



GREENHILL INDUSTRIAL PARK

PRELIMINARY GEOTECHNICAL REPORT

PROJECT NO: HD3783
GREENHILL INDUSTRIAL PARK
CONSORTIUM
REFERENCE: PGR 01
21 OCTOBER 2025

Executive summary

We have been engaged by Barker and Associates, on behalf of the Greenhill Industrial Park Consortium (the Client), to undertake a preliminary geotechnical assessment based on a desk study for the site located at 133 Greenhill Road, Puketaha. This report is intended to be submitted to Waikato District Council in support of the Fast-track Approvals Act (FTAA) referral application to allow for further subdivision and building development across the five titles at 133 Greenhill Road. The assessment is high level and will need to be confirmed with site testing and further assessment if the referral is successful.

Site description

The site is characterised by flat plains (RLs 26 m to 37 m) and a central northern hill rising to 55 m RL. The land is mostly greenfields, with a few houses along the site boundary. The site is accessed from Puketaha Road and Greenhill Road, with the Waikato Expressway to the west.

Our scope included:

- a desktop study of the site, including historical aerial images, geology maps, contour maps, and the New Zealand Geotechnical Database (NZGD)
- a natural hazards assessment in accordance with section 106 of the Resource Management Act
- high level earthworks assessment
- preliminary foundations recommendations

Our key findings were:

- there are investigations available on NZGD along the western boundary of the site (Waikato Expressway). The investigations show soils in low lying areas around the site consistent with the mapped Hinuera Formation
- based on the expected geology, natural hazards on the site are likely to include:
 - liquefaction
 - static settlement
 - slope instability
 - low bearing
- our preliminary liquefaction assessment indicates a high hazard is likely on the plains areas
- our high-level slope assessment indicates a generally low risk of instability, with steeper slopes likely to be modified by earthworks
- settlement is likely to be a hazard in the low-lying areas. Mitigation is likely to be required

Next steps include:

- investigate the site, focussing on areas of higher potential hazards. These include wet or swampy areas, Plains Terrain with high groundwater and liquefaction hazard, earthwork material suitability, and sensitive soils
- detailed assessment of liquefaction hazard across the site, settlement potential of soft soils, groundwater depth and drawdown potential
- input into the detailed design of the development to limit exposure to the identified hazards, and to mitigate them where possible
- reporting to support consenting
- earthwork specifications and detailed design of geotechnical elements
- observation during construction to validate assumptions and confirm work meets specifications

Contents

Executive summary	i
Introduction	1
Desk study	2
Geotechnical assessment.....	4
Geotechnical recommendations.....	6
Limitations	7
Appendix A – Proposed plans	A
Appendix B – Historic Aerial imagery.....	B
Appendix C – Potential Uncharacterised fill location plan	C
Appendix D – Slope grades and suspected swamp areas	D
Appendix E – Draft Earthworks Cut to fill plan	E

PREPARED BY: **Cailem Whitburn**



Graduate Geotechnical Engineer

████████████████████

Tel ██████████

REVIEWED
AND
APPROVED
BY:



Andrew Holland, CPENG



Technical Director

████████████████████

Version no.	Prepared by	Description	Dated
Draft	Cailem Whitburn	Draft report issued	09/10/25
Final	Cailem Whitburn	Final report issued	04/11/25

Introduction

We have been engaged by Barker and Associates, on behalf of the Greenhill Industrial Park Consortium (the Client), to undertake a preliminary geotechnical assessment for the site located at 133 Greenhill Road, Puketaha. This report is intended to support a Fast-track Approvals Act (FTAA) referral application to allow for further subdivision and building development across the five titles at 133 Greenhill Road. The assessment is a high level, desk-based assessment of likely natural hazards, and will need to be confirmed with site testing and further assessment if the referral is successful.

