



8 June 2026

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Dear Ben,

OPARURE QUARRY SOUTH-WESTERN PIT – CONTAMINATED LAND PRELIMINARY SITE INVESTIGATION

1.0 Introduction

Pattle Delamore Partners Limited (PDP) has been engaged by Graymont (NZ) Limited (Graymont) to prepare a Preliminary Site Investigation (PSI) for the Oparure Quarry South-Western Pit (SW Pit) and haul road. The SW Pit and haul road are located on Lot 1 DPS 77130, Lot 1 DPS 74022 and Lot 2 DPS 33442 located off Oparure Road, Te Kūiti, Waikato, herein referred to as the 'site' (refer Figure 1, Appendix A). The PSI has been undertaken in support of an application from Graymont for consent under the Fast-track Approvals Act 2024 (FTAA). The consents sought are to enable the Oparure Quarry SW Pit project. The purpose of this PSI is to support the application by identifying the nature and significance of identified contaminated land issues which may be present at the site.

It is noted that this PSI covers the entirety of the wider Graymont-owned properties (the area outlined in green in Figure 1, Appendix A), however the area to be disturbed as part of quarry activities is confined to the SW Pit and haul road areas outlined in orange and dark red in Figure 1, Appendix A.

The site appears to have historically comprised of pasture farmland from as early as 1944 until present day (based on available aerial images). At the time of the site walkover¹, the site was stocked with sheep and beef with unsealed tracks (farm races) from farm buildings located adjacent to Oparure Road running throughout the site.

This report investigates and summarises the actual and/or potential contaminated land issues associated with the current and historical use(s) of the site and has been prepared to satisfy the requirements of the following regional and national contaminated land regulations:

- ✧ Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 ('the NES-CS'); and,
- ✧ Waikato Regional Council (WRC) *Operative Waikato Regional Plan*, 2007 (amended 2024) (WRP).

¹ Site walkover was undertaken on 10 October 2019. Further site visits undertaken in 2025 and 2026 confirmed that the general land use has not materially changed since the 2019 site walkover.

The site investigation has been overseen by a Suitably Qualified and Experienced Practitioner (SQEP) as outlined by the NES-CS, and a certifying statement to this effect has been appended. This 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 (Revised 2021)* (MfE, 2021a), and with the relevant elements relating to the impartial role of an ‘expert witness’ detailed by the Environment Court’s ‘Expert Witness Code of Conduct’².

2.0 Objective

The key objective of the PSI was to identify any actual or potential ground contamination sources, including any Hazardous Activity and Industry List³ ('HAIL') use, either from historic and/or current sources and/or activities occurring at the site.

3.0 Scope of Work

The scope of work undertaken by PDP included:

- ✧ Completion of a desktop study including the review of publicly available historical aerial images, Waitomo District Council (WDC) property files, and WRC Land Use Information Register enquiry for the site;
- ✧ Review of available historical environmental reports or information;
- ✧ Completion of a site walkover for site characterisation, and to identify current and/or historical infrastructure and/or features that may be associated with potentially contaminating activities/sources;
- ✧ Completion of interviews with previous and/or current site owners/occupiers (if possible) who may have knowledge of the history of the site and its land activities; and,
- ✧ Preparation of this PSI report.

4.0 Site Information

4.1 Site Description

A summary of the site details is provided in Table 1. All properties on the site are under the regulatory authority of WDC and WRC. Under the WDC Operative Waitomo District Plan, the site is zoned as rural production land use. The site is currently and has historically been used for agricultural (pastoral) purposes. The surrounding land use is primarily agricultural (pastoral), with the active Graymont Oparure limestone quarry located directly to the east.

² Section 9 of the Environment Court of NZ: Practice Note 2023.

³ The Hazardous Activities and Industries List (HAIL) is a compilation of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. The HAIL is intended to identify most situations in New Zealand where hazardous substances could cause, and in many cases have caused, land contamination. The most recent version of the HAIL was published by the MfE in 2011 (MfE, 2011a).

Table 1: Site Details

Address	Legal Description	Site Area (hectares)	Owner
966 Oparure Road	Lot 1 DPS 77130	105.89	Graymont
	Lot 2 DPS 33442	68.92	
806 Oparure Road	Lot 1 DPS 74022	13.10	

4.2 Geology, Hydrogeology and Topography

The site is located between 210 m and 300 m above sea level and comprises of a gently to very steeply (approximately 5 to 55 degrees) undulating landscape with numerous closed tomos located in the topographical lows of the landscape throughout the site.

The limestone in the area occurs within the Te Kūiti Group of strata which comprises thick units of coal measures, sandstone, and limestone (Frostad, 2004). The adjacent Oparure quarry extracts high grade limestone from the Ōtorohanga Limestone Formation (around 75 m thick at Oparure) which is overlain by Mahoenui Group mudstone (with some coarser grained siltstone and sandstone seams) and volcanic ash deposits. The Ōtorohanga limestone displays a well-developed fracture system that has promoted the formation of caves and has a strong influence on the subsurface movement of water. The area has a typical karst topography (e.g. short gullies and valleys) that end suddenly where the surface water is discharged into dolines and then tomos and caves. These underground water pathways discharge at spring locations or stream emergences which form surface water channels (PDP, 2022).

The depth of perched groundwater (groundwater hosted within the epikarst overlying the karst system) is not known at the site.

The WRC online mapping tool, Waikatomaps⁴, indicates that there are two bores within 1 km of the site. One bore, reference Bore ID 72_474, is located approximately 800 m east of the eastern site boundary, within the eastern portion of the existing Oparure limestone quarry. The bore is 140 m deep with an unknown depth to groundwater. Consent reference AUTH105349.01.01 indicates that the bore is utilised for a groundwater take for mining (rock/aggregate) purposes. The other bore, reference Bore ID 71_4, is located approximately 1 km east of the south-eastern site boundary. The bore is 90 m deep with an unknown depth to groundwater. Consent reference AUTH134156.01.01 indicates that the bore is utilised for a groundwater take for agricultural farming (dairy) purposes.

4.3 Historical Aerial Images

A selection of publicly available historical aerial images from 1944, 1968, 1976, 1983, 2001, 2010, 2013 and 2023-2024 were reviewed. Historical aerial images were accessed from the publicly available website, Retrolens, Google Earth, and LINZ Data Service (LINZ). The historical aerial images are provided as Figure 1⁵ and Figures 3 to 9 in Appendix A. A review of these historical aerial images is provided in Table 2.

⁴ <https://waikatomaps.waikatoregion.govt.nz/Gallery/>

⁵ Note that Figure 1 is primarily the site layout plan however uses LINZ aerial imagery flown 2023-2024.

Table 2: Aerial Image Information

1944 (Retrolens)	The site is rural (potentially pastoral) with little other land use (e.g. built structures, cropping, etc) visible. What appears to be buildings and races (tracks) are located on the southern boundary outside of the site (Lot 1 DPS 77130). Oparure Road is visible to the south of the site. Adjacent to the site to the east and to the south are two buildings (assumed residential dwellings). The overall surrounding land use is rural (potentially pastoral).
1968 (Retrolens)	The site remains rural. Some farm races and what appear to be fences are now visible throughout the site. An assumed water tank or pump shed is visible in a topographical high point in the northern portion of the site on Lot 1 DPS 77130. An assumed shearing shed and one other farm shed are visible on the southern boundary of the site (Lot 1 DPS 77130). A linear feature (potential airstrip) is present on the northwest portion of the site (across Lot 1 DPS 77130 and Lot 2 DPS 33442). The surrounding land use remains generally the same as in the 1944 aerial.
1976 (Retrolens)	The site and surrounding land use remain relatively unchanged from the 1968 photograph. An additional building (assumed shed) is visible on the southern boundary of the site (Lot 1 DPS 77130).
1983 (Retrolens)	The site land use remains relatively unchanged from the 1976 photograph. In the surrounding area, early quarrying operations are visible to the east of the site.
2001 (Google Earth)	The majority of the site land use appears to be unchanged, however valleys and tomos in the eastern portion of the site appear to have been filled in, assumed to be related to the neighbouring quarry activities. To the east of the site, the quarry operations have intensified and expanded and an airstrip is visible adjacent to the south-eastern boundary of the site.
2010 (Google Earth)	The majority of the site land use appears to be unchanged from the 2001 photograph. A pond and potential pump shed are present to the northeast of the pump shed / water tank observed in the 1968 aerial. Neighbouring quarry operations to the east have expanded slightly.
2013 (Google Earth)	The majority of the site and surrounding land use remains relatively unchanged from the 2010 photograph. A potential stock yard is now visible south of the site, south of Oparure Road.
2023-2024 (LINZ)	The majority of the site and surrounding land use remains relatively unchanged from the 2013 photograph.

4.4 Waitomo District Council Information

4.4.1 Property Files

Copies of the property files for the site were received in October 2019 and reviewed for relevant information pertaining to the history and any potential contamination sources at the site. The property files were not found to contain any relevant files or information about potential contamination sources at the site. The property files can be provided electronically on request.

