

Watchman Capital

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Attn: Bill Ritchie

05 December 2022

31 Ngongotaha Rd Rotorua – Ground Contamination Review

Introduction

The site is to be developed for residential purposes. It will include residential lots, streets and stormwater control / reserve areas. Geohazard Environmental Ltd has previously undertaken investigations at the site. This letter is prepared to provide a high-level overview of the findings to support a preliminary approval to apply for consent under a fast-track process.

1.1 Proposed Development

The development plans provided to us show a large residential subdivision in Ngongotaha village. The development includes standard residential sections, roadways and stormwater reserves.



Figure 1: Site Area (Not to scale)

1.2 DSI Summary

In December 2017, Geohazard Environmental Ltd issued a DSI (ref.: 170306) relating to the land parcel on which the site is located.

- Potential sources of contamination include the historical sheep dip identified within the south-east of the wider property, former structures (including suspected dwellings, sheds and paddocks) identified within the southeast of the wider property, and historical dumping of sludge mixed with sawdust (which reportedly took place onsite between 1977 and 1987).
- It was considered more likely than that that **HAIL A.8** (*livestock dip or spray race operations*), **HAIL 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*), and **HAIL G.5** (*waste disposal to land (excluding where biosolids have been used as soil conditioners)*) occurred.
- Of the 159 samples initially taken, 45 surface or near-surface soil samples from within the southeast, south and northwest of the wider land parcel contained concentrations of contaminant (namely arsenic) above residential guideline values. Other metals such as lead and cadmium were detected around former buildings on site.
- Aldrin was detected in the two composite samples taken within the vicinity of the former sheep dip, although concentrations were well below residential guideline values.
- Environmental protection criteria have been exceeded in several locations. The majority of these locations are in proposed residential areas where remediation is required. Proposed stormwater reserve areas and wetlands will require some “hotspot” remediation.
- The report concluded that remediation or site management was required in the vicinity of the exceedances identified.



Figure 2: Summary of Impacted Areas (Not to scale)

1.3 Further Investigations

Since the 2017 DSI, additional samples have been collected to refine the affected areas, especially at the likely former sheep dip site and around some structures at the south of the site. Further sampling is recommended in the wider site where sludge disposal areas intersect proposed residential areas.

1.4 Development Implications

Remediation or site management of affected areas is required prior to the site being suitable for residential use.

1.4.1 Remediation Options

Options to remediate the site include excavation and offsite disposal, soil mixing, capping, or relocating soil to a less sensitive area. These are discussed further below.

Excavation and Disposal

Excavation and offsite disposal is the most expensive option, however once complete no further management is required. The full extents of the affected area should be determined prior to works.

A Site Validation Report is required at completion of any excavation and disposal remedial works, to verify all impacted soils have been removed.

Excavation and disposal of the sludge-impacted areas is not likely to be viable, given the size and volumes involved.

Soil Mixing

Soil mixing involves combining cleaner soils with contaminated soils. It is an acceptable approach for relatively low levels of contamination, where contaminant levels are consistent. For this site, soil mixing *may* be suitable for some areas, in conjunction with excavation and disposal of the worst areas. The point sources of contamination are not suitable for mixing. The sludge disposal areas may be suitable for soil mixing.

The risk of mixing not working means that the volume of soil required to be disposed of multiplies. We always recommend a trial of mixing prior to large-scale works.

Capping or Bund

Capping the soil in-situ or placing under a bund elsewhere on site is a viable option if the cap/bund is to be well managed in the future.

A suitable capping depth is typically over 1m for residential areas (a depth at which most residents would not typically excavate beyond. This would be the same for a bund.

Ongoing Site Management is required to ensure all future owners are aware of the cap and the requirements for earthworks near it.

If the cap or bund were to be removed in future, to allow disposal of contaminated soil underneath, some of the capping material would also be considered contaminated, unless it was separated via geotextile cloth or similar.

Soil Relocation

Areas on the site are designated as reserves for passive recreation and stormwater control. It is possible that soil could be relocated within the site to these areas, where the risk is generally lower.

1.4.2 General Development Implications

Soil disturbance and land use change will occur at the site.

- Remediation of affected areas should occur prior to bulk earthworks commencing. Specific controls will be required to prevent cross-contamination of clean soils.
- Validation sampling will be required by the contaminated land specialist (SQEP) on completion of remediation (regardless of the method chosen) to confirm that the remediation objectives have been met.
- Following satisfactory remediation, bulk earthworks can proceed under standard controls and procedures. Soil disposal for much of the remainder of the site can be to cleanfill, with the approval of the receiving fill. Retention on site is also possible from a contamination perspective.
- Any unexpected contamination can be managed through procedures in a Contaminated Site Management Plan (CSMP).

1.5 Consenting Implications

The National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) outlines various 'Permitted Activities' (not requiring consent) and 'Controlled, Restricted Discretionary and Discretionary Activities' (requiring resource consent). The advice of a planner should be sought to ensure all consent requirements are met.

Concentrations of arsenic were elevated above adopted guideline values in a number of samples. Given the concentrations of metals detected, and the reported historical spreading of sawdust and sewerage sludge, it is considered more likely than not that **HAIL G.5** activities occurred (waste disposal to land).

The site is considered to be a "piece of land" under NES legislation.

1.5.1 Land Use Change

Section 10 states land use change or subdivision is a Restricted Discretionary activity if contaminants are above guidelines. Rotorua Lakes Council will require a **Restricted Discretionary Consent** for any subdivision or land use change at the site.

