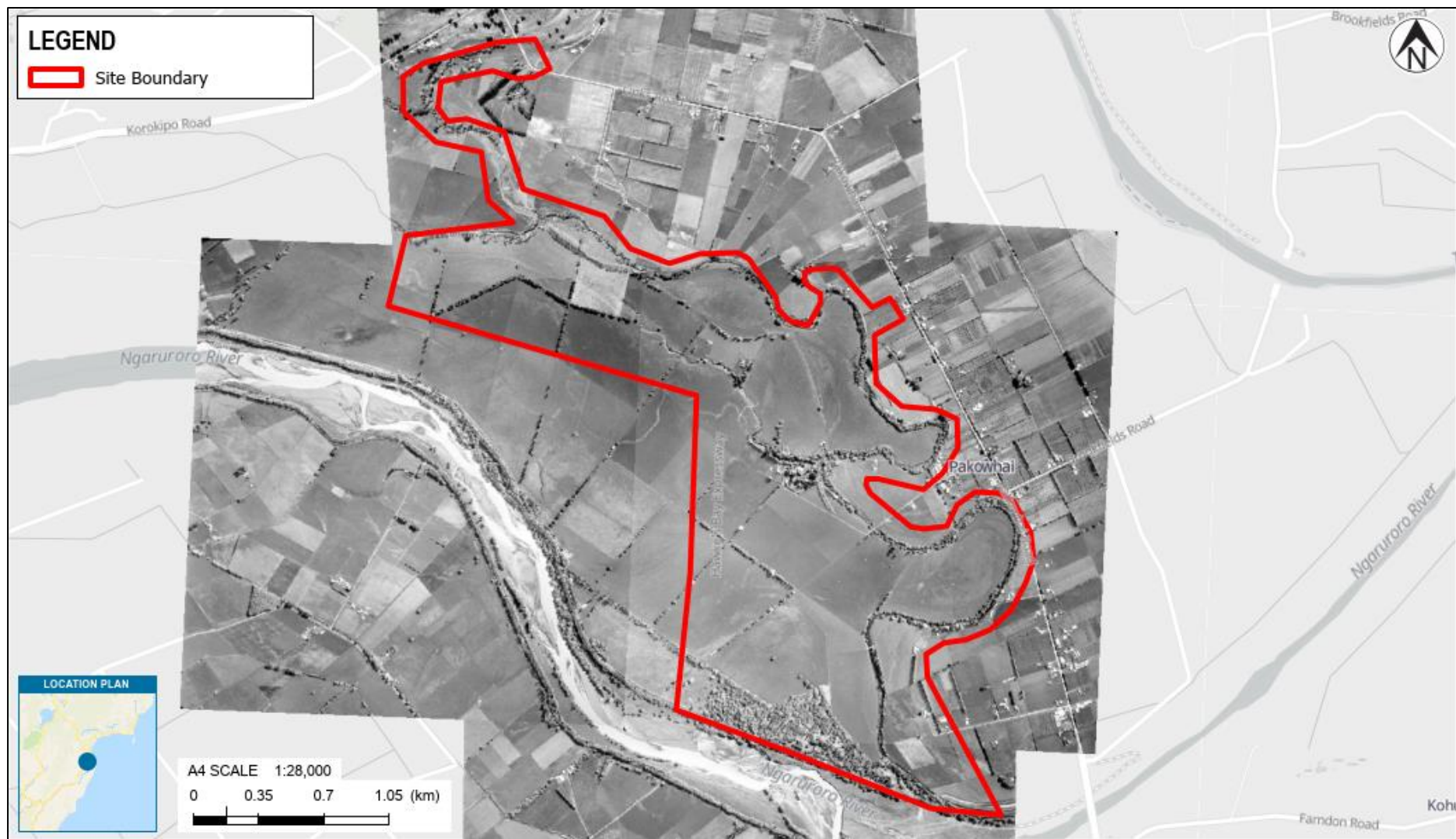
Appendix D Historic aerial photographs



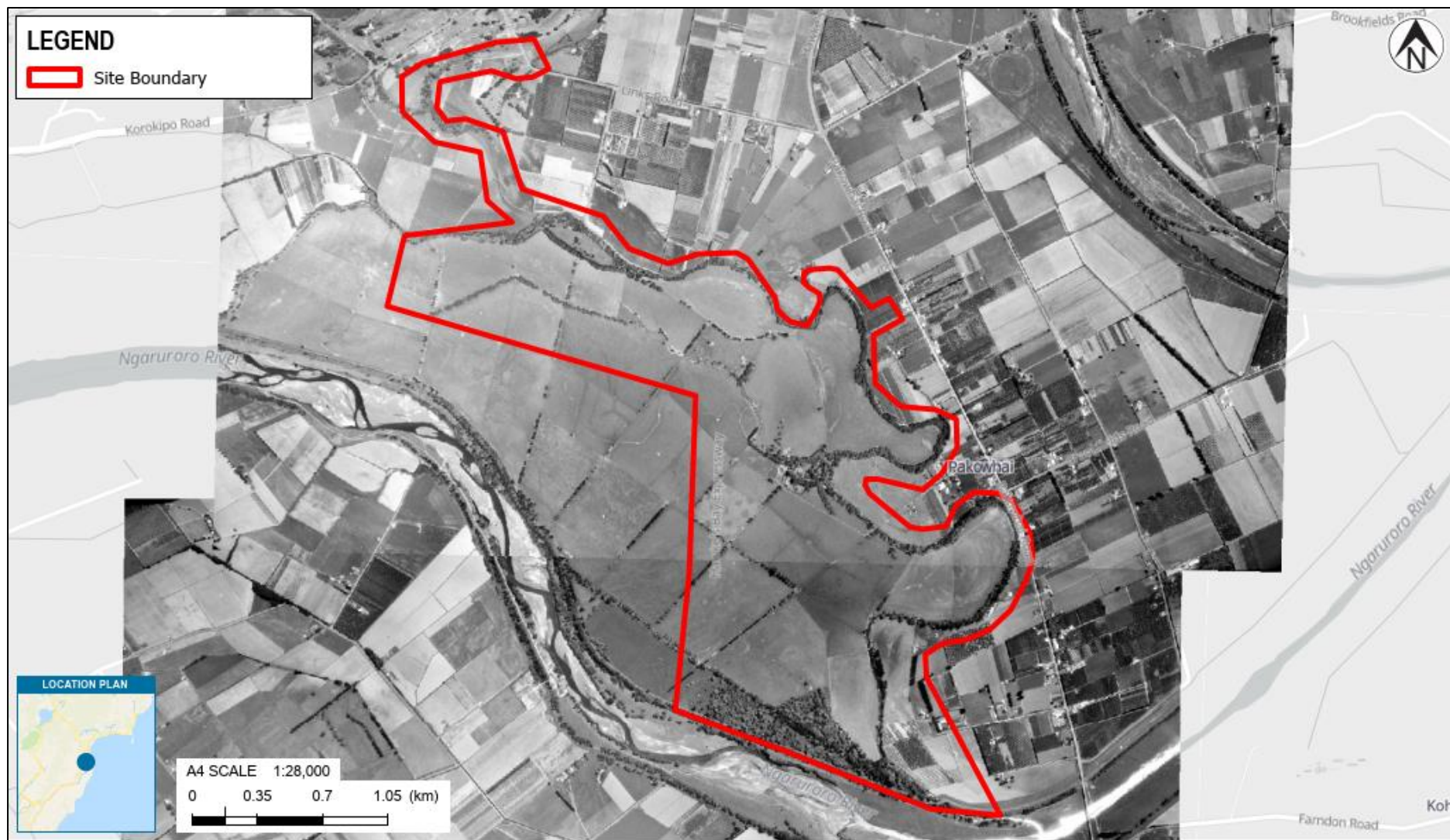
Photograph Appendix D.2:1949 Historic Aerial Image, sourced from Retrolens.