Scope

Our scope was limited to a desk-based assessment. The Assessment included:

- a desktop study of historical aerial images, geology maps, contour maps, and the New Zealand Geotechnical Database (NZGD)
- a natural hazards assessment broadly following s106 of the Resource Management Act
- preliminary qualitative assessments of liquefaction, settlement and slope instability
- high level earthworks discussion
- suitability discussion and recommendations for further assessment

Site description

Greenhill Industrial Park is of irregular shape and approximately 180 hectares. It is situated within the Waikato District, adjacent to the eastern side of the Waikato Expressway. The site is accessed from Puketaha Road to the north and Greenhill Road to the south. The Waikato District and Hamilton City jurisdiction boundary is defined by Gordonton Road, which is located approximately 1 kilometre to the west of the Waikato Expressway. Currently, the site is predominantly greenfields, with a small number of residential dwellings situated along the northern and southern boundaries.

The bulk of the site is flat, with reduced levels (RLs) typically between 36 m and 37 m relative to the local datum¹. However, the central northern portion of the site rises to an elevation of up to 55 m RL. This elevation change is characterised by gentle slopes of around 10 degrees, but there are also distinct sections where the ground becomes steeper, with slopes between approximately 25 and 35 degrees.

Proposed development

The Greenhill Industrial Park Consortium plan to subdivide the site for primarily industrial use, with some residential lots connected through private roads. Road swales, landscape buffers, stormwater riparian areas, and stormwater ponds are also. We understand that the client intends to cut the elevated portion of the site down and use the material as fill across the rest of the site. High level plans are included in Appendix A.

¹ NZVD2021 [EPSG: 7839]

Desk study

We completed a desktop study of the site to identify features of interest. The desktop study consisted of a review of recent and historical aerial imagery^{2,3}, geology maps, and surrounding NZGD testing.

Aerial photography

We reviewed images from 1952, 1963, 1979, 1991, 2008, 2016, and 2025 (attached in Appendix B for reference). Key findings from each image are presented in Table 1.

Table 1: Summary table for historical imagery.

Date	Observations
1952	• The site is predominantly rural, with open paddocks and minimal built development. • Few structures are visible, and the landscape is mostly agricultural. • Swampy, tussocky vegetation is visible generally within the central area of the site.
1963	• The area remains largely unchanged, with continued agricultural use. • Some minor changes in field boundaries and vegetation are visible. • Tussocky vegetation is still visible across the central extent of the site.
1979	• The site and surrounding area show gradual intensification of land use. • More field boundaries and small structures appear, but the site itself remains undeveloped. • Tussocky vegetation is no longer visible, potentially due to modification of the area for farming.
1991	• There is a noticeable increase of vegetation planted within the southeast corner of the site. • Off-site development begins to increase, with more structures visible to the north and east. • Potential uncharacterised fill is visible within the central western area of the site*
2008	• The site is still undeveloped, but surrounding areas show increased residential and rural development. • Tree rows and shelterbelts are well established across the east and west site boundaries. • Potential uncharacterised fill is visible onsite near the southern boundary.
2016	• The site remains largely unchanged, with continued agricultural use. • Surrounding development continues, with more dwellings and infrastructure visible.
2025	• The most recent imagery shows a slight increase in built development onsite. • The development of the Waikato Expressway adjacent to the site is visible. • Four potential uncharacterised fill areas are visible. Three of these are located near the southern boundary and the other is further towards the southeast corner of the site.

* See Appendix C for potential uncharacterised fill location plan.

² Sourced from <http://retrolens.nz> and licensed by LINZ CC-BY 3.0. Accessed 13/06/2025.

³ Google earth Pro. Accessed 13/06/2025.

Geological setting

The site's contours generally match the mapped geology. Geology maps⁴ of the Greenhill site show three distinct geological units:

Hinuera formation

- the North and west extents are mapped as Late Pleistocene River deposits of the Hinuera Formation,
- the Hinuera Formation is described as 'cross-bedded pumice sand, silt, and gravel with interbedded peat.'
- flat areas, (RLs 36 m to 37 m) align with the Hinuera Formation

Walton Subgroup alluvium

- the Central north extent is mapped as Walton Subgroup alluvium
- the Walton subgroup is described as 'pumiceous mud, silt, sand and gravel with muddy peat beds; rhyolite pumice, including non-welded ignimbrite, tephra and alluvial pumice deposits'
- the Walton Subgroup, which is typically mantled by several metres of volcanic ash
- the top elevation of the central northern hill extends up to about 55 m RL
- historical images show that swampy, tussocky vegetation overlaps some hills terrain, which will require further investigation to confirm

