Site-Wide Preliminary Site Investigation (Contamination) Report

Ravensdown Napier Works

Prepared for Ravensdown Limited
Prepared by Beca Limited

6 August 2021

Revision History

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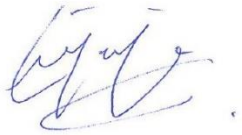
Reviewed by	Emma Lewis		06 August 2021
Approved by	Emma Lewis		06 August 2021
on behalf of	Beca Limited		

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Executive Summary

Beca Limited (Beca) has been commissioned by Ravensdown Limited (Ravensdown) to undertake a Preliminary Site Investigation (PSI) at the Awatoto site, approximately 6km to the south of Napier city centre. The PSI is a requirement under National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NESCS) prior to disturbing soil at a site where a Hazardous Activities and Industries List (HAIL) activity is considered to have occurred on a 'more likely than not' basis. The PSI is intended to identify any potential risks associated with site soils and highlight any requirements for managing those risks in accordance with regional and national requirements.

Based on the information reviewed, the site predominantly comprised undeveloped assumed grazing land until approximately 1953. By 1953, the majority of the site had been developed for use as a fertiliser manufacturing facility (including sulphuric acid manufacturing, fertiliser manufacturing, phosphate rock storage, sulphur and superphosphate storage and handling facilities). Old site plans also referred to various structures associated with the facility including but not limited to a weighbridge, workshops, garages, and a laboratory. Dwellings were historically located in the far north-west of the site (on Sections 35 and 36 Block I Clive SD) from at least 1962 until pre-2003. A truck shed was erected in the far north-east of the site (on Part Section 43 Block I Clive SD) in pre-1982. This structure was subsequently utilised as a tannery and is currently utilised as an engineering workshop operated by Pipe Co Engineering Limited. A laboratory operated by Analytical Research Laboratories has been located in the north of the site (on Part Section 43 Block I Clive SD) since at least 2003.

A number of potentially contaminative land uses / activities have been identified on-site (either currently or historically) including:

- **HAIL A.3** ('*commercial analytical laboratory sites'*)
  - Relating to the laboratory in the far north of the site (on Part Section 43 Block I Clive SD) and the former laboratory in the south-east of the site (on Part Section 32 Block I Clive SD).
- **HAIL A.6** ('*fertiliser manufacture or bulk storage'*)
  - Relating to the fertilizer manufacturing facility on-site (on Section 44 Block I Clive SD, Section 60 Block I Clive SD, Lot 1 DP 16060, Section 50 Block I Clive SD, Section 26 Block I Clive SD, Lot 4 DP 8546, Lot 2 DP 16060 and Part Section 32 Block I Clive SD).
- **HAIL A.16** ('*skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products*')
  - Relating to the former tannery in the far north-east of the site (on Part Section 32 Block I Clive SD).
- **HAIL A.17** ('*storage tanks or drums for fuel, chemicals or liquid waste*')
  - Relating to the diesel and AdBlue Above Ground Storage Tanks (AST) in the north of the site (on Section 44 Block I Clive SD), the diesel AST towards the center of the site (on Section 60 Block I Clive SD), the petrol tank towards the north of the site (on Lot 1 DP 16060), the diesel AST in the south-east of the site (on Part Section 32 Block I Clive SD) and the inventory stores in the south-west of the site (on Lot 2 DP 16060).
  - From 1984, various applications were submitted for a license to store dangerous goods (including two Underground Storage Tanks - UST), locations were not provided). Site staff were not aware of any current or historical USTs. However, an unconfirmed recollection of a possible UST was noted adjacent to the east of the Intake area.
- **HAIL B.2** ('*electrical transformers'*)
  - Relating to the transformers identified towards the center of the site (on Section 44 Block I Clive SD, Lot 1 DP 16060, and Lot 4 DP 8546) and in the south of the site (on Section 26 Block I Clive SD and Part Section 32 Block I Clive SD).

- **HAIL D.5** (‘*engineering workshops with metal fabrication’*)
  - Relating to a workshop in the east of the site (on Section 26 Block I Clive SD, utilised for repairs and maintenance for the fertiliser manufacturing facility), a maintenance workshop in the south of the site (on Part Section 32 Block I Clive SD, utilised for repairs and maintenance for the acid plant, and the former tannery structure in the far north-east of the site (Part Section 43 Block I Clive SD, currently utilised as an engineering workshop).
- **HAIL E.1** (‘asbestos *products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition’*)
  - Relating to numerous infrastructure (past and present) at various locations on-site.
  - The risk of any asbestos (if present) within materials used in the production of fertiliser (e.g. magnesium) falls outside of the scope of this investigation.
- **HAIL I** (‘*any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment’*)
  - Relating to the former railway lines and sidings identified in the north of the site (on Section 44 Block I Clive SD).
- **HAIL F.8** (‘*transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances’*)
  - Relating to the transport depot in the north of the site (on Section 44 Block I Clive SD, Section 60 Block I Clive SD and Lot 1 DP 16060).
- **HAIL G.5** (*‘waste disposal to land’*)
  - Anecdotal information indicates the potential presence of demolish waste from the former ‘No 1 – 3 Acid Plants’ to be located within the grassed area south of the small carwash on Lot 1 DP 16060.
  - Unconfirmed anecdotal information suggests the potential presence of asbestos wrapped in plastic and buried in the grass-covered area in the south-west of the site (on Lot 2 DP 16060).

If soil disturbance, underground fuel system removal, soil sampling, subdivision and/or a change of land use is proposed for an area of the site identified as HAIL, then a review of the Permitted Activity criteria in relation to the specific activity should be undertaken to determine whether land use consent is required. Depending on the nature of the proposed works, a Detailed Site Investigation (DSI) may be required to assist with determination of whether consent is required. Where a proposed development requires the disposal of spoil material off-site, soil sampling would be required to determine the suitability of the material for acceptance at the chosen facility. Acceptance from the facility should be approved prior to removal of soil off-site.

Prior to all future works being undertaken, a Suitably Qualified and Experienced Practitioner (SQEP) should be consulted in advance of physical works commencing to confirm any potential contaminated land consenting requirements.

1 Introduction

Beca Limited (Beca) has been commissioned by Ravensdown Limited (Ravensdown) to undertake a site-wide Preliminary Site Investigation (PSI) into the Ravensdown Napier Works on Waitangi Road, Awatoto.

1.1 Purpose and Scope

The purpose of the PSI is the following:

- Identify areas that have the potential to be contaminated as a result of current or historical land uses or activities and how this can be managed during future earthworks.
- Confirm contaminated land consent requirements for the proposed works under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS).

The scope of works includes a desk-based review of historical background information. The following information sources were reviewed:

- Existing PSIs and other information held by Ravensdown relating to potential contaminating activities at the site
- Selected Napier City Council (NCC) property files
- Certificates of Title
- Historical aerial photographs from Google Earth Professional and Retrolens
- Discharge consent information within 200m of the site as supplied by Hawke's Bay Regional Council (HBRC)
- Client provided Asbestos Survey and Management Plans
- Information gathered through undertaking a site walkover and interview with an individual knowledgeable of the history of the site (i.e. a long-term employee)
- Local geology, hydrogeology and sensitive environmental receptors
- Any other relevant information which becomes available during the timeframe for report delivery

The information gathered during the investigation will be reported in general accordance with the Ministry for the *Environment (MfE) Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand* (2011).

2 Site Description

2.1 Site Location and Area

The site is located at 90 Waitangi Road, Awatoto, Napier, which is on the eastern coast approximately 6km to the south of Napier city centre. The site (outlined in red in **Figure 1** below) occupies an area of approximately 33.8ha and comprises the following 15 parcels with individual legal descriptions:

- Section 35 Block I Clive SD
- Section 36 Block I Clive SD
- Section 62 Block I Clive SD
- Section 43 Block I Clive SD
- Section 44 Block I Clive SD
- Section 60 Block I Clive SD
- Lot 1 DP 16060
- Section 26 Block I Clive SD
- Section 50 Block I Clive SD
- Lot 4 DP 8546
- Part Section 32 Block I Clive SD
- Section 56 Block I Clive SD
- Lot 2 DP 16060
- Lot 7 DP 25683
- Lot 6 DP 25683

The locations of these 15 land parcels are shown in **Figure 1** and are herein referred to collectively as “the site”. The yellow lines represent the existing lot boundaries.

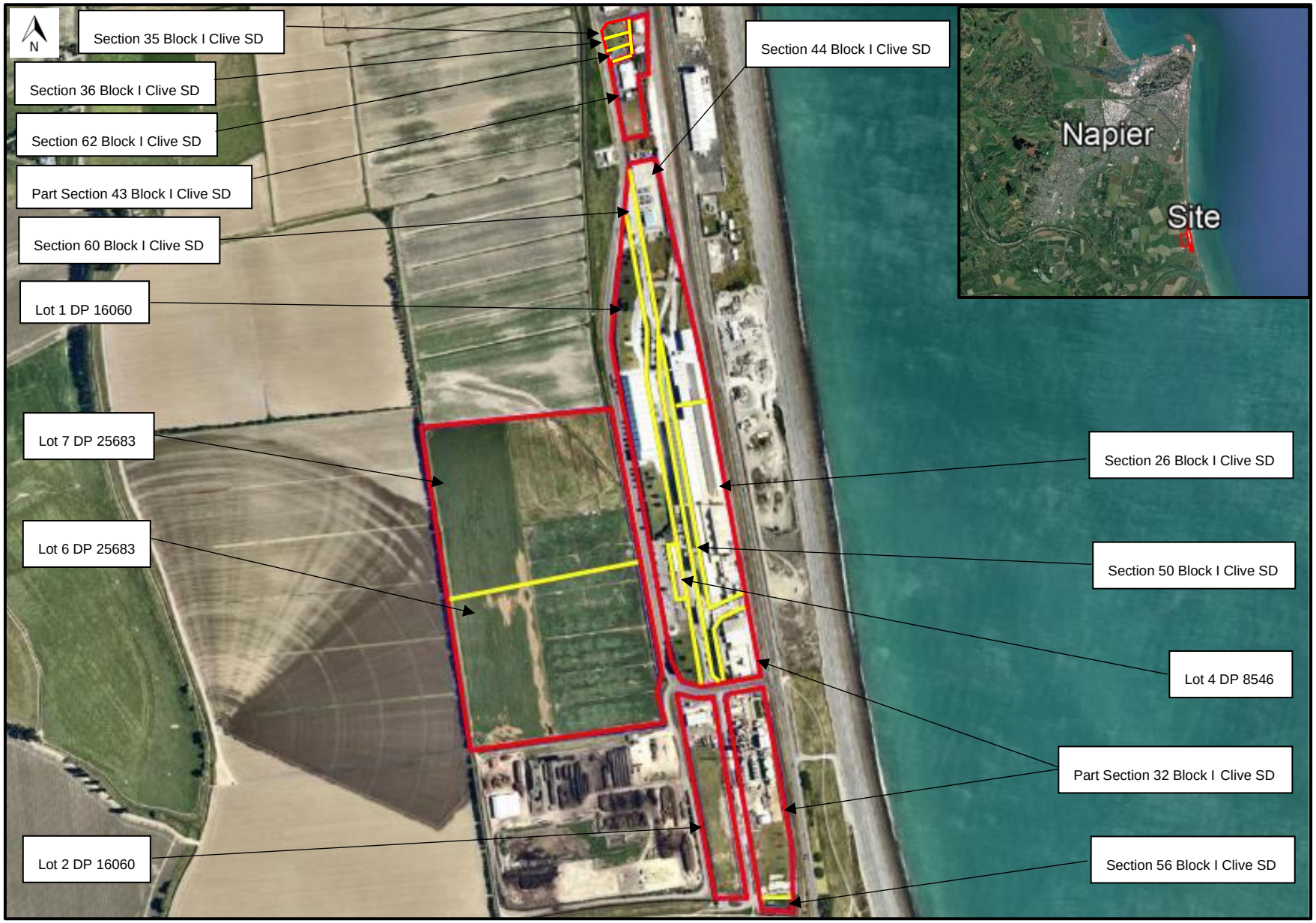


Figure 1: Site Plan (Image Sources: © 2021 Nearmap and Google Earth Pro)

3 Environmental Setting

3.1 Current Land Use

The site is currently owned by Ravensdown and predominantly supports a fertiliser manufacturing facility. A workshop (occupied by Pipe Co Engineering Limited) and a commercial laboratory (occupied by Analytical Research Laboratories) are located within the far north of the site (on Part Section 43 Block I Clive SD). A transport depot (occupied by Sandford Transport Limited) is located in the north of the site (on Section 44 Block I Clive SD, Section 60 Block I Clive SD and Lot 1 DP 16060). Lots 6 and 7 DP 25683 in the west of the site is currently utilised for grazing purposes and occasional cropping.

For further details on current operations on the site, refer to Section 4.6.

3.2 Surrounding Land Use

As shown in **Figure 2** below, the site is located within a predominantly agricultural and commercial area. Normanby Street is located adjacent to the north of the site, beyond which numerous commercial/industrial properties are located. Railway lines and State Highway 2 are located from adjacent to the east of the site, beyond which various commercial/industrial properties, rural-residential properties, a quarry/gravel pit and a grass-covered reserve are located on a coastal strip. The sea shore is located approximately 150m to the east of the site. Undeveloped land, a drain and a section of the Tutaekuri River (on the wider Model Flying Hawkes Bay property) are located from adjacent to the south. A compost manufacturing facility operated by BioRich Compost is located from adjacent to the south-west of the site. Grazing land is located from adjacent to the west and north-west of the site.

Figure 2: Surrounding Land Uses (Image Sources: © 2021 Nearmap)

3.3 Topography

The topography of the site is reasonably flat, with a gentle fall towards Waitangi Road in the west (around 11m above ordnance datum (AOD) as recorded on the NCC map viewer) and rise towards the railway and SH2 to the east. On the eastern side of SH2, there is a narrow plateau, ranging between 14m and 15.5m AOD, before the ground slopes downwards to the east to the beach and the sea.

3.4 Sensitive Receptors

The site is located approximately 150m to the west of the eastern coastline and approximately 200m to the north of the Tutaekuri River. A drain is located approximately 35m south of the site, which flows into the Tutaekuri River. The Tutaekuri River demarks the northern edge of the Waitangi Estuary, which is identified as a Significant Conservation Area in the Proposed Regional Coastal Environment Plan. The confluence of the Nagaruoro, Tutaekuri and Clive rivers is located approximately 850m to the south of the site. Residential properties within 500m of the site are limited to a handful of dwelling situated from approximately 50m east of the site (on the coastal strip located on the opposite side of the railway lines and State Highway).

3.5 Geology

The Geological & Nuclear Sciences (GNS) 1:250 000 Geological Map of New Zealand[1] indicates that the site is underlain by Holocene aged shoreline deposits, described as "*unconsolidated marine gravel, sand and mud on modern beaches*." This is recorded to be underlain by a clastic sandstone and mudstone (Heron, D.W. (custodian) 2018: Geological Map of New Zealand 1:250 000 (2nd ed.). GNS Science Geological Map 1. Lower Hutt, New Zealand. GNS Science).

The area of Napier (including the city and extending south beyond Hastings), comprises a series of generally south-west – north-east trending folds and similarly orientated fault lines. The Awanui Fault is recorded by GNS as an active fault, which is present approximately 2km to the north of the site.

The liquefaction vulnerability for the site is reported to be 'medium' based on the GNS assessment of liquefaction risk in Hawkes Bay (2017).

A geotechnical investigation report by Resource Development Consultants Ltd (RDCL) dated July 2014 recorded shallow soils to comprise granular fill extending to approximately 1m below ground level, underlain by sands and gravels, locally with some organic clay extending to the base of physical investigations (3m below ground level). The investigation work was conducted in the area of the sulphur melter plant, acid plant and other areas within the Ravensdown site.

3.6 Hydrogeology

Unconfined groundwater with strong hydraulic connectivity to the sea is anticipated to be present at shallow depths within the soils beneath the site.

Groundwater is recorded in a bore (no.222) approximately 225m to the north of the site, with water recorded at a depth of 59m during the most recent quarterly monitoring round conducted by the Regional Council in June 2018 (accessed via the Hawke's Bay Regional Council map viewer). A review of the NZ Geotechnical Database[2] indicates that bores in the vicinity of the site note groundwater at a similar level. These bores are anticipated to be within the Heretaunga aquifer, which is a confined aquifer beneath the site. Bores within 500m of the site are discussed further in Section 4.3.3 below.

[1] https://data.gns.cri.nz/geology/, © GNS Science 2013
[2] https://www.nzgd.org.nz/ARCGISMapViewer/mapviewer.aspx

4 Information Search

4.1 Certificate of Title

The current and historical Certificates of Title were obtained for the site and are included in **Appendix A**.

In April 1975, the East Coast Farmers' Fertiliser Company were recorded to be the proprietors of Section 26, amongst others, belonging to Block I, Clive Survey District. In April 1977 the owners' name was changed to East Coast Fertiliser Company. In August 2005 the owners' name changed to Ravensdown Fertiliser Co-Operative Limited. In October 2015, the name was recorded to change to Ravensdown Limited.

No further information of significance was obtained from the review.

4.2 Historical Aerial Photographs

Historical aerial photographs for the site have been sourced from:

- Napier City Council[3] for the year 1936.
- Retrolens[4] for the years 1948, 1962, 1969, 1977, 1980, 1982, 1988, 1996.
- National Library of New Zealand[5] for the year 1958, 1972.
- Google Earth Pro[6] for the years 2003, 2012, 2019
- Nearmap[7] for the year 2020.

The aerial photographs have been reviewed to identify any changes in land use activities on the site and surrounding properties. **Table 1** presents a summary of the observations and the historical aerial images are provided in **Appendix B**. The plans included within **Appendix C** illustrate building names, locations and approximate ages. Relevant old site plans identified within the Council Property Files are included in **Appendix D**.

Table 1: Summary of Historical Aerial Photograph Observations

Year	On-Site	Surrounding Area
1936	■ From at least 1936, the site predominantly comprises undeveloped assumed grazing land. ■ A section of a road extends through the site with a north/south orientation. ■ A pale area is visible in the vicinity of a drain in the north-east of Lot 7 DP 25683 (the site representative indicated that this related to salt from sea water)	■ The surrounding area predominantly supports undeveloped assumed grazing land.
1948	■ By 1948, an assumed shed is present towards the centre of the site (likely associated with the pastoral farm use of the area at the time).	■ Railway lines are visible from adjacent to the east of the site, and land on the other side of these railway lines has been developed for assumed industrial and rural-residential uses (including an assumed quarry).

[3] http://www.gis.napier.govt.nz/intramaps80/default.htm?project=NCC&module=Property
[4] https://retrolens.co.nz
[5] https://natlib.govt.nz
[6] https://earth.google.com/web
[7] http://www.nearmap.com/nz/en

1958	■ Between 1948 and 1958, the aforementioned shed is cleared and the majority of the site is developed for use as a fertiliser manufacturing facility (including structures labelled on old site plans dating from 1974 as 'No 1 Super Store', 'manufacture/ granulation', 'No 2 Rock Store', 'works cafeteria', 'No 1 Rock Store', 'workshops & store', 'loco shed', 'acid tanks', 'garage', 'sulphur store', and a 'swimming pool' – see **Appendix D**). ■ An assumed acid plant is visible towards the south-east (potentially relating to "No 1 – 3 Acid Plants'). ■ Railway sidings are visible in the north of the site (to the north of No 1 Super Store in the north of the site). ■ Lot 6 DP 25683 and Lot 7 DP 25683 remains as farmland.	■ No significant changes are noted.
1962	■ By 1962, the fertiliser manufacturing facility is further developed (including structures labelled on old site plans as a 'weighbridge', a 'potash store', 'mixtures', and 'despatch plants' – see **Appendix D**). ■ Assumed residential properties are visible in the far north-west of the site (on Section 35 Block I Clive SD and Section 36 Block I Clive SD).	■ No significant changes are noted.
1969	■ A small structure (assumed store) is present towards the centre of the site (to the west of the aforementioned despatch plants). ■ Further acid tanks are visible towards the south-east (east of the aforementioned sulphur store). ■ A settling pond is visible towards the centre-south of the site (between No 1 Rock Store and the sulphur store, see **Appendix C**). ■ Stockpiling activities are visible in the south-east of the site (assumed relating to temporary storage of phosphate rock).	■ Land off-site to the north-east is further developed for assumed industrial uses.
1972	■ By 1972, a small structure (labelled as a 'canteen' on old site plans - see **Appendix D**) is present towards the centre-north of the site (to the west of the aforementioned potash store).	■ No significant changes are noted.
1977	■ By 1977, a small structure (labelled as a 'garage' on old site plans - see **Appendix D**) is present in the north of the site (north-west of the aforementioned weighbridge). ■ Infrastructure (labelled on old site plans as an 'engineering parts store', a 'boiler', an above-ground fuel storage 'tank', an 'acid plant'/No 4 Acid Plant', 'cooling towers' and 'acid tanks' - see **Appendix D**) is present in the south-east of the site.	■ No significant changes are noted.
1980	■ By 1980, a structure (labelled as a 'truck shed' and subsequent 'tannery' on old site plans - see **Appendix D**) and an assumed associated shed is present in the far northeast of the site (on Part Section 43 Block I Clive SD). ■ The aforementioned canteen has been redeveloped into a large structure (labelled on site plans as 'No 2 Dispatch').	■ No significant changes are noted.

	■ A small structure (labelled as a 'bag store' on old site plans - see **Appendix D**) has been erected towards the centre of the site. ■ Infrastructure (labelled as an 'engineering store', 'pump house' and an 'oleum tank' on old site plans - see **Appendix D**) has been erected in the south of the site. ■ Assumed stockpiling is visible in the far south of the site (assumed relating to temporary storage of phosphate rock).	
1982	■ The aforementioned assumed acid plant towards the south-east (potentially relating to "No 1 – 3 Acid Plants') has been cleared.	■ The main road (Waitangi Road) is diverted off-site.
1988	■ By 1988, the aforementioned railway lines are no longer visible. ■ A small structure (labelled as a 'laboratory' on old site plans/present-day Contractors Canteen - see **Appendix D**) has been erected to the north-west of the aforementioned swimming pool.	■ No significant changes are noted.
1996	■ By 1996, the aforementioned canteen is no longer visible. ■ Structures (labelled as a 'sulphur store' and 'sulphur melt') has been erected in the south-east. ■ The aforementioned settling pond has been redeveloped into infrastructure labelled on site plans as 'intake'.	■ No significant changes are noted.
2003	■ By 2003, the two aforementioned assumed residential properties in the far north-west of the site had been cleared. ■ A structure (labelled as an 'analytical research laboratory' on site plans) has been erected in the far north (on Part Section 43 Block I Clive SD). ■ The aforementioned small garage and weighbridge in the north are no longer visible. ■ Alterations appear to have taken place south-west of the potash store. ■ External storage activities are visible around the aforementioned engineering store in the south-west. ■ An assumed vehicle wash area has been developed towards the south-west. ■ Assumed stockpiling activities are visible in the far south of the site.	■ No significant changes are noted.
2005	■ An access point has been developed along the south-western site boundary. ■ Assumed stockpiling activities are visible in the north of the site.	■ A notable colour change is visible on land immediately adjacent to the south-west of the site (in the vicinity of the new access point on-site – see the 2005 image in **Appendix B**). Although unconfirmed, this is indicative of a potential release of material from the site onto surrounding pastoral farmland.

2009	■ A structure (labelled as a 'workshop and office' on site plans - see **Appendix D**) has been erected in the north of the site.	■ Significant earthworks and stockpiling activities are visible adjacent to the south-west of the site (including the above-mentioned area with a notable colour change), likely relating to the existing compost manufacturing facility.
2012	■ The aforementioned bag store has been redeveloped to form part of a larger structure (labelled as 'No 3 Rock Store' on old site plans - see **Appendix D**). ■ A small assumed weather station had been installed in the far north-west of the site.	■ No significant changes are noted.
2015	■ An above-ground fuel storage tank has been installed adjacent to the north-east of the aforementioned workshop and office building in the north of the site.	■ No significant changes are noted.
2020	■ No significant changes are noted.	■ No significant changes are noted.

4.3 Regional Council Information

HBRC was contacted to confirm any details about the site that have been used, or are currently used for activities which have the potential to have caused contamination. The Council provided a response on 30 June 2021 with details of Hazardous Activities and Industry List (HAIL) sites noted on their Listed Land Use Register (LLUR). The following sections provide a summary of the pertinent information and the full response is included in **Appendix E**.

4.3.1 Contamination Enquiry

- Ravensdown owns and operate a major manufacturing plant on the site, which was established in 1954. The plant comprises a sulphuric acid manufacturing plant, a fertiliser manufacturing plant, phosphate rock storage, sulphur storage and superphosphate storage and handling facilities.
- The site is recorded as a HAIL A.6 ('*fertiliser manufacture or bulk storage*') - verified HAIL, risk not qualified (Site ID SLS-10706).
- HBRC do not currently hold any records of previous site investigations relating to the site.
- In January 2021, there was a complaint in relation to dust from the fertilisers works blowing "over the road" (direction not provided). No further information was provided.
- In March 2021, there was an exceedance of Sulphur Dioxide following a malfunctioning steam gun and fire in the 'sulphur smelter at the acid plant'. No further information was provided.

4.3.2 Discharge Consents

Discharge Consents relating to the site include the following:

- Discharge to Air (ref.: DP050561Ab) - To discharge contaminants into the air from the operation of the company's fertiliser manufacturing plant.
- Discharge to Water (ref.: AUTH-126648-01) - To discharge, for a short-term and temporary duration, Fluorescent Red Rhodamine WT dye into water at the Awatoto Drain from the settling pond at the Ravensdown superphosphate manufacturing plant.
- Discharge to Water (ref.: DP040143Wa) - To discharge contaminants into water for the purpose of disposing of stormwater, cooling water from air compressors and a hydraulic drive, water from drinking

fountains and a truck wash, water from cooling towers and high-pressure boilers, and rinse water from a boiler water treatment plant into the Tutaekuri River (Waitangi Estuary).

- Historically, there has been a discharge of stormwater from the site to the Waitangi Estuary. There have been a number of occasions in recent years when resource consent limits for the concentration of some contaminants have been exceeded. No further information was provided.

Discharge Consents recorded within 200m of the site include the following:

- *Bio-Rich Limited* (off-site to the south-west)*:*
  - Discharge to air – 201 Waitangi Road (ref.: AUTH-117991-03).
  - Discharge to land – 201 Waitangi Road (ref.: AUTH-117994-04).
- *Winstone Aggregates Limited* (off-site to the east):
  - Discharge to land – Awatoto foreshore (ref.: AUTH-119349-01).
- *Firth Industries Limited* (off-site to the east):
  - Discharge to air – 820 State Highway 2, Awatoto (ref.: AUTH-116185-01).
  - Discharge to land – 820 State Highway 2, Awatoto (ref.: AUTH-116186-01).
- *HB Protein* (off-site to the north):
  - Discharge to air – Waitangi Road (ref.: AUTH-118812-01).
  - Discharge to air – Waitangi Road (ref.: AUTH-119028-02).

4.3.3 Water Take Consents

Table 2 represents a summary of Water Take Consents on and within 200m of the site.

Table 2: Summary of Water Take Consents

Well Number	Ref	Use	Location
On-Site:			
-	LU120144B	Industrial use	On-Site
-	LU120155B	Fertiliser manufacturing plant	On-Site
-	AUTH-126498-01	Geotechnical investigation including three bores	On-Site
15986 and 15989	WP060639Tb	Manufacture of sulphuric acid and fertilisers	On-Site
Within 200m:			
15391	WP130287T	For the purpose of water bottling	Approximately 50m north-east of the site
16341	WP120233Ta	For the purpose of manufacturing beverages in a bottling operation	Approximately 50m north-east of the site
-	CC170410T	To take and use not more than 20m3/day at a rate not exceeding 10 l/s	Approximately 50m east of the site
4218 and 204	WP070137T	For shingle and sand washing	Approximately 50m east of the site
5672	WP130408T	For the purpose of irrigation of crops and pasture, compost, washing down and building supply	Approximately 100m south-west of the site
595	WP060555Tb	for water bottling	Approximately 150m north of the site

4.4 Napier City Council Information

The NCC held property files were requested for the Ravensdown site. Based on the large number of documents the file holds, a high-level review was undertaken for information specifically related to ground conditions and contaminated land. Whilst the review aims to screen all relevant documents, due to the large quantity of documents it is possible that relevant information may have been overlooked. **Table 3** provides a summary of the pertinent information. Copies of relevant documents can be provided upon request.

Table 3: Summary of Reviewed Property File Information

Document Type	Date	Details
Far North of the Site (Part Section 43 Block I Clive SD)		
Application for Building Permit	September 1978	■ To erect a super bin (fertiliser store) for Cooper / Tollison.
Ministry of Works and Development document	December 1978	■ Part Section 43 Block I Clive SD was listed as surplus land available for re-allocation or disposal and the general description was "*level section in grass*".
Application for Building Permit	August 1978	■ To erect a new truck shed and facilities for D.A. Tollision (ref.: 5546). ■ Associated plans indicate that this relates to the general vicinity of the existing structure in the far north of the site (labelled on old site plans as "tannery", see below).
Application for Building Consent	October 1993	■ To establish a tannery processing 5000 possum skins and 1000 rabbits for the souvenir trade (ref.: RM931011). ■ In April 1993, a Certificate of Registration for Offensive Trade was issued to Mr A Gregory for tanning operations (ref.: 00671).
Application for Building Consent	October 1995	■ To erect a lean-to extension for additional general workspace for Mr A. Gregory.
Building Consent	November 1995	■ A workshop extension for Mr A Gregory (ref.: BC951016).
Resource Consent	December 1995	■ To build and operate a meat packhouse for Mr A Gregory (ref.: RM951006). ■ The proposed "*opossum tanning area*" was labelled within the north-west of an existing structure in the far north of the site (potential former truck shed, see ref.: 5546 above).
Building Consent	March 1996	■ Alterations to game meat packhouse for Mr A Gregory (ref.: BC951317). ■ Associated plans indicate that this related to the structure in the far north of the site, labelling it as "*existing building Opossum World*". ■ Undated plans also labelled a standalone proposed meat packhouse to the south.
Resource Consent	May 1998	■ For Wild Game H.B. Ltd to increase an existing facility (meat packhouse) to incorporate an ostrich slaughter plant (ref.: RM980082).
Building Consent	June 1998	■ Additions to local market butchery for Wild Game HB Ltd (ref.: BC980438).
Letter	October 1998	■ From Analytical Research Laboratories Ltd to NCC regarding a proposed new laboratory building.
Building Consent	January 1999	■ For Analytical Research Laboratories Ltd to erect a new lab and relocate two outbuildings (ref.: BC981018).
Building Consent	July 2002	■ For East Coast Fertiliser Co Ltd to erect a storage building for storing soil samples (ref.: BC020613).
Resource Consent	July 2002	■ Sample storage building with an associated drying room for Analytical Research Laboratories (ref.: RM020128).
Building Consent	October 2019	■ For Ravensdown to erect a new commercial shed (ref.: BC190975).