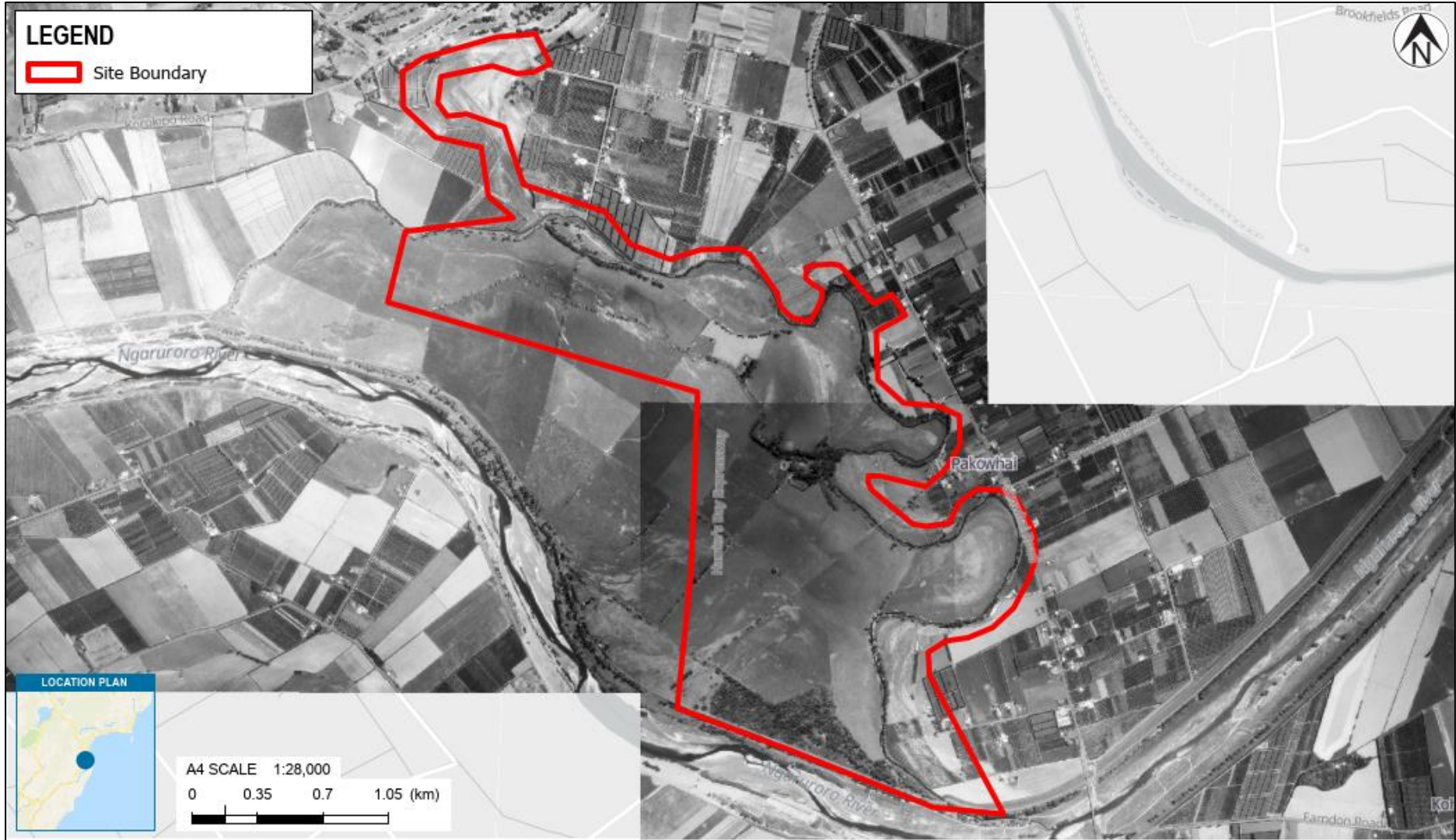
Photograph Appendix D.3:1950 Historic Aerial Image, sourced from Thomas Kay through Koordinates.



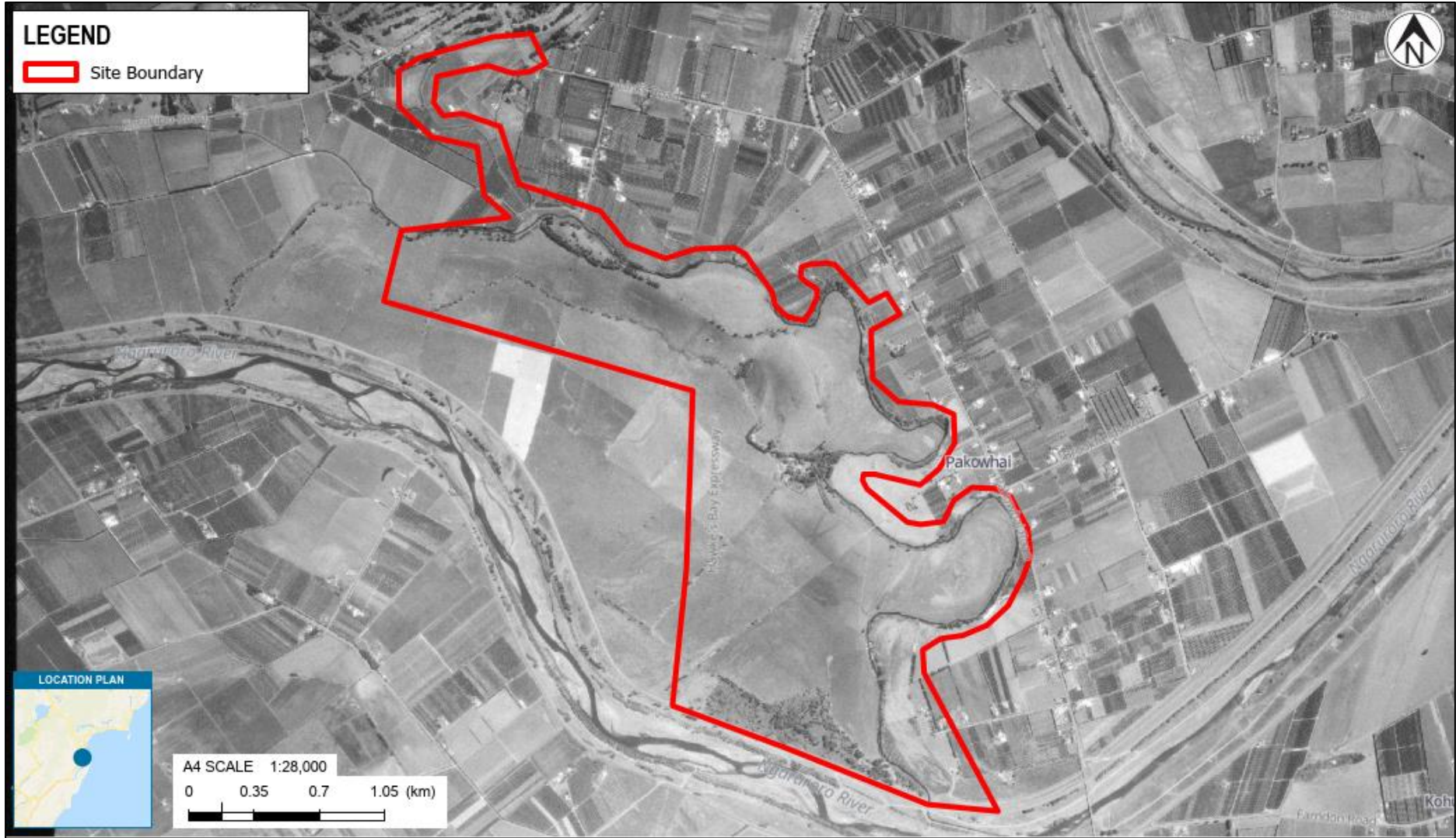
Photograph Appendix D.4:1964 Historic Aerial Image, sourced from Retrolens.