Holocene Swamp deposits

- the East and south extents are mapped as Holocene swamp deposits
- Holocene swamp deposits are described as 'soft, dark brown to black, organic mud, muddy peat and woody peat with minor overbank sand, silt and mud'
- areas mapped as Holocene swamp deposits can also present as silt, sand and mud deposits with interbedded and/or lenses of peat. This means that the highly organic deposits can be locally limited across the mapped area. This was confirmed by some existing testing reviewed as part of the desk study
- flat areas, (RLs 36 m to 37 m) align with the Holocene swamp deposits
- a plan showing slope grades and the suspected swamp areas are provided in Appendix D

NZGD

We have reviewed the NZ Geotechnical Database (NZGD) to determine whether ground investigations have been conducted on or near the site. Most of the site has no data available, however, along the western boundary, and in the extreme southwestern corner of the site, there are tests available.

- **Onsite:** Eight hand augers (HAs) have been logged in the southwestern corner of the site. These tests found a mixture of sand, silt, and clay of varied strengths, consistent with the Late Pleistocene River deposits of the Hinuera Formation. Groundwater was recorded in all HAs at between 0.8 m and 1.5 m bgl.
- **Near the site:** Several ground investigations have been completed for the Waikato Expressway along the western boundary of the site, as well as cone penetration tests (CPTs) to the north and south, and a cluster of HAs past the northeast corner. These investigations (hand augers, test

⁴ 1:250,000 Geological Map of New Zealand (QMAP) New Zealand Geology Web Map. GNS, 2013. <http://data.cri.nz/geology/>. Accessed 13/06/2025.

pits, boreholes, and CPTs) also found sand, silt, and clay, consistent with the materials found onsite. We see that these materials also vary in strength, generally from loose to medium dense (sand) and very soft to stiff (clay and silt). Groundwater was recorded at between 0.9 m and 2.9 m bgl.

Geotechnical assessment

Natural hazards

We have assessed the following natural hazards, as per Section 106 of the Resource Management Act.

- **earthquake and liquefaction:** the site subsoil class is D 'deep or soft soils.' Design peak ground acceleration for the 1 in 500-year average recurrence interval earthquake event is 0.25 g⁵. Earthquake induced liquefaction is likely to occur in a large earthquake (see 'Liquefaction' section below)
- **active faults:** the Waikato Regional Hazards Portal⁶ indicates an active fault (Kerepehi fault) is located approximately 37 km east of the site running roughly northwest to southeast. As the site is greater than 20 metres from the fault⁷, the risk of damage from fault rupture is very low.
- **volcanic, geothermal or sedimentary activity:** the site is located approximately 20 km southeast of the closest volcanic vent, with the last eruption 1.8 million years ago. The closest active volcano is Rotorua, approximately 90 km southeast, therefore the risk from volcanic hazards is very low. The site is not near any known sources of geothermal or sedimentary activity.
- **flooding:** the site is not mapped within any flood areas⁶, so we anticipate the risk of flooding at the site is Low.
- **subsidence:** the risk of the site to subsidence is possible (see 'Subsidence' section below).
- **landslips, slope instability, and erosion:** aerial imagery show no obvious signs of instability across the site, and our assessment is that the risk of landslips, slope instability, or erosion at the site is low (refer to 'Slope stability' section below).
- **expansive soils:** the natural soil at the site is likely to be classed from A to M, non-expansive to moderately expansive soils (refer to 'Expansive soils' section below).

⁵ Ministry of Business innovation and Employment (MBIE) / New Zealand Geotechnical Society (NZGS). Module 1: Overview of the guidelines. Dated November 2021.

⁶ Waikato Regional Hazards Portal. Accessed 13 August 2025. Sourced from:

<https://www.waikatoregion.govt.nz/services/regional-hazards-and-emergency-management/regional-hazards-portal/>

⁷ Ministry for the Environment. Planning for Development of Land on or close to Active Faults. July 2023

Table 2 - Natural hazards risk matrix.