4.5 Waikato Regional Council Information

4.5.1 Land Use Information Register Enquiry

A Land Use Information Register (LUIR) enquiry for the site was received by PDP on 21 February 2026⁶. WRC confirmed that the site does appear on their LUIR and that two potential HAIL land use activities are identified at the site. A summary of the information provided by WRC is summarised in Table 3 and the WRC LUIR enquiry response is provided in Appendix B.

Table 3: Summary of WRC LUIR Information				
Legal Description	WRC LUIR Reference	Site Name	Classification	Hail Category and Description
Lot 1 DPS 77130 / Lot 2 DPS 33442	LUI06628	Grainger Farm Airstrip	Unverified HAIL ¹	A6 – Fertiliser bulk storage
Lot 1 DPS 77130	LUI12777	Building 2 (adjacent to)	Unverified HAIL ¹	A8 – Livestock dip or spray race operations
<i>WRC comments:</i> <i>This site is included on the register for land use information only; we do not hold soil investigation reports regarding the presence or otherwise of hazardous substances in the soil.</i>				

5.0 Site Walkover

PDP visited the site on 10 October 2019 to complete a site walkover. A photographic log showing the general site conditions is provided in Appendix C and areas of interest are shown on Figure 2 in Appendix A. The land uses observed on site were consistent with the aerial image review. Further site visits undertaken in 2025 and 2026 confirmed that the general land use has not materially changed since the 2019 site walkover. Key observations made during the October 2019 site walkover were as follows:

- ✦ The site comprised predominantly of grassed farmland (pasture) (photograph 1);
- ✦ Trees/scrub vegetation was generally restricted to steep, low lying sections of the site, with some tomos containing large (≥30 m high) trees;
- ✦ Fly tipped farm waste (comprising mostly of fence posts, fencing wire, tyres, with some offal, corrugated iron sheeting and empty unidentified chemical containers in one tomo) was observed in some tomos throughout the site (photographs 6 and 7);
- ✦ A storage shed (Building 1) was inaccessible but through gaps in the door was observed to contain an above ground diesel tank and various small containers of farming related chemicals stored on wooden pallets (photographs 8 and 9). No secondary containment (e.g. bunding) or evidence of

⁶ A LUIR enquiry was also received on 16 September 2019 which was inclusive of the current site area. The enquiry from 2019 identified land use activity WRC REF LUI06628 on the current site footprint which is detailed in Table 3.

spillage was observed around the diesel tank or chemical storage area, however a full inspection was not completed;

- ✧ A woolshed (Building 2) is located adjacent to the access gate at Oparure Road and exterior building materials were observed to be in a degraded state with broken asbestos containing material (ACM) cladding spread over the ground surrounding the structure (photograph 13);
- ✧ A stock race structure and a covered livestock yard are located directly adjacent to the woolshed (Building 2) to the southeast and southwest respectively. Evidence of livestock spraying was visible in this area (including intermediate bulk containers containing Cryozin KO, an ectoparasiticide chemical, and spraying equipment) (photographs 11 and 12);
- ✧ A small shed (Building 3) was also located adjacent to Oparure Road; this structure was clad in ACM and ACM cladding sheets were also stored in the shed lean-to (photograph 16);
- ✧ A pump shed (Building 4) was observed on the northwestern section of the site (Lot 1, DPS 77130) and a minor spill of motor oil (AEGIS 20w40 motor oil) was observed on the wet concrete floor of the shed; this spill was observed to be running off onto the unsealed ground outside of the building (photographs 18 and 19). The shed also contains a potential asbestos electrical backing board and herbicide containers;
- ✧ A former airstrip (Grainger Farm Airstrip) is located in the northwestern section of the site (photograph 2). A grassed runway was visible but there was no other evidence of infrastructure in this area. Some piles of fencing timber were observed in this vicinity (photograph 4); and,
- ✧ During the site walkover, the Oparure Lime Quarry airstrip was visible to the southeast of the site (photograph 3).

5.1 Other Information Sources

A questionnaire was provided to the previous landowners of the site () to enquire about present and/or historic land use activities at the site to try and determine whether or not contamination sources could be present including historical and/or current HAIL activities. A copy of the completed questionnaire is provided in Appendix D.

The information provided in the questionnaire indicates that a livestock (sheep) dip was located on the corner of the Graymont quarry driveway and 806 Oparure Road; this is located outside of the PSI site area, to the southeast of the site (refer to Figure 2, Appendix A). No other information relating to potential or actual historical and/or current HAIL land use activities at the site were provided.

No historical environmental reports were identified and/or provided for the site.

6.0 PSI Information Summary

The information gathered during this PSI regarding the current and/or historical land use activities at the site relating to potential ground contamination are summarised in the following sub-sections. Refer to Figure 2 in Appendix A for a plan showing the location of these identified land use activities.

6.1 Fly Tipped Farm Waste in Tomos

The fly tipping of farm waste was observed in some tomos throughout the site including areas within the proposed quarry area. Waste observed comprised mostly of fence posts, fencing wire and tyres, however the tomo nearest the farm buildings (Buildings 1, 2 and 3) had evidence of offal waste and an empty unidentified chemical container. Given the quantity and type of waste observed across the site, the fly tipping is not considered to fall within the definition as a HAIL activity, as it is unlikely that hazardous substances would be released in sufficient quantity to pose a risk to human health or the environment.

6.2 Building 1 (Farm Shed)

Building 1 is located outside of the proposed quarry area and it is understood that no earthworks are proposed in this vicinity. Building 1 was observed to contain a small above ground storage tank (AST) labelled as containing diesel. Building 1 was locked during the site walkover therefore it was not possible to access inside, however from an observation point through a gap in the door, the AST appeared to be in good condition. Storage of chemicals and fuel is an activity listed on the HAIL (Category A17: storage tanks or drums for fuel, chemicals or liquid waste) and the shallow soil in the vicinity may have been impacted by this activity. If the land use in this area of the site is proposed to be changed or any earthworks are proposed as part of any future site development, a soil investigation is recommended under the NES-CS.

Timber fencing materials are stored outside of this building, and the timber is likely to be treated. However, given the quantity of the potentially treated timber, the timber storage is not considered to represent a HAIL activity as it is considered unlikely that a sufficient quantity of hazardous substances would be released to cause a risk to human health or the environment.

6.3 Building 2 (Woolshed), Livestock Race and Livestock Yard

Building 2 (a woolshed), the livestock race, and livestock yard are all located outside of the proposed quarry area and it is understood that no earthworks are proposed in the vicinity of these structures.

6.3.1 Asbestos in Soil

Building 2 has asbestos cladding located on the southeastern exterior wall which has been broken, and fragments are spread over the gravel race on the southeast side of the building. The fragments were observed to have spread as far as the covered stock yard. Asbestos contamination of soils in this area related to these broken fragments has been assessed as possible given the quantity of fragments present, in accordance with the assessment criteria provided in the BRANZ and ALGA (2024) *'New Zealand Guidelines for Assessing and Managing Asbestos in Soil'*. Given the deteriorated condition of the broken fragments on the ground on the southeast wall of Building 2, this location is considered to meet the definition of HAIL Category E1: sites with buildings containing asbestos products known to be in a deteriorated condition. The building footprint, and area surrounding the other walls of Building 2 are not considered HAIL.

6.3.2 Lead in Soil

Given the age of Building 2 (approximately 1950s), painted building materials observed may contain lead. The condition of the paint on the building indicates that lead in soil contamination may be present where paint has weathered and been deposited on to the ground. At this time, this contamination source is considered to represent a 'potential HAIL', noting that the use of lead-based paint is not listed on the HAIL and therefore any contamination from this source would be categorised as Category 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. Category I is only considered to apply in cases where soils are found to contain concentrations of contaminants that exceed the MfE *Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (the 'Methodology')* (MfE, 2011b) Soil Contaminant Standards (SCS) for the applicable land use scenario. This can only be determined via soil sampling, hence the conclusion provided herein that the site is 'potential Category I'.

6.3.3 Livestock Yard and Livestock Race

The livestock yard contains containers of chemicals and equipment used for livestock spraying. Livestock spraying is an activity listed on the HAIL (Category A8: livestock dip or spray race operations) and the shallow soil in the vicinity may have been impacted by this activity. If the land use in this area of the site is

proposed to be changed or any earthworks are proposed as part of any future site development, a soil investigation is recommended under the NES-CS.

6.4 Building 3 (Small Shed)

Building 3 is located outside of the proposed quarry area and it is understood that no earthworks are proposed in this vicinity.

6.4.1 Asbestos in Soil

Building 3 has partial asbestos cladding and roofing in a moderately weathered condition, as well as asbestos super 6 sheeting in a good condition stored in an attached lean-to area. This piece of land is not considered as HAIL as the quantity and degree of weathering on the asbestos to land is not considered to be of sufficient quantity that could be a risk to human health or the environment.

