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Project Number #18882.000.001

**Preliminary Environmental Site
Investigation**

80 McLarin Road, Glenbrook, Auckland

Submitted to:

Harrison Grierson Ltd

4 Leonard Isitt Drive

Auckland Airport

Auckland 2022

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1 Introduction

ENGEО Ltd was requested by Harrison Grierson Ltd, acting on behalf of HD Project 2 Ltd, to undertake a preliminary environmental site investigation (PSI) of the property at 80 McLarin Road, Glenbrook, Auckland (herein referred to as 'the site'; refer to Figure 1 below). This work has been carried out in accordance with our signed agreement, dated 3 June 2021. The purpose of the assessment was to support a private plan change from future urban to urban residential land use zoning.

We understand that 80 McLarin Road is one of three properties identified as 'Glenbrook Beach 2' in the Future Urban Land Supply Strategy 2-17 (FULSS) and is earmarked as being 'Development Ready' by 2023. High-level feasibility investigations indicate that once urbanised and developed, the site could yield between 60 – 100 household units.

Figure 1: Site Location



Image sources: Auckland Council GeoMaps and Google Maps, 2021.

1.1 Objectives

The objective of this investigation was to evaluate and identify conditions indicative of releases and threatened releases of hazardous substances at, or to the subject property, and report on the associated potential risks posed to future site users and the environment.

Based on the results of this investigation, advice is included regarding whether further assessment and / or soil sampling is required to meet the requirements of the Resource Management (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (the 'NES') or the contaminated land standards of E30 from the Auckland Unitary Plan – Operative in Part, 16 November 2016 (AC, 2016) (the 'AUP').

1.2 Approach

To meet the objectives, a PSI was undertaken by suitably qualified and experienced practitioners (SQEPs). The following sources of information was reviewed:

- Auckland Council property files and contaminated land enquiry.
- Historical aerial photographs.
- Site walkover to assess the site conditions for visual indicators of contamination.

This PSI report has been prepared in accordance with the Ministry for the Environment (MfE) Contaminated Land Management Guidelines No.1 – Reporting on Contaminated Sites in New Zealand (MfE, 2021).

2 Site Description

Site information and site setting and summarised in Table 1 and Table 2 respectively.

Table 1: Site Information

Item	Description
Location	80 McLarin Road, Glenbrook
Legal Description	Lot 1 DP 204733
Current Land Use	Rural / Pastoral
Proposed Land Use	Residential Land Use
Site Area	79,870 m ²
Territorial Authority	Auckland Council

Table 2: Site Setting

Item	Description
Topography	The site generally falls 16 meters (m) from north to south, with a particularly steep escarpment along the southwest boundary of the site.
Local Setting	AC GeoMaps identifies the site as zoned 'Future Urban Zone'
Nearest Surface Water & Use	Glenbrook Beach on the Waiuku River is located approximately 150 meters to the west of the site. Drainage channels / planted watercourses across McLarin Road to northwest drain to mangrove / beach area of the Taihiki River approximately 200 metres to the north of the site.

Item	Description
Geology (GNS, 2018)	GNS maps the site as underlain by various geology. The majority of the site is mapped as underlain by pumiceous river deposits, comprising pumiceous mud, sand and gravel with muddy peat and lignite, rhyolite pumice, including non-welded ignimbrite, tephra and alluvia. The northern portion of the site is mapped as underlain by East Coast Bays Formation, comprising alternative sandstone and mudstone with variable volcanic content and interbedded volcanoclastic grits.
Hydrogeology	Unknown – shallow groundwater flow may follow surface contours and flow southwest towards the Waiuku River.

3 Site History

ENGEO obtained and reviewed available environmental and geological information relevant to the site, including historical aerial photographs, property files, and a contaminated land enquiry response from Auckland Council. Relevant information from these sources is summarised in this section.