Risk assessment matrix		Likelihood				
		Very unlikely	Unlikely	Possible	Likely	Very likely
Potential Consequences	Severe					
	Major					
	Moderate	- Earthquake		- Liquefaction		
	Minor	- Volcanic, geothermal or sedimentation activity - Flooding - Erosion - Landslips/slope instability - Active faults	- Lateral spreading	- Expansive soils - Subsidence		
	Negligible					

Liquefaction

We have undertaken a qualitative liquefaction assessment for the site. We have reviewed the CPTs undertaken near the site, and the geology maps.

Hills Terrain liquefaction hazard

The Hills Terrain, in the northern central part of the site, is expected to be underlain by strong cohesive deposits of the Hamilton Ash and Walton Subgroup. These deposits are not susceptible to liquefaction and the hazard in this area is negligible.

Plains Terrain liquefaction hazard

The flat areas of the site, the 'Plains Terrain' are mapped as being underlain by alluvium and swamp deposits. The nearby NZGD investigation data matches the geology maps, and so we expect the plains terrain to be underlain by primarily silt and sand material. The historic aerial imagery and the nearby testing indicate the groundwater is shallow on the plains. These conditions: susceptible soil types and high groundwater, mean that the liquefaction hazard is likely to be high.

Lateral spreading

Given the expected high liquefaction hazard on the Plains Terrain, any free faces, such as drains, stormwater ponds, or other excavations, could create a free face towards which lateral spreading could occur. The detailed design will need to consider lateral spreading and mitigation measures may be needed.

Slope stability

We have assessed the risk of global or large-scale slope instability across the site as 'unlikely'. This is based on aerial photography, publicly available contour data, and our knowledge of the area. Aerial images dating back to 1952 show minimal change to the geomorphology across the site. We did not observe any indication of instability in these images. We understand that earthworks are intended to cut down the Hills Terrain and fill on the Plains Terrain. This will further ease average grades and improve stability. Any steps or steep slopes proposed will need specific assessment and may need retaining walls.

Settlement

The geology maps and historic aerial photography indicate that swampy areas are likely to be present. These areas tend to have soft, loose, or organic soils that can be susceptible to consolidation settlement on loading. Loading from fill placed, or from building and surcharge loads can trigger settlement.

Mitigation measures may be needed to reduce the expected settlement. Mitigation options could include undercutting near surface poor soils, preloading with settlement monitoring, or ground improvement.

Expansive soils

Investigations completed near the site (from NZGD) encounter soils of moderate plasticity. These soils have the potential to change in volume ('shrink and swell') in response to moisture content changes, typically with a seasonal periodicity if close to the surface. These typically include volcanic ash soils such as clay.

Based on this observation, the geology maps, and the typical clay minerology of Waikato soils, we expect the surface soils across the development to range between Class A and Class M, non-expansive to moderately expansive. These classes are typical in the Waikato and Class S to M soils can be easily mitigated in building design.

Geotechnical recommendations

While there are likely to be natural hazards present on the site, they are typical of the Waikato and are unlikely to preclude development. Given the likely hazards, careful investigation, assessment, and design should be undertaken. The design of the development should be guided by geotechnical assessment as hazards can be avoided or minimised by design if incorporated early. Our geotechnical recommendations are outlined below.

Earthworks

Draft cut to fill plans provided by the client (provided in Appendix E) anticipate significant cuts and fill across the site to ease the grades between the Hills Terrain and the plains and to form level building platforms. We expect the cut materials will vary with cut depth. The volcanic ash is likely to be suitable earthworks material. Deeper materials can be sensitive and difficult to earthwork. Investigation will be needed to confirm material types and depths and to guide the earthworks design.

Locations of potential uncharacterised fill will require investigation to confirm the underlying materials. If these materials are uncharacterised fill as anticipated, they will need to be excavated and replaced with engineered fill. Environmental guidance should be followed throughout the excavation and disposal process.

Excavation, preparation of subgrade, and backfill should be performed in accordance with geotechnical recommendations that will follow the detailed investigation and with the applicable portions of the New Zealand Standard 4431:2022⁸. All earthworks should be performed under the observations and testing of HD Geo.

⁸ NZS 4431:2022: Engineered fill construction for lightweight structures.

