


TECHNICAL MEMORANDUM

INVESTIGATION	Land Contamination – Additional Clarification of Risk	PROJECT	139 Grange Road, Burnham
CLIENT	Burnham 2020 Ltd	PROJECT NO	C04096100
CLIENT CONTACT	Dan McGregor	PREPARED BY	Scott Wilson
VERSION	Final (Version 2)	SIGNATURE	
		DATE	24 July 2023

<p>Introduction</p> <p>Pattle Delamore Partners Limited (PDP) has been asked to provide additional information in relation to the overall contamination risk associated with past and present land used activities at the property located at 139 Grange Road, Burnham. It is understood Burnham 2020 Ltd intend to progressively quarry the property to provide aggregate for construction projects.</p> <p>A preliminary site investigation (PSI) report¹ was prepared by PDP as part of the due diligence process and identified a number of HAIL² activities to have occurred in the past, or are currently occurring on site. These activities have the potential to have caused some level of contamination of site soils and/or groundwater. This memo has been prepared to provide additional information to the background behind the categorisation of each of these activities and the associated level of risk for the future quarrying activity. It is understood that the farming operation will continue in the future with the quarrying activity progressively moving across the property. The quarried areas will be rehabilitated at a lower elevation following the removal of aggregate. As such, this assessment is based on the current land use activities for the current period and whilst the current farming activity will not change, the location of the potentially contaminating activities associated with farming may move (i.e. fuel storage, bulk fertilizer storage or offal pits etc).</p>
<p>Site History Summary</p> <p>The PSI is a desktop assessment that looks at a range of information sources to help understand what land use activities have occurred on site in the past that could have resulted in contaminating site soils. The primary information sources for this investigation comprised the historical aerial photographs and the site inspection. Some anecdotal information was also provided. The aerial photographs are one of the most reliable information sources as they represent a snapshot in time, however, they are only taken approximately every 10 years so also have their limitations. They do however provide a good generalisation of the primary land use activities.</p> <p>Based on the available information the site appears to have been used as a forestry plantation from at least the 1940's until circa 2005 when the property was converted to an irrigated cropping/cattle fattening farm and more recently since 2010, an irrigated heifer grazing farm. There is no information of the land use activities prior to the 1940's. The site use at his time is unknown, but likely used for similar land use activities.</p> <p>Given the property has been used as a forestry plantation until circa 2005, the likelihood that the more persistent contaminants of concern such as organochlorines (i.e. DDT) which were used to control pesticides in</p>

¹ 'Preliminary Site Investigation – 139 Grange Road, Burnham' PDP, July 2023.

² Hazardous Activities and Industries List (Ministry for the Environment; MfE, 2011).

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historical farming operations is low, and this was supported by the non-detectable concentrations of DDT recorded in the near surface soils samples (PSI; PDP 2023). Further to this, there was no evidence to suggest that a sheep dip was located within the property. These two contamination sources are some of the more contaminating for rural areas such as this. The greatest potential for any land contaminating activities at this property is related to the more recent farming operations, which based on our observations when walking about the site were considered typical for a large operation like this.

Key Land Contaminating Activities Identified and Associated Risks

The two key land use activities identified (forestry and farming) have an inherit low risk of land contamination apart from possible localised areas associated with normal site operations typical for these land use activities. The key activities that were identified for the property that may have resulted in contaminating soils/groundwater are shown in the attached plan (sourced from the PSI report) and include the following:

- ∴ An above ground diesel tank was reportedly present in the pad of the former forestry yard (location estimated based on anecdotal evidence provided). This was likely a small above ground tank (possibly portable). The likelihood of there being any significant contamination in the ground associated with this fuel storage is low. In fact, it is likely that any impacts, if present at all, may not be identified during the quarrying activities. This was included for completeness based on the information provided by the former landowner in the event that petroleum hydrocarbons are identified during any future earthworks;
- ∴ Two above ground fuel storage tanks for refuelling farm vehicles are currently present on site. These are existing tanks and will continue to exist for the foreseeable future as the current operations continue. The presence of fuel tanks on farms to refuel farm machinery is typical. The risk associated with above ground tanks is low as any minor spillage is generally contained in the near surface soils and leaks can be quickly realised and repaired. There is considered a negligible risk to the future quarry activity provided appropriate controls and security of the tanks is maintained.
- ∴ Storage of bulk fertilisers and other materials such as fence posts (likely treated timber) and used tyres which are used in the general operational aspects of the farm. These are all items that you would expect to see in a normal farming operation and were again included for completeness. The contamination risk associated with these activities is generally low and would be restricted to the near surface soils only. This would be easily managed during any future site development works; and
- ∴ Waste pits/infill pits (former and current) and have been identified at the site. The current farming waste pit was observed during the site inspection and contained organics, metal, concrete, plastics and wood waste. The full composition and extent of the material in the pit is unknown. It is understood that additional pits will be created in the same general area as the farming operation will continue into the future. The composition of the material within the known former infilled pit is unknown. Other pits may also exist across the site associated with general farming practices. Waste pits are common and typical for most large farming operations. In this instance the pits are related to farming practices that have occurred at the site from 2005 onwards. This means the potential for some of the more persistent and hazardous contamination sources (i.e. drums of former pesticides or asbestos containing materials) is unlikely. The material will however require removal and disposal when these areas are encountered during the progressive quarrying activity. This can be easily managed through the preparation of a suitable site management plan which will outline the correct procedures for the excavation, removal and disposal of this material. Just because waste material has been disposed of, it doesn't necessarily mean that the surrounding soils are contaminated. This will likely depend on the type of waste material present. Only a small area of the waste was able to be observed and this material looked typical for a farming operation as opposed to highly hazardous materials.

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The above activities are defined on the Ministry for the Environment (MfE, 2011) '*Hazardous Activities and Industries List*' (HAIL) which 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. However, just because the land use activity has or is suspected to have occurred doesn't necessarily mean that this caused land contamination. This is determined through detailed site investigations activities including soil and groundwater sampling. Preliminary soil sampling was undertaken as part of the PSI, however, this was confined to the areas away from the known operational areas to provide a general characterisation of any past board-acre contamination. No indicators of contamination were identified in the surface soils with concentrations similar to those of background levels for the area. No sampling of soils in the current operational yard area or known pit locations was undertaken as these areas will continue to be used in the short to medium term so would need to be investigated prior to being developed anyway. Some contamination of soils would be expected in these areas, however, the level of contamination would be expected to be typical for a large farming operation.

The extent of the HAIL areas shown on the attached plan is a conservative assessment given the level of uncertainty of some of the locations. Further to this, the entire current farming operational area was included as a conservative approach given this area will be used for the general storage of farming equipment and materials that could contaminate the surface soils currently and in the future. The intention of identifying the HAIL locations was to highlight those areas where potential contamination may exist so that more detailed assessment for the presence of contamination can be investigated before those areas are disturbed in the future. It does not necessarily translate to these areas being contaminated or requiring remedial works to be undertaken.

As outlined in the PSI, the recommended approach to manage the identified contamination sources is to undertake targeted detailed site investigations of each HAIL area as the quarrying activity progresses (i.e. immediately prior to disturbance of these identified areas). This will ensure that any contamination sources associated with the ongoing use of the site as production land is captured in the assessments. The results of the testing will determine the appropriate course of action that is required and what remedial works, if any, are required. This would be outlined in a Site Management Plan prepared for the quarry development works.

The level of remedial works within each HAIL area will vary depending on the type and extent of contamination present. In those areas where waste material is encountered this will likely require sorting and/or off-site disposal, but for the majority of the other HAIL areas the level of contamination from normal farming operations would not be expected to cause sufficient contamination that large remedial works would be required. The majority of the soils would likely be suitable to remain onsite and used in perimeter bunding during the quarrying activity and possibly be reuse as topsoil for future land use purposes.

If you have any further queries or need further clarification, please feel free to contact me.