Document Type	Date	Details
Central and Southern Areas of the Site		
Site plans	March 1961	■ Plans for East Coast Farmers Fertiliser Co dated March 1961 labelled a "*weighbridge*" in the north-west (ref.: BP09-03-61).
Site Plans	May 1961	■ Plans entitled "*Addition to Sulphur Store*" dated May 1961 labelled "*std corrugated asbestos*".
Site Plans	March 1972	■ Plans entitled "*Sulphur Melter Building*" dated March 1972 labelled "*super six*" wall cladding (an asbestos containing material - ACM).
Design Calculations	August 1974	■ Calculations for acid and oleum storage tanks, and a molten sulphur tank associated with a 650 M.T.P.D. Sulphuric Acid Plant.
Site Plans	November 1974	■ Plans entitled "*Oleum Storage Tank*" showed a 100 tonne tank containing 20% oleum.
Site Plans	January 1974	■ Plans entitled "*Fuel Oil Storage Tank*" showed a 4000 gallon diesel tank (ref.: BP5335).
Site Plans	January 1974	■ Plans entitled "*No. 4 Acid Plant Building for Auxiliary Boiler*" labelled "*super six*" wall cladding (an ACM).
Historical CTs	May 1974	■ Supreme Tanneries Limited were seized of Section 55 Block I Clive Survey District.
Site Plans	February 1975	■ Plans labelled "*super six A.C sheathing*" (an ACM).
Site Plans	September 1976	■ Plans entitled "*proposal for site extensions*" labelled various structures on-site at the time (including a manufacturing building, rock stores, a garage, a sulphur store, an infilled drain and an acid plant).
Site Plans	February 1978	■ Plans entitled "*No. 2 Superstore*" labelled "*fibrolite A.C. Super Six roofing*", "*fibrolite A.C. curved down sheet*" and "*fibrolite A.C. Super Six wall cladding*" (ACMs).
Site Plans	February 1978	■ Plans entitled "*Conveyor Bridge – New Store & Tower No 1*" labelled "*A.C. wall cladding*" (potential ACM).
Site Plans	February 1978	■ Plans entitled "*Weighbridge Office Extension*" labelled "*fibrolite soffit lining*" (an ACM).
Site Plans	February 1978	■ Plans entitled "*Weighbridge Office Extension*" labelled *"fibrolite soffit lining*" (an ACM).
Site Plans	March 1978	■ Plans labelled two existing 3000 tonne acid tanks and a proposed 500 tonne oleum tank.
Permit Application	July 1980	■ For the storage of bagged fertiliser.
Lease Application	July 1980	■ To facilitate the lease of the premises from Taylors (HB) Ltd (formerly owned and occupied by Supreme Tanneries Limited) for short-term storage of bagged fertiliser.
Application for a License to Store Dangerous Goods	April 1984	■ Including a 4,500 litre UST, two 20,250 litre Class 3c aboveground storage tanks (ASTs), two 409 litre ASTs, a 209 litre drum, a 1,100,000 litre sulphuric acid tank, a 3,300,000 litre sulphuric acid tank and a 350,000 litre oleum tank.
Building Permit	September 1984	■ For a laboratory (ref.: 30654).
Building Permit	October 1984	■ For a shelter for liquid fertiliser plant (ref.: 30718).
Application for a License to Store Dangerous Goods	June 1986	■ Including a 15,000 litre Class 3c UST and two 22525 litre Class 3c ASTs.
Application for Building Consent	August 1994	■ To erect bunding walls to acid tanks (ref.: BC941051).
Application for Building Consent	December 1994	■ For a hopper for the intake of fertiliser (ref.: BC941405).
Building Consent	July 1998	■ For a concrete maintenance and wash pad for Tranz Rail Limited (ref.: BC980565).
Resource Consent	August 1997	■ To erect a 38m high chimney for the ventilation of the manufacturing building (ref.: RM970172).
Building Consent	November 1997	■ For plumbing and drainage replacement and upgrades (ref.: BC971047).
Building Consent	May 1998	■ To demolish a plant and develop a new access to a store (ref.: 98/0476).

Document Type	Date	Details
Building Consent	July 1998	■ For Tranz Rail Limited to install a concrete maintenance and wash pad (ref.: 98/0565).
Building Consent	August 1998	■ For alterations to a building for the storage of phosphate rock (ref.: 98/0838)
ISO 14001 Certificate of Approval	October 1998	■ The certificate was issued to Ravensdown Fertiliser Co-operative Limited with respect to the management of environmental aspects in relation to the manufacture of sulphuric acid and the manufacture and blending of superphosphate and imported fertilisers.
Application for Building Consent	March 1999	■ The relocation of a stormwater drain (ref.: BC990298).
Dangerous Goods License	May 1999	■ Issued to Ravensdown Fertiliser Co-op (ref.: DG999127), which included two Class 3c ASTs (no USTs were listed on the license).
Building Consent	May 1999	■ To erect a canopy to provide protection from weather for site traffic (ref.: BC990344).
Building Consent	May 1999	■ To erect a conveyor and silo support fertiliser store (ref.: BC990347).
Building Consent	May 1999	■ For a conveyor and silo (ref.: BC990347).
Dangerous Goods Licences	May 1999 - March 2003	■ Issued to Ravensdown Fertiliser for the storage of 29,300 litres of Class 3C and 400 litres of Class 3A (within ASTs), 800 litres of Class 3B (within drums), 250 tonnes of Class 4 (sulphur), 35 tonnes of Class 5 (ammonium nitrate), and various Class 2 gas cylinders (license numbers: DG999127).
Building Consent	November 1999	■ For alterations to an office (ref.: BC991065).
Building Consent	May 2000	■ For a fertiliser works (ref.: 001362).
Application for Building Consent	May 2000	■ For a dispatch facility building.
Building Consent	June 2000	■ For a despatch building to despatch fertiliser (ref.: 001424).
Building Consent	August 2000	■ For alterations to a factory (ref.: 001749).
Building Consent	July 2002	■ To replace infill panels for retaining fertiliser (ref.: 020654).
Building Consent	August 2002	■ For an electrical control centre (ref.: 020816).
Resource Consent	August 2003	■ To extend the stacks at 808 Waitangi Road (ref.: RM030228).
Building Consent	August 2003	■ For alterations to a control room and cafeteria for use as a fertiliser works (ref.: 030804).
Building Consent	September 2003	■ To extend a stack (ref.: 030660).
Application for Building Consent	September 2003	■ To extend a workshop (ref.: BC031347).
Letter	September 2004	■ Ravensdown Fertiliser Co-operative Ltd sent a letter to the Regional Council regarding a sulphur fire that occurred on 23 August. No further details were provided (see 4.6).
Application for Building Consent	May 2005	■ To erect a new workshop (ref.: BC050778).
Hazardous Site(s) Form	March 2006	■ The form listed 808 Waitangi Road as a potentially contaminated site from hydrocarbons. 'Flooding' was also listed as important site information (however, no further details were provided).
Building Consent	August 2006	■ for a tank bund (to contain HFA in the event of main storage tank ruptures) (ref.: 020655).
Resource Consent	December 2006	■ to establish and operate a truck depot at 808 Waitangi Road (ref.: RM060271).
Building Consent	January 2007	■ To erect a new workshop / truck workshop in the north of the property (ref.: 061437).
Building Consent	May 2008	■ For a building extension to the control room (ref.: 080424).
Building Consent	January 2011	■ to construct a new electrical control room (ref.: 101074).
Building Consent	May 2011	■ For a new store and canopy (ref.: 110265).

Document Type	Date	Details
Building Consent	June 2011	■ For an acid plant upgrade (ref.: 110343). The application form made reference to "*diesel tank replaced and new support and bund structure placed on existing location*."
Building Consent	April 2012	■ To relocate a shed within the site (ref.: 120404).
Site Plans	April 2015	■ Plans prepared by Petroleum Services (2001) Ltd entitled "*diesel fuel tank installation*" labelled a 40,000 litre diesel storage tank.
Building Consent	May 2015	■ To construct three diesel tank concrete pads for the mounting of a 40,000L Diesel tank (ref.: 150370).

Documents dated from at least 1961 listed the land-owner as "*East Coast Farmers Fertiliser Co*". From 1994, the owner was listed as "*Ravensdown Fertiliser Co-op*". According to publicly available online anecdotal information, the East Coast Fertiliser works opened on-site on 5 October 1954[8], and in 1987, East Coast Fertiliser merged with Ravensdown[9].

4.5 Site Walkover

A walkover of the site, the facility and immediate surrounds was completed on 20th July 2021 by a Beca Environmental Scientist. The weather on the day was sunny and clear. Selected photographs taken during the site walkover are included in **Appendix F**.

Section 35 Block I Clive SD and Section 36 Block I Clive SD (far north-west of the site):

- This area of the site comprises grass-covered land predominantly utilised for the storage of empty small silos.
- Numerous concrete blocks are present across this area (to stop the public from driving onto the property and dumping/fly tipping etc).
- A small weather station is located within this area.
- Sections of an old fence containing assumed asbestos in a deteriorated condition are located along the north and west of Section 35 Block I Clive SD, and along the west of Section 36 Block I Clive SD.

Section 62 Block I Clive SD and Section 43 Block I Clive SD (far north of the site):

- A workshop (former truck shed and tannery) is located in the north-east of this area of the site. The workshop is currently operated by Pipe Co Engineering Ltd and utilised for small-scale fabrication, piping, maintenance, welding, repairs, machining etc. An associated old storage shed is located to the south of the workshop.
- No significant staining was noted on top of the concrete flooring within the workshop.
- The site representative reported that no waste oil is produced from the activities undertaken within this workshop.
- Electric cranes and a gas-powered forklift truck were noted in the workshop.
- A laboratory operated by Analytical Research Laboratories is located in the south of this area. An associated caged gas canister storage area was noted up against the south of the building.

Lot 7 DP 25683 and Lot 6 DP 25683 (far west of the site):

- This area of the site predominantly supports grazing land occasionally also used for cropping.

Lot 2 DP 16060 (south-west of the site):

- A pump house is located within the north-west of this land parcel.

[8] https://www.napierlibrary.co.nz/assets/Documents/Timeline-Napier-and-Hawkes-Bay-05.10.20.pdf
[9] https://www.ravensdown.co.nz/our-company/our-history

- An engineering store is located in the north of this land parcel. A number of locked containers ('inventory stores', including one for the storage of oils and grease) are located in the yard area surrounding the engineering store. No significant staining was noted on top of the concrete hardstanding within this area.
- The remainder of this land parcel predominantly supports grass covered land.

Part Section 32 Block I Clive SD and Section 56 Block I Clive SD (in the south-east of the site):

- A staff room ('Contractors Canteen', former laboratory) and a maintenance workshop are located within the north-west of this area. No significant staining was noted on top of the concrete flooring within the workshop.
- A concrete-lined pool is located in the north-east of this area. The water within this pool is used in the production process.
- A large AST (associated with the acid plant) is located within a concrete bund to the west of the pool. The tank is relatively new in age and no significant cracks etc were noted in the concrete bund. Aboveground pipework leads to an off-set fill point to the east. No secondary containment associated with the fill point was noted (e.g. a drip tray). However, no suspected hydrocarbon staining was noted on top of the concrete hardstanding below this fill point. Above ground pipework leads from the tank to an associated boiler house adjacent to the south of the tank.
- An acid plant is located adjacent to the south of the boiler house. Two large associated cooling towers are located adjacent to the south of the acid plant.
- Two large sulphuric acid ASTs and one slightly smaller oleum tank are located within a concrete bund adjacent to the south-east of the acid plant. No significant cracks etc were noted in the concrete bund.
- A stormwater retention pond is located in the far south-east of the site.

Section 44 Block I Clive SD, Section 60 Block I Clive SD, Lot 1 DP 16060, Section 26 Block I Clive SD, Section 50 Block I Clive SD, Lot 4 DP 8546, Part Section 32 Block I Clive SD (the remainder of the site):

- A truck depot operated by Sandford Transport Ltd is located within the north of the site. The majority of the depot comprised compact hardcore.
- A workshop associated with the truck depot is located within this area. A concrete-lined vehicle inspection pit is located within the workshop. No significant staining was noted on top of the concrete flooring within the workshop.
- A large integrally bunded steel diesel AST is located to the north of the workshop. A direct fill point was noted on top of the tank. Aboveground pipework leads to a dispense point fitted with a drip tray. An associated integrally bunded plastic AdBlue AST is located between the workshop and the diesel tank. The fill point appeared to be housed within the plastic bund. Aboveground pipework leads to a dispense point fitted with a drip tray. No significant staining was noted on top of the concrete hardstanding within the vicinity of these tanks.
- A truck wash is located adjacent to the south of the workshop.
- Old concrete floor slabs are located south of the truck depot (assumed remnants of the former garage and weighbridge). Remnants of the old railway lines is also present in this area of the site (observed within a concrete access road in a generally moderate to poor condition).
- A small c.500 litre steel petrol AST is located within a steel bund external to a small gardeners maintenance shed in the north of the site (utilised for refuelling gardening and general maintenance equipment). The associated fill point and dispense point were noted to be located within the bunded area. No significant staining was noted on the concrete and asphalt hardstanding within the vicinity of the tanks.
- The main fertiliser manufacturing building (referred to as 'Manufacturing and Granulation') is located in the east of the site. Four large grinders are located within this structure. Associated stacks and scrubbers are located externally and adjacent to the south-east of this structure. The interior surfaces of the structure

were noted be covered in fine particles understood to be fertiliser dust created during the manufacturing process.

- A storage structure (referred to as 'No 2 Rock Store') is located next to and to the west of the Manufacturing and Granulation building. A large AST containing 50% caustic is located externally adjacent to the west. Structures referred to as 'No 3 Rock Store', 'No 1 Dispatch' and 'No 1 Super Store' are located from adjacent to the north of the Manufacturing and Granulation building. A further storage structure (labelled on old site plans as the 'Potash Store') is located adjacent to the north of No 1 Dispatch. A diesel-powered bulldozer was noted to be operating within the No 1 Super Store. The structures included concrete floor slabs and further assumed fertiliser dust was noted on interior surfaces.
- A further structure (referred to as 'No 2 Dispatch') is located towards the west of the site. A predominantly concrete sealed yard area and access road are located between No 1 Dispatch and No 2 Dispatch. A large integrally bunded steel diesel AST is located within this area of the site. The associated fill point and dispense point were noted to be located within the bund. No significant staining was noted on top of the concrete hardstanding within the vicinity.
- A steel molten sulphur AST with associated aboveground pipework is located external to the south-east of the Manufacturing and Granulation building. A disused former hazchem store is located within this vicinity. No significant staining was noted on top of the concrete flooring within the store.
- A maintenance workshop and garage (reportedly utilised for general repairs and welding) are located south of the Manufacturing and Granulation building. No significant staining was noted on top of the concrete flooring within these structures.
- Two large acid ASTs are located within a concrete bund externally adjacent to the south of the garage. No significant cracks etc were noted in the concrete bund.
- A further storage structure (referred to as 'No 1 Rock Store') is located to the west of the maintenance workshop.
- The sites Main Office and Customer Centre are located to the west of No 1 Rock Store. A car parking area and small carwash are located adjacent to the south-west of the Main Office and Customer Centre.
- Infrastructure referred to as 'Intake' is located south of No 1 Rock Store.
- Two large sulphur stores are located south of the acid tanks. Suspected asbestos containing materials was noted in the roofing of the older sulphur store. Moss was noted to be growing on the cement roof sheeting.
- A 'Sulphur Melter' is located adjacent to the south-east of the sulphur stores. Sulphur staining was noted on top of the concrete hardstanding within this area of the site.

4.6 Interview with Site Personnel

Interviews were held with available personnel on-site at the time of the site walkover. The following information was identified (key findings are shown on the plan included within **Appendix G**):

- Prior to the 1931 earthquake, the site and surrounding area were underwater.
- Construction of the fertiliser manufacturing facility began 1952 and the facility first opened in 1953.
- The former dwellings in the far north-west of the site were historically used to house staff.
- Raw materials are brought into the site via the designated Intake area. Sulphur is placed in the designated Sulphur Stores, and phosphate rock is placed within the designated Rock Stores. In the Manufacturing and Granulation building, the materials are ground in four grinding mills and then mixed, cut, and beat. The product is then stored for 1 – 4 weeks to mature before leaving the site from the designated Despatch points. Approximately 50 staff work at the facility in shift patterns.
- No detergents are used in the truck wash in the north or the small carwash towards the south.

- Stormwater flows southwards from the truck depot in the north to the stormwater retention pond in the far south-east. Water within this pond is then pumped off on height into the stream off-site to the south. This flows into the Nagaruoro, which in turn flows into the sea.
- Stormwater from the acid plant flows into the concrete-lined pool in the south of the site. This water is then used in the production process. This pool was originally built and used as a swimming pool for staff and their families.
- Activities undertaken within the workshops and garage associated with the fertiliser manufacturing facility include general repairs and maintenance, with some lathing and welding. Only minimal waste oil is produced from the workshops and garage, (as any oil used on-site is reused numerous times). What waste oil is produced is used to lubricate machinery and equipment in the Manufacturing and Granulation building (which ends up in the product, in very small concentrations).
- The historical settling pond previously located in the vicinity of the Intake area comprised of a concrete-lined pond used to store scrubber liquor. This was believed to have been infilled approximately 20 years ago and the concrete lined pond is believed to likely remain buried at this location. The type and source of the fill used is unknown.
- The former weighbridge in the north had an inspection pit. This was believed to have been infilled. The type and source of the fill used is unknown.
- Stockpiles visible on the historical aerial images reportedly relate to temporary storage of materials (such as phosphate rock), which was subsequently used in the production of fertiliser.
- White areas are visible in the west of the site on a 1936 aerial image. This is likely related to salt from evaporated sea water. It is likely impacting vegetation growth.
- Staff on-site were unaware of any historical or current USTs. However, the only unconfirmed recollection of a potential UST was adjacent to the east of Intake.
- The existing diesel AST within the Acid Plant area in the south of the site was replaced relatively recently. Historically, underground pipework lead from the tank to the boiler room. In the mid-1990s, a leak was detected within this pipework. The pipework was removed and replaced aboveground. An investigation was undertaken, and the leak was found to be minor. No other information on this was available.
- Numerous structures on-site historically contained asbestos. Over the years, the majority of the asbestos was removed. However, some remains, which is appropriately managed by an Asbestos Management Plan (see **Appendix H**).
- A number of transformers are located on-site. Any polychlorinated biphenyls (PCBs) were removed pre-2014.
- A number of fires have occurred, mostly sulphur fires. No structures containing asbestos were known to have been damaged during any previous fires on-site, and either product or water was used to extinguish any fires.
- The existing Acid Plant (also referred to as ‘No 4 Acid Plant’) was erected in 1976. Historically, three other acid plants (‘No 1 – 3 Acid Plants’) were located in the vicinity of the newer Sulphur Store. Anecdotal information indicated the potential presence of demolish waste from the former No 1 – 3 Acid Plants to be located within the grassed area south of the small carwash on Lot 1 DP 16060.
- Unconfirmed anecdotal information suggested the potential presence of asbestos wrapped in plastic and buried in the grass-covered area in the south-west of the site (on Lot 2 DP 16060). This area is understood to currently be leased to Model Flying Hawkes Bay.

4.7 Client Provided Information

The following information was provided for review by Ravensdown. A high-level review of the documents was undertaken, and the following provides a summary of the pertinent information:

4.7.1 Geotechnical Investigation for Ravensdown Fertiliser Co-operative Limited by Resource Development Consultants Limited (RDCL) dated 16 July 2014

- The report was prepared in relation to the proposed replacement of footings for the sulphur melter canopy (south-east of the Sulphur Stores), penthouse (south of No 1 Super Store) and an acid plant chimney stack (north of the cooling towers). A road was also proposed to be paved (east of the newer Sulphur Store). These areas of focus are highlighted in light blue in **Figure 3** below.
- The geotechnical investigation included advancing ten machine augered holes to depths of up to 3.2m bgl to assess near surface material and the water table.
- Ground conditions encountered in the vicinity of the sulphur melter canopy comprised gravel and fill to 1m bgl (no further description provided) underlain by sandy gravel to 2.5m bgl, which in turn was underlain by sandy gravel with organic clay. Groundwater was encountered at 1.3m bgl.
- Ground conditions encountered in the vicinity of the proposed road comprised gravel with silt to 1m bgl, underlain by sandy gravel to 1.3m bgl, which in turn was underlain by gravelly sand.
- Ground conditions encountered in the vicinity of the penthouse comprised gravelly sand to 0.6m underlain by sandy gravel.
- Ground conditions encountered in the vicinity of the acid plant comprised sandy gravel with fill to 1m bgl, underlain by gravelly sand. Groundwater was encountered at 2.4m bgl.
- No further details regarding the fill were provided.

4.7.2 NPE Den Scrubber Upgrade - Preliminary Site Investigation for Ravensdown by Beca dated 04 September 2018

- The PSI was undertaken to identify any potential risks associated with site soils and highlight any requirements for managing those risks in accordance with local, regional, and national requirements. This information was to be used to inform the Stage 3 Developed Design Study for the replacement / repair of the Napier Works Den Scrubber System.
- "The subject site" comprised the vicinity of the manufacturing building. This area of focus are highlighted in white in **Figure 3** below.
- During discussion with Grant Whitfield (Operations Manager) it was stated that asbestos containing materials (ACM) have been identified at various locations within the Ravensdown site. An Asbestos Management Plan is in place, which includes a programme of replacing ACM with alternative materials. It was stated that various areas of ACM have been replaced, however, ACM was still present.
- The PSI concluded that it was more likely than not that the following HAIL activities occurred in the vicinity of the manufacturing building:
    - **HAIL A.6** ('*fertiliser manufacture or bulk storage*')
    - **HAIL A.17** ('*storage tanks or drums for fuel, chemicals or liquid waste*')
    - **HAIL E.1** ('*sites with buildings containing asbestos products known to be in a deteriorated condition*')
    - Furthermore, on a "more likely than not" basis, it was considered that potentially contaminative activities have been undertaken during the history of the sites operations in sufficient quantity that it could pose a risk to human health or the environment (largely associated with the

storage and use of chemicals and fertiliser products). **HAIL I** (‘*any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment*’).

- Draft Asbestos Management Plan for Ravensdown by ERM dated 28 March 2019 and Subsequent Version 3 of the same report dated 24 June 2021
- The purpose of the Asbestos Management Plan (Appendix E) was to set out the actions that would be taken to manage asbestos containing materials (ACMs) at Awatoto, Napier in accordance with required health and safety regulations (see report for further details). The report contained recommendations for work being carried out on-site, in areas where asbestos may be present.
- Attached within the report is a survey conducted following a site visit on 22 February 2018 by a Licensed Asbestos Assessor & Certified Surveyor from ERM (included within **Appendix H**). This survey details results of sampling that was conducted on-site.

4.7.3 Molten Sulphur Tank Replacement Works - Preliminary Site Investigation (Contamination) for Ravensdown by Beca dated 24 May 2019

- The PSI was undertaken for an area proposed to be disturbed as part of the replacement of the Acid Plant molten sulphur tank at the southern end of the wider Ravensdown site. This area of focus are highlighted in dark blue in **Figure 3** below.
- A diesel storage tank was located to the north-west of the area of focus, and an auxiliary boiler tank was located to the west. An underground diesel line was reportedly located along the northern boundary of the molten sulphur tank. Furthermore, two obsolete, decommissioned underground pipes were reportedly located underneath the tank.
- Various fires have reportedly occurred on the wider Ravensdown site where site staff typically used only water as a fire suppressant. However, fire extinguishers were occasionally used depending on the location and extent of the fire. Site records did not contain details of fire locations or whether fire suppressant foams had previously been used at the site.
- The most recent significant chemical spill occurred 30 May 2018 when diluted fluorosilica acid sprayed across the site and onto SH2 due to a hole in the top of a fibreglass pipe from the Den Scrubber equipment.
- The PSI concluded that it was considered more likely than not that **HAIL A.6**, **A.17** and **HAIL I** activities had occurred.

4.7.4 Hazardous Substance Site Plan prepared by Ravensdown Fertiliser Co-operative Limited dated 01 March 2020

- During the site walkover, a Hazardous Substance Plan was provided (included within **Appendix I**) which illustrated the locations of the aforementioned existing tanks on-site.

4.7.5 NPE Drying Tower Replacement Works - Preliminary Site Investigation (Contamination) for Ravensdown by Beca dated 03 December 2020

- The PSI was undertaken in relation to the replacement of the drying tower replacement works (located in the vicinity of the acid plant in the south-east of the site on Part Section 32 Block I Clive SD).
- The report concluded that the following HAIL codes were considered to be applicable to the area on a ‘more likely than not basis’:
  - **HAIL A6** (‘*fertiliser manufacture or bulk storage’*)
  - **HAIL A17** (‘*storage tanks or drums for fuel, chemicals or liquid waste’*)

– **HAIL I** (‘*any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment’*).

4.7.6 Detailed Site Investigation for Ravensdown Fertiliser Co-operative Limited by EAM NZ Ltd dated December 2020

- The DSI was undertaken to provide an assessment of the contaminative status and to assess the human health risks for an area where a new chimney stack and scrubber system (including soil disturbance) is proposed to be developed.
- Three trial pits were excavated to access the underlying soils in the vicinity of the proposed development. A clay brick structure was identified in Trial Pit 1. There were no other obvious contamination indicators noted.
- Soil samples were collected from within the three trial pits at depths of 0-150mm and 150-300mm. Analysis was undertaken for a suite of metals. Concentrations were found to be within the NES soil contaminant standards for the land use scenario of Commercial/Industrial, albeit some concentrations were noted to be elevated above predicted background concentrations.
- The report concluded that the soils at the area of focus are highly unlikely to represent a risk to human health with respect to the commercial/Industrial activity occurring.

4.7.7 Contaminated Soil Management Plan for Ravensdown Fertiliser Co-operative Limited by EAM NZ Ltd dated January 2021

- The CSMP was prepared for the earthworks resulting from the proposed construction of a new chimney stack and scrubber system at the site.
- The CSMP outlined procedures for the safe excavation and removal of soils from the focus area, and to ensure that the soils were disposed of to the correct locations.

4.7.8 Soil Sampling (Contamination) – Drying Tower Replacement Letter Report for Ravensdown by Beca dated 12 January 2021

- Beca was commissioned by Ravensdown to undertake soil sampling in relation to the replacement of the drying tower works (which involved disturbance and disposal of soil for installing new plinths for improvements to ducting supports).
- Three hand augers were excavated to a maximum depth of 0.6m bgl and two soil samples (immediately beneath the concrete and 0.5 – 0.6 m bgl) were collected at each location.
- Two distinct layers of fill material were observed (the first fill layer being approximately 150mm thick and comprising brownish orange sandy silt with large river pebbles, and the second fill layer being at least 200mm thick and comprising light brown silty sand with smaller river pebbles).
    - BTEX compounds were below laboratory detection limits in all six samples analysed.
    - TPH were detected in one sample (TP1/S1) but the result did not exceed the adopted screening criteria.
    - Numerous PAH compounds were detected in one sample (TP3/S1), however all detections were below their applicable screening criteria. PAH were not detected in the remaining five samples analysed.
    - Various heavy metals were detected above the published background concentration for the area but were below the adopted screening criteria in all six samples analysed, with the exception of one arsenic result in soil sample TP1/S1. This single sample produced a result for arsenic (220 mg/kg) that was above both the adopted human health and environmental

risk criteria (70 and 150 mg/kg, respectively). All other samples arsenic results were below the screening criteria.

- Asbestos was detected in two of the six soil samples analysed. These detections did not produce results that exceeded the applicable human health criteria.

- The proposed earthworks were considered to be within the permitted activity criteria of the NESCS however, a Contaminated Soils Management Plan (CSMP) was recommended to prevent contaminant mobility during the works and to allow for general good practice in handling and disposing of soils with low contaminant concentrations.
- Arsenic was found to be present in one sample that exceeded the environmental screening criteria. However, given that the TP1/S1 result was the only result above the screening criteria values, it was considered that with reasonable mixing likely to occur during the earthworks, the concentration of arsenic at the single location was unlikely to pose a significant risk to the environment.
- Based on the soil results indicating a lack of evidence of contamination that would result in significant adverse effects on the environment, consent from Hawke's Bay Regional Council under the HB RRMP was considered to not be required for the proposed works.

4.7.9 NPE Drying Tower Replacement Works Contaminated Soils Management Plan for Ravensdown by Beca dated 13 January 2021

- The CSMP was prepared for the earthworks associated with replacement of the drying tower.
- The CSMP was intended to be used as a reference document during the earthworks, to outline and assist in identifying controls to be implemented at the site based on the observed risk of contamination within the soils.

4.7.10 Den Scrubber Upgrade – Geotechnical Safe Work Method Statement (Contaminated Land) for Ravensdown by Beca dated 18 February 2021

- The Safe Work Method Statement (SWMS) was prepared to manage the risk associated with geotechnical investigation (including drilling) into potentially contaminated sub-surface materials at Ravensdown Napier as part of the Den Scrubber Upgrade project. The focus area was adjacent to the north-east of the Manufacturing & Granulation building (on Section 26 Block I Clive SD).
- The proposed geotechnical investigation included two 20m deep boreholes (with the installation of one of the boreholes with a piezometer to 15m depth) and the hydro excavation of five trial pits to approximately 2m depth.
- The purpose of the SWMS was to provide appropriate management controls and procedures to mitigate the exposure pathway between potentially contaminated material and staff involved in the intrusive geotechnical investigation at Ravensdown Napier.

In April 2021, Hill Laboratories issued results to EAM NZ Limited for three samples (named Scrubber 1, Scrubber 2 and Scrubber 3). Asbestos was not detected in any of these samples. Although not confirmed, it is understood that this sampling was undertaken to inform the above Den Scrubber Upgrade Geotechnical Safe Work Method Statement.

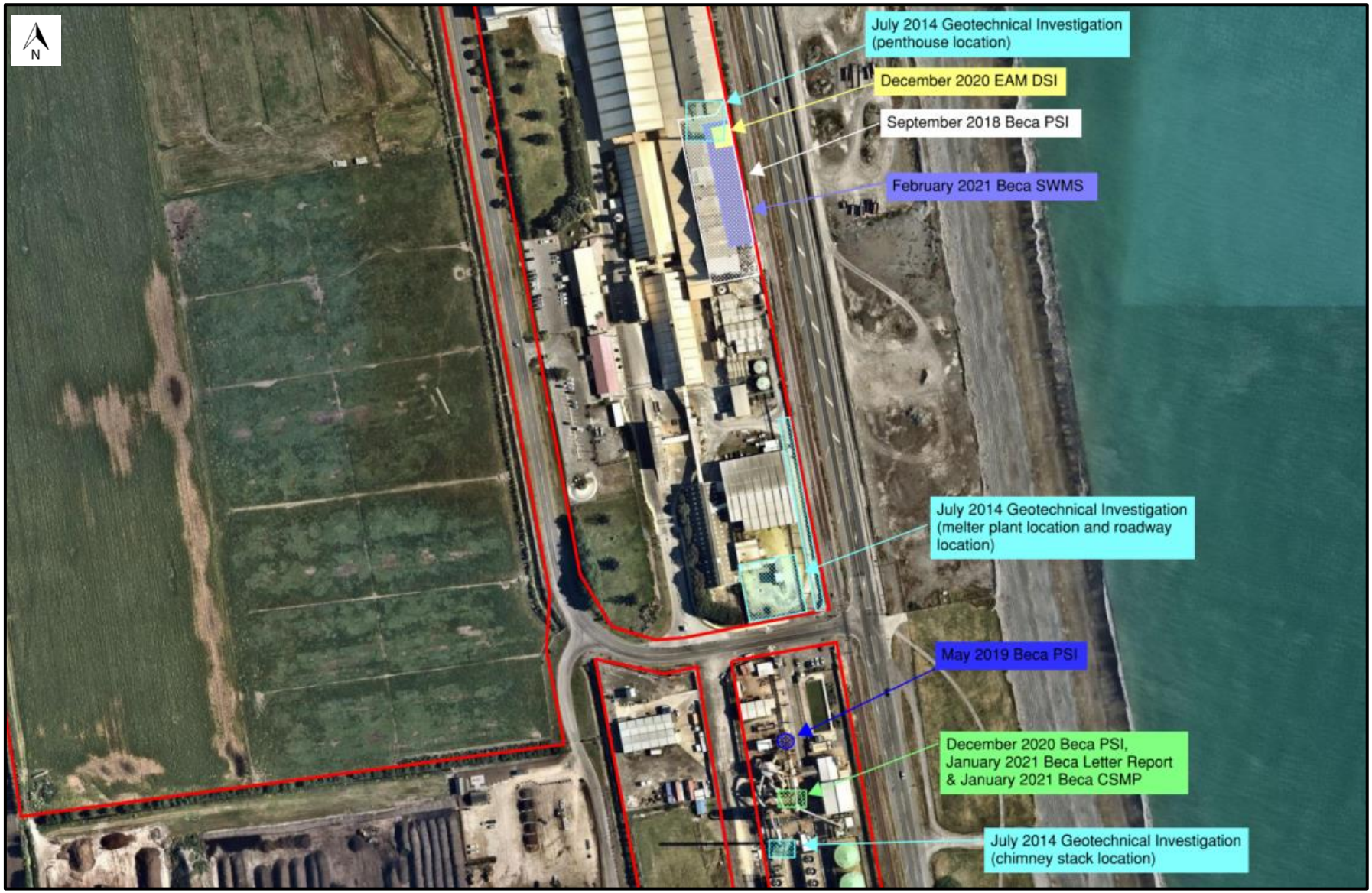


Figure 3: Focus Areas of Previous Investigations. Image Source: © 2021 Nearmap.