1.5.2 Earthworks

The NES sets permitted standards in relation to soil disturbance under Regulation 8(3). A **Restricted Discretionary Consent** would likely be required. Furthermore, as soils are in excess of applicable guidelines, a Remediation Plan and/or Site Management Plan is likely to be required as part of any earthworks consent.

1.5.3 Regional Council Consent

At a regional level, consent for a Restricted Discretionary Activity is required for the remediation or disturbance of a contaminated site. The BOPRC defines a contaminated site as "*a location at which hazardous substances in soil, groundwater or surface water occur at concentrations above background levels....and where assessment indicates those substances pose....a hazard to human health or the environment*".

1.6 Recommendations

We recommend that:

- Additional sampling be undertaken where residential housing is proposed, near to sludge disposal areas. This is to confirm the horizontal extent of the affected areas.
- The DSI be updated to incorporate all information pertaining to the site and incorporates latest guideline values (including relating to environmental risk).
- A Contaminated Site Management Plan / Remediation Action Plan should be prepared for site works.
- Areas around the former sheep dip, historical structures and other hotspots be remediated as required.

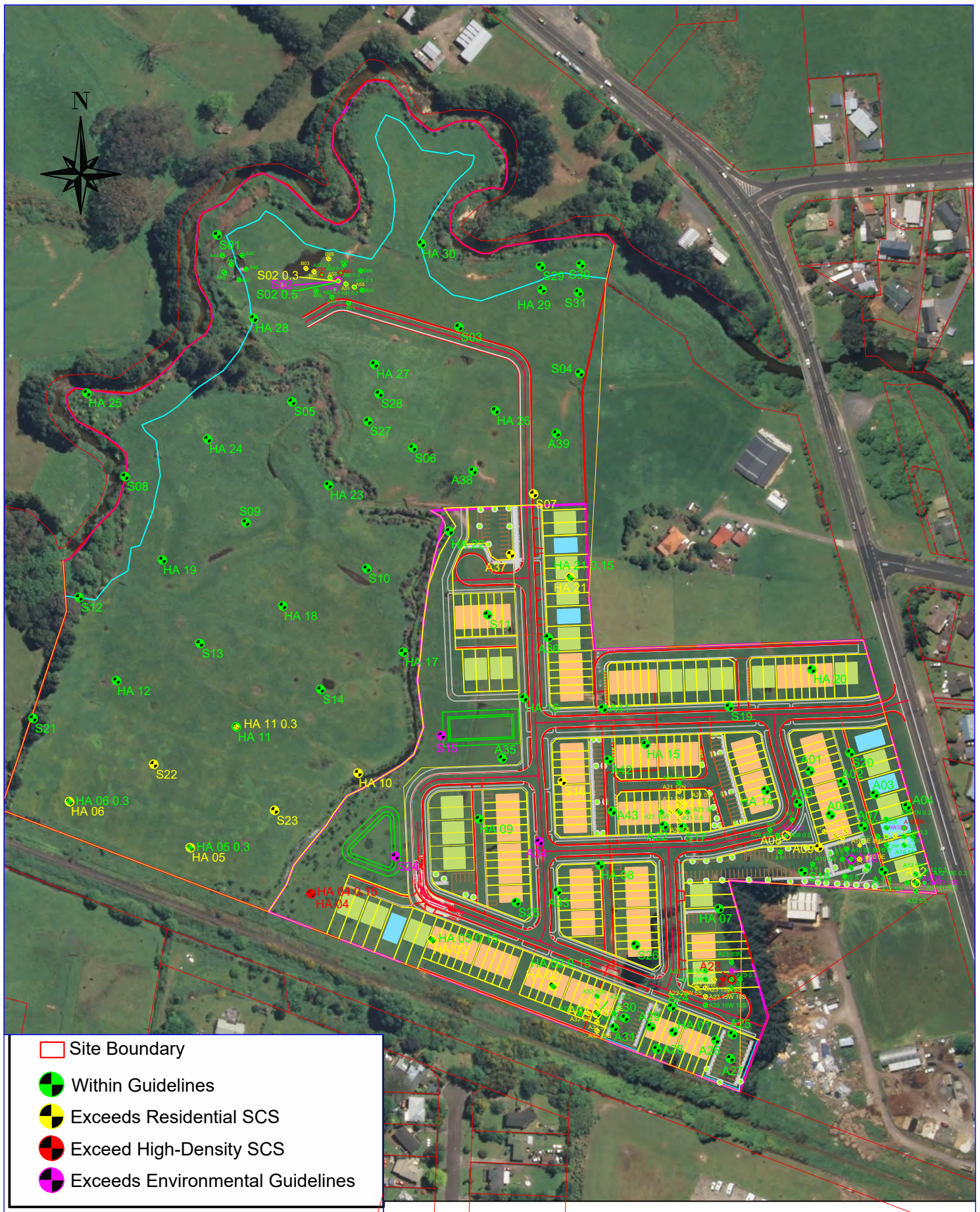
Yours Sincerely



Jonathan Findon
Environmental Scientist (Director)
Geohazard Environmental Ltd.

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s 9(2)(a) [REDACTED] (022 Geohazard)

Attached: Sample Location Sketch





Dwg Title 31 Ngongotaha Rd
Sample Plan

Client: Watchman Capital Ltd

SCALE:
NTS @ A4

JOB # 221102

DATE: 00/00/21

DRAWN BY:
SAM

DRG No. 001

REV. -