Next steps

We have identified potential natural hazards on the site. These should not preclude development as they are standard for this geology in the Waikato region however, they should be defined by investigation and assessment and should be avoided or mitigated through the design of the development where possible. Where hazards remain, they can be mitigated through careful engineering design. We recommend further geotechnical input to inform a substantive application, including:

- investigate the site, focussing on areas of higher potential hazards. These include, wet or swampy areas, Plains Terrain with high groundwater and liquefaction hazard, earthwork material suitability and sensitive soils
- detailed assessment of liquefaction hazard across the site, settlement potential of soft soils, groundwater depth and drawdown potential
- input into the detailed design of the development to limit exposure to the identified hazards, and to mitigate them where possible
- reporting to support consenting
- earthwork specifications and detailed design of geotechnical elements
- observation during construction to validate assumptions and confirm work meets specifications

Limitations

This report has been prepared for our client, Greenhill Industrial Park Consortium, for the purpose detailed above and may not be relied on by any other party or for any other purpose. This report contains a high-level assessment based on our desktop study of the site to support the Fast-track Approvals Act (FTAA) referral application to allow for further subdivision and building development.

Further testing and assessment are required for detailed design for the site. Inferences about the conditions at the site have been made based on nearby testing and our understanding of the geological environment in which the site lies. The deposits in this area are by nature highly variable both vertically and laterally. We recommend that HD Geo is engaged to provide input into the design of the development and to undertake further testing, assessment and design. For continuity and to confirm ground conditions, geotechnical observation will also be required during site construction works.

APPENDIX A – PROPOSED PLANS

2.0 Masterplan

Scale: 1:8,000 @ A3

Legend

- Site Boundary
- Proposed Industrial Lots (with indicative buildings and on-lot landscaping)
- Proposed Rural Residential Lots
- Proposed Greenhill Expressway Service Area (Extended)
- Proposed Road Swales
- Proposed Landscape Buffer between Rural Residential and Industrial Lots (10-15m)
- Proposed Landscape Buffer along Waikato Expressway (10-15m)
- Proposed Stormwater Ponds & Riparian Areas
- Potential Existing Mature Trees for Retention (pending further investigation)
- Existing Modified Watercourse for Realignment & Renaturalisation
- WWPS Proposed Wastewater Pumpstation
- Existing Radio Aerial for Retention
- Existing Overhead Power Pole and Lines for Retention
- Designation J17 (Requiring Authority - NZTA)
- Expressway Noise Control Areas
- 1 Existing Rural Residential Properties (outside of the Site)
- 2 Existing Childcare
- 3 Potential Access Options to Greenhill Expressway Service Area
- 4 Existing Residential Dwelling to Retain



Figure 8 High-level Masterplan

Legend

Site outline

Scale: 1:8 000 @ A3



lots (with indicative landscaping)
Initial Lots
Expressway Service Area
Buffer between Rural (Rural) Lots (10-15m)
Buffer along Waikato
Ponds & Riparian Areas
Fire Trees for Retention (Retention)
Access for Realisation
Pumpstation
Fire Retention
Power Pole and Lines for
Fencing Authority - NZTA
Control Areas
Local Properties (outside)



CLIENT

Greenhill Industrial Park Consortium

TITLE

HD3783 - Greenhill Industrial Park (R3
Fast Track)
Site Location Plan

GENERAL NOTES AND DISCLAIMER

1. Coordinates are in NZTM
2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved
3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk.
4. Contour information sourced from local council GIS databases. Crown copyright reserved.
5. Site Masterplan overlay sourced from client.

Project Number

HD3783

Drawing Reference

HD3783-101-R0

Drawn By

CW

Date

04/11/2025

Reviewed By

MM

Date

04/11/2025

SCALE

1:10,000

0

400

800 m

APPENDIX B – HISTORIC AERIAL IMAGERY

Site boundary

.nz and licensed by LINZ CC-BY 3.0



1,000 m

1. Coordinates are in NZTM.
2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved.
3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk.
4. Contour information sourced from LINZ, or local council GIS databases. Crown copyright reserved.