3.1 Auckland Council Site Contamination Enquiry

Auckland Council provided a response to a Contaminated Land Enquiry (SCE) on 14 September 2021. A copy of the response is included in Appendix 1. In preparing the response, the former Auckland Regional Council and current databases were searched for records of closed landfills, bores, air discharge, industrial and trade process consents, contaminated site discharge consents, and environmental assessments within approximately 200 metres of the site.

Auckland Council's SCE indicates that the sites adjacent to the northern end of the property have been used for horticultural activity. Therefore, the site may have been subject to spray drift from pesticide use.

No other potentially contaminating activities were identified.

3.2 Auckland Council Property File Review

The property file held by Auckland Council was received on 7 September 2021. A summary of information potentially relevant to this investigation is provided in Table 3 below.

Table 3: Property File Summary

Date	Description
June 2000	Resource consent application for common boundary relocation subdivision in growth area.
July 2000	Building consent for a new septic and drainage system (neighbouring property to the southeast).

3.3 Historical Aerial Photograph Review

Aerial photographs dating from 1942 to 2017 have been reviewed and are included in Appendix 2 for reference. The aerials were sourced from Auckland Council GeoMaps and Retrolens. Relevant visible features on the site and surrounding area are noted in Appendix 2, and are summarised below.

The site has been pastoral in land use since at least 1942 (earliest available image), and remains in pastoral use today. Buildings have not been constructed on-site aside from a shed in the south-western quadrant of the site (likely in the late 1970s); it does not appear that the site has been used for horticultural purposes. The site was partitioned into four separate paddocks in 2006, and remains in this configuration today.

4 Site Investigation

A site walkover was completed on 23 September 2021. Observations of activities and conditions present at the site are summarised in Table 4 below. ENGEO did not conduct an interview with current site owners / occupants during the walkover.

Photographs taken during the site visit are included in Appendix 3.

Table 4: Current Site Conditions

Site Conditions	Comments
Site Description	The site comprises four large paddocks, separated by shelter belts. A dwelling is present to the southeast, outside of the site boundary. A small shed is present within the centre of the south-eastern paddock.
Surface Water Appearance	Multiple overland flow path and ephemeral streams cross the site in a north to south direction, with the man channel (intermittent stream) and a flood plain affecting the south-western corner of the site. Two small wetland-type features were identified on-site, in the eastern and southern paddocks.
Current Surrounding Land Use	Redevelopment / earthworks are underway to the north of the site. Residential land use and Glenbrook Beach are to the west. Grassed paddocks and rural residential land use is present to the east and south.
Local Sensitive Environments	None observed.
Visible Signs of Plant Stress	None observed.
Ground Cover	The site is grassed.
Potential for On – Or – Off – Site Migration of Contaminants	There is potential for on-site contaminants (if present) to migrate off-site via overland flow paths and ephemeral streams. However, no significant contaminant sources were observed.
Visible Signs of Contamination	A burn pit was identified in the eastern area of the site, (Appendix 3; Photograph 3).

5 Potential HAIL Activities

Based on the information reviewed as part of this PSI, the following activities listed on the MfE Hazardous Activities and Industries List (HAIL; MfE, 2011) may have occurred at the site:

- **HAIL ID H: Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment.**
 - The sites adjacent to the northern end of the property were historically used for horticultural purposes, therefore the site may have been subject to spray drift during pesticide application on this neighbouring property.
- **HAIL ID 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.**
 - Agrichemicals, in particular superphosphate fertiliser, are likely to have been applied to the site to support use as grazing land. Cadmium is often co-located with the source of superphosphate fertiliser, resulting in a build-up of cadmium in soils where superphosphate fertiliser is regularly applied.

6 Conceptual Site Model

A conceptual site model (CSM) has been developed for the site to assess the exposure pathways present at the site. A CSM consists of three primary components. For a contaminant to present a risk to human health or an environmental receptor, all three components are required to be present and connected. The three components of a conceptual site model are:

- Source of contamination.
- An exposure route, where the receptor and contaminants come into contact (e.g. ingestion, inhalation, dermal contact).
- Receptor(s) that may be exposed to the contaminants.