6.4.2 Lead in Soils / Timber Treatment Contamination in Soils

Given the age of the building (estimated to be in the 1950s based on historical aerial photographs), the painted building materials observed may contain lead. The deteriorated condition of the paint on the building indicates that lead in soil contamination may be present where paint has weathered and been deposited on to the ground. At this time, this contamination source is considered to represent a 'potential HAIL', noting that the use of lead-based paint is not listed on the HAIL and therefore any contamination from this source would be categorised as Category 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. Category I is only considered to apply in cases where soils are found to contain concentrations of contaminants that exceed the Methodology SCS (MfE, 2011b) for the applicable land use scenario. This can only be determined via soil sampling, hence the conclusion provided herein that the site is 'potential Category I'.

The attached lean-to contains timber fencing materials and the timber is likely to be treated. However, given the shed cover and the small quantity of the fence posts stored there, the timber storage is not considered to represent a HAIL activity as it is considered unlikely that a sufficient quantity of hazardous substances would be released to cause a risk to human health or the environment.

6.5 Building 4 (Pump Shed)

Building 4 is located outside of the proposed quarry area and it is understood that no earthworks are proposed in this vicinity. Building 4 is a pump shed located on the northwestern boundary of the site. The pump within the shed pumps water from a stream to supply water to troughs around the site. Motor oil was observed to be leaking from the pump equipment onto the ground surface however this leak is not considered as HAIL as the amount of hazardous substance potentially released is not considered to be of sufficient quantity that could be a risk to human health or the environment.

6.6 Sheep Dip Site

The previous property owner questionnaire provided information that a sheep dip site was previously located on the corner of Oparure Road and the Graymont quarry access road. When investigated during the site visit, there was no visible sign of a historical livestock dip in this area. Given the suspected sheep dip is outside the site and down hydraulic gradient of the site, this potential HAIL activity is not considered further in this investigation.

6.7 Former Grainger Farm Airstrip and Oparure Lime Quarry (McDonalds Lime Ltd Quarry) Airstrip

The WRC LUIR identified two airstrips on the site. The former Grainger Farm Airstrip was visited as part of the PSI site walkover and no infrastructure (e.g. fuel storage or dispensing facilities) or signs of contamination were observed. Anecdotal evidence from talking with farmers on site suggests that this airstrip was formerly used to load aircraft with fertiliser products, however no evidence of this was observed during the site walkover, and no other evidence of this activity has been found from any of the other information sources reviewed as part of this PSI. Therefore, the potential HAIL activity listed on the LUIR (Category A6: fertiliser manufacture or bulk storage) is not considered further for the airstrip location in this investigation.

The Oparure Lime Quarry airstrip was not visited as part of the PSI site visit as the airstrip is predominantly located outside of the defined site which is the subject of this PSI. Therefore, the potential HAIL activity listed on the LUIR (Category A6) is not considered further in this investigation.

7.0 Preliminary Conceptual Site Model

A preliminary Conceptual Site Model (CSM) is provided in Table 4 which summarises the potential sources of contamination identified from the PSI. The CSM further details the potential mechanism of contamination, the potential receptors, and the potential exposure pathways that could be present at the site in accordance with the PSI findings.

Table 4: Preliminary Conceptual Site Model

HAIL land use	Building 1: Storage Tanks for Fuel (HAIL Category A17)	Building 2: Livestock Spray Race Operations (HAIL Category A8)	Buildings 2 and 3: Buildings Containing Asbestos Products in a Deteriorated Condition and Asbestos in Soil Contamination (HAIL Category E1)	Buildings 2 and 3: Lead Painted Walls in Deteriorating State (potential HAIL Category I)
Likelihood of onsite impact	Potential for ground contamination to be present – Site observations within the shed were limited, however no staining of the ground was observed and there are no records of spills or leaks recorded in any of the documents reviewed as part of this PSI. The AST was not banded and it is assumed that the ground surface is unsealed in Building 1.	Potential for ground contamination to be present – Site observations suggest that there is a livestock spray race operation at Building 2. There is potential for the contaminants associated with the livestock spraying and chemical storage activities to have impacted shallow soil as this whole area is unsealed.	Potential for ground contamination to be present – Site observations noted asbestos cladding on buildings and broken fragments on the unsealed ground surrounding the building.	Potential for ground contamination to be present – Site observations noted very degraded painted surfaces on the exterior of the building; with buildings constructed and potentially painted during a period when the use of lead-based paint was common.
Onsite Location	Outside of the proposed quarry area and proposed earthworks. Building 1 is in the southern portion of the site by the farm main access road to the site.	Outside of the proposed quarry area and proposed earthworks. Southern boundary of the site, adjacent to Oparure Road.	Outside of the proposed quarry area and proposed earthworks. Southern boundary of the site, adjacent to Oparure Road. Weathered and degraded asbestos cladding present around Buildings 2 and 3. Broken fragments on ground surrounding Building 2.	Outside of the proposed quarry area and proposed earthworks. Buildings 2 and 3 in the southern boundary of the site, adjacent to Oparure Road.
Identified Contaminants of Concern	Diesel	Organochlorine pesticides (DDT, lindane, dieldrin and aldrin), organophosphates, synthetic pyrethroids, arsenic, zinc, copper.	Asbestos in soil	Lead
Potential Mechanism of Contamination	Deposition on to, and leaching into the ground and potentially perched groundwater from spillages.	Deposition on to the ground (from spray drift and/or livestock movement and/or direct discharge to ground from spills or disposal of excess chemicals); migration (leaching) to deeper soil and perched groundwater (from potential chemical dumping activities).	Mechanical and chemical degradation of asbestos containing cement sheeting resulting in release of asbestos fibres into shallow soil.	Direct deposition of contaminants to shallow soil.
Identified Potential Receptor(s)	Short term: Farm workers (it is understood the vicinity of Buildings 1 to 3 will continue to be used for farm purposes in the future). Livestock where animals are able to access the identified areas. Environmental receptors (migration of contaminants via soil leaching, surface water run-off or perched groundwater).			
Identified Potential Receptor(s) (continued)	Long term: Future farm workers in areas outside of the proposed quarry area (if contaminated soil remains onsite and workers continue to use the identified areas of the site). Livestock in areas outside of the proposed quarry area (if animals continue to access the identified areas). Environmental receptors (if contaminated soil is buried or remains onsite).			

Table 4: Preliminary Conceptual Site Model

HAIL land use	Building 1: Storage Tanks for Fuel (HAIL Category A17)	Building 2: Livestock Spray Race Operations (HAIL Category A8)	Buildings 2 and 3: Buildings Containing Asbestos Products in a Deteriorated Condition and Asbestos in Soil Contamination (HAIL Category E1)	Buildings 2 and 3: Lead Painted Walls in Deteriorating State (potential HAIL Category I)
Potentially Complete Exposure Pathways	Dermal contact and soil ingestion for current/future site workers and users – potentially complete (if contaminant source is present and appropriate protection measures are not put in place). Discharges to surface water – potentially complete (if contaminant source is present and appropriate protection measures are not put in place).	Dermal contact and soil ingestion for current/future site workers and users – potentially complete (if contaminant source is present and appropriate protection measures are not put in place). Discharges to surface water – potentially complete (if contaminant source is present and appropriate protection measures are not put in place).	Inhalation for current/future site users and users – potentially complete (if contaminant source is present and appropriate protection measures are not put in place).	Dermal contact and soil ingestion for current/future site workers and users – potentially complete (if contaminant source is present and appropriate protection measures are not put in place).
	Note: if soil contamination is found to be present to the depth of underlying perched groundwater, then the groundwater pathway would need to be considered further.			Note: if soil contamination is found to be present to the depth of underlying perched groundwater, then the groundwater pathway would need to be considered further.
Applicable Human Health Guideline Criteria	MfE (2011c) <i>Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (Revised 2011)</i> Tier 1 soil acceptance criteria for a residential/agricultural land use.	Methodology (MfE, 2011b) – SCS and Soil Guideline Values (SGV) for site-specific contaminants not covered by the Methodology (MfE, 2011b) – rural residential / lifestyle block 25% produce or commercial / industrial outdoor worker (unpaved) land use scenarios (dependent on ultimate land use for specific site areas). MfE (2006) <i>Identifying, investigating and managing risks associated with former sheep-dip sites: A guide for local authorities</i> – SGV for human health (lifestyle block or commercial / industrial [unpaved] land use) for site-specific contaminants not covered by the Methodology (MfE, 2011b).	BRANZ and ALGA (2024) <i>New Zealand Guidelines for Assessing and Managing Asbestos in Soil</i> .	Methodology (MfE, 2011b) – SCS and SGV for site-specific contaminants not covered by the Methodology (MfE, 2011b) – rural residential / lifestyle block 25% produce or commercial / industrial outdoor worker (unpaved) land use scenarios (dependent on ultimate land use for specific site areas).
Applicable Discharge Criteria	MfE (2011c) <i>Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (Revised 2011)</i> Soil acceptance criteria for protection of groundwater quality.	WRC natural background concentrations in the Waikato Region.		WRC natural background concentrations in the Waikato Region.