Legend

 Site boundary



etrolens.nz and licensed by LINZ_CC-BY 3.0



bd
GEO

CLIENT

Greenhill Industrial Park Consortium

TITLE

Greenhill Industrial Park
Historic aerial images - 1963

Project Number

HD3783

Drawing Reference

HD3783-102b

Drawn By

MM

Date

30/09/25

Reviewed By

PG

Date

30/09/25

SCALE

1:11,000

0 250 500 750 1,000 m

GENERAL NOTES AND DISCLAIMER

1. Coordinates are in NZTM.
2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved.
3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk.
4. Contour information sourced from LINZ, or local council GIS databases. Crown copyright reserved.

Legend

 Site boundary



	CLIENT		TITLE				GENERAL NOTES AND DISCLAIMER 1. Coordinates are in NZTM. 2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved. 3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk. 4. Contour information sourced from LINZ, or local council GIS databases. Crown copyright reserved.
	Greenhill Industrial Park Consortium		Greenhill Industrial Park Historic aerial images - 1979				
	Project Number	Drawing Reference	Drawn By	Date	Reviewed By	Date	
	HD3783	HD3783-102c	MM	30/09/25	PG	30/09/25	
SCALE		02505007501,000 m					
1:11,000							

Legend

 Site boundary



CLIENT

Greenhill Industrial Park Consortium

TITLE

Greenhill Industrial Park
Historic aerial images - 1991

Project Number

HD3783

Drawing Reference

HD3783-102d

Drawn By

MM

Date

30/09/25

Reviewed By

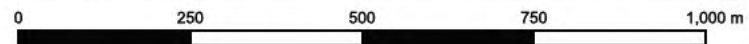
PG

Date

30/09/25

SCALE

1:11,000



GENERAL NOTES AND DISCLAIMER

1. Coordinates are in NZTM.
2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved.
3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk.
4. Contour information sourced from LINZ, or local council GIS databases. Crown copyright reserved.

Legend

 Site boundary



CLIENT Greenhill Industrial Park Consortium		TITLE Greenhill Industrial Park Historic aerial images - 2008			
Project Number HD3783	Drawing Reference HD3783-102e	Drawn By MM	Date 30/09/25	Reviewed By PG	Date 30/09/25
SCALE 1:11,000		0 250 500 750 1,000 m			

GENERAL NOTES AND DISCLAIMER

1. Coordinates are in NZTM.
2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved.
3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk.
4. Contour information sourced from LINZ, or local council GIS databases. Crown copyright reserved.

Legend

 Site boundary



CLIENT

Greenhill Industrial Park Consortium

TITLE

Greenhill Industrial Park
Historic aerial images - 2016

Project Number

HD3783

Drawing Reference

HD3783-102f

Drawn By

MM

Date

30/09/25

Reviewed By

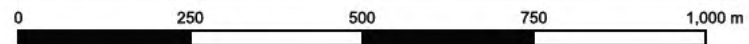
PG

Date

30/09/25

SCALE

1:11,000



GENERAL NOTES AND DISCLAIMER

1. Coordinates are in NZTM.
2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved.
3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk.
4. Contour information sourced from LINZ, or local council GIS databases. Crown copyright reserved.

