



12 January 2024

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Dear Jo,

UPDATED - SUTTON BLOCK EXTENSION TO DRURY QUARRY - PRELIMINARY SITE INVESTIGATION

1.0 Introduction and Background

Pattle Delamore Partners Limited (PDP) has been engaged by Stevenson Aggregates Limited (SAL) to undertake a Preliminary Site Investigation (PSI) of the Sutton Block, which comprises part properties located at 1189 Ponga Road, 121 MacWhinney Drive and Quarry Road, Drury, Auckland (collectively referred henceforth as 'the site'; refer white outline of property parcels in Figure 1). It is understood that that works proposed in the Sutton Block are to extend the current Drury Quarry with similar quarry operations including stripping of overburden and mining of aggregate, along with ancillary quarrying activities (refer to Section 1.1 below for a summary of the 2023 revised Sutton Block pit extension proposal). Key areas of interest for the further use of the two properties are the future quarry pit extension (refer to Figure 1), which is expected to cover:

- ∴ The majority of grassed land located on 1189 Ponga Road and excludes areas of native bush land in the northern and eastern sections of the property, and the area of Ballards Cone in the south of the property;
- ∴ The eastern grassed land located on 121 MacWhinney Drive and excludes areas of native bush land in the western and the southern parts of the property, and Ballards Cone within this property parcel; and
- ∴ The northernmost grassed land located on part Quarry Road.

Accordingly, this PSI is limited to these areas of interest within the site as the remainder of the property areas are not intended to be impacted by the future quarry pit extension.

The Sutton Block has been under shrubland/pastoral land use since at least 1942 (based on the first available aerial image). The current land use at the site continues to be shrubland/pastoral land use, including a few farm dwellings and ancillary structures. The site also comprises an area named 'Ballard's Cone', a wāhi tapu historic pa site, which is located between the current pit and the Sutton Block. No works are proposed in the Ballard's Cone location.



This report investigates and summarises the actual and/or potential contaminated land issues associated with the current and historical use of the site. This report has been prepared to satisfy the requirements of the following national and regional consenting frameworks for contaminated land management:

- ✧ Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 (NES-CS); and
- ✧ Section E30 Contaminated Land rules in the Auckland Council Auckland Unitary Plan: Operative in Part (AUP-OP) (AC, 2021).

This PSI has been directed and reviewed by Suitably Qualified and Experienced Practitioner (SQEP) with respect to contaminated land and has been undertaken in accordance with the Ministry for the Environment's (MfE's) *Contaminated Land Management Guidelines (CLMG) No.1 – Reporting on Contaminated Sites in New Zealand* (MfE, 2021a) and the relevant sections of *CLMG No.5 – Site Investigation and Analysis of Soils* (MfE, 2021b). A certifying statement to this effect is provided in Appendix A.

1.1 Project Description for the 2023 Revised Sutton Block Pit Extension

SAL Drury Quarry is located in Drury, within the Auckland Region, and has been in operation for over 80 years. Drury Quarry is a greywacke hard rock quarry supplying concrete, asphalt and roading aggregate to the Auckland market. The Drury Quarry pit is located within the wider landholdings owned by SAL which encompasses an area of approximately 562 ha. This landholding includes quarry activities, a clean fill, farmland and large swathes of native vegetation.

Based on current demand estimates, the existing pit will provide approximately 20 years of aggregate supply to Auckland. To continue to provide a local supply of aggregate resource SAL, proposes to develop a new pit within the existing site, called 'the Sutton Block'. The Sutton Block pit has been designed to provide approximately 185 million tonnes of additional aggregate to supply the market.

The Sutton Block is located to the northeast of the existing pit. The development of the Sutton Block will involve the staged development of an area of approximately 87.7 ha to a maximum pit depth of approximately 60 m RL. The Sutton Block is designed to be a separate quarry pit although it will be serviced by the existing Drury Quarry ancillary site infrastructure and facilities.

Further details are provided in the *Drury Quarry, Sutton Block, Assessment of Environmental Effects* (AEE) report (Tonkin + Taylor, in preparation).

2.0 Objectives

The key objective of the PSI is to identify any actual or potential sources of ground contamination, including Hazardous Activity and Industry List (HAIL¹) land use, within the site, either from historical or current land uses, activities and/or structures at the site; and to summarise the relevant information in this report.

¹ 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.

3.0 Scope of Work

The scope of work undertaken by PDP, as agreed with SAL, included:

- ✧ A desktop review of a selection of publicly available historical aerial images, Auckland Council property files², and an Auckland Council (AC) site contamination enquiry (SCE) for the site;
- ✧ A site visit to observe the site, and the features noted during the desktop review; and to identify any additional actual or potential contamination sources and their locations at the site;
- ✧ Conducting interviews with people who are familiar with the historical and current use of the site;
- ✧ Identification of actual or potential impacted ground/HAIL land use as a result of current or former site uses; and
- ✧ Development of a Conceptual Site Model (CSM) to indicate the potentially complete source-pathway-receptor linkages at the site.

The above is to be summarised in this report, completed under the direction of a SQEP in Contaminated Land, in accordance with the MfE CLMG requirements.

4.0 Site Description

The site comprises the future quarry pit extension comprising parts of the properties located at 1189 Ponga Road, 121 MacWhinney Drive and part Quarry Road (refer Figure 1).

Table 1: Property Information	
Site Address	Description
1189 Ponga Road	SECT 2 SO 467566, ALLOT 37 Parish OF HUNUA, ALLOT 198 Parish OF HUNUA, ALLOT 190A Parish OF HUNUA, SPO 190 ALLT 190 PARO Hunua, ALLOT 191 Parish OF HUNUA, ALLOT 197 Parish OF HUNUA
121 MacWhinney Drive	LOT 4 DP 509893, LOT 5 DP 509893, LOT 1 DP 126627
Quarry Road (part)	PT ALLOT 152 SETT OF MAKETU SUB SEC 2 PSH OPAHEKE, LOT 2 DP 41441, ALLOT 168 Sbrn Sec 2 Parish of Opaheke, LOT 1 DP 46285, ALLOT 175 Sbrn Sec 2 Parish of Opaheke, SECT 1 SO 467566, Lot 2 DP 19546, Lot 1 DP 19546, Lot 1 DP 32801, ALLOT 211 SUB SEC 2 Paris

The total area (three properties combined) is approximately 414.7702 hectares in size; however, the future quarry pit extension (which is the focus of this PSI) will be significantly smaller in size (as shown in Figure 1). The remainder of the properties has not been assessed as part of this PSI as they will not be impacted by the future quarry pit extension.

