

Dairy Flat Campus

Preliminary Site Investigation Report – Contaminated Land Management

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Contents

1	Executive Summary	3
2	Introduction.....	4
2.1	Project Background	4
2.2	Development Proposal and Description	4
2.3	Objectives	5
2.4	Scope.....	5
2.5	Explanatory Statement	5
2.5.1	Review Scope and Use	5
2.5.2	Project Specific Limitations	5
2.5.3	Limits on Investigation and Information.....	6
3	Site Description	6
3.1	Site Identification	6
3.2	Land Use	6
3.3	Surrounding Land Use.....	7
3.4	Site Environment	7
3.4.1	Topography	7
3.4.2	Geology	7
3.4.3	Hydrology	7
3.4.4	Hydrogeology and Well/Bore Details.....	8
4	Site Record Search and Development History	8
4.1	Review of Historical Aerial Photography	8
4.2	Site Contamination Enquiry	9
4.3	Closed Landfill Enquiry	9
4.4	Property File Search.....	9
4.5	Hazardous Substances and Incidents Report	10
4.6	FENZ Enquiry	10
5	Site Walkover	10
6	Discussion	11
7	Conceptual Site Model	12
8	Construction Risk.....	13
9	Conclusions and Recommendations	13
10	References	14

Tables

Table 1	Site Identification
Table 2	Surrounding Land Use
Table 3	Summary of Historical Aerial Imagery
Table 4	Property File Information
Table 5	FENZ Information
Table 6	Conceptual Site Model (CSM)

Appendices

Appendix A – Property and Site Location Plan

Appendix B – Concept Design Plans

Appendix C – Surrounding Environment Plan

Appendix D – AC Site Contour Plan

Appendix E – Historical Aerial Photography

Appendix F – AC Site Contamination Enquiry

Appendix G – AC Closed Landfill Enquiry

Appendix H – FENZ Enquiry

Appendix I – Site Inspection Photographs

1 Executive Summary

Aurecon New Zealand Limited (Aurecon) were engaged by a technology company to undertake a Preliminary Site Investigation (PSI) within a property addressed 1350 Dairy Flat Highway, Dairy Flat, Auckland. The PSI is prepared to support the proposed development of a data centre, and to assess consenting requirements for the project under the Ministry for the Environment – Manatū Mō Te Taiao (MfE) National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESC) (2011) and the Contaminated Land Rules of the Auckland Unitary Plan: Operative in Part (AUP:OP). It is understood that the proposed data centre is to be constructed in the eastern portion of the property, together with a new internal road to be constructed along the entire southern boundary providing access from both Dairy Flat Highway and Postman Road.

The land within the property that is the subject of this PSI (i.e. the footprint of the data centre and the access road) is herein referred to as 'the site'. Background searches conducted as part of the scope include the entire property, however, an assessment against the provisions of the NESC for a change in land use and soil disturbance have been limited to the site only (shown in Appendix A). Areas of the property outside of the site have been excluded from this assessment.

The purpose of the PSI was to review the historic land use and determine whether the site has been subject to any activities or industries listed on the MfE Hazardous Activities and Industries List (HAIL) and identify the likely presence of potential contamination associated with historic or current activities/land use.

Based on the findings of this PSI, the following conclusions and recommendations have been made:

- Based on a review of the available background information, aerial photographs and from the site walkover and inspection, it is considered highly unlikely that activities or industries listed on the HAIL have been conducted on the site. Therefore, consent under the NESC for the proposed change in land use, soil disturbance and subdivision at the site is not required;
- The Contaminated Land Rules of the AUP:OP are also considered not to be applicable to the proposed development works as this PSI has identified that no potentially contaminating activities have occurred at the site;
- Soils from within and surrounding the small area of burning can be excavated and removed from the site as a Permitted Activity in accordance with Regulation 8(3) of the NESC. Soils excavated from the burn area will need to be disposed of to a suitably licensed landfill facility;
- With the exception of soils from the area of burning, the site soils are suitable for retention onsite from a human health and environmental perspective. However, it is recommended that soil sampling and analysis be undertaken by a Suitably Qualified and Experienced Person (SQEP) to support disposal options for soils that require off-site disposal;
- Given the scale of this project it is suggested that a Contaminated Site Management Plan (CSMP) be prepared to detail procedures for managing unexpected discoveries of contamination;
- Where dewatering is proposed, recommend prior testing of groundwater to be undertaken to inform disposal and discharge requirements;
- If potential contamination is identified during works (accidental discovery), such as potential fill materials, potential asbestos containing material (ACM), and odorous and/or stained soils, the Site Manager is to contact a SQEP to assess the nature of the material;
- All earthworks should be undertaken in accordance with site-specific sediment and erosion control plans, and the Auckland Councils Erosion and Sediment Control for Land Disturbance Activities in the Auckland Region, Guideline Document GD2016/005; and
- Any soil materials that are to be imported to site for the purpose of reinstating the ground should be suitable to comply with the definition of 'cleanfill', as per the Waste Management Institute New Zealand (WasteMINZ) document titled 'Technical Guidelines for Disposal to Land – Revision 3' (2022)'.

The persons undertaking, managing, reviewing and certifying (verifying) this report are suitably qualified and experienced practitioners (SQEPs) as defined in the MfE's NES Users' Guide (MfE 2012).

2 Introduction

2.1 Project Background

Aurecon New Zealand Limited (Aurecon) were engaged by a technology company to undertake a Preliminary Site Investigation (PSI) within a property addressed 1350 Dairy Flat Highway, Dairy Flat, Auckland. The PSI is prepared to support the proposed development of a data centre, and to assess consenting requirements for the project under the Ministry for the Environment – Manatū Mō Te Taiao (MfE) National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESC) (2011) and the Contaminated Land Rules of the Auckland Unitary Plan: Operative in Part (AUP:OP). It is understood that the proposed data centre is to be constructed in the eastern portion of the property, together with a new internal road to be constructed along the entire southern boundary providing access from both Dairy Flat Highway and Postman Road.

The land within the property that is the subject of this PSI (i.e. the footprint of the data centre and the access road) is herein referred to as 'the site'. Background searches conducted as part of the scope include the entire property, however, an assessment against the provisions of the NESC for a change in land use and soil disturbance have been limited to the site only (shown in Appendix A). Areas of the property outside of the site have been excluded from this assessment.

2.2 Development Proposal and Description

As described in the project brief, our client is planning to construct and operate a new data centre in the North Shore area of Auckland. The site will ultimately accommodate a 40MW data centre campus and will provide a clear pathway for future expansion capacity.

