

Remediation Action Plan (RAP)

86, 108, and 122 Arataki Road, Havelock

ct: Woods

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STATEMENT

This plan has been prepared in acknowledgement of the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011. It has been authorised by a suitably qualified and experienced practitioner (SQEP); and has been prepared with the intention of providing practices and procedures for the management of potentially contaminated land that meets the criteria of the NES, the MfE guidelines and the requirements of the client's proposed work.

SQEP Certification

I, Carl O'Brien, of SQN Consulting Ltd ('SQN GeoSciences') certify that I meet the qualifications of a suitably qualified and experienced practitioner (SQEP) in contaminated land investigations, remediation, and management as outlined in Section 2.1.1 of the MfE's (2012) Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Evidence of qualifications and experience can be provided upon request.

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1 INTRODUCTION

It is proposed to undertake a residential subdivision (Appendix B), including landuse change, subdivision and preparatory earthworks, at 86, 108, and 122 Arataki Road, Havelock North (the site). A Detailed Site Investigation (DSI) was completed by Geosciences Ltd (GSL; Ref: REP-H0162/DSI/SEP21, 2021), and a subsequent Supplementary DSI completed by SQN GeoSciences (SQN, Ref: J250030-DSI-Mar25, 2025) in support of the associated fast-track resource consent for the proposed activities.

To address the requirements of the *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011* (NES), a Remediation Action Plan (RAP) is required to address three localised areas of soil containing heavy metals and/or asbestos concentrations that present a risk to human health and the environment under the proposed residential landuse.

This RAP has therefore been prepared to:

- Enable appropriate remediation of localised areas containing heavy metal or asbestos contamination,
- Provide appropriate measures and controls to protect human health and the environment during disturbance of soil during remedial and general development earthworks,
- Prevent accidental discharge of potential contaminants to the surrounding environment,
- Ensure that excavated soil is appropriately disposed of at a facility licensed to accept such material (if removed from site), and
- Provide appropriate contingency measures for accidental discoveries of contamination not previously identified.

It is noted that this report supersedes the previous RAP completed by GSL (Ref: Rep-H0162/SMP/Sep21).

Controls outlined in this report are to be implemented to minimise risks from any potentially mobilised soil contaminants, consistent with industry best practice. As the DSI (GSL, 2021) and Supplementary DSI (SQN, 2025) concluded that there is a risk to human health and/or the environment under the proposed residential landuse, the controls in this report have been developed to mitigate unidentified risks to human and environmental health during soil disturbance in accordance with best practice.

This RAP has been authorised by a suitably qualified and experienced environmental practitioner (SQEP) and has been prepared in general accordance with the Ministry for the Environment (MfE) *Contaminated Land Management Guidelines*, NES, and the Hawke's Bay Regional Resource Management Plan (HBRC RRMP), while acknowledging the WorkSafe New Zealand (2016) *Approved Code of Practice for the Management and Removal of Asbestos* (ACOP) and the BRANZ (2017) *New Zealand Guidelines for Assessing and Managing Asbestos in Soil* (NZGAMAS).

All site workers and PCBUs are required to complete and sign the induction form provided in Appendix A, certifying that they have read, understood, and will comply with this RAP during all earthworks at the site.

2 SITE DESCRIPTION

2.1 PROPERTY DETAILS

TABLE 1 PROPERTY DETAILS

Address	Legal Description	Area (Ha)	Zoning
122 Arataki Road, Havelock North	LOT 2 DP 540945	5.234	Plains Production
108 Arataki Road, Havelock North	SEC 10 S BLK IV TE MATA SD	2.939	
86 Arataki Road, Havelock North	LOT 2 DP 546439	2.984	
Total Investigation Area		11.157 Ha	

The above properties at the above identifiers, hereafter collectively referred to as ‘the site’, is located outside of the urban outskirts, approximately 2.3 km northeast of Havelock North town centre (Figure 1). West of the site the wider land use is predominantly urban residential, while land to the east is predominantly rural residential and production land.

2.2 FORMER INVESTIGATIONS AND POTENTIAL CONTAMINANTS

The potential for soil contamination resulting from activities listed on the Hazardous Activities and Industries List (HAIL) was identified within several reports:

- Geosciences Ltd (GSL, 2018), *Environmental Due Diligence (DD)*, 108, 122 & 166 Arataki Road, Havelock North, Ref: Rep-1232/DD/Sep18,
- GSL (2019), *Environmental Due Diligence (DD)*, 86 & 96 Arataki Road, Havelock North, Rep-H0044/DD/Mar19,
- GSL (2021), *Detailed Site Investigation (DSI)*, 86, 102, and 122 Arataki Road, Havelock North, Hastings, Rep-H0162/DSI/Sep21, and
- SQN (2025), *Supplementary Detailed Site Investigation*, 86, 108 & 122 Arataki Road, Havelock North, J250030-DSI-Mar25.

The desktop review and subsequent soil sampling and analysis from these investigations identified multiple HAIL activities across discrete portions of the site requiring remediation:

- **Improper demolition and deterioration of building materials (HAIL E1/I):** Lead and/or asbestos contamination at concentrations exceeding the adopted human health and/or environmental protection criteria was identified in shallow soil around the curtilage of multiple site structures within the 86 and 108 Arataki Road properties. Additionally, asbestos containing materials (ACM) in the form of fibre cement debris was identified around the south-eastern dwelling at 108 Arataki Road.
- **Burning of materials (HAIL I):** Surface soil beneath a burn pile within the eastern portion of 122 Arataki Road (containing partially combusted building materials and/or refuse) contained heavy metals above the human health and environmental protection criteria.

While the site had been subject to historic horticultural activities, analytical results did not indicate that the site had been subjected to the application or bulk storage of persistent pesticides.

The investigations identified that most of the remaining topsoil across the site contain contaminant concentrations above natural background levels.

As noted in the Supplementary DSI, Eco-SGV criteria have since been revised and updated expected background ranges published. Under the current guideline values, additional sample locations exceeded the expected background concentrations and environmental protection criteria for the site. Figures 3a-3c of this report show updated analytical results under the current applicable guideline values.

Sample locations and analytical results from the previous investigations are shown in Figures 2-4.

3 SUMMARY OF CONTAMINATION

A summary of the extents of contamination identified in the previous investigations is depicted in Figures 5a & 5b and Table 2 below. Contaminant concentrations at each location exceeded the human health protection criteria, and the environmental protection criteria was exceeded in all locations except Building C.

TABLE 2 SUMMARY OF ESTIMATED EXTENTS OF CONTAMINATION

Property #	Location	Area (m ²)	Depth (mbgl)	Volume (m ³)	Contaminants
122	Burn Pile	30	0.3	9	As, Cr, Cu, Zn
108	Building A	150	0.3	45	Lead
	Building B ¹	65	0.3	19.5	Lead
	Building C ²	145	0.15	21.75	Asbestos
86	Shed A ³	35	0.15	5.25	Arsenic & Zinc
	Building D & Shed B	290	0.5	145	Lead
Totals		715	-	245.5	-

Notes

1. Packing Shed in DSI (GSL, 2021)
2. Dwelling 5 in DSI (SQN, 2025)
3. Shed 6 in DSI (SQN, 2025)
4. As = Arsenic, Cr = Chromium, Cu = Copper, Zn = Zinc, Asbestos = ACM and free fibres in soil.

Based on the asbestos concentrations identified in the DSI (SQN, 2025), remedial works at Building C shall be completed as Asbestos-Related Works (BRANZ, 2017). However, it is recommended that this work is undertaken by contractors suitably experienced in the removal of asbestos-contaminated soil.

4 ASSESSMENT OF REMEDIAL OPTIONS

Given the nature and estimated volume of the heavy metals and/or asbestos contamination identified, viable remedial options are limited to:

- On-site retention, requiring encapsulation / containment or pre-treatment (soil mixing or chemical immobilization), or
- Excavation and off-site disposal at a suitable location.

It is noted that while additional treatment technologies are available, they are unlikely to be financially viable or are not achievable for the current scenario and are therefore not discussed further.

As the heavy metals and/or asbestos contamination has been identified in organic topsoil material, options for on-site retention are restricted by both location (excluded from future residential areas) and geotechnical compaction standards (excluded from road footprints). Viable containment options are therefore limited to grassed road verges or the north-eastern stormwater drainage reserve (dependant on design), however, the soft grass cap and ongoing management requirements to ensure the soil remains undisturbed are likely to be limiting factors.

These requirements may be minimised by pre-treatment, such as mixing the contaminated soil with cleanfill soil or with a binding agent to limit the mobility or availability of the heavy metals. However, it is noted that there are additional requirements associated with chemical dilution through soil mixing (including a site-specific methodology and soil mixing trial) and there is the potential for multiple rounds of mixing required to achieve the remedial goals. Furthermore, dilution via soil mixing is not a suitable option of the asbestos-contaminated soil.

Considering the above and the nature of the proposed development, excavation and off-site disposal to a licenced disposal facility is the recommended option.

It is noted that this RAP will be updated to reflect any changes to the selected remedial approach should an alternative method become the preferred solution prior to commencement.

5 REMEDIATION ACTION PLAN

This RAP has been prepared to:

- Remove the risk to current and future human and environmental receptors posed by the contamination identified,
- Address the restricted discretionary activity requirements (Regulation 10) of the NES and permitted activity Rules (47 – 49) of the Hawke's Bay Regional Council RRMP, supporting resource consent applications for the development, and
- Document the methods to meet the applicable SCS and Eco-SGVs for the intended landuse.