The current site comprises the future quarry pit extension zone only and is pastoral land with farm dwellings and ancillary structures including: the main dwelling and ancillary structures including three storage sheds, a shearing shed and two wooden structures at 1189 Ponga Road. The site is zoned as 'Special Purpose – Quarry Zone', and as 'Rural Zone'.

² Property files are requested for 1189 Ponga Road and 121 MacWhinney Drive only. A property file for Quarry Road (due to this site being largely covered by the existing quarry site) has not been requested at this time but historical aerial images will be reviewed as a priority to identify actual/potential contaminated land issues in this area of the site.

Surrounding land use appears to be rural residential blocks to the north, and east. The existing Drury Quarry is located to the south, with rural residential properties beyond. The Drury South development exists to the west of the existing pit, comprising both industrial and urban residential activities. Refer to Section 5.3 for a full description of the site and surrounds observed during the site visit.

4.1 Geology, Hydrogeology and Topography

The Geological Map of Auckland (Edbrooke, 2001) indicates that the site area is underlain by three major geological formations being, greywacke of the Waipapa Group, fine-grained and coarse-grained, porphyritic, olivine basalt, basanite and hawaiite lava flows and carbonaceous mudstone and claystone with coal seams, minor sandstone and rare conglomerate of the Waikato Coal Measures.

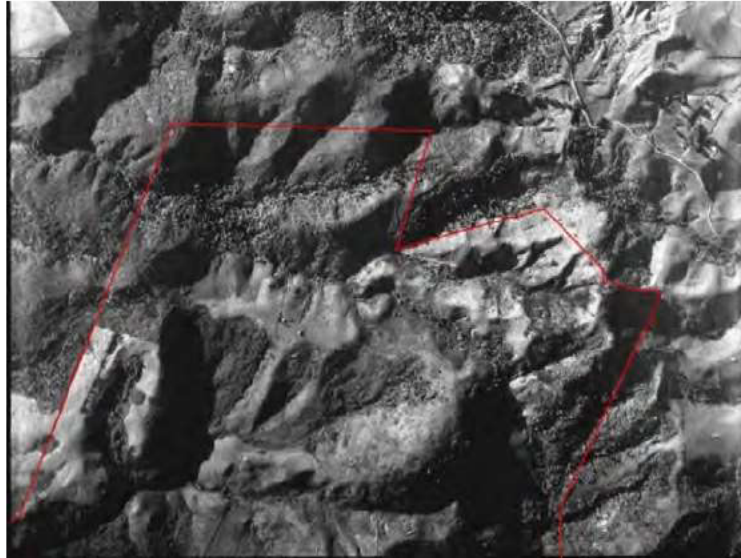
The site has a topographic high in the north-eastern corner of the site (~300 m RL) and gently slopes away to a topographic low of ~50 m RL at the south-western part of the site.

Groundwater at the site is expected to generally flow in a westerly direction towards Hingaia Stream.

5.0 Background Information

5.1 Historical Aerial Photographs

A selection of publicly available historical aerial images was obtained and reviewed in order to identify any land features or activities at the site that could indicate potential HAIL activity and/or contaminated land impacts to ground. Aerial photographs from 1942 to 1981 were accessed via the Retrolens website (<http://retrolens.nz/>), the aerials between 1996 and 2017 were accessed from the Auckland Council GIS viewer (<https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html>) and the 2021 aerial was accessed via Google Earth. A review of the electronic versions of the available historical aerial imagery was undertaken for the entirety of 1189 Ponga Road and 121 MacWhinney Drive and for the northern part of Quarry Road. Therefore, closer inspection and identification of some features that may not be apparent in the images as shown in Table 2 was possible. A summary of the aerial photograph review is provided in Table 2.

Table 2: Historical Aerial Review**1942 Northern Aerial**

The 1942 aerial is the oldest photograph available for the site, no aerial photograph exists covering the entirety of the site and therefore two images were chosen, one covering the northern part and one covering the southern part of the site. The northern part of the site appears to be largely scrubland/pastoral land. Two structures (a main dwelling and shed) are visible on the northern part of 1189 Ponga Road.

The surrounding land to the north and east appears to be shrub/pastoral use with rural/residential dwellings sparsely present around the area.

**1942 Southern Aerial**

The southern part of the site appears to be scrubland/ pastoral land.

The surrounding land to the west, east and south appears to be shrub/pastoral use with rural/residential dwellings sparsely present around the area.

Table 2: Historical Aerial Review**1961 Aerial**

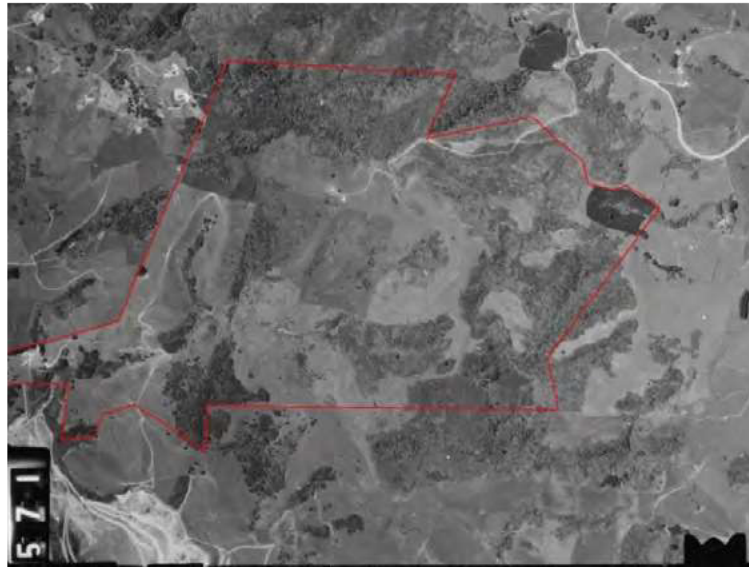
1189 Ponga Road remains largely as described in 1942. However, several developments including four dwellings and ancillary structures were established in the southwestern corner of the site (not part of the future quarry pit extension) and one structure was established in the central part of 121 MacWhinney Drive.

Quarrying operations of the Drury Quarry have commenced to the south-west of the site. The remainder of the surrounding land is largely as described for 1942.

