

Interim

Bayswater Marina Residential Redevelopment, 21 Sir Peter Blake Parade, Devonport

Site Management Plan (Ground Contamination)

BAYSWATER MARINA HOLDINGS LTD

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1. Introduction

Williamson Water & Land Advisory (WWLA) has prepared this Site Management Plan (SMP) to assist Bayswater Marina Holdings Ltd (BMH) support consenting and redevelopment of the Bayswater Marina, Devonport for residential and public use (**Figure 1**).



Figure 1. The site (Source Auckland Council GIS).

1.1 User's guide

This SMP has been prepared to satisfy resource consent requirements, whilst providing procedures for Contractors undertaking the works. While Contractors are expected to review the document in its entirety, a **Checklist** has been prepared to assist Contractors with compliance with this document. The checklist (**Appendix A**) provides the key actions required to comply with this SMP.

The Contaminated Land Specialist (CLS) will review the checklist with the Contractor at the establishment phase as indicated in **Section 4.1**.

1.2 Overview

BMH propose to redevelop an existing car park and boat servicing yard into residential housing (townhouses) with associated public spaces. A preliminary site investigation (PSI)¹ undertaken by Hazel-Hewett Associates identified potential for contamination at the site as a result of the boat servicing yard in the north of the site². Potential for fill used in the reclamation of the site to be contaminated was considered negligible as marine

¹ Hazel-Hewett, May 2021. Bayswater Marina Holdings Limited, 21 Sir Peter Blake Parade, Bayswater Marina. Preliminary Site Investigation Report. Prepared for Empire Capital Ltd.

² An activity listed on MfE's Hazardous Activities and Industries List (HAIL) as F5: Port activities including dry docks and marine vessel maintenance facilities.

dredgings were used. A fuel line was also considered but as it runs just inside the boundary of the site footprint in an area that will remain as public land, it is highly unlikely to have resulted in contamination that will impact on site works.

Council have accepted the findings of the PSI but have requested sampling be undertaken and a Site Management Plan (SMP) be prepared to support the consent application and ground works. BMH have agreed to seek consent as a discretionary activity under the NESCS³ and AUP⁴ and carry out sampling as a condition of consent. This SMP supports the consent application and outlines the sampling that will be taken prior to works commencing. It is intended that this Interim SMP will be revised following sampling to reflect the actual contaminant levels on site but can be implemented concurrently with investigations should soil disturbance be required.

1.3 Site identification

This SMP relates to the property described in **Table 1**. The property is a peninsula, bound by the Waitemata Harbour including the Bayswater Marina berths and associated vessels to the west and public access to a boat ramp located in the south of the peninsula. A boat charter company operates from the marina. A vessel refuelling jetty that forms part of the marina is located south of the site along with the Fullers Ferry terminal.

Table 1. Site identification

Address	Legal description	Certificate of title	Area (m ²)
21 Sir Peter Blake Parade, Bayswater	Lot 1 DP 309604	639741	3.3415 ha

1.4 Objectives and scope of this plan

The objectives of this SMP are to:

- Outline the known site history and expected contamination conditions as well as the investigation methodology for additional sampling to be undertaken prior to the main development works commencement.
- Outline contaminated land-related soil management requirements.
- Provide procedures to guide contractors in materials management, reuse, disposal, health and safety and response to unexpected contamination encounters.

A summary of the sections of this SMP are provided below:

Sections 1 to 2	Supporting evidence used to inform the requirements of this SMP.
Section 3	Pre-works testing requirements.
Section 4	Contamination specific requirements for the contractor establishing the site and procedures prepared to ensure soils are handled, contained or disposed of appropriately and discharges are mitigated.
Section 5	Health and safety procedures. No contamination- specific health and safety procedures are expected to be required. The only exception to this would be if unexpected contamination is encountered and these procedures are included in Section 6 .
Section 6	Contingency measures are provided in the event that unexpected ground conditions are encountered, discharges occur and / or complaints are received during site works.
Section 7	Lists the information the contractor is required to provide at the end of the project to be included in a ground contamination-related site closure (validation) report.
Appendix A	A Contractor Checklist is provided to assist Contractors with compliance with this document.
Appendix B	Development plans pertinent to this SMP.

³ National Environmental Standard for Assessing and Managing Contamination in Soil to Protect Human Health Regulations, 2011

⁴ Auckland Unitary Plan: Operative in Part

1.5 Legislative requirements

WWLA has prepared this Interim SMP in accordance with requirements of the AUP, NESCS and MfE CLMG No.1⁵. The persons preparing and certifying this SMP are suitably qualified and experienced practitioners as defined in the NESCS Users Guide⁶.

1.6 Plan management and control

Contaminated land-related responsibilities during development of the site, including management, distribution and implementation of this plan are as set out in **Table 2**.

Table 2: Roles and responsibilities under this plan

Organisation	Role and responsibilities
Bayswater Marina Holdings	Land owner. - PCBU as defined in the Health and Safety at Work Act 2015 (Health and Safety Regulation).
Lead Contractor	Responsible for: - Distribution of this plan to sub-contractors and ensuring they understand their obligations under the plan; - Compliance with resource consent conditions; and - Implementation of this plan.
Contractors Site Manager	Responsible for: - Liaising with the Contaminated Land Specialist to ensure appropriate inspections are undertaken at the key times (refer Section 3 and Contractor Checklist, Appendix A); - Monitoring compliance with consent conditions; - Ensuring disposal of surplus materials is to an appropriate location; and - Monitoring earthworks controls.
Site Health and Safety Officer	Responsible for: - Ensuring adequacy of health and safety provisions during unexpected contamination encounters.
Subcontractors	Responsible for adhering to procedures and requirements of this plan.
Contaminated land specialist/ Suitably qualified environmental practitioner (SQEP) (WWLA)	Responsible for: - Undertaking investigations set out in Section 3, including soil sampling and reporting; - Observing remedial actions if required; - Inspections and advice during the works, including soil and water sampling and scheduling (if required); - Works closure reporting.
Auckland Council	Responsible for monitoring compliance with resource consent conditions.
Worksafe NZ	Responsible for overseeing compliance with the Health and Safety Regulation.