To achieve these objectives, this RAP provides procedures for:

- Remediation of the heavy metals and/or asbestos-impacted soil across the six areas listed in Table 2.
- Handling of the remaining topsoil areas containing low-level contaminants at the site, and
- Contingency measures in the event of accidental soil contamination discovery during remedial and developmental earthworks.

Remedial goals for this project are to ensure all residual soil complies with the SCS for residential landuse (10% Produce) and ecological SGVs for environmental protection, being:

- | | |
|-------------------------|--|
| • Arsenic: <20mg/kg. | • Zinc: <200 mg/kg. |
| • Lead: <210 mg/kg. | • Asbestos: <0.01% w/w ACM & <0.001% FA/AF |
| • Chromium: <200 mg/kg. | |
| • Copper: <110 mg/kg. | |

The extent of remediation required is specified in Table 2 and Figures 5a & 5b, with a total combined volume of approximately 245.5 m³. Given the nature of ground contamination, actual remedial volumes may vary. No additional proactive remedial works are required outside of these areas.

The practices and procedures in this plan are intended to ensure that health, safety, and environmental risks associated with the proposed earthworks activities are managed to an acceptably low level. It is not intended that this RAP replace the contractor's site-specific health and safety plan or earthworks and sediment control plan, instead this is to be enacted in conjunction with these documents.

5.1 ASBESTOS REQUIREMENTS

Due to the presence of visible ACM on the soil surface and asbestos (ACM) concentrations within the topsoil in the vicinity of Building C, the following requirements apply to works within this area:

- All remedial earthworks must be completed as non-notifiable Asbestos Related Work (Table 6, NZGAMAS) by a contractor experienced in the removal of asbestos contaminated soil,
- A licenced asbestos removal contractor/CLA is engaged to supervise the remedial works, and
- A competent person (such as the nominated CLA, or a licenced asbestos assessor/SQEP) must complete a visual clearance inspection of the site and equipment (e.g. excavator) following completion of the remedial works.

These requirements are further detailed in the following sections.

5.2 HIERARCHY, SITE MANAGEMENT & PCBU REQUIREMENTS

Woods, or the appointed engineer to the contract must complete the information in Table 3 below prior to project commencement to outline the responsibilities of suitably qualified and licenced professionals in relation to the proposed works at the site. Each of the outlined professionals shall work collectively where work streams overlap to ensure remedial and soil disturbance works are streamlined and undertaken in an efficient manner.

5.2.1 RESPONSIBLE PARTIES

Woods will appoint a primary Contractor to undertake the development earthworks and will provide the Contractor with a copy of this RAP to ensure they understand the scope and scale of controls required. The Contractor will in turn appoint a Site Manager who will be the primary person responsible for ensuring the requirements of this RAP are implemented on site and all controls stipulated in the following sections are in place and effective.

An independent suitably qualified and experienced practitioner (SQEP) in contaminated land shall be engaged to fulfil the role of in Contaminated Land Advisor (CLA) and provide on-call assistance regarding actual or potential soil contamination during the proposed works.

A copy of this RAP must also be provided to Auckland Council in advance of works commencing on site for approval.

Following the appointment of a Site Manager, it will be their responsibility to ensure the contact details for the responsible parties with respect to this RAP are provided in Table 3 below.

TABLE 3 RESPONSIBLE PARTIES

Position	Contact Name & Company	Telephone Number	Responsibility
Client	Woods		Project Delivery
Primary Contractor			Management of Project, PCBU
Site Manager / Supervisor			Implementation of RAP
Contaminated Land Advisor (CLA)	SQN GeoSciences		On-call Assistance, Validation of Remedial Works
Asbestos Assessor / SQEP (If separate to the CLA)			Supervision and clearance of asbestos works
Regulatory Authorities	Hastings District Council	06 871 5000	Environmental Pollutant Discharges (Water & Air)
	WorkSafe NZ	0800 030 040	Notifiable H&S Incidents

5.3 BRIEFING SESSIONS

The Site Manager is to commission a briefing session for relevant staff and subcontractors prior to the commencement of works. The briefing session will include as a minimum:

- Known areas of impacted soil material,
- Appropriate PPE and safety measures,
- Asbestos-specific requirements
- Disposal requirements,
- Familiarisation with the requirements of the RAP,
- Guidance for identifying potentially contaminated material as works progress (Section 8), and
- Procedures to be followed should potentially contaminated material be encountered (Section 8).

5.4 HEALTH AND SAFETY PROCEDURES

While this RAP provides steps that are required because of the elevated concentrations of heavy metals identified during the DSI, the earthworks contractor is ultimately responsible for the H&S procedures related to the earthworks and will set site specific protocols.

The concentrations of arsenic within burn pile exceed the human health standards for site workers. Due to the presence of this contaminant, provisions must be established, and adhered to, to ensure the health and safety of workers during remedial soil disturbance in this area.

Inhalation is the most important exposure risk related to airborne asbestos and heavy metals in dust. Additionally, direct contact with skin or eyes are additional routes of entry for the other contaminants identified.

Consequently, earthworks will be subject to the Personal Protective Equipment (PPE) and Respiratory Protective Equipment (RPE) requirements detailed below, in addition to standard site management controls and practices that ensure personnel hygiene and minimise direct soil contact (such as a designated 'smoko' area, appropriate dust control, and the use of direct mechanical load out of soil).

Implementation of these controls and practices within the remaining remedial areas is considered sufficiently conservative to address any risks based on actual assessed concentrations and potential unexpected contamination.

5.5 PERSONAL PROTECTIVE EQUIPMENT

The minimum Personal and Respiratory Protective Equipment (PPE & RPE) which should be available on-site will be in accordance with the contractor's specific health and safety plan. During soil disturbance activities involving asbestos-contaminated material, the following PPE must be worn:

- Protective leather or rubber gloves;
- Safety glasses;
- Half face P2 (or higher) respirators. All individuals entering the asbestos works zone must be clean shaven to ensure correct respirator fit;
- Type 5 / Category 3 disposable coveralls; and
- Steel toe-capped rubber gumboots or safety footwear with disposable overshoes.

Additional PPE that may be required during non-asbestos works include:

- Protective leather or rubber gloves,
- Safety glasses, and
- Dust masks.

The site manager will use his discretion regarding the use of additional PPE and might call on the CLA for advice on this matter.

5.6 PRE-COMMENCEMENT REQUIREMENTS & SITE ESTABLISHMENT

The following must be completed prior to commencing soil disturbance activities at the site:

- Obtain all relevant consents/permits from Hastings District Council and/or Hawkes Bay Regional Council to remove contaminated soil from the site.
- Engage a contractor experienced in the removal of asbestos contaminated soil, and a CLA to supervise the remedial works. While not required, SQN recommends that the contractor holds a Class B asbestos removal licence.
- Notify the CLA of the intended site date of the remedial works.
- Secure pre-approval for the acceptance of soil containing asbestos and heavy metal contaminated materials from a consented receiving facility.
- Establish sediment controls (e.g., silt fencing, catchpit/drain protection) around the remedial footprint in accordance with the Hawke's Bay Regional Council guideline document (2009) *Hawke's Bay Waterway Guidelines Erosion and Sediment Control*.
- Establish a fenced exclusion zone around the areas of works to restrict access to authorised personnel.
- Establish a stabilised site entry with wheel wash area to prevent tracking of contaminants outside the site.
- Establish a designated worker decontamination area, including a foot wash area (if shoe covers are not worn), basic decontamination tent, labelled asbestos waste bags and tape and wet wipes for Building C.
- Ensure all personnel involved in the remedial works are familiar with the requirements of this RAP and have signed the induction form.
- Ensure all workers have received asbestos awareness training including decontamination procedures for the site.
- Obtain all necessary PPE and decontamination equipment for asbestos works.

Remediation of the discrete areas listed in Table 2 may occur in stages as determined by the overall earthworks programme; however, all controls described in this RAP (e.g. pre-commencement and establishment requirements, earthworks procedures, dust and sediment control etc.) must be applied to each discrete area.

5.7 REMEDIAL EARTHWORKS PROCEDURES

The remedial works are to be completed in accordance with the following controls:

- Soil will be excavated via mechanical excavation and direct loadout into covered trucks / trailers, limiting physical handling/contact with excavated soil as far as possible.
- For soil within Building C, the trucks/trailers will be lined with 200 µm heavy-duty polythene lined trays.
- Earthworks within Building C must be completed by a contractor experienced in the removal of asbestos-contaminated soil.
- Personnel working within the impacted area must be wearing appropriate PPE and RPE (Section 4.5).
- No soil disturbance, including stockpiling, may occur outside of the sediment control area.
- Dust suppression is required for the full duration of works (Section 5.9).
- Any foreign materials identified during excavation (e.g. construction and demolition waste, refuse, etc.) must be disposed of as asbestos-contaminated material alongside the excavated soil unless additional testing by the CLA determines otherwise.
- If any unexpected suspicious or noxious materials are encountered during the earthworks, the contingency measures described in Section 8 below will immediately be enacted and the CLA notified. If necessary, the CLA will take soil samples for analysis of any foreign material that is discovered. The CLA will advise on the disposal of any such material.
- Disposal of material, including the requirement to line all trucks / trailers used to transport asbestos contaminated soil and retention of disposal dockets will be in accordance with Section 9.
- Any sediment or soil tracked outside the site will be cleaned up as soon as possible, under the direction of the nominated asbestos supervisor or CLA, to prevent generation of airborne fibres or contaminated water discharges.
- Dust and stormwater protection controls outlined in Sections 5.8 and 5.9 and shall remain in place for the duration of general earthworks.
- Stockpiling of material will be avoided. Where required, temporary stockpiles shall be placed within the sediment and erosion control measures outlined in Section 5.9.
- Decontamination procedures (Section 6) will be followed upon completion of remedial works.