**1969 Aerial**

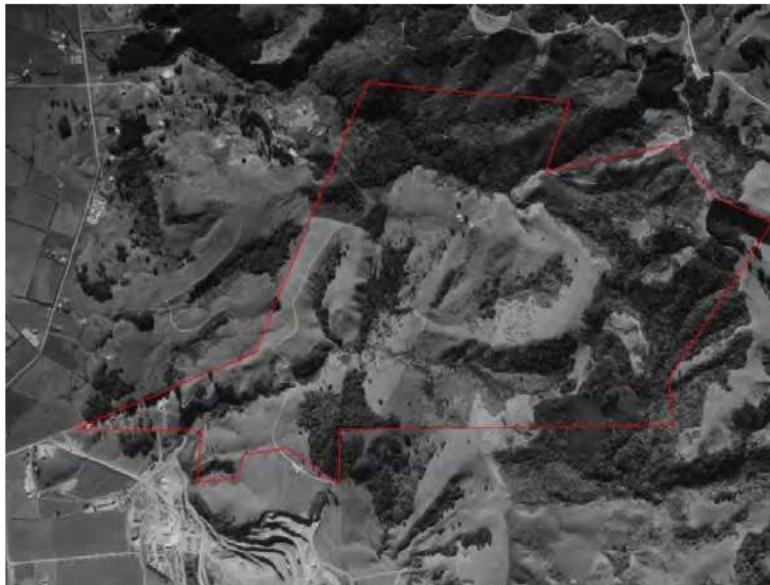
The site is largely as described in 1961. However, two additional dwellings were established at the western tip at 121 MacWhinney Drive (not part of the future quarry pit extension) while the dwelling in the central part of 121 MacWhinney Drive, previously visible in the 1961 aerial image appears to have been demolished/removed.

The surrounding land is largely as described for 1961, however, it appears that the quarry operations have been intensified and the number of residential properties has slightly increased.

Table 2: Historical Aerial Review**1977 Aerial**

The site remains largely as described for 1969.

The surrounding land is largely as described for 1969.

**1981 Aerial**

Two sheds (Storage Shed 2 and 3) have been constructed to the south of the main dwelling and a wooden structure has been constructed to the east of the shearing shed at 1189 Ponga Road. Three additional structures have been established in the western tip of 121 MacWhinney Drive (not part of the future quarry pit extension). The remainder of the site is largely as described for 1977.

The surrounding land is largely as described for 1977.

Table 2: Historical Aerial Review**1996 Aerial**

The site remains largely as described for 1981 apart from the construction of an additional shed (Storage Shed 1) to the southeast of the main dwelling at 1189 Ponga Road.

The surrounding land is largely as described for 1981, however, it appears that the Drury Quarry operations have been intensified and the number of residential properties present to the west has slightly increased.

**2008 Aerial**

An additional wooden structure has been built to the west of the main dwelling at 1189 Ponga Road. One structure has been built on the north-eastern part of 121 MacWhinney Drive and five structures have been removed from the western part of 121 MacWhinney Drive (not part of the future quarry pit extension).

The surrounding land is largely as described in 1996, however, it appears that the number of residential properties present to the west has slightly increased.

Table 2: Historical Aerial Review**2017 Aerial**

All buildings except for the western most shed have been removed from 121 MacWhinney Drive and earthworks appear to be taken place (not part of the future quarry pit extension), and the shed observed on the north-eastern part of 121 MacWhinney Drive appears to have been removed. The remainder of the site remains largely as described in 2008.

The surrounding land use remains largely as described for 2008, except for an extension of the Drury Quarry northward.

**2021 Aerial**

The site remains largely as described for 2017 apart for the demolition of the western most dwelling (not part of the future quarry pit extension) and a new building appears to have been constructed in the central part of 121 MacWhinney Drive.

The surrounding land use remains largely as described for 2017, except for an extension of the Drury Quarry northward.

5.2 Auckland Council Information

5.2.1 Property Files

Copies of the property files for 121 MacWhinney Drive and 1189 Ponga Road were reviewed for relevant information pertaining to the historical land use and any potential for contamination to have occurred at the property. Although the files provided information confirming the development history of the property, no pertinent information relating to ground contamination was found in the 121 MacWhinney Road property file. The 1189 Ponga Road property file included similar documentation, although also included a copy of a AC Site Contamination Enquiry logged below.

A property file for the Quarry Road property has not been requested as the majority of the property is a part of the Drury Quarry operations with only the northernmost section being included as part of the proposed works for the Sutton Block but it will not be included in the future quarry pit extension.

5.2.2 Site Contamination Enquiry

A Site Contamination Enquiry (SCE) was submitted to AC on 24 September 2021 and was received on 7 October 2021.

In summary the SCE identified:

- ∴ 121 MacWhinney Drive as a potential HAIL site due to the property being licensed for the storage of hazardous substances in 2004, including three underground fuel storage tanks (USTs), one above ground fuel storage tank (AST) and multiple cylinders of acetylene and LPG (HAIL Category A17 – storage tanks or drums for fuel, chemicals, or liquid waste). It is assumed that these records relate to the use of this site as an active quarry.
- ∴ Part of 121 MacWhinney Drive as a potential HAIL site due to the property being consented for the disposal of managed fill to create a noise bund (HAIL Category G3 – land fill site), however, the area in question is not part of the future quarry pit extension.
- ∴ 1189 Ponga Road as a potential HAIL site due to the utilisation of the property for spray race and sheep dip activities (HAIL Category A8 – livestock dip or spray race operations). It was noted that the former sheep dip was located in the area of the farm buildings (see Figure 2).

The SCE also identified the following within a 200 m radius of the site:

- ∴ A total of 8 records of local bores. The majority of these appear to be installed for monitoring purposes and chemical testing. Three bores for investigation purposes are expired, 6 bores were installed in 2015 for monitoring/investigation purposes.
- ∴ A total of 5 records of consents; 3 expired consents relate to bores, 1 surrendered consent and 1 active discharge associated with the importation of managed fill at Drury Quarry.
- ∴ A total of 1 permitted activity associated with the drilling and construction of three bores for monitoring/investigation purposes as part of the consent conditions for the permit 40317.

Further discussion of the HAIL designation for the site is provided in Section 5.5.

The AC site contamination enquiry is appended to this report (Appendix B).

5.3 Site Visit

A site visit was completed under the direction of a SQEP on 3 December 2021 to physically inspect parts of the site for potential impacted ground areas/HAIL use. Refer to Figure 1 and Figure 2 for the location of features described.

The findings of the site visit are summarised below, and associated photographs with items of note are provided in Appendix C.