5 Discussion

5.1 Potential Contaminants of Concern

MfE define the Hazardous Activities and Industries List (HAIL) as "*a compilation of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. The HAIL is intended to identify most situations in New Zealand where hazardous substances could cause, and in many cases have caused, land contamination*."

Review of the site historical information has identified a number of land use activities which may have resulted in the contamination at the site on a more likely than not basis. These are summarised in **Table 4**. Potential contaminants of concern associated with these activities have also been identified.

The maps included within **Appendix J** illustrate the identified potential HAIL areas on-site.

Table 4. Discussion, Identified HAIL Activities and Potential Contaminants of Concern

Location	Activity	Comments	Discussion	HAIL Activity to Have Occurred On-Site on a "more likely than not" basis?	HAIL Code	Potential Contaminants of Concern
The majority of the site (shaded in yellow in the HAIL Maps in **Appendix J**)	Fertiliser production (including bulk storage of associated chemicals such as acid)	Available historical aerial photographs indicate that sometime between 1948 and 1958, the majority of the site had been developed to support a fertiliser manufacturing facility (including a sulphuric acid manufacturing plant, a fertiliser manufacturing plant, phosphate rock storage, sulphur storage, superphosphate storage, acid tanks, and handling facilities). Staff on-site reported that the facility opened in 1953. A historical settling pond previously located in the vicinity of the Intake area comprised a concrete-lined pond used to store scrubber liquor. This pond was believed to have been infilled approximately 20 years ago and is believed to likely still in-situ. Furthermore, former stockpiling activities were identified on historical aerial images. The site representative indicated that this was associated with temporary storage of phosphate rock, which was subsequently removed and used for the production of fertiliser.	Human exposure to any contaminated soils and groundwater via direct contact (ingestion, dermal contact and inhalation of dust) would be limited as current conditions across this area of the site predominantly comprise hardstanding and building cover, reducing the likelihood that site occupiers would be exposed to subsurface contaminants under normal working conditions. However, if future soil disturbance is proposed, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.	Yes	A.6 - Fertiliser manufacture or bulk storage	Calcium phosphate, calcium sulphate, copper chloride, sulphur, sulphuric and phosphoric acid, molybdenum, selenium, iron, cadmium, nitrates, and ammonia
On Lot 7 DP 25683	White strip evident in the 1936 aerial image	The site representative indicated that this is associated with salt from evaporated sea water, impacting vegetation growth.	Given the cause is likely relate to salt from sea water, this is unlikely to represent a significant source of contamination.	No	-	-
On Lot 1 DP 16060 and Lot 2 DP 16060 (shaded in brown in the HAIL Maps in	Waste disposal to land	Anecdotal information indicated the potential presence of demolish waste from the former 'No 1 – 3 Acid Plants' to be located within the grassed area south of the small carwash. Unconfirmed anecdotal information suggested the potential presence of asbestos wrapped in plastic and buried	This represents a potential source of contamination. If future soil disturbance is proposed in these areas, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.	Yes	G.5 - Waste disposal to land	Dependent upon type of fill material but can include: ■ Heavy metals including arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc ■ Hydrocarbons ■ Asbestos

Location	Activity	Comments	Discussion	HAIL Activity to Have Occurred On-Site on a "more likely than not" basis?	HAIL Code	Potential Contaminants of Concern
Appendix J)		in the grass-covered area in the south-west of the site. The former weighbridge in the north reportedly had an inspection pit. This was believed to have been infilled.	The potential for any fill material to intercept groundwater also cannot be wholly discounted at this stage. Therefore, there is the potential that contamination (if present) within fill material may leach into shallow groundwater and migrate into the nearby surface water features.			
On Section 44 Block I Clive SD (shaded in dark blue in the HAIL Maps in **Appendix J**)	Historical railway lines / sidings	Former railway lines/sidings were identified in the north-east of the site from at least 1962 until pre-1988.	This area of the site now predominantly supports an access road. Therefore, human exposure to any contaminated soils and groundwater via direct contact (ingestion, dermal contact and inhalation of dust) would be limited, reducing the likelihood that site occupiers would be exposed to subsurface contaminants under normal working conditions. However, if future soil disturbance is proposed in this area of the site, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.	Yes	I – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment	Hydrocarbons including polycyclic aromatic hydrocarbons (PAH), heavy metals including arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, asbestos
On Part Section 43 Block I Clive SD (shaded in blue in the HAIL Maps in **Appendix J**)	Tannery	A former tannery is located within the far north of the site, erected pre-1982 and converted into a workshop in approximately 1996.	Human exposure to any contaminated soils and groundwater via direct contact (ingestion, dermal contact and inhalation of dust) would be limited as current conditions across this area of the site predominantly comprise hardstanding and building cover, reducing the likelihood that site occupiers would be exposed to subsurface	Yes	A.16 – Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or	Chromium (including hexavalent Cr), manganese, copper, ammonia, nitrite, sulphides, acids, sodium hydroxide, lime, formaldehyde, solvents, cyanide, detergents, pesticides, and bleaching agents (e.g. hydrogen peroxide)

Location	Activity	Comments	Discussion	HAIL Activity to Have Occurred On-Site on a "more likely than not" basis?	HAIL Code	Potential Contaminants of Concern
			contaminants under normal working conditions. However, if future soil disturbance is proposed, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.		storing wool or leather products	
On Part Section 32 Block I Clive SD and on Part Section 43 Block I Clive SD shaded in green in the HAIL Maps in **Appendix J**)	Commercial laboratories	A laboratory was historically located in the south of the site, erected pre-1987 and currently utilised as a Contractors Canteen. An existing commercial laboratory is located in the far north of the site, erected pre-2003.	Human exposure to any contaminated soils and groundwater via direct contact (ingestion, dermal contact and inhalation of dust) would be limited as current conditions across this area of the site predominantly comprise hardstanding and building cover, reducing the likelihood that site occupiers would be exposed to subsurface contaminants under normal working conditions. However, if future soil disturbance is proposed, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.	Yes	A.3 – Commercial analytical laboratory sites	A range of organic and inorganic compounds including solvents, acids, metals, and mercury
On Section 44 Block I Clive SD and Section 60 Block I Clive SD	Transport depot	From at least 2009, a transport depot was evident in the north of the site.	The potential for this activity to have caused contamination cannot be discounted. If future soil disturbance is proposed, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.	Yes	F.8 – Transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances	Dependent on products being transported: ▪ Hydrocarbons (including PAH) Heavy metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc)

Location	Activity	Comments	Discussion	HAIL Activity to Have Occurred On-Site on a "more likely than not" basis?	HAIL Code	Potential Contaminants of Concern
Various locations on-site (shaded and/or outlined in pink in the HAIL Maps in **Appendix J**)	Asbestos products known to be in a deteriorated condition	Various former structures have been identified on-site, which have since been cleared. Old site plans dated from 1961 labelled various asbestos containing materials in built structures. A Draft Asbestos Management Plan undertaken by ERM in March 2019 identified numerous ACMs on-site (including cladding, lagging, insulation, vinyl flooring, electrical boards, gutters / downpipes, and underground services). The report indicated that cladding in-particular was broken or damaged "*in almost every case*", and an area of soft landscaping south of the Sulphur Store was potentially contaminated with asbestos fibres. During the site walk-over, it was reported that the majority of ACMs have been removed, however, some remain (including the roof of the older Sulphur Store). Sections of an old fence on Sections 35 and 36 Block I Clive SD in the far north-west of the site were also noted to contain suspected asbestos cement sheeting in a deteriorated condition.	The potential for contamination cannot be discounted at this stage. If future soil disturbance is proposed in the vicinity of structures known or suspected to contain asbestos in a deteriorated condition, soil sampling is recommended to inform consenting requirements, material handling and/or disposal procedures.	Yes	E.1 - Sites with buildings containing asbestos products known to be in a deteriorated condition	Asbestos
Various locations on-site (shaded in light blue in the HAIL Maps in **Appendix J**)	Bulk fuel storage	From 1984, various applications were submitted for a license to store dangerous goods (including a 4,500 litre Class 3c UST, two 20,250 litre Class 3c ASTs, two 409 litre Class 3a ASTs in 1984 and a 15,000 litre Class 3c UST and two 22525 litre Class 3c ASTs in 1986 – locations not provided). Site staff were not aware of any current or historical USTs. However, an	The potential for soil contamination cannot be discounted. The potential for any contamination (if present) to intercept groundwater and impact nearby surface water features also cannot be wholly discounted. If future soil disturbance is proposed, further investigation would likely be required to inform	Yes	A.17 – Storage tanks or drums for fuel, chemicals or liquid waste	■ Total petroleum hydrocarbons (TPH) ■ Polycyclic aromatic hydrocarbons (PAH) ■ Benzene, toluene, xylene, ethylbenzene (BTEX)

Location	Activity	Comments	Discussion	HAIL Activity to Have Occurred On-Site on a "more likely than not" basis?	HAIL Code	Potential Contaminants of Concern
		unconfirmed recollection of a possible UST was noted adjacent to the east of the Intake area. An approximately 40,000 litre diesel AST is located in the north of the site (on Section 44 Block I Clive SD, associated with the truck depot operated by Sandford Transport Ltd). An associated AdBlue AST was also noted in the vicinity. An approximately 500 litre petrol AST is located in the north of the site (on Lot 1 DP 16060, utilised for refuelling gardening maintenance equipment). A large diesel AST tank is located east of No 2 Dispatch (on Section 60 Block I Clive SD). A large diesel AST tank is located in the south of the site (on Part Section 32 Block I Clive SD). This tank was replaced relatively recently. Historically, there was a leak in associated underground pipework. This was subsequently replaced to be aboveground and the leak was believed to have been minor. An engineering store is located in the south-west of the site (on Lot 2 DP 16060). A number of locked containers ('inventory stores', including one for the storage of oils and grease) are located in the yard area surrounding the engineering store. A Hazardous Site(s) Form dated March 2006 listed '808 Waitangi Road' as a potentially contaminated site from	consenting requirements, material handling and/or disposal procedures.			

Location	Activity	Comments	Discussion	HAIL Activity to Have Occurred On-Site on a "more likely than not" basis?	HAIL Code	Potential Contaminants of Concern
		hydrocarbons, however, no further details were provided (including the location, source or extent etc).				
On Section 26 Block I Clive SD, Part Section 32 Block I Clive SD and on Part Section 43 Block I Clive SD (shaded in blue in the HAIL Maps in **Appendix J**)	Workshops	Workshops in the east of the site (on Section 26 Block I Clive SD), dated pre-1958 (largely utilised for repairs and maintenance for the fertiliser manufacturing facility). A maintenance workshop in the south of the site (on Part Section 32 Block I Clive SD), dated pre-1982 (largely utilised for repairs and maintenance for the acid plant). The former tannery structure in the far north-east of the site is currently utilised as an engineering workshop (since approximately 1996).	Human exposure to any contaminated soils and groundwater via direct contact (ingestion, dermal contact and inhalation of dust) would be limited as current conditions across this area of the site predominantly comprise hardstanding and building cover, reducing the likelihood that site occupiers would be exposed to subsurface contaminants under normal working conditions. However, if future soil disturbance is proposed, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.	Yes	D.5 – Engineering workshops with metal fabrication	Metals and oxides of iron, nickel, copper, chromium, magnesium and manganese; range of organic compounds used for cleaning including BTEX, solvents
On Section 44 Block I Clive SD and on Section 26 Block I Clive SD (shaded in purple in the HAIL Maps in **Appendix J**)	Garages	Old site plans referred to: ■ A former garage in the north of the site (on Section 44 Block I Clive SD), dated pre-1987 and cleared pre-2003. ■ A garage in the east of the site (on Section 26 Block I Clive SD), dated pre-1958 (currently utilised for repairs and maintenance for the fertiliser manufacturing facility).	The potential for soil contamination cannot be discounted. The potential for any contamination (if present) to intercept groundwater and impact nearby surface water features also cannot be wholly discounted. If future soil disturbance is proposed, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures.	Yes	F.4 – Motor vehicle workshops	Hydrocarbons including PAHs, solvents, and metals contained in waste oil
Various locations on-site (shaded in	Electrical transformers	Numerous transformers are present on-site.	Human exposure to any contaminated soils and groundwater via direct contact (ingestion, dermal contact and	Yes	B.2 – Electrical transformers	Polychlorinated biphenyls (PCBs), hydrocarbons, copper, tin, lead, and mercury

Location	Activity	Comments	Discussion	HAIL Activity to Have Occurred On-Site on a "more likely than not" basis?	HAIL Code	Potential Contaminants of Concern
orange in the HAIL Maps in **Appendix J**)		The use of PCBs was prohibited in new infrastructure under the HSNO Act 1996, with a phased removal until 2016. Given the age of the facility, the potential for PCBs to have historically be present cannot be discounted.	inhalation of dust) would be limited as current conditions across these areas of the site predominantly comprise hardstanding and building cover, reducing the likelihood that site occupiers would be exposed to subsurface contaminants under normal working conditions. However, if future soil disturbance is proposed, further investigation would likely be required to inform consenting requirements, material handling and/or disposal procedures			
Location unconfirmed	Sulphur fire	A letter viewed in the Council Property Files dated September 2004 made reference to a sulphur fire. The site representative reported that fires have occurred on-site in the past, however, no structures containing asbestos were affected, and only product or water has been used to extinguish any fires	As no structure containing asbestos was reportedly damaged during historical fires on-site and as no fire-fighting foams were reportedly used to extinguish any historical fires, this is unlikely to represent a significant source of contamination.	No	-	-

5.2 Exposure Pathway Assessment

The Conceptual Site Model (CSM) is provided in **Table 5** and was developed in order to inform the assessment and describe the relationship between sources of contamination at the site, the human and environmental receptors that may be exposed to those contaminants in the context of the use of the site, and the pathways by which those receptors may be exposed.

Table 5: Preliminary Exposure Pathway Assessment

Source	Receptor	Pathway	Pathway Complete?
▪ Calcium phosphate calcium sulphate copper chloride, sulphur, sulphur and phosphoric acid, molybdenum, selenium, iron, cadmium, nitrates, and ammonia ▪ Heavy metals ▪ Hydrocarbons ▪ Asbestos ▪ Solvents ▪ PCBs	Construction workers	Exposure of workers to contaminants in soils during site redevelopment – dermal contact, ingestion or inhalation of dust/vapours.	**Potentially Complete Pathway** – Levels of contaminants may be present at concentrations that may pose a risk to human health.
	Future site users	Exposure of future site users to contaminants in soils - dermal contact, ingestion or inhalation of dust/vapours.	**Potentially Complete Pathway** – Not all identified HAIL areas on-site comprise building cover and hardstanding.
	Groundwater resources for public consumption	Leaching and migration of soil contaminants into groundwater	**Potentially Complete Pathway** – Various Water Permits for water bottling uses are recorded within the surrounding area.
	Surface water	Runoff into site stormwater system which may discharge to the marine environment. Lateral migration to marine environment via groundwater.	**Potentially Complete Pathway** – This exposure risk can be managed through specific controls.

6 Development Implications

6.1 Consents

6.1.1 National Environmental Standard

Where potentially contaminating land uses are identified to have occurred, then the Regulations set out by the NESCS will apply and may potentially trigger a Resource Consent.

The NESCS applies to land as per clause 5(7):

"Land covered:

(7) The piece of land is a piece of land that is described by 1 of the following:

a) an activity or industry described in the HAIL is being undertaken on it;

b) an activity or industry described in the HAIL has been undertaken on it;

c) it is more likely than not that an activity or industry described in the HAIL is being or has been undertaken on it."

HAIL activities have been identified on-site, as detailed in **Table 4** and illustrated in the HAIL Maps in **Appendix J**.

The NESCS applies to five activities taking place on land identified to have potentially contaminating activities being undertaken on it, as listed on the HAIL. These activities are:

- The removal or replacement of all, or part of, a fuel storage system
- Sampling the soil sampling
- Soil disturbance
- Subdivision of the land
- Change of land use

For each activity, there are a set of criteria that if met, the activity can proceed as a Permitted Activity (PA). Where works cannot comply with these PA criteria then land use consent would be required under the NESCS.

The following activities may be triggered for this site:

Soil Disturbance

Under Regulation 8(3) of the NESCS, soil disturbance of up to 25m^3 per 500m^2 and disposal of up to 5m^3 per 500m^2 is allowed as a PA. If permitted volumes are likely to be exceeded, consent will be required.

Regulation 8(3) of the NESCS also requires compliance with the below criteria in order to meet Permitted Activity status:

- Controls are put in place to minimise people's contact with the soil during the disturbance works (including workers undertaking the disturbance works and people on neighbouring sites).
- Appropriate dust, erosion and sediment controls are put in place to limit contaminant mobility for the duration of the works and until the site is in an erosion free state.
- The soil is in an erosion free state within 1 month of the completion of works.
- Soil for offsite disposal must be taken to an appropriate facility.
- Duration of the works must not exceed 2 months.
- On-site containment of contaminants must not be compromised.

6.1.2 Regional Plans

Section 6.3.2 (Rule 7) of the Hawkes Bay Regional Resource Management Plan identifies a number of conditions to be met associated with "*vegetation clearance and soil disturbance activities*" carried out as a Permitted Activity. Section 6.6.7 (Rules 48 and 49) of the Regional Plan outline conditions associated with "*discharges of solid contaminants, including cleanfill, to land*".

These rules indicate that if excavated soils are to be stockpiled on-site and have the potential to increase the concentration of contaminants at that site, a discharge consent and a contaminated soils management plan will be required.

If excavated soils are to be stockpiled on-site and are unlikely to increase the concentration of contaminants at that site a discharge consent will not be required.

If soils are to be excavated and removed off-site to a licenced disposal/treatment facility, no consent is required from the Regional Council, however standard waste management transfer practices will be required.

7 Summary of Conclusions

Beca has been commissioned by Ravensdown to undertake a Preliminary Site Investigation (PSI) at their site at Awatoto on the eastern coast, approximately 6km to the south of Napier city centre. The PSI is a requirement under National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011 (NESCS) prior to disturbing soil at a site where a Hazardous Activities and Industries List (HAIL) activity is considered to have occurred on a 'more likely than not' basis. The PSI is intended to identify any potential risks associated with site soils and highlight any requirements for managing those risks in accordance with regional and national requirements.

Based on the information reviewed, the site predominantly comprised undeveloped assumed grazing land until approximately 1953. By 1953, the majority of the site had been developed for use as a fertiliser manufacturing facility (including sulphuric acid manufacturing, fertiliser manufacturing, phosphate rock storage, sulphur and superphosphate storage and handling facilities). Old site plans also referred to various structures associated with the facility including but not limited to a weighbridge, workshops, garages, and a laboratory. Dwellings were historically located in the far north-west of the site (on property sections Sections 35 and 36 Block I Clive SD) from at least 1962 until pre-2003. A truck shed was erected in the far north-east of the site (on Part Section 43 Block I Clive SD) in pre-1982. This structure was subsequently utilised as a tannery, and is currently utilised as an engineering workshop operated by Pipe Co Engineering Limited. A laboratory operated by Analytical Research Laboratories has been located in the north of the site (on Part Section 43 Block I Clive SD) since at least 2003.

A number of potentially contaminative land uses / activities have been identified on-site (either currently or historically) including:

- **HAIL A.3** ('*commercial analytical laboratory sites*')
  - Relating to the laboratory in the far north of the site (on Part Section 43 Block I Clive SD) and the former laboratory in the south-east of the site (on Part Section 32 Block I Clive SD).
- **HAIL A.6** ('*fertiliser manufacture or bulk storage*')
  - Relating to the fertilizer manufacturing facility on-site (on Section 44 Block I Clive SD, Section 60 Block I Clive SD, Lot 1 DP 16060, Section 50 Block I Clive SD, Section 26 Block I Clive SD, Lot 4 DP 8546, Lot 2 DP 16060 and Part Section 32 Block I Clive SD).
- **HAIL A.16** ('*skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products*')
  - Relating to the former tannery in the far north-east of the site (on Part Section 32 Block I Clive SD).
- **HAIL A.17** ('*storage tanks or drums for fuel, chemicals or liquid waste*')
  - Relating to the diesel and AdBlue ASTs in the north of the site (on Section 44 Block I Clive SD), the diesel AST towards the center of the site (on Section 60 Block I Clive SD), the petrol tank towards the north of the site (on Lot 1 DP 16060), the diesel AST in the south-east of the site (on Part Section 32 Block I Clive SD) and the inventory stores in the south-west of the site (on Lot 2 DP 16060).
  - From 1984, various applications were submitted for a license to store dangerous goods (including two USTs, locations were not provided). Site staff were not aware of any current or historical USTs. However, an unconfirmed recollection of a possible UST was noted adjacent to the east of the Intake area.
- **HAIL B.2** ('*electrical transformers*')
  - Relating to the transformers identified towards the center of the site (on Section 44 Block I Clive SD, Lot 1 DP 16060, and Lot 4 DP 8546) and in the south of the site (on Section 26 Block I Clive SD and Part Section 32 Block I Clive SD).
- **HAIL D.5** ('*engineering workshops with metal fabrication*')

- Relating to a workshop in the east of the site (on Section 26 Block I Clive SD, utilised for repairs and maintenance for the fertiliser manufacturing facility), a maintenance workshop in the south of the site (on Part Section 32 Block I Clive SD, utilised for repairs and maintenance for the acid plant, and the former tannery structure in the far north-east of the site (Part Section 43 Block I Clive SD, currently utilised as an engineering workshop).

- **HAIL E.1** ('asbestos *products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition'*)
  - Relating to numerous infrastructure (past and present) at various locations on-site.
  - The risk of any asbestos (if present) within materials used in the production of fertiliser (e.g. magnesium) falls outside of the scope of this investigation.

- **HAIL I** ('*Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment'*)
  - Relating to the former railway lines and sidings identified in the north of the site (on Section 44 Block I Clive SD).

- **HAIL F.8** ('*transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances'*)
  - Relating to the transport depot in the north of the site (on Section 44 Block I Clive SD, Section 60 Block I Clive SD and Lot 1 DP 16060).

- **HAIL G.5** (*'waste disposal to land'*)
  - Anecdotal information indicated the potential presence of demolish waste from the former 'No 1 – 3 Acid Plants' to be located within the grassed area south of the small carwash on Lot 1 DP 16060.
  - Unconfirmed anecdotal information suggested the potential presence of asbestos wrapped in plastic and buried in the grass-covered area in the south-west of the site (on Lot 2 DP 16060).

If soil disturbance, underground fuel system removal, soil sampling, subdivision and/or a change of land use is proposed for an area of the site identified as HAIL, then a review of the Permitted Activity criteria in relation to the specific activity should be undertaken to determine whether land use consent is required. Depending on the nature of the proposed works, a DSI may be required to assist with determination of whether consent is required. Where a proposed development requires the disposal of spoil material off-site, soil sampling would be required to determine the suitability of the material for acceptance at the chosen facility. Acceptance from the facility should be approved prior to removal of soil off-site.

Prior to all future works being undertaken, a Suitably Qualified and Experienced Practitioner (SQEP) should be consulted in advance of physical works commencing to confirm any potential contaminated land consenting requirements.

8 Limitations

This report has been prepared by Beca Ltd (Beca) solely for Ravensdown Limited (Client). Beca has been requested by the Client to provide a site-wide Preliminary Site Investigation at the Ravensdown Napier Works in Awatoto. This report is prepared solely for the purpose of the assessment of potential soil and groundwater contamination. The contents of this report may not be used by Ravensdown Limited for any purpose other than in accordance with the stated Scope.

This report is confidential and is prepared solely for the Client. Beca accepts no liability to any other person for their use of or reliance on this report, and any such use or reliance will be solely at their own risk.

In preparing this report Beca has relied on key information including the following: publicly available historical aerial photographs, Hakes Bay Regional Council Contamination Enquiry, NCC Property Files, and reports and plans provided by the Client.

Unless specifically stated otherwise in this report, Beca has relied on the accuracy, completeness, currency and sufficiency of all information provided to it by, or on behalf of, the Client or any third party, including the information listed above, and has not independently verified the information provided. Beca accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the information provided. Publicly available records are often inaccurate or incomplete.

The contents of this report are based upon our understanding and interpretation of current legislation and guidelines (“Standards”) as consulting professionals, and should not be construed as legal opinions or advice. Unless special arrangements are made, this report will not be updated to take account of subsequent changes to any such Standards.

This report should be read in full, having regard to all stated assumptions, limitations and disclaimers.

A

Appendix A – Historical Certificates of Title

References
Prior C/T 144/117(balance)
Mortgage 312468.1
Transfer No.
N/C. Order No.

CANCELLED

Land and Deeds 69

REGISTER

Duplicate Destroyed

No. F4/984

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

This Certificate dated the 22nd day of April one thousand nine hundred and seventy-five under the seal of the District Land Registrar of the Land Registration District of HAWKE'S BAY

WITNESSETH that THE EAST COAST FARMERS' FERTILISER COMPANY LIMITED at Napier ——

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 7.3616 hectares more or less being Sections 26,35,36 and 44 and part Section 32 Block I Clive Survey District ——

DISTRICT LAND REGISTRAR HAWKE'S BAY NEW ZEALAND

Assistant Land Registrar

Interests at Date of Issue:

1. Subject to the reservations and conditions imposed by Section 59 of the Land Act 1948.

2. 312468.1 Mortgage to New Zealand Meat Producers Board - 22.4.1975 at 10.14 a.m.

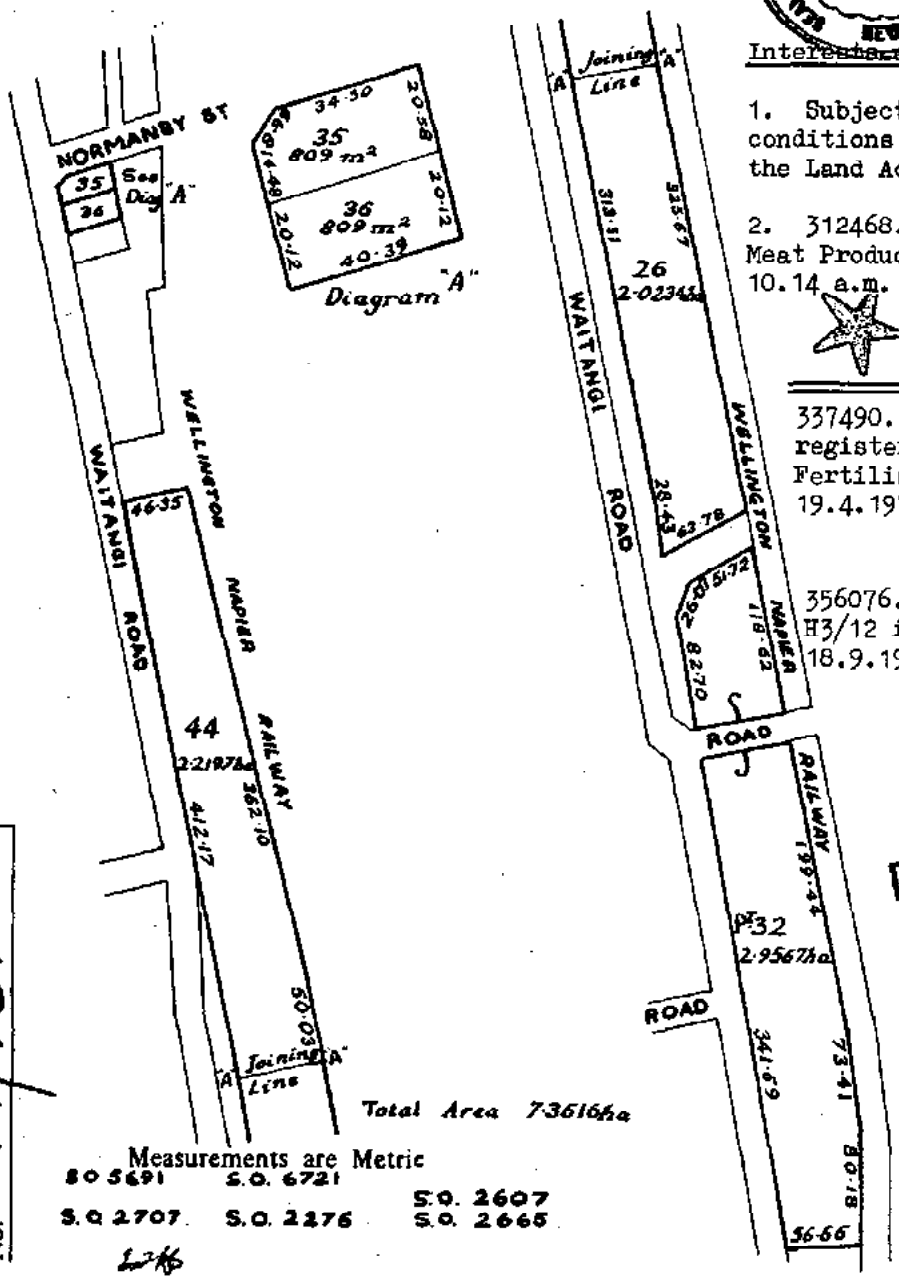
A.L.R.

337490.1 Change of Name of the registered proprietor to East Coast Fertiliser Company Limited- 19.4.1977 at 9.16 a.m.

A.L.R.

356076.1 OCT Cancelled and C.T. H3/12 issued for within land - 18.9.1978 at 9.16 a.m.

A.L.R.



Measurements are Metric

S.O. 5691 S.O. 6721 S.O. 2607
S.O. 2707 S.O. 2276 S.O. 2665

Duplicate Destroyed

CANCELLED

No. F4/984

COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952

Historical Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**HBH3/12**
Land Registration District	**Hawkes Bay**
Date Issued	18 September 1978

Prior References
HBB4/1313 HBF4/982 HBF4/984

Estate	Fee Simple
Area	8.4618 hectares more or less
Legal Description	Section 26, Section 35-36, Section 44, Section 50 and Part Section 32 Block I Clive Survey District and Lot 4 Deposited Plan 8546

Original Proprietors
East Coast Fertiliser Company Limited

Interests

Subject to Section 59 Land Act 1948 (affects Sections 26, 35, 36 and 44 and part Section 32)

618157.1 CERTIFICATE PURSUANT TO SECTION 37 BUILDING ACT 1991 - 19.12.1994 AT 12.06 PM

6522263.2 Change of Name of East Coast Fertiliser Company Limited to Ravensdown Fertiliser Co-operative Limited - 4.8.2005 at 9:00 am

10204342.1 Change of Name of Ravensdown Fertiliser Co-operative Limited to Ravensdown Limited - 27.10.2015 at 9:02 am

References
Prior C/T B4/1313(all) F4/982,984(all)

Transfer No.
N/C. Order No. 356076.1

Land and Deeds 69

No. H3/12

REGISTER

CERTIFICATE OF TITLE UNDER LAND TRANSFER ACT

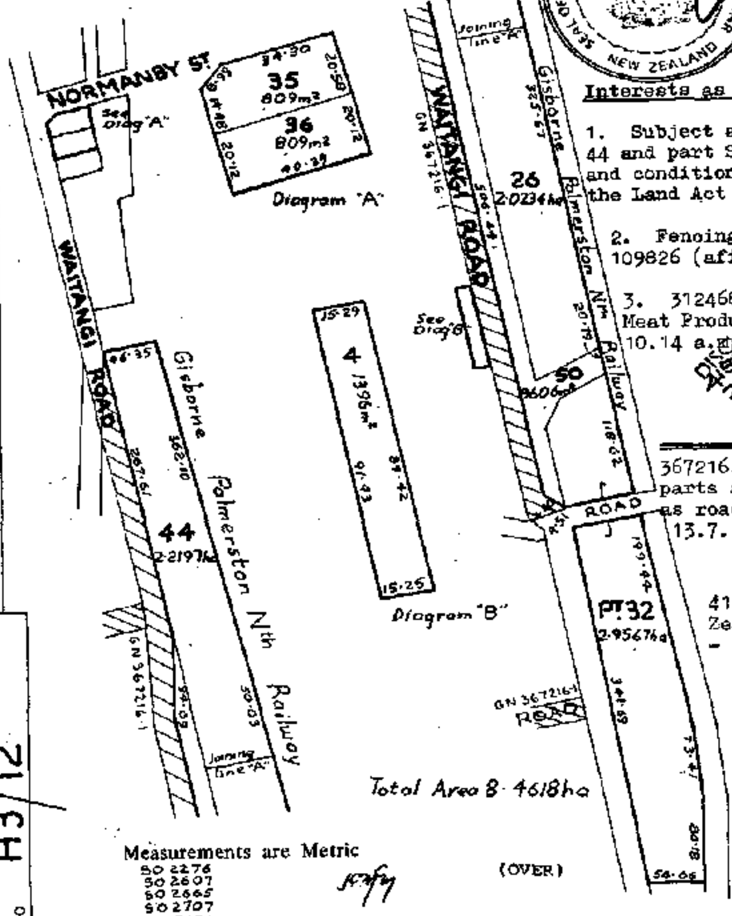
This Certificate dated the 18th day of September one thousand nine hundred and seventy-eight under the seal of the District Land Registrar of the Land Registration District of HAWKE'S BAY

WITNESSETH that EAST COAST FERTILISER COMPANY LIMITED at Napier ———

is seised of an estate in fee-simple (subject to such reservations, restrictions, encumbrances, liens, and interests as are notified by memorial underwritten or endorsed hereon) in the land hereinafter described, delineated with bold black lines on the plan hereon, be the several admeasurements a little more or less, that is to say: All that parcel of land containing 8.4618 hectares more or less being Sections 26,35,36,44 and 50 and part Section 32 Block I Clive Survey District and Lot 4 on Deposited Plan 8546 ———

SEAL OF THE HAWKES BAY DISTRICT LAND REGISTRAR NEW ZEALAND

Assistant Land Registrar



Interests as at Date of Issue:

1. Subject as to Sections 26,35,36 and 44 and part Section 32 to the reservations and conditions imposed by Section 59 of the Land Act 1948.