5.8 DUST CONTROL

As inhalation is the most important exposure risk related to airborne soil contaminants in dust, it is imperative that the potential generation of dust is minimised during the disturbance of impacted soil on site. The earthworks Contractor will use their discretion with regard to dust suppression and will be ultimately responsible for ensuring the control of dust during earthworks on site.

Dust generation during earthworks may be controlled by use of light frequent spraying. Water usage should be frequent enough to suppress the generation of dust, but not so heavy as to produce sediment laden run-off. Details on dust suppression during earthworks may be found in the *MfE Good Practice Guide for Assessing and Managing Dust* (2016).

5.9 STORMWATER PROTECTION

To prevent generation of sediment laden run-off, stormwater protection measures shall be incorporated around the perimeter of the proposed works in accordance with Hawke's Bay Regional Council guideline document (2009) *Hawke's Bay Waterway Guidelines Erosion and Sediment Control*. These controls shall include appropriate measures such as protection of the proposed works perimeter with silt fences or silt-socks to trap sediment in stormwater.

5.10 SOIL STOCKPILING

Stockpiling will be minimised as far as practicable, with materials directly loaded onto lined trucks/trailers for disposal. However, if required, contaminated soil stockpiles will be:

- Maintained at 15% moisture content.
- Covered with tarpaulin or other protective measures if left unattended for more than 24 hours or overnight.
- Placed within the area of contamination or placed on heavy duty polythene to prevent cross-contamination.

No stockpiling will occur outside the site or area of sediment control.

5.11 SOIL DISPOSAL

No earthworks plans were available at the time of preparing this report; however, based on the nature of the proposed subdivision and future development, the topsoil materials across the majority of the site will likely require excavation and off-site disposal or reuse. Based on the findings of the DSI, Figure 6 summarises the expected disposal classifications for the site, subject to the waste receiver's confirmation.

TABLE 4 DISPOSAL CLASSIFICATIONS - TOPSOIL

Location	Depth (mbgl)	Area (m ²)	Volume (m ³)	Contaminants	Classification
Burn Pile, Buildings A, B, D, Sheds A & B	Various ¹	570	223.75	Heavy metals	Landfill ^{4,5}
Building C	0.0-0.15	145	21.75	Asbestos	Landfill (asbestos) ^{4,5}
Southwest & Northeast Paddocks	0.0-0.3	14,040	4,212	N/A	Cleanfill ⁶
Remaining Site Soil	0.0-0.3	96,795	23,038.5	Heavy metals, PAH	Non-Cleanfill ⁶

Notes:

1. Refer to Table 2 for estimated depths at each location.
2. Refer to Figures 6a-6c for further details regarding locations.
3. All measurements and extents are estimates only.
4. Acceptance of the site soils will be at the discretion of the nominated receiving facility, and pre-approval shall be obtained before removing soil from the site.
5. Soil classified as landfill is subject to mandatory remediation.
6. Soil may remain on site as no risk to human health or the environment.

Due to the heavy metal concentrations detected within the burn pile, leachability analysis may be required by the waste receiving facility.

All trucks and trailers used to transport asbestos-contaminated soil must be lined with 200 µm polythene prior to loading, must be covered during transport, and are not permitted within the remedial area to avoid tracking potentially contaminated soil onto public roads, with a clean load-out zone established to prevent wheel contamination.

Dockets from the receiving disposal facility must be obtained, detailing the source location, the location of the receiving facility, and the volume of soil disposed.

5.12 SOIL IMPORTATION

All material imported to site (including soil, clay, gravel, sand and rock) shall comply with Hastings District Council's definition of cleanfill 'materials that, when buried, will have no adverse effect on people or the environment. This includes virgin natural materials such as clay and soil, and inert materials such as concrete'.

Evidence of the above (e.g. disposal dockets, laboratory reports etc) shall be provided to the CLA for inclusion in the Site Validation Report (SVR).

6 DECONTAMINATION PROCEDURES (BUILDING C)

Upon completion of the asbestos remedial earthworks at Building C and following confirmation of a successful visual inspection by the nominated CLA/asbestos assessor, decontamination of equipment followed by personal decontamination will be completed for areas involving asbestos work as documented in Sections 6.1 and 6.2.

6.1 EQUIPMENT DECONTAMINATION

Decontamination of any site equipment/plant (i.e. excavator and attachments) used in the asbestos remedial works will involve:

- Removal of all visible soil, vegetation or other material from the tracks and bucket.
- Any contaminated material removed from the digger will be loaded onto lined trucks for disposal as contaminated waste.
- Use of water will be avoided where possible. If used, wastewater generated will be captured for disposal as contaminated wastewater.
- A visual clearance inspection will be completed by the nominated CLA/asbestos assessor, confirming that all contaminated material has been removed from the excavator.
- Decontamination of equipment must be completed under asbestos conditions.

6.2 PERSONAL DECONTAMINATION

Prior to leaving the asbestos work area, all personnel must complete decontamination:

- All personnel must complete the decontamination procedures prior to leaving the work area.
- Coveralls will be sufficiently wetted prior to removal. and
- All asbestos waste, including PPE/RPE (and any other items that cannot be decontaminated) will be double bagged in labelled asbestos waste bags and gooseneck tied for disposal as asbestos waste.

7 POST-COMPLETION REQUIREMENTS

Following completion of remedial works and equipment within the Building C asbestos area the nominated CLA (or SQEP/licenced asbestos assessor) will complete a visual clearance inspection of the excavated area and equipment, to confirm that the remedial and decontamination procedures have been carried out in accordance with this RAP.

Following a successful visual inspection within Building C area, and upon completion of remedial excavations within the other areas, the CLA will collect validation samples (Section 9.2.1). If remedial works are staged, validation sample collection should be completed progressively as each area of remediation is completed. The remedial controls will remain in place until the CLA advises that the remedial targets have been achieved. If the analytical results shown that further contamination remains, additional remediation will be required.

The asbestos works area (including asbestos controls) will remain in place within the Building C area until the CLA advises that the asbestos has been successfully remediated.

8 CONTINGENCIES

Where unidentified soil contamination is encountered on the site during the works (e.g. separate phase hydrocarbons, suspected ACM, odorous or stained soils, buried refuse etc.), the Site Manager will:

- Immediately cease works within 10 m of the area of discovery (or at a suitable distance determined by the CLA), including where practicable, shutting down earthmoving machinery and removing these from the area of discovery,
- Contact the CLA for immediate advice on necessary controls to minimise any discharge of contaminants into the environment, and
- Secure the area of discovery to prevent access and inform wider relevant parties including Auckland Council.

Following notification, the CLA will undertake an initial assessment and provide information to Council on the type of discovery, associated risk, and response to address the discovery. The CLA will either:

- Identify the material *in-situ* if possible (staining, odour, visible fibres or refuse etc.), or
- Undertake sampling *in-situ* to advise on management, and removal and disposal options once analytical results are returned.

If any staff, contractors, or consultants discover contamination, they should notify the Site Manager immediately, who should enact the provisions of the plan.

8.1 FIBROUS MATERIAL (ASBESTOS)

If further asbestos containing materials (ACM) are encountered during earthworks at the site within the soil matrix, all works shall cease (including the excavation and disposal of affected materials) until the provisions of the *Health and Safety at Work (Asbestos) Regulations 2016* are exercised.

ACM identification will be primarily through visual inspection by a suitably competent person or CLA. Any fibrous material observed during the excavation will be visually inspected, photographed, and representative samples submitted to an accredited laboratory for analysis. Following the receipt of analytical results, the site manager, in conjunction with the CLA shall determine what, if any further remedial steps are required, including the provisions of asbestos removal control plans, semi-

quantitative analysis, or site management under the *BRANZ New Zealand Guidelines for the Assessment and Management of Asbestos in Soil* (November 2017).

9 VALIDATION, REPORTING AND RECORD KEEPING

9.1 PRIMARY CONTRACTOR REQUIREMENTS

At the completion of soil disturbance activities, the Primary Contractor will provide the following information as a minimum to the Client and the CLA:

- Volume and nature of any material removed from site and copies of all managed fill/landfill disposal dockets,
- Dimensions of the excavation completed at the site,
- Details of any complaints received, incidents, or accidental discoveries of actual or potential contamination, including any photographic logs and records,
- Details of any material imported to site, and where necessary, certification of soil quality for imported soils, and
- Written confirmation that the controls set out in this RAP were in place and effective for the duration of general development works as required.

9.2 SQEP COMPLETION REPORTING

Upon completion of the remedial works, a Site Validation Report (SVR) will be completed by a SQEP and provided to Auckland Council.

9.2.1 VALIDATION SAMPLING REQUIREMENTS

Soil sampling and analysis completed during the previous investigations indicate that soils containing elevated heavy metals and/or asbestos concentrations requiring remediation are limited to the topsoil horizon, as detailed in Table 2. As such, SQN recommends that a total of 53 validation samples are taken from these areas following completion of the remedial excavations. It is noted that wall samples are not proposed where excavations extend up to property boundaries or building edges, or where the depth of contamination has been delineated in the DSI (2020).