The facility shall accommodate associated mechanical and electrical plant space, technology support areas, offices, storage and logistics. The facility shall be capable of meeting the technology company's growth projections for the next 10 years, this will be further discussed and refined during the design development phase. Each data hall will be capable of accommodating both hyperscale and colocation rack densities utilising flexible power and cooling infrastructure that can easily respond to dynamic future requirements. The power and cooling equipment modules sizes shall facilitate this flexibility, with each module combining with other modules to complete the system to optimise capacity and investment.

The site shall be designed such that capacity can be added or modified as the site develops, and load grows to minimise future design and construction costs. The Data Centre will be constructed in multiple stages, and each stage shall consist of several phases of fit out work as the demand for additional capacity increases over time.

Stage 1 shall deliver a total of 8MW IT capacity (10MW total capacity) split into two separate 4MW data halls. Each data hall may be design with different capacities and rack densities (for example, Data Hall could be 5MW at 15kW/rack, and Data Hall 2 could be 3MW at 7.5kW/rack. Data Hall 2 (3MW) may then be divided into smaller (0.1 to 1.0MW) caged areas subject to customer requirements.

Stage 2 will deliver a further 24MW IT capacity (40MW total capacity) and nominally divided into 4MW data halls. Each Data Hall will need to accommodate both hyperscale and colocation rack densities, with power and cooling capacity being flexible between data halls. Stage 2 is likely to be built out over time in 8MW blocks. The building construction, and power and cooling infrastructure, needs to be configured to support a staged development to optimise investment and avoid under/over provisioning of capacity ahead of customer demand.

The project is currently in the concept design phase. The concept design plans are provided in Appendix B.

2.3 Objectives

The objectives of the contamination assessment are to:

- Determine whether an activity or industry listed on the Ministry for the Environment's (MfE) Hazardous Activities and Industries List (HAIL) is being, has been, or is more likely than not to have been undertaken on the site and to identify current and/or historical activities that have the potential to have caused contamination within the site; and
- Inform implications for the proposed development with regard to these activities, provide an overall assessment of the applicability of the NESCS and AUP:OP, including any requirement for an intrusive site investigation.

2.4 Scope

The following scope of works was undertaken:

- A review of selected publicly available information for the property including:
 - Published local geological and hydrogeological information;
 - Historical aerial photographs;
 - An Auckland Council Site Contamination Enquiry;
 - An Auckland Council Closed Landfill Search;
 - A property file search of Auckland Council records;
 - Hazardous Substances and Incidents report, provided by the Environmental Protection Agency (EPA); and
 - A Fire and Emergency New Zealand Enquiry.
- Site inspection to visually assess the presence of any activities or industries listed on the HAIL or evidence of any potential contamination on the site; and
- Preparation of a PSI report in general accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guideline (CLMG) No. 1: Reporting on Contaminated Sites in New Zealand (Revised 2021).

The persons undertaking, managing, reviewing and certifying (verifying) this report are suitably qualified and experienced practitioners (SQEPs) as defined in the MfE's NES Users' Guide (MfE 2012).

2.5 Explanatory Statement

2.5.1 Review Scope and Use

- Aurecon has prepared this report for a technology company, exclusively for its use. It has been prepared in accordance with our scope of services and the instructions given by or on behalf of our client. Data or opinions contained within the report may not be used in other contexts or for any other purposes without Aurecon's prior review and agreement.
- Aurecon accepts no responsibility or liability to any third party for the use of, or reliance on, the report by any third party and the use of, or reliance on, the report by any third party is at the risk of that party.

2.5.2 Project Specific Limitations

- This PSI report has been prepared specifically for the site. Should any part of the property not covered by this PSI be developed in future, further investigation will be necessary to assess potential risk to human health at that location.

2.5.3 Limits on Investigation and Information

- Soil and rock formations are often variable, and this along with use, storage or disposal of hazardous substances on a site can result in heterogeneous distribution of contaminants. Contaminant concentrations may be evaluated at chosen sample locations - however, conditions between sample sites can only be inferred based on geological and hydrological conditions and the nature and the extent of identified contamination. Boundaries between zones of contamination are often indistinct, and therefore interpretation is based on available information and the application of professional judgement.
- Only a finite amount of information has been collected to meet the specific technical requirements of the technology company brief and this report does not purport to completely describe all the site's characteristics and properties.
- This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should further information become available regarding the conditions at the site, including previously unknown likely sources of contamination, Aurecon reserves the right to review the report in the context of the additional information.
- This report has been prepared for a technology company for its own use and is based on information provided. Aurecon takes no responsibility and disclaims all liability whatsoever for any loss or damage that the client may suffer as a result of using or relying on any such information or recommendations contained in this report, except to the extent Aurecon expressly indicates in this report that it has verified the information to its satisfaction. This report is not to be reproduced either wholly or in part without our prior written permission.

3 Site Description

3.1 Site Identification

Site identification details are presented in Table 1 and the property boundary and the site are shown in Appendix A.

Table 1 Site Identification	
Aspect	Details
Site Address	1350 Dairy Flat Highway, Dairy Flat, Auckland
Legal Description	PT ALLT 189 PARO Pukeatua
Record of Title Number	NA579/33
Property Area (ha)	22.5085
Site Area (ha)	10 (approximately)

3.2 Land Use

The property is currently zoned 'Future Urban Zone' under the Auckland Council Unitary Plan: Operative in Part (AUP:OP), and it is currently in use for rural residential purposes. The proposed development of the technology company Data Centre will change the use of the land within the site to commercial / industrial land use, being less sensitive.

3.3 Surrounding Land Use

The surrounding land uses are detailed in Table 2, and a surrounding environment plan is shown in Appendix C.

Table 2 Surrounding Land Use

Direction	Description
North	Rural residential land use, likely in use for grazing livestock.
East	The North Shore Airport is located adjacent the site to its east, across Postman Road.
South	Rural residential land use, likely in use for grazing livestock.
West	Redvale Landfill is located approximately 1.2 kilometres to the west of the site.

3.4 Site Environment

3.4.1 Topography

The western portion of the property is situated at an elevation of approximately 55 metres above sea level (m abs), the centre of the property is at approximately 54 m abs and the eastern portion rises from approximately 55 m abs to 64 m abs. A site contour plan (by Auckland Council (AC)) is included as Appendix D.

3.4.2 Geology

The Institute of Geological and Nuclear Sciences (GNS) 1:250,000 online geological map (Sheet 3, Auckland) shows that the property is underlain by two geological features. The majority of the site is underlain by Middle Pleistocene - Late Pleistocene river and hill slope deposits consisting of predominantly pumiceous sand, silt, mud and clay, with interbedded gravel and peat. The far eastern portion of the site is underlain by Allochthonous rocks consisting of blue-grey to white, micritic, coccolith foraminiferal, muddy limestone, commonly with thin glauconitic sandstone beds.