⁵ Ministry for the Environment Contaminated Land Management Guideline No. 1 – Reporting on Contaminated Sites in New Zealand (updated 2011)

⁶ NESCS Users Guide, April 2012

2. Site and Project Description

2.1 Site layout and setting

A summary of key details of the site's layout, position and setting are summarised in **Table 3**.

Table 2: Environmental setting.

Topography	The site is largely flat at approximately 3-4 m above sea level. The coastal margins are comprised of a steep (1:1 or 1:2) rocky embankment down to sea level.
Pre-works site layout	The central and southern parts of the site are predominantly car parking with some public space and service buildings for the marina on the southern boundary near the refuelling jetty. The northern third of the site is occupied by a boat servicing yard where boats are stored and minor repairs are undertaken.
Surrounding land use	A boat charter company and recreational boat users occupy land to the east of the site. Within that land is fuel storage tanks that hold diesel for the refuelling jetty (refer Section 3 for map). Land further to the north and east is residential.
Site history, historic features and land use	The site was reclaimed in the late 1990s. Boat storage appears to have been intermittent through the early 2000s, with facilities established for servicing etc around 2003/2004. The remainder of the site has been used for car parking since reclamation.
Geology	As indicated above the site is entirely on reclaimed land. Reclamation is understood to have been from marine sediments, with the upper 1-2 m being lime stabilised as it was placed.
Hydrology and hydrogeology	Groundwater is expected to be at 2-4 m below ground level and be strongly tidally influenced. Stormwater within the site drains direct to the Waitemata Harbour.
Surface water bodies	The site is surrounded by the Waitemata Harbour on three sides.
Significant ecosystems	Aquatic ecosystems of the Waitemata Harbour.

2.2 Ground conditions

Geotechnical logs (KGA Ltd)⁷ describe the reclamation materials as clayey silt and sand, with some gravels (including basalt and scoria) near the base of the reclamation. Waitemata Group (flyshe, alternating sand and silt sequences) sediments were encountered at between 6.5 and 8 m depth.

No contamination testing has been carried out on the site, but any contaminants present are expected to be located within the northern third of the site where boat servicing and storage is currently occurring. It is possible localised hydrocarbon impacts could be present around the fuel line running along the southeastern boundary of the site, although this is considered highly unlikely given the modern nature of the pipeline.

2.3 Project description

The site will be developed in three general stages, commencing in the south and working toward the north (south, central and north precincts). Eighteen buildings will be constructed across the three precincts with new roading connecting them. Three of the proposed buildings (two in the south precinct, one in the central precinct) will be mixed use with commercial units on the ground floor and residential apartments above. These will also include basement car parking (single-level). Terrace housing will make up the remaining buildings, grouped to be designed and constructed as part of superlots. An approximately 20 m wide public esplanade will be retained around the marine margins of the site.

Construction will take place in stages. As there is a requirement to retain a certain number of car parks for boat berth owners, the northern boat yard will first be converted into parking as well as being used as a laydown area

⁷ KGA Geotechnical, February 2021. Geotechnical Investigation Report. Bayswater Maritime Village – 21 Sir Peter Blake Parade, Bayswater. KGA Ref K200265-1

for earthworks/ construction. The southern precinct will be developed first, followed by the central precinct. Once these are complete and alternative parking is provided, the northern precinct will be developed.

Fill from basement excavations is expected to be reused on site to raise the surrounding ground level above coastal inundation levels. This means that the final basement floor levels are at approximately the same level as the existing pre-development ground level. Bulk cut depths are expected to be up to 1.2 m below the existing ground surface for most parts of the site, and up to 3.6 m where basements will be located. Fill depth will range up to 1.5 m above existing ground level.

2.4 Soil management requirements

Potential for isolated contamination exists primarily in the north of the site. Actual levels will be informed by soil sampling prior to works commencing. It is intended that any contamination will be remediated in isolation prior to bulk works commencing. In the south adjacent to the fuel line, ground disturbance works are highly unlikely to disturb the fuel line or any contaminated soils (if present), but if so there will be contingency procedures in place to protect site workers and the environment, and manage the impacts of the contamination.

2.4.1 Works sequencing

The project is expected to involve the following general process⁸:

1. Demolition of structures in the boat storage yard followed by soil sampling to inform ground conditions and any remediation required. This area will be sealed and used for car parking while the south of the site is redeveloped.
2. Soil sampling alongside the fuel line in the south of the site.
3. Redevelopment of the southern and central precincts as per the development plans (**Appendix B**). This will comprise ground improvement, installation of footings and foundations, building construction and landscaping.
4. Remediation of the northern precinct (former boat storage yard) if required followed by redevelopment of this portion of the site in accordance with the development plans (**Appendix B**).
5. Final landscaping and works completion reporting.

Soil-disturbance will occur through Phases 3 and 4 above. Management of isolated contamination in surface soils and fill, and any unexpected contamination, will be informed by pre-works testing in Phases 1 and 2 and be carried out prior to bulk earthworks in each redevelopment stage.

2.4.2 Soil management strategies

The objective of soil management strategies documented in this report is to protect site workers and future site users from the effects of contaminated soil, and minimise discharges to the environment, while achieving the best outcomes for the site in terms of programme and cost (i.e., re-use of materials).

The management strategy is as follows:

- Pre-works testing to inform actual soil contamination conditions (Phases 1 and 2 above).
- Manage any contamination in surface soils as a priority during each earthworks phase (Phases 3 and 4 above) followed by post-remediation validation. This means contamination controls can be removed prior to bulk earthworks commencing.
- Use standard earthworks controls and procedures during bulk earthworks, with focus on appropriate disposal of surplus soil, minimising generation of potentially contaminated sediment-laden stormwater during disturbance of fill materials and prompt response and management of unexpected contamination.

⁸ Adapted from Airey Consultants, May 2021. Construction management plan for the proposed Bayswater Maritime Precinct Development. 21 Sir Peter Blake Parade, Bayswater. Prepared for Bayswater Marina Holdings Ltd.