Limitations

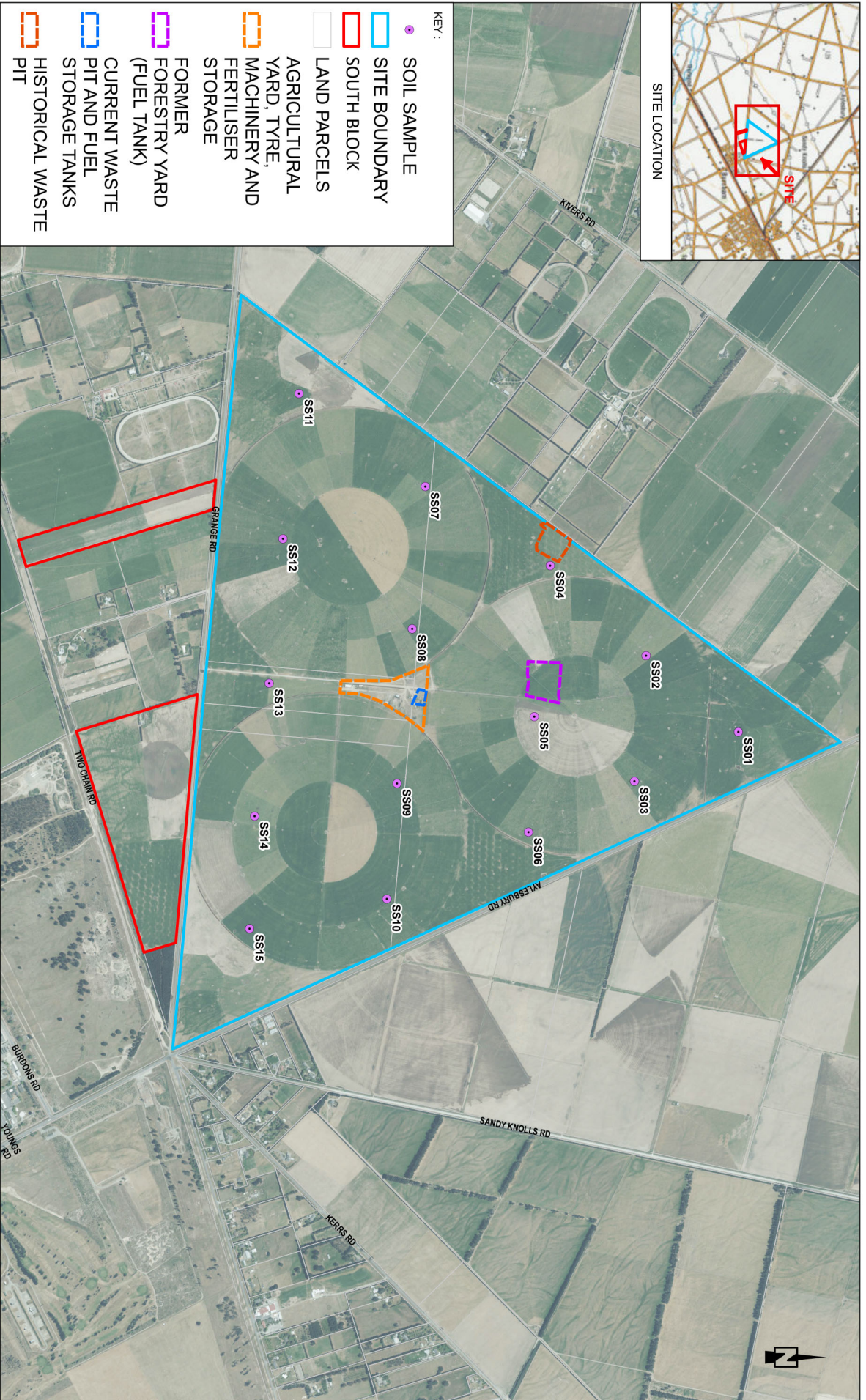
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The information contained within this document applies to the date stated in this document, or if none is stated, the date of this document. With time, the site and environmental conditions may change. Accordingly, the reported assessment is not guaranteed to apply at a later date.

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Owing to the limited nature of this assessment, there may be soil and/or groundwater contamination conditions at the site that have not been identified and which have not been considered in this document.

This memorandum has been prepared by PDP on the basis of information sourced for the preparation of the Preliminary Site Investigation (PDP 2023). PDP has not independently verified the information to prepare the PSI and has relied upon it being accurate and sufficient for use by PDP in preparing the memorandum. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.



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FIGURE 2: HAIL LOCATIONS