A search of the NZ Geotechnical Database, conducted in March 2022, identified that a test pit (NZGD ID: TP_152203) and a borehole (NZGD ID: BH_152202) were completed adjacent each other within the Northshore Airport located at 270 Postman Road, Dairy Flat. The test pit and bore hole locations were situated approximately 290 metres to the north-east of the site. The test pit extended down to a maximum depth of 3.6 m bgl and the borehole extended down to a maximum depth of 5.3 m bgl. Both sample locations identified the following:

- Topsoil from the surface down to 0.15 metres below ground level (m bgl);
- Clay (Alluvium) from 0.15 m bgl to approximately 1.0 m bgl;
- Silt Clay (Northland Allochthon) from approximately 1.0 m bgl to 1.5 m bgl; and
- Micritic Limestone (Northland Allochthon) from approximately 1.5 m bgl to 5.3 m bgl.

Given the proximity of the two sample locations to the site (290 m), it is expected that the site will display similar stratigraphy to that detailed above.

3.4.3 Hydrology

The closest open surface water body is an unnamed stream located within the property and is situated immediately adjacent the site to its west. The unnamed stream flows north-west into the Rangitopuni Stream located approximately 730 metres to the north-west of the site. A pond is located in the eastern portion of the site.

3.4.4 Hydrogeology and Well/Bore Details

A search of the information provided in the Site Contamination Enquiry provided by Auckland Council did not identify any permitted wells or bores within 200 metres of the property. Auckland Council GeoMaps indicates that the property and the site are located within the Rangitopuni Waitemata Aquifer zone.

4 Site Record Search and Development History

A search of readily available information sources was conducted with the objective of identification of past or present activities with the potential to contaminate land or other media such as sediment and groundwater. The nature and extent of any identified activities has also been assessed, where information was available. The following searches were conducted:

- Historical aerial photographs;
- An Auckland Council Site Contamination Enquiry;
- An Auckland Council Closed Landfill Search;
- A property file search of Auckland Council records;
- Hazardous Substances and Incidents report, provided by the Environmental Protection Agency (EPA); and
- Fire and Emergency New Zealand (FENZ) Enquiry.

4.1 Review of Historical Aerial Photography

Historical aerial photographs were sourced from Retrolens and Auckland Council GeoMaps. A description of the aerial photographs reviewed is detailed in Table 3 below and the photographs are presented in Appendix E.

Table 3 Summary of Historical Aerial Imagery

Year and source	The site	Adjacent the site
1957, 1963 and 1975, 1981 (Retrolens)	Proposed Data Centre Development Area: Covered in grass and is sectioned into four paddocks. An object is visible in the northern portion, likely to be a tractor, and a pond is visible in the eastern portion of the site. Proposed Road: Structures are visible in the far western area of the proposed road, likely to be associated with farm activities such as farm sheds. The remainder of the road is covered in grass.	Proposed Data Centre Development Area: Postman Road is located along the eastern boundary of the site. A portion of North Shore Airport is visible in the 1975 aerial photograph, located adjacent the site to its east. An oval shaped track, likely a horse-riding rink, can be seen in the 1981 photograph to the south of the proposed development area. Proposed Road: Surrounded by farmland.
1996 and 2006 (Auckland Council GeoMaps)	Proposed Data Centre Development Area: Remains relatively unchanged. Proposed Road: Remains relatively unchanged.	Proposed Data Centre Development Area: Remains relatively unchanged. Proposed Road: Large elongated sheds can be seen on the adjacent property to the south of the road in the western portion of the site.
2017 and 2022 (Auckland Council GeoMaps)	Proposed Data Centre Development Area: Remains relatively unchanged. Small stockpiles of drainage soil from the adjacent stream are visible in the north-western area in the 2017 photograph. Proposed Road: Remains relatively unchanged.	Proposed Data Centre Development Area: Remains relatively unchanged. Proposed Road: The large, elongated sheds situated on the adjacent property to the south of the road in the western portion of the site have been removed.

4.2 Site Contamination Enquiry

Auckland Council holds a database of sites that have, or have had in the past, an activity or industry that is detailed in the Hazardous Activities and Industries List (HAIL) (MfE 2012) occur on it that are considered likely to cause land contamination.

A Site Contamination Enquiry (SCE) was requested from Auckland Council and received March 2023. A search of the Contaminated Land Database, maintained by the Contamination, Air & Noise Team in the Resource Consent Department, provides information on Auckland Council records for landfills, bores, air discharge consents, industrial and trade process consents, contaminated site discharge consents and environmental incidents at the property and within a 200-metre radius of the property.

The SCE notes that the property has possibly been subject to HAIL Category A.17 as council records indicate the presence of an above ground storage tank in 2010. Additionally, records indicated that rubbish was burnt on the property in 2010.

The SCE also notes that due to the age of the buildings on the property that there is potential for asbestos and/or lead paint products to have been used during their construction, which has the potential to impact soils if in a deteriorated state. The search results did not identify any pollution incident files regarding spills/contamination for the property or within 200 m of the property. However, the SCE identified the North Shore Airport located at 270 Postman Road and Lot 5 DP 66352 as being subject to HAIL Category A.17 - Storage tanks or drums for fuel, chemicals or liquid waste.

The SCE response is presented in Appendix F.

4.3 Closed Landfill Enquiry

An Auckland Council closed landfill enquiry was requested for the property. The enquiry, received March 2023, did not identify anything of relevance on or near the property. The closed landfill enquiry response is presented in Appendix G.

4.4 Property File Search

An Auckland Council property search was requested for the property, received March 2023. A review of the information provided in the property file identified nine building consents relating to the construction of buildings and structures for farm activities. Details of the information contained within the property file are provided in Table 4.

It should be noted that the design plans for the eight-unit piggery (BPA 155281) noted that the external cladding on the buildings was to be constructed with weatherboard or fibrolite (likely constructed with asbestos containing materials). However, the location of the piggery does not appear to be located within the site.

Table 4 Property File Information

Activity	Reference Number / Consent ID / Building Permit No.	Date
Construct a hay shed	BPA 15800	November 1960
Eight-unit enclosed piggery	BPA 155281	November 1960
Construct a hay barn	BPA1635	March 1961
Construct a farm implement shed	BPA 15249	November 1966
Addition to cow shed	BPA-94691	May 1965
Extension to existing hay shed	BPA40991	October 1968
Additions to shed	BPA 38048	October 1978
Extend the cow shed lengthways	BPA 194351	July 1980

Activity	Reference Number / Consent ID / Building Permit No.	Date
Leaner adjoining existing shed	BPA 260291	November 1980

4.5 Hazardous Substances and Incidents Report

The Environmental Protection Agency (EPA) maintained a list of reported hazardous substance incidents over the period July 2006 – December 2011. A review of the EPA register over this period, accessed March 2023, identified no incidents at the property of within 500 metres of the property.