2. Fencing Covenant in Transfer 109826 (affects part).

3. 312468.1 Mortgage to New Zealand Meat Producers Board - 22.4.1975 at 10.14 a.m.

DISCHARGED 21.12.1978

A.L.R.

367216.1 Gazette Notice (a)closing parts adjoining road (b)proclaiming as road parts adjoining land - 13.7.1979 at 10.43 a.m.

A.L.R.

415527.2 Mortgage to The New Zealand [illegible] Company Limited - 21 [illegible]

DISCHARGED

A.L.R.

Measurements are Metric
SO 2276
SO 2607
SO 2665
SO 2707
SO 5691
SO 6721

(OVER)

No. H3/12

Identifier **HBH3/12**

H3/12

618157.1 Certificate certifying the within land is subject to Section 37 Building Act 1991 - 19.12.1994 at 12.6p.m.

A.L.R.

B

Appendix B – Historical Aerial Photographs

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Napier City Council
1936

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Retrolens
1948

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

BLKBEAM

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www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from National Library of New Zealand **1958**

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from National Library of New Zealand **1958**

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

BLUEBEAM

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)	Design		
	Drawn		
Reduced Scale (A3)	Dsg Verifier		
	Dwg Check		

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Retrolens
1962

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Retrolens
1969

Discipline

Drawing No.

Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from National Library of New Zealand **1972**

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Retrolens
1977

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

BLKEBAM

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N

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Retrolens
1982

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

BLUEBEAM

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Retrolens
1988

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)	Design		
	Drawn		
Reduced Scale (A3)	Dsg Verifier		
	Dwg Check		

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Retrolens
1996

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

BLUEBEAM

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Google Earth Pro **2003**

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

BLUEBEAM

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Google Earth Pro **2012**

Discipline

Drawing No.

Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Google Earth Pro **2019**

Discipline

Drawing No.

Rev.

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Historical Aerial Photograph Sourced from Nearmap **2020**

Discipline

Drawing No.

Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

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C

Appendix C – Building Names, Locations and Approximate Ages

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No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Annotated Site Plans of the North of the Site (Image Source: Nearmap)

Discipline

Drawing No.

Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Annotated Site Plans of the South of the Site (Image Source: Nearmap)

Discipline

Drawing No.

Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

D

Appendix D – Old Site Plans Sourced from NCC Property File

Old Annotated Site Plans Identified During the Review of Property Files Held by Napier City Council:

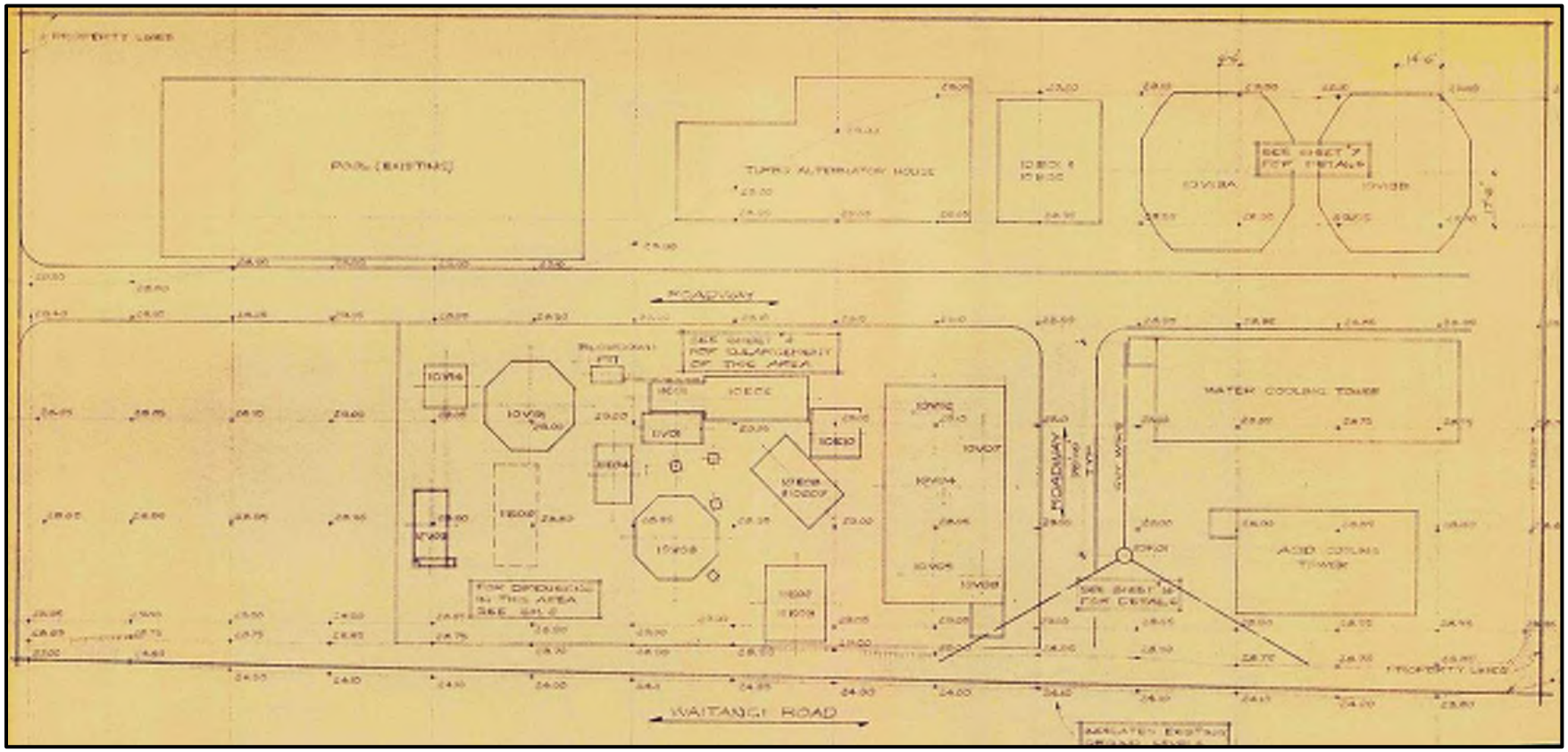


Figure A: Plan in the Vicinity of the Acid Plant in the South of the Site Dated April 1974 (Image Sourced from Napier City Council Property Files)

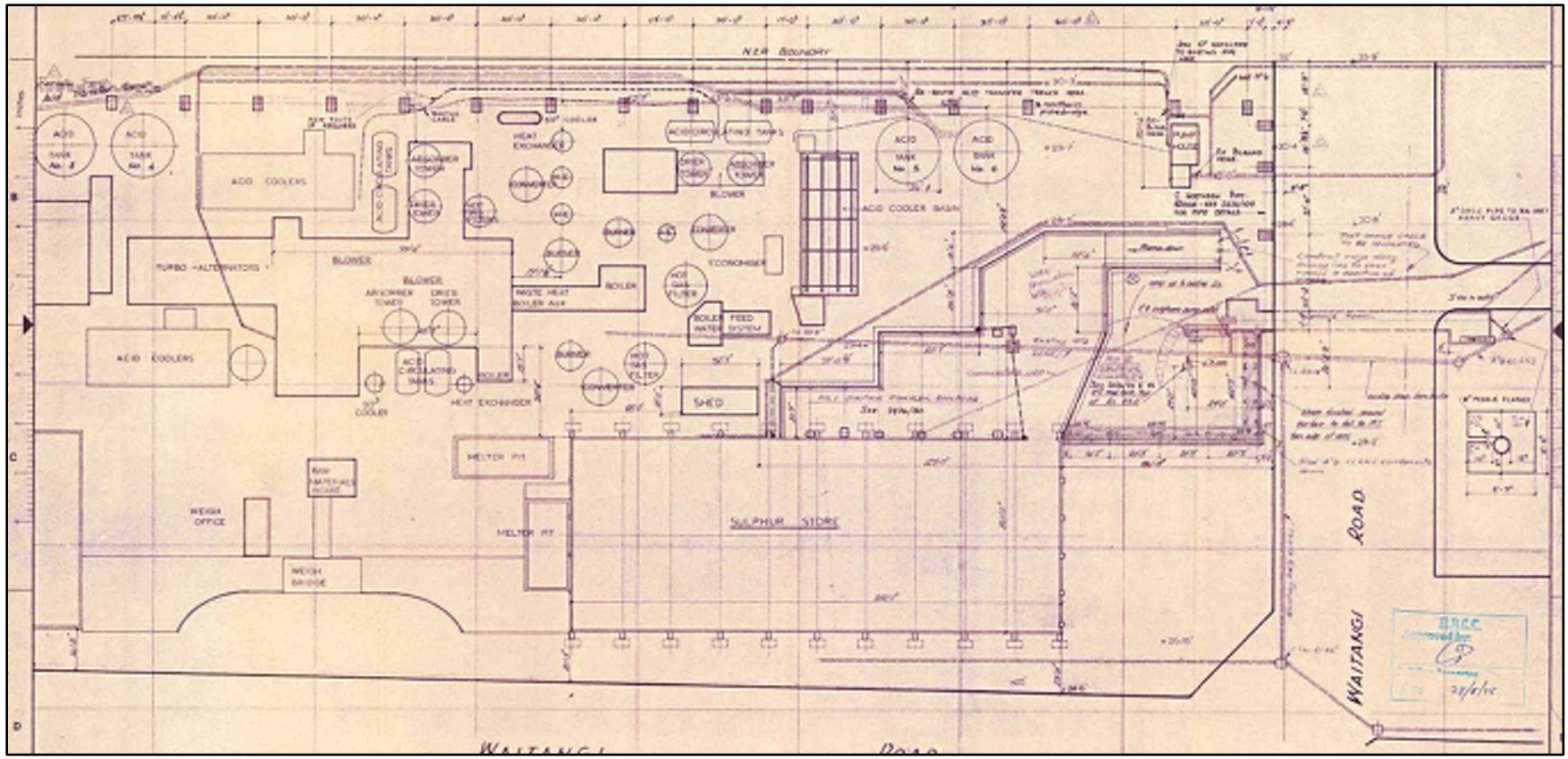


Figure B: Plan in the Vicinity of the Sulphur Store Towards the South of the Site Dated July 1974 (Image Sourced from Napier City Council Property Files)

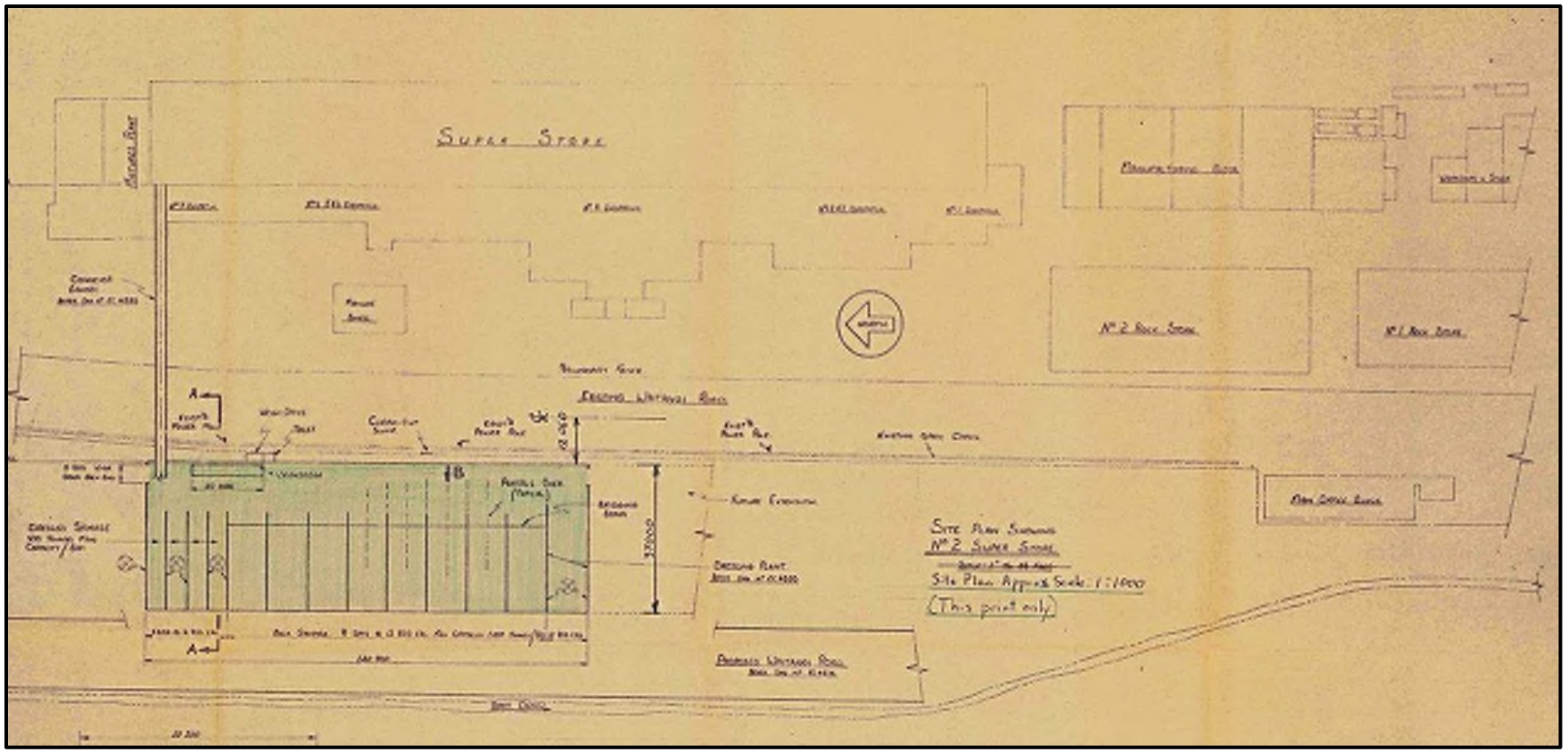


Figure C: Plan in the Vicinity of the Super Store and Manufacturing / Granulation Building Towards the Centre of the Site Dated January 1977 (Image Sourced from Napier City Council Property Files)

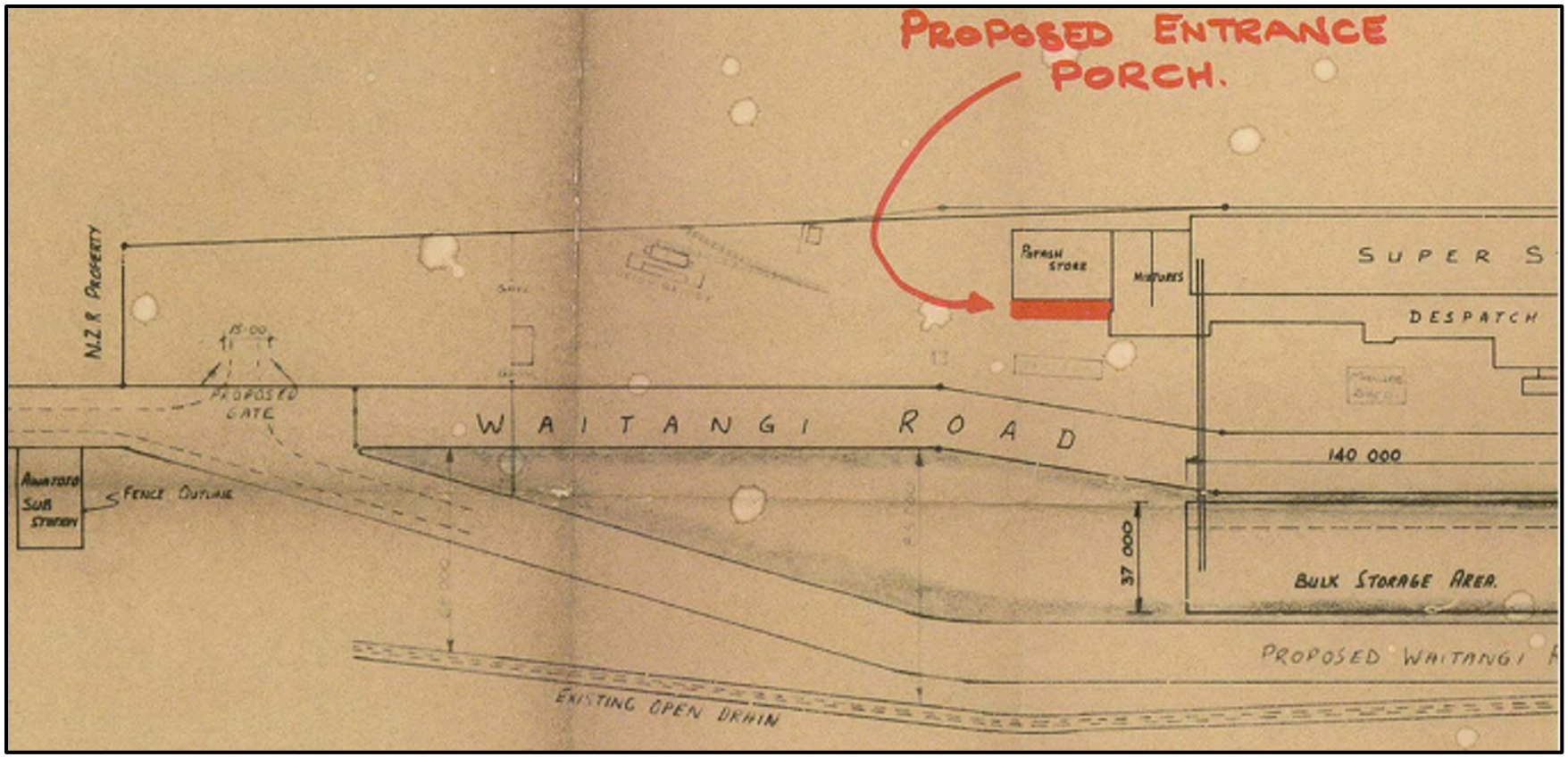


Figure D: Plan in the Vicinity of the Former Weighbridge Towards the North of the Site Dated April 1978 (Image Sourced from Napier City Council Property Files)

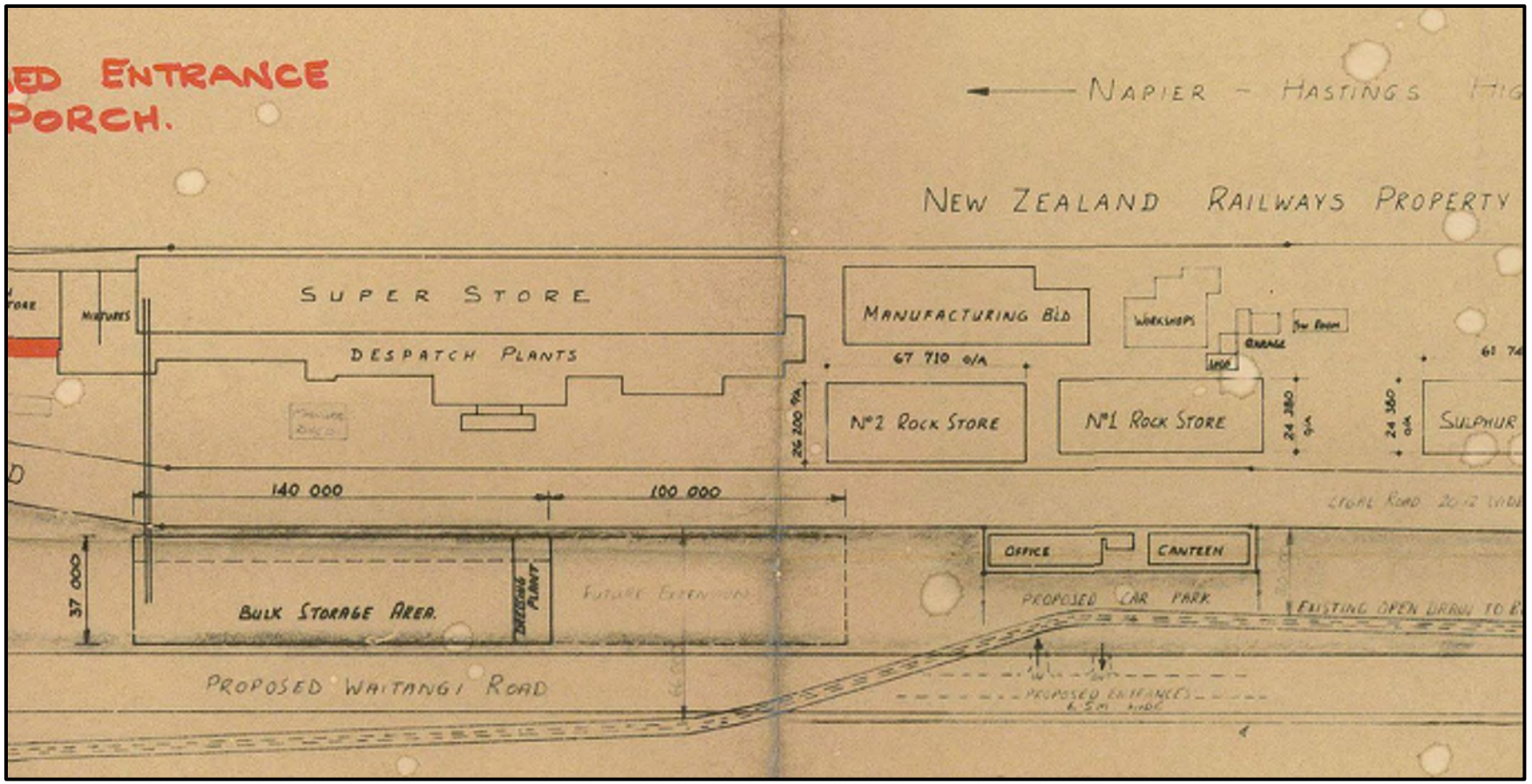


Figure E: Plan in the Vicinity of the Super Store and Manufacturing / Granulation Building Towards the Centre of the Site Dated April 1978 (Image Sourced from Napier City Council Property Files)

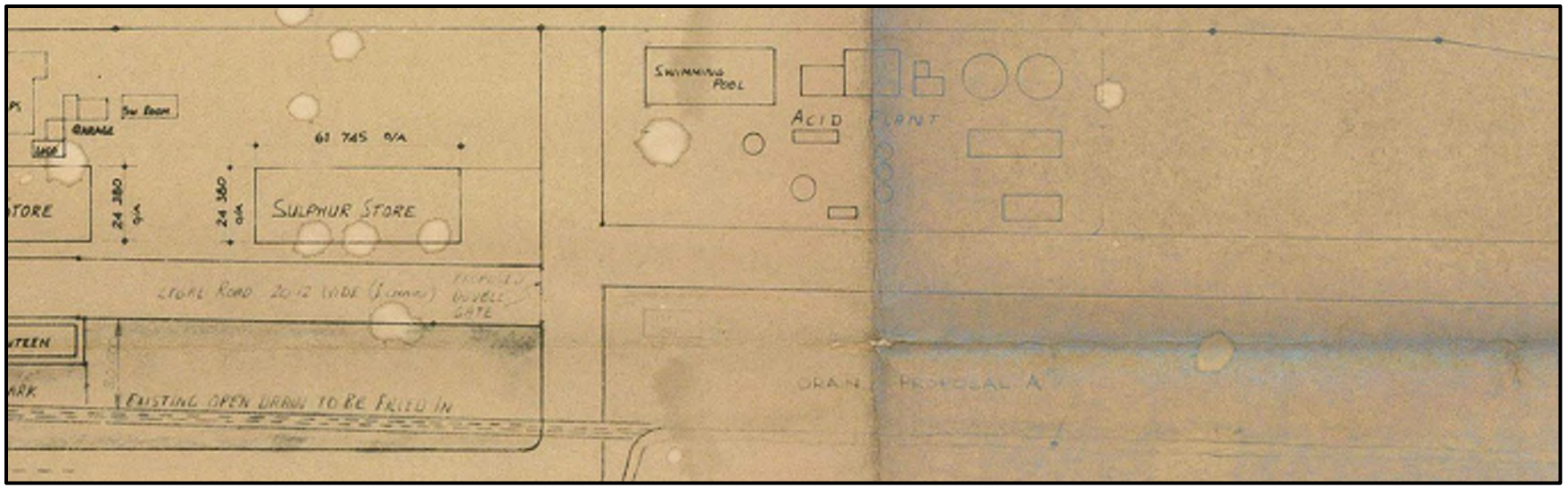


Figure F: Plan in the Vicinity of the Acid Plant in the South of the Site Dated April 1978 (Image Sourced from Napier City Council Property Files)

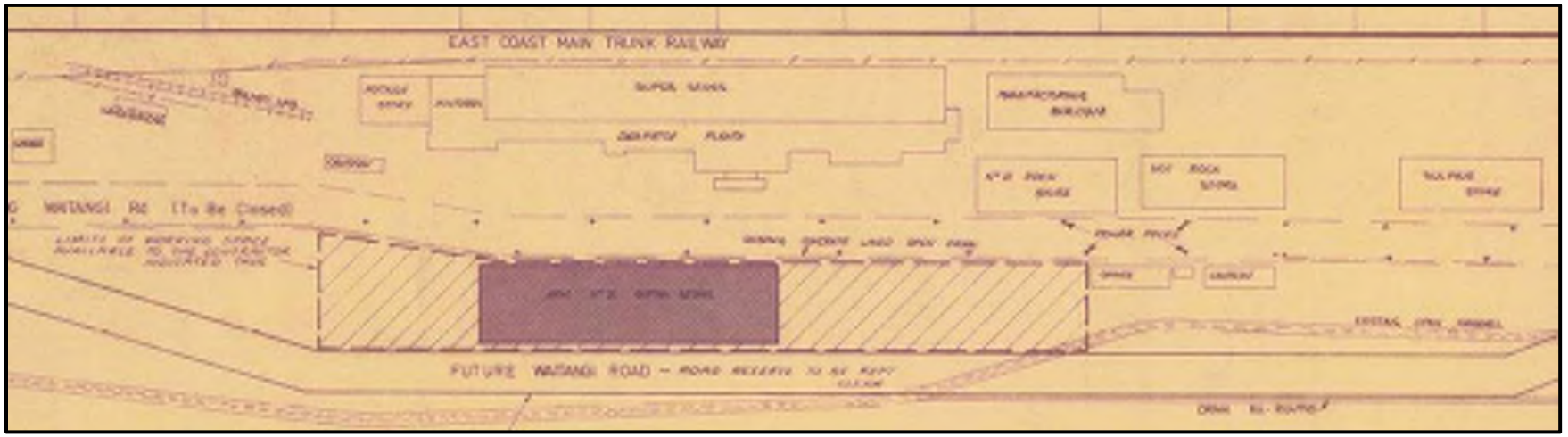


Figure G: Plan in the Vicinity of the Super Store and Manufacturing / Granulation Building Towards the Centre dated March 1978 (Sourced from Napier City Council Property Files)

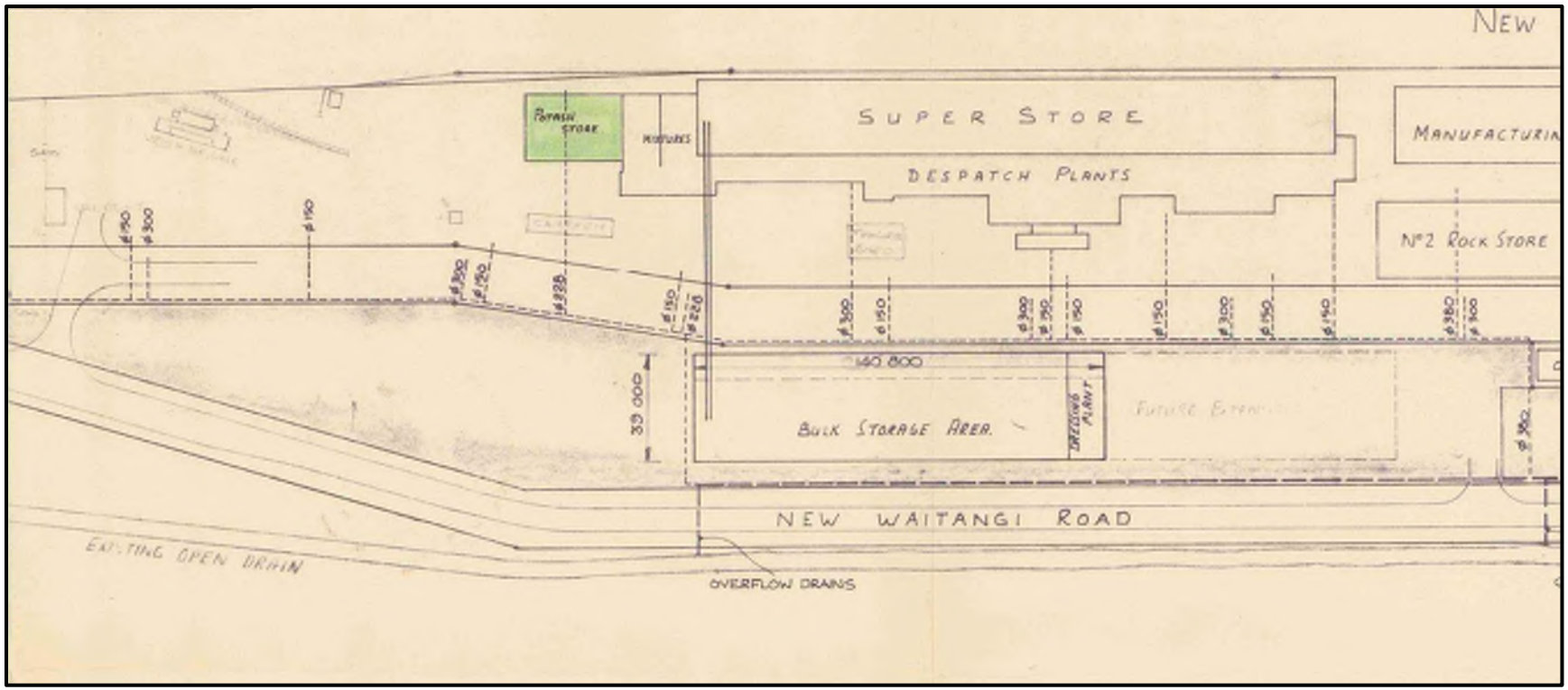


Figure H: Plan in the Vicinity of the Super Store and Manufacturing / Granulation Building Towards the Centre dated February 1979 (Sourced from Napier City Council Property Files)