Photograph Appendix D.5:1972 Historic Aerial Image, sourced from Retrolens.



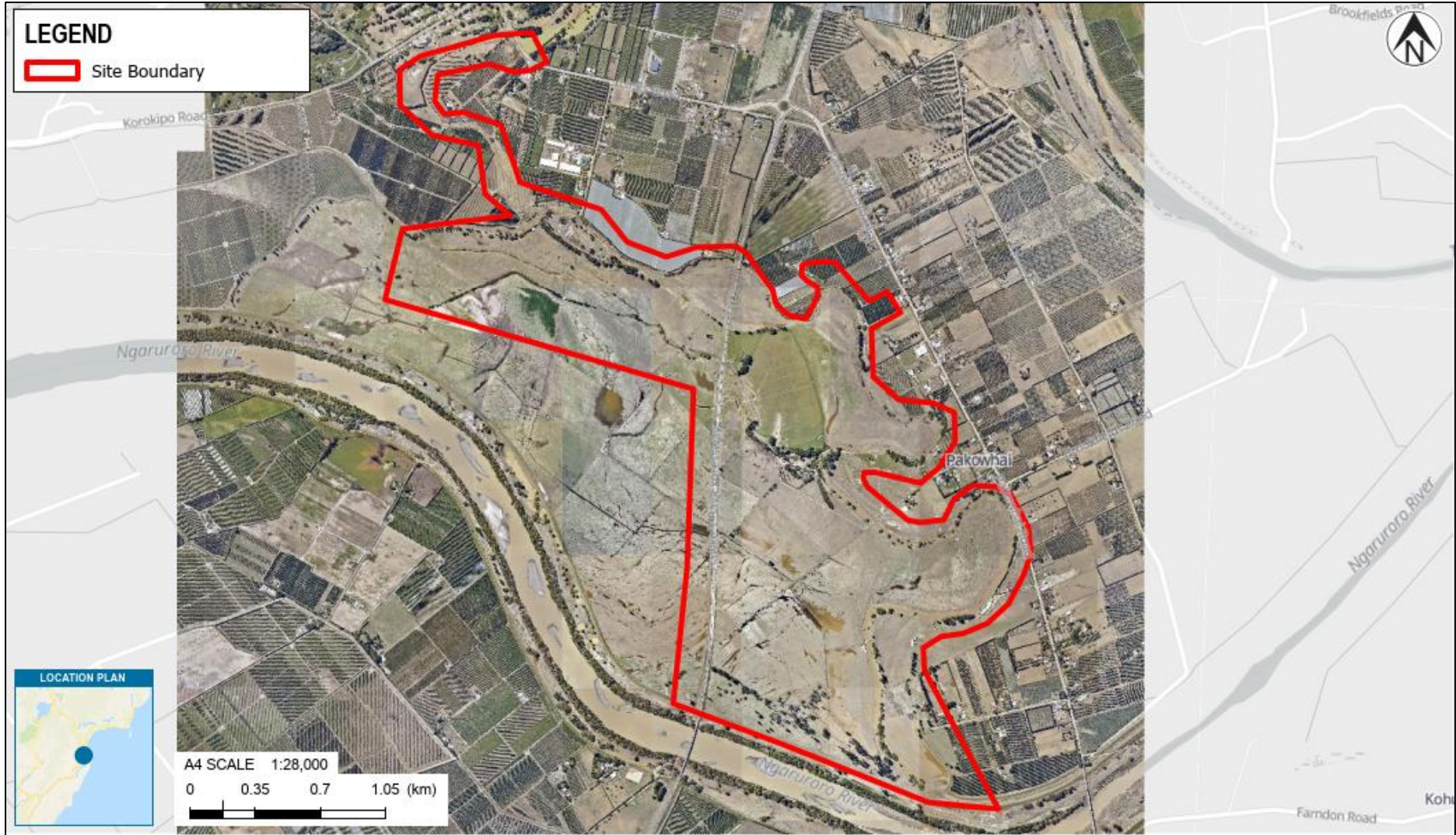
Photograph Appendix D.7:1988 Historic Aerial Image, sourced from Retrolens.



Photograph Appendix D.8:1996 Historic Aerial Image, sourced from Retrolens.



Photograph Appendix D.9:2010 Historic Aerial Image, sourced from Retrolens.



Photograph Appendix D.10:2023 Historic Aerial Image, sourced from Retrolens.

Appendix E Results summary table

Appendix F Laboratory transcripts



Certificate of Analysis

Tonkin and Taylor Ltd
 Level 3, 161 Victoria Street, Te Aro
 Wellington 6011

Attention: Miriam Lindsay
 Phone: 0275473311
 Email: mlindsay@tonkintaylor.co.nz

Sampling Site: Pakowhai

Lab Reference: 24-15349
 Submitted by: Miriam Lindsay
 Date Received: 11/05/2024
 Testing Initiated: 13/05/2024
 Date Completed: 20/05/2024
 Order Number: QT_24-14706
 Reference: 1017353.2403

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories (or at the subcontracted laboratories, when applicable). Samples were in acceptable condition unless otherwise noted on this report. Specific testing dates are available on request.