4.6 FENZ Enquiry

Fire Emergency New Zealand (FENZ) maintains a record of incidents over a twenty-year period. An official information request for the property and adjacent properties was received from FENZ in April 2023. The FENZ records did not identify any incidents for the property. Information held on incidents on adjacent properties are provided in Table 5 and Appendix H.

Table 5 FENZ Information

Address	Parcel Description	Date	Incident Group	Incident Type	Structure Type	CAD Number
1338 Dairy Flat Highway, Dairy Flat	Lot 6 DP 66181	05 November 2014	Other Fire	Outside rubbish fire	Non-Residential	F1721062
1320 Dairy Flat Highway, Dairy Flat	Lot 4 DP 66181	24 March 2016	Structure Fire	Structure fire with damage	Residential	F2044953
231 Postman Road, Dairy Flat	Lot 15 DP 66181	27 September 2008	Vehicle Accident	Motor vehicle accident	Non-Residential	F250256

5 Site Walkover

A site walkover and inspection was undertaken on 28 March 2023. Observations made during the walkover are detailed below and the site inspection photographs are displayed in Appendix I.

- The property was accessed by a gravel driveway off Dairy Flat Highway, which led to several farm buildings in the western portion of the property and provided access to the site and property. A small burn area/pit was identified in the western portion of the site adjacent the gravel driveway;
- Two farm buildings were situated within the location of the proposed access way/road in the western portion of the site. The building situated furthest west was a livestock holding pen and it contained a livestock race and crush. The ground beneath the race and holding area was covered in concrete. This structure was constructed with timber, corrugated iron and cinder blocks. The electrical backing board/panel on the fuse box within the structure was identified as having potentially been constructed with asbestos containing materials (ACM) which appeared generally to be in good condition;
- The other structure to the east of the livestock holding area, and situated within the site, had collapsed and it was constructed with corrugated iron and timber. No evidence of contamination was identified within or surrounding this structure;

- Two larger farm buildings situated adjacent the site to its north in the western portion of the property were constructed of timber and corrugated iron and were being used to store farm machinery and farm equipment;
- Three ponds were identified adjacent the proposed driveway in the western portion of the site and a pond was identified in the far eastern paddock. The remainder of the site was covered in grass. Concrete troughs were situated in the paddocks for watering livestock; and
- With the exception of the small burn area, no visual evidence of contamination such as evidence of historical above/underground storage tanks, sumps or pits (excluding water services), asbestos or large-scale storage of chemicals were observed during the site walkover.

6 Discussion

Based on a review of the available background information for the site, and from site observations, the site has largely remained in pasture for grazing livestock. Activities undertaken within the site are largely typical of agricultural practices.

The frequent use of superphosphate fertilisers can potentially result in elevated levels of cadmium in soil. While not confirmed as being directly used at the site, as with many other Upper North Island rural sites it is considered likely that the application of phosphate-based fertilisers will have occurred. However, given the intended future land use (commercial/industrial), it is considered highly unlikely that concentrations of cadmium in soil would exceed the adopted NESCS guideline value (1,300 mg/kg) or the discharge criteria of the AUP:OP (7.5 mg/kg). Therefore, cadmium in soil is considered highly unlikely to pose a risk to human health and the environment associated with the proposed development, especially given that the site will largely be covered in hardstand preventing any potential pathways.

Noting the likely distribution of fertilisers as a diffuse source across rural properties, it is considered highly unlikely that large hot spots of cadmium would be present in soils across the site. On this basis, the application of superphosphate is not considered to have occurred in sufficient quantities to be classified as an activity listed on the MfE Hazardous Activities and Industries List (HAIL I). Removal of the small burn pile can be undertaken as a permitted activity in accordance with Regulation 8(3) of the NESCS.

North Shore Airfield is located adjacent to the east of the site. Commercial airports are typically noted to present a risk associated with the use of aqueous firefighting foam (AFFF) associated with fire training and aircraft maintenance activities. North Shore Airfield is relatively small and lacks some of the infrastructure that larger more conventional airports have where AFFF may have been used, such as firefighting training facilities or for maintenance. Therefore, it is considered unlikely that AFFF has been used in significant quantities, however a risk cannot entirely be ruled out.

Redvale landfill is privately owned by Waste Management. The landfill is located in a geological formation that is ideally suited to accept waste disposal. The thick layers of very low permeability mudstone and limestone beneath the landfill make it very difficult for contaminants to leak out of the landfill. The landfill consists of 17 lined cells and six stormwater treatment ponds. The landfill includes a gas energy plant, flares and a leachate evaporator. Given the distance of the landfill to the site (~1.2 km) the landfill does not present a likely risk to the project.

Furthermore, an electrical backing board/panel on a fuse box within a structure was identified as having potentially been constructed with asbestos containing materials (ACM), which appeared generally to be in good condition. An asbestos survey completed by a competent person should be undertaken on all structures/buildings that require removal/demolition to facilitate the proposed development.

On this basis, it is considered highly unlikely that activities or industries listed on the HAIL have been conducted on the site.

7 Conceptual Site Model

The Conceptual Site Model (CSM) outlines the potential source-pathway-receptor linkages that may be present, and a qualitative assessment of complete or potentially complete source-pathway-receptor (SPR) linkages. A risk is only present if there is a complete SPR linkage. A CSM has been developed below (Table 6) for the site and is based on the findings from this PSI.

Table 6 Conceptual Site Model (CSM)