Table 3: Site Visit Summary	
General Site Observations	The site is utilised as a farm with predominantly pastoral land use for the rearing of cattle and sheep. An area in the northern central section on 121 MacWhinney Drive is currently utilised for the production of higher protein feed (see Appendix C: Photograph 2). The site comprises 1 main dwelling (which was occupied at the time of the site visit) and associated farm/shearing sheds/structures. Small amounts of refuse: plastic, tyres and metal were observed on the surface surrounding the main dwelling. A small area of earthworks was observed to the northeast of the main dwelling (see Appendix C: Photograph 15) and a small stockpile (approximately 30 m³) consisting of light brown silts and gravel (see Appendix C: Photograph 3) was observed to the east of the wooden structure. No staining of soils, potential asbestos containing material ('PACM') nor refuse was noted within the stockpiled soil. In general, the site walkover noted no specific evidence of: ✧ Significant waste disposal to land, and/or uncontrolled fill material; ✧ Odour, staining or chemical impact to ground surface; and ✧ Storage of dangerous goods, fuels and/or chemicals.
Eastern Potential Spray Race/Sheep Dip	A wooden structure which could potentially have been used as a spray race/sheep dip was observed (see Appendix C: Photographs 4 and 5). Some stressed/dying grass within the structure was noted.
Western Potential Spray Race/Sheep Dip	A wooden structure which could potentially have been used as a spray race/sheep dip operation was observed, including a metal roofed shelter structure without walls (see Appendix C: Photographs 13 and 14).
Main Dwelling	The main dwelling consisted of painted weatherboard cladding and a painted metal roof (see Appendix C: Photograph 12). The building material of the gable and baseboard of the dwelling could not be clearly identified and have the potential to be either painted cement sheet (i.e. PACM) or wood. Closer inspection was not possible due to the property fence being locked at the time of the site visit. The gable and baseboard were noted to be in good condition. A carport with metal roof was located adjacent to the main dwelling.

Table 3: Site Visit Summary

Shearing Shed	A shearing shed was observed with painted metal cladding and roof (see Appendix C: Photographs 6,7 and 8). Three small chemical containers noting modern sheep and cattle pesticides were observed within the shed. Several pieces of PACM were observed on the ground within and immediately adjacent to the shed with no obvious source of this material being identified. No ground staining or other PACM was observed.
Storage Shed 1	A storage shed with painted metal cladding and roof was observed (see Appendix C: Photograph 9). A tractor, wood and metal were stored inside the shed. No signs of ground staining or PACM were observed.
Storage Shed 2	A storage shed with metal cladding (unpainted) and painted metal roof was observed (see Appendix C: Photograph 10). A lawn mower and wood were stored within the shed. No signs of ground staining or PACM were observed.
Storage Shed 3	A painted wooden shed with metal roof was observed (see Appendix C: Photograph 11). The shed interior could not be accessed as it was located behind the locked fence of the dwelling.
Noise Bund	The construction of the noise bund located at 121 MacWhinney Drive was observed to have been completed and revegetated. This area is expected to be outside of the future quarry expansion zone.
Other structures	The dwelling identified in the aerial image review on the central part of 121 MacWhinney Drive was no longer located in this area of the site. No obvious building material was observed on the ground within the former building footprints during a drive by, however a close-up inspection was not performed. Several water storage tanks were observed across the site. These were either constructed from plastic or concrete (i.e. no PACM was observed).

5.4 Interviews

An interview with Ms Jo Young (Natural Resource Planner, Stevenson Aggregates Limited) and Mr Jayden Ellis (Business Services Manager, Stevenson Aggregates Limited) was conducted via email as provided in Appendix D. The following points were noted in regard to findings of this desktop review:

- ✧ Ms Young and Mr Ellis confirmed that no environmental reports related to the area of interest exist.
- ✧ Ms Young and Mr Ellis confirmed that they hold no further information in relation to the wooden structures located at 1189 Ponga Road, which may have been used as a spray race/sheep dip.
- ✧ Ms Young and Mr Ellis confirmed that the area of 121 MacWhinney Drive where the noise bund from managed fill was constructed will not be part of the future quarry pit extension.
- ✧ Ms Young and Mr Ellis confirmed that the parts of 121 MacWhinney Drive that have been licensed for the storage of hazardous substances in 2004 (including three USTs, one AST and multiple cylinders of acetylene and LPG) are part of the existing quarry operations and that these chemicals are stored outside of the future quarry pit extension.

5.5 Information Summary and Risk Assessment

The information gathered during this PSI regarding the current and historical land use of the site related to potential ground contamination can be summarised as follows:

5.5.1 General Site Observations

Based on historical aerials, the site has been used for pastoral purposes from at least 1942. Cropping of higher protein feed (i.e. chicory) in the northern central section of 121 MacWhinney Drive was observed during the site visit but could not be identified on historical aerial images, which suggests a relatively recent use in this area (i.e. under modern practises outside of the considerations for ground impacts from horticultural purposes).

Minor refuse observed in the vicinity of the main dwelling is considered to be inert in nature and insufficient in quantity to pose a threat to human or environmental health.

The earthworks occurring at the site are small in their scale and appear to occur within natural material and are therefore not expected to pose a risk to human or environmental health. The small soil stockpile identified appears to be comprised of natural material and no refuse, odour nor PACM was noted. The risk of ground impacts as a result of these activities is considered to be low.

The remainder of the site is part pastoral and part native bush/shrub, and no specific evidence has been provided or observed to demonstrate the possible presence of localised waste disposal to land (i.e., infilling of gullies/HAIL Category G3 or G5), or significant localised management of waste materials by burning. The majority of the site is therefore not expected to have been subject to any HAIL land use.

5.5.2 Livestock Dip/Spray Race Operations at 1189 Ponga Road

The SCE identified 1189 Ponga Road as a potential HAIL site (Category A8) due to the potential utilisation of parts of the property for spray race/sheep dip activities. The SCE indicated that these practices are likely to be related to the farm buildings. Whilst the exact location of the sheep dip/spray race operations is not known, it is considered most likely that these operations are related to the wooden structures present to the east of the shearing shed and to the west of the main dwelling. Universal farming practises for pest control in sheep and cattle in New Zealand throughout the possible age range of these structures (i.e. since 1942 – present day) included the use of toxic and persistent chemicals (e.g. arsenic, dieldrin, DDT, lindane, etc.), and therefore it is considered more-likely-than-not that these chemicals may have been used as part of the operations at this property. Further investigation of the soils underlying these two wooden structures (as shown in Figure 2) is recommended.

5.5.3 Onsite Buildings/Structures

The site contains numerous buildings of varying age, with dwellings present onsite from at least as early as 1942, and various barns and sheds throughout the history of the site – the majority of these appear to have been constructed before 1 January 2000³. Based on the historical aerial photograph review, some of these buildings have been previously demolished (refer to Figure 1 for building footprints of former sheds).