Heavy Metals in Soil

Client Sample ID			PA_SS_01	PA_SS_02	PA_SS_03	PA_SS_04	PA_SS_05
Date Sampled			9/05/2024	9/05/2024	9/05/2024	9/05/2024	9/05/2024
Analyte	Unit	Reporting Limit	24-15349-1	24-15349-2	24-15349-3	24-15349-4	24-15349-5
Arsenic	mg/kg dry wt	0.125	11	9.6	6.2	9.7	13.0
Beryllium	mg/kg dry wt	0.013	0.61	0.62	0.71	1.0	0.66
Boron	mg/kg dry wt	1.25	7.8	9.5	6.8	9.6	10
Cadmium	mg/kg dry wt	0.005	0.073	0.21	0.089	0.12	0.12
Chromium	mg/kg dry wt	0.125	18.1	15.2	19.8	28.5	15.4
Copper	mg/kg dry wt	0.075	9.50	25.9	9.87	13.8	14.2
Lead	mg/kg dry wt	0.25	16.0	42.0	13.8	19.7	34.5
Mercury	mg/kg dry wt	0.025	0.052	0.059	0.063	0.091	0.047
Nickel	mg/kg dry wt	0.05	13.9	11.2	14.7	21.3	11.8
Zinc	mg/kg dry wt	0.05	120	87.1	60.1	84.8	70.8

Heavy Metals in Soil

Client Sample ID			PA_SS_06	PA_SS_07	PA_SS_08	PA_SS_09	PA_SS_10
Date Sampled			10/05/2024	10/05/2024	10/05/2024	10/05/2024	10/05/2024
Analyte	Unit	Reporting Limit	24-15349-6	24-15349-7	24-15349-8	24-15349-9	24-15349-10
Arsenic	mg/kg dry wt	0.125	9.1	7.1	12	13.7	9.7
Beryllium	mg/kg dry wt	0.013	1.1	0.84	1.51	1.1	1.3
Boron	mg/kg dry wt	1.25	9.0	9.4	10	7.4	9.3
Cadmium	mg/kg dry wt	0.005	0.12	0.11	0.13	0.17	0.13
Chromium	mg/kg dry wt	0.125	26.2	19.8	30.2	23.4	25.2
Copper	mg/kg dry wt	0.075	24.8	16.0	22.6	18.6	17.8

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation with the exception of tests marked *, which are not accredited.
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Heavy Metals in Soil

Client Sample ID			PA_SS_06	PA_SS_07	PA_SS_08	PA_SS_09	PA_SS_10
Date Sampled			10/05/2024	10/05/2024	10/05/2024	10/05/2024	10/05/2024
Lead	mg/kg dry wt	0.25	22.1	16.9	29.0	22.2	26.1
Mercury	mg/kg dry wt	0.025	0.091	0.076	0.13	0.091	0.13
Nickel	mg/kg dry wt	0.05	20.7	16.0	24.6	16.8	20.6
Zinc	mg/kg dry wt	0.05	86.1	74.8	106	123	87.4

Heavy Metals in Soil

Client Sample ID			PA_SS_11
Date Sampled			10/05/2024
Analyte	Unit	Reporting Limit	24-15349-11
Arsenic	mg/kg dry wt	0.125	5.9
Beryllium	mg/kg dry wt	0.013	0.59
Boron	mg/kg dry wt	1.25	12
Cadmium	mg/kg dry wt	0.005	0.13
Chromium	mg/kg dry wt	0.125	15.6
Copper	mg/kg dry wt	0.075	10.2
Lead	mg/kg dry wt	0.25	797
Mercury	mg/kg dry wt	0.025	0.073
Nickel	mg/kg dry wt	0.05	11.3
Zinc	mg/kg dry wt	0.05	160

Organochlorine Pesticides - Soil

Client Sample ID			PA_SS_02	PA_SS_03
Date Sampled			9/05/2024	9/05/2024
Analyte	Unit	Reporting Limit	24-15349-2	24-15349-3
TCMX (Surrogate)	%	1	99	100
2,4'-DDD	mg/kg dry wt	0.005	<0.0050	<0.0050
2,4'-DDE	mg/kg dry wt	0.005	<0.0050	<0.0050
2,4'-DDT	mg/kg dry wt	0.005	<0.0050	<0.0050
4,4'-DDD	mg/kg dry wt	0.003	<0.0030	<0.0030
4,4'-DDE	mg/kg dry wt	0.005	<0.0050	<0.0050
4,4'-DDT	mg/kg dry wt	0.005	<0.0050	<0.0050
Total DDT	mg/kg dry wt	0.02	<0.0200	<0.0200
alpha-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050
Aldrin	mg/kg dry wt	0.005	<0.0050	<0.0050
beta-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050
cis-Chlordane	mg/kg dry wt	0.005	<0.0050	<0.0050
cis-Nonachlor	mg/kg dry wt	0.01	<0.010	<0.010
delta-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050
Dieldrin	mg/kg dry wt	0.05	<0.050	<0.050
Endosulfan I	mg/kg dry wt	0.005	<0.0050	<0.0050
Endosulfan II	mg/kg dry wt	0.01	<0.010	<0.010
Endosulfan sulfate	mg/kg dry wt	0.005	<0.0050	<0.0050
Endrin	mg/kg dry wt	0.05	<0.050	<0.050
Endrin aldehyde	mg/kg dry wt	0.01	<0.010	<0.010
Endrin ketone	mg/kg dry wt	0.005	<0.0050	<0.0050
gamma-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050
Heptachlor	mg/kg dry wt	0.005	<0.0050	<0.0050
Heptachlor epoxide	mg/kg dry wt	0.005	<0.0050	<0.0050
Hexachlorobenzene	mg/kg dry wt	0.005	<0.0050	<0.0050

Organochlorine Pesticides - Soil

Client Sample ID		PA_SS_02	PA_SS_03
Date Sampled		9/05/2024	9/05/2024
Methoxychlor	mg/kg dry wt	0.01	<0.010
trans-nonachlor	mg/kg dry wt	0.01	<0.010
trans-Chlordane	mg/kg dry wt	0.01	<0.010
Chlordane (sum)	mg/kg dry wt	0.02	<0.020

Total Petroleum Hydrocarbons - Soil

Client Sample ID		PA_SS_01	PA_SS_04
Date Sampled		9/05/2024	9/05/2024
Analyte	Unit	Reporting Limit	
C7-C9	mg/kg dry wt	10	<10
C10-C14	mg/kg dry wt	15	<15
C15-C36	mg/kg dry wt	25	103
C7-C36 (Total)	mg/kg dry wt	50	142

Moisture Content

Client Sample ID		PA_SS_01	PA_SS_04
Date Sampled		9/05/2024	9/05/2024
Analyte	Unit	Reporting Limit	
Moisture Content	%	1	15

Method Summary

- Elements in Soil** Samples dried and passed through a 2 mm sieve followed by acid digestion and analysis by ICP-MS. In accordance with in-house procedure based on US EPA method 200.8.
- OCP in Soil** Samples are extracted with hexane, pre-concentrated then analysed by GC-MSMS. (Chlordane (sum) is calculated from the main actives in technical Chlordane: Chlordane, Nonachlor and Heptachlor). (In accordance with in-house procedure).
- Total DDT** Sum of DDT, DDD and DDE (4,4' and 2,4 isomers)
- TPH in Soil** Solvent extraction, silica cleanup, followed by GC-FID analysis. (C7-C36). (In accordance with in-house procedure based on US EPA 8015).
- Moisture** Moisture content is determined gravimetrically by drying at 103 °C.