The potential source, pathway, receptor linkages at this subject site are provided in Table 5.

Table 5: Conceptual Site Model

Source	Exposure Pathway	Potential Receptor	Acceptable Risk?
Spray drift from pesticide use on adjacent sites Primary contaminants of concern: Heavy metals / metalloids and organochlorine pesticides.	Soil ingestion, inhalation of dust, and / or dermal contact.	Site redevelopment workers / future site users.	Likely – potential for topsoil in northern portion of the site contain low-level contamination as a result of historical pesticide spray drift. Recommended testing of shallow soil in the northern portion of the site prior to, or as part of, future site redevelopment works.
	Leaching of contaminants.	Surrounding environments.	
Agrichemical application to support use of site as grazing land. Primary contaminant of concern: Cadmium from superphosphate fertilizer application.	Soil ingestion, inhalation of dust, and / or dermal contact.	Site redevelopment workers / future site users.	Likely – potential for topsoil across the site to contain low-level contamination as a result of historical agrichemical application. Recommended testing of shallow soil across the site prior to, or as part of, future site redevelopment works.
	Leaching of contaminants.	Surrounding environments.	

7 Summary and Conclusion

ENGEO Ltd was requested by Harrison Grierson Ltd to undertake a PSI of the property at 80 McLarin Road, Glenbrook, Auckland. The purpose of the assessment is to support your private plan change from future urban to urban residential land use zoning.

Based on the information reviewed as part of this PSI, the following activities listed on the HAIL may have impacted the site:

- HAIL ID H: Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment.
 - The sites adjacent to the northern end of the property were historically used for horticultural purposes, therefore the site may have been subject to spray drift during pesticide application on this neighbouring property.

- HAIL ID 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.
 - Agrichemicals, in particular superphosphate fertiliser, are likely to have been applied to the site to support use as grazing land. Cadmium is often co-located with the source of superphosphate fertiliser, resulting in a build-up of cadmium in soils where superphosphate fertiliser is regularly applied.

For either HAIL IDs H or I to apply to the site, the contaminant concentrations must be at levels that pose an unacceptable risk to human health or the environment. Based on our experience on similar sites, it is unlikely that contaminants from one or both of the above HAIL land uses are present in site topsoil above standard residential Tier 1 human health criteria. As such, the site is not considered to meet the NES definition of a “piece of land” on which an activity or industry described in the HAIL is being undertaken, has been undertaken or is more likely than not to have been undertaken (MfE, 2012). Therefore, the NES does not apply to the proposed land use change, or future subdivision and soil disturbance works associated with redevelopment activities.

Contaminants may be present in topsoil above regional background levels, meaning that topsoil excavated from site could not be disposed as cleanfill or re-used on another earthworks site without Auckland Council approval. It is recommended that prior to or as part of future redevelopment works, a Suitably Qualified and Experienced Practitioner (MfE, 2012) is engaged to sample topsoil for laboratory analysis of heavy metals / metalloids and organochlorine pesticides at a minimum rate of 1 per 1,000 m³ of topsoil to be disturbed. These data shall be used to assess disposal and re-use options for excess topsoil generated during the redevelopment works.

8 Limitations

- i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Harrison Grierson Ltd, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.
- ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.
- iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.
- iv. This Limitation should be read in conjunction with the Engineering NZ/ACENZ Standard Terms of Engagement.
- v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (09) 972 2205 if you require any further information.

Report prepared by



Tyler Paterson

Environmental Scientist

Report reviewed by



Erika McDonald, CMEngNZ

Principal Environmental Engineer

9 References

AC, 2016. Auckland Regional Council. (2016). The Proposed Auckland Unitary Plan – operative in part 15 November 2016.

BRANZ, 2017. The Building Research Association New Zealand. (2017). New Zealand Guidelines for Assessing and Managing Asbestos in Soil.

GNS, 2018. Institute of Geological and Nuclear Sciences Ltd. (2018). 1:250,000 Geological Map 3, Auckland.

MfE, 2012. Ministry for the Environment. (2012). Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health, April 2012.

