

# REPORT

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Watercare Services Ltd

Central Interceptor  
Site Management Plan

**Report prepared for:**  
WATERCARE SERVICES LTD

**Report prepared by:**  
Tonkin & Taylor Ltd

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# Table of contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Objectives and scope	1
<b>2</b>	<b>Plan and management control</b>	<b>2</b>
2.1	Roles and responsibilities	2
2.2	Distribution	2
2.3	Review and update	2
2.4	Implementation	2
<b>3</b>	<b>Ground contamination</b>	<b>3</b>
3.1	Actual and potential ground contamination	3
3.2	Confirmation of ground contamination	5
3.2.1	Sampling procedure	5
3.2.2	Classification of soils	5
<b>4</b>	<b>Site Management Procedures</b>	<b>7</b>
4.1	Earthwork procedures	7
4.2	Stockpiling of contaminated or potentially contaminated soil	7
4.3	Imported material procedure	8
4.4	Procedure for removing and reporting on unforeseen structures	8
4.5	Dust control	8
4.6	Stormwater and sediment control measures	9
4.7	Dewatering	9
4.8	Odour control	9
<b>5</b>	<b>Soil Disposal</b>	<b>10</b>
<b>6</b>	<b>Health and Safety Procedures</b>	<b>10</b>
6.1	Site establishment	10
6.2	General safety requirements	10
6.3	Emergency procedures	11
<b>7</b>	<b>Monitoring Programme</b>	<b>11</b>
7.1	Earthworks Control	11
7.2	Validation Testing	12
<b>8</b>	<b>Staff Training</b>	<b>12</b>
<b>9</b>	<b>Validation Reporting</b>	<b>13</b>
<b>10</b>	<b>Applicability</b>	<b>14</b>

Appendix A: Figure

# 1 Introduction

Tonkin and Taylor (T&T) Limited has prepared this site management plan (SMP) to assist in managing the excavation, handling and disposal of any contaminated material encountered as part of the Central Interceptor Project. This work was conducted in accordance with our proposal dated 16 September 2011.

## 1.1 Background

The Central Interceptor Project involves the construction of a 13 km long main tunnel, 3 – 5 m diameter, with an invert depth of between 32 m and 110 m below ground surface. The tunnel will extend from Western Springs Park to the Mangere Wastewater Treatment Plant and will connect to the existing Watercare network at key connection points. Eight combined sewer overflow (CSO) collector sewers have been designed to extend out from the Central Interceptor tunnel into the local network. These collector sewers make connections with the local networks in parts of the Pt Chevalier, Waterview, Avondale, New Windsor, and Mt Albert suburbs. A range of pipe dimensions will be involved in these works, depending on location and the capacity needed to address overflow mitigation requirements.

A number of construction sites are required to facilitate completion of the project. Three major construction sites are proposed and will be located at Western Springs, May Road and Mangere (WS1 to WS3). These sites will be used for delivering construction materials and removing tunnel spoil for the main tunnel, including construction of permanent facilities. Smaller construction sites are proposed at a number of locations along the main tunnel route and the CSO collector sewer sites. Activities include shaft sinking launching or retrieving the microtunnel boring machine and construction of surface facilities. Activities at all construction sites will include possible removal of vegetation, earthworks, relocation of services, establishment of site access, construction yards and lay down areas and site reinstatement. Figure 1 in **Appendix A** shows the approximate location of the construction sites.

At the time of writing, the project has been developed to a concept design stage. It is likely that some design details or the concept proposed will change as the project moves through the detailed design process. All figures and dimensions referred to in this report are approximate.

For the purposes of this report, the following definitions are used to refer to the various relevant areas.

Construction site	Area of land that Watercare proposes to occupy during construction. The extents of the construction sites are shown in drawings provided in the Drawing Set which accompanies the Assessment of Effects on the Environment (AEE) Reports (or the AEE Drawing Set).
Property	Area of land covered by the legal description in which the construction site is proposed to be located. For example, the property for the Western Springs Depot construction site is land covered by Lot 10 DP 168863 and is 8.72 hectare in area.  For a number of construction sites, e.g. Lyon Ave and Whitney Street, the property extends across land covered by more than one legal description.

## 1.2 Objectives and scope

An assessment on the potential for ground contamination has been completed for the project. The assessment indicates that contaminated soils are generally unlikely to pose a human health risk to workers undertaking the works and the general public. However, they could contain contaminant concentrations that will require the works to be managed to minimise the potential and actual effects on the environment.

The objective of this SMP is to provide procedures for the excavation, handling and disposal of any contaminated or potentially contaminated soil that may be encountered during construction of the Central Interceptor project works.

The scope of this report is to provide procedures for:

- Identifying the presence of contaminants;
- Undertaking excavations in areas potentially containing contaminated soils;
- Managing and containing contaminated soils encountered during the development of the site;
- Controlling potential effects during the works such as odour, dust and tracked soil;
- Managing health and safety during the works; and
- Validating/monitoring the works, as necessary, to ensure appropriate disposal of surplus soil.