Sharelle Frank, B.Sc. (Tech)
Technologist




Astra Southerwood,
Sample Preparation Team Leader

Prianshu Chawla, B.Tech
Technologist



Divya Goundar DipSciTech
Technician



Justen Berntsen
Sample Prep. Technician



Certificate of Analysis

Tonkin and Taylor Ltd
 161 Victoria Street, Te Aro
 Wellington 6011

Attention: Kasey Pitt
 Phone: 0275101001
 Email: kpitt@tonkintaylor.co.nz

Lab Reference: 24-16529
 Submitted by:
 Date Received: 22/05/2024
 Testing Initiated: 22/05/2024
 Date Completed: 28/05/2024
 Order Number: 1017353.2403
 Reference: QT-24-14706

Sampling Site:

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories (or at the subcontracted laboratories, when applicable). Samples were in acceptable condition unless otherwise noted on this report. Specific testing dates are available on request.

Heavy Metals in Soil

Client Sample ID			PA_SS_12 0.0	PA_SS_13 0.0	PA_SS_14 0.0	PA_SS_15 0.0	PA_SS_16 0.0
Date Sampled			21/05/2024	21/05/2024	21/05/2024	21/05/2024	21/05/2024
Analyte	Unit	Reporting Limit	24-16529-1	24-16529-2	24-16529-3	24-16529-4	24-16529-5
Arsenic	mg/kg dry wt	0.125	4.1	4.2	3.6	5.0	3.9
Beryllium	mg/kg dry wt	0.013	0.56	0.57	0.51	0.50	0.55
Boron	mg/kg dry wt	1.25	6.2	6.5	12	6.5	5.6
Cadmium	mg/kg dry wt	0.005	0.053	0.085	0.094	0.11	0.073
Chromium	mg/kg dry wt	0.125	16.5	15.8	13.3	15.1	15.4
Copper	mg/kg dry wt	0.075	6.3	6.8	10.5	8.27	6.2
Lead	mg/kg dry wt	0.25	8.68	9.34	13.0	8.67	8.65
Mercury	mg/kg dry wt	0.025	0.054	0.045	0.066	0.051	0.049
Nickel	mg/kg dry wt	0.05	11.5	11.0	9.73	10.1	10.8
Zinc	mg/kg dry wt	0.05	45.9	51.7	61.9	74.6	45.5

Heavy Metals in Soil

Client Sample ID			PA_SS_17 0.0	PA_SS_18 0.0	PA_SS_19 0.0	PA_SS_20 0.0	PA_SS_21 0.0
Date Sampled			21/05/2024	21/05/2024	21/05/2024	21/05/2024	21/05/2024
Analyte	Unit	Reporting Limit	24-16529-6	24-16529-7	24-16529-8	24-16529-9	24-16529-10
Arsenic	mg/kg dry wt	0.125	5.5	5.0	5.4	5.6	5.0
Beryllium	mg/kg dry wt	0.013	0.63	0.61	0.64	0.65	0.61
Boron	mg/kg dry wt	1.25	7.0	7.4	7.6	8.8	6.4
Cadmium	mg/kg dry wt	0.005	0.079	0.11	0.093	0.091	0.073
Chromium	mg/kg dry wt	0.125	17.4	17.3	17.1	18.5	18.7
Copper	mg/kg dry wt	0.075	8.75	23.7	18.1	13.3	7.2

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation with the exception of tests marked *, which are not accredited.
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Heavy Metals in Soil

Client Sample ID			PA_SS_17 0.0	PA_SS_18 0.0	PA_SS_19 0.0	PA_SS_20 0.0	PA_SS_21 0.0
Date Sampled			21/05/2024	21/05/2024	21/05/2024	21/05/2024	21/05/2024
Lead	mg/kg dry wt	0.25	10.7	10.8	13.9	11.2	10.2
Mercury	mg/kg dry wt	0.025	0.064	0.056	0.061	0.071	0.058
Nickel	mg/kg dry wt	0.05	12.0	11.6	11.7	12.8	12.6
Zinc	mg/kg dry wt	0.05	54.6	55.4	127	59.3	50.5

Polycyclic Aromatic Hydrocarbons - Soil

Client Sample ID			PA_SS_13 0.0	PA_SS_15 0.0
Date Sampled			21/05/2024	21/05/2024
Analyte	Unit	Reporting Limit	24-16529-2	24-16529-4
1-Methylnaphthalene	mg/kg dry wt	0.01	<0.010	<0.010
2-Methylnaphthalene	mg/kg dry wt	0.01	<0.010	<0.010
Acenaphthene	mg/kg dry wt	0.01	<0.010	<0.010
Acenaphthylene	mg/kg dry wt	0.01	<0.010	<0.010
Anthracene	mg/kg dry wt	0.01	<0.010	<0.010
Benz[a]anthracene	mg/kg dry wt	0.02	<0.020	<0.020
Benzo[a]pyrene	mg/kg dry wt	0.01	<0.010	<0.010
Benzo[b]&[j]fluoranthene	mg/kg dry wt	0.02	<0.020	<0.020
Benzo[g,h,i]perylene	mg/kg dry wt	0.02	<0.020	<0.020
Benzo[k]fluoranthene	mg/kg dry wt	0.01	<0.010	<0.010
Chrysene	mg/kg dry wt	0.01	<0.010	<0.010
Dibenz(a,h)anthracene	mg/kg dry wt	0.01	<0.010	<0.010
Fluoranthene	mg/kg dry wt	0.02	<0.020	<0.020
Fluorene	mg/kg dry wt	0.01	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	mg/kg dry wt	0.01	<0.010	<0.010
Naphthalene	mg/kg dry wt	0.01	<0.010	<0.010
Phenanthrene	mg/kg dry wt	0.01	<0.010	<0.010
Pyrene	mg/kg dry wt	0.02	<0.020	<0.020
Benzo[a]pyrene TEQ (LOR)	mg/kg dry wt	0.03	0.030	0.030
Benzo[a]pyrene TEQ (Zero)	mg/kg dry wt	0.01	<0.010	<0.010
Anthracene-d10 (Surrogate)	%	1	100	100

Organochlorine Pesticides - Soil

Client Sample ID			PA_SS_18 0.0	PA_SS_20 0.0	PA_SS_21 0.0
Date Sampled			21/05/2024	21/05/2024	21/05/2024
Analyte	Unit	Reporting Limit	24-16529-7	24-16529-9	24-16529-10
TCMX (Surrogate)	%	1	110	100	110
2,4'-DDD	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
2,4'-DDE	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
2,4'-DDT	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
4,4'-DDD	mg/kg dry wt	0.003	<0.0030	<0.0030	<0.0030
4,4'-DDE	mg/kg dry wt	0.005	0.012	<0.0050	<0.0050
4,4'-DDT	mg/kg dry wt	0.005	0.016	<0.0050	<0.0050
Total DDT	mg/kg dry wt	0.02	0.0300	<0.0200	<0.0200
alpha-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Aldrin	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
beta-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
cis-Chlordane	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050