- Regular communication between the project manager, the site manager and CLS to ensure that contaminated soil is appropriately managed without delay to the programme.
- Site closure reporting to satisfy Council requirements on completion of earthworks.

Pre-works testing requirements are described in **Section 3**. General earthworks requirements are described in **Sections 4 and 5**.

Unexpected contamination contingency measures are included in this document in the event that materials are identified that require further action (**Section 6**).

All key contractor requirements are summarised in the contractor checklist in **Appendix A**.

3. Pre-Works Soil Testing

The following soil investigations, undertaken by a SQEP, shall occur prior to bulk earthworks commencing.

3.1 Boat yard/ servicing area

<p>Investigation rationale</p>	<p>Boat servicing has been undertaken in the northern third of the site since the early 2000s. This is included on the MfE HAIL register as <i>Activity F5: Port activities including dry docks or marine vessel maintenance facilities</i>. There is potential for antifoul to have been removed and reapplied, fuel tanks drained, engines serviced, and a range of other activities to have been undertaken.</p> <p>Given the small size of the facility and that most has been used for storage rather than servicing, contamination is expected to be limited to shallow soils (excluding the top 100 mm of hardfill gravels, unless they have significant fines).</p> <p>The key contaminants likely to be associated with boat servicing activities are metals, paint residues (tin, lead), tributyltin (TBT), and hydrocarbons from fuel storage. Given the potential broad spread of activities across this portion of the site, investigations are proposed on a grid basis.</p>
<p>Sampling requirements</p>	<p>Sampling will be on a 30 x 30 m grid basis across the site (Figure 2).</p> <ul style="list-style-type: none"> • Soils immediately underneath the hardfill will be targeted in all locations, with soils at 0.5 m depth collected in every second location. Two samples of soils at 1 m will also be collected so that the full depth of the excavation is represented. A total of 13 samples will be collected on a grid basis. • In addition to grid sampling, any point sources of contamination (i.e. fuel storage areas) will be targeted for additional sampling. This will be informed by a site walkover by the SQEP prior to removal of boat servicing facilities. It is expected that between two (2) and five (5) targeted samples may be required. • Soils shall be sampled by a SQEP using an excavator to dig test pits through the stabilised fill layer. • All soil sampling shall follow standard best practice procedures including changing gloves between each sample, placement of samples directly into laboratory-prepared jars, use of chain of custody documentation, couriering in chilled conditions, and logging of soils encountered.
<p>Laboratory analysis</p>	<p>Grid samples will be tested for a suite of contaminants that reflects the historic site use. This is expected to include:</p> <ul style="list-style-type: none"> • Metals (arsenic, cadmium, chromium, copper, lead, nickel, tin, zinc). • Tributyltin. • Polycyclic aromatic hydrocarbons (PAH) in 50% of samples. <p>The above testing will be informed and adjusted according to site observations. For example, if hydrocarbon odours are noted, total petroleum hydrocarbons (TPH) will be tested for.</p> <p>All testing will be carried out at an IANZ accredited laboratory.</p>
<p>Figure 2: Boat storage and servicing area plan (Investigation area shown in yellow with sample locations as orange circles). Aerial source: Auckland Council GeoMaps.</p>	

3.2 Fuel line

<p>Investigation rationale</p>	<p>An existing fuel line runs from the fuel tank location east of the site to the refuelling jetty south of the site. Between these two points it is within the site boundary, but beneath an area that will be part of the public esplanade reserve. The fuel line is modern and there have been no reports of leaks so the potential for contamination is considered negligible. However, we propose to investigate the potential for any leaks to have resulted in contamination that may impact on the proposed development, particularly future residents of the townhouses or those installing service lines.</p> <p>As the fuel line is approximately 20 m from the nearest dwelling alignment (indicated as a blue dashed line in Figure 3), we propose to excavate a hand auger⁹ to 1 m (the likely maximum depth of the fuel line) in five (5) locations along the fuel line between the line and the proposed building locations. This will inform whether or not there are likely to have been any leaks associated with the fuel line that may impact on future site workers or residents. The hand augers will be excavated within grassed areas approximately 2 to 3 m away from the fuel line to avoid accidentally intercepting it while still obtaining representative data.</p>
<p>Sampling requirements</p>	<p>Samples will be collected at approximately 30 m spacings in the locations shown on Figure 3.</p> <ul style="list-style-type: none"> • All hand augers will be excavated to 1 m depth with samples collected at 0.5 m and 1.0 m. Samples will be screened for volatile organic compounds (VOCs) in the field. • As for the boatyard sampling in Section 3.1 above, sampling will be undertaken by a SQEP according to best practice procedures.
<p>Laboratory analysis</p>	<p>Samples will be tested for:</p> <ul style="list-style-type: none"> • Petroleum hydrocarbons (TPH) and volatile organic hydrocarbons (VOCs). <p>All testing will be carried out at an IANZ accredited laboratory.</p>
<p>Figure 3: Fuel line sampling. (Sample locations are shown as orange circles. The fuel line and tanks are yellow with the approximate building outlines in blue. The site boundary is red). Aerial source: Auckland Council GeoMaps.</p>	

⁹ Hand augers are proposed to minimise the risk of intercepting the fuel line or other services. However, if the ground is too hard to hand auger, a small excavator will be used instead.

3.3 Evaluation criteria

Protection of Human Health	<ul style="list-style-type: none"> NESCS soil contamination standards (SCS) for high-density residential use to inform potential effects on future residents. NESCS SCS for commercial/ industrial use to inform potential effects on site workers. Where NESCS SCS values were not provided, guidance obtained from the following documents were used, as per MfE’s “Contaminated Land Management Guideline No. 2, Hierarchy and Application in New Zealand of Environmental Guideline Values (Revised 2011)”. For vapour (adjacent to fuel line), Workplace Exposure Limits set by Worksafe NZ (refer Table 5). For asbestos (in the unlikely event it is required), the New Zealand Guidelines for Assessing and Managing Asbestos in Soil (BRANZ, 2017), all users criteria to assess both effects on people and remediation requirements.
Discharges to the Environment	<p>For discharges to the environment the Auckland Unitary Plan (AUP) Permitted Activity (PA) Soil Acceptance Criteria or where appropriate the criteria specified by Rule E30.6.1.4 of the AUP. Where contaminants are not listed in the table, the hierarchy listed in AUP Chapter E.30 has been adopted:</p> <ul style="list-style-type: none"> Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines for the protection of the environment and human health.
Soil Disposal	<p>For soil disposal published non-volcanic background concentrations for Auckland described in TP153¹⁰, are used as a basis for acceptance of soil to cleanfill sites. We note that while the area is predominantly non-volcanic, volcanic fill appears to have been used in some fill units as evidenced by basalt and scoria gravels. Therefore, it is likely that some metal concentrations will be elevated, reflective of these volcanic sources.</p> <p>Background values are considered when assessing the activity status of the NESCS for soil disturbance and removal.</p>