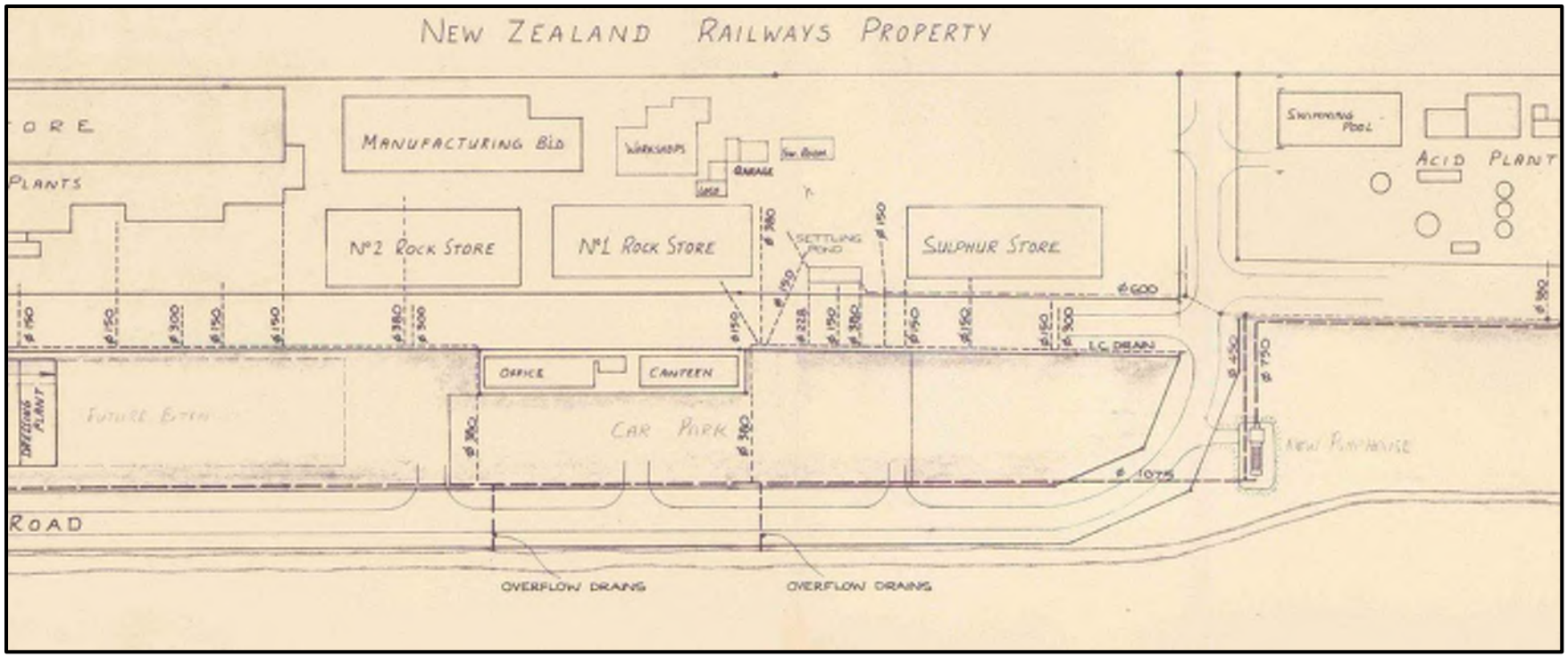


Figure I: Plan in the Vicinity of the Sulphur Store Towards the South of the Site dated February 1979 (Sourced from Napier City Council Property Files)

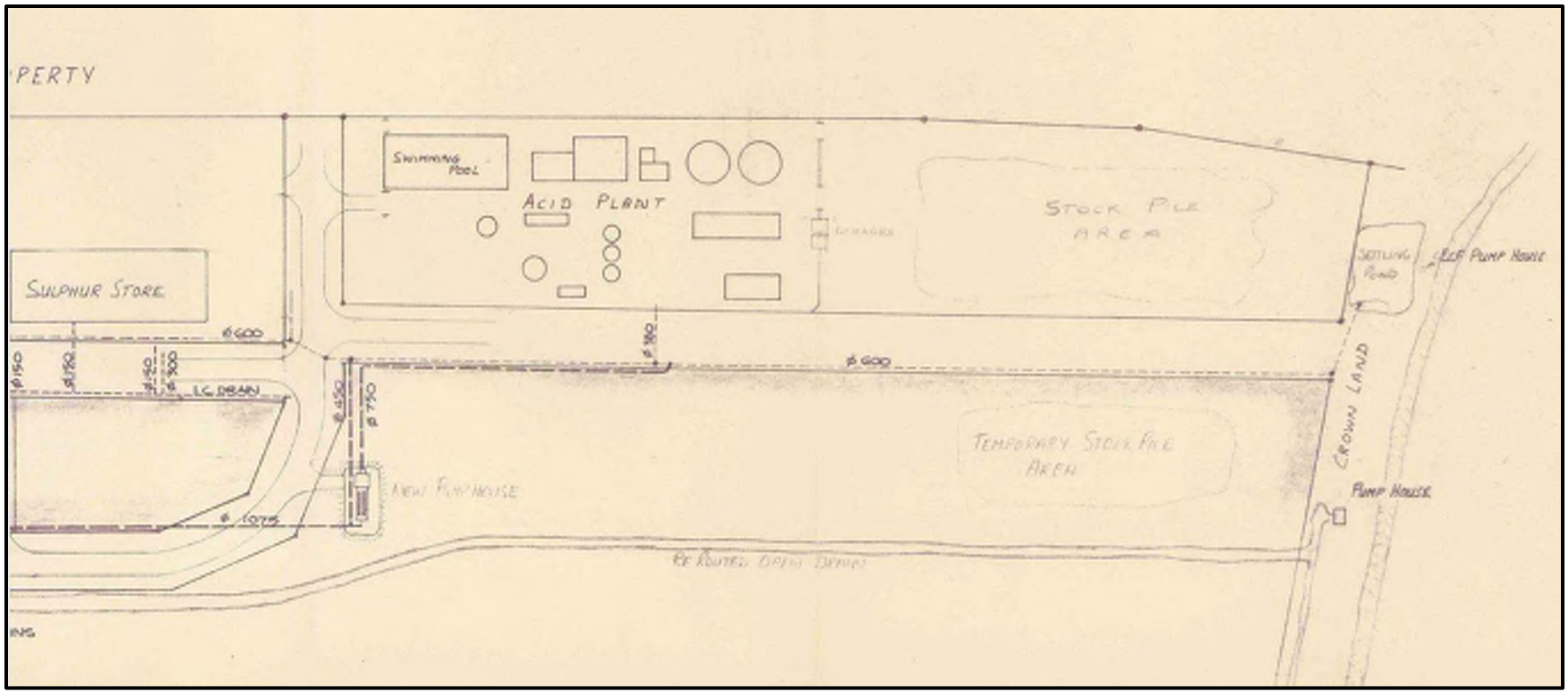


Figure J: Plan in the Vicinity of the Acid Plant the South of the Site dated February 1979 (Sourced from Napier City Council Property Files)

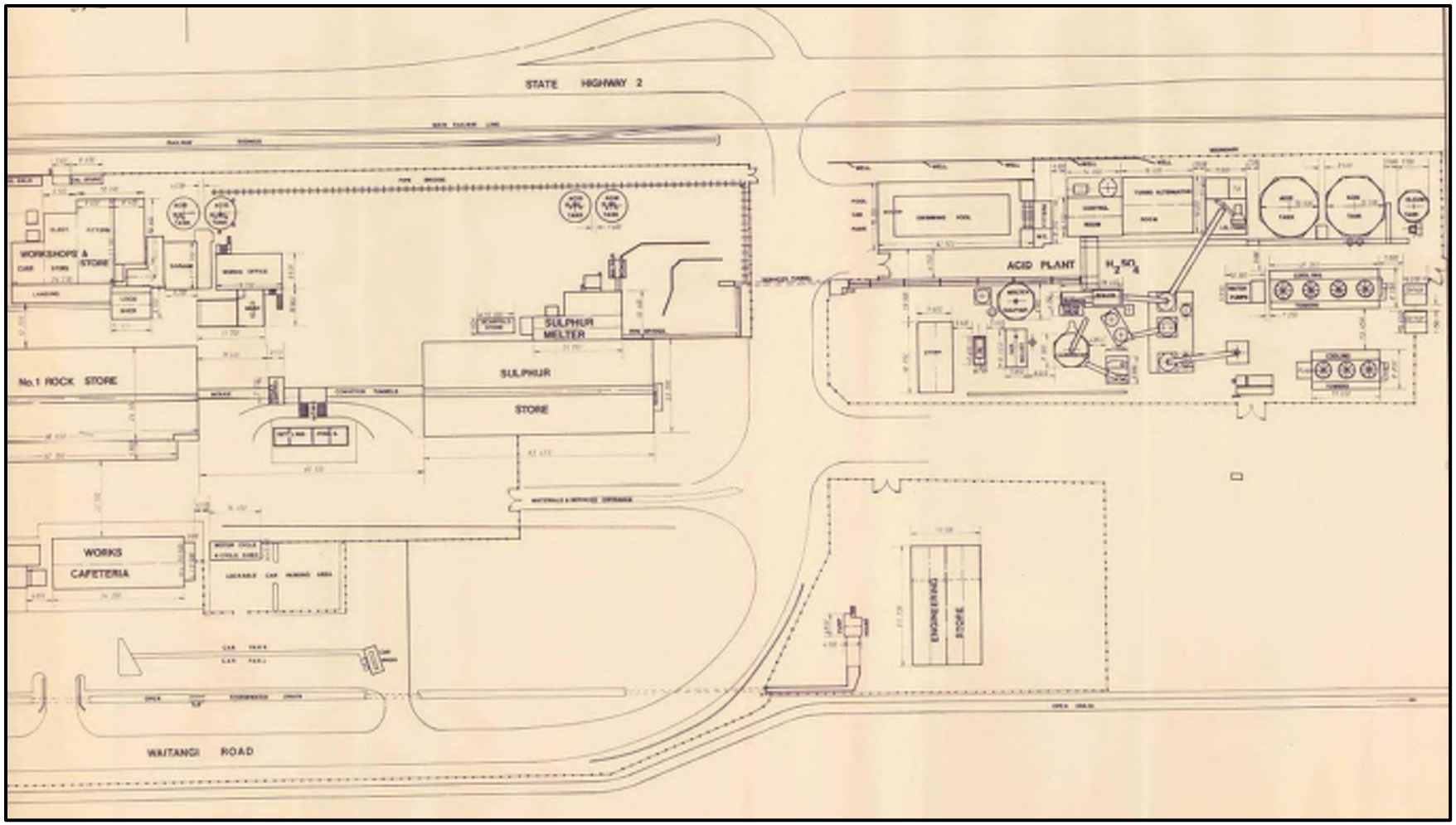


Figure K: Plan in the Vicinity of the Sulphur Store and Acid Plant the South of the Site dated September 1983 (Sourced from Napier City Council Property Files)

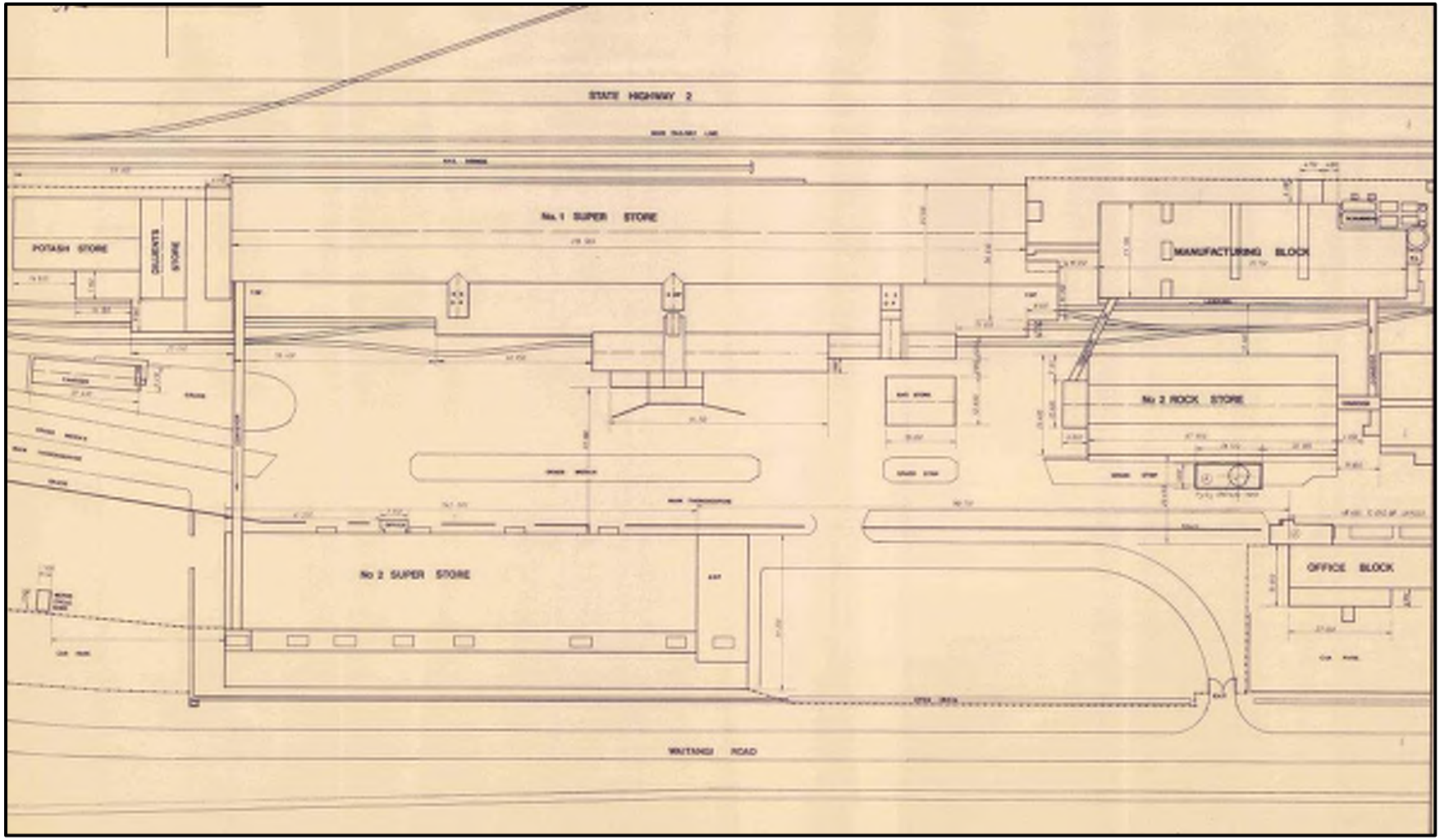


Figure L: Plan in the Vicinity of the Super Store and Manufacturing / Granulation Building Towards the Centre of the Site dated September 1983 (Sourced from Napier City Council Property Files)

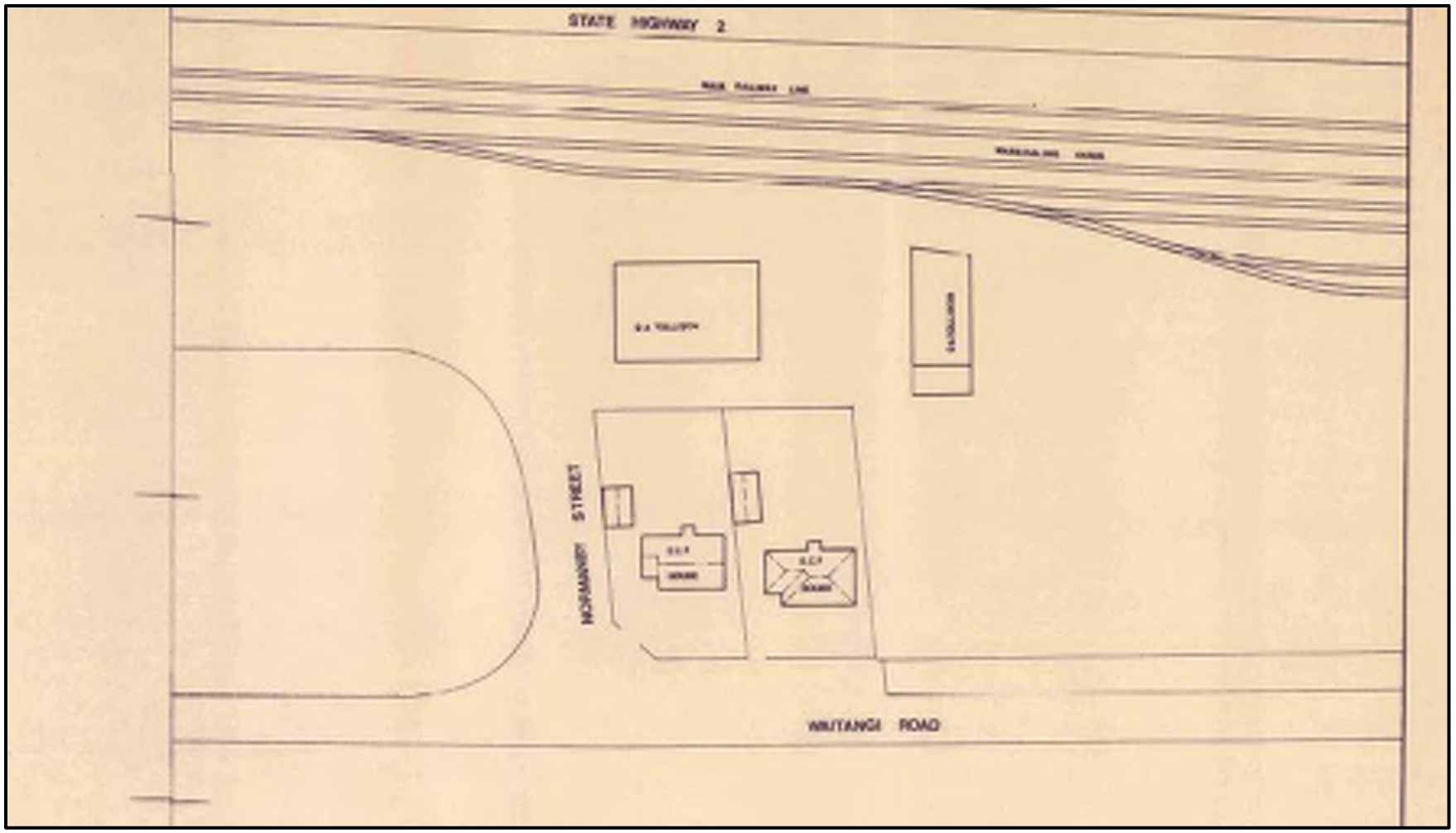


Figure M: Plan in the Vicinity of the Former Dwellings in the Far North of the Site dated September 1983 (Sourced from Napier City Council Property Files)

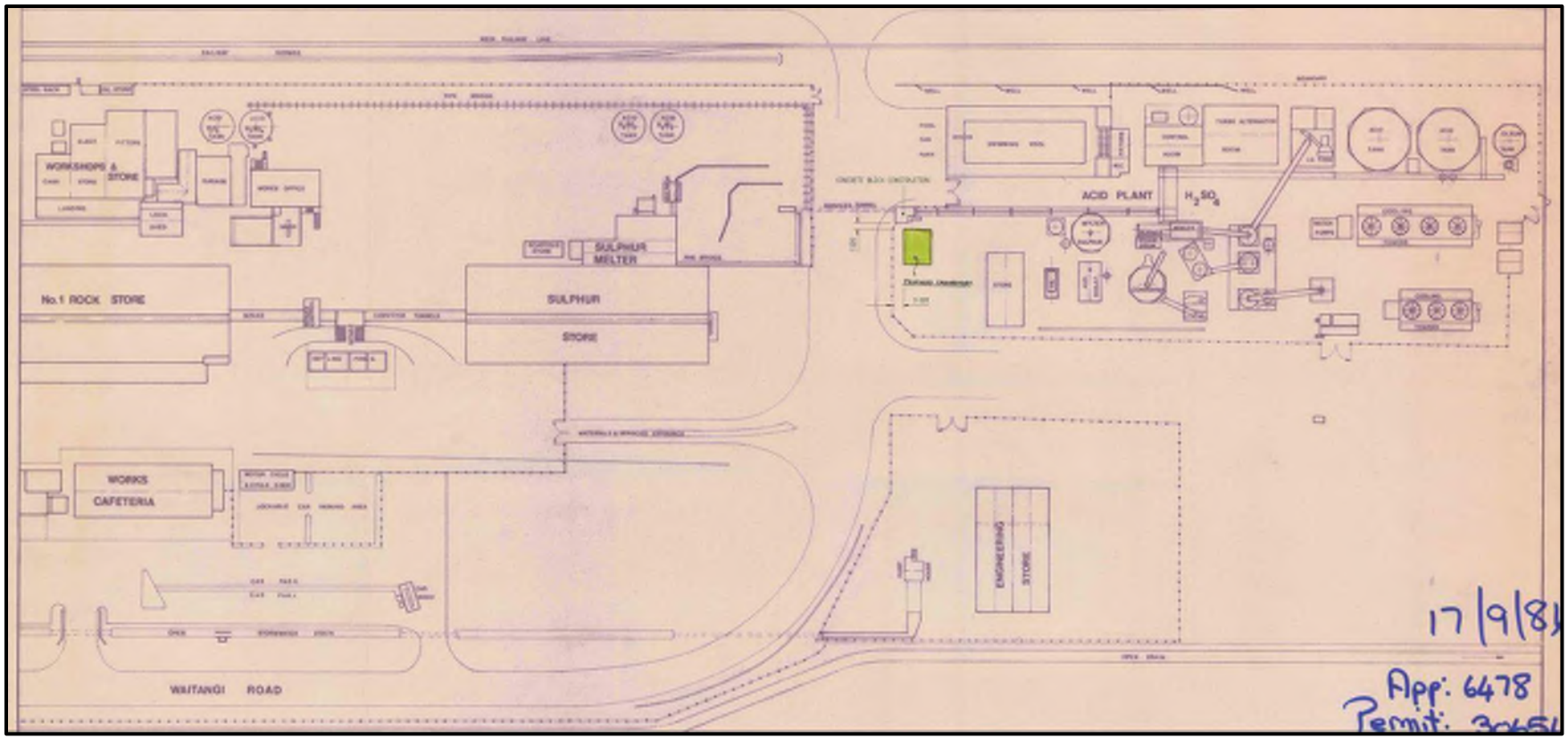


Figure N: Plan in the Vicinity of the Sulphur Store and Acid Plant the South of the Site dated September 1984 (Sourced from Napier City Council Property Files)

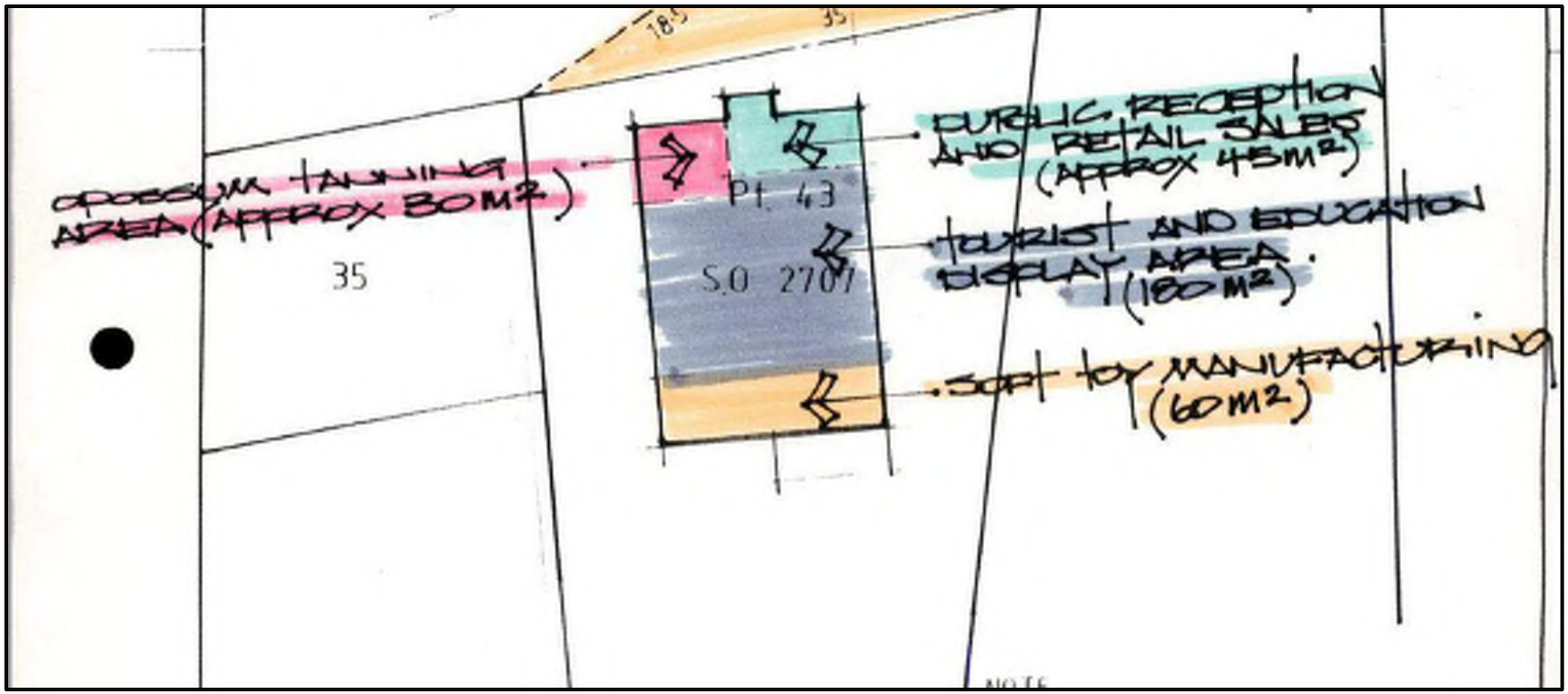


Figure O: Plan in the Vicinity of the Old Tannery in the Far North of the Site dated 1993 (Sourced from Napier City Council Property Files)

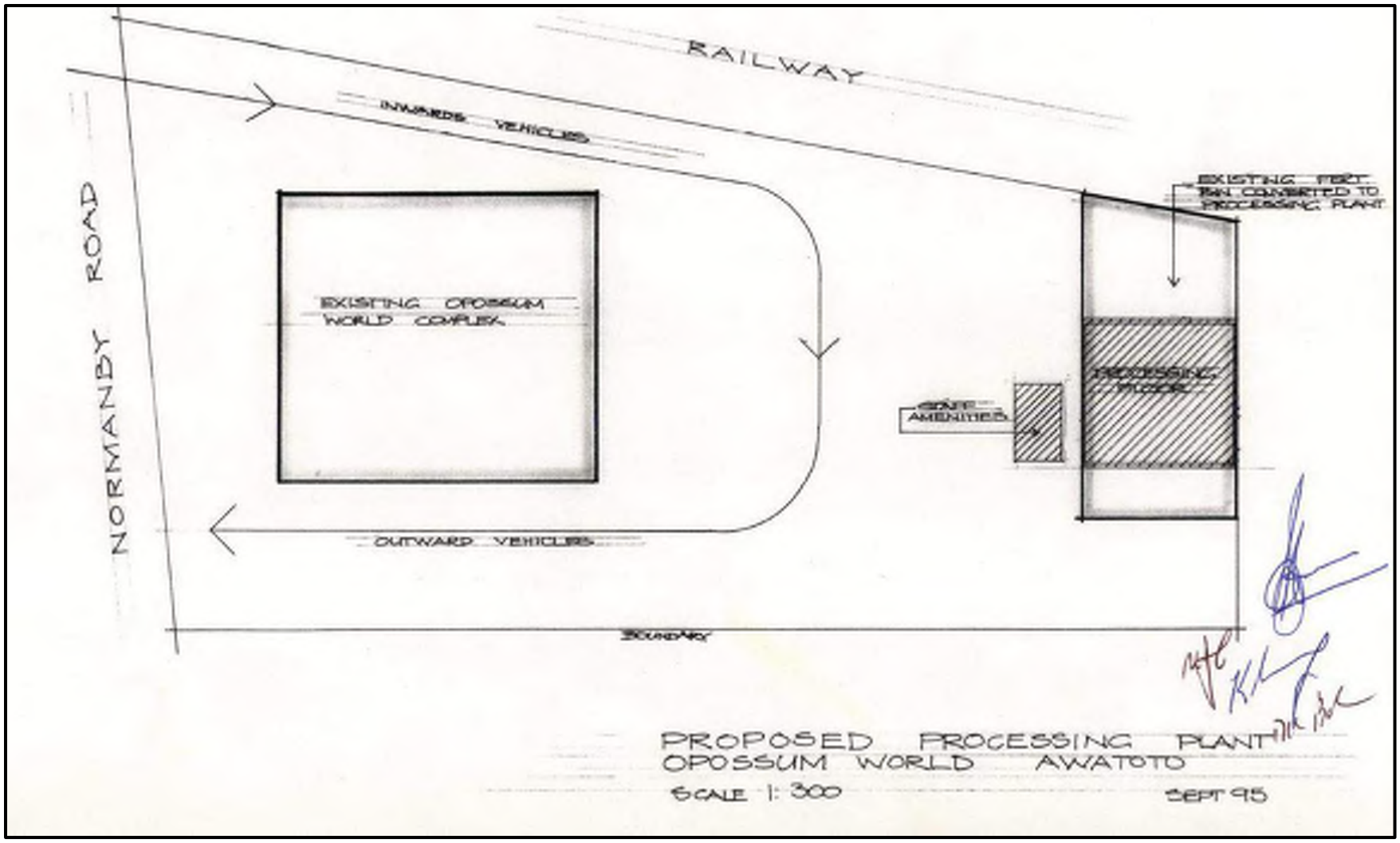


Figure P: Plan in the Vicinity of the Old Tannery in the Far North of the Site dated September 1995 (Sourced from Napier City Council Property Files)

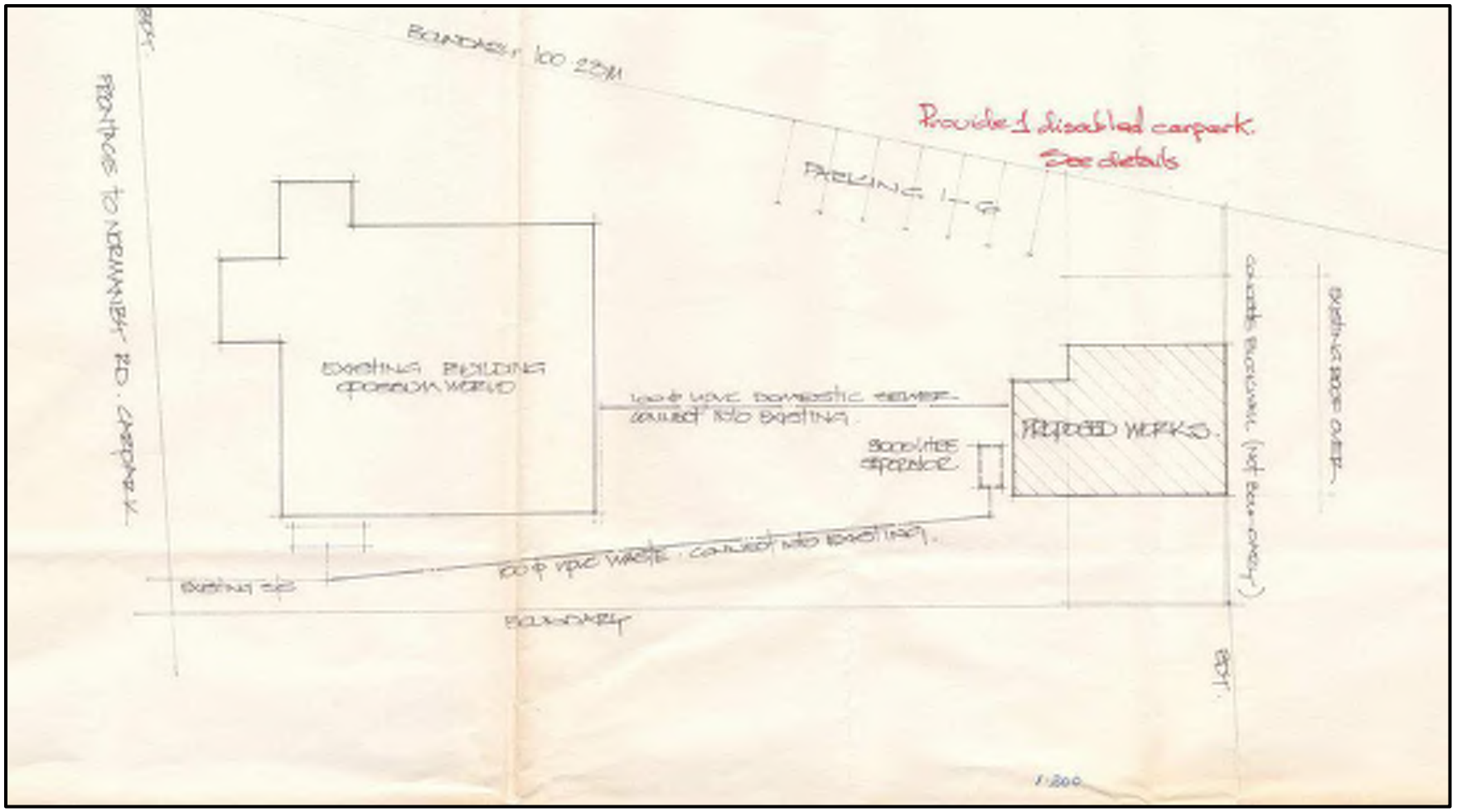


Figure Q: Plan in the Vicinity of the Old Tannery in the Far North of the Site dated 1996 (Sourced from Napier City Council Property Files)