Organochlorine Pesticides - Soil

Client Sample ID			PA_SS_18 0.0	PA_SS_20 0.0	PA_SS_21 0.0
Date Sampled			21/05/2024	21/05/2024	21/05/2024
cis-Nonachlor	mg/kg dry wt	0.01	<0.010	<0.010	<0.010
delta-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Dieldrin	mg/kg dry wt	0.05	<0.050	<0.050	<0.050
Endosulfan I	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Endosulfan II	mg/kg dry wt	0.01	<0.010	<0.010	<0.010
Endosulfan sulfate	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Endrin	mg/kg dry wt	0.05	<0.050	<0.050	<0.050
Endrin aldehyde	mg/kg dry wt	0.01	<0.010	<0.010	<0.010
Endrin ketone	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
gamma-BHC	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Heptachlor	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Heptachlor epoxide	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Hexachlorobenzene	mg/kg dry wt	0.005	<0.0050	<0.0050	<0.0050
Methoxychlor	mg/kg dry wt	0.01	<0.010	<0.010	<0.010
trans-nonachlor	mg/kg dry wt	0.01	<0.010	<0.010	<0.010
trans-Chlordane	mg/kg dry wt	0.01	<0.010	<0.010	<0.010
Chlordane (sum)	mg/kg dry wt	0.02	<0.020	<0.020	<0.020

Moisture Content

Client Sample ID			PA_SS_13 0.0	PA_SS_15 0.0
Date Sampled			21/05/2024	21/05/2024
Analyte	Unit	Reporting Limit	24-16529-2	24-16529-4
Moisture Content	%	1	30	24

Method Summary

Elements in Soil

Samples dried and passed through a 2 mm sieve followed by acid digestion and analysis by ICP-MS. In accordance with in-house procedure based on US EPA method 200.8.

PAH in Soil

Solvent extraction, silica cleanup, followed by GC-MS analysis.

Benzo[a]pyrene TEQ (LOR): The most conservative TEQ estimate, where a result is reported as less than the limit of reporting (LOR) the LOR value is used to calculate the TEQ for that PAH.

Benzo[a]pyrene TEQ (Zero): The least conservative TEQ estimate, PAHs reported as less than the limit of reporting (LOR) are not included in the TEQ calculation.

Benzo[a]pyrene toxic equivalence (TEQ) is calculated according to '*Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health*'. Ministry for the Environment. 2011. (In accordance with in-house procedure).

OCP in Soil

Samples are extracted with hexane, pre-concentrated then analysed by GC-MSMS.

(Chlordane (sum) is calculated from the main actives in technical Chlordane: Chlordane, Nonachlor and Heptachlor). (In accordance with in-house procedure).

Total DDT

Sum of DDT, DDD and DDE (4,4' and 2,4 isomers)

Moisture

Moisture content is determined gravimetrically by drying at 103 °C.



Sharelle Frank, B.Sc. (Tech)
Technologist



Prianshu Chawla, B.Tech
Technologist




Divya Goundar DipSciTech
Technician

Astra Southerwood,
Sample Preparation Team Leader



Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 161 Victoria Street, Te Aro
Wellington 6011
Attention: Miriam Lindsay
Phone: 0275473311
Email: milindsay@tonkintaylor.co.nz

Lab Reference: 24-15713
Submitted by: Miriam Lindsay
Date Received: 13/05/2024
Testing Initiated: 15/05/2024
Date Completed: 5/07/2024
Order Number: 1017353.2403
Reference: QT - 24- 14782

Sampling Site: Pakowhai
Description of Work: Bulk/ SQ - QT - 24- 14782

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories (or at the subcontracted laboratories, when applicable). Samples were in acceptable condition unless otherwise noted on this report. Specific testing dates are available on request.

AMENDED REPORT. This report replaces in full a previous version [R00] sent on 4/07/2024. Amended PO number as per clients request.

Asbestos in Soil (Semi-Quantitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
24-15713-9	PA_SS01		Soil	9/05/2024	16/05/2024

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled

Analysis Results (Summary)

Laboratory ID	Client Sample ID	Asbestos	Sample Weight as Received	Moisture Content	Trace Asbestos (Presence / Absence)	Asbestos (Presence / Absence)
		Units	g	%		
24-15713-9	PA_SS01	Chrysotile (White Asbestos) Organic Fibres	663.4	10.9	Absent	Present

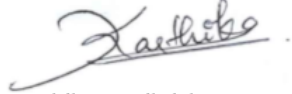
Information in the above table supplied by the client: Client Sample ID

Analysis Results (Size Fraction Breakdown)

Laboratory ID	Client Sample ID	Fraction Size	Fraction Weight*	AF/FA Weight*	ACM Weight*	ACM Content*	Asbestos Matrix	Asbestos Weight*	W/W% Asbestos*
		<i>Units Reporting Limit</i>	g 0	g 0	g 0	%		g 0	
24-15713-9	PA_SS01	>10mm	1.63	0.0000	0.0000	0	No Asbestos Detected	0.0000	<0.001 (ACM)
		2-10mm	30.68	0.0000	-	-	No Asbestos Detected	0.0000	
		<2mm	558.98	0.0096	-	-	Free Fibres	0.0540	0.009 (AF/FA)

Information in the above table supplied by the client: Client Sample ID

Asbestos in Soil (Semi-Quantitative) Approver:



Karthika Unnikrishnan, M.Sc.
Technician

Method Summary

Asbestos Fibres in Soil (Semi-Quantitative)

Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with AS4964-2004 Method for the qualitative identification of asbestos in soil samples.

Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques.

Note 2: Trace asbestos is indicative that freely liberated respirable fibres are present and dust control measures should be implemented or increased on site. This is not the sole indicator for the friable nature of the asbestos present.

Note 3: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised.

Note 4: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.



Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 161 Victoria Street, Te Aro
Wellington 6011
Attention: Miriam Lindsay
Phone: 02 7547 3311
Email: milindsay@tonkintaylor.co.nz

Lab Reference: 24-15702
Submitted by: Miriam Lindsay
Date Received: 13/05/2024
Testing Initiated: 15/05/2024
Date Completed: 16/05/2024
Order Number: 1017353.2403
Reference: QT_24 - 14706

Sampling Site: Pakowhai
Description of Work: Bulk / SQ - QT_24 - 14706

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories (or at the subcontracted laboratories, when applicable). Samples were in acceptable condition unless otherwise noted on this report. Specific testing dates are available on request.