MfE, 2011a. Ministry for the Environment. (2011). Hazardous Activities and Industries List (HAIL).

MfE, 2021a. Ministry for the Environment. (2021). Contaminated Land Management Guidelines No.1: Reporting on Contaminated Sites in New Zealand.

NES, 2011. The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to protect Human Health) Regulations (2011).



APPENDIX 1:
Site Contamination Enquiry

14 September 2021

ENGEO Limited
8 Greydene Place
AUCKLAND 0622
Attention: Tyler Paterson

Dear Tyler

Site Contamination Enquiry – 80 McLarin Road, Glenbrook

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.

There is no contamination information held within Council's records for the site 80 McLarin Road, Glenbrook.

Aerial records indicate sites adjacent at the northern end of the property are utilised for horticultural activity.

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



Legend:

- | | |
|----------------------------|--|
| All Consents + | Closed Landfill (Auckland Council owned) □ |
| All Applications ■ | Closed Landfill (Privately owned) ■ |
| All Permitted Activities * | |
| All Bores ★ | |

Relevant details of any pollution incidents and consents 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.

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 \$128 for the time involved in this enquiry will follow shortly.

Yours Sincerely,

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

INCIDENT#	XCOORD	YCOORD	NZTMXCO	NZTMYCO	LOCATION	SUBURB	CATCHMEI	POLLUTANT	RECIEVED	REPORT	INCIDENTI	ACTIONED	IMPACT	VOLUME	PROBLEMI	CULPRITTR	RECORDDATE	INVESTIGATIONDATE
Sep-41	1751990	5886011	1751990	5886011	Mclarin Road	Glenbrook	710	Spray Drift	Phone	Other Agrichemical spray drift and no notification	Rural Pollution	Kathryn Davies	Potential	N/A	YES	YES	29/10/2009	29/10/2009



APPENDIX 2:
Historical Aerial Photographs



1942 (Retrolens)

The site comprises pastoral land, which appears separated into various paddocks. No buildings are present on-site. McLarin Road borders the site to the north and east. Glenbrook Beach is located to the west of the site. The surrounding land appears to be rural residential, residential and pastoral in use.



1961 (Retrolens NZ)

Residential development appears to have occurred to the west and southwest of the site. Minimal vegetation is present on-site. Appears to be fences / hedges between paddocks. No other significant changes observed to the site or surrounding area.



1969 (Retrolens NZ)

No significant changes observed to the site or the surrounding area.



1975 (Retrolens NZ)

No significant changes observed to the site or the surrounding area.



1981 (Retrolens NZ)

A small shed may now be present in the southwestern quadrant of the site. No significant changes observed to the surrounding area.



1987 (Retrolens NZ)

The fences / hedges between paddocks appear removed. No significant changes observed to the site or the surrounding area.



2006 (Auckland Council GeoMaps)

The site has been partitioned into four paddocks, separated by hedges / shelterbelts. There appears to have been a change in land use to the property to the north. Earthworks appear underway to the east of the site. No significant changes observed to the site or the surrounding area.



2008 (Auckland Council GeoMaps)

No significant changes observed to the site or the surrounding area.



2017 (Auckland Council GeoMaps)

Significant earthworks observed to the north of the site. Shelterbelts within the site boundary and along the eastern boundary appear denser. No other significant changes observed to the site or the surrounding area.



APPENDIX 3:
Site Walkover Photographs



Arrows indicate the orientation of the following photographs.



Photograph 1: South-eastern corner of the site, looking west across south-eastern paddock.



Photograph 2: Centre of site looking southwest.



Photograph 3: Burn pit in the centre of the site, near the eastern site boundary.



Photograph 4: North-eastern site boundary looking west.



Photograph 5: North-western site boundary looking southeast.



Photograph 6: North-western paddock looking southeast.



Photograph 7: Centre of south-eastern paddock looking southeast towards the adjacent off-site dwelling.



Photograph 8: Centre of north-western paddock looking northwest towards adjacent residential land.