## **2 Plan and management control**

### **2.1 Roles and responsibilities**

Implementation of this SMP shall be the responsibility of Watercare. Watercare will appoint a suitably qualified contractor to undertake the required works (the contractor). Watercare will also appoint a suitable qualified Environmental Consultant to address specific contamination issues outlined in this report.

The contractor shall train all earthwork staff to ensure they are aware and understand ways in which contamination can be identified on site (refer Section 8).

Watercare will ensure that a health and safety plan is produced and addresses, as a minimum, the issues outlined in this plan.

### **2.2 Distribution**

At least one (master) copy of the SMP shall be held by Watercare. An up-to-date register of Plan Holders shall be maintained by the person responsible for the management and implementation of the document.

A copy of the SMP shall be kept onsite at all times. It is the responsibility of Watercare to distribute the SMP to site contractors carrying out the construction works.

### **2.3 Review and update**

The SMP shall be reviewed prior to work commencing and as necessary to cater for changes in ground conditions and operation procedures.

Any substantive variations to the SMP shall be provided to Watercare and Auckland Council for approval prior to implementation.

It is the responsibility of Watercare to distribute updated versions of the SMP and to ensure the correct copy of the report is onsite at all times.

### **2.4 Implementation**

Responsibility for the implementation of the SMP lies with Watercare and the contractors undertaking the works.

## 3 Ground contamination

### 3.1 Actual and potential ground contamination

Ground contamination assessments have been completed and are documented in the following reports:

- T&T, July 2012, Desk study and ground contamination assessment – Main works Central Interceptor Project; and
- T&T, July 2012, Desk study and ground contamination assessment – Combined sewer overflows (CSO) points Central Interceptor Project.

The ground contamination assessments were targeted to the construction sites that need to be established for the project because construction activities will disturb near-surface soils which could have been contaminated by current and/or historic HAIL activities.

The assessment indicates that no known potentially contaminating activities have occurred at the following construction sites:

#### Main Works

- Norgrove Ave (L2S2 & CC3A1 – MH1)
- Whitney Street (L3S3)
- Dundale Ave (L3S4)
- Haycock Ave (L3S5)
- Kiwi Esplanade (AS7 Option A)

#### CSO works

- Moa Reserve (CC1A2-MH2)
- Waterview Reserve (CC1B4-MH1)
- Howlett and Waterview Walkway (CC1B5-MH2)
- Seaside Reserve (CC1B-MH11)
- Alan Wood Reserve (CC5- MH3 and CC5-MH4)

Hence, works at those sites will be subject to the Watercare standard earthwork procedures.

However, potentially contaminating activities are known to have occurred at the other construction sites. Potential contaminants generally include metals, petroleum hydrocarbons and asbestos containing material.

Intrusive investigations were carried out on four of the potentially contaminated construction sites (Mangere WWTP, May Road, Western Springs and Motions Road). Investigation results and development implications for the four investigated sites are provided in **Table 3.1**.

**Table 3.1: Summary of analytical results and development implications**

Site name	Soil concentrations			Soil disposal location	
	Above ALW Plan Permitted Activity criteria	Above published background	Above NES SCS <sup>1</sup>	Fill	Natural
Mangere WTP	Yes	Yes	No	Managed fill (Average depth across site of fill requiring disposal = 2.5 m)	Volcanic cleanfill, otherwise managed fill

<sup>1</sup> MfE, April 2011, National Environmental Standards (NES) Users Guide for Assessing and Managing Contaminants to protect human health - Soil Contaminant Standards (SCS)

Site name	Soil concentrations			Soil disposal location	
	Above ALW Plan Permitted Activity criteria	Above published background	Above NES SCS <sup>1</sup>	Fill	Natural
May Road	No	Yes	No	Managed fill but presence of ACM may require all fill to be disposed to licensed landfill (Average depth across site of fill requiring disposal = 1 m)	Volcanic cleanfill, otherwise managed fill
Western Springs Main site	No	Yes	No	Managed fill (Average depth across site of fill requiring disposal = 0.8 m)	Cleanfill, subject to further testing, otherwise managed fill
Western Springs Secondary site	Yes	Yes	No	Managed fill (Likely depth across site of fill requiring disposal = 1 m)	Not able to be tested
Motions Road	Yes	Yes	No	Managed fill but presence of ACM may require all fill to be disposed to licensed landfill (Average depth across site of fill requiring disposal = 0.5 m)	Volcanic cleanfill, otherwise managed fill

Intrusive investigations have not been carried out at the other remaining potentially contaminated construction sites (Rawalpindi Reserve, Mt Albert War Memorial Reserve, Lyons Ave, Haverstock Road, Walmsley Park, PS25, Keith Hay Park, PS23, Ambury Park, Western Springs Depot, Miranda Reserve and Wingate Reserve). However, the desk study assessment shows that contaminant levels at these sites are unlikely to be at concentrations that would exceed human health criteria for recreational and/or commercial/industrial land use. Hence, the potential for risk to construction workers and general public is likely to be low. However, for some sites, contaminant concentrations could be above published background concentrations and/or the permitted activity acceptance criteria for the Auckland Regional Plan: Air Land and Water. Sampling and testing of soils will be required at these sites before work commences (refer Section 3.2) to establish contaminant levels and correct procedures for the sites.