Asbestos in Soil (Semi-Quantitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
24-15702-3	PA_SS_11		Soil	8/05/2024	16/05/2024

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled

Analysis Results (Summary)

Laboratory ID	Client Sample ID	Asbestos	Sample Weight as Received	Moisture Content	Trace Asbestos (Presence / Absence)	Asbestos (Presence / Absence)
		<i>Units</i>	g	%		
24-15702-3	PA_SS_11	Asbestos NOT Detected. Organic Fibres	599.0	12.2	Absent	Absent

Information in the above table supplied by the client: Client Sample ID

Analysis Results (Size Fraction Breakdown)

Laboratory ID	Client Sample ID	Fraction Size	Fraction Weight*	AF/FA Weight*	ACM Weight*	ACM Content*	Asbestos Matrix	Asbestos Weight*	W/W% Asbestos*
		<i>Units Reporting Limit</i>	g 0	g 0	g 0	%		g 0	
24-15702-3	PA_SS_11	>10mm	2.04	0.0000	0.0000	0	No Asbestos Detected	0.0000	<0.001 (ACM)
		2-10mm	35.97	0.0000	-	-	No Asbestos Detected	0.0000	
		<2mm	487.82	0.0000	-	-	No Asbestos Detected	0.0000	<0.001 (AF/FA)

Information in the above table supplied by the client: Client Sample ID

Asbestos in Soil (Semi-Quantitative) Approver:



Millie Campbell
Lab Technician

Method Summary

Asbestos Fibres in Soil (Semi-Quantitative)

Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with AS4964-2004 Method for the qualitative identification of asbestos in soil samples.

Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques.

Note 2: Trace asbestos is indicative that freely liberated respirable fibres are present and dust control measures should be implemented or increased on site. This is not the sole indicator for the friable nature of the asbestos present.

Note 3: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised.

Note 4: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.



Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 161 Victoria Street, Te Aro
Wellington 6011
Attention: Kasey Pitt
Phone:
Email: kpitt@tonkintaylor.co.nz

Lab Reference: 24-16577
Submitted by: Miriam Lindsay
Date Received: 23/05/2024
Testing Initiated: 27/05/2024
Date Completed: 27/05/2024
Order Number: QT-24-14706
Reference: 1017353.2403

Sampling Site: Pakowhai
Description of Work: SQ - 1017353.2403

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories (or at the subcontracted laboratories, when applicable). Samples were in acceptable condition unless otherwise noted on this report. Specific testing dates are available on request.

Asbestos in Soil (Semi-Quantitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
24-16577-1	SS14	Next to concrete	Soil	21/05/2024	27/05/2024
24-16577-2	SS15	Dumpsite	Soil	21/05/2024	27/05/2024

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled

Analysis Results (Summary)

Laboratory ID	Client Sample ID	Asbestos	Sample Weight as Received	Moisture Content	Trace Asbestos (Presence / Absence)	Asbestos (Presence / Absence)
		<i>Units</i>	<i>g</i>	<i>%</i>		
24-16577-1	SS14	Asbestos NOT Detected. Organic Fibres	771.3	25.2	Absent	Absent
24-16577-2	SS15	Asbestos NOT Detected. Organic Fibres	667.0	27.2	Absent	Absent

Information in the above table supplied by the client: Client Sample ID

Analysis Results (Size Fraction Breakdown)

Laboratory ID	Client Sample ID	Fraction Size	Fraction Weight*	AF/FA Weight*	ACM Weight*	ACM Content*	Asbestos Matrix	Asbestos Weight*	W/W% Asbestos*
		<i>Units Reporting Limit</i>	g 0	g 0	g 0	%		g 0	
24-16577-1	SS14	>10mm	85.58	0.0000	0.0000	0	No Asbestos Detected	0.0000	<0.001 (ACM)
		2-10mm	74.22	0.0000	-	-	No Asbestos Detected	0.0000	<0.001 (AF/FA)
		<2mm	417.20	0.0000	-	-	No Asbestos Detected	0.0000	
24-16577-2	SS15	>10mm	29.31	0.0000	0.0000	0	No Asbestos Detected	0.0000	<0.001 (ACM)
		2-10mm	66.30	0.0000	-	-	No Asbestos Detected	0.0000	<0.001 (AF/FA)
		<2mm	390.24	0.0000	-	-	No Asbestos Detected	0.0000	

Information in the above table supplied by the client: Client Sample ID

Asbestos in Soil (Semi-Quantitative) Approver:



Karthika Unnikrishnan, M.Sc.
Technician

Method Summary

Asbestos Fibres in Soil (Semi-Quantitative) Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with AS4964-2004 Method for the qualitative identification of asbestos in soil samples.

Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques.

Note 2: Trace asbestos is indicative that freely liberated respirable fibres are present and dust control measures should be implemented or increased on site. This is not the sole indicator for the friable nature of the asbestos present.

Note 3: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised.

Note 4: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.



Certificate of Analysis

Tonkin and Taylor Ltd
Level 3, 161 Victoria Street, Te Aro
Wellington 6011
Attention: Miriam Lindsay
Phone: 02 7547 3311
Email: milindsay@tonkintaylor.co.nz

Lab Reference: 24-15702
Submitted by: Miriam Lindsay
Date Received: 13/05/2024
Testing Initiated: 15/05/2024
Date Completed: 15/05/2024
Order Number: 1017353.2403
Reference: QT - 24 - 1470

Sampling Site: Pakowhai
Description of Work: Bulk / SQ - QT - 24 - 14706

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories (or at the subcontracted laboratories, when applicable).
Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Asbestos Fibres in Bulk (Qualitative)

Sample Details

Laboratory ID	Client Sample ID	Sample Location	Sample Description	Date Sampled	Date Analysed
24-15702-1	PA_Bulk 01		Bulk Materials (100 x 80 x 4 mm)	8/05/2024	15/05/2024
24-15702-2	PA_Bulk 02		Bulk Materials (110 x 50 x 4 mm)	8/05/2024	15/05/2024

Information in the above table supplied by the client: Client Sample ID, Sample Location, Date Sampled.

Analysis Results

Laboratory ID	Client Sample ID	Sample Layers	Fibre Types	Asbestos (Present / Absent)
24-15702-1	PA_Bulk 01	L1 - Fibrous Cement Sheet L2 - Surface Debris	Asbestos NOT Detected. Organic Fibres	Absent
24-15702-2	PA_Bulk 02	L1 - Fibrous Cement Sheet L2 - Surface Debris	Chrysotile (White Asbestos) Organic Fibres	Present

Information in the above table supplied by the client: Client Sample ID.

Asbestos Fibres in Bulk (Qualitative) Approver:

Millie Campbell
Lab Technician

Method Summary

Asbestos Fibres in Bulk Materials (Qualitative)

Sample analysis was performed using polarised light microscopy with dispersion staining in accordance with the guidelines of AS4964-2004 Method for the qualitative identification of asbestos in bulk samples.

Note 1: The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques.

Note 2: If mineral fibres of unknown type are detected, by PLM and dispersion staining, these may or may not be asbestos fibres. To confirm the identity of this fibre, another independent analytical technique such as XRD analysis is advised.

Note 3: The laboratory does not take responsibility for the sampling procedure or accuracy of sample location description.