3.4 Reporting

Results of the above sampling will be reported in a letter suitable for submission to Auckland Council. It will include a description of the sampling undertaken, any variation from the methodology and rationale outlined in this SMP, site observations, and interpretation of the results relative to the specified evaluation criteria.

On completion of sampling this interim SMP will be updated to reflect actual contamination conditions.

¹⁰ Auckland Regional Council, Technical Publication 153 (TP153): Background concentrations of inorganic elements in soil from the Auckland Urban Region.

4. Earthworks and Construction

The following sections set out expectations of the contractor in following standard earthworks control practices and compliance with likely consent conditions, while the procedure for unexpected contamination response in **Section 6.4** (Contingency Measures). Points at which the CLS must be contacted are *highlighted* and indicated on the contractor checklist in **Appendix A**.

4.1 Site Establishment

The contractor shall implement the following in addition to the Contractors standard establishment works.

Table 3: Site establishment

Notify Auckland Council	Advise Council <i>five days</i> prior to the commencement of ground disturbance works.
Permits	Obtain permits for disposal of surplus soil and water discharge to stormwater (if required). Notify disposal destinations of expected disposal dates.
Signage and hazard board	Placed at the site entrance, the signage and hazard board shall include summary information on site works and notification processes for unexpected contaminated soil encounters, including health and safety actions.
Induction	Site workers shall complete a contaminated land briefing prior to commencing works. <i>The briefing shall be led by the CLS</i> , i.e. WWLA (subsequent inductions may be by the Site Manager) and shall cover: <ul style="list-style-type: none"> • Spoil management to minimised discharges to the environment; • Material disposal constraints and reuse opportunities; and • Procedures for responding to unexpected contamination.
Erosion and sediment control	Implement site specific ESCP. Implement daily erosion and sediment control checks as per Section 4.3(4) .

4.2 Remedial procedures

The following procedures are provided in the event that minor remedial works are required prior to bulk earthworks occurring. This will be confirmed on completion of soil testing as per Section 3.

For any remedial works, the procedures in Section 4.3 shall be followed, in addition to the procedures outlined in Table 4 below.

If no remediation is required, or if remediation is complete, disregard this section.

Table 4: Remediation procedures

1. Signage and fencing	The remediation area shall be separately fenced and only site workers essential to the specific tasks being undertaken shall be admitted.
2. Erosion and sediment control	Depending on the works being undertaken, separate erosion and sediment control may be required for the remediation area. This is to ensure contamination does not migrate over uncontaminated parts of the site. This will be determined on a case-by-case basis as it will be largely dependent on the nature of the contamination, the remediation method, and the surrounding site status.
3. Soil disposal and reuse	<ul style="list-style-type: none"> • Soil sampling (Section 3) will determine if soils can be reused on site from a contamination perspective or require specific offsite disposal. • If offsite disposal is required then soils will not be able to go to cleanfill and will require disposal to either a managed fill or licensed landfill, depending on the level of contamination identified. • All trucks removing soil from site shall be loaded within the area of erosion and sediment controls and submit tracking documentation so that the volumes of soil disposed of at each disposal site are recorded for validation reporting (Section 7).

<p>4. Separate phase hydrocarbon (SPH) management</p>	<p>Based on the modern fuel transfer, storage and infrastructure there is minimal potential for SPH it cannot be ruled out in the vicinity of the fuel pipeline. The key issues during the disturbance or removal of soils containing SPH are:</p> <ol style="list-style-type: none"> 1. Development of hazardous atmospheres, particularly within excavations/voids; 2. Odour generation; and 3. Soil handling, transport and disposal management. <p>Given soil disturbance will be minimal in the fuel pipeline area, the volume of soils with SPH (if any) is expected to be small. However, it is expected all disturbed soil, including that containing SPH (if any) will require offsite disposal to licensed landfill.</p> <p>Procedures for odorous materials are outlined below.</p>
<p>5. Odorous materials procedure</p>	<p>The following procedures shall be implemented to minimise odour/vapour effects to workers and surrounding properties during disturbance and disposal of soils impacted by hydrocarbon contamination:</p> <ul style="list-style-type: none"> • Monitoring weather conditions including wind direction and wind speed on-site. • Minimising or ceasing works in strong winds as they will enhance odour transport to neighbouring sites. • Minimising works during early mornings and late evening periods when the wind speed is expected to be lowest. • Minimising the generation of odour and vapour by maintaining minimal open areas. This will include reducing the volume of material being excavated during wind conditions that have a greater potential for odour effects (e.g. specific wind directions, low wind speeds, early morning during warming conditions). • Application of dust/vapour/odour suppression measures such as: <ul style="list-style-type: none"> - Use of water sprays; and/or - Use of deodorisers delivered via demisting sprays around the excavation plant if water sprays are insufficient. Air Repair FS Gold odour suppressants (or equivalent) will be used conservatively assuming a dosing rate of 100:1. • Monitoring of vapour according to the procedures below. <p>If an odour is detected at the site boundary, the contingency measures in Section 7 shall be implemented.</p>
<p>6. Hydrocarbon monitoring</p>	<p>The Contractor shall ensure that during the works:</p> <ol style="list-style-type: none"> 1. No discharges from any activity on site shall give rise to visible emissions, other than water vapour, to an extent which is noxious, dangerous, offensive or objectionable. 2. Beyond the boundary of the site, there shall be no hazardous air pollutant, caused by discharges from the site that causes, or is likely to cause, adverse effects on human health, environment or property. 3. There is no discharge of hydrocarbons to the stormwater system. <p>This can be undertaken by regular boundary checks (walking around the perimeter) and use of monitoring devices such as a PID or LEL meter if odours/ vapours are suspected.</p>
<p>7. Vehicle decontamination</p>	<p>For machinery that is used for remediation (e.g. excavators, rollers, stabilising equipment, piling rig) decontamination shall comprise washing prior to leaving the site. Washing shall be undertaken within the area of erosion and sediment controls.</p> <p>Successful decontamination of all machinery/equipment used for soil disturbance of material shall be confirmed by visual assessment <i>undertaken by the CLS</i> prior to the machinery/equipment leaving site.</p>
<p>8. Health and safety</p>	<p>Works areas shall be clearly separated from break/ smoko areas. No eating, drinking or smoking shall occur within the works area.</p> <p>Hand washing facilities shall be provided so all workers can wash hands prior to eating and drinking.</p> <p>Workers remediating hydrocarbon contamination may be exposed to vapours that can commonly bring on headaches and nausea. The following should be followed when remediating hydrocarbon-impacted soils:</p> <ul style="list-style-type: none"> • Workers shall be aware of the potential risks and be confident to cease works as soon as there is any sign of a headache or nausea. • Half-face respirators with organic cartridges shall be provided if required. • Excavations shall be kept open and able to naturally vent periodically when being worked. • No worker shall enter an excavation that is impacted by hydrocarbons without the appropriate confined-spaces training and procedures. These will be advised separately on a case-by-case basis.