TABLE 5 VALIDATION SAMPLE REQUIREMENTS

Location	Excavation Depth	Base Samples	Wall Samples	Analytes
Burn Pile	0.3	1	4	As, Cr, Cu, Zn
Building A	0.3	7	6	Lead
Building B	0.3	6	7	Lead
Building C	0.15	2	5	Asbestos
Shed A	0.15	1	4	Arsenic & Zinc
Building D & Shed B	0.5	4	6	Lead

Notes:

1. Depths in mbgl
2. As = Arsenic, Cr = Chromium, Cu = Copper, Zn = Zinc.

Each sample will be submitted to an IANZ accredited laboratory for heavy metals and/or asbestos analysis and compared against the remedial targets listed in Section 5.

If one or more samples return contaminant concentrations in excess of remedial target(s), further remediation (i.e. additional excavation) and validation sampling may be required, until the remedial standards are met. The locations of the remedial extent and proposed validation sampling are shown on Figures 5a & 5b; however, it is noted that the proposed validation soil sampling regime may be altered by a SQEP in line with CLMG No. 5 based on observations made during the validation inspection.

9.2.2 REPORTING REQUIREMENTS

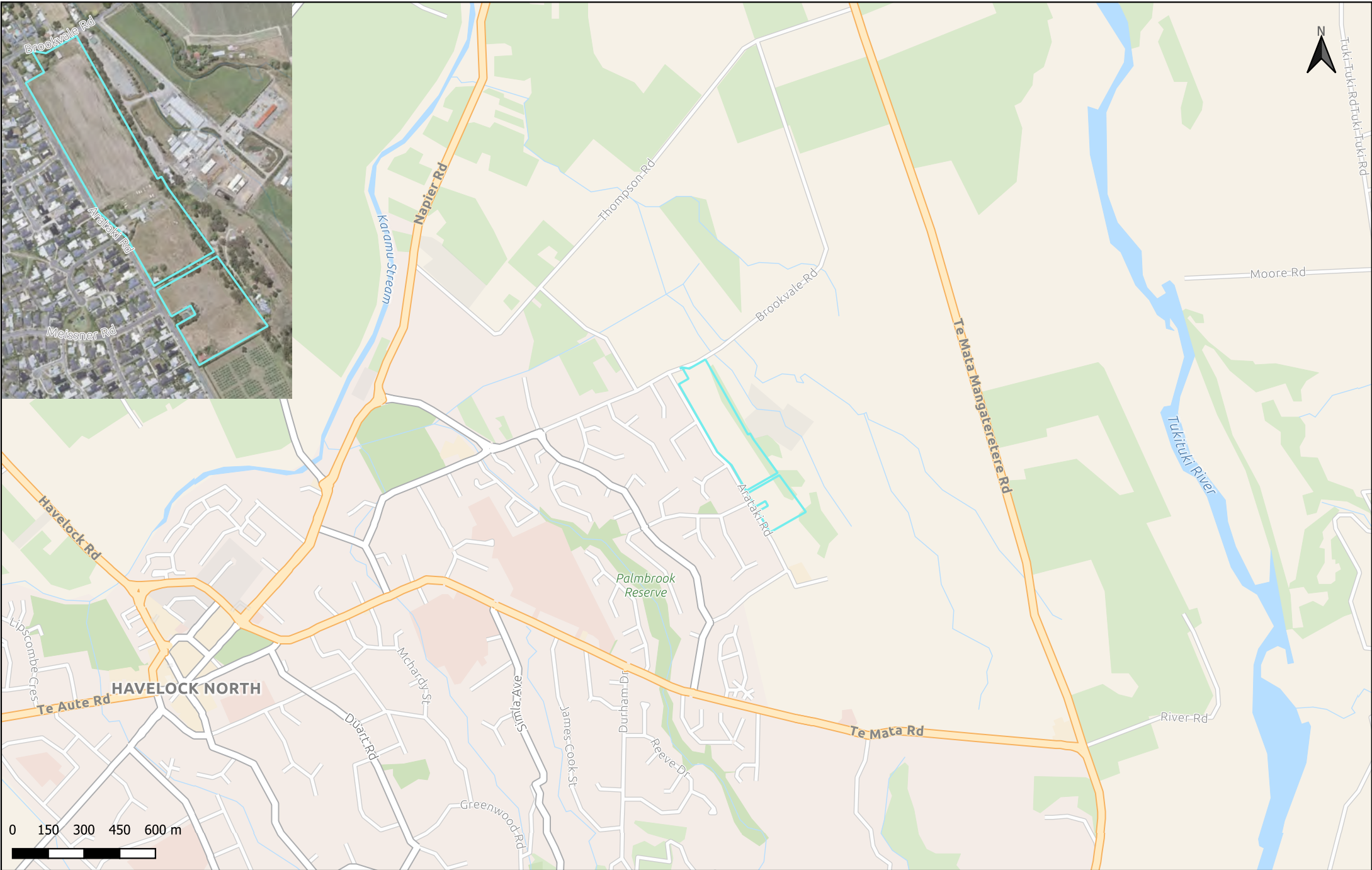
In accordance with CLMG No. 1 and to satisfy the relevant conditions of the resource consent, an SVR will be prepared by a SQEP following completion of remedial works and confirmation all validation samples meet the applicable remedial goals. As a minimum, the SVR will include:

- Confirmation from the Site Manager that earthworks, including remediation of the heavy metals and/or asbestos hotspot, has been completed in accordance with this RAP and the relevant conditions of the resource consent,
- Confirmation that all soil removed from site has been appropriately disposed of a facility licenced to accept the level of contamination identified,
- Volume and nature of any material removed from site and all non-cleanfill/landfill disposal dockets,
- A log of any unknown or suspicious materials encountered during the earthworks,
- Details of any site inspections or soil sampling that occurred,
- Laboratory reports from any soil testing undertaken,
- Any complaints or incidents relating to soil contamination,
- An as-built plan of any capped contamination, including the cap thickness (where applicable),
- Details on the need for long-term management of the area following verification sampling, and
- Site photographs of all excavations and re-instatement works.

10 REFERENCES

1. BRANZ (2017) – *New Zealand Guidelines for Assessing and Managing Asbestos in Soil*. Wellington, New Zealand.
2. Geosciences Ltd (GSL, 2018) – *Environmental Due Diligence (DD), 108, 122 & 166 Arataki Road, Havelock North*, Ref: Rep-1232/DD/Sep18.
3. GSL (2019) – *Environmental Due Diligence (DD), 86 & 96 Arataki Road, Havelock North*, Rep-H0044/DD/Mar19
4. GSL (2021) – *Detailed Site Investigation (DSI), 86, 102, and 122 Arataki Road, Havelock North, Hastings*, Rep-H0162/DSI/Sep21.
5. Hawke's Bay Regional Council (2009) – *Hawke's Bay Waterway Guidelines Erosion and Sediment Control*.
6. Landcare Research (2023), *An Implementation Framework for Ecological Soil Guideline Values (July 2023)*. Envirolink Tools Grant: C09X2206.
7. Landcare Research (2014) – *Hawke's Bay Region: Background Soil Concentrations for Managing Soil Quality*. Report No. RM 14-03, HBRC plan no. 4611. Envirolink Advice Grant: 1443-HBRC194.
8. Ministry for the Environment (2011) – *Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011*. Wellington, New Zealand.
9. Ministry for the Environment (2016) – *Good Practise Guide for Assessing and Managing Dust*. Wellington, New Zealand.
10. Ministry for the Environment (Revised 2021a) — *Contaminated Land Management Guidelines No.1: Reporting on contaminated Sites in New Zealand*. Ministry for the Environment, Wellington, New Zealand.
11. Ministry for the Environment (Revised 2021b) — *Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils*. Ministry for the Environment, Wellington, New Zealand.
12. SQN (2025) – *Supplementary Detailed Site Investigation, 86, 108 & 122 Arataki Road, Havelock North*, J250030-DSI-Mar25.