Appendix G Council information

17 June 2024

Kasey Pitt
Tonkin + Taylor
161 Victoria Street
Te Aro
Wellington 6011

Dear Kasey,

PROPERTY ENQUIRY: SELECTED LAND USE REGISTER (SLUR) STATEMENT

Thank you for submitting your property enquiry in relation to our Selected Land Use Register which holds information about sites that have been used or are currently used for activities which have the potential to have caused contamination.

The Selected Land Use Register statement provided below indicates the location of the land parcel(s) you enquired about. This provides information relating any listed sites within a radius of this land as specified in the statement.

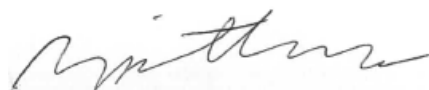
Please note that if a property is not currently entered on the Register, it does not mean that an activity with the potential to cause contamination has never occurred or is not currently occurring there. The Register is not complete and new sites are regularly being added as we receive information and conduct our own investigations into current and historic land uses.

The Selected Land Use Register only contains information held by Hawkes Bay Regional Council in relation to contaminated or potentially contaminated land; other information relevant to potential contamination may be held in other files (for example consent and enforcement files).

If your enquiry relates to a farm property, please note that many current and past activities undertaken on farms may not be listed on the Register. Activities such as the storage, formulation and disposal of pesticides, offal pits, foot rot troughs, animal dips and underground or above ground fuel tanks have the potential to cause contamination.

Please contact the Hawkes Bay Regional Council hazardous substances team if you wish to discuss the contents of the Register Statement, or if you require additional information.

Yours sincerely



Neville Pettersson
Environmental Compliance Officer
Policy & Regulation Group
Phone: 06 835 9200
Email: neville.pettersson@hbrc.govt.nz



Hawkes Bay Regional Council Selected Land Use Register Statement

Date requested: 14/6/2024
Date generated: 17/6/2024

PARCEL ENQUIRY REFERENCE:

Property Address(s):	2008 Pakowhai Road
Legal Description(s):	Lots 1 2 DDP 437 BLK XII HERETAUNGA SD
Parcel ID(s):	4,183,508
Valuation Number(s):	0960033500



-  Area of enquiry
-  Listed Sites

The above map outlines the specific parcel(s) or area(s) where contaminated land information has been requested

SITES WITHIN AREA OF ENQUIRY:

Summary of sites:

Site ID	Site Name	Location	HAIL activity(s)	Category	Sub-Category
SLS-11242	2008 Pakowhai Road Closed Landfill, Hastings	2008 Pakowhai Road	G3. Landfill sites	Verified HAIL	Risk not quantified

Please note that the above table represents a summary of sites and HAIL within the area of enquiry stated above only.

Information held about the sites on the Selected Land Use Register

Site ID:	SLS-11242
Site address:	2008 Pakowhai Road Closed Landfill, Hastings
Legal Description(s):	LotS 1 2 DDP 437 BLK XII HERETAUNGA SD
Site category:	Verified HAIL
Site sub category:	Risk not quantified
Context:	Agricultural

HAIL Details:	HAIL description	Period from	Period to
G3.	Landfill sites.	<1945	1950-1962

Site Notes:

Private landfill for depositing of demolition related waste between 2001 - 2006. See attached consent.

Site Investigation(s):

Please find attached to this email the full historic file, which includes all compliance monitoring, consents, correspondence and information we have for this site.

Resource Consent(s):

AUTH-108514-01

Authorisation Name

DISCHARGE LAND 2008 Pakowhai Road, Pakowhai

Authorisation Description

to deposit demolition material, concrete & rubble onto the ground for land filling

Commencement Date: 25/07/1996

Application Activity: DISCHARGE LAND Young S and P Partnership

Expiry Date: 31/05/2001 (not exercised in this period)

AUTH-111699-01

Authorisation Name

DISCHARGE LAND 2008 Pakowhai Road, Hastings

Authorisation Description

to deposit demolition material onto the ground

Commencement Date: 01/06/2001

Application Activity: DISCHARGE LAND N J's Contracting

Expiry Date: 31/05/2006

Photograph(s):

Photographs are included in the historic file (attached to this email).

Other Relevant Information

There is no relevant information in relation to contaminated land for this location.

SITES SURROUNDING AREA OF ENQUIRY: (Not applicable to this particular enquiry)

There are no listed sites within the surrounding area of enquiry.

Disclaimer:

This service is provided by the Hawke's Bay Regional Council as a public service. Information is derived from Hawke's Bay Regional Council's Listed Land Use Register. The Register has been established by the Council for the purpose of performing its functions under the Resource Management Act 1991.

The information is made available in good faith but the council does not warrant the accuracy or completeness of the information. Users of this Register who rely on the information provided without obtaining independent verification, do so at their own risk. Hawke's Bay Regional Council accepts no liability for any inaccuracy in or omission from the information. Any party relying on the information does so at their own risk.

The given land use category reflects the Council's understanding at the time of the date indicated for the property's assessment, which is based only on the information obtained by it and held on record at the time. The site condition or information available may have changed since the date of the Council's assessment of the property. Any person acting on the information should verify the site's condition at the time. The Council accepts no responsibility for changes to the site condition since the site was listed on the Register.

Properties listed on the Register include properties where potentially contaminating activities are suspected to have occurred (Unverified HAIL sites) or are known to have occurred but no physical investigation has taken place (Not investigated sites). In both cases, the listing is not an indication of actual contamination and no reliance can or should be placed by any person as indicating the actual presence of contaminants on such sites. Further investigation is required to establish the actual presence or absence of contaminants.

The Council does not warrant a listed property's suitability for any specific purpose. The listing is based only on human health considerations. Where a site has been investigated and been listed as suitable for one of several generic uses (e.g. residential or commercial), the suitability is within the given constraints (e.g. a management plan is in place and being adhered to). Such a property may not be suitable for particular land uses within that general use (e.g. being able to grow particular plants; different plants having a widely varying sensitivity to soil contaminants). Any person relying on a property's general suitability as demonstrating the land is suitable for a specific purpose does so at their own risk. Conversely a property listed as being hazardous to people for the given generic land use may not be hazardous for some other less sensitive land use. Independent, expert advice should be sought as to the property's suitability for a particular purpose.

The listing of a property does not necessarily mean the property condition implied by the listing occurs over the complete parcel of land represented by the street address or legal description of the property. For example, a large property may only have had a small part of it used for a potentially contaminating activity or have actual contamination over only a small part of it (e.g. a sheep dip within a large block of otherwise uncontaminated land).

Where a property or properties have been subdivided or amalgamated since the date of listing, in the absence of information to the contrary, as a precautionary approach the Council will automatically apply the original listing to the new land parcels. Given a potentially contaminating historical activity or actual contamination may originally have had a limited extent, it is not necessarily the case that all the newly subdivided properties are in the condition implied by the listing after subdivision. Similarly, not all of a newly amalgamated property is necessarily in the condition implied by the listing. Further investigation may be necessary to determine the extent of the land actually affected.

www.tonkintaylor.co.nz