8.0 Legislative and Regulatory Considerations

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

The NES-CS applies to specified activities on a 'piece of land' where there is a potential that soil is contaminated in such a way as to be a risk to human health. For the purposes of the NES-CS, the piece of land is defined as a site, or an area of a site, where a HAIL activity has taken place, is taking place, or is more likely than not to have taken place. The applicable activities are identified as:

- ✧ Removing or replacing a fuel storage system;
- ✧ Sampling the soil;
- ✧ Disturbing the soil;
- ✧ Subdividing the land; and
- ✧ Changing the land use.

This PSI has not identified any HAIL land use activities, or 'pieces of land' within the proposed quarry area (identified with a brown outline in Figure 2, Appendix A). All identified potential sources of contamination / HAIL activities are located within the site, however located outside of the proposed quarry area. PDP understands that land use in the areas of the site outside of the proposed quarry area will continue as farm related activities, and no activities covered by the NES-CS are contemplated to be undertaken at the identified HAIL (or potential HAIL) locations.

8.2 Waikato Regional Plan

No potential contamination sources were identified by this PSI within the quarry area of the site, therefore the contaminated land rules under the WRP Section 5.3.4 do not apply.

For the wider Graymont-owned properties outside of the quarry area where potential contamination sources were identified by this PSI, should land disturbance be proposed, the contaminated land rules under the WRP may be applicable under Section 5.3.4. As these disturbance activities do not form part of the SW Pit Project, they are not considered further in this document.

8.3 Other Plans and Strategies

Consideration has been given to the following two documents as they pertain to contaminated land:

- ✧ '*Vision and Strategy for the Waikato River (Te Ture Whaimana o te Awa O Waikato)*', prepared by the Waikato River Authority (2008); and
- ✧ '*Ko Tā Maniapoto Mahere Taiao: Maniapoto Environmental Management Plan*' (KTMMT), prepared by the Maniapoto Maori Trust Board (2018).

The Vision and Strategy for the Waikato River (Te Ture Whaimana o te Awa O Waikato) ('the Vision and Strategy') and the KTMMT have been reviewed to determine what requirements they contain as it relates to the identification and management of contaminated land.

The objectives of the Vision and Strategy may be summarised as requiring the restoration and protection of the health and wellbeing of the Waikato River, including its ecological integrity, water quality, cultural and community relationships, and the integrated, precautionary, and mātauranga-informed management of its resources. This is to be achieved via an integrated approach to management of the Waikato River, and the avoidance of adverse cumulative effects (including potential effects), from activities undertaken

both on the Waikato River and within its catchments. The strategies to accomplish the objectives collectively require a coordinated, knowledge-based, and culturally grounded programme of action to understand, enhance, and protect the health and wellbeing of the Waikato River while strengthening relationships, best practice, and community engagement across the entire river system. While the Vision and Strategy does not specifically reference contaminated land, it is considered that the identification and appropriate management of contaminated land is required in order to meet the objectives of the Vision and Strategy.

The KTMMT focuses on environmental sustainability and outlines an objective relating specifically to contaminated land. The KTMMT requires that contaminated sites are identified and appropriately managed (which includes record keeping and clean up as required) such that adverse effects on Maniapoto values are avoided.

In relation to contaminated land, Graymont is planning the SW Pit in a manner that is consistent with the Vision and Strategy of the Waikato River and the KTMMT. This PSI (which has been overseen by a SQEP and has been undertaken in accordance with the MfE Contaminated Land Management Guidelines No.1 (MfE, 2021a)), shows that Graymont is following best practice for identifying and recording contaminated land within their site. This PSI did not identify any contaminated land within the proposed quarry area; however, in the instance that any potential contamination is discovered, appropriate action will be taken to ensure that any potentially or actually contaminated land is properly assessed and managed. Any future management of potentially contaminated soil will be undertaken in accordance with best practice guidelines and procedures.

8.4 Health and Safety at Work Act (Asbestos) Regulations 2016

Degraded ACM was identified on unsealed ground surfaces during the PSI site walkover and this source of potential contamination represents a potential risk to human health. Although this potential contamination source was located in an area of the site that is outside of the area to be developed for minerals extraction, the whole site is owned by Graymont who are a Person Conducting a Business or Undertaking (land owner) in accordance with the Health and Safety at Work Act (asbestos) Regulations 2016 (HSWA-AR). As such, Graymont have responsibilities under the HSWA-AR for identifying asbestos or ACM that may give rise to risk at locations which are a workplace.

9.0 Asbestos Investigation

PDP returned to the site on 22 October 2019 to undertake a limited asbestos building survey and asbestos in soils sampling where the potential for asbestos impact was identified during the initial PSI site walkover. The investigation identified that asbestos cladding is present on Buildings 2 and 3, minor dust contamination was present in Building 2, and asbestos fragments are present on the ground surface surrounding Building 2. Details of the Building 2 and 3 asbestos investigation and results are provided in the PDP (2019) report '*Woolshed Asbestos Survey and Assessment*'. In summary, the results from the investigation established that there was an unacceptable risk to human health because of the identified asbestos on the site, and remediation activities were required. Graymont engaged *Asbestos Solutions Limited*, who undertook the recommended remediation works, and *Independent Asbestos Assessors*, who undertook the clearance inspection on 18 November 2019. The clearance certification issued by *Independent Asbestos Assessors* demonstrates that the remedial works had been adequately completed and the area is suitable for reoccupation and normal use.

10.0 Conclusions and Recommendations

The PSI information review has indicated that the majority of the site has historically been and is currently used for pastoral use which is not considered to be a HAIL land use activity. The PSI has identified four actual and potential HAIL land use activities that have the potential to have caused soil contamination in discrete areas in the vicinity of farm buildings at the site. This contamination potential is related to bulk diesel storage, degraded ACM, degraded potentially lead painted surfaces and a livestock spray race operation. Following a review of these potential sources of contamination, as part of the preliminary CSM development, it is considered possible that these HAIL and potential HAIL activities may have resulted in localised soil contamination.

All identified potential contamination sources are located in the southern portion of the site which is outside of the area identified as the proposed quarry area, where a change in land use and soil disturbance – activities which are regulated by the NES-CS on HAIL sites – will occur. Graymont has stated that none of the five land use activities regulated by the NES-CS are proposed in areas of the site outside of the proposed quarry area and that the land use will remain farming related. Consequently, it is considered that no effects in relation to contaminated land will arise, and the regulations under the NES-CS and contaminated land rules under the WRP Section 5.3.4 do not currently apply to either the quarry area, or any other areas of the site.

PDP has sighted the clearance certification which demonstrates that the asbestos contamination identified at the site has been managed appropriately under the HSWA-AR.

Should any future development within the wider Graymont-owned properties, particularly the vicinity of Buildings 1 to 3, be proposed, an assessment of the applicability of the NES-CS should be made. PDP recommend that a detailed site investigation be completed in the vicinity of Buildings 1 to 3 if an activity regulated by the NES-CS is proposed in these areas.

11.0 References

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- Frostad, C., 2004. *The Structural Controls on Karst Development, Oparure Block, North Island, New Zealand*. Thesis submitted in partial fulfilment of the requirements for the Degree of Master of Science in Geology and Geophysics at the University of Calgary, Alberta, Canada.
- Health and Safety at Work Act (Asbestos) Regulations 2016.
- Maniapoto Māori Trust Board, 2018. *Maniapoto Environmental Management Plan (Ko Tā Maniapoto Mahere Taiao)*.
- Ministry for the Environment, 2006. *Identifying, investigating and managing risks associated with former sheep-dip sites: A guide for local authorities*.
- Ministry for the Environment, 2021a. *Contaminated Land Management Guidelines No. 1. Reporting on Contaminated Sites in New Zealand (Revised 2021)*.
- Ministry for the Environment, 2011a. *Hazardous Activities and Industries List (HAIL) October 2011*.
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- Pattle Delamore Partners Limited, 2019. *Woolshed Asbestos Survey and Assessment*.

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

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Waikato Regional Council, 2007. *Waikato Regional Plan*.

Waikato River Authority, 2008. *The Vision and Strategy for the Waikato River (Te Ture Whaimana o te Awa O Waikato); Restoring and Protecting the Health and Wellbeing of the Waikato River*.

Waitomo District Council, 2009. *Operative Waitomo District Plan*.

12.0 Limitations

This report has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by the Graymont (NZ) Limited and others (not directly contracted by PDP for the work), including Paul and Claire Grainger, Waikato Regional Council and Waitomo District Council. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

Owing to the limited nature of this assessment (as described in the Objectives and Scope of Work sections), there could be conditions at the site that have not been identified, and which have not been considered in this report. Thus, although the assessment has shown knowledge of possible sources of soil contamination, there is a risk that sources of soil contamination could exist which are not identified by the assessment. This risk could be reduced by undertaking further research or subsoil investigation.