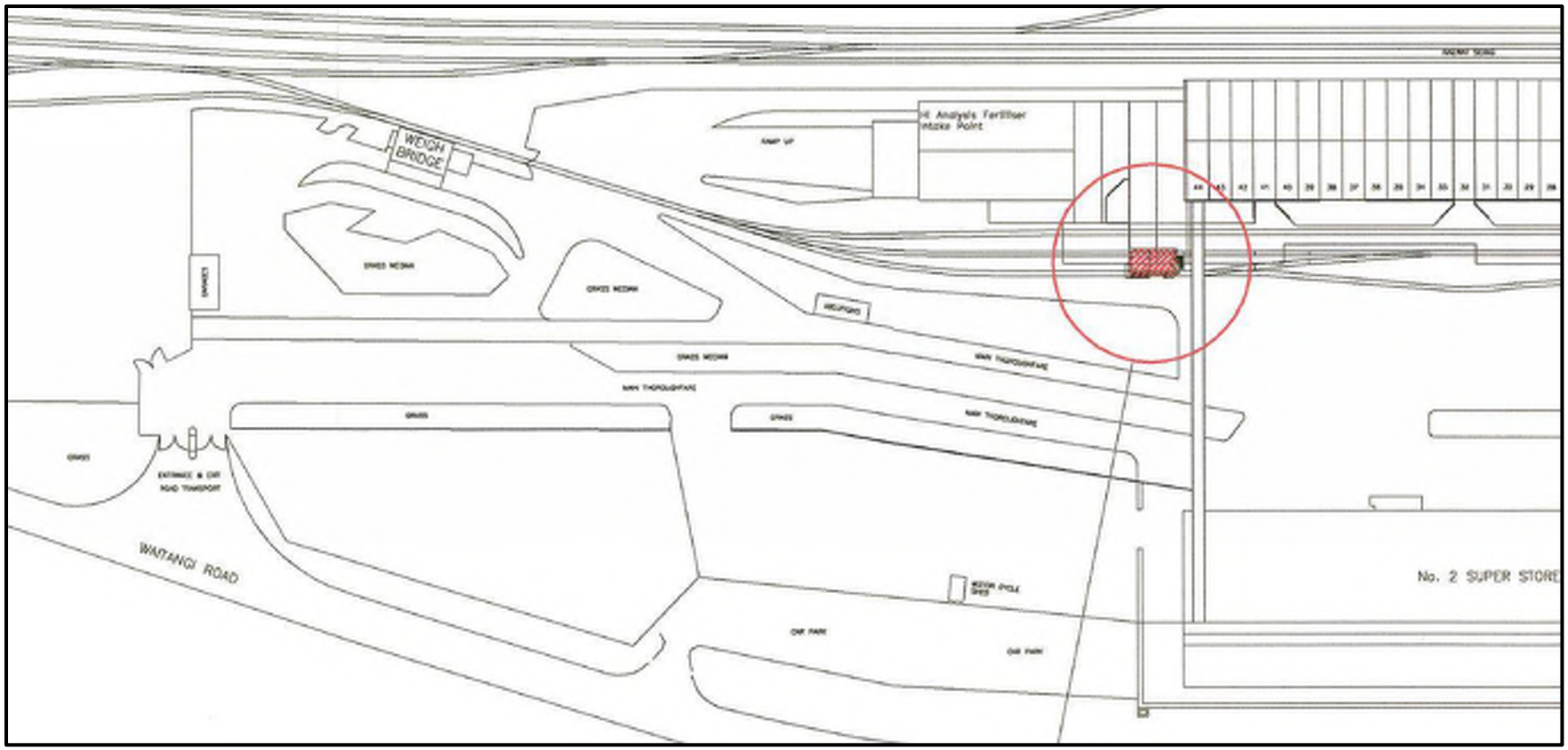


Figure R: Plan in the Vicinity of the Super Store Towards the North of the Site dated April 2000 (Sourced from Napier City Council Property Files)

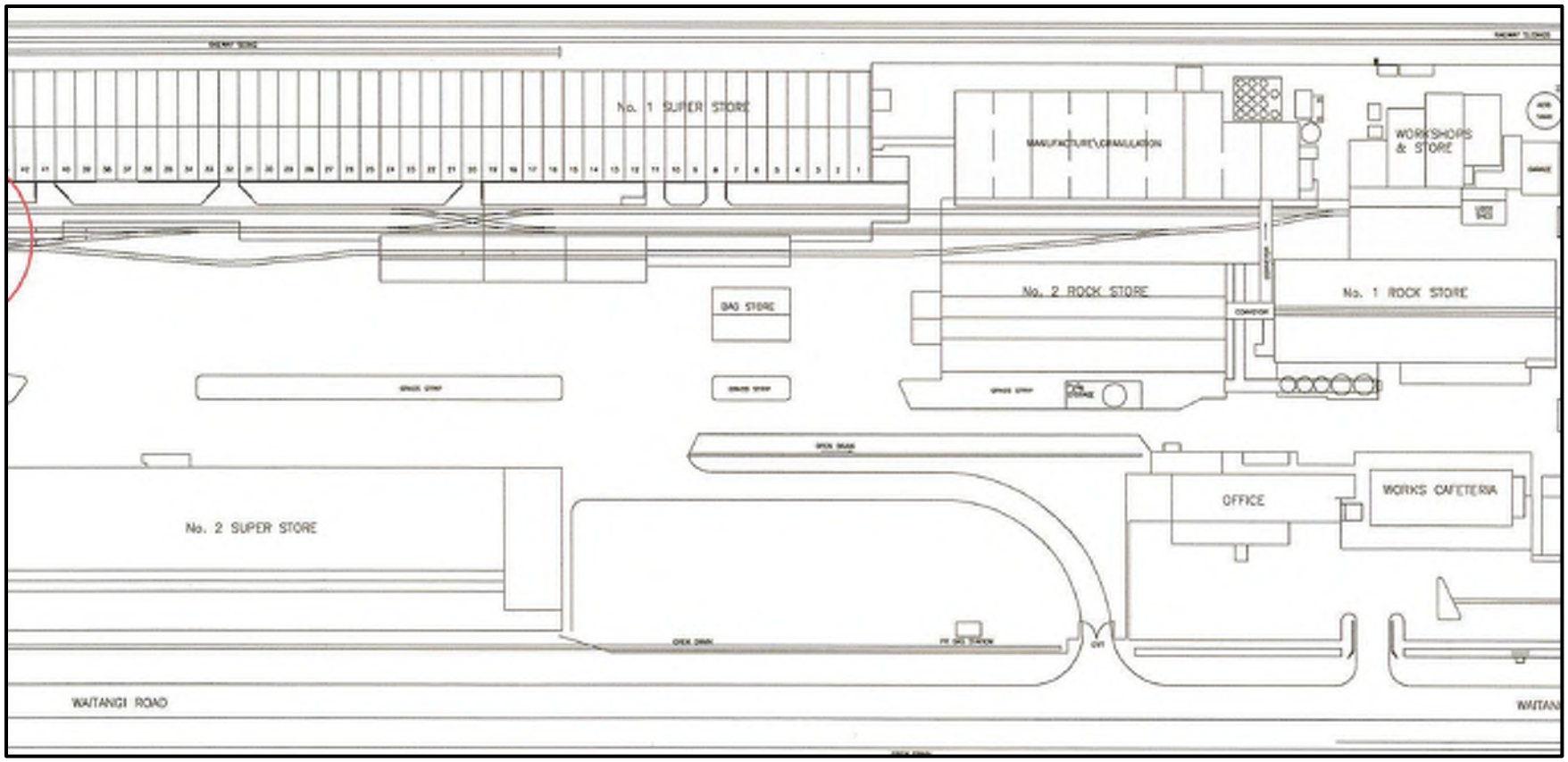


Figure S: Plan in the Vicinity of the Super Store and Manufacturing / Granulation Building Towards the Centre of the Site dated April 2000 (Sourced from Napier City Council Property Files)

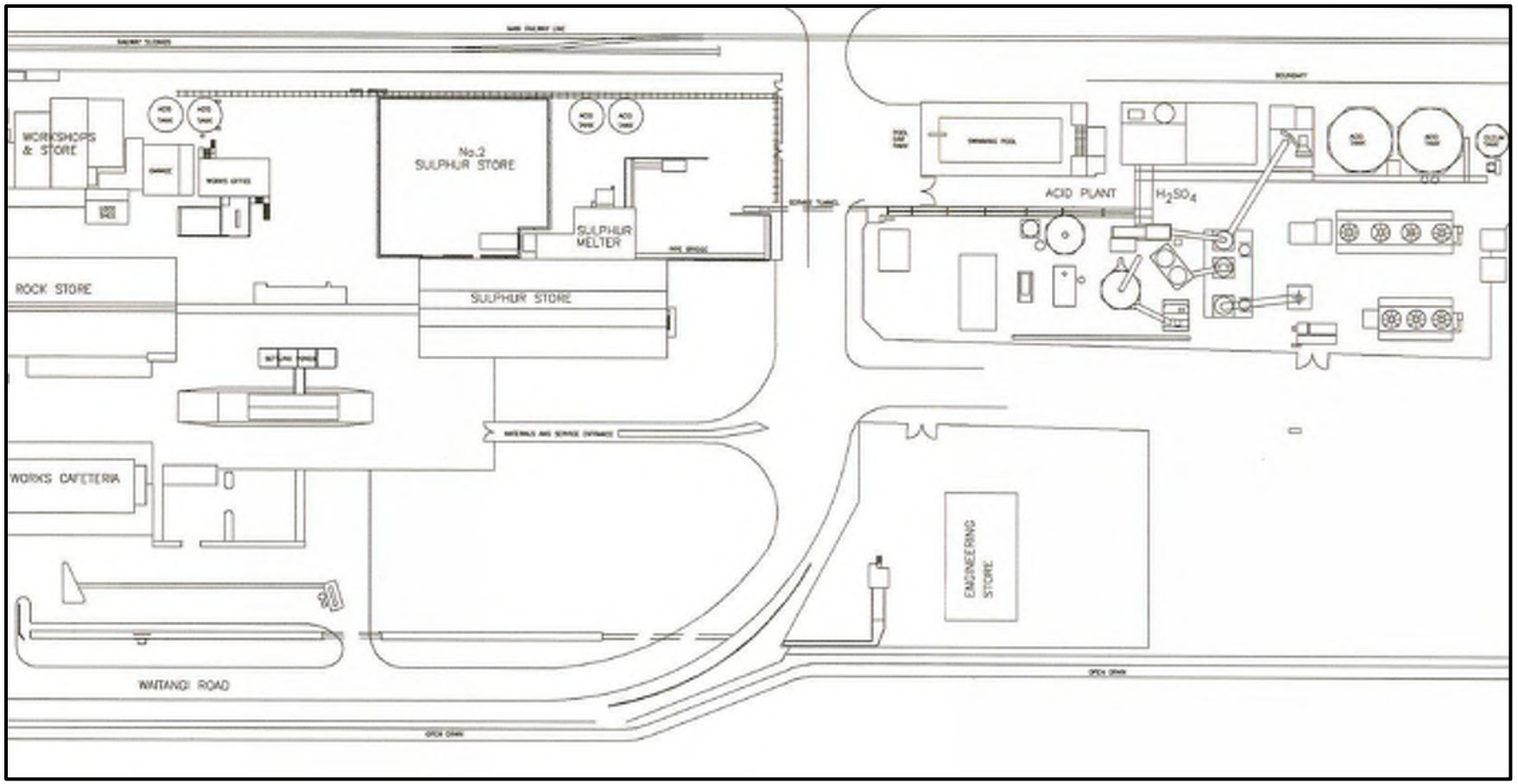


Figure T: Plan in the Vicinity of the Super Store and Sulphur Stores and Acid Plant Towards the South of the Site dated April 2000 (Sourced from Napier City Council Property Files)

E

Appendix E – Regional Council Information

30th June 2021

Beca
C/- Nichola Mather
21 Pitt Street
Auckland 1010

Dear Nichola

PROPERTY ENQUIRY: LISTED LAND USE REGISTER (LLUR) STATEMENT

Thank you for submitting your property enquiry in regards to our Listed 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 Listed Land Use Register statement provided below indicates the location of the land parcel(s) you enquired about and provides information regarding 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 Listed 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

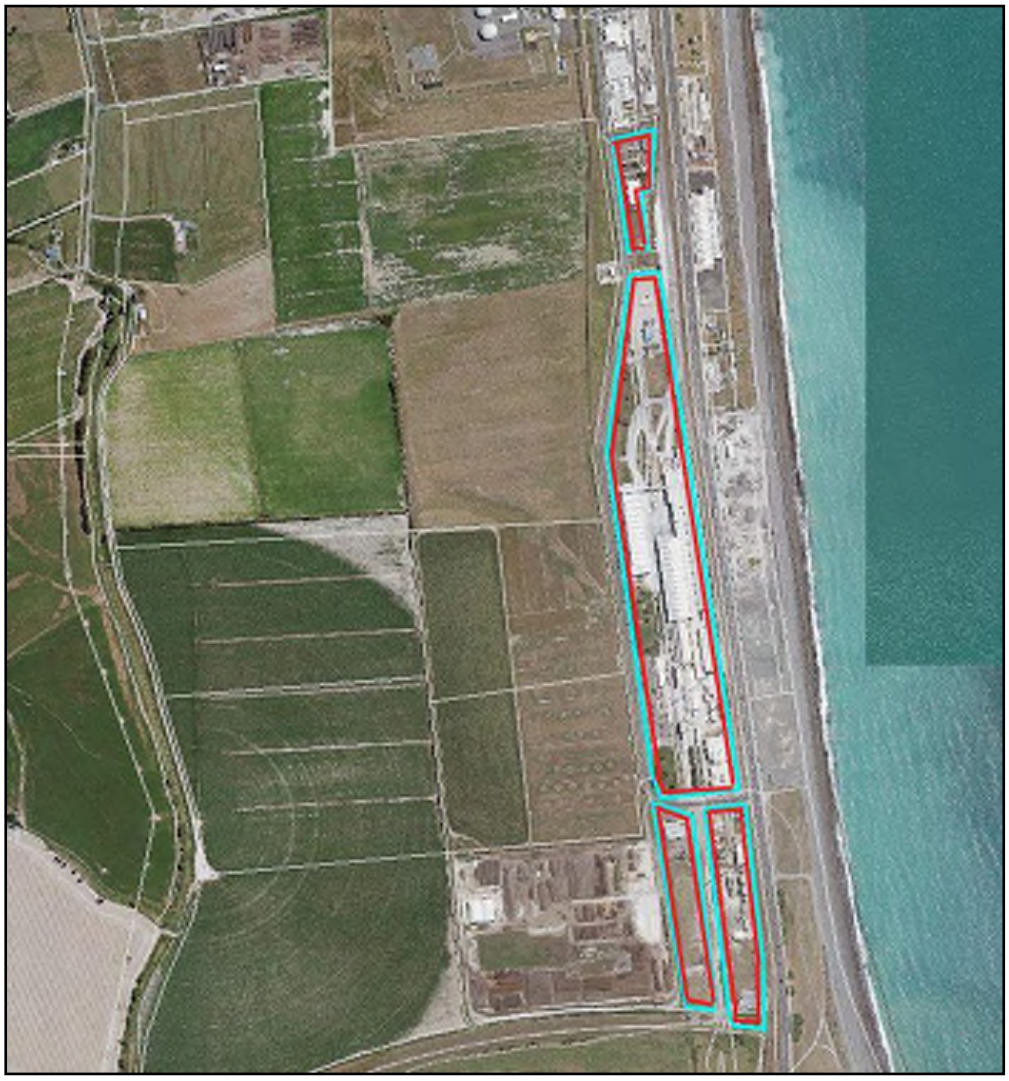
IRENA MIKOLIC
ENVIRONMENTAL OFFICER COMPLIANCE
REGULATION GROUP - HAZARDOUS SUBSTANCES TEAM
Email: contaminated.land@hbrc.govt.nz

Hawkes Bay Regional Council Listed Land Use Register Statement

Date requested: 18/06/2021
Date generated: 30/06/2021

PARCEL ENQUIRY REFERENCE:

Property Address(s):	Waitangi Road, Napier
Legal Description(s):	SECS 26 35 36 44 50 56 60 62, PT SECS 32 43, LOT 4 DP 8546, LOTS 1 & 2 DP 16060 BLK I CLIVE SD
Parcel ID(s):	4172528, 4177444, 4219914, 4170571, 4217031, 4193953, 4239052, 4175523, 4241187, 4193954, 4220460, 4165043
Valuation Number(s):	0991063300, 0991063000, 0991062900, 0991062800



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-10706	Waitangi Road, Napier, Ravensdown Ltd	Waitangi Road, Napier	A6 – Fertiliser manufacture or bulk storage	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 Listed Land Use Register

Site ID:	SLS-10706
Site Address:	Waitangi Road, Napier
Legal Description(s):	SECS 26 35 36 44 50 56 60 62, PT SECS 32 43, LOT 4 DP 8546, LOTS 1 & 2 DP 16060 BLK I CLIVE SD
Site Category:	Verified HAIL
Site Sub-Category:	Risk Not Quantified

HAIL Details:	HAIL description	Period from	Period to
A6	Fertiliser manufacturing plant established around 1954 and activities are ongoing.	1954	Ongoing

Site Notes:

Ravensdown Fertiliser Ltd own and operate a major fertiliser manufacturing plant at this site which was established in 1954. The plant is divided into five main categories:

- A sulphuric acid manufacturing plant
- A fertiliser manufacturing plant
- Phosphate rock storage
- Sulphur storage, and
- Superphosphate storage and handling facilities.

Historically there has been a continual discharge of stormwater from the site to the Waitangi Estuary. There have been a number of occasions in recent years when resource consent limits for the concentration of some contaminants have been exceeded.

Site Investigation(s):

There are no investigations associated with this location.

Resource Consent(s):

1. Discharge to Air (DP050561Ab) - To discharge contaminants into the air from the operation of the company's fertiliser manufacturing plant at Awatoto, including the following processes:
   - The manufacture of sulphuric acid,
   - The manufacture of superphosphate fertiliser,
   - The storage, blending and dispatch of bulk and bagged fertilisers and sulphuric acid,
   - The receipt and storage (inside and outside) of raw materials and imported fertiliser,
   - General site operations.

2. Discharge to Water (AUTH-126648-01) - To discharge, for a short-term and temporary duration, Fluorescent Red Rhodamine WT dye into water at the Awatoto Drain from the settling pond at Ravensdown Limited's superphosphate manufacturing plant.

3. Discharge to Water (DP040143Wa) - To discharge contaminants into water for the purpose of disposing of stormwater, cooling water from air compressors and a hydraulic drive, water from drinking fountains and a truck wash, water from cooling towers and high pressure boilers, and rinse water from a boiler water treatment plant into the Tutaekuri River (Waitangi Estuary).

4. Bore Permit (LU120144B) - To drill bore no. 15986 (150 mm diameter) at the location described below and shown on the site map.

5. Bore Permit (LU120155B) - To drill bore no. 15989 (150 mm diameter) for use in a fertiliser manufacturing plant.

6. Bore Permit (AUTH-126498-01) - To drill bore nos 17107, 17108 and 17109 (120 mm diameter) for geotechnical investigation.

7. Water Permit (WP060639Tb) - To take water from well no's. 15986 and 15989 (150 mm diameters) for use in the manufacture of sulphuric acid and fertilisers.

Photograph(s):

Photo 1: 1962 Aerial photography – fertiliser established

Other Relevant Information

Incident 07/01/2021 – complaint in relation to dust from the fertilisers works blowing over the road.

Incident 03/03/2021 – exceedance of SO2 following a malfunctioning steam gun and fire in the sulphur smelter at the acid plant.

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 particularly 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.

F

Appendix F – Site Walkover Photographs

Section 35 Block I Clive SD and Section 36 Block I Clive SD (far north-west of the site):

Photograph 1: General View of the Weather Station and Silos on Section 35 Block I Clive SD and Section 36 Block I Clive SD

Photograph 2: General View of the Suspected Asbestos Cement Sheet Fencing Around Parts of Section 35 Block I Clive SD and Section 36 Block I Clive SD

Section 62 Block I Clive SD and Section 43 Block I Clive SD (far north of the site):

Photograph 3: General View of the Current Engineering Workshop (Former Truck Shed and then Tannery) on Part Section 43 Block I Clive SD

Photograph 4: Internal View of the Above Engineering Workshop

Photograph 5: General View of the Old Refrigerator Store to the Rear of the Above Engineering Workshop

Photograph 6: General View of the Commercial Laboratory on Section 62 Block I Clive SD and Section 43 Block I Clive SD

Lot 7 DP 25683 and Lot 6 DP 25683 (far west of the site):

Photograph 7: General View of the Grazing Land on Lot 7 DP 25683 and Lot 6 DP 25683

Lot 2 DP 16060 (south-west of the site):

Photograph 8: View of the Pumphouse on Lot 2 DP 16060

Photograph 9: View of the Engineering Store on Lot 2 DP 16060

Photograph 10: Example View of the Shipping Containers used as Inventory Stores External to the Engineering Store on Lot 2 DP 16060

Part Section 32 Block I Clive SD and Section 56 Block I Clive SD (in the south-east of the site):

Photograph 11: View of the Old Laboratory/Current Contractors Canteen on Part Section 32 Block I Clive SD

Photograph 12: General View of the Swimming Pool on Part Section 32 Block I Clive SD

Photograph 13: General View of the Bunded Diesel Tank on Part Section 32 Block I Clive SD

Photograph 14: General View of the Acid Plant on Part Section 32 Block I Clive SD

Photograph 15: General View of the Bunded Acid Tanks on Part Section 32 Block I Clive SD

Photograph 16: General View of the Cooling Towers on Part Section 32 Block I Clive SD

Photograph 17: General View of the Stormwater Retention Pond in the Far South-East of the Site

Section 44 Block I Clive SD, Section 60 Block I Clive SD, Lot 1 DP 16060, Section 26 Block I Clive SD, Section 50 Block I Clive SD, Lot 4 DP 8546, Part Section 32 Block I Clive SD (the remainder of the site):

Photograph 18: General View of the Workshop at the Truck Depot in the North of the Site

Photograph 19: View of the ASTs at the Truck Depot in the North of the Site

Photograph 20: Remnants of the Former Weighbridge South of the Truck Depot

Photograph 21: Former Railway Lines in the North of the Site

Photograph 22: View of the *c.500 litre Petrol AST in the North of the Site*

Photograph 23: View of Grinding Mill Equipment Inside the Manufacturing and Granulation Building

Photograph 24: Internal View within No 1 Super Store

Photograph 25: View of the Diesel AST to the East of No 2 Despatch

Photograph 26: View of the Molten Sulphur AST South-East of the Manufacturing and Granulation Building

Photograph 27: View of the Stacks South of the Manufacturing and Granulation Building

Photograph 28: View of the Disused Former HazChem Store South-East of the Manufacturing and Granulation Building

Photograph 29: Internaol View of the Workshops South of the Manufacturing and Granulation Building

Photograph 30: Internal View of the Garage South of the Above Workshops

Photograph 31: View of the Bunded Acid Tanks South-East of the Above Garage

Photograph 32: View of the Intake Area Towards the South of the Site

Photograph 33: View of the General Area Adjacent to Intake where Site Staff Recollected a Potential Former UST

Photograph 34: Internal View within the Older Sulphur Store Towards the South of the Site

Photograph 35: View of The Grass-Cover Area West of the Sulphur Store Above (where anecdotal information suggests the potential presence of buried acid plant demolition waste)

Photograph 36: View of the Sulphur Melter Towards the South of the Site

G

Appendix G – Information Identified Following Interview with Site Staff

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No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: Information Identified During Interviews with Site Staff (Image Source: Nearmap)

Discipline

Drawing No.

Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

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H

Appendix H – Asbestos Management Plan

ASBESTOS MANAGEMENT PLAN

RAVENSDOWN FERTILISER

Contents

1. Document Control

1.1. Document Identification

The table below is a record of the document control:

Document Title:	Asbestos Management Plan (Awatoto - Napier)
Document Number:	
Date Created:	01 March 2018
Owner:	Ravensdown
Author:	Dean Lochore – ERM – Asbestos Assessor Licence AA16090140
Reviewer:	Lloyd Clark – ERM – Asbestos Assessor Licence AA16090112 and Certified IP402 BOHS Surveyor ID 20160324-36522-7254

1.2. Review

The table below is a record of the asbestos management plan reviews and updates

Review Due Date	Version	Summary of Review:	Action Required:	Action By:
15th August	3	Sample results and removal update	Update Register	Jonathan Love

1.3. Revision

The table below is a record of the changes that have been made to this document:

Revision Date	Version	Summary of Changes	Author
04/02/19	1	Sampling and testing against high priority presumed locations	Syed Khurram Iqbal
23/12/19	2	Sampling of remaining areas and asbestos removal	Syed Khurram Iqbal
24/06/21	3	Sampling, testing and removal against presumed locations	Syed Khurram Iqbal

1.4. Distribution

This document has been distributed to the following people:

Name	Position	Date of Issue	Version
Graham Eskdale	Project Manager	15/06/21	3
David Blatchford	National Engineering Manager	15/06/21	3
Andrew Torrens	Works Manager Napier	15/06/21	3
Syed Khurram Iqbal	Project Manager	15/06/21	3
Jonathan Love	Maintenance Manager	15/06/21	3

2. Purpose

The Asbestos Management Plan sets out the actions that will be taken to manage asbestos containing materials (ACMs) at *Awatoto, Napier* in accordance with

- Health and Safety at Work Act 2015
- Health and Safety at Work (Asbestos) Regulations 2016 and SW-E 3.6.4 Asbestos Risk Management
- Health and Safety at Work (General Risk and Workplace Management) Regulations 2016
- WorkSafe Approved Code of Practice for Management and Removal of Asbestos December 2016
- BRANZ (Building Research Association of New Zealand) New Zealand Guidelines for Assessing and Managing Asbestos in Soil December 2017.

3. Roles & Responsibilities

The following roles have responsibilities under this asbestos management plan

Role	Responsibilities
Asbestos Project Manager & Team	▪ Coordinate the identification, assessment and management of Asbestos/ACM at Ravensdown owned sites ▪ Develop site asbestos management plans for Ravensdown owned sites where asbestos/ACM has been identified ▪ Ensure the effective implementation and functioning of the asbestos management plan and the overall management, monitoring and control of Asbestos/ACM at Ravensdown owned sites ▪ Coordinate annual inspections of asbestos/ACM and periodic reviews of the asbestos management plan for each site
H&S Manager	▪ Provide advice to the Asbestos Project Manager & Team and assist with the approval of the asbestos/ACM removal control plans and SSSP (Site Specific Safety Plan).
Site Manager	▪ Ensure the requirements of the asbestos management plan are implemented and complied with ▪ Ensure the asbestos management plan is readily available to employees, emergency personnel; and reviewed by contractors prior to commencing work ▪ Notify the Asbestos Project Manager of any planned work that may involve Asbestos/ACM ▪ Investigate any reported asbestos/ACM related damage/incidents or hazards and implement corrective actions
Site Employees	▪ Comply with the requirements of the asbestos management plan ▪ Report all asbestos/ACM related damage/incidents or potential hazards to their manager and lodge them in Noggin
Contractors	▪ Ensure that they and their employees and sub-contractors are aware of their responsibilities regarding asbestos management ▪ Ensure the asbestos management plan (particular to the site and work area), is inspected prior to any works to determine whether asbestos/ACM is knowingly present; ▪ Comply with site asbestos management plan requirements ▪ Follow all legislation, regulations and codes of practice associated with ACM in the workplace ▪ Report incidents or potential hazards pertaining to asbestos to the site manager.

Asbestos Management Plan Access

The asbestos management plan will be made readily available to:

- Employees, their representatives and other persons conducting work on-site
- Contractors prior to commencing work so they can determine whether ACM is present in the area where they will be working and whether the proposed work will disturb the ACM
- Emergency Services personnel attending the site when they arrive

4. Asbestos & Asbestos Containing Materials (ACM) Risk Management

A summary of how asbestos and ACM will be identified, assessed and managed in accordance with SW-E3.6.4 Asbestos Risk Management Process is provided in the flowchart below.

Reference SW-E3.6.4 Asbestos Risk Management

5. Asbestos & ACM Register Summary

The register details the asbestos and ACM identified on site and the decisions (and rationale for the decision) made in regards to controlling the risks arising from the material based on an assessment of its condition and its potential to release fibres.

The Napier site conducted an initial asbestos survey in 2014. This was largely a visual assessment although two ACM cement bulk cladding materials were sent for analysis, and confirmed the presence of Amosite and Chrysotile asbestos. From this the document *Mackersey Report 010914 Asbestos Location Plan and Summary Part 1* September 2014, was produced. The report was produced by a team of Engineers and Land Surveyors from construction company Mackersey, and has been used as a reference guide, especially in relating volumes.

In February of 2018 a further site assessment was conducted by an ERM certified asbestos assessor, Lloyd Clark. The site walkover was chaperoned by the Ravensdown Maintenance Manager, Rob Miller. A total of Seven (7) bulk material samples were taken for analysis at locations of ambiguity. Other than this targeted sampling the assessment was visual and it is noted that further certainty regarding ACMs, especially at high risk areas and locations due for demolition, would require a more detailed asbestos survey and additional sampling.

As a result of the site walkover conducted in February 2018 an asbestos register has been produced and is located within Annex 4. An updated location plan is provided within section 6 of this report. The register provides a list of confirmed and presumed ACMs with location details and provides a risk analysis of that item in relation to its condition and potential for disturbance.

Summary of ACM Register

5.1. Cladding

Asbestos cement sheeting cladding was presumed at the following locations;

- North Gable wall of the No. 1 Super Store
- East Gable wall of the High Analysis Bays
- North Gable wall of the No. 3 Rock Store
- North Wall of the No. 2 Rock Store
- South Wall of the No. 2 Rock Store
- South east wall stack surround of Manufacturing & Granulation
- North Wall of No. 1 Rock Store
- South Wall of No 1 Rock Store
- Aperture within central Workshop
- South Gable Wall of Workshop
- Roof of Sulphur Store
- Roof and Walls of the Archimedes Pump Shed

Asbestos board cladding was evident at the following locations;

- No. 2 Despatch Weigh Bridge Toilet Block
- Office Block – in sections. The exterior has been rendered for uniformity but the underlying boards are different.
- Service Centre Block – in sections. The exterior has been rendered for uniformity but the underlying boards are different.
- Engineers “Smoko” Rest Room South Wall

- Electrical Workshop East Wall
- Rock Intake Shed MCC Room

The material in question was broken or damaged in almost every case, with the exception of the office and service centre blocks.

- *Note: The exterior walls to the office and service centre have been presumed ACM, based on age and the inability to distinguish what material has been used. Please note that some exterior panels are clearly not ACM but both buildings have been rendered to show conformity across different materials. A detailed investigation with sampling would be required to determine the parts of the exterior cladding that are ACM.

It is recommended that all low lying safely accessible ACM edges be immediately sealed using an ACM sealing agent such as ABC Fibrelock. A single container was provided to site during the walkover but will not be sufficient for all areas requiring attention.

It is recommended that an "emu walk" be conducted around all these areas to identify fragments of asbestos sheeting, which should be immediately collected, contained and disposed as per asbestos guidelines. A specific task methodology and risk assessment should be produced beforehand to confirm the work process and identify and mitigate all risks accordingly.

It is recommended that all remaining ACM cladding be removed as soon as practical to do so. Until then the following management measures are advised:

- Highlight and label ACM materials for identification;
- Conduct regular (monthly) inspections of these areas to monitor condition and identify any further breakage that has left the structure in question; and
- A specific task methodology and risk assessment should be produced before any work to be conducted in these areas to confirm the work process and identify and mitigate all risks accordingly.
- Anyone working directly in contact with ACM or likely to disturb ACM must be qualified and wear appropriate PPE.