Activity (Source)	Contaminant of Concern (COC)	Pathway	Receptor	Discussion	SPR Linkage
Application of phosphate-based fertilisers	Heavy Metals (specifically cadmium)	Direct contact Inhalation Ingestion	Contractors / Site workers Future site users (commercial / industrial)	Based on a review of the available background information, aerial photographs and from the site walkover and inspection, it is considered highly unlikely that activities or industries listed on the HAIL have been conducted on the site.	Highly Unlikely It is considered highly unlikely that activities or industries listed on the HAIL have been conducted on the site.
		Leaching or migration of contaminants to off-site sources via surface water runoff, drainage network and/or groundwater	Receiving environment: Streams / stormwater / groundwater		
North Shore Airport	Per- and polyfluoroalkyl substances (PFAS)	Direct contact Inhalation Ingestion	Contractors / Site workers Future site users (commercial / industrial)	North Shore Airfield is located adjacent to the east of the site. Commercial airports have been identified as presenting a risk associated with the use of aqueous firefighting foam (AFFF) associated with fire training activities. Northshore airport is relatively small and lacks some of the infrastructure that larger more conventional airports have where AFFF may have been used, such as firefighting training facilities. Therefore, it is considered highly unlikely that a risk would be present to the site from the airport.	Highly Unlikely It is considered highly unlikely that significant contamination from the potential use of AFFF at the airport would present a risk to the site. If PFAS was identified within groundwater beneath the site, it would not constrain development of a data centre from a human health or ecological risk perspective, unless dewatering of the site was required.
		Leaching or migration of contaminants to off-site sources via surface water runoff, drainage network and/or groundwater	Leaching or migration of contaminants to off-site sources via surface water runoff, drainage network and/or groundwater		
Area of burning	Heavy Metals, hydrocarbons, refuse	Direct contact Inhalation Ingestion	Contractors / Site workers Future site users (commercial / industrial)	Removal of the small burn pile can be undertaken as a permitted activity in accordance with Regulation 8(3) of the NESCS.	Potentially Incomplete Following removal of soils within and surrounding the area of burning, the SPR linkage will be considered incomplete.
		Leaching or migration of contaminants to off-site sources via surface water runoff, drainage network and/or groundwater	Receiving environment: Streams / stormwater / groundwater		
Redvale Landfill	Heavy metals, hydrocarbons, asbestos, refuse	Direct contact Inhalation Ingestion	Contractors / Site workers Future site users (commercial / industrial)	Redvale landfill is privately owned by Waste Management. The landfill is located in a geological formation that is ideally suited to accept waste disposal. The thick layers of very low permeability mudstone and limestone beneath the landfill make it very difficult for contaminants to leak out of the landfill.	Incomplete Given the distance of the landfill to the site, the landfill does not present a likely risk to the project.
		Leaching or migration of contaminants to off-site sources via surface water runoff, drainage network and/or groundwater	Leaching or migration of contaminants to off-site sources via surface water runoff, drainage network and/or groundwater		
Asbestos Containing Materials (ACM)	Asbestos	Direct contact Inhalation Ingestion	Contractors / Site workers Future site users (commercial / industrial)	During the site inspection, an electrical backing board/panel on a fuse box within a structure was identified as having potentially been constructed with asbestos containing materials (ACM), which appeared generally to be in good condition. An asbestos survey completed by a competent person should be undertaken on all structures/buildings that require removal/demolition.	Incomplete At the time of the inspection, no impact to soils was visible due to ACM generally being in good condition. Therefore, the SPR linkage is considered incomplete.

8 Construction Risk

As stated above in Section 5, elevated levels of cadmium can be present in soils above regional background levels from the application of superphosphate fertiliser, preventing soils from being considered cleanfill which subsequently can present a construction risk to the project associated with soil disposal management. Soil sampling should be undertaken to confirm whether elevated levels of cadmium are present in soils at the site, and if confirmed, information should be provided to inform appropriate soil disposal options to manage this construction risk. In addition, where dewatering is proposed, it is recommended that prior testing of groundwater be undertaken to inform disposal and discharge requirements.

9 Conclusions and Recommendations

Site History and Consenting Considerations

- Based on a review of the available background information, aerial photographs and from the site walkover and inspection, it is considered highly unlikely that activities or industries listed on the HAIL have been conducted on the site. Therefore, consent under the NESCS for the proposed change in land use, soil disturbance and subdivision at the site is not required;
- In addition, the Contaminated Land Rules of the AUP:OP are also considered not to be applicable to the proposed development works as this PSI has identified that no potentially contaminating activities have occurred at the site;
- Soils from within and surrounding the small area of burning can be excavated and removed from the site as a Permitted Activity in accordance with Regulation 8(3) of the NESCS. Soils excavated from the burn area will need to be disposed of to a suitably licensed landfill facility.

Waste Disposal

- With the exception of soils from the area of burning, the site soils are suitable for retention onsite from a human health and environmental perspective. However, it is recommended that soil sampling and analysis be undertaken by a Suitably Qualified and Experienced Person (SQEP) to support disposal options for soils that require off-site disposal. It is recommended that sampling is undertaken prior to soil disturbance activities to prevent any costly project delays i.e., awaiting results from the laboratory. The alternative is to stockpile materials onsite and have them sampled and analysed prior to off-site disposal; and
- Any removal of asbestos containing material from the site (such as electrical backing board/panels on a fuse box) will need to be undertaken in accordance with the Approved Code of Practice for the Management and Removal of Asbestos (ACOP) (WorkSafe New Zealand, 2016) and the Health and Safety at Work (Asbestos) Regulations (MBIE, 2016).

Recommendations

- Where dewatering is proposed, recommend prior testing of groundwater to be undertaken to inform disposal and discharge requirements;
- Given the scale of this project it is suggested that a Contaminated Site Management Plan (CSMP) be prepared to detail procedures for managing unexpected discoveries of contamination;
- All earthworks should be undertaken in accordance with site-specific sediment and erosion control plans, and the Auckland Councils Erosion and Sediment Control for Land Disturbance Activities in the Auckland Region, Guideline Document GD2016/005;
- If potential contamination is identified during works (accidental discovery), such as potential fill materials, potential asbestos containing material (ACM), and odorous and/or stained soils, the Site Manager is to contact a Suitably Qualified and Experienced Practitioner (SQEP) to assess the nature of the material; and

- Any soil materials that are to be imported to site for the purpose of reinstating the ground should be suitable to comply with the definition of 'cleanfill', as per the Waste Management Institute New Zealand (WasteMINZ) document titled 'Technical Guidelines for Disposal to Land – Revision 3' (2022).

Discussion

- This PSI report has been prepared specifically for the site. Should any part of the property not covered by this PSI be developed in future, further investigation will be necessary to assess potential risk to human health at that location;
- The conclusions and recommendations in this PSI have been made on the basis that the entire site is to be developed as a data centre (commercial / industrial use) including access roads and have been made in the absence of finalised development plans. It is recommended that once development plans are finalised, given that they differ greatly from the concept plans presented in Appendix B, that this PSI and any further investigations completed for the project be re-visited in the context of the finalised development plans; and
- Aurecon reserves the right to review our conclusions and recommendations in the event further information becomes available regarding the site history, or the proposed development activities that are subject to change.

10 References

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Ministry for the Environment (MfE) 2011a, *Contaminated Land Management Guidelines No. 1. Reporting on Contaminated Sites in New Zealand* (Revised 2021), ME number: 1475, Ministry for the Environment, Wellington.

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Parliamentary Counsel Office 2011, *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health Regulations 2011*, Parliamentary Counsel Office, Wellington.

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Work Safe New Zealand, 2016. *Approved Code of Practice: Management and Removal of Asbestos*.