The information contained within this document applies to an information review and site walkover undertaken on the dates stated in this document, or if none is stated, the date of this document. With time, the site conditions and the environmental standards referenced as part of this assessment may change. Accordingly, the reported assessment and conclusions are not guaranteed to apply at a later date.

This report has been prepared by PDP on the specific instructions of Graymont New Zealand Limited for the limited purposes described in the report. PDP accepts no liability if the report is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

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Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

Prepared by



pp Max Sharpe

Senior Environmental Geologist

Reviewed and Approved by



Susie Humphrey

Contaminated Land – Technical Director

Certifying Statement

I, Susie Humphrey of Pattle Delamore Partners Limited certify that:

1. This preliminary site investigation meets the requirements of the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 (the NES-CS) because it has been:
 - a. done by a suitably qualified and experienced practitioner, and
 - b. reported on in accordance with the current edition of *Contaminated Land Management Guidelines No 1 – Reporting on Contaminated Sites in New Zealand*, and
 - c. the report is certified by a suitably qualified and experienced practitioner.

Evidence of the qualifications and experience of the suitably qualified and experienced practitioner(s) who have done this investigation and certified this report is provided below.

This certification applies to the date of this report.

Signed



Susie Humphrey

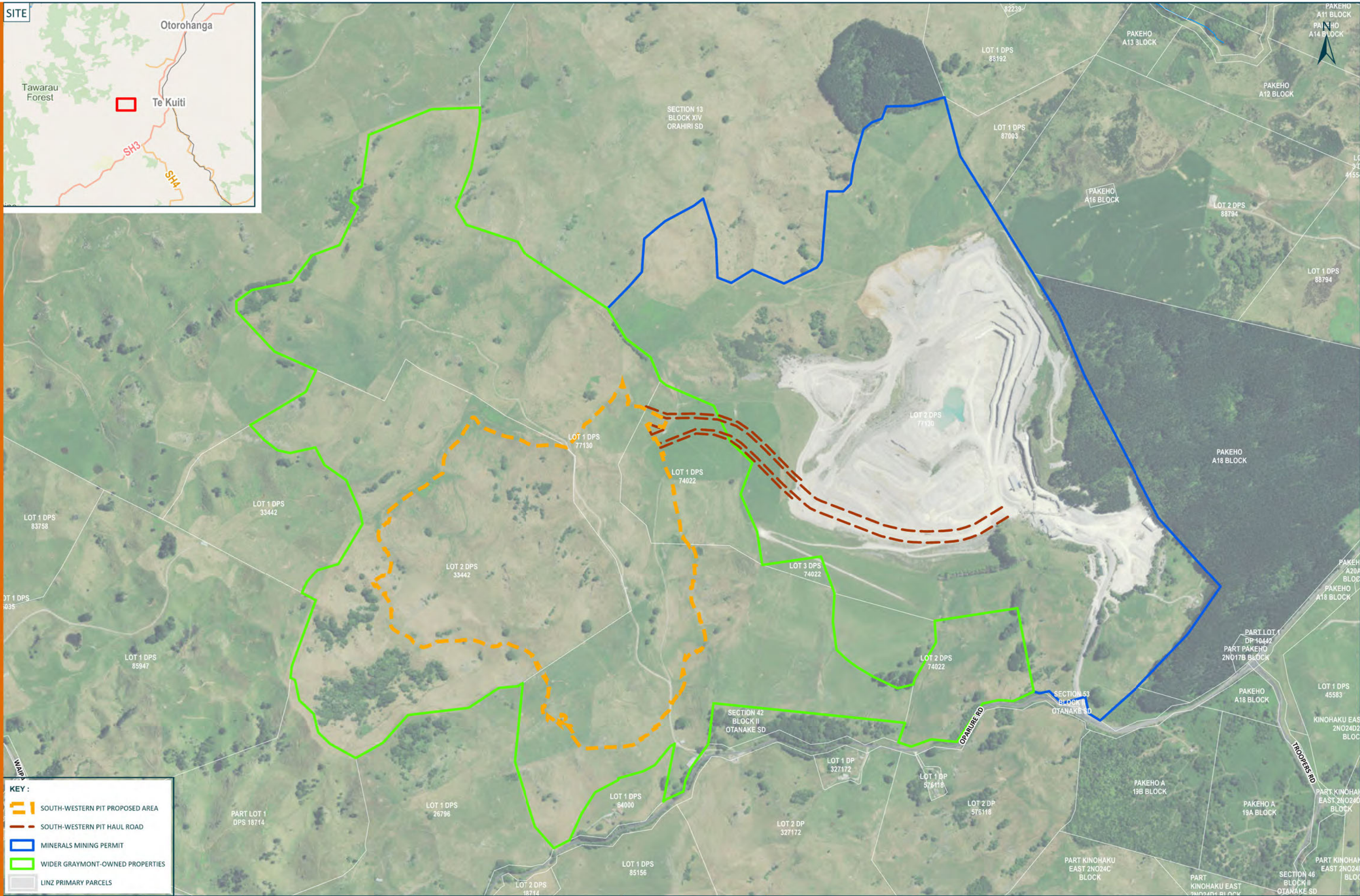
Technical Director – Contaminated Land

Susie Humphrey – Report Reviewer and Approver

Susie is an environmental scientist with over 16 years of experience in undertaking environmental and contaminated land assessments in New Zealand. She has a BSc in Geography from the University of Newcastle upon Tyne, England. Susie has experience with organising and undertaking site investigations, environmental assessments, and monitoring programmes for a range of environmental issues, across a broad range of media including soil, sediment, surface water, groundwater, and ground gas. She has a strong understanding of current contaminated land regulation and practice in New Zealand, including assessments under the NES-CS and the consenting of contaminated sites within the Waikato region. Susie is a Certified Environmental Practitioner – General (certification number 1041).



Appendix A – Figures



KEY :

- SOUTH-WESTERN PIT PROPOSED AREA
- SOUTH-WESTERN PIT HAUL ROAD
- MINERALS MINING PERMIT
- WIDER GRAYMONT-OWNED PROPERTIES
- LINZ PRIMARY PARCELS

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METRES

SCALE : 1:10,000 (A3)

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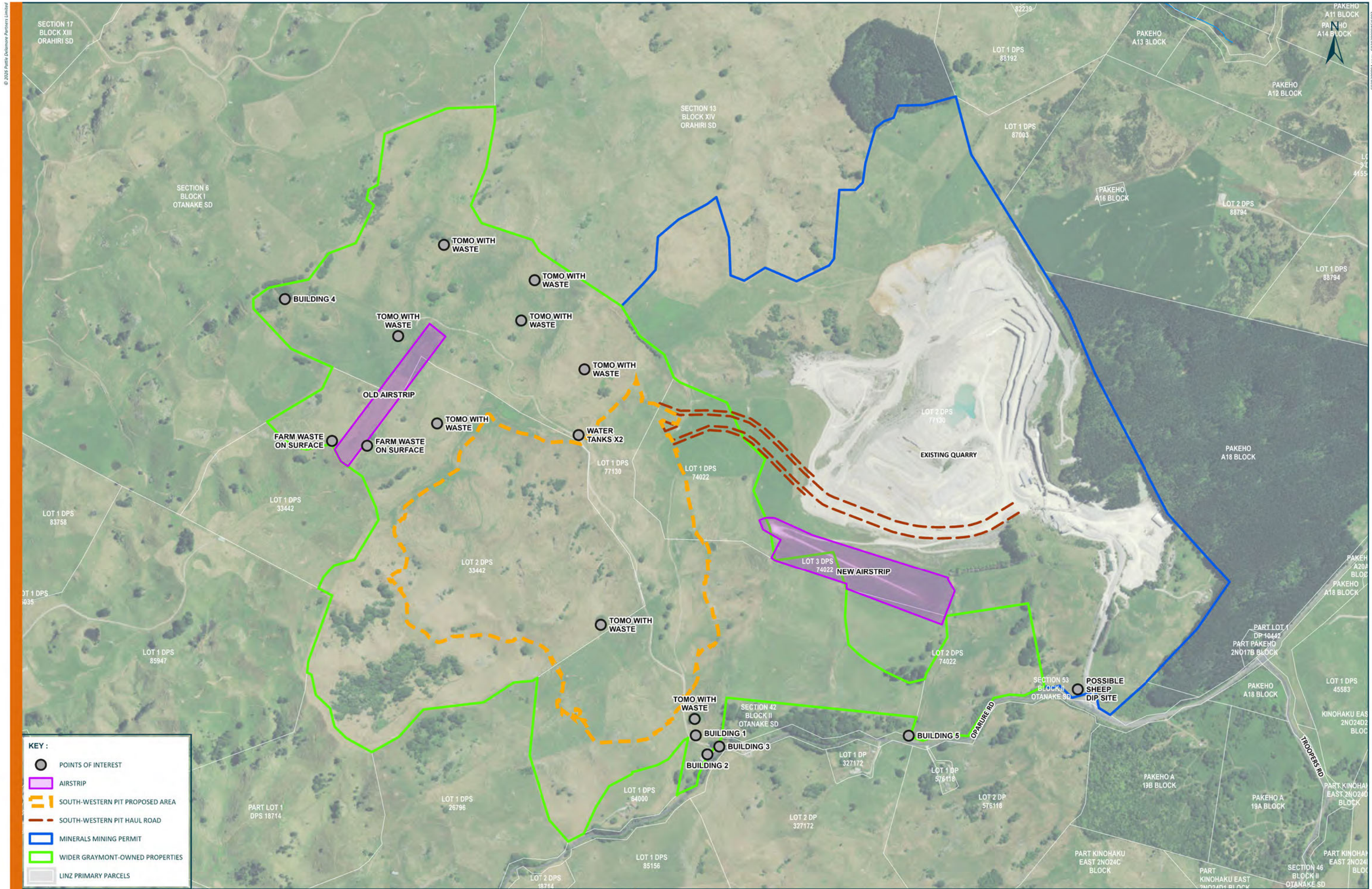
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FIGURE