FIGURES



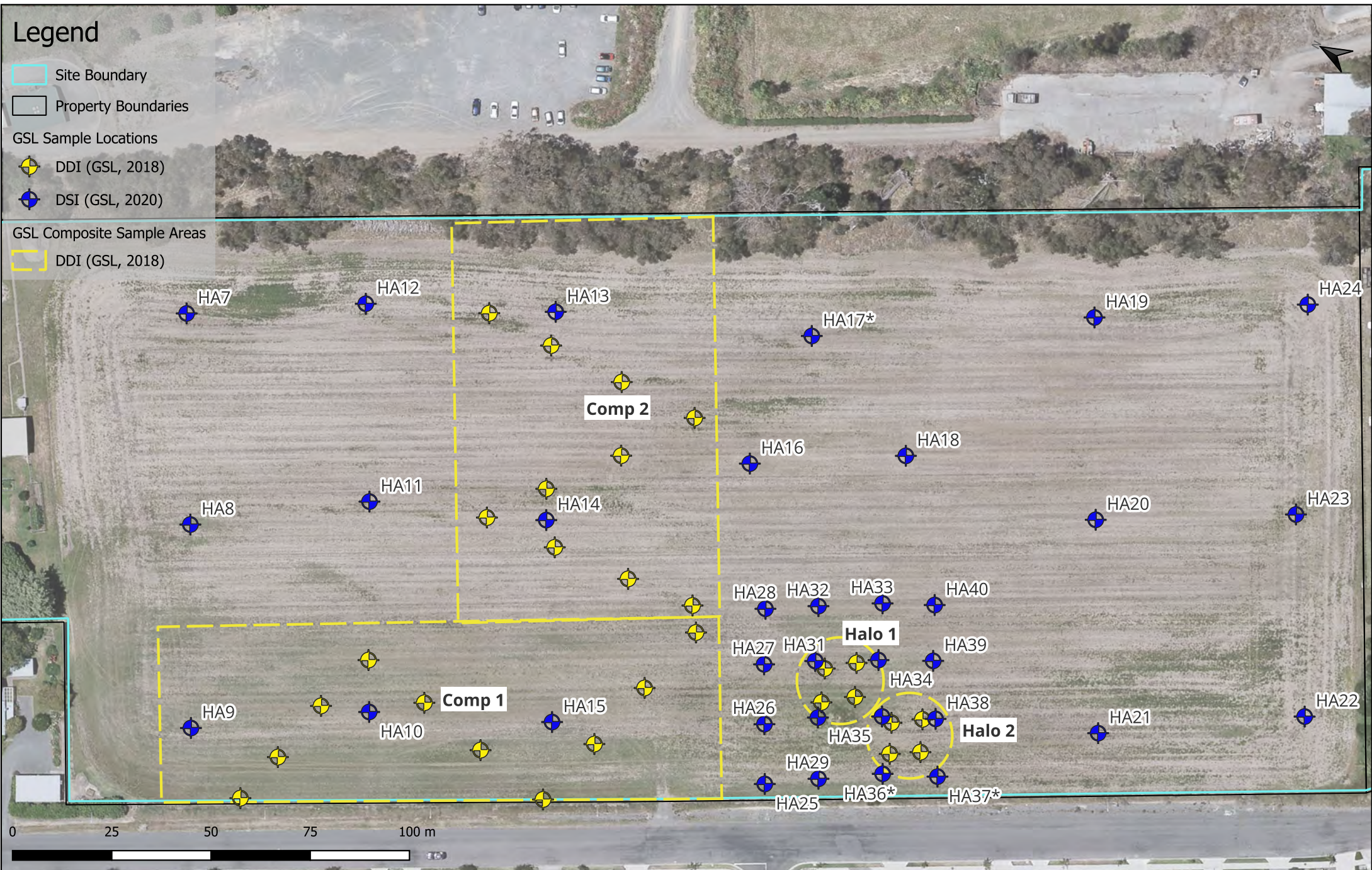
SQN GeoSciences Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	SITE LOCATION		DRAWN GC	APPROVED CD	JOB No. J250030	DATE 2025-03-12
	86, 108 & 122 Arataki Road, Havelock North		NOTES		SCALE 1:20,000 (A4) Inset 1:10,494 (A4)	REV 0

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SQN GeoSciences Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	OVERALL SITE PLAN	DRAWN GC	APPROVED CD	JOB No. J250030	DATE 2025-03-14
	86, 108 & 122 Arataki Road, Havelock North	NOTES		SCALE 1:4200 (A4)	REV 0
				DWG No. Figure 2	

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SQN GeoSciences Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	122 ARATAKI ROAD - GSL SAMPLE LOCATIONS		DRAWN LC	APPROVED COB	JOB No. J250030	DATE 2025-03-14
	86, 108 & 122 Arataki Road, Hastings		NOTES		SCALE 1:1200 (A4)	REV 0
					DWG No. Figure 2a	

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Legend

- Site Boundary
- Property Boundaries
- GSL Sample Locations
 - DDI (GSL, 2018)
 - DSI (GSL, 2020)
- GSL Composite Sample Areas
 - DDI (GSL, 2018)

Map Labels: HA1, HA2, HA3, HA4, HA5, HA6, HA23, HA24, DS1, DS2, DS9, DS10, DS11, DS12, DS13, DS16, DS17, DS18, DS19, DS20, DS21, DS22, DS23, Halo 5, Comp 4, SS1, SS2, SS3, SS4, SS5, H6.

Scale: 0, 20, 40, 60, 80 m

 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL SAMPLE LOCATIONS	DRAWN LC APPROVED COB NOTES	JOB No. J250030 DATE 2025-03-14 SCALE 1:930 (A4) DWG No. Figure 2b REV 0
	86, 108 & 122 Arataki Road, Hastings		

 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL SAMPLE LOCATIONS	DRAWN LC APPROVED COB NOTES	JOB No. J250030 DATE 2025-03-14 SCALE 1:930 (A4) DWG No. Figure 2b REV 0
	86, 108 & 122 Arataki Road, Hastings		

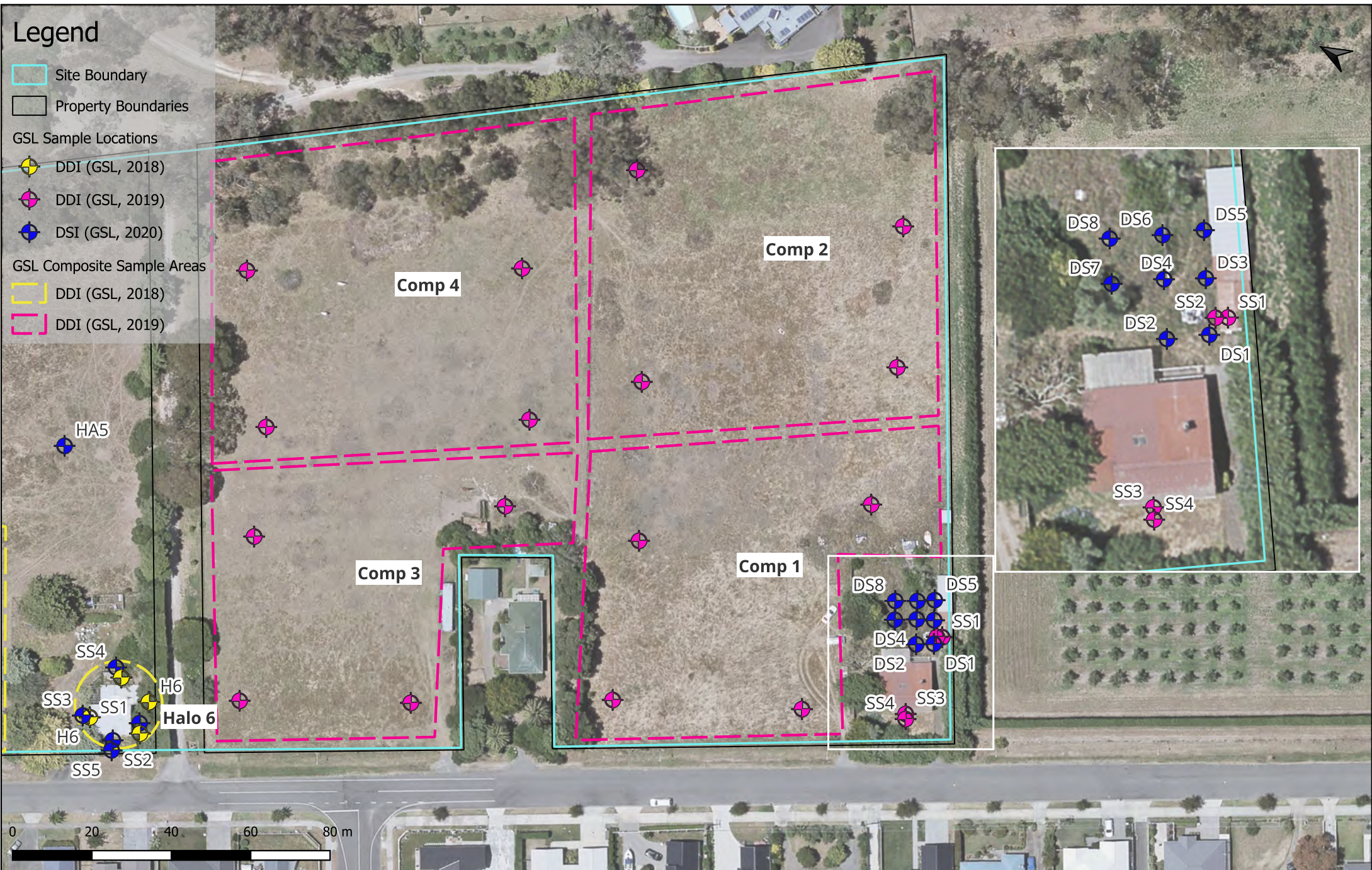
 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL SAMPLE LOCATIONS	DRAWN LC APPROVED COB NOTES	JOB No. J250030 DATE 2025-03-14 SCALE 1:930 (A4) DWG No. Figure 2b REV 0
	86, 108 & 122 Arataki Road, Hastings		

 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL SAMPLE LOCATIONS	DRAWN LC APPROVED COB NOTES	JOB No. J250030 DATE 2025-03-14 SCALE 1:930 (A4) DWG No. Figure 2b REV 0
	86, 108 & 122 Arataki Road, Hastings		

 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL SAMPLE LOCATIONS	DRAWN LC APPROVED COB NOTES	JOB No. J250030 DATE 2025-03-14 SCALE 1:930 (A4) DWG No. Figure 2b REV 0
	86, 108 & 122 Arataki Road, Hastings		