APPENDIX C – POTENTIAL UNCHARACTERISED FILL LOCATION PLAN

APPENDIX D – SLOPE GRADES AND SUSPECTED SWAMP AREAS

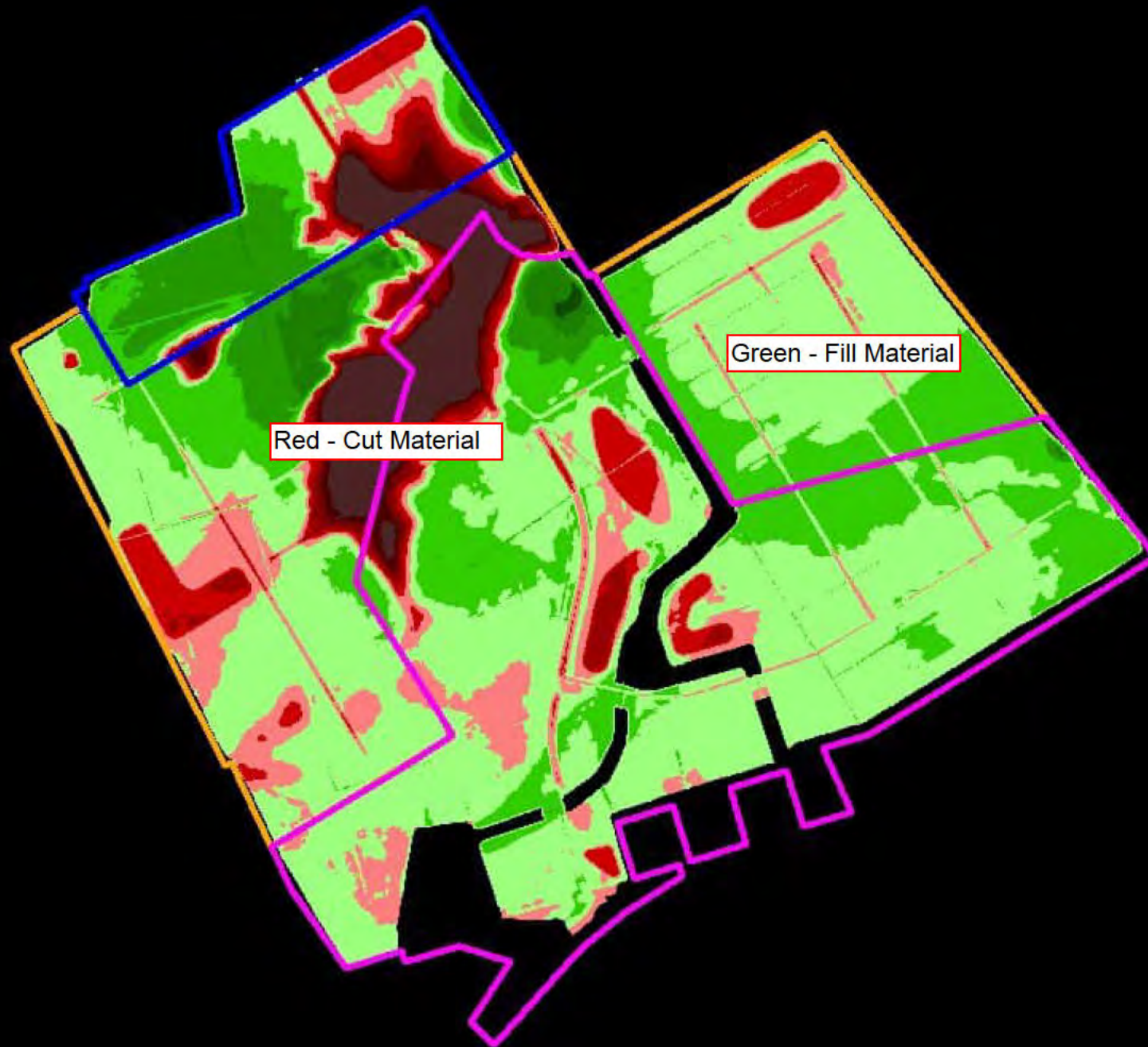
Legend

- Site outline
- Lidar Contours 1 m
- - - Identified Tussocky Swamp areas



	CLIENT		TITLE				GENERAL NOTES AND DISCLAIMER 1. Coordinates are in NZTM 2. Imagery and cadastral information sourced from LINZ. Crown copyright reserved 3. Areas and dimensions are approximate only, any use or reliance on this plan is at the users risk. 4. Contour information sourced from local council GIS databases and DEM from opentography. Crown copyright reserved. 5. Site Masterplan overlay sourced from client.
	Greenhill Industrial Park Consortium		HD3783 - Greenhill Industrial Park (R3 Fast Track) Slope grades and suspected swamp areas				
	Project Number	Drawing Reference	Drawn By	Date	Reviewed By	Date	
	HD3783	HD3783-104-R0	CW	09/10/2025	EC	09/10/2025	
SCALE							
1:10,000							

APPENDIX E – DRAFT EARTHWORKS CUT TO FILL PLAN



Red - Cut Material

Green - Fill Material