Appendix A – Property and Site Location Plan



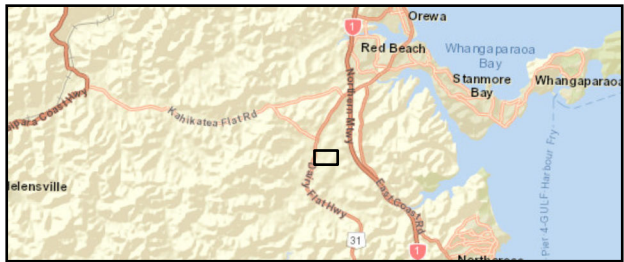
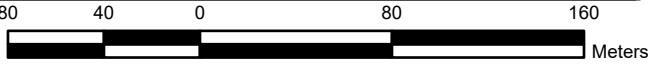
STATS NZ, LINZ, ESRI, HERE, GARMIN, NGA, USGS
AUCKLAND COUNCIL, LINZ

NOTES:
Aerial image sourced from the LINZ Data Service and
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engineering, or surveying purposes. Users of this
information should review or consult the primary data
and information sources to ascertain the usability of the
information. Aurecon cannot accept any responsibility
for any errors, omissions, or positional accuracy of the
data.

Legend

- Site Boundary
- Property Boundary



aurecon

CLIENT



REV	DATE	REVISION DETAILS	APPROVED
A	20/04/2023	FOR ISSUE WITH 523578-00-RPE-KF-0001	

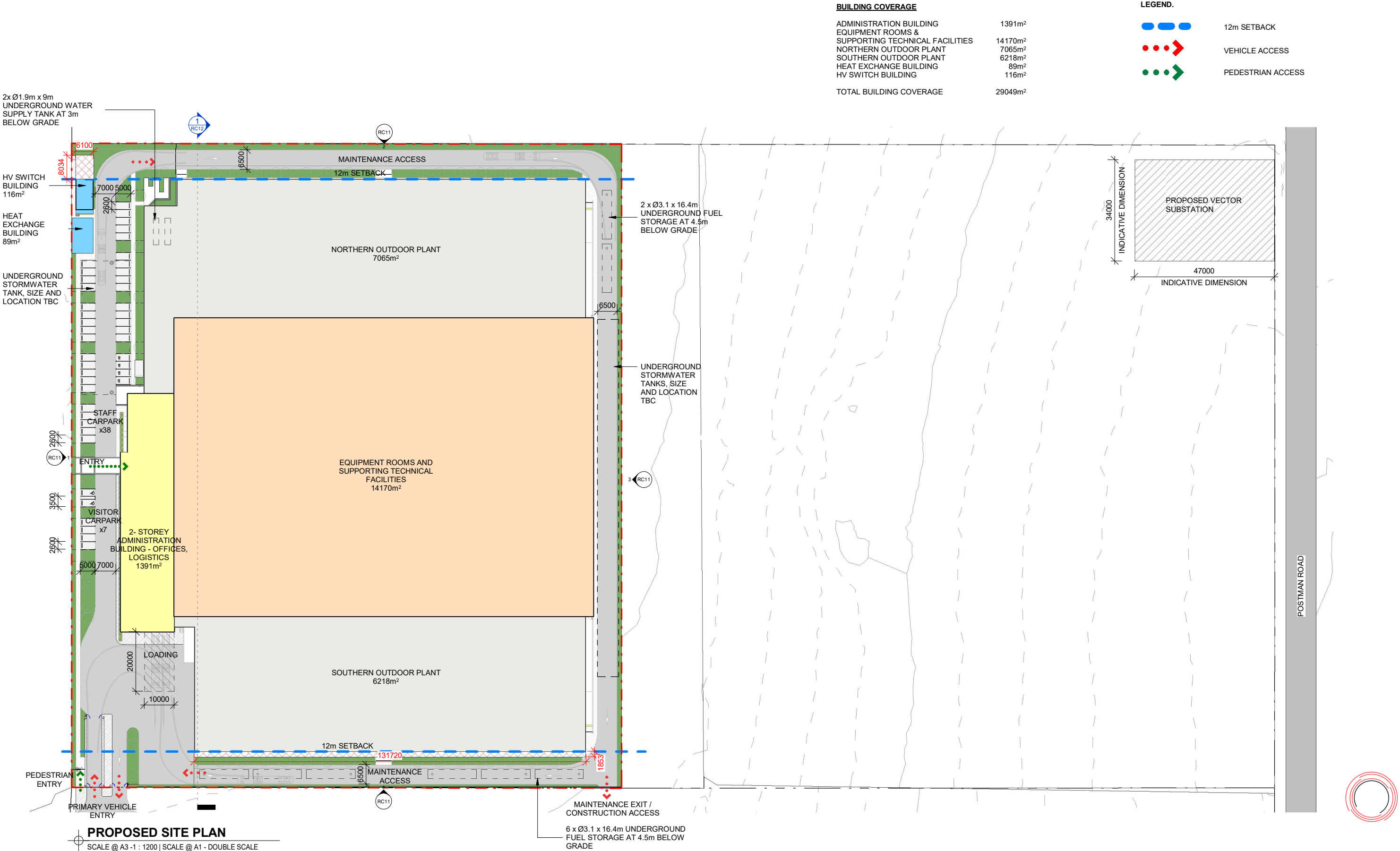
SCALE	SIZE
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DRAWN	
G.WOOD	
DESIGNED	
A. BARR	
CHECKED	

PRELIMINARY NOT FOR CONSTRUCTION	DATE 20.04.23
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PROJECT	DATA CENTRE DEVELOPMENT										
TITLE	SITE PLAN										
DRAWING No.	PROJECT No.	WBS	TYPE	DISC	NUM	REV					
	523578	- 000 -	SKT	KF	- 0001 -	A					

Appendix B – Concept Design Plans

PROPOSED SITE PLAN



PROPOSED SITE PLAN
SCALE @ A3 - 1 : 1200 | SCALE @ A1 - DOUBLE SCALE

Appendix C – Surrounding Environment Plan

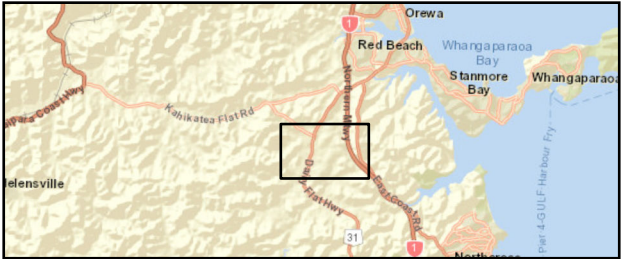


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Legend

- Site Boundary
- Property Boundary

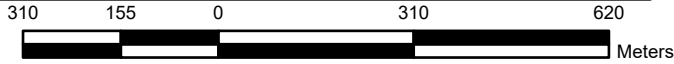


CLIENT

REV	DATE	REVISION DETAILS	APPROVED
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SCALE	SIZE
1:12,000	A3
DRAWN	
G.WOOD	
DESIGNED	
A. BARR	
CHECKED	

PRELIMINARY NOT FOR CONSTRUCTION	DATE 20.04.23
-------------------------------------	------------------



PROJECT	DATA CENTRE DEVELOPMENT
TITLE	SURROUNDING ENVIRONMENT PLAN
DRAWING No.	PROJECT No. 523578 - WBS 000 - TYPE SKT - DISC KF - NUM 0002 - REV A

Appendix D – AC Site Contour Plan



DISCLAIMER:
This map/plan is illustrative only and all information should be independently verified on site before taking any action.
Copyright Auckland Council. Land Parcel Boundary information from LINZ (Crown Copyright Reserved). Whilst due care has been taken, Auckland Council gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information. Height datum: Auckland 1946.