FIGURE 1: SITE LAYOUT PLAN

PROJECT

OPARURE QUARRY SOUTH-WESTERN PIT



KEY :

- POINTS OF INTEREST
- AIRSTRIP
- SOUTH-WESTERN PIT PROPOSED AREA
- SOUTH-WESTERN PIT HAUL ROAD
- MINERALS MINING PERMIT
- WIDER GRAYMONT-OWNED PROPERTIES
- LINZ PRIMARY PARCELS



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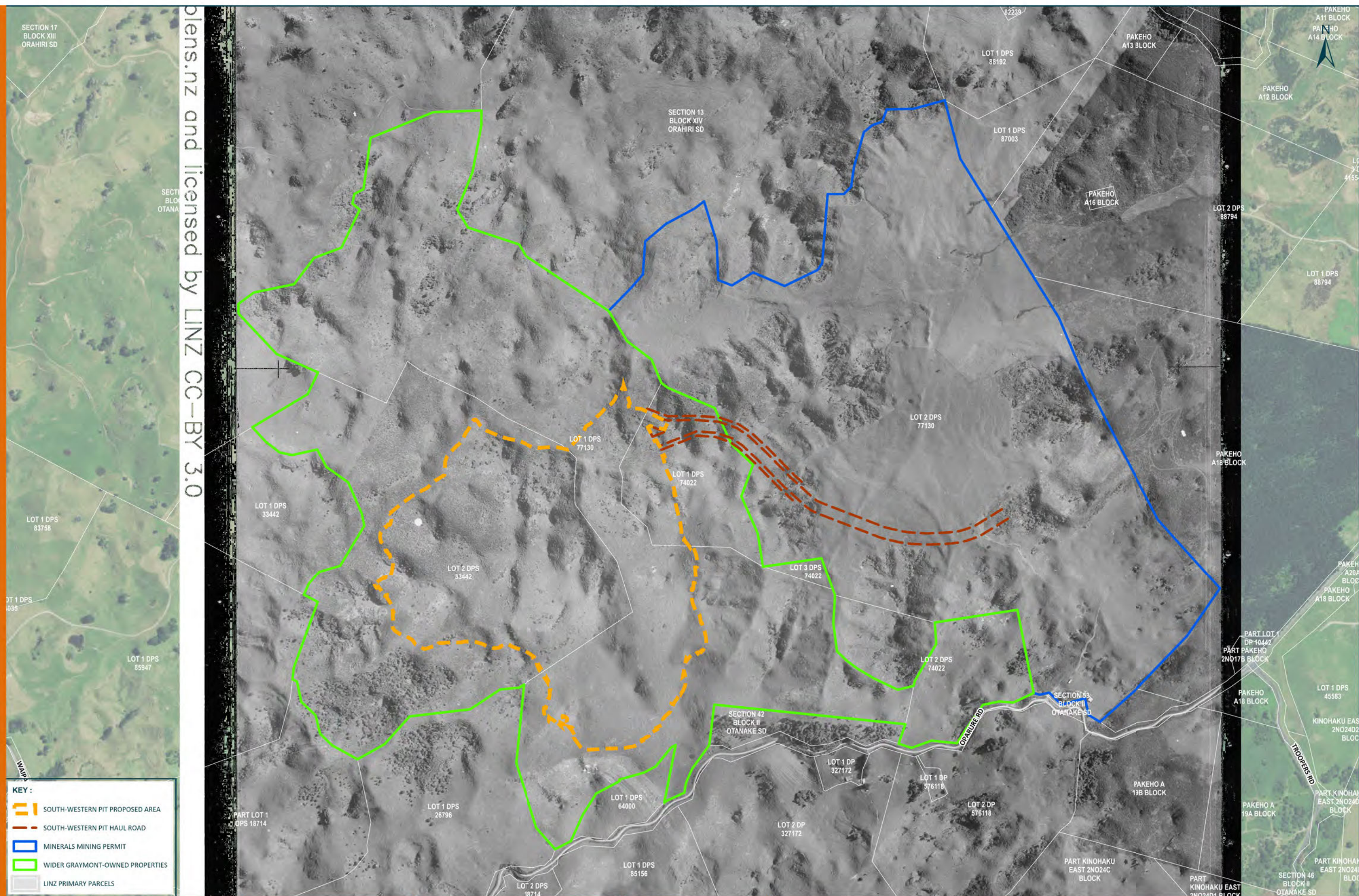
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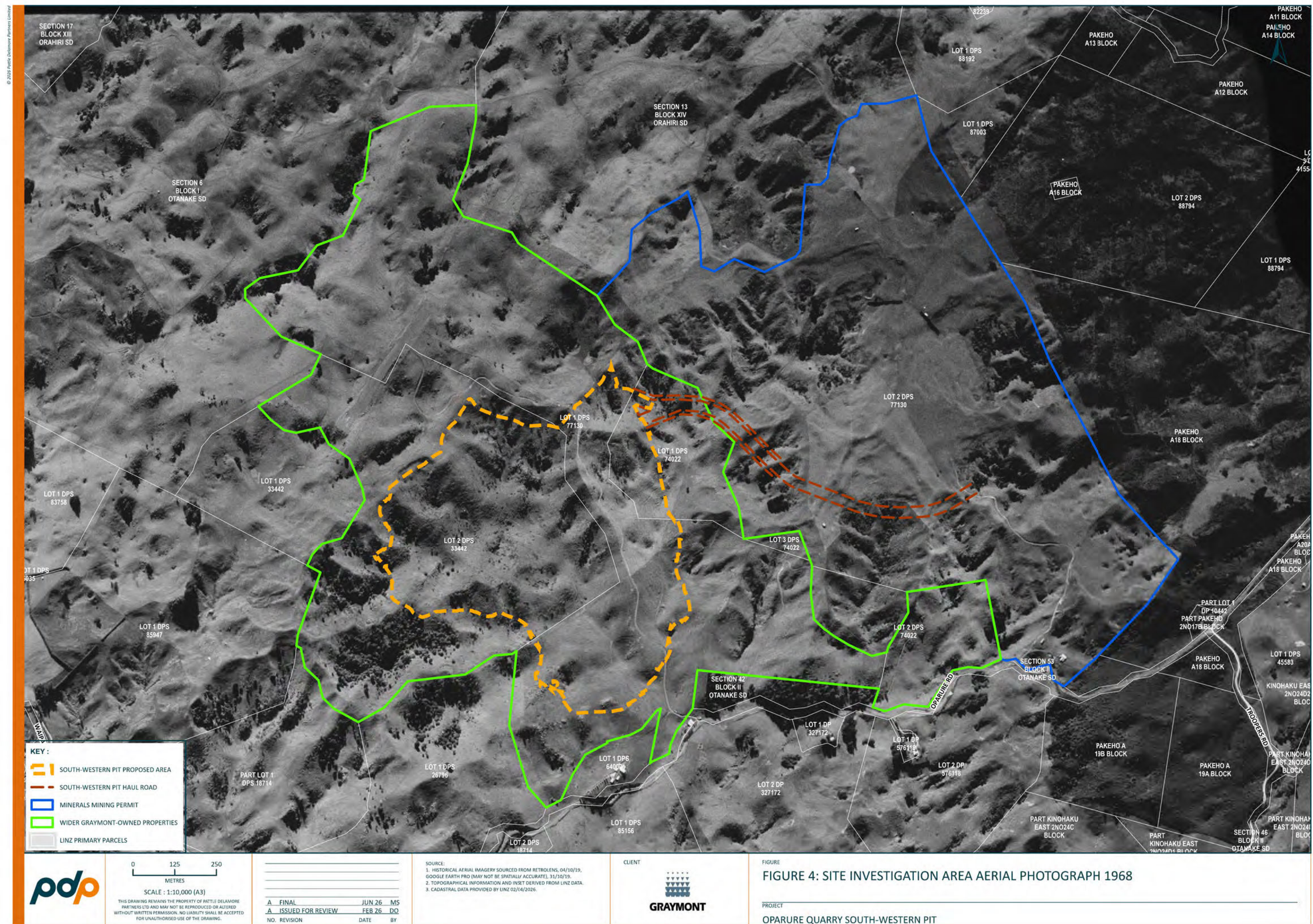
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FIGURE 2: LOCATION OF POTENTIAL GROUND CONTAMINATION ACTIVITIES