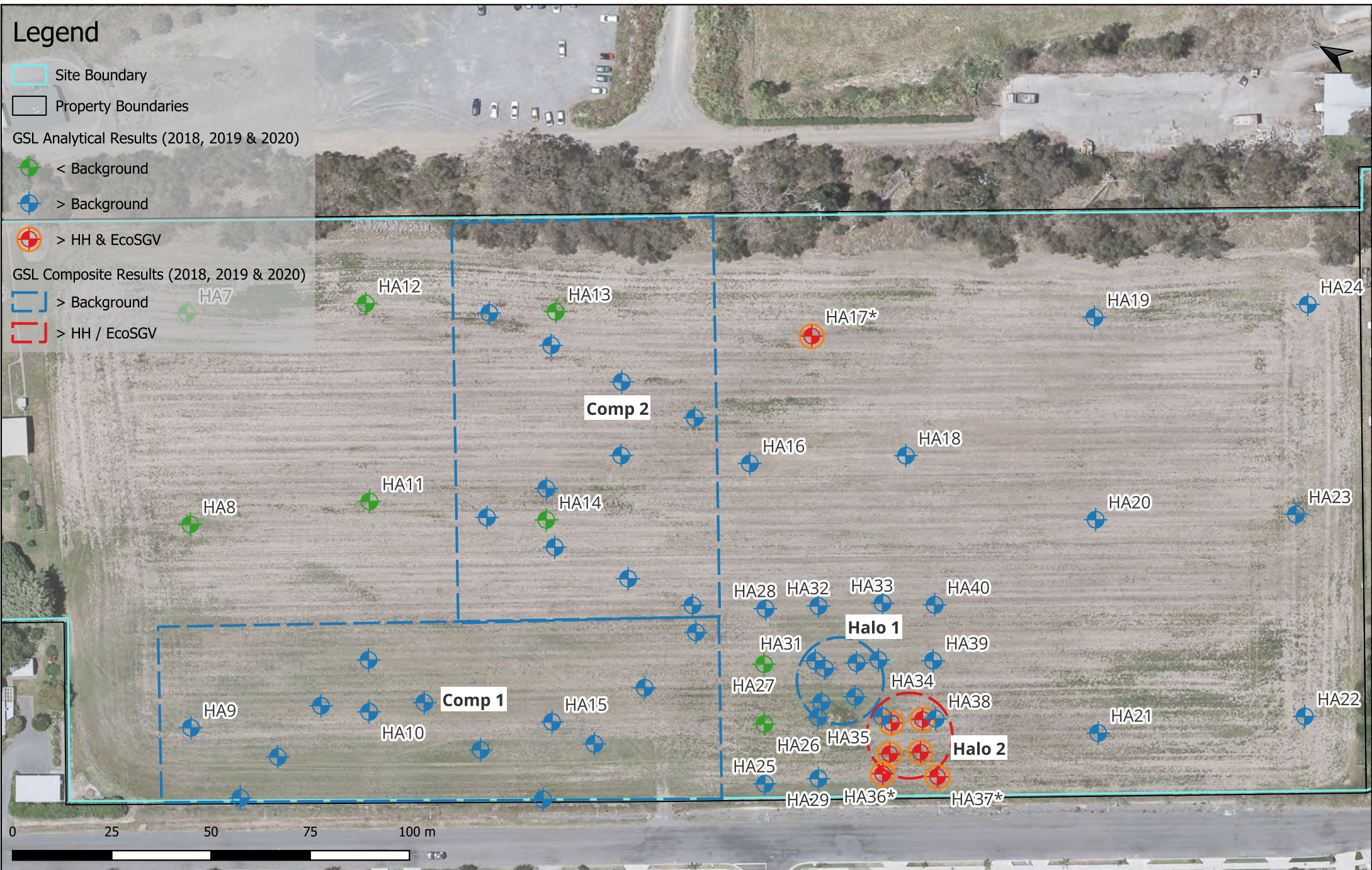
 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL SAMPLE LOCATIONS	DRAWN LC APPROVED COB NOTES	JOB No. J250030 DATE 2025-03-14 SCALE 1:930 (A4) DWG No. Figure 2b REV 0
	86, 108 & 122 Arataki Road, Hastings		

 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL SAMPLE LOCATIONS	DRAWN LC APPROVED COB NOTES	JOB No. J250030 DATE 2025-03-14 SCALE 1:930 (A4) DWG No. Figure 2b REV 0
	86, 108 & 122 Arataki Road, Hastings		



SQN GeoSciences	Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	86 ARATAKI ROAD - GSL SAMPLE LOCATIONS		DRAWN LC	APPROVED COB	JOB No. J250030	DATE 2025-03-14
		86, 108 & 122 Arataki Road, Hastings		NOTES		SCALE 1:1200 (A4)	REV 0

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SQN GeoSciences Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	122 ARATAKI ROAD - GSL ANALYTICAL RESULTS		DRAWN LC APPROVED COB		JOB No. J250030	DATE 2025-03-14
	86, 108 & 122 Arataki Road, Hastings		NOTES *95% UCL results indicate that marginal exceedances are spurious and in the context of the broader area these concentrations do no pose a risk to human health / environment. HH = Human Health		SCALE 1:1200 (A4)	REV 0
					DWG No. Figure 3a	

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 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - GSL ANALYTICAL RESULTS	DRAWN LC NOTES HH = Human Health	APPROVED COB	JOB No. J250030 SCALE 1:930 (A4) DWG No. Figure 3b	DATE 2025-03-14 REV 0
	86, 108 & 122 Arataki Road, Hastings				

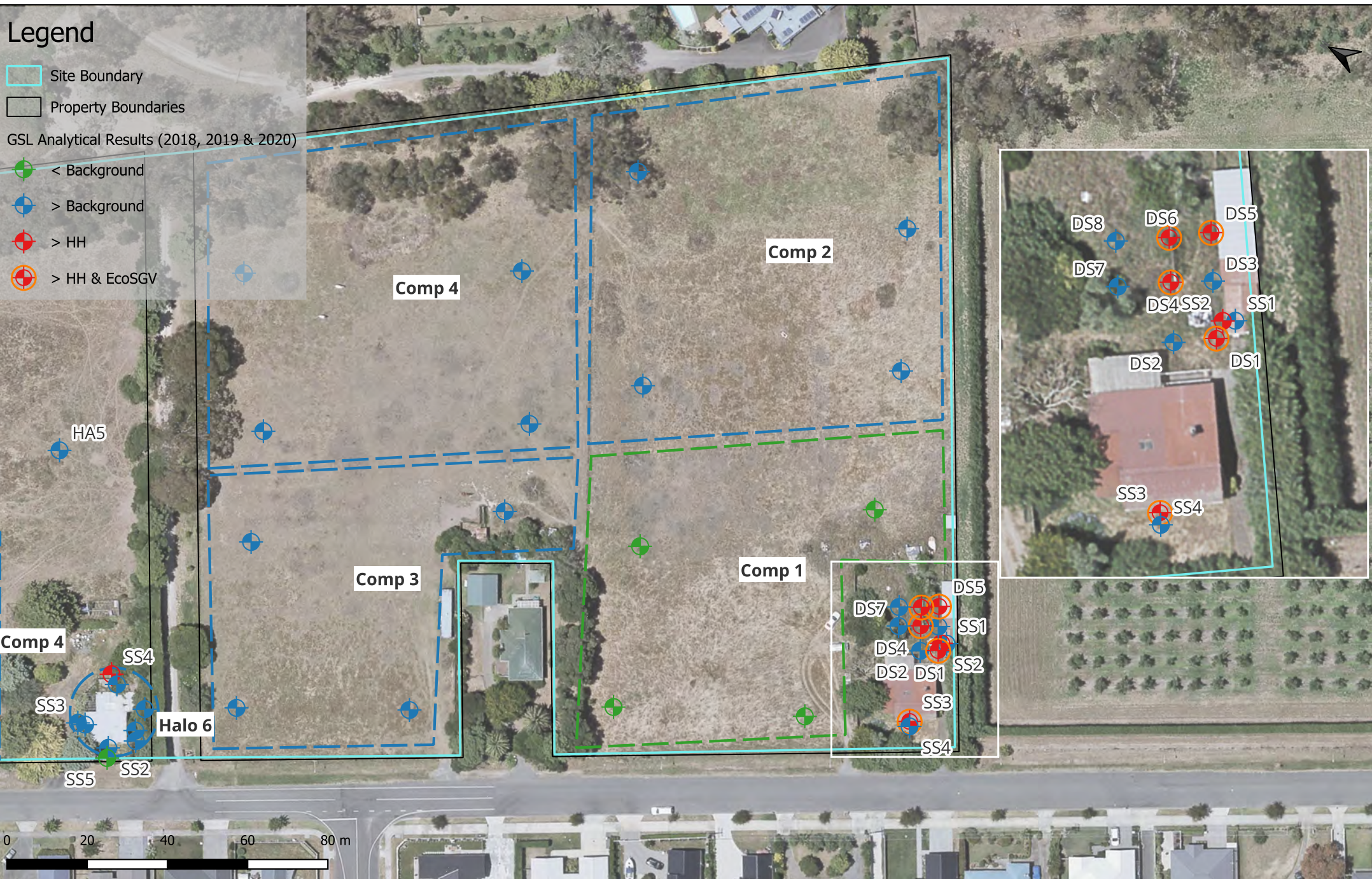
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Legend

- Site Boundary
- Property Boundaries

GSL Analytical Results (2018, 2019 & 2020)