	<ul style="list-style-type: none"> Monitoring for odours and vapours shall be carried out as per Tables 5 and 6 at all times during hydrocarbon remediation works. <p>If the trigger levels in Table 5 are exceeded, or odours are 'very strong' as per Table 6, works shall cease immediately and the excavation be allowed to vent. Works shall only resume when concentrations have decreased to safe levels.</p>
9. Personal decontamination	<p>All personnel involved in ground disturbance activities associated with hydrocarbon contamination must be decontaminated before leaving the site. Decontamination facilities shall comprise, as a minimum:</p> <ol style="list-style-type: none"> Facilities for storing and changing PPE. Boot wash facilities. A hand and face wash facility. Bins for disposal of contaminated gloves and other consumables. <p>All personnel need to complete the personal decontamination procedures whenever they stop work, i.e. for meal breaks, toilet breaks etc. Decontamination shall be undertaken immediately in the event of any body parts coming in direct contact with any soil and/or groundwater.</p> <p>Personnel decontamination shall comprise:</p> <ol style="list-style-type: none"> Rinsing and/or scrubbing of boots, gloves and other PPE to remove dirt and dust residues. Removal of all PPE with disposable items such as gloves and dust mask (if worn) placed in a plastic bag or drum for waste collection. Thorough washing of hands and face with soap and water. <p>All waste materials shall be considered as contaminated and disposed appropriately.</p>
10. Validation sampling	<p><i>The contaminated land specialist shall collect validation samples</i> in the areas where remediation has been undertaken. The density and nature of sampling will depend on the contamination present and the final use of that particular part of the site.</p> <p>Validation requirements will be determined as part of the pre-works testing (Section 3).</p>

Table 5: Air monitoring trigger values

Vapour	Action level	Measure with
Explosive gases	10 % LEL ² 0 % LEL for hot works/ mechanical activities (piling, excavation) ³	Multi-gas meter
CO2	0.5 % ²	Multi-gas meter
O2	>19.5 % ²	Multi-gas meter
H2S	10 ppm ²	Multi-gas meter
VOCs	5 ppm ⁴	PID

Notes:

- AS/NZS 60079.10.:2009 Part 10.1: Classification of areas – Explosive gas atmospheres.
- Worksafe Exposure Standard TWA.
- Any hot works at or below ground level shall only be carried out when no combustible gases are detected. As defined by WorkSafe New Zealand, hot works includes welding, thermal or oxygen cutting, heating, including fire-producing or spark-producing operations that may increase the risk of fire or explosion.
- Only a limited number of compounds have New Zealand Workplace Exposure Standards (WES) lower than 5 ppm and it is unlikely that these compounds will be present in sufficient quantities to exceed their individual WES. 5 ppm has therefore been adopted as a practical screening level to avoid false positives associated with weather effects and instrument drift.

Table 6: Odour intensity evaluation descriptions

Very strong	Offensive odour that is unable to be tolerated. May cause headaches. Strong Clearly recognised type of odour and may be uncomfortable. Works shall cease and passive or active treatment provided.
Moderate	The type of odour is easily recognised but not uncomfortable
Slight	May be difficult to identify the type of odour

Very slight	The type of odour not able to be discerned nor is the source
Not detected	No measurable odour

4.3 Soil Disturbance Controls and Procedures

The procedures in this section are largely standard earthworks practices. The contractor checklist sets out the key actions for the Contractor (**Appendix A**).