PROJECT
OPARURE QUARRY SOUTH-WESTERN PIT







KEY :

- SOUTH-WESTERN PIT PROPOSED AREA
- SOUTH-WESTERN PIT HAUL ROAD
- MINERALS MINING PERMIT
- WIDER GRAYMONT-OWNED PROPERTIES
- LINZ PRIMARY PARCELS



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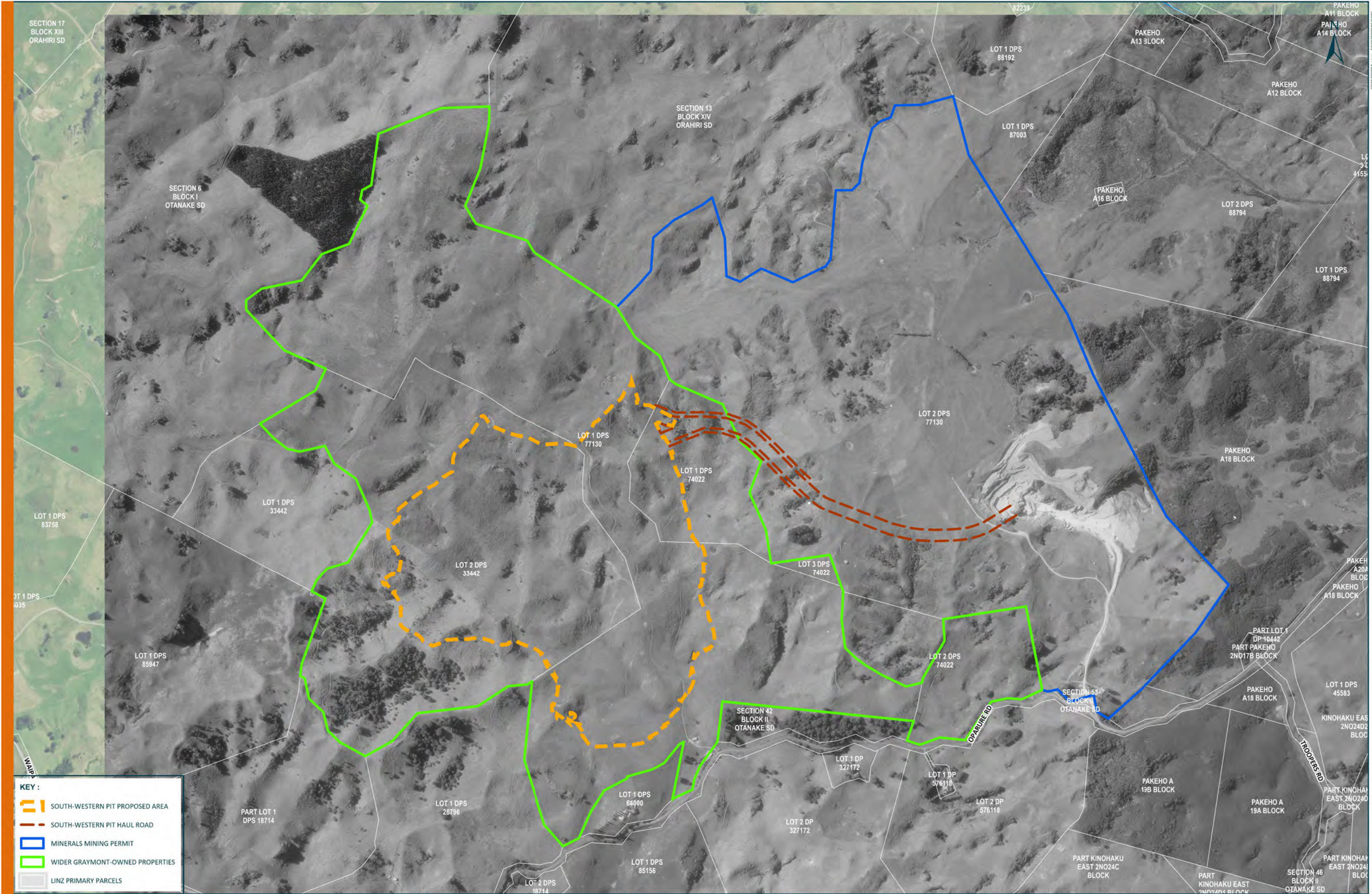
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2. HISTORICAL AERIAL IMAGERY SOURCED FROM RETROLANS, 04/10/19, GOOGLE EARTH PRO (MAY NOT BE SPATIALLY ACCURATE), 31/10/19.
3. TOPOGRAPHICAL INFORMATION AND INSET DERIVED FROM LINZ DATA.
4. CADASTRAL DATA PROVIDED BY LINZ 02/04/2026.

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FIGURE
FIGURE 5: SITE INVESTIGATION AREA AERIAL PHOTOGRAPH 1976

PROJECT
OPARURE QUARRY SOUTH-WESTERN PIT



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A	ISSUED FOR REVIEW	FEB 26	DO
NO.	REVISION	DATE	BY

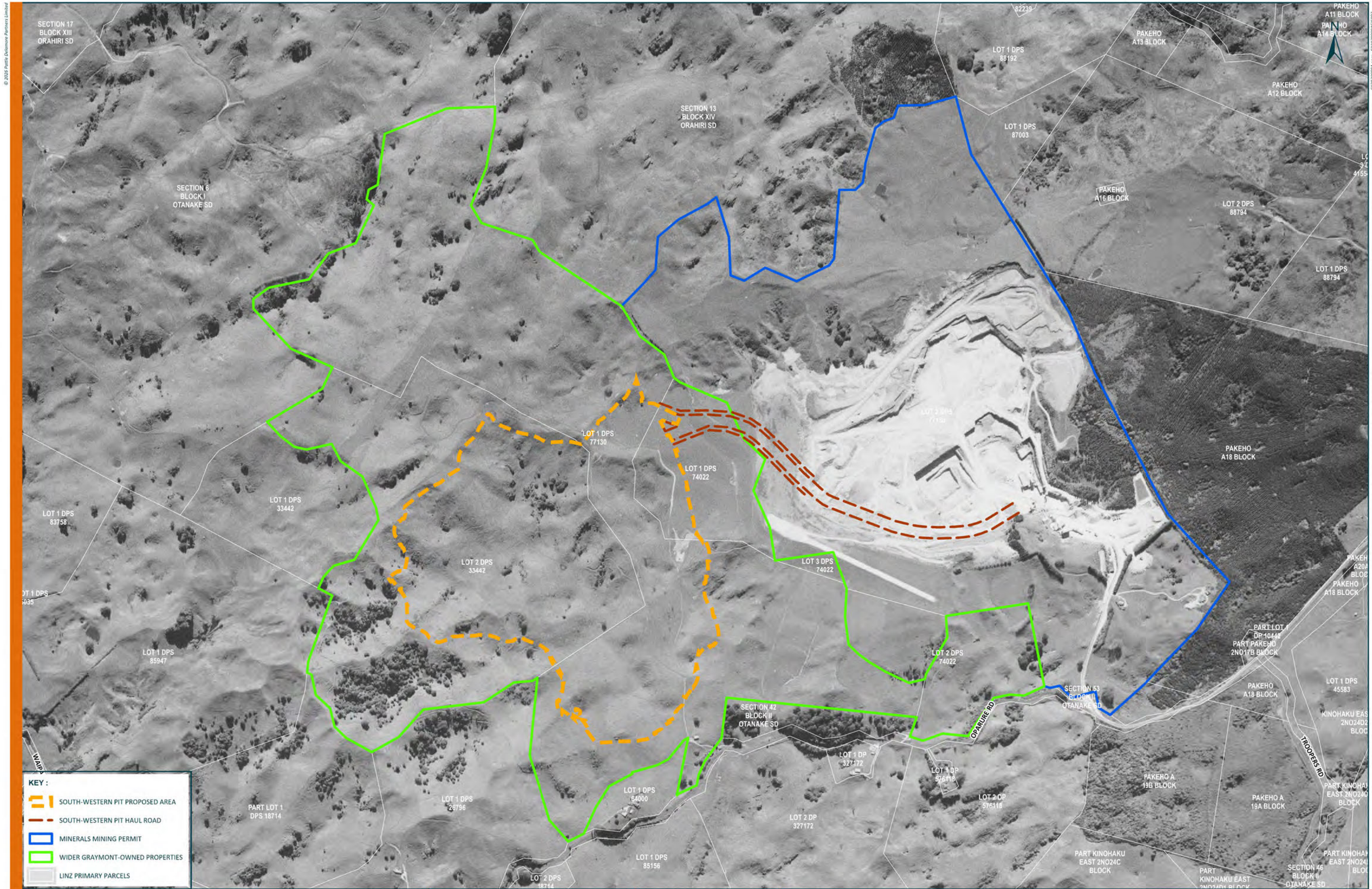
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2. HISTORICAL AERIAL IMAGERY SOURCED FROM RETROLENS, 04/10/19, GOOGLE EARTH PRO (MAY NOT BE SPATIALLY ACCURATE), 31/10/19.
3. TOPOGRAPHICAL INFORMATION AND INSET DERIVED FROM LINZ DATA.
4. CADASTRAL DATA PROVIDED BY LINZ 02/04/2026.