- < Background
- > Background
- > HH
- > HH & EcoSGV



SQN
GeoSciences

Building 1, 1 William Pickering Drive,
Rosedale, Auckland, 0632
PO Box 45053, Waterloo, Lower Hutt, 5042
Tel: 0800 333 287

**86 ARATAKI ROAD -
GSL ANALYTICAL RESULTS**
86, 108 & 122 Arataki Road, Hastings

DRAWN LC APPROVED COB
NOTES
HH = Human Health

JOB No. J250030 DATE 2025-03-14
SCALE 1:1200 (A4)
DWG No. Figure 3c REV 0



Legend

- Site Boundary
- Property Boundaries
- Discrete Sample Locations
 - > Background
 - > HH & Eco SGV
- Composite Areas
- Composite Subsample Locations

SQN GeoSciences	Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	122 ARATAKI ROAD - DSI		DRAWN LC		APPROVED COB		JOB No. J250030	DATE 2025-03-14
		ANALYTICAL RESULTS (SQN, 2025)		NOTES HH = Human Health		SCALE 1:461 (A4)			
		86, 108 & 122 Arataki Road, Hastings				DWG No. Figure 4a		REV 0	

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Legend

- Site Boundary
- Property Boundaries
- Discrete Sample Locations
- < Background
- > HH



SQN GeoSciences	108 ARATAKI ROAD - DSI		DRAWN GC	APPROVED CD	JOB No. J250030	DATE 2025-03-14
	ANALYTICAL RESULTS (SQN, 2025)		NOTES		SCALE 1:750 (A4)	
	86, 108 & 122 Arataki Road, Hastings		*Asbestos detected in fibre cement debris (BM1), but absent in underlying soil. HH = Human Health		DWG No. Figure 4b	REV 0

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Legend

- Site Boundary
- Property Boundaries

Discrete Sample Locations

- > Background
- > HH & Eco SGV



Building 1, 1 William Pickering Drive,
Rosedale, Auckland, 0632
PO Box 45053, Waterloo, Lower Hutt, 5042
Tel: 0800 333 287

86 ARATAKI ROAD - DSI
ANALYTICAL RESULTS (SQN, 2025)
86, 108 & 122 Arataki Road, Hastings

DRAWN GC APPROVED CD
NOTES
HH = Human Health

JOB No. J250030 DATE 2025-03-14
SCALE 1:700 (A4)
DWG No. Figure 4c REV 0



SQN GeoSciences	Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	ESTIMATED REMEDIAL EXTENTS & VALIDATION SAMPLE LOCATIONS		DRAWN LC APPROVED COB		JOB No. J250030 DATE 2025-03-17	
		86, 108 & 122 Arataki Road, Hastings		NOTES All extents are estimates only. Proposed validation sample locations are indicative and dependent on final remedial extents.		SCALE 1:370 (A4)	
						DWG No. Figure 5a REV 0	

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SQN GeoSciences Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	ESTIMATED REMEDIAL EXTENTS & VALIDATION SAMPLE LOCATIONS		DRAWN LC APPROVED COB		JOB No. J250030 DATE 2025-03-17	
	86, 108 & 122 Arataki Road, Hastings		NOTES All extents are estimates only. Proposed validation sample locations are indicative and dependent on final remedial extents.		SCALE 1:450 (A4)	
					DWG No. Figure 5b REV 0	

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Legend

- Site Boundary
- Property Boundaries
- Cleanfill
- Landfill
- Non-Cleanfill

 Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	122 ARATAKI ROAD - DISPOSAL CLASSIFICATIONS	DRAWN LC APPROVED COB	JOB No. J250030 DATE 2025-03-15
	86, 108 & 122 Arataki Road, Hastings	NOTES Classifications and extents are indicative only and may be subject to change. Pre-approval from nominated waste receiver required.	SCALE 1:1360 (A4) DWG No. Figure 6a REV 0

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SQN GeoSciences Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	108 ARATAKI ROAD - DISPOSAL CLASSIFICATIONS		DRAWN LC	APPROVED COB	JOB No. J250030	DATE 2025-03-17
	86, 108 & 122 Arataki Road, Hastings		NOTES Classifications and extents are indicative only and may be subject to change. Pre-approval from nominated waste receiver required.		SCALE 1:1000 (A4)	REV 0

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Legend

- Site Boundary
- Property Boundaries
- Cleanfill
- Landfill
- Landfill (ACM)
- Non-Cleanfill

SQN GeoSciences Building 1, 1 William Pickering Drive, Rosedale, Auckland, 0632 PO Box 45053, Waterloo, Lower Hutt, 5042 Tel: 0800 333 287	86 ARATAKI ROAD - DISPOSAL CLASSIFICATIONS	DRAWN LC APPROVED COB	JOB No. J250030 DATE 2025-03-17
	86, 108 & 122 Arataki Road, Hastings	NOTES Classifications and extents are indicative only and may be subject to change. Pre-approval from nominated waste receiver required.	SCALE 1:1000 (A4) REV 0
DWG No. Figure 6c			

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APPENDIX A INDUCTION FORM

All site workers and visitors entering the site during the earthworks must be inducted into this RAP and sign the below induction form. By signing this form, you understand and agree to comply with the requirements outlined in this report.

Name	Company	Date	Signature

APPENDIX B PROPOSED SCHEME PLAN

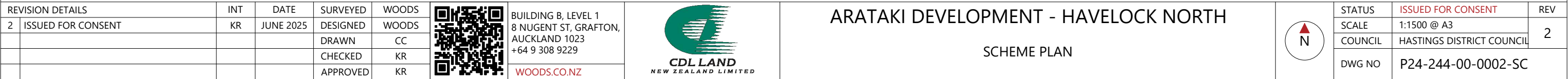
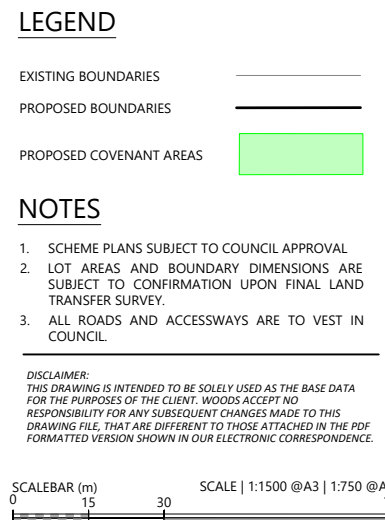




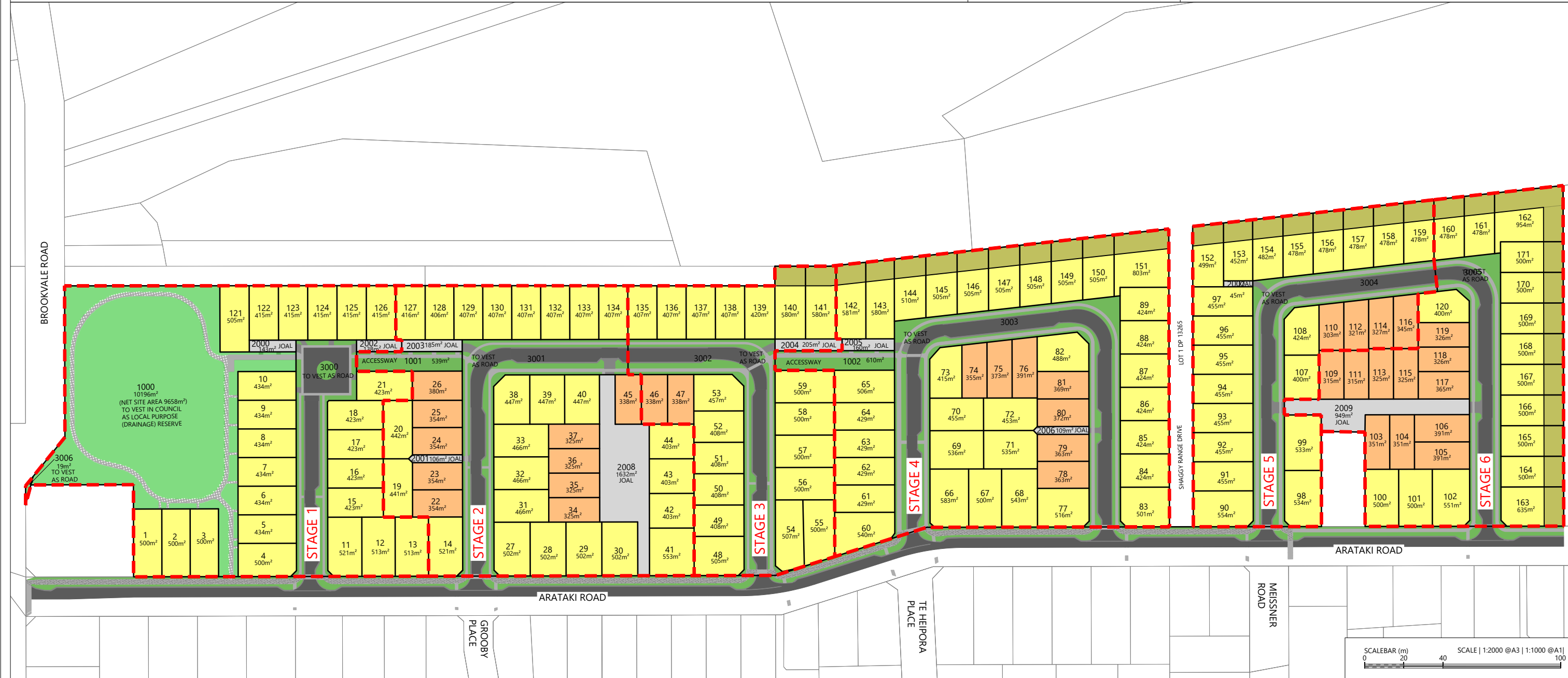
Fig. 1: 12DTEMP\12DSYNERGY\12DSYNERGY\ENERGYSERVICE\ICE8080\EIF604EE-AD71-454D-B9C7-1A9EDC7A3D18\P24-244-00-0001-5C.DWG