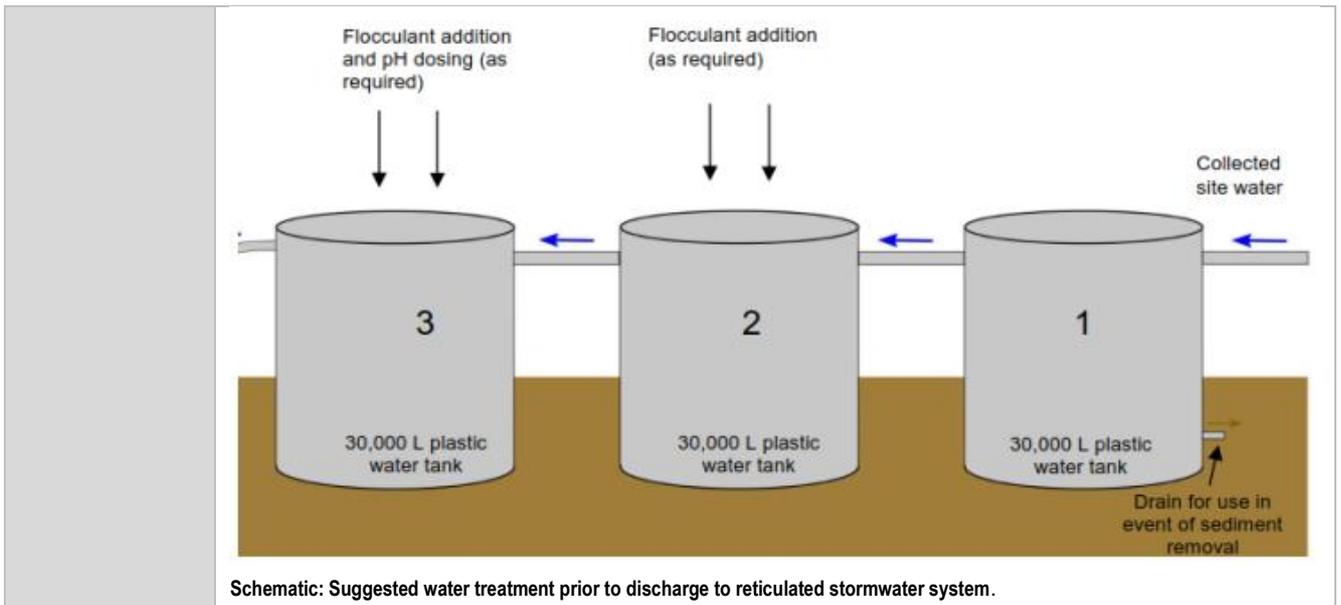
Table 7: Soil disturbance controls and procedures

1. General materials handling, excavation and transportation procedures	<p>The following shall be adhered to during excavation and offsite transportation of excavated fill material:</p> <ul style="list-style-type: none"> • Project-relevant earthworks controls shall be in place during excavation. • Trucks transporting surplus soil offsite shall be loaded within the site where runoff and possible spills during loading shall be controlled and contained. • The Contractor shall ensure that any soil exceeding background levels (fines within fill), or any unexpected contaminated soil, is disposed to managed landfill and is transported in covered trucks and accompanied by tracking documentation. • Trucks shall have their wheels maintained clean of debris and there shall be no tracking of material onto roads or footpaths. • All disposal dockets shall be retained, with weighbridge summaries <i>provided to the CLS for closure reporting</i> as per Section 7.
2. Soil disposal and reuse	<ul style="list-style-type: none"> • Soils across the majority of the site are likely to be suitable for reuse on site from a contamination perspective, or disposal to cleanfill. This excludes the northern third of the site (boat storage yard) and soils adjacent to the fuel pipeline that may require specific disposal as per Section 4.2. • Underlying natural Waitemata Group sediment throughout the site is suitable for cleanfill disposal or reuse on site from a contamination perspective. • There may be areas of localised contamination that are encountered during works and require disposal to licensed landfill. The key indicators for contamination are described in Section 6.1.
3. Imported materials procedure	<p>Any material imported to the site shall originate from:</p> <ul style="list-style-type: none"> • A site which has been determined by a SQEP/ contaminated land specialist to have had <u>no</u> known history of potentially contaminating activities, as detailed on the HAIL. • A site which has been adequately investigated by a SQEP/ Contaminated Land Specialist, in accordance with CLMG No.5¹¹ to meet the 'Cleanfill material' definition as prescribed in the Auckland Unitary Plan (Operative in Part). This shall include: <ul style="list-style-type: none"> - Sampling at a rate of 1 sample for every 500 m³; - Testing for metals and PAH, depending on the land use at the material's source, testing for OCPs and asbestos content may also be required; and - It is preferable that the fill is tested at its source prior to its use at the site. However, if not, then the Contractor shall stockpile the fill on site until test results are available. • Hardfill imported for backfill, if sourced directly from a quarry or supplier, does not require testing. • <i>Contact the CLS should there be any uncertainty about the certification of imported materials.</i> • A weighbridge or load count summary of imported materials shall be provided to the CLS on completion of works.
4. Management of erosion and sediment controls	<p>Erosion and sediment controls installed as per the ESCP and shall be managed as follows:</p> <ul style="list-style-type: none"> • Any additional controls shall be in accordance with Auckland Council's Guideline Document 2016/005, "Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region": • Any operating stormwater drains onsite shall be covered by filter cloth to avoid the discharge of water that has come into contact with soil. • Vehicles shall be inspected prior to leaving the works area and wheels brushed/cleaned as required to avoid the potential for sediment to leave the site on vehicle tyres and enter the existing stormwater system. • Soil disturbance work in heavy rain shall be avoided.

¹¹ Contaminated Land Management Guidelines (CLMG) No.5 Site Investigation and Analysis of Soils, (Ministry for the Environment, revised 2011)