It is expected that, given the age of these buildings, each of them may have contained ACMs in their building products (potential HAIL Category E1 if the asbestos is in a deteriorated condition) and may also be/have been painted with lead-based paint products (potentially HAIL Category I) – especially prevalent in buildings constructed prior to the 1980-1990s. Details of former buildings/structures (previously located on the north-eastern and central parts of 121 MacWhinney Drive) that have been demolished or

³ Under the Health and Safety at Work (Asbestos) Regulations, buildings constructed before 1 January 2000 have the potential to contain asbestos building products (i.e. ACMs) and, as such, require surveys to identify the presence and location of any ACMs before refurbishment or demolition.

removed are not known. Building material of these structures have the potential to be a source of contamination to ground if these remain onsite, (i.e., might contain ACM or lead-based paint). No building material was noted within the vicinity of these former building footprints during the site walkover, however, if building materials are encountered onsite during soil disturbance works then the materials and surrounding soils will need to be investigated for the presence of lead and/or asbestos, and managed as appropriate based on the results of this assessment.

The shearing shed was constructed prior to 1942. Three chemical canisters were observed within the shed which are deemed small in scale and recent in their production, therefore not likely to have contributed to ground contamination on the site. Several pieces of PACM were observed on the ground at one part of the shed (see Figure 1 for area) with no obvious source, however, no other visual or olfactory evidence of contamination was identified in this area during the site walkover.

Storage Sheds 2 and 3 (constructed prior to 1981) and Storage Shed 1 (constructed prior to 1996) are expected to have been used for various farming and agricultural purposes. It is possible that these sheds have been used to store farming/agricultural equipment (e.g., vehicles, machinery, etc.) and potentially chemicals (e.g., fuels, herbicides, pesticides, etc.). No visual or olfactory evidence of contamination was identified in the area of Storage Shed 1 and Storage Shed 2 during the site walkover, however, Storage Shed 3 could not be accessed during the site walkover.

The water storage tanks observed across the site were constructed from plastic or concrete and these structures are not expected to have contributed to potential ground contamination.

The western tip of 121 MacWhinney Drive is not located within the proposed future pit extension and historical and/or present buildings on this part of the site are therefore not part of the scope of this investigation.

5.5.4 Storage of Hazardous Substances at 121 MacWhinney Drive

The SCE identified 121 MacWhinney Drive as a potential HAIL site (Category A17) due to the property being licensed for the storage of hazardous substances in 2004. However, this HAIL designation is not considered to be applicable to the current investigation area as the storage of hazardous goods did not occur within the vicinity of the proposed future pit extension area and is therefore not part of the scope of this investigation.

5.5.5 Disposal of Managed Fill at 121 MacWhinney Drive

The SCE identified 121 MacWhinney Drive as a potential HAIL site (Category G3) due to the property being consented for the disposal of managed fill to create a noise bund. However, this HAIL designation is not considered to be applicable, as the area indicated in the aerial image provided within the CLE is outside the proposed future pit extension area and is therefore not part of the scope of this investigation.

6.0 Conceptual Site Model

On the basis of the information review, a CSM has been derived to summarise the identified potential contamination sources, pathways and receptors.

A risk to human health or the environment can only exist if there is a contamination source (e.g., storage or use of materials that could have impacted soil, dust or water), a receptor (e.g., people, surface water) and a migration pathway linking the source and the receptor. An absence of any one of these components means that the exposure pathway is incomplete. Where it has been assessed that there is an incomplete exposure pathway for any of the potential contamination sources discussed in Section 5, these have not been included in the CSM and are not discussed further below). The CSM is provided below in Table 4.

Table 4: Conceptual Site Model

HAIL land use	Sheep Dip and Spray Race Operations (HAIL Category A8)	Lead-Based Paint (potential Category I)	Asbestos Building Products (potential Category E1)
Onsite Location	In the area of the farm buildings (as shown in Figure 2).	Immediately surrounding dwellings (typically <5 m halo) and current/historical buildings/structures if painted with lead-based paint.	Attached to, and immediately surrounding dwellings (typically <5 m halo) and current/historical buildings if asbestos containing and subject to deterioration.
Identified Contaminants of Concern	Potential contaminants could include arsenic, organochlorine pesticides (OCP) (including DDT, lindane, dieldrin and aldrin) and organophosphates).	Lead (associated with the use of lead-based paint).	Asbestos/ACM and asbestos fibres.
Potential Mechanism of Contamination	Leaching of contaminants to ground, runoff to surface water and infiltration to groundwater.	Progressive deterioration or active disturbance/ maintenance of lead-based painted surfaces. Uncontrolled demolition of historical structures.	Progressive deterioration or active disturbance/ maintenance of asbestos containing materials. Uncontrolled demolition of historical structures.
Identified Receptor(s)	Short term: - Current site users (i.e. tenants and farm workers/growers/pickers) who remain onsite in advance of proposed quarry expansion. - Quarry mine workers/contractors during soil disturbance. - Environmental receptors (via surface water) during soil disturbance. Long term: - Future site users (if contaminated soil remains onsite) - Quarry mine workers/contractors during soil disturbance (if contaminated soil remains onsite at shallow depths).		Short term: - Current site users (i.e. tenants and farm workers/growers/pickers) who remain onsite in advance of proposed development. - Earthworks/demolition contractors during removal of structures and soil disturbance. Long term: Future site users if material remains onsite/is not removed appropriately.

Table 4: Conceptual Site Model

HAIL land use	Sheep Dip and Spray Race Operations (HAIL Category A8)	Lead-Based Paint (potential Category I)	Asbestos Building Products (potential Category E1)
	- Environmental receptors (if contaminated soil remains onsite). - Groundwater users (if contaminants extend into groundwater system).		Maintenance and excavation workers (if material remains onsite/is not removed properly).
Potentially Complete Exposure Pathways	Dermal contact and soil ingestion for current site users, earthworks contractors during soil disturbance works – potentially complete subject to further testing and investigation (only complete if contaminated soils are confirmed as present and accessible). Dermal contact and soil ingestion for future site users during future soil disturbance – potentially complete subject to further testing and investigation (only complete if contaminated soils are confirmed as present and accessible and remain onsite). Discharges to surface water/groundwater during soil disturbance – potentially complete subject to further testing and investigation (only complete if contaminated soils are confirmed as present and accessible).		Inhalation of airborne asbestos fibres for current site user, workers, demolition contractors during demolition and soil disturbance works – potentially incomplete subject to further testing and investigation (only complete if ACM/asbestos is confirmed as present and accessible (i.e. in deteriorated condition). Inhalation of airborne asbestos fibres for future site users during future soil disturbance works – potentially incomplete subject to further testing and investigation (only complete if ACM/asbestos is confirmed as present and accessible and remains onsite).
Applicable Human Health Guideline Criteria	National Environmental Standards for Assessing and Managing Contaminants in Soil (NES-CS) to Protect Human Health – Soil Contaminant Standards (SCS) and Soil Guideline Values (SGV) – Commercial/Industrial land use scenario.		New Zealand Guidelines for Assessing and Managing Asbestos in Soil (BRANZ, 2017) soil guideline values and HSWA (Asbestos) 2016 Regulations.
Applicable Discharge Criteria	Auckland Unitary Plan, Operative in Part – Contaminated Land Rules E30.		N/A