REVISION DETAILS		INT	DATE	SURVEYED	WOODS		BUILDING B, LEVEL 1 8 NUGENT ST, GRAFTON, AUCKLAND 1023 +64 9 308 9229 WOODS.CO.NZ		ARATAKI DEVELOPMENT - HAVELOCK NORTH SCHEME PLAN				STATUS	ISSUED FOR CONSENT	REV
2	ISSUED FOR CONSENT	KR	JUNE 2025	DESIGNED	WOODS								SCALE	1:1500 @ A3	2
				DRAWN	CC								COUNCIL	HASTINGS DISTRICT COUNCIL	
				CHECKED	KR								DWG NO	P24-244-00-0003-SC	
				APPROVED	KR										

ARATAKI DEVELOPMENT STANDALONE LOTS	STAGE 1	STAGE 2	STAGE 3	STAGE 4	STAGE 5	STAGE 6	TOTAL
	24	35	21	40	24	27	171

LEGEND	
STAGE BOUNDARIES	---
BOUNDARIES	---
ROAD CARRIAGEWAY	---
PEDESTRIAN PATHS	---
INFORMAL PEDESTRIAN PATHS	---
SHARED PATHS	---
JOINT OWNED ACCESS LOTS (JOAL)	---
LOT TYPE 1	---
LOT TYPE 2	---
PROPOSED DRAINAGE RESERVE	---
COVENANT AREA OVER LOT TYPE 1	---



REVISION DETAILS		INT	DATE	SURVEYED	WOODS
1	ISSUED FOR DISCUSSION	BM	APR 2025	DESIGNED	AB
2	ISSUED FOR CONSENT	TB	JUNE 2025	DRAWN	BM
				CHECKED	BLO
				APPROVED	BF

BUILDING B, LEVEL 1
8 NUGENT ST, GRAFTON,
AUCKLAND 1023
+64 9 308 9229
WOODS.CO.NZ



ARATAKI DEVELOPMENT - HAVELOCK NORTH

DEVELOPMENT CONTROL PLAN

STATUS	ISSUED FOR CONSENT	REV
SCALE	1:2000 @ A3	2
COUNCIL	HASTINGS DISTRICT COUNCIL	
DWG NO	P24-244-00-0100-GE	

APPENDIX C SQEP CERTIFICATION

Curriculum Vitae

Name: Carl O'Brien
Company: SQN Consulting Ltd
Position: Senior Environmental Scientist

Contact: (M) 027 420 5193
(E) Carl@SQN.co.nz

Tertiary Qualifications:

- Post Graduate Diploma in Science (Environmental Management) (Distinction), University of Auckland, 2013
- Bachelor Of Science (Biology), University of Auckland, 2008

Suitably Qualified and Experienced Practitioner Status:

I have more than 16 years' experience in environmental impact assessments, contaminated land management and assessment, Assessment of Environmental Effects, Adaptive Management Plans, Environmental Regulatory Assessments, and Environmental Policy Assessment. My qualifications and experience meet the requirements of a '*Suitably Qualified and Experienced Practitioner*' as detailed in the User's Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (MfE 2012). This is sufficient for preparation and certification of reports.

Employment Record:

- SQN Consulting Ltd, Senior Environmental Scientist (August 2024 – Current);
- AgFirst Consultants HB Ltd, Senior Environmental / Horticultural Consultant (July 2023 – Current);
- Geosciences Ltd, General Manager / Director (2018 – 2023);
- Geosciences Ltd, Senior Environmental Consultant (2015 – 2018);
- Mitchell Partnerships Ltd, Environmental Consultant (2008 – 2015).

Summary of Key Projects

Kāinga Ora Housing Corporation – Social Housing Stock Re-Development Programme: Preparation of PSI, DSI and feasibility assessments for the redevelopment or significant swathes of KOHC (formerly Housing New Zealand Corporation) properties in Whangarei, Auckland, Rotorua, Gisborne, Napier, Hastings, Taupo, Wellington, and Palmerston North. Works have included site management plans and remediation strategies to address a range of HAIL activities encompassed within the KOHC stock as well as technical caucusing to develop an internal KOHC policy on site assessment.

Ambury Properties Ltd – SleepyHead Estate: Preparation of a PSI and DSI for the Stage 1 Earthworks extent for the construction and development of a new Sleepyhead factory. This was followed by preparation and presentation of expert evidence for Hearing 19 on the

Proposed Waikato District Plan for rezoning of land at Ohinewai to establish the Sleepyhead Estate, a mixed commercial, industrial and residential precinct.

CDL Land New Zealand Ltd – Brookfield Estate Stage 2: Preparation of a DSI, RAP and SVR for Brookfield's Estate Stage 2, Havelock North, Hastings to address residual persistent pesticide contamination from historic orchard activities. This included development of an encapsulation regime for impacted soils, delineation of soils of different qualities, and stratified disposal of excess soil from the development, followed by site validation reporting.

Neil Group – Various: Preparation of PSI's and DSIs for Neil Group residential development in Auckland and Bay of Plenty including determination of Remediation Action Plans, Site Management Plans, and Site Validation Reports where required.

Millennium Group Ltd – Sandy Lane Residential Development: Contaminated Land Advisor for the implementation of a revised Remediation Action Plan to address former landfill activities. Works included on call services for environmental advice, accidental discovery of a significant volume of refuse during earthworks, liaison with WorkSafe NZ and Licensed Asbestos Removalists and undertaking a staged validation approach over the site to minimize disruptions during earthworks. Following completion of works, the project required production of expert evidence and technical witness caucusing for High Court claims of loss by the Client against the previous consultancies;

NZ Storage Holdings Ltd - Otahuhu Power Station Redevelopment: Resource consent works to obtain relevant permissions for staged investigation and redevelopment of the former Otahuhu A and Otahuhu B power stations and associated infrastructure (switchyards, transformer bays, DG Stores etc). Detailed investigation of underlying soil quality across the parcel is ongoing.

ERGO Consulting Ltd – Vector Substation Upgrades: Preliminary and detailed investigation of existing substations throughout Auckland and Northern Waikato for the purpose of undertaking upgrade works.

Southern Gateway Consortium Limited – Puhinui Road, Prices Road and State Highway 20 Master Plan: Engaged by the consortium to undertake staged contamination investigations (PSI and DSI's) across an initial 27.6 ha footprint for the expansion of road network linkages and bridges with supplementary detailed investigation of green fields properties in Wiri. Future provision for assessment of the remaining ~150 ha of masterplan footprint was set out in the site management plan prepared.

The Mill Industrial Park Ltd – The Mill Industrial Park Subdivision and Development: Initially commenced engagement to facilitate Environment Court mediation following Auckland Council abatement notices with respect to actual and potential contamination. Following mediation, contaminated land investigations commenced and works expanded into development of remedial action plans and site management plans for the containment of impacted soil within an engineered structure on site. Works also expanded to include detailed site investigation of areas of the Industrial Park to provide recommendations and controls for completing boundary adjustment subdivisions across the site alongside Contaminated Land Advisor role during earthworks;

Northland Waste Ltd – Transfer Station Redevelopment: Preliminary and detailed site investigations of current waste transfer stations for redevelopment including preparation of Environmental Management Plans, design of stormwater and trade waste discharge monitoring regimes.

Ridge Road Quarry Ltd – Managed Fill & Quarry Expansion: Preparation of an Assessment of Environmental Effects of Leachate Discharge from the application to expand the Ridge Road

Quarry Managed Fill to encompass up to 10 million cubic metres of fill over a life of quarry application. The scope of works included provisions for monitoring discharges from sediment retention ponds, management mechanisms for deposition of asbestos containing materials and generation of a site-specific set of waste acceptance criteria.

Pro Floors Ltd – Clean & Managed Fill AEE's and CLA Advice: Preparation of assessments of environmental effects for numerous managed fill locations across the Auckland Region including site specific risk assessments and development of acceptance criteria. In addition, ongoing contaminated land advice has been provided for accidental discovery of contamination, compliance with resource consent conditions and preparation of site closure reports at completion of filling activities.

Dirtworks Ltd – Preparation of Managed Fill AEE's and CLA advice: Preparation of assessments of environmental (discharge) effects for numerous managed fill locations across the Auckland Region including site specific risk assessments and development of waste acceptance criteria. In addition, ongoing contaminated land advice has been provided for accidental discovery of contamination, compliance with resource consent conditions and preparation of site closure reports at completion of filling activities.

P & I Pascoe Ltd – Clean & Managed Fill AEE's and CLA Advice: Preparation of assessments of environmental effects for numerous managed fill locations across the Auckland Region including site specific risk assessments and development of waste acceptance criteria. In addition, ongoing contaminated land advice has been provided for accidental discovery of contamination, compliance with resource consent conditions and preparation of site closure reports at completion of filling activities.