	<ul style="list-style-type: none"> • The site shall be kept clean of debris and stockpiles unless necessary. • Erosion and sediment controls shall be checked regularly and made sure that are in good working condition. To ensure good practice: <ul style="list-style-type: none"> - The entry/exit point shall be reapplied with aggregate, or in the case of a pavement entrance, cleaned if excessive sediment build-up occurs. - Erosion and sediment control measures shall be upgraded/ modified where necessary. - Sediment fences will be replaced if the fabric is ripped or otherwise damaged. They shall be retrenched if needed. - The weather conditions along with the performance of the erosion and sediment control measures shall be monitored. <p>Erosion and sediment control measures shall remain in place until surface reinstatement is established.</p>
<p>5. Dust controls</p>	<p>Dust control measures shall comply with the <i>Good Practice Guide for Assessing and Managing Dust</i>, Ministry for the Environment (2016).</p> <p>To avoid dust generation, should dry conditions prevail, and to mitigate against dust created by vehicular movement, the following control system shall be put in place:</p> <ul style="list-style-type: none"> • Frequent spraying of water to ensure the working surfaces remain damp. • Dampening of the loaded material once placed on the truck, where tarps are not used. • Use of a water truck or portable water sprays in trafficked areas to dampen dust.
<p>6. Stockpiling procedures</p>	<p>Temporary stockpiling, if required, shall following the procedures below:</p> <ul style="list-style-type: none"> • Where possible stockpiles shall be placed within excavations to avoid the potential for rainfall induced runoff. • For stockpiles formed on ground surface, the following controls shall be in place: <ul style="list-style-type: none"> - Stockpiles shall be placed within a designated area defined on the ESCP. - The stockpiling area shall be on an impermeable surface within an area protected by erosion and sediment controls and be covered with tarpaulins anchored at the edges outside working hours and during periods of heavy rain. - Stockpiling of material containing separate phase hydrocarbons or odorous petroleum hydrocarbons shall not take place, these shall be removed directly offsite.
<p>7. Water management</p>	<p>Water management and treatment if ponding occurs shall involve:</p> <ul style="list-style-type: none"> • Contain water and where possible prevent it from migrating over any exposed soil. Diversion of clean water from open excavations should be carried out as part of standard erosion and sediment control practices. • Settle suspended sediment within the excavation or holding tanks (refer suggested Schematic below). Where sediment removal is not successful by settlement or where there is insufficient time for settlement, flocculant such as polyaluminium chloride (PAC) shall be added at the proprietary rate. • pH treatment should also be undertaken in holding tanks. • Dewatering to be observed by the contractor on twice daily basis during working hours to ensure sediment removal is adequate (75% removal of total suspended solids is the benchmark required by Auckland Council). • Any water requiring disposal to the stormwater system will require <i>testing by the CLS</i> to ensure stormwater discharge levels can be met. Discharge levels are the A&NZ Guidelines¹² for the protection of 80 percent of marine species, with the exception of benzene where the 95 percent protection level shall apply and must be free from petroleum hydrocarbons.

¹² Australian and New Zealand Guidelines for Protection of Fresh and Marine Waters (revised 2018)



5. Health and Safety

Following completion of any remedial works as described in **Section 4.2**, there are not expected to be any health and safety requirements in respect of ground contamination. The only exception to this would be if unexpected contamination is encountered.

Standard good hygiene practices should be followed, including washing hands before eating/ drinking/ smoking, and separation of works areas from break areas.

Unexpected contamination procedures are provided in **Section 6.4**.

6. Contingency Measures

6.1 Contingency triggers and responsibilities

Unexpected contamination, complaints or an uncontrolled discharge will trigger implementation of contingency measures. Key identifiers for unexpected contamination that will trigger these measures include:

- Asbestos fibres and/ or building products.
- Odours such as hydrocarbons or solvents.
- Discoloured soil such as black, blue or green staining, or any staining that appears out of the ordinary.
- Underground structures such as fuel tanks (procedures for which are provided in **Section 3.4**).

Mitigation measures must be applied in accordance with the hierarchy of control described in the Health and Safety in Employment Act – **Eliminate, Isolate, Minimise**.

Responsibility for identifying and enacting contingency measures lies with the Contractor. The contractor shall:

- a) Apply the notification process outlined below.
- b) *The CLS shall be notified immediately in the event that any unexpected contamination or contingency measures are required to be implemented.*
- c) The Auckland Council shall be notified in writing within 24 hours of contingency measures being implemented.
- d) Worksafe NZ may also need to be notified, depending on the nature of contamination or possible exposure by workers.



6.2 Emergency response

Should an incident occur on site which may result in any unauthorised discharges (water, soil, hydrocarbons etc.), the Contractor's site supervisor will take control of the situation and coordinate the efforts of all on site to minimise the impact. *The CLS shall be notified and inspect the discharges and advise on mitigation.*

In the unlikely event that sustained and uncontrollable discharges (exceeding the specified action levels) occur from the site, emergency response and evacuation procedures, including provisions for notifying and managing neighbouring site users, shall be implemented.

The emergency response and evacuation procedures shall be specified in the project specific health and safety plan.

6.3 Complaints procedure

The contact details for occupants of the neighbouring sites shall be established by the Contractor prior to commencement of the works. These parties shall be advised of the 24-hour emergency contact number for the project and the associated complaints procedure at this time.

In regard to the general public, signage advising the 24-hour emergency contact number for the project must be posted around the fenced site frontages.

A written record of all complaints received shall be maintained. The Contractor’s site supervisor shall initiate an investigation as soon as practicable on receipt of a complaint, but as a minimum shall notify Auckland Council within 24 hours of the complaint being received, including providing details of any corrective actions taken.

Appropriate feedback will be provided to the complainant, such as the response made and any corrective actions taken, in response to the complaint.

6.4 Unexpected contamination procedure

The following shall be implemented by the Contractor:

STOP WORK (in the immediate area)	<ul style="list-style-type: none"> Remove all unnecessary site staff from the immediate area of unexpected contamination.
ISOLATE	<ul style="list-style-type: none"> Install temporary fencing, taping, or cones to identify the area.
NOTIFY	<ul style="list-style-type: none"> Advise the Site Manager. <i>Liaise with the CLS.</i> Update the site hazard board to warn workers and visitors.
REVIEW CONTROLS	<ul style="list-style-type: none"> The CLS shall review controls with the Site Manager. The Contractor shall implement additional controls if required. These may include the controls set out for remediation in Section 4.2.
ASBESTOS	<ul style="list-style-type: none"> If ACM is observed P2 dust masks shall be provided to all works required to enter the isolated area. The level of control shall be reviewed by the CLS. This shall include inspection and review of the works. Additional testing may be required, and this shall be undertaken in accordance with the NZ Asbestos Guidelines. If the above assessment indicates that it is possible that asbestos in soil will be encountered at concentrations exceeding the relevant standards, an Asbestos Removal Control Plan shall be prepared to support removal of the materials. In this event a Licensed Asbestos Removal Supervisor shall be engaged.

7. Closure Reporting

7.1 Site validation report

Upon completion of works a Site Validation Report (SVR) shall be prepared confirming the works were undertaken according to this SMP, unexpected contamination encounters (if any) and any remedial measures implemented.