Site Contour Plan



Scale @ A4
= 1:5,000

Date Printed:
22/03/2023



Appendix E – Historical Aerial Photography

Historical Aerials

1957
(Retrolens)



1963
(Retrolens)



1975
(Retrolens)



1981
(Retrolens)



1996
(AC
Geomaps)



2006
(AC
Geomaps)



2017
(AC
Geomaps)



2022
(ArcGIS)



Appendix F – AC Site Contamination Enquiry

31 March 2023

Aurecon
PO Box 9762
AUCKLAND 1010

Attention: Andrew Barr

Dear Andrew

Site Contamination Enquiry – 1350 Dairy Flat Highway, Dairy Flat

This letter is in response to your enquiry requesting available site contamination information within Auckland Council records for the above site. Please note this report does not constitute a site investigation report; such reports are required to be prepared by a (third-party) Suitably Qualified and Experienced Practitioner.

The following details are based on information available to the Contamination, Air & Noise Team in the Resource Consent Department. The details provided may be from former regional council information, as well as property information held by the former district/city councils. For completeness the relevant property file should also be requested to obtain all historical records and reports via 09 3010101 or online at:

<https://www.aucklandcouncil.govt.nz/buying-property/order-property-report/Pages/order-property-file.aspx>.

1. Hazardous Activities and Industries List (HAIL) Information

This list published by the Ministry for the Environment (MfE) comprises activities and industries that are considered likely to cause land contamination as a result of hazardous substance use, storage, and/or disposal.

Council's records indicate this site has possibly been subject to the following activity that falls within the HAIL:

- HAIL Item (A.17) -Storage tanks or drums for fuel, chemicals or liquid waste

Council records indicate the presence of an above ground storage tank on site in 2010. Additionally, in 2010 records indicate the burning of rubbish on site.

Due to the age of the buildings on site the potential for asbestos and/or lead paint may need to be considered.

Please note:

- *If you are demolishing any building that may have asbestos containing materials (ACM) in it, you have obligations under the Health and Safety at Work (Asbestos) Regulations 2016 for the management and removal of asbestos, including the need to engage a Competent Asbestos Surveyor to confirm the presence or absence of any ACM.*

- *Paints used on external parts of properties up until the mid-1970's routinely contained lead, a poison and a persistent environmental pollutant. You are advised to ensure that soils affected by old, peeling or flaking paint are assessed in relation to the proposed use of the property, including high risk use by young children.*

2. Consents and Incidents Information (200m radius of the selected site)

The Council database was searched for records of the following activities within approximately 200 metres of the site:

- Pollution Incidents (including air discharges, oil or diesel spills)
- Bores
- Contaminated site and air discharges, and industrial trade process consents
- Closed Landfills
- Air quality permitted activities
- Identified HAIL activities

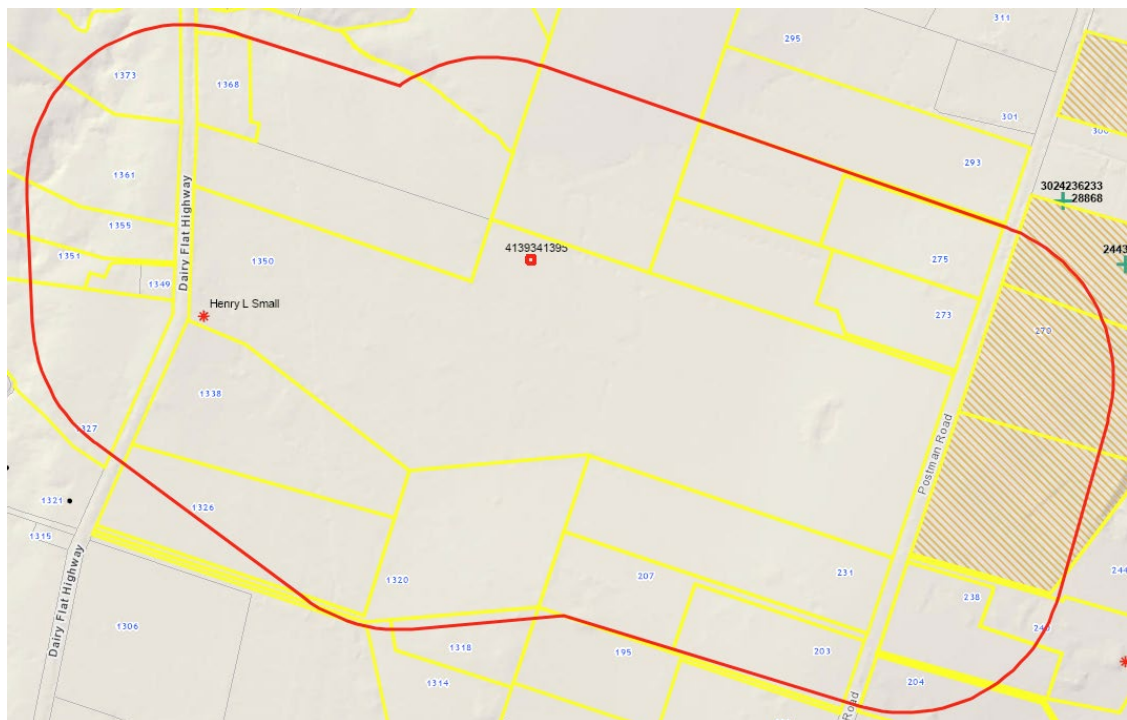


Figure 1: Selected Consents, Incidents and HAIL activities within approximately 200m of the subject site

Legend:

- All Consents 
 - All Applications 
 - All Permitted Activities 
 - All Bores 
 - Closed Landfill (Auckland Council owned) 
 - Closed Landfill (Privately owned) 
 - All Incidents 
 - HAIL activities 

Relevant details of any pollution incidents and consents and HAIL activities are appended to this letter (Attachment A). Please refer to the column titled 'Property Address' on the spreadsheet to aid in identifying corresponding data on the map.

For any identified HAIL sites, please refer to the tab "HAIL activities" for more information (Column C and D include HAIL activity details where these are available).