7.0 Conclusions and Recommendations

PDP has been engaged by SAL to undertake a PSI on parts of 1189 Ponga Road, 121 MacWhinney Road and Quarry Road, Drury that comprise the future pit extension area to identify any actual or potential sources of ground contamination, including HAIL land use, within the site, either from historical or current land uses, activities and/or structures at the site. In summary, the PSI has identified the following sources, uses or activities that could have resulted in ground contamination within site, and which represent a potentially complete source-pathway-receptor linkage. These have been identified as comprising:

- ✧ Potential impacts of various contaminants (e.g. arsenic, DDT, lindane, dieldrin, etc.) from the sheep dip/spray race activities located in the area of the farm buildings;
- ✧ Localised lead impacts from painted surfaces on current/historical houses/structures constructed prior to the 1980-1990s; and
- ✧ Asbestos/ACM impacts to soils from current/historical building materials that are observed to be in deteriorated condition on houses/structures constructed prior to the 2000s and/or have been removed inadequately in the past.

The conclusion that some of these HAIL land uses are more-likely-than-not to have occurred at the site indicates that the NES-CS and its regulations apply to the piece of land where these activities have been identified and would be triggered by the proposed activities anticipated to be undertaken in the future, which are expected to include: change of land use (from rural to a commercial/industrial) and soil disturbance. Based on the expected area and volume of soil disturbance from the proposed works, the contaminated land rules of the AUP-OP may also be applicable to the proposed development of the site if concentrations of contaminants are found to exceed the Permitted Activity criteria from Section E30 of the AUP-OP within those identified HAIL areas.

Based on the result of this assessment, large areas of the site are confirmed as representing non-HAIL areas and will therefore be exempt from further requirements of the NES-CS (as described in Regulation 5 (7)) and the contaminated land rules of the AUP-OP. The actual/potential contaminated land issues identified by this PSI are expected to be able to be addressed using standard contaminated land management practises, beginning with a Detailed Site Investigation (DSI) of the identified potential contamination sources to determine the nature and extent of impacts to ground as a result of these current/historical activities; and if necessary, seeking resource consents and provision of supporting documents such as a Site Management Plan (SMP) and/or Remedial Action Plan (RAP).

In addition, as noted under the Health and Safety at Work (Asbestos) Regulations, buildings constructed before 1 January 2000 have the potential to contain asbestos building products (i.e., ACMs) and, as such, require surveys to identify the presence and location of any ACMs before refurbishment or demolition.

8.0 References

- AUP: OP, 2021. Auckland Unitary Plan; Operative in Part. Updated 11 June 2021. Auckland Council.
- Edbrooke, S.W., 2001. *Geology of the Auckland Area*. Institute of Geological and Nuclear Sciences 1:250,000 geological map 3.
- MfE, 2021a. *Contaminated Land Management Guidelines No. 1 – Reporting on Contaminated Sites in New Zealand*. Ministry for the Environment.
- MfE, 2021b. *Contaminated Land Management Guidelines No. 5 – Site Investigation and Analysis of Soils*. Ministry for the Environment.

NES-CS, 2011. Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011. Ministry for the Environment.

T+T, in preparation. *Drury Quarry, Sutton Block, Assessment of Environmental Effects*. Tonkin + Taylor.

9.0 Limitations

This document has been prepared by Pattle Delamore Partners Ltd (PDP) on the basis of information provided by Stevenson Aggregates Limited and others (not directly contracted by PDP for the work), including Auckland 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 document. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This report has been prepared by PDP on the specific instructions of Stevenson Aggregates 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.

Owing to the limited nature of this assessment (as described in the Objectives and Scope 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 contamination, there is a risk that sources of contamination could exist which are not identified by the assessment. This risk could be reduced by undertaking further research and/or subsoil investigation.