5.2. Lagging and Insulation

Asbestos lagging and insulation was evident at the following locations;

- Sulphur Melter – several locations
- Acid Store
- Sulphur Lines along East Boundary Between Manufacturing and Granulation and The Melter
- Engineers Workshop
- Turbine Hall Oil Cooler
- No 2 Despatch East Wall

It is recommended that all remaining ACM lagging and insulation be removed as soon as practical to do so. Until then the following management measures are advised:

- Conduct a detailed asbestos survey with sampling to determine content of the various materials identified;
- Highlight and label ACM materials for identification;
- Conduct regular (monthly) inspections of these areas to monitor condition and identify any further breakage that has left the structure in question; and
- A specific task methodology and risk assessment should be produced before any work to be conducted in these areas to confirm the work process and identify and mitigate all risks accordingly.
- Anyone working directly in contact with ACM or likely to disturb ACM must be qualified and wear appropriate PPE.

5.3. Vinyl Flooring

Vinyl flooring presumed to contain asbestos until proven otherwise was sited at the following locations;

- Office Block Ground Floor Entrance Way Floor
- Office Block Ground Floor Corridor Floors
- Office Block Ground Floor Toilet Floors
- Laboratory Floor
- Office Block Ground Floor Canteen
- Service Centre Canteen
- Service Centre Server Room
- Beneath existing carpet within office block at various locations

All vinyl flooring was seen to be in good condition.

It is recommended that a detailed ACM survey be conducted to confirm material content when practical to do so, should the condition of the flooring deteriorate or before any maintenance activity. The following controls are also recommended:

- Highlight and label ACM materials for identification;
- Conduct regular inspections of these areas to monitor condition; and
- A specific task methodology and risk assessment should be produced before any work to be conducted in these areas to confirm the work process and identify and mitigate all risks accordingly.
- Anyone working directly in contact with ACM or likely to disturb ACM must be qualified and wear appropriate PPE.

5.4. Electrical Boards

A mixture of new non-ACM and ACM electrical units are apparent on the site. The following electrical units were observed to contain ACM, but others may be present and caution should always be taken.

- Manufacturing Granulation Building
- No 2 Despatch Main MCC 12
- Office Block 1st Floor
- Service Centre Toilets

All electrical boards directly observed were seen to be in good condition. No electrical unit was touched during the survey so if the unit was closed, internal condition could not be confirmed.

It is recommended that the following controls are also recommended:

- Highlight and label ACM materials for identification;
- Conduct regular inspections of these areas to monitor condition;
- A specific task methodology and risk assessment should be produced before any work to be conducted in these areas to confirm the work process and identify and mitigate all risks accordingly; and
- Anyone working directly in contact with ACM or likely to disturb ACM must be qualified and wear appropriate PPE.

Please note that due to its age and lack of any known refurbishment, the No 5 transformer directly in front of the Office Block may also contain ACMs. There was nothing evident externally but internal structures may exist, so any work that involves removal of external features should consider the potential to encounter ACMs.

If unsure please contact a relevant qualified person.

5.5. Gaskets

The site no longer uses or stores any ACM gaskets. The site has been in a process of replacing all ACM gaskets within the facility.

It is recommended that a register of all gasket locations is produced and for the engineering/ maintenance division to confirm that all ACM gaskets have been removed. If in the process of producing the register further ACM gaskets are identified these should be scheduled for replacement at the next available opportunity. Until then they should be highlighted on the ACM Site Plan with relevant restrictions around access. A specific task methodology and risk assessment should then be produced before any maintenance work on the relevant equipment or within the vicinity to confirm the work process and identify and mitigate all risks accordingly.

5.6. Cavities, Dust & Cross Contamination

Several cavities and building materials were identified that were previously in direct contact with ACM. The ACM has been removed but as far as ERM is aware, isolation of the removal area and post removal ACM vacuuming and swab verification has not been conducted. These areas include;

- Manufacturing Granulation Building – structural building materials previously in contact with ACM
- Acid Plant – ceiling to roof voids
- Number 1 Super store – structural building materials previously in contact with ACM
- Number 1, 2 and 3 Rock stores – structural building materials previously in contact with ACM
- Number 2 Despatch

See the site location map in section 6 for further details.

It is recommended that swab sampling be conducted within cavity areas and on building materials that were previously in contact with ACM to establish if fibres are still present. Further control measures may be required depending on the swab analysis results. These areas have been presumed as ACM locations until proven otherwise, therefore ACM control measure are required for any person working within or in contact with these areas. A specific task methodology and risk assessment should be produced beforehand to confirm the work process and identify and mitigate all risks accordingly.

5.7. Soil

There is a single location of surface soil that is potentially contaminated with asbestos fibres, being the soft landscaping area on the south side of the Sulphur Store. The Sulphur Store still has an asbestos cement sheet roof and associated structures. The asbestos cement sheeting was seen to be broken in numerous places. Fragments of asbestos sheeting are very likely to have fallen from the roof to the soil surface.

It is recommended that an “emu walk” be conducted along this soft landscaping area to identify fragments of asbestos sheeting, which should be immediately collected, contained and disposed as per asbestos guidelines. A specific task methodology and risk assessment should be produced beforehand to confirm the work process and identify and mitigate all risks accordingly.

A plan for remediation of soft landscaping areas should be sought. This would require further assessment and ultimately creation of a Remediation Action Plan (RAP) to instruct the works. This could be based on existing available information or may require further soil analysis against the new 2017 soil guidelines. A suitably qualified environmental consultant should be obtained to make this assessment and oversea the works. Any removal of asbestos contaminated soil will require oversight and verification by a certified New Zealand Assessor.

Please note that soil guidelines for asbestos within soils for New Zealand were only released in December 2017 by BRANZ (Building Research Association of New Zealand) within the *New Zealand Guidelines for Assessing and Managing Asbestos in Soil* Report.

5.8. Gutters and Downpipes

ACM gutters and or downpipes, including those cross contaminated through direct contact to other ACM items were identified at the following locations;

- Office Block – ACM gutters with plastic cross contaminated downpipes

These gutters and downpipes were observed to be in good condition.

It is recommended that all remaining ACM gutters and downpipes be removed as soon as practical to do so. Until then the following management measures are advised:

- Highlight and label ACM materials for identification;
- Conduct regular inspections of these areas to monitor condition;
- A specific task methodology and risk assessment should be produced before any work to be conducted in these areas to confirm the work process and identify and mitigate all risks accordingly; and
- Anyone working directly in contact with ACM or likely to disturb ACM must be qualified and wear appropriate PPE.

5.9. Underground Services

No ACM underground services were observed, however, no sub-surface investigation was undertaken. A facility of this age is highly likely to have some underground pipework made of ACMs, especially water pipes.

Any sub-surface work to be conducted on the site should consider the potential to encounter ACM sub-surface utilities. Facility utility plans should be scrutinised before any sub-surface work to try and avoid contact with sub-surface utilities. Facility plans should not be fully relied upon and any sub-surface work should also have an action plan for if an unknown sub-surface structure is located, with the primary action being to stop work and report the find so it can be investigated.

For any sub-surface work over a larger area sub-surface scanning or geophysical survey should be considered.

5.10. Other

The following confirmed or presumed ACMs were also identified:

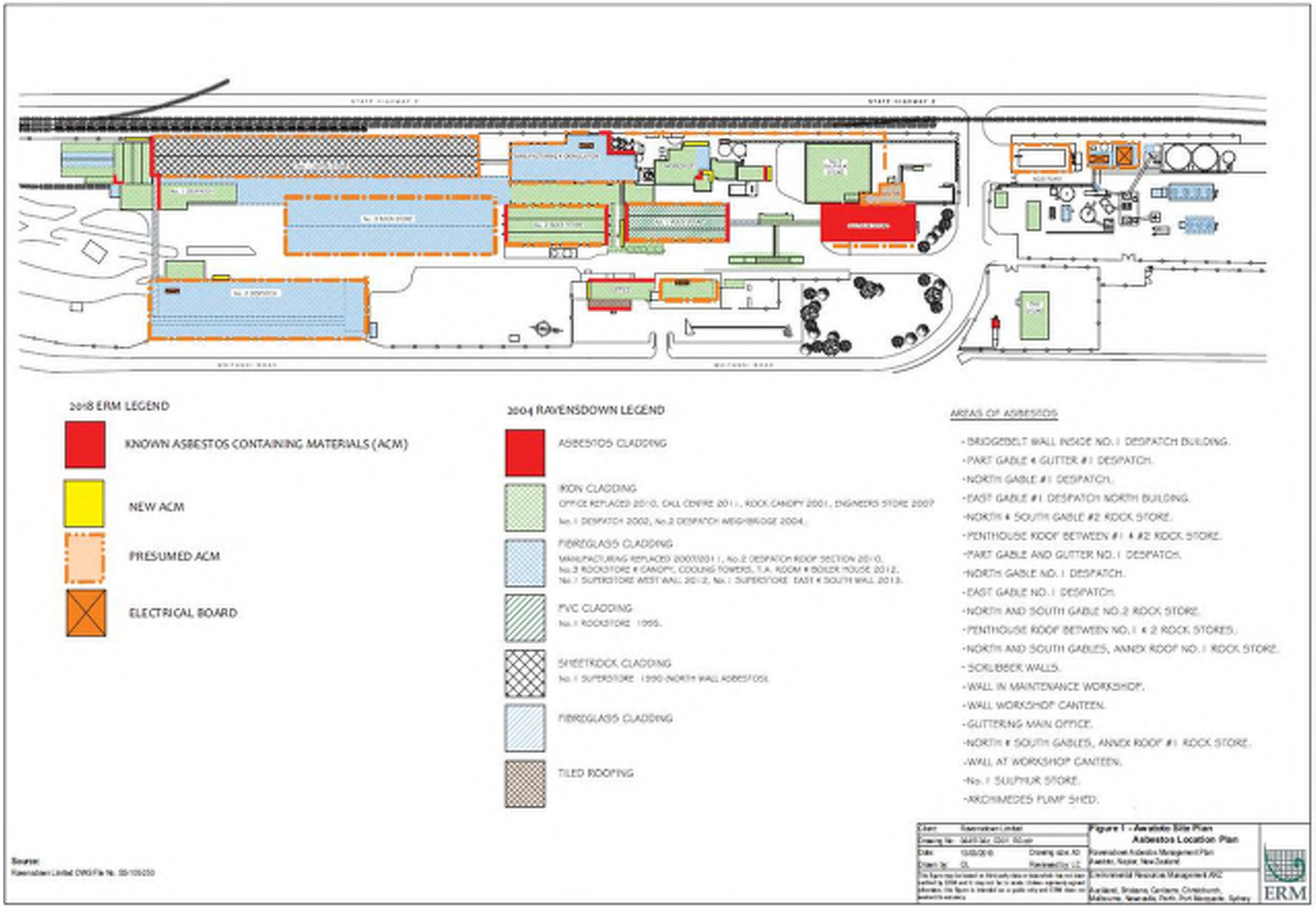
- ACM panels were presumed within the laboratory fumigation cupboards
- Building (black) paper at various wall and roofing locations in production and storage areas
- Office Block Internal Wall Panels
- Office Block Toilets Black Floor to Wall Skirting

All noted materials were seen to be in good condition except for the building paper on some occasions. Building paper used in the last century may contain asbestos. More recent building papers may not contain asbestos but can hold asbestos fibres from other materials if direct contact was enabled.

It is recommended that a detailed ACM survey be conducted to confirm material content as soon as practical to do so or before any maintenance activity. The following controls are also recommended:

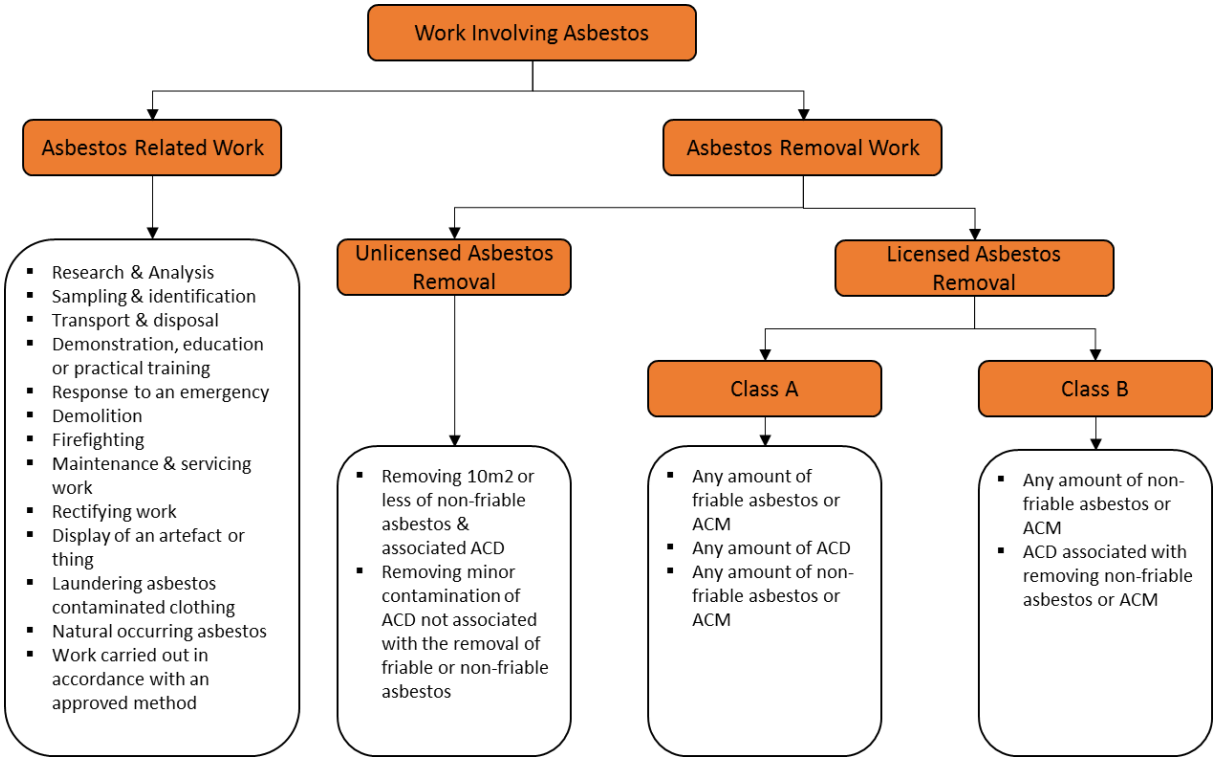
- Highlight and label ACM materials for identification;
- Conduct regular inspections of these areas to monitor condition; and
- A specific task methodology and risk assessment should be produced before any work to be conducted in these areas to confirm the work process and identify and mitigate all risks accordingly.

6. Site Map of Asbestos & ACM Locations



7. Work Involving Asbestos and ACM

Work involving asbestos and asbestos containing material includes asbestos related work and asbestos removal work as described in the flowchart below.



All licensed asbestos removal work must been overseen and verified by an independent certified asbestos assessor.

7.1. Permit to Work System

All asbestos related work and asbestos removal work must be conducted under the Ravensdown Permit to Work System.

7.2. General Precautions

The site asbestos management plan must be reviewed prior to starting work to determine whether any asbestos/ACM will be disturbed (releasing airborne asbestos fibres) by the proposed work.

Where there is a risk of the asbestos/ACM being disturbed consideration should first be given to arranging for removal of the asbestos/ACM as first priority. If this is not reasonably practical then a risk assessment must be conducted and appropriate controls put in place to minimise the release of airborne asbestos fibres and protect people from inhaling them.

Note: The airborne contamination standard (average concentration over any eight hour period of 0.1 respirable fibres per millilitre of air) must not be exceeded with the exception of licenced asbestos removal work within an enclosure where workers are wearing appropriate PPE.

7.3. Power Tools

Power tools must not be used on asbestos/ACM unless they are used with dust suppression or extraction controls within an enclosure that meets the requirements of *WorkSafe Approved Code of Practice Management and Removal of Asbestos 27 Enclosures for Asbestos Removal Work*

7.4. Asbestos Related Work

Asbestos related work tasks that are likely to disturb asbestos (releasing airborne asbestos fibres) must be conducted in accordance with *WorkSafe Approved Code of Practice Management and Removal of Asbestos* and where applicable Appendix F Safe Work Practices.

7.5. Asbestos Removal Work

All asbestos removal work must be conducted in accordance with WorkSafe Approved Code of Practice Management and Removal of Asbestos and where applicable Appendix G Safe Work Practices.

8. Training, Competency & Licences

Persons performing asbestos related work and/or asbestos removal work must have received appropriate training, competencies and obtained appropriate licences as per *Appendix 3 Asbestos Training, Competency & Licences.*

Any persons working within an area that contains asbestos must undergo basic asbestos training, specific to the risks identified within their work location. Records of attendance should be held.

9. Emergency Procedures

9.1. Unexpected Discovery of Asbestos Containing Materials

Where unexpected or suspected asbestos containing materials are discovered:

- Leave it undisturbed – secure the area to prevent access if there is a risk of airborne fibres being released
- Notify the Asbestos Project Manager (Graham Eskdale) - in consultation with a qualified person as required.

The Asbestos Project Manager will:

- Determine if the material is asbestos/ACM (presumed or confirmed by sampling)
- Assess the risk of airborne fibres being released (if the material is identified as asbestos/ACM) using the *Appendix 1 Asbestos Risk Assessment Logarithm*; and:
  - Where there is a low risk – label and maintain as undisturbed
  - Where there is a medium-high risk – Use Appendix 2 Asbestos Risk Control Method Options to determine and apply best method for controlling the risk (remove or enclose/encapsulate and label)
- Communicate results of asbestos/ACM identification, assessment and management to site manager, employees and others onsite and keep them up to date on progress with any subsequent actions
- Implement actions based on the risk assessment and chosen risk control methods
- Update the site Asbestos Management Plan and reissue it
- Include Asbestos/ACM if it remains in situ in scheduled inspections

Reference SW-E3.6.4.1 Asbestos Incident Management Protocol

9.2. Damaged Asbestos Containing Materials

Where it is discovered that asbestos/ACM have been damaged or deteriorated the following steps must be taken:

- Leave it undisturbed – secure the area to prevent access if there is a risk of airborne fibres being released
- Notify the Asbestos Project Manager

The Asbestos Project Manager will:

- Review the Asbestos Management Plan Asbestos/ACM Register
- Reassess the risk of airborne fibres being released using the *Appendix 1 Asbestos Risk Assessment Algorithm*; and:
  - Where there is a low risk –maintain as undisturbed

  - Where there is a medium-high risk – Use Appendix 2 Asbestos Risk Control Method Options to determine and apply best method for controlling the risk (remove or enclose/encapsulate and label)
- Communicate results of asbestos/ACM identification, assessment and management to site manager, employees and others onsite and keep them up to date on progress with any subsequent actions
- Implement actions based on the risk assessment and chosen risk control methods
- Update the site Asbestos Management Plan and reissue it

  Reference SW-E3.6.4.1 Asbestos Incident Management Protocol

9.3. Emergency Demolition

In the event that an emergency demolition needs to be performed onsite for a building or structure with asbestos containing material the following steps must be take:

- Notify the Asbestos Project Manager

The Asbestos Project Manager will:

- Notify Worksafe of the proposed emergency demolition prior to commencing the demolition;
- Ensure contractors undertaking the demolition have the appropriate asbestos removal licences;
- Ensure oversight and verification is provided by an independent certified asbestos assessor;
- Ensure the demolition is undertaken under the Ravensdown Permit to Work System;
- Ensure a documented demolition procedure has been developed that will so far as is reasonably practicable reduce the risk of workers or persons in the vicinity of the demolition site being exposed to asbestos that is in concentrations that exceed the airborne standard for asbestos (respirable asbestos fibre levels at or above 0.02 fibres/ml);
- Communicate with site personnel and others in vicinity to keep them apprised of the demolition work; and
- Update the Asbestos Management Plan and reissue it.

Reference SW-E3.6.4.1 Asbestos Incident Management Protocol

10. Notifiable Events

The following incidents will be notified to WorkSafe:

- Events relating to the emergency demolition of a structure or plant containing asbestos;
- Any asbestos removal; and
- Recorded respirable asbestos fibre levels at an asbestos removal area at or above 0.02 fibres/ml

11. Air Monitoring & Clearance Certificates

All air monitoring and clearance certificates must be attached to this plan. Air monitoring must be conducted in line with regulation (Health and Safety at Work (Asbestos) Regulations 2016) during asbestos removal activities.

It is recommended to conduct an air monitoring baseline of the site for asbestos fibres. The baseline should also look to clarify the status of air quality at high risk ACM areas and locations of previous ACM removal, where there is a high potential risk of fibres left in place due to disturbance from removal activities.

12.Inspections & Periodic Reviews

12.1. Inspections

An annual inspection (or as specified in section 6) of ACMs will be scheduled in Noggin by the Asbestos Project Manager and assigned to a competent person to perform. The inspection will include:

- Inspection of the condition of the asbestos containing material where accessible to identify any deterioration which may require remediation
- A review of asbestos warning labels to ensure they remain appropriate and have been maintained in good condition

The inspection report will be uploaded to Noggin and CAR's raised to assign and implement any corrective actions required

12.2. Periodic Reviews

The asbestos management plan will be periodically reviewed and revised by Asbestos Project Manager in consultation with site manager and employees if:

- New (previously unknown) asbestos is identified;
- There is a review of a current control measure;
- There are changes to current control measures i.e. the asbestos is removed, disturbed, sealed or enclosed;
- The plan is no longer adequate for managing the risk arising from asbestos containing material at the site;
- Any monitoring is conducted;
- 5 years have passed since the plan was reviewed.

All monitoring activities should be logged within a register that is attached to this plan.

12.3. Certified Asbestos Assessors

Certified New Zealand asbestos assessors should be consulted for any significant or out of the ordinary projects that are likely to encounter asbestos.

Independent New Zealand certified asbestos assessors must be used to oversee asbestos removal and demolition works including:

- Review of the contractors asbestos removal control plan;
- Inspection of site work activities;
- Production of air quality management plan;
- Assessment of air quality results; and
- Site or location verification with production of a signed verification report.

13. Appendix

1. Asbestos Risk Assessment Algorithm
2. Asbestos Risk Control Method Options
3. Asbestos Training Competencies & Licences
4. Asbestos Survey Report
5. Sampling Reports
6. Air Monitoring Results
7. Clearance Certificates

Appendix 1 Asbestos Risk Assessment Algorithm

Use the algorithm below to assess the potential risk of asbestos fibres being released.

1. Categorise the product type
2. Determine the condition of material
3. Determine the stability of asbestos fibres

Sample variable	Score	Description
Product Type (or debris from product)	1	Asbestos-reinforced composites - plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc.
	2	Asbestos insulation board, millboards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.
	3	Thermal insulation (i.e. pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.
Condition	0	Good condition: no visible damage
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
Fibre Stability	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.
	1	Enclosed sprays and lagging, asbestos insulation board (with exposed face painted or encapsulated) asbestos cement sheets etc.
	2	Unsealed asbestos insulation board, or encapsulated lagging and sprays.
	3	Unsealed lagging and sprays.
Total		

Risk Score	**Potential To Release Fibres**
7-9	High
4-6	Medium
1-3	Low

Reference: WorkSafe Good Practice Guidelines Conducting Asbestos Surveys

Appendix 2 Asbestos Risk Control Method Options

The following table outlines control methods that can be used (and when they are appropriate or not appropriate) to eliminate or minimise the risk of airborne asbestos fibres being released

Option	Option Involves	Appropriate When	Not Appropriate When
Removal	Complete removal of asbestos or ACM from building	▪ Surface is friable or asbestos is poorly bonded ▪ Asbestos is severely water-damaged or liable to damage or deterioration ▪ There is lichen growth or lichen-related damage ▪ Asbestos is located in air conditioning ducts ▪ Airborne asbestos levels exceed exposure standard ▪ Other control techniques are inappropriate	▪ Asbestos is located on complex or inaccessible surfaces ▪ Removal would be extremely difficult and other techniques are satisfactory
Encapsulation [1]	Coating ACM with a product that penetrates into and hardens the material	▪ Asbestos removal is difficult or not feasible ▪ Minimal likelihood of asbestos being damaged ▪ Building has a short life expectancy ▪ Asbestos is readily visible for regular assessment	▪ Asbestos is deteriorating or has been water-damaged ▪ Applying the sealant may damage the asbestos ▪ Area of damaged asbestos is large
Sealing [1]	Applying a protective coating to the ACM that creates an impermeable seal for the asbestos e.g. paint		
Enclosure [1,2]	Placing a barrier between ACM and the surrounding environment	▪ Asbestos removal is extremely difficult ▪ Fibres can be fully contained within the enclosure ▪ Most of the surface is inaccessible (enclosed) ▪ Disturbance to, or entry into the enclosure is unlikely	▪ Enclosure is liable to be damage or water damage may occur ▪ Asbestos cannot be fully enclosed
Deferral	No action taken at the present time	▪ Risk of asbestos exposure is negligible, and ▪ Asbestos is inaccessible and fully contained, or ▪ Asbestos is stable and unlikely to be damaged	▪ There is a possibility of asbestos damage or deterioration ▪ Airborne asbestos dust levels exceed exposure standards

Notes:

1. If the enclosure, encapsulation or sealing options are used- the location of the asbestos must be clearly indicated and recorded.
2. This option is only acceptable when ACM is in good condition and the barrier is designed to protect against mechanical damage
3. Asbestos/ACM likely to be disturbed during demolition or refurbishment activities must be identified and removed prior to the demolition/refurbishment activity; with the exception of an emergency demolition
4. If an emergency demolition needs to occur - WorkSafe must be notified and a procedure developed to minimise the risk of workers and people in the vicinity being exposed to a respirable asbestos fibre levels at or above 0.02 fibres/ml

Reference: WorkSafe Code of Practice Management & Removal of Asbestos

Appendix 3 Asbestos Training, Competencies & Licences

Asbestos Training & Competencies

Type	Training & Competency Requirements
Workers doing asbestos-related work or unlicensed asbestos removal	NZQA 2138 or equivalent (in-house or external provider) including: ▪ Different types of asbestos ▪ How asbestos is used in construction ▪ Health hazards associated with asbestos ▪ Safety procedures when asbestos is suspected or present ▪ Legislative and ACOP requirements for managing asbestos ▪ Roles and responsibilities ▪ Any required health monitoring
Workers doing licensed asbestos removal	Class A removal training, or Class B removal training
Class A License Holder	Certificate of Competency Class A
Workers for Class A License Holder	NZQA unit standard 29765, or NZQA unit standard 29766
Supervisor	Class A, or Class B, worker removal training plus separate unit on supervision
Class B License Holder	Certificate of Competency Class B
Class A Supervisor	Asbestos Nominated Supervisor Competency Test – Class A
Class B Supervisor	Asbestos Nominated Supervisor Competency Test – Class B
Asbestos Assessor	WorkSafe have specified the following asbestos assessor training courses: ▪ Australian VET standard CPCCBC5014A Conduct asbestos assessment associated with removal ▪ British Occupational Hygiene Society proficiency module P404 Air Sampling of Asbestos and MMMF and Requirements for a Certificate of Reoccupation Following Clearance of Asbestos. ▪ W504 Asbestos and Other Fibres ▪ British Occupational Hygiene Society proficiency module IP404

Asbestos Removal & Assessor Licences

Type of License	What Asbestos Can Be Removed
Class A	Any type or quantity of asbestos or asbestos-containing material, including: ▪ Any amount of friable asbestos or ACM ▪ Any amount of asbestos-contaminated dust or debris (ACD) ▪ Any amount of non-friable asbestos or ACM.
Class B	▪ Any amount of non-friable asbestos or ACM. ▪ Asbestos containing dust associated with removing any amount of non-friable asbestos or ACM.
No licence required	▪ Up to and including 10m2 of non-friable asbestos or ACM, cumulatively, over the whole course of the removal project for the site. ▪ Asbestos containing dust that is: associated with removing 10m2 or less of non-friable asbestos or ACM; and minor amounts of ACD, not associated with the removal of friable or non-friable asbestos.
Asbestos Assessor	From 4 April 2018 an assessor license is required to: ▪ Conduct air monitoring during Class A asbestos removal ▪ Conduct and issue clearance inspections for Class A asbestos removal Until then it can be done by a competent person*
	No licence required, must be a competent person* ▪ Clearance inspections for Class B asbestos removal (which may include surface testing and air monitoring) ▪ Issuing of clearance certificates in relation to Class B asbestos removal.

*Competent person means a person who has acquired, through training and experience, the knowledge and skills of relevant asbestos removal industry practice and who holds;

- A certificate for an asbestos assessor training course specified by WorkSafe, or
- A tertiary qualification in occupational health and safety, occupational hygiene, science, or environmental health.

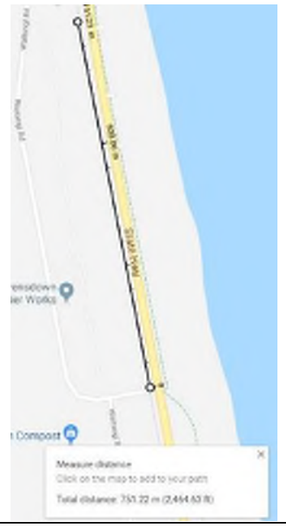
Appendix 4 Asbestos Survey Report

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**22/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

General Information

The Ravensdown site is located in Napier. It is a fertilizer processing plant of significant size with numerous large buildings. The site has been active since the 1950s.