Please note:

The HAIL activity hatching in Figure 1 only reflects whether a site has been identified as a HAIL site (both verified and non-verified) by the Council and the type of HAIL associated with the site. This does not confirm whether the site has been formally investigated or the contamination status of the property (e.g. contaminated, remediated etc.). Additionally, due to limitations within Council's records, the specific HAIL activity is not included in the data for all properties. For further information on any of these known HAIL sites, a subsequent site contamination enquiry can be lodged for the specific property (up to 5 adjacent properties can be covered in one request).

While the Auckland Council has carried out the above search using its best practical endeavours, it does not warrant its completeness or accuracy and disclaims any responsibility or liability in respect of the information. If you or any other person wishes to act or to rely on this information, or make any financial commitment based upon it, it is recommended that you seek appropriate technical and/or professional advice.

If you wish to clarify anything in this letter that relates to this site, please contact contaminatedsites@aucklandcouncil.govt.nz. Any follow up requests for information on other sites must go through the online order process.

Should you wish to request any of the files referenced above and/or listed in the attached spreadsheet for viewing, please contact the Auckland Council Call Centre on 301 0101 and note you are requesting former Auckland Regional Council records (the records department requires three working days' notice to ensure the files will be available).

Please note Auckland Council cost recovers officer's time for all site enquiries. As such an invoice for the time involved in this enquiry will follow shortly.

Yours Sincerely,

**Contamination, Air and Noise Team
Specialist Unit | Resource Consents
Auckland Council**

Appendix G – AC Closed Landfill Enquiry

Andrew Barr

From: Oscar Simons <oscar.simons@aucklandcouncil.govt.nz> on behalf of closedlandfills <closedlandfills@aklc.govt.nz>
Sent: Friday, 24 March 2023 6:10 PM
To: Andrew Barr; closedlandfills
Subject: RE: Closed Landfill Enquiry - 1350 Dairy Flat Highway, Dairy Flat

Hi Andrew,

CLFM does not hold any records on or near 1350 Dairy Flat Highway, Dairy Flat.

Ngā mihi | Kind regards,

Oscar Simons | Closed Landfill Intern Engineer
Resilient Land & Coasts
Infrastructure & Environmental Services

Mobile 027 341 9364

Auckland Council, Level 18 (South), Te Wharau o Tāmaki / Auckland House, 135 Albert Street, 1010, Auckland Central

Visit our website: www.aucklandcouncil.govt.nz

From: Andrew Barr <Andrew.Barr@aurecongroup.com>
Sent: Tuesday, 21 March 2023 11:30 am
To: closedlandfills <closedlandfills@aklc.govt.nz>
Subject: Closed Landfill Enquiry - 1350 Dairy Flat Highway, Dairy Flat

Hi there,

Does Auckland Council hold any information within CLFM records on or near 1350 Dairy Flat Highway, Dairy Flat, Auckland?





Address
1350 DAIRY FLAT HIGHWAY

Info
Legend
Results

Property

Attribute	Value
Address	1350 Dairy Flat Highway Dairy Flat 0792
Legal Description	PT ALLT 189 PARO Pukeatua
Record of Title Number	NA579/33
Property Name	
Property Type	Site (Property)
Property Status	Current
Property Area	22.5085
Area Unit	HA
Local Board	Rodney
Ward	

1 : 15,000 Zoom



Regards,

Andrew Barr

Senior Consultant, Contaminated Land, Aurecon

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Level 3, Air New Zealand Building
185 Fanshawe Street
Wynyard Quarter, Auckland New Zealand 1010
aurecongroup.com

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*Whakahā uā whakaaro
Kia māia, kia kaha, mahi tahi*



DISCLAIMER

Appendix H – FENZ Enquiry



National Headquarters
Fire and Emergency New Zealand
National Headquarters

Phone +64 4 496 3600

11 April 2023

Andrew Barr
Aurecon
By email: Andrew.Barr@aurecongroup.com

Tēnā koe Andrew

Information Request – 1350 Dairy Flat Highway, Auckland

I refer to your official information request dated 21 March 2023 asking for any information we hold on the address 1350 Dairy Flat Highway, Dairy Flat, Auckland and adjacent properties.

In accordance with the provisions of the Official Information Act 1982, I enclose a table of all Fire and Emergency call outs to 1350 Dairy Flat and surrounding properties. Please note, the data provided is from information recorded in our centralised database in the last 20 years. It is possible that there have been events at the address which have not been recorded.

You have the right to seek an investigation and review by the Ombudsman of this decision. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Nāku noa nā

Julia McCook-Weir
Manager, Information Requests

encl



OIA 2023-00010429 -FENZ Call outs to 1350 Dairy Flat Highway, Dairy Flat, Auckland and surrounding properties

CADNumber	Address	Date/Time	Incident Group	Incident Type	Structure Type	Parcel Legal Description
F1721062	Dairy Flat Highway, Dairy Flat	11/05/2014	Other Fire	Outside rubbish fire	Non-Residential	Lot 6 DP 66181
F2044953	Dairy Flat Highway, Dairy Flat	3/24/2016	Structure Fire	Structure fire with damage	Residential	Lot 4 DP 66181
F250256	Postman Road, Dairy Flat	9/27/2008	Vehicle Accident	Motor Vehicle Accident)	Non-Residential	Lot 15 DP 66181

OIA2023-00010429 - FENZ Call outs to 1350 Dairy Flat Highway, Dairy Flat, Auckland

Information released under the Official Information Act 1982

Appendix I – Site Inspection Photographs

Site Inspection Photographs



Photograph 1: Gravel driveway providing access to the property and the site.



Photograph 2: Small area of burning



Photograph 3: Livestock farm structure



Photograph 4: Southern side of the livestock farm structure



Photograph 5: Race and crush located on eastern side of the livestock farm structure



Photograph 6: Potential ACM, electrical backing board/panel



Photograph 7: Collapsed farm structure



Photograph 8: Inside collapsed farm structure



Photograph 9: Southern side of large farm building adjacent the site located in the western portion of the property



Photograph 10: Inside large farm building



Photograph 11: Additional farm building located in the western portion of the property



Photograph 12: Inside additional farm building



Photograph 13: Pond situated adjacent the site to its north in the western portion of the property



Photograph 14: Pond situated adjacent the site to its south in the western portion of the property



Photograph 15: Stream situated along the western boundary of the proposed data centre location



Photograph 16: Northern portion of the proposed data centre location



Photograph 17: Southern portion of the proposed data centre location



Photograph 18: Southern boundary of the site, location of the proposed road



Photograph 19: Southern boundary of the site, location of the proposed road



Photograph 20: Concrete troughs for watering livestock

Document prepared by

Aurecon New Zealand Limited

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Newmarket, Auckland 1023

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