The following information is required from the Contractor for inclusion in the SVR, including:

- Copies of weigh bridge summaries for the disposal destination of any surplus soil or water generated during the redevelopment works;
- Documentation confirming the source, where necessary testing data, and weighbridge summaries or load counts from the source of certified imported clean materials
- Records of visits by Council representatives;
- Details of any complaints and actions in response to these;
- Details of any health and safety incident related to the contamination and how they were resolved;
- Details of unexpected encounters/events and the action taken; and
- Any contingency actions implemented.

The Contractor shall provide the required information to the CLS within one month of completion of groundworks.

The SVR shall be submitted to Auckland Council and shall be prepared to generally comply with the MfE *Contaminated Land Management Guideline No. 1*.

7.2 Long term monitoring plan

In the unlikely event that residual contamination remains onsite post development at levels that exceed either environmental discharge criteria or high-density residential health criteria, the CLS shall prepare a Long Term Monitoring Plan (LTMP) in accordance with MfE Contaminated Land Management Guideline No. 1.

The LTMP shall include as a minimum:

- A summary of the contaminated soil remaining on the site, including the soil validation results in the context of effects on residents, and location of contaminated soil on the site.
- Appropriate management measures for the site cover, and for future ground disturbing work.

The LTMP shall be prepared within three months of ground works completion and prior to occupation of the dwellings.

Appendix A. Contractor Checklist



SMP (GROUND CONTAMINATION) – CONTRACTOR CHECKLIST

Site: Bayswater Marina		
Actioned by (Contractor's Site Manager):		Date:
Checked by (Contaminated Land Specialist):		Date:
Task	Description	Check
Pre-works testing	• <i>CLS (WWLA) undertake Boat Yard investigation</i> and report on results	<input type="checkbox"/>
	• <i>CLS (WWLA) undertake Fuel Line investigation</i> and report on results	<input type="checkbox"/>
	• SMP updated to reflect actual contaminant conditions on site	<input type="checkbox"/>
Site establishment	• Establish earthworks controls as per Section 4.1 .	<input type="checkbox"/>
	• Induct any new workers or subcontractors as works progress.	<input type="checkbox"/>
	• Arrange disposal permitting for materials being removed from site (if any)	<input type="checkbox"/>
Remediation and general works	• <i>Advise CLS (WWLA) and Auckland Council of commencement.</i>	<input type="checkbox"/>
	• Undertake targeted remediation if required <i>as guided by CLS</i> and Section 4.2	<input type="checkbox"/>
	• Maintain erosion, sediment controls as per Section 4.3 .	<input type="checkbox"/>
	• Action mitigation for any new hazards identified during the course of the works.	<input type="checkbox"/>
	• <i>Liaise with the CLS</i> should any <u>unexpected contamination be identified</u> , including asbestos and implement mitigation measures advised by the CLS and: <ul style="list-style-type: none"> - Cease works in the immediate vicinity of the suspected contamination and tape or cone off. - Notify the project manager (client representative) and the CLS. - Implement any contaminated land-related health and safety procedures and PPE if deemed necessary by the CLS. - Update the Hazard Board to direct site workers should continued exclusion of the area be required. - Implement and maintain any additional controls required by the CLS to manage contamination. - If asbestos is identified, requirements of the Health and Safety at Work (Asbestos) Regulations must be adhered to. The CLS shall provide direction and if required, a Licensed Asbestos Removal Supervisor engaged. 	<input type="checkbox"/>
	• Notify Auckland Council within 24 hours of implementing any additional mitigation measures (not included in the SMP).	<input type="checkbox"/>
	• Dispose surplus soil as determined by pre-works testing.	<input type="checkbox"/>
	• Keep records of disposal volumes and destinations.	<input type="checkbox"/>
	• Ensure any imported materials are clean as per Section 4.3 .	<input type="checkbox"/>
	• <i>Contact CLS for an inspection</i> if water is required to be disposed to stormwater.	<input type="checkbox"/>
Post works <i>(provide to CLS)</i>	• Weighbridge summary of all materials disposed from site (including soil and water) for disposal verification, including imported clean materials.	<input type="checkbox"/>
	• Details of any health and safety or environmental incidents or Council inspections.	<input type="checkbox"/>

Appendix B. Development Plan

This graphic has been prepared by Boffa Miskell Limited on the specific instructions of our Client. It is solely for our Client's use in accordance with the agreed scope of work. Any use or reliance by a third party is at that party's own risk. Where information has been supplied by the Client or obtained from other external sources, it has been assumed that it is accurate. No liability or responsibility is accepted by Boffa Miskell Limited for any errors or omissions to the extent that they arise from inaccurate information provided by the Client or any external source.



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NOTES

CONTRACTORS TO VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCING WORK;
CONTRACTORS ARE RESPONSIBLE FOR CONFIRMING THE LOCATION OF ALL UNDERGROUND SERVICES ON SITE PRIOR TO COMMENCING WORK;
FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED DIMENSIONS.

KEY

- - - SITE BOUNDARY
- ESPLANADE STRIP
- SUB-PRECINCT BOUNDARIES
- ADJACENT SITE BOUNDARIES

REV	DATE	DESCRIPTION
A	23.02.21	FOR RESOURCE CONSENT

APPR'D
RDL

CLIENT
BAYSWATER MARINA HOLDINGS LTD
CONSULTANTS
PBA STANTEC HAMPSON & ASSOCIATES
AIREY CRAIG SHEARER

RESOURCE CONSENT

BAYSWATER MARITIME PRECINCT

WIDER SITE PLAN

Design	THe	Scale	Date
Drawn	THe	1:1000 @ A1	06.07.20
Check	JPo	1:2000 @ A3	

DRAWING NO.	REVISION
A15265A_220	(A)

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BAYSWATER MARITIME PRECINCT

SITE PLAN

Design THe	Scale 1:500 @ A1	Date 06.07.20
Drawn THe	1:1000 @ A3	
Check JPo		

DRAWING NO.	REVISION
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PUBLIC OPEN SPACE: 7750m²
BUILDING COVERAGE: 7600m²

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RESOURCE CONSENT

BAYSWATER MARITIME PRECINCT
 COVERAGES AND AREAS

Design THe	Scale 1:500 @ A1	Date 06.07.20
Drawn THe	1:1000 @ A3	
Check JPo		
DRAWING NO.	REVISION	
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