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GRAYMONT

FIGURE
FIGURE 6: SITE INVESTIGATION AREA AERIAL PHOTOGRAPH 1983

PROJECT
OPARURE QUARRY SOUTH-WESTERN PIT



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NO.	REVISION	DATE	BY

SOURCE:
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2. TOPOGRAPHICAL INFORMATION AND INSET DERIVED FROM LINZ DATA.
3. CADASTRAL DATA PROVIDED BY LINZ 02/04/2026.

CLIENT



FIGURE

FIGURE 7: SITE INVESTIGATION AREA AERIAL PHOTOGRAPH 2001

PROJECT

OPARURE QUARRY SOUTH-WESTERN PIT

Appendix B – Waikato Regional Council Land Use Information Register Enquiry

Max Sharpe

From: Dau Hawng Dau
Sent: Saturday, 21 February 2026 2:40 pm
To: Susie Humphrey; Max Sharpe
Subject: Fw: Land Use Information Register enquiry Part of 806 Oparure Road, Otorohanga (REQ228721) LUI12777 and LUI06628

Get [Outlook for iOS](#)

From: Guy Sowry <[REDACTED]>
Sent: Saturday, February 21, 2026 11:32:19 AM
To: Dau Hawng Dau [REDACTED]
Subject: Land Use Information Register enquiry Part of 806 Oparure Road, Otorohanga (REQ228721) LUI12777 and LUI06628

Dear Dau,

Thank you for your enquiry regarding information the Waikato Regional Council may hold relating to potential contamination at the property indicated below:

Part of 806 Oparure Road, Otorohanga: LOT 1 DPS 77130 (part of VGN 0581141804)



Part of 806 Oparure Road, Otorohanga: LOT 1 DPS 74022 (part of VGN 0581141804)



Part of 806 Oparure Road, Otorohanga: LOT 2 DPS 3422 (part of VGN 0581141804)



Background: The Waikato Regional Council maintains a register of properties known to be contaminated on the basis of chemical measurements, or potentially contaminated on the basis of past land use. This register (called the Land Use Information Register) is still under development and should not be regarded as comprehensive. The 'potentially contaminated' category is gradually being compiled with reference to past or present land uses that have a greater than average chance of causing contamination, as outlined in the Ministry for the Environment's Hazardous Activities and Industries List (HAIL):
<http://www.mfe.govt.nz/sites/default/files/hazards/contaminated-land/is-land-contaminated/hazardous-activities-industries-list.pdf>

This property : I can confirm that this site **does** appear on the Land Use Information Register, as indicated by the yellow dot on the map below.



At or about the yellow dot above appears on the Land Use Information Register as **LUI12777** with a classification of 'Unverified HAIL' due to past land use for HAIL activity 'A8. Livestock dip or spray race operations' associated with this pastoral farm . This site is included on the register for land use information only; we do not hold soil investigation reports regarding the presence or otherwise of hazardous substances in the soil.



At or about the yellow dot above appears on the Land Use Information Register as **LUI06628** with a classification of 'Unverified HAIL' due to past land use for HAIL activity 'A6. Fertiliser bulk storage' associated with this pastoral farm. This site is included on the register for land use information only; we do not hold soil investigation reports regarding the presence or otherwise of hazardous substances in the soil.

District Councils: Our records are not integrated with those of territorial authorities, so it would also be worth contacting the Waitomo District Council to complete your audit of Council records if you have not already done so. In general, information about known contaminated land will be included on a property LIM produced by the territorial authority.

Rural Land Considerations: Examples of sites that are "more likely than not" to have soil contamination (HAIL sites) include timber treatment activities, service stations and/or petroleum storage, panel beaters, spray painters, etc. Whilst pastoral farming is not included on this list, typical farming activities of horticulture, sheep dipping, chemical storage, petroleum storage and workshops are; but are more difficult to identify and may not be as well represented on the Land Use Information Register. Therefore, individuals interested in pastoral land may be interested in completing further investigations in accordance with Ministry for the Environment Guidelines prior to land purchase and/or development.

Additional Information: Please note that:

- *

Significant use of lead-based paint on buildings can, in some cases, pose a contamination risk; the use of lead-based paint is not recorded on the Land Use Information Register.

- *

Buildings in deteriorated or derelict condition which contain asbestos can result in asbestos fibres in soil; the use of asbestos in building materials is not recorded on the Land Use Information Register.

● *

The long term, frequent use of superphosphate fertilisers can potentially result in elevated levels of cadmium in soil; the use of superphosphate fertiliser is not recorded on the Land Use Information Register.

● *

We are not currently resourced to fully incorporate historic aerial photographs in our region-wide assessment of HAIL activities. A significant proportion of the Crown historical aerial image archive for the Waikato region is available to view free of charge at <http://retrolens.nz/>. We recommend this resource is consulted for any HAIL assessment.

● *

Due to the large volume of enquiries being received, we may not be able to respond to your enquiry as quickly as previously. We are resourced to meet **20 day** response times as per LGOIMA, but endeavour to respond more quickly when workload permits. If your enquiry is urgent, please note this first in your enquiry and we will do our best to assist.

Please feel free to contact me if you have any further queries on this matter. For any new enquiries or requests for information please continue to use the [Request for Service form](#) for 'Contaminated Land/HAIL.'

Kind regards

Guy

Guy Sowry | CONTRACTOR | Land and Soil, Science and Strategy
WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato
P: [REDACTED]
F: [facebook.com/waikatoregion](https://www.facebook.com/waikatoregion)
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

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Appendix C – Photographic Log



Photograph 1: General landscape of the site.



Photograph 2: View facing south west of a former airstrip (Grainger Farm airstrip) which is located in the north-western portion of the site.



Photograph 3: View facing south east of the Oparure Lime Quarry (McDonalds Lime Ltd Quarry) airstrip located to the south-east of the site.



Photograph 4: Fencing timber on ground in the west portion of the site adjacent to the former airstrip.



Photograph 5: View facing north of water tanks in the north-eastern portion of the site.



Photograph 6: View of the typical waste (predominantly fencing materials) observed in some of the tomos at the site.



Photograph 7: View of waste and vegetation within the tomo closest to Building 1 in the southern section of the site.



Photograph 8: View of Building 1 facing south west in the southern section of the site. Building used for storing a tractor and farming equipment.



Photograph 9: View of the farm equipment and small diesel above ground storage tank located in Building 1.



Photograph 10: View of Building 2 facing south on the southern site boundary. Building used as wool shed (for shearing), livestock pen and livestock spraying area; Oparure Road is visible beyond the building.



Photograph 11: View of livestock spraying equipment and chemicals located on unsealed ground within the livestock pen in Building 2.



Photograph 12: View of livestock spraying equipment in Building 2.



Photograph 13: View of broken asbestos containing cement sheet on the southern exterior wall of Building 2.



**Photograph 14: View of Building 3 facing south on the southern site boundary; Oparure Road is visible beyond the building.
Building used to store wool off cuts.**



Photograph 15: View facing east of asbestos cladding on the building and roofing in the lean-to at Building 3.



Photograph 16: View of asbestos cement sheet being stored in the lean-to at Building 3.



Photograph 17: View facing west of the vicinity of Building 4 located within the heavily vegetated gully in the north-western boundary of the site. The building is used for storing a water pump.



Photograph 18: View of the pump within Building 4; a small stream is visible beyond the building. Minor motor oil spill identified by the arrow.



Photograph 19: View of oil containers and old parts within Building 4.



Photograph 20: View facing north of a stockyard and livestock loading pen (Building 5) located in the south-eastern portion of the site adjacent to Oparure Road.

Appendix D – HAIL Activities Landowner Questionnaire

Preliminary Site Investigation (Contaminated Land) Landowner Questionnaire

Question	Answer
What are the current land use activities on your property?	Sheep + Beef grazing
Are you aware of any different uses of your property historically? If so, what were they?	No
Are there any chemicals and/or fuels stored on your property? If so, are you able to indicate where and provide a high-level estimate of quantities?	No
Are there any current and/or historic livestock spray or dip areas on your property? If so, are you able to indicate where on your property?	No - except for sheep dip Corner Graymont driveway and Oparure Rd. (~806 Oparure Rd)
Are you aware of any buildings/sheds that have been demolished/removed from your property? If so, are you able to indicate where on your property?	No
Are you aware of any current and/or historical refuse dump sites on your property? If so, are you able to indicate where on your property?	No
Are you aware of any current and/or burn piles on your property? If so, are you able to indicate where on your property?	No