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Yours faithfully,

PATTLE DELAMORE PARTNERS LIMITED

Prepared by

PP



Myra Belkot

Environmental Scientist

Reviewed by



Stefan Yap

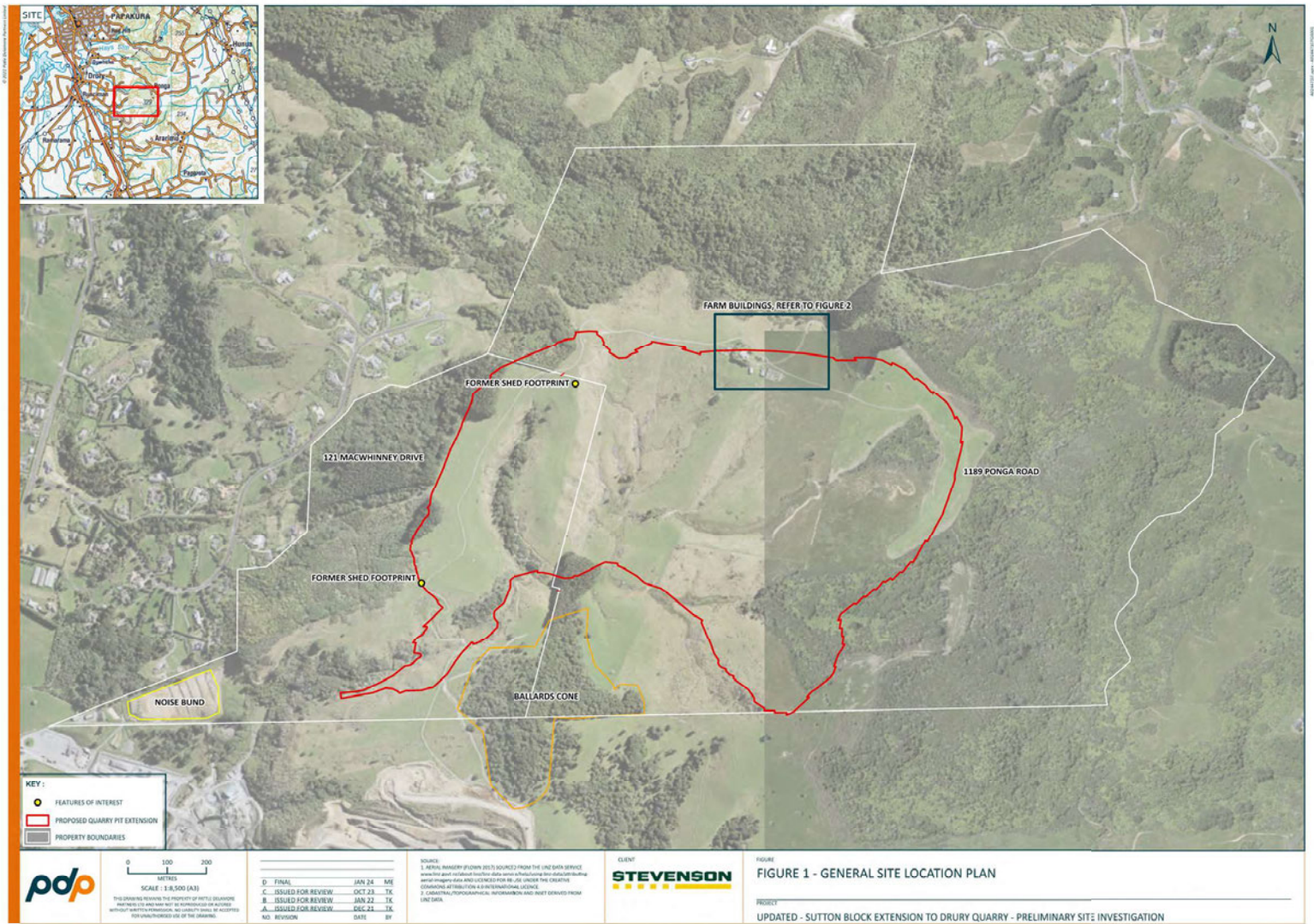
Service Leader - Contaminated Land

Approved by



Rod Lidgard – CEnvP SC

Technical Director - Contaminated Land





Appendix A: Certifying Statements

I, Rod Lidgard of Pattle Delamore Partners, certify that 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 NESCS') because it has been:

- a. Completed by a suitably qualified and experienced practitioner;
- b. Reported on in accordance with the current edition of the MfE's *Contaminated Land Management Guidelines No.1 – Reporting on Contaminated Sites in New Zealand*; and
- c. 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



Rod Lidgard

Technical Director - Contaminated Land

Rod Lidgard – Project Director

Rod is an environmental geologist with 16 years of experience in undertaking environmental and contaminated land assessments. Rod is a Certified Environmental Practitioner – Site Contamination specialist. Certification numbers 1272 CEnvP, and SC41119.



Stefan Yap – Project Manager and Preliminary Site Investigation Report Reviewer

Stefan is an environmental scientist with over 19 years of diverse experience within the environmental field throughout New Zealand and Asia Pacific with practical expertise in contaminated land management, environmental regulatory compliance and hazardous waste management. He has a BEnvSc (Hons) from Murdoch University. Stefan has prepared detailed assessments of contaminated sites, conceptual site models, remedial action plans, long-term management & monitoring plans and risk assessments. He has worked as a contaminated land specialist with small and large clients across a wide variety of industries including large-scale infrastructure, transport, oil & gas, energy, telecommunication, construction, education, manufacturing, recreation, agriculture & horticulture, and solid waste.

Myra Belkot – Author

Myra is an environmental scientist with over 3 years' experience in undertaking environmental and contaminated land assessments. She has a BSc in Geography and Environmental Science from Canterbury University of Christchurch. Myra has practical experience in a variety of contaminated land assessment techniques and has relevant experience in carrying out and reporting on both Preliminary and Detailed Site Investigations.



Appendix B: Site Contamination Enquiry

7 October 2021

Pattle Delamore Partners Limited
PO Box 9528
AUCKLAND 1149
Attention: Myra Belkot

Dear Myra

Site Contamination Enquiry – 121 MacWhinney Drive and 1189 Ponga Road, Drury

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

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

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

1. Hazardous Activities and Industries List (HAIL) Information

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

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

- HAIL Item (A.8) – Livestock dip or spray race operations.
- HAIL Item (A.17) – Storage tanks or drums for fuel, chemicals, or liquid waste.
- HAIL Item (G.3) – Landfill sites.

Records indicate the site 121 MacWhinney Drive, Drury, was licensed for the storage of hazardous substances in 2004. This included three underground fuel tanks, one above ground fuel tank and multiple cylinders of acetylene and LPG.

Further, the site has been consented for the disposal of managed fill to create a noise bund. This land disturbance can be seen in the aerial below:



Records indicate the site 1189 Ponga Road, Drury, has been utilised for spray race and sheep dip activities. It has been noted that a former sheep dip was located in the area of the building on site.



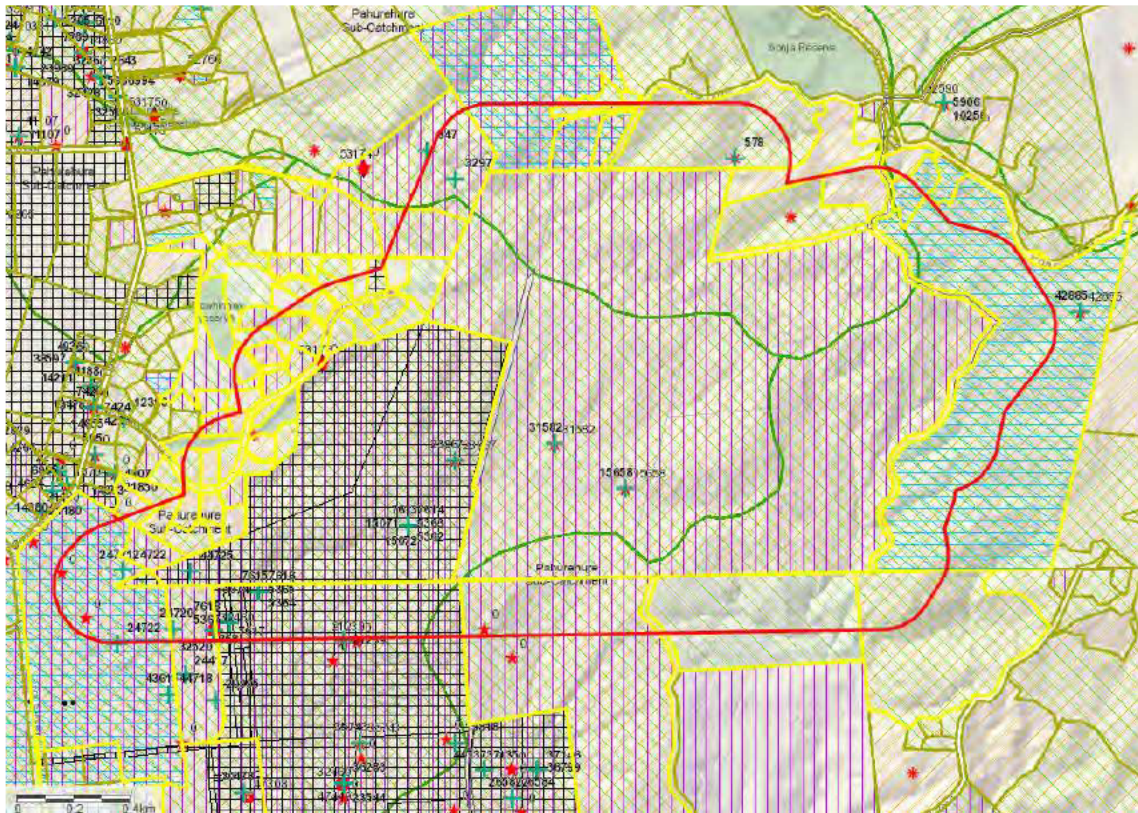
Please note:

- *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**



Appendix C: Site Photographs



Photograph 1: Looking southeast at the southern section of 121 MacWhinney Drive and the northern section of Quarry Road.



Photograph 2: Looking south at the northern central section of 121 MacWhinney Drive showing high-protein cattle feed.



Photograph 3: The small stockpile located east of the shearing shed at 1189 Ponga Road.



Photograph 4: Looking west at the potential location of the former spray race/sheep dip structure with the shearing shed in the background.



Photograph 5: Stressed grass within the potential location of the former spray race/sheep dip structure.



Photograph 6: Looking east at the shearing shed.



Photograph 7: Interior of the shearing shed.



Photograph 8: Interior of the shearing shed with PACM fragments observed on the ground.



Photograph 9: Looking west at Storage Shed 1.



Photograph 10: Looking west at Storage Shed 2.



Photograph 11: Looking west at Storage Shed 3 in the background and the southern side of Storage Shed 2 to the right.



Photograph 12: Looking west at the main dwelling and carport.



Photograph 13: Looking south at the potential location of the former spray race/sheep dip structure.



Photograph 14: Looking southeast at the potential location of the former spray race/sheep dip structure.



Photograph 15: Looking northeast towards the small earthworks area 1189 Ponga Road.



Appendix D: Email Communication

From: ELLIS, Jayden <jayden.ellis@stevenson.co.nz>
Sent: Monday, 22 November 2021 5:30 pm
To: YOUNG, Jo; Myra Belkot
Cc: Rod Lidgard
Subject: RE: Sutton Quarry remaining questions

Follow Up Flag: Follow up
Flag Status: Flagged

My notes in green

From: YOUNG, Jo <Jo.Young@stevenson.co.nz>
Sent: Monday, 22 November 2021 4:46 PM
To: Myra Belkot <Myra.Belkot@pdp.co.nz>
Cc: Rod Lidgard <rod.lidgard@pdp.co.nz>; ELLIS, Jayden <jayden.ellis@stevenson.co.nz>
Subject: RE: Sutton Quarry remaining questions

Hi Myra

Comments below in red. I've cc'ed my colleague Jayden Ellis into this email. Jayden – can you please look at the highlighted comment below and let us know if you have anything to add.

Thanks

Jo Young | Natural Resources Planner | **Fulton Hogan Ltd**
Stevenson Aggregates Limited | Stevenson Concrete Limited
4-10 Reliable Way, Mt Wellington | Private Bag 11 900, Ellerslie, Auckland 1061 | 
| www.stevenson.co.nz | www.fultonhogan.com



From: Myra Belkot <Myra.Belkot@pdp.co.nz>
Sent: Rāhina, 22 Whiringa ā-rangi, 2021 2:12 p.m.
To: YOUNG, Jo <Jo.Young@stevenson.co.nz>
Cc: Rod Lidgard <rod.lidgard@pdp.co.nz>
Subject: Sutton Quarry remaining questions

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Hi Jo,

We have some general questions that have been thrown up as a result of the property file review.
Please review and then provide some responses/put us in touch with whomever might be able to assist thanks.

1. Are there any additional environmental reports related to the area of interest that you are aware of?

No – very little report has been done on this site to date. Agree

We are seeking some confirmation (to provide confidence to the reader) that they are not to be included in this assessment)

2. 1189 Ponga Road is flagged as a Hazardous Area due to sheep dip and/or spray race activities (refer Figure 1). Historic aerial images indicate that a potential sheep dip/spray race structure was erected west of the existing structures between 1977 and 1981 and another potential sheep dip/spray race structure appears to have been constructed to the east of the existing dwellings between 1981 and 1996.

Is there anyone knowledgeable about the use of this site we can discuss this with – i.e. nature of chemicals/use/etc?

I don't think there is anyone in the company that would know what the farmer was using.

Jayden – Would you have any idea? Or know who would? I can ask our retired farmer, but he may not reply

3. Council records indicate that parts of 121 MacWhinney Drive have been licensed for the storage of hazardous substances in 2004 (including three underground storage fuel storage tanks, one above storage tank and multiple cylinders of acetylene and LPG). We assume that storage of these chemicals has occurred as part of the existing quarry operations and that these chemicals were stored outside of the future quarry zone extension pit. Can you please confirm?

That is correct. I am assuming they are all within the front of house. – i.e. this part of 121 MacWhinney Drive. PDP have carried out a baseline assessment for Stevenson Mining (DSL) prior to the sale of the business, so this information is available for review if needed ...but like Jo says ...not in the future quarry extension



4. Council records also indicate that 121 MacWhinney Drive has been consented for the disposal of managed fill to create a 'noise bund' (Figure 2). An aerial image supplied by the council shows earthwork disturbances on the

western tip of the 121 MacWhinney Drive.

Our understanding is that this area will not be part of the future pit extension zone, can you please confirm?

This noise bund has now been completed planted up. The photo must be a few years old. I can confirm the extension will not be anywhere near this part of the site. Agree

Cheers,

Myra Belkot - BSc | Environmental Scientist

PATTLE DELAMORE PARTNERS LTD

Level 4, PDP House, 235 Broadway, Newmarket, Auckland

PO Box 9528, Newmarket, Auckland 1149

NEW ZEALAND

Map - [Auckland Office](#) | Web - www.pdp.co.nz

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