Overview

Property area [m²]	111,000 m² 
Construction date	1950s
No. of buildings	20
Ownership	Ravensdown Fertilizer
Basement floors	No
Upper floors	Various

Photography

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

Table 1 – Material Assessment Algorithm

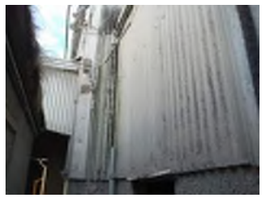
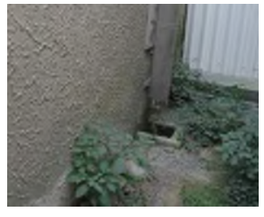
Sample variable	Score	Description
Product Type (or debris from product)	1	Asbestos-reinforced composites - plastics, resins, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement etc.
	2	Asbestos insulation board, millboards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.
	3	Thermal insulation (i.e. pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.
Condition	0	Good condition: no visible damage
	1	Low damage: a few scratches or surface marks, broken edges on boards, tiles etc.
	2	Medium damage: significant breakage of materials or several small areas where material has been damaged revealing loose asbestos fibres.
	3	High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.
Fibre Stability	0	Composite materials containing asbestos: reinforced plastics, resins, vinyl tiles.
	1	Enclosed sprays and lagging, asbestos insulation board (with exposed face painted or encapsulated) asbestos cement sheets etc.
	2	Unsealed asbestos insulation board, or encapsulated lagging and sprays.
	3	Unsealed lagging and sprays.
Total		

Risk Score	Potential To Release Fibres
7-9	High
4-6	Medium
1-3	Low

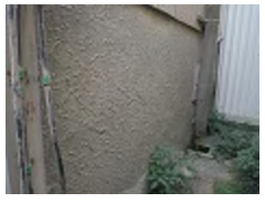
Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Main Office External	22 February 2018	Presumed	50m^2	**ACM**	-		Cement Product Score=1	Good, no visible damage Score=0	Score = 0	Low Score = 1	L	Low	Sample confirmed Asbestos		Asbestos Removed
Service Centre External	22 February 2018	Presumed	100m^2 - 3 Sides	**ACM**	-		Cladding Score=1	Good, no visible damage Score=0	Score=1	Low Score = 2	M	Low	Asbestos not confirmed in Sample		
#1 Rock Store South Gable Wall	22 February 2018	Sampled	75m^2	**Confirmed Chrysotile**	#1		Cement Sheeting Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	High	Sample confirmed Asbestos		Asbestos Removed
Floor of #1 Rock Store – Building Footprint	22 February 2018	Sampled	1m^2	**Confirmed Chrysotile**	#1		Cement Sheeting Fragments Score=1	Broken fragments Score=3	Score=1	Medium Score = 5	H	Critical	Sample confirmed Asbestos		Asbestos Removed

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							**RISK ASSESSMENT**						**RISK CONTROL & REVIEW**		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Roof Edging of #1 Rock Store	22 February 2018	Presumed based on #1	20m^2	**Potential for Chrysotile fibre contamination**	Presumed based on #1		Not ACM itself but in direct contact Score=1	Good, no visible damage Score=0	Score=0	Low Score = 1	L	Low	Sample confirmed Asbestos		Asbestos Removed
#1 Sulphur Store	01 February 2019	Sampled	2,000m^2	**Confirmed Chrysotile & Amosite**	Presumed based on #1		ACM Sheeting Score=1	Deteriorated Score=2	Score=2	High Score = 7	H	High	Sample confirmed Asbestos		Part of Sulhpur Master Plan project
Engineers Smoko South Gable Wall	22 February 2018	Sampled	60m^2	**Confirmed Chrysotile & Amosite**	#2		ACM Sheeting Score=1	Deteriorated Score=2	Score=2	Medium Score = 5	H	High	Sample confirmed Asbestos		Asbestos Removed
Ground footprint and Engineer Smoko Room	22 February 2018	Sampled	10m^2	**Confirmed Chrysotile & Amosite**	#2		ACM Sheeting Score=1	Deteriorated Score=2	Score=2	Medium Score = 5	H	High	Asbestos Removed		Asbestos Removed

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Pipe Sulphur Lines Lagging	01 February 2019	Sampled	1,000m^2 +	**None**	-		Lagging Score=3	Medium damage Score=2	Score=2	Score = o			Asbestos not confirmed in Sample		
Engineers workshop SW Corner	01 February 2019	Presumed Against #2	100m^2	**None**	-		ACM Sheeting & gutters Score=1	Medium damage Score=2	Score=2	Medium Score = 0			Asbestos not confirmed in Sample		
Engineers workshop SW corner	22 February 2018	Presumed	10m^2	**ACM**	-		Electrical cable Lagging Score=2	Low damage Score=1	Score=1	Medium Score = 4	H	High	Asbestos not confirmed in Sample		
Engineers Workshop SW corner	22 February 2018	Presumed	30m^2	**ACM**	-		Wall Cover Score=1	Good Score=0	Score=0	Low Score = 1	M	Moderate	Asbestos not confirmed in Sample		

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Engineers workshop Old cable lagging	22 February 2018	Presumed	30m^2	**ACM**	-		Lagging Score=2	Medium damage Score=2	Score=2	Medium Score = 6	L	Moderate	Asbestos not confirmed in Sample		
Electrical Workshop NE Wall	22 February 2018	Sampled	3m^2	**Confirmed Chrysotile**	#3		ACM Sheet Score=1	Medium damage Score=2	Score=2	Medium Score = 5	H	Critical	Asbestos not confirmed in Sample		
Manufacturing Granulation Building	22 February 2018	Presumed against #1	1,000m^2	**Confirmed Chrysotile**	Presumed based on #1		ACM Sheeting on walls around Scrubbers Score=1	Low damage Score=1	Score=2	Medium Score = 4	L	Moderate	Asbestos not confirmed in Sample		
Underground Services	22 February 2018	Presumed	?	**ACM**	-	NA	Pipes Score=1	No visible damage Score=0	Score= 1	Low Score = 2	L	Low	Asbestos not confirmed in Sample		

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Manufacturing Granulation Building	22 February 2018	Presumed	?	**ACM**	-		Various, interior structural materials in direct contact with ACM Score=1	Score=0	Score=0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Various	22 February 2018	Presumed	Total $2m^2$	**ACM**	-		Power boards Score=1	Good condition Score=0	Score=0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Voids	22 February 2018	Presumed Too high	?	**ACM**	-		Building Papers Directly Behind ACM Sheeting Score= 1	Good condition Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Archimedes	22 February 2018	Presumed	$60m^2$	**ACM**	-		ACM Sheeting Score= 1	Medium damage Score= 2	Score= 1	Medium Score = 4	M	Moderate	Sample confirmed Asbestos		Asbestos Removed

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Various	22 February 2018	NA	NA	**No**	-		Gaskets	-	-	Encapsulated (did not see any broken) Site says all ACM gaskets removed TBC with gasket register	-	-	Asbestos not confirmed in Sample		
Ceiling Voids*	22 February 2018	Presumed	?	**Potential asbestos fibre contamination**	-		ACM Fibres from Roofing material removed Score= 1	Score= 0	Score= 2	Low Score = 3	L	Low	Asbestos not confirmed in Sample		
Acid Plant Molten Sulphur Tank	22 February 2018	Sampled	?	**No**	Yes #4		Insulation						Asbestos not confirmed in Sample		
Turbine Wall in Oil Cooler	22 February 2018	Sampled	?	**No**	-		Pipe Lagging Score=3						Asbestos not confirmed in Sample		

Client:	***Ravensdown***	**Project No.:**	**0445134**
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Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
*Lots of ACM roofing removed in the last 4 years. Eg. Acid Plant. As far as site is aware the areas under removal were not isloated and related structural materials were not verified clean.															
Acid Plant	22 February 2018	Against #4	5m^2	**No**	Presumed against sample #4		Insulation						Asbestos not confirmed in Sample		
Sulphur Melter	22 February 2018	Sampled	100m^2	**NO**	-		Insulation Score= 3						Asbestos not confirmed in Sample		
Sulphur Melter	22 February 2018	Sampled	500m^2	**No**	-		Lagging Score= 3						Asbestos not confirmed in Sample		

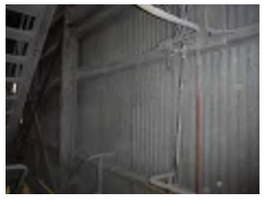
Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Sulphur store – Grass Foot print	22 February 2018	Against #1	Unknown – Emu Walk and SI to confirm	**ACM**	-		Cement Sheeting Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Sample confirmed Asbestos		Sulphur Master Pan Scope
#1 Rock Store North end	22 February 2018	Against #1	75m^2	**Presumed Chrysotile**	Presumed against sample #1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Sample confirmed Asbestos		Planned for financial year 2021/22
Blending Plant Roof and High Ends	22 February 2018	Against #1	50m^2	**Presumed Chrysotile**	Presumed against sample #1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Sample confirmed Asbestos		Planned for financial year 2021/22
#2 Rock Store South Gable	22 February 2018	Against #1	75m^2	**Presumed Chrysotile**	Presumed against sample #1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Sample confirmed Asbestos		Planned for financial year 2021/22

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Rock Intake Shed (MCC Room)	22 February 2018	Against #1	50m^2	**Presumed Chrysotile**	Presumed against sample #1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Asbestos not confirmed in Sample		
№5 Transformer	22 February 2018	Presumed	?	**ACM**	-		Internal Boards Score=1	No visible damage Score=0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
#2 Rock Store	22 February 2018	Against #1	45m^2	**Presumed Chrysotile**	Presumed against sample #1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Sample confirmed Asbestos		Planned for financial year 2021/22
#2 Despatch East Wall Pipe	22 February 2018	Sampled	NA	**No**	#5		NA	NA	NA	NA	M	Moderate	Asbestos not confirmed in Sample		

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
#1 Dispatch North Gable – Bridge	22 February 2018	Against #1	75 m^2	**Presumed Chrysotile**	Presumed against sample # 1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Sample confirmed Asbestos		Asbestos Removed
High Analysis Bay East Gable	22 February 2018	Against #1	50m^2	**Presumed Chrysotile**	Presumed against sample # 1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	L	Moderate	Sample confirmed Asbestos		Asbestos Removed
Dispatch A Control Room	22 February 2018	Sampled	NA	**No**	# 6		NA	NA	NA	NA	H	NA	Asbestos not confirmed in Sample		
#1 Superstore	22 February 2018	Against #1	100m^2	**Presumed Chrysotile**	Presumed against sample # 1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	L	Moderate	Sample confirmed Asbestos		Need to Check/Plan

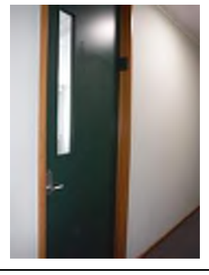
Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Toilet Block at #2 Dispatch Weigh Bridge	22 February 2018	Sampled	30m^2	**NO**	-		ACM Panels Score=1						Asbestos not confirmed in Sample		
Dispatch #2 Main MCC 12	22 February 2018	Sampled	100m^2	**No**	#7		ACM Board						Asbestos not confirmed in Sample		
Office Canteen Vinyl Floor	22 February 2018	Presumed	30m^2	**ACM**	-		Vinyl Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Office Building Exterior Wall in Parts	22 February 2018	Presumed	200m^2	**ACM**	-		ACM Speckled Board Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Sample confirmed Asbestos		Asbestos Removed

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Office Building Vinyl flooring	22 February 2018	Presumed	30m^2	**ACM**	-		Vinyl Flooring Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Lab	22 February 2018	Presumed	30m^2	**ACM**	-		Vinyl Flooring Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Lab	22 February 2018	Presumed	5m^2	**ACM**	-		Frame Cabinets x2 Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Sample confirmed Asbestos		Asbestos Removed
Office Block Internal Floors	22 February 2018	Presumed	?	**ACM**	-		Beneath Carpet- Overlays Old Vinyl Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Office Internal Walls	22 February 2018	Presumed	$100m^2$ + very different wall types, some at least one ACM need to sample all	**ACM**	-		Wall Panels Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Offie block 1st Floor Ladies and Mens Toilets	22 February 2018	Presumed	$10m^2$	**ACM**	-		Bitumen Skirting Score = 1	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Upstairs Office Block Speckled Clue walls	22 February 2018	Presumed	$1m^2$	**ACM**	-		Electrical Panel	No visible damage Score= 0	Score= 0	Low Score = 1	L	Low	Asbestos not confirmed in Sample		
Service Floor in Canteen, Toilets and Server Room	22 February 2018	Presumed	$2m^2$	**ACM**	-		Insulation in Big old fire doors Score= 2	No visible damage Score= 0	Score= 0	Low Score = 2	L	Low	Asbestos not confirmed in Sample		

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							RISK ASSESSMENT						RISK CONTROL & REVIEW		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Service Centre Toilets	22 February 2018	Presumed	1005m^2	**ACM**	-		Wall panels Score= 1	No visible damage Score= 0	Score= 0	Low Score = 2	L	Low	Asbestos not confirmed in Sample		
Service Centre, Extend Cladding	22 February 2018	Presumed	20m^2	**ACM**	-		Vinyl flooring Score=1	No visible damage Score= 0	Score= 0	Low Score = 2	L	Low	Sample confirmed Asbestos		Asbestos Removed
Engineers workshop Old cable logging	22 February 2018	Presumed	1m^2	**ACM**	-		Electrical Board Score=1	No visible damage Score= 0	Score= 0	Low Score = 2	L	Low	Asbestos not confirmed in Sample		
Electrical Workshop NE Wall	22 February 2018	Presumed	200m^2	**ACM**	-		Cladding Refurbished Score =1	No visible damage Score= 0	Score= 0	Low Score = 2	L	Low	Asbestos not confirmed in Sample		

Client:	***Ravensdown***	**Project No.:**	**0445134**
Building Use:	**Agrochemical Production**	**Project:**	**Asbestos Assessment for AMP**
Site visit date	**23/02/18**	**Location**	**Awatoto, Napier**
Assessor:	**Mr Lloyd Clark (ERM - NZ Licensed Asbestos Assessor & Certified Surveyor)**		

ASBESTOS IDENTIFICATION							**RISK ASSESSMENT**						**RISK CONTROL & REVIEW**		
Location	**Date Identified**	**ID Method** Presumed/Sampled	**Extent Approx.**	**ACM Type**	**Survey Sample Ref**	**Photo**	**Product type &** (Score of 1-3)	**Condition** (Score of 0-3)	**Potential to release Fibres** (Score of 0-3)	**Material Assessment Algorithm Risk Score**	**Risk Of Disturbance**	**Priority for Action**	**Risk Control Method**	**Rationale for Decision**	**Updates/Changes to Risk Controls**
Acid Plant Blower Roof	18th June 2021	Presumed	10m^2	**ACM**	-		Black Tar Score =1	No visible damage Score= 0	Score= 0	Low Score = 2	L	Low	Asbestos confirmed in Sample		Need to Plan
Rock Shed 2 Penthouse	18th June 2021	Presumed	100m^2	**Presumed Chrysotile**	Presumed against sample #1		ACM Sheets Score=1	Low damage Score=1	Score=2	Medium Score = 4	M	Moderate	Sample to be tested		Need to Plan
Underfloor Admin Building	2nd July 2021	Tested	NA	**Chrysotile**	21-084907		Pipe Lagging	Low damage Score=1	Score= 0	Low Score = 2	L	Low	Asbestos confirmed in Sample		Need to Plan
Acid Plant Drying Tower	7th July 2021	Tested	NA	**Presumed Chrysotile**	B-18306/49059		Textured Coating	No visible damage Score= 0	Score= 0	Low Score = 2	L	Low	Asbestos not confirmed in Sample		

Appendix 5 Sampling Reports

Attach Asbestos Sampling Reports

Report Number 49858
04-Feb-11

To John Perry.
From Mark Adams

Peter Julian
Asbestos Specialists Ltd
185 Parkhill Road
Naumoona RD2,
Hastings

IDENTIFICATION OF ASBESTOS IN A BULK SAMPLE

Samples received on 4/02/2011 from Ravensdown - Mackersay Construction. Sampled by Mark Adams, on 2/02/2011.

Results

Sample #	Sample details	Analytical results
49858	ASL14	Amosite and Chrysotile
49859	ASL15	Amosite and Chrysotile

This report may not be reproduced, except in full. Results pertain to sample "as received".

Method: Australian Standard: AS 4964-2004, Method for the identification of asbestos in bulk samples.

Asbestos types: Amosite or Brown asbestos; Crocidolite or Blue asbestos, and Chrysotile or White asbestos.

* Interpretations and opinions expressed in this report are outside the terms of this laboratory's Accreditation.

* Asbestos is a hazard. Provided it is incorporated into a stable matrix and no airborne dust is produced it presents minimal health risk. The Asbestos identified follows the definition of "asbestos" (even as a contaminant) in The Health and Safety in Employment (Asbestos) Regulations 1998.

All tests reported herein have been performed in accordance with the laboratory's scope of Accreditation

Reported By
Libby Nanai
Analyst

Capital Environmental Services (2005) Ltd
P.O. Box 38-328
Wellington Mail Centre 5045

2nd Bell Road South Greenfield Lower Hutt
Telephone 04-566 5311 Fax 04-566 5312
Email library@hegs.co.nz www.hegs.co.nz

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
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Hamilton 3240 New Zealand

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T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

ANALYSIS REPORT

Client:	ERM	Lab No:	1934683
Contact:	Lloyd Clark	Date Received:	01-Mar-2018
	C/- ERM	Date Reported:	01-Mar-2018
	PO Box 106234	Quote No:	89857
	Auckland City	Order No:	C.C.
	Auckland 1143	Client Reference:	Ravensdown
		Add. Client Ref:	Sampled on: 22/2/18
		Submitted By:	Dean Lochore

Sample Type: Building Material

Sample Name	Lab Number	Sample Category	Sample Weight on receipt (g)	Asbestos Presence / Absence
Sample 1 - Rock Wool	1934683.1	Fibre Cement	20.17	Chrysotile (White Asbestos) detected.
Sample 2 - Engineer Smoke Wall	1934683.2	Fibre Cement	25.86	Amosite (Brown Asbestos) and Chrysotile (White Asbestos) detected.
Sample 3 - Electrical	1934683.3	Fibre Cement	18.77	Chrysotile (White Asbestos) detected.
Sample 4 - Acid Plate Tank	1934683.4	Lagging / Insulation	11.70	Asbestos NOT detected.
Sample 5 - Pipe from E wall	1934683.5	Other	8.29	Asbestos NOT detected.
Sample 6 - Control Room	1934683.6	Fibre Cement	43.84	Asbestos NOT detected.
Sample 7 - Dispatch 2 Main MCC	1934683.7	Fibre Cement	73.58	Asbestos NOT detected.

Analyst's Comments

Appendix No.1 - Chain of Custody

SUMMARY OF METHODS

The following table(s) gives a brief description of the methods used to conduct the analysis for this job. The detection limits given below are those attainable in a relatively clean matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis.

Sample Type: Building Material

Test	Method Description	Default Detection Limit	Sample No
Asbestos in Bulk Material			
Sample Category	Assessment of sample type. Analysed at Hill Laboratories - Asbestos, 72 Grafton Road, Auckland.	-	1-7
Sample Weight on receipt	Sample weight. Analysed at Hill Laboratories - Asbestos, 72 Grafton Road, Auckland.	0.01 g	1-7
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos, 72 Grafton Road, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	-	1-7

IANZ ACCREDITED LABORATORY

This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked *, which are not accredited.

Job No: 193 4683 Date Recv: 01-Mar-18 09:56

Received by: Christian Cisterna Bae

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
Level 1, 72 Grafton Road
Grafton
Auckland 1010, New Zealand

T 0508 HILL LAB (44 552 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Office use only
(Job No)

Quote No 89857
Primary Contact Lloyd Clark
Submitted By Dean Lochore
Client Name ERM

Address
Postcode
Phone Mobile
Email

Charge To ERM
Client Reference Ravensdown
Order No

Results To Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.

☑ Email Primary Contact ☐ Email Submitter ☐ Email Client
☐ Email Other
☐ Other

Sent to Hill Laboratories — Date & Time: / Name: / Signature:
☐ Tick if you require COC to be emailed back

Received at Hill Laboratories — Date & Time: / Name: / Signature:

Condition — Temp.
☐ Room Temp ☐ Chilled ☐ Frozen
☐ Sample and Analysis details checked
Signature:

Priority ☐ Low ☑ Normal ☐ High
☐ Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date:

22/2/18

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1	Rock Stove			BM	ASB
2	Engineer Smoke Wall			"	"
3	Electrical			"	"
4	Acid Plate Tank			"	"
5	Pipe from E wall			"	"
6	Control Room			"	"
7	Dispatch 2 Main Mill			"	"
8					
9					
10					
11					
12					

Continued on next page

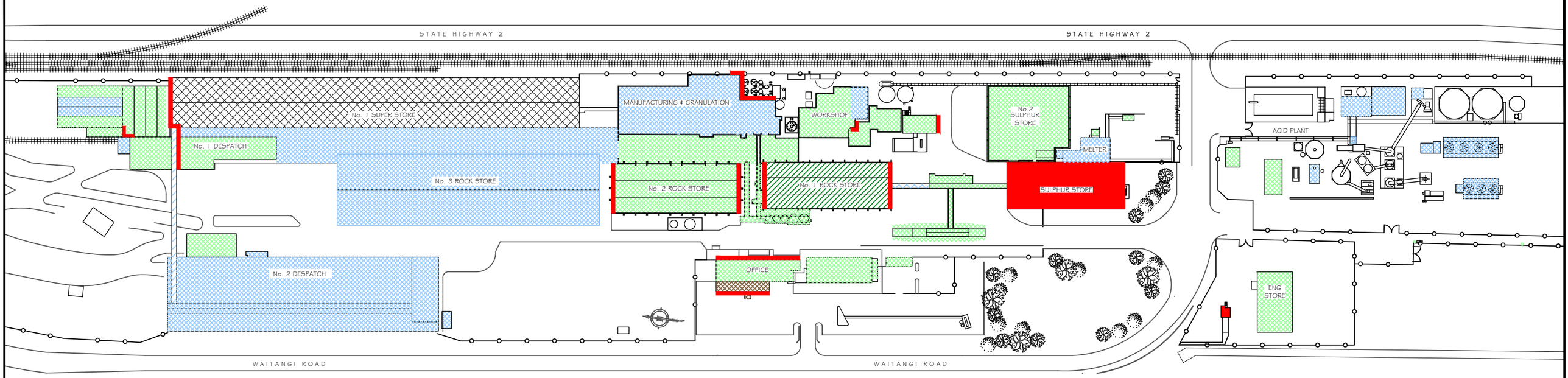
KB Item: 40421 Version: 1

Appendix 6 Air Monitoring Results

Attach any air monitoring reports

Appendix 7 Clearance Certificates

Attach any clearance certificates



ASBESTOS CLADDING

IRON CLADDING

OFFICE REPLACED 2010, CALL CENTRE 2011, ROCK CANOPY 2001, ENGINEERS STORE 2007

No.1 DESPATCH 2002, No.2 DESPATCH WEIGHBRIDGE 2004.

FIBREGLASS CLADDING

MANUFACTURING REPLACED 2007/2011, No.2 DESPATCH ROOF SECTION 2010,
No.3 ROCKSTORE & CANOPY, COOLING TOWERS, T.A. ROOM & BOILER HOUSE 2012,
No.1 SUPERSTORE WEST WALL 2012, No.1 SUPERSTORE EAST & SOUTH WALL 2013.

PVC CLADDING

No.1 ROCKSTORE 1995.

SHEETROCK CLADDING

No.1 SUPERSTORE 1990 (NORTH WALL ASBESTOS).

FIBREGLASS CLADDING

TILED ROOFING

AREAS OF ASBESTOS

- BRIDGEBELT WALL INSIDE NO.1 DESPATCH BUILDING.
- PART GABLE & GUTTER #1 DESPATCH.
- NORTH GABLE #1 DESPATCH.
- EAST GABLE #1 DESPATCH NORTH BUILDING.
- NORTH & SOUTH GABLE #2 ROCK STORE.
- PENTHOUSE ROOF BETWEEN #1 & #2 ROCK STORE.
- PART GABLE AND GUTTER NO.1 DESPATCH.
- NORTH GABLE NO.1 DESPATCH.
- EAST GABLE NO.1 DESPATCH.
- NORTH AND SOUTH GABLE NO.2 ROCK STORE.
- PENTHOUSE ROOF BETWEEN NO.1 & 2 ROCK STORES.
- NORTH AND SOUTH GABLES, ANNEX ROOF NO.1 ROCK STORE.
- SCRUBBER WALLS.
- WALL IN MAINTENANCE WORKSHOP.
- WALL WORKSHOP CANTEEN.
- GUTTERING MAIN OFFICE.
- NORTH & SOUTH GABLES, ANNEX ROOF #1 ROCK STORE.
- WALL AT WORKSHOP CANTEEN.
- No.1 SULPHUR STORE.
- ARCHIMEDES PUMP SHED.

Rev	Date	Approved	Description
B	11/12		AREAS UPDATED
C	07/13		AREAS UPDATED
D	12/14		PROGRESS UPDATE
E	12/17		PROGRESS UPDATE

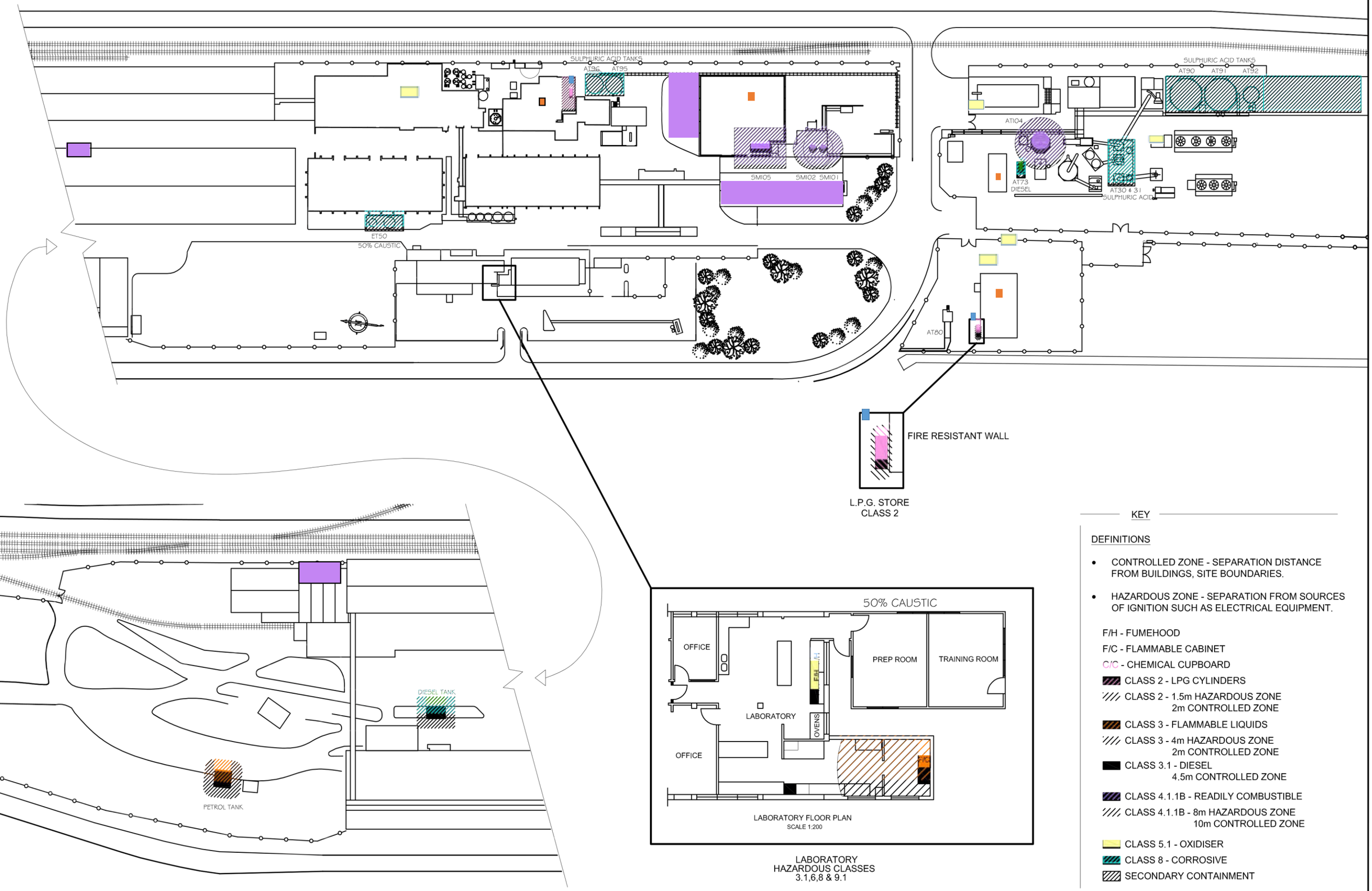
ravensdown

Scale	1:2000
Size	
Drawn	B.D.E.
Checked	
Approved	
Date	15/12/2004

AWATOTO SITE PLAN
ASBESTOS LOCATION PLAN

JOB FILE No.	
DWG.FILE No.	SS-100-250
SHEET	1 of 1
REVISION	E
ASSET No.	

Appendix I – Hazardous Substance Plan



KEY

DEFINITIONS

- CONTROLLED ZONE - SEPARATION DISTANCE FROM BUILDINGS, SITE BOUNDARIES.
- HAZARDOUS ZONE - SEPARATION FROM SOURCES OF IGNITION SUCH AS ELECTRICAL EQUIPMENT.

F/H - FUMEHOOD
F/C - FLAMMABLE CABINET
C/C - CHEMICAL CUPBOARD
CLASS 2 - LPG CYLINDERS
CLASS 2 - 1.5m HAZARDOUS ZONE
2m CONTROLLED ZONE
CLASS 3 - FLAMMABLE LIQUIDS
CLASS 3 - 4m HAZARDOUS ZONE
2m CONTROLLED ZONE
CLASS 3.1 - DIESEL
4.5m CONTROLLED ZONE
CLASS 4.1.1B - READILY COMBUSTIBLE
CLASS 4.1.1B - 8m HAZARDOUS ZONE
10m CONTROLLED ZONE
CLASS 5.1 - OXIDISER
CLASS 8 - CORROSIVE
SECONDARY CONTAINMENT

Rev	Date	Approved	Description
	1/03/20	DB	Updated hazardous areas

Ravensdown Fertiliser Co--operative Limited

Scale	
Size	
Drawn	P.B.

AWATOTO SITE PLAN

JOB FILE No.	
DWG.FILE No.	
SHEET	of

J

Appendix J – HAIL Maps

www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: HAIL Map of the North of the Site (Image Source: Nearmap)

Discipline

Drawing No.

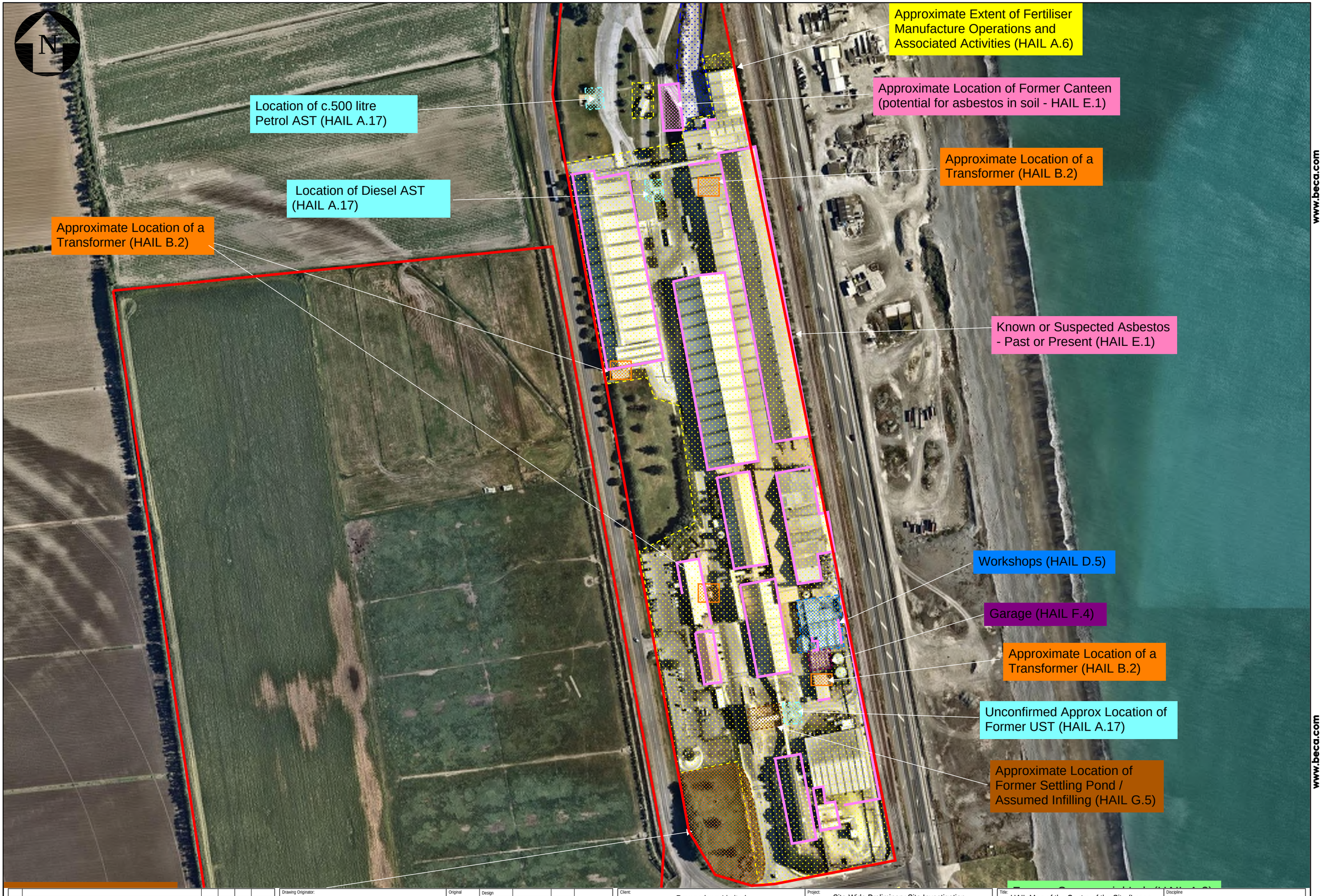
Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

www.beca.com



www.beca.com

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)
Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: HAIL Map of the Centre of the Site (Image Source: Nearmap)

Discipline

Drawing No.

Rev.

BLUEBEAM

DO NOT SCALE

IF IN DOUBT ASK.

No.	Revision	By	Chk	Appd	Date

Drawing Originator: Beca

Original Scale (A1)

Reduced Scale (A3)

Design			
Drawn			
Dsg Verifier			
Dwg Check			

* Refer to Revision 1 for Original Signature

Client: Ravensdown Limited

Project: Site-Wide Preliminary Site Investigation

Title: HAIL Map of the South of the Site (Image Source: Nearmap)

Discipline

Drawing No.

Rev.

BLUEBEAM

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