The potential for contamination from the tunnelling works is extremely low because soils at the proposed tunnelling depths are likely to comprise natural ground. There is a low potential for works within the road corridors to encounter contaminated ground and/or groundwater (eg migration from neighbouring industrial or service station sites onto the adjacent road corridors). Confirmatory testing and management procedures if contaminated materials are encountered are provided in this SMP for those works (Sections 4.0 to 9.0)

## 3.2 Confirmation of ground contamination

As discussed above, further sampling is required to fully characterise ground contamination across the areas of ground disturbance for the 12 potentially contaminated construction sites. Additional soil sampling and testing is proposed to be undertaken either prior to excavation or during the construction process by sampling and testing open excavations or spoil stockpiles.

Confirmatory soil sampling and testing may also be required on sites that have not been identified to be potentially contaminated including works within the road corridor if contaminated soil is suspected during the course of works (refer Section 3.1).

These confirmatory sampling works will establish the appropriate handling procedures and disposal locations.

Results of any soil testing will not be available for at least five working days. If soil testing is undertaken during the construction process, the excavated soil shall be treated as potentially contaminated while awaiting laboratory confirmatory results and the procedures set out in Section 4.0 shall be implemented. A waste manifest is required to be obtained from Landfill Operator before surplus soils can be disposed of. Discussions with the landfill operator could take several days. Further testing (for leachability) may also be required if soil contaminant levels exceed their screening criteria. Disposal facilities typically require one sample per 500 m<sup>3</sup> of soil.

The advantages of establishing contamination levels and obtaining a waste manifest prior to any excavation starting on site are that the material can be directly loaded onto trucks and transported offsite. This minimises the need for additional environmental controls (e.g. to prevent dust generation from stockpiled material), frees up more area for construction purposes, and minimises associated effects on programme.

### 3.2.1 Sampling procedure

All sampling works to confirm if contamination is present shall be directed and undertaken by a qualified Environmental Consultant in accordance with the Ministry for the Environment Contaminated Land Guidelines. The soil sampling strategy (including depth, sampling method, analytes) for the areas of excavation shall be based on the findings of the desk-based ground contamination assessment<sup>1&2</sup>.

### 3.2.2 Classification of soils

Laboratory results should be assessed against the following:

- The National Environmental Standards (NES) Soil Contamination Criteria<sup>3</sup> for commercial/industrial outdoor workers to determine if soils pose a health risk to site workers (Section 6);
- The National Environmental Standards (NES) Soil Contamination Criteria<sup>3</sup> for recreational or commercial/industrial land use to determine if soils can be re-used on site; and
- Auckland cleanfill criteria to determine appropriate disposal locations.

These are listed in **Table 3.2**.

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<sup>2</sup> Desk Study and Ground Contamination Assessment – Combined Sewer Overflows (CSO) – Central Interceptor Project, Tonkin and Taylor, July 2012

<sup>3</sup> MfE, April 2012. Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

**Table 3.2: Soil Contaminant Concentrations (mg/kg)**

Contaminant	NES SCS for commercial/industrial outdoor workers (unpaved) <sup>1</sup>	NES SCS for recreational land use <sup>1</sup>	Auckland Cleanfill Criteria <sup>2</sup>
<b>Arsenic</b>	70	80	12
<b>Cadmium</b>	1,300	400	0.65
<b>Chromium</b>	>10,000	>10,000	55 or published background for the site
<b>Copper</b>	>10,000	>10,000	45 or published background for the site
<b>Lead</b>	3,300	880	65 or published background for the site
<b>Nickel</b>	3,000 <sup>3</sup>	600 <sup>3</sup>	35 or published background for the site
<b>Zinc</b>	35,500 <sup>3</sup>	14,000 <sup>3</sup>	180 or published background for the site
<b>B(a)P. Equivalent</b>	35	40	<LOR
<b>C7-C9</b>	500 <sup>4</sup>	500 <sup>4</sup>	<LOR
<b>C10-C14</b>	670 <sup>4</sup>	510 <sup>4</sup>	<LOR
<b>C15-36</b>	> 20,000 <sup>4</sup>	> 20,000 <sup>4</sup>	<LOR
<b>Total Hydrocarbons</b>	-	-	<LOR

Notes:

<LOR = Less than Laboratory Limit of Reporting

1 - NES for Assessing and Managing Contaminants in Soil to Protect human Health, Ministry for the Environment, 2011

2 - Refer TP153 Background Concentrations of Inorganic Elements within Auckland Soils, Auckland Regional Council, 2001

3 - NEPC, 1999. Guideline on the Investigation Levels for Soil and Groundwater

4- MfE, 1999 (Revised 2011), *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*, conservative scenario of sandy silt soil with contamination at 1-4m depth, used for comparison Site Management Practices

The soil testing results shall determine the management procedures that the contractor shall follow during works. These are shown on **Table 3.3**.

**Table 3.3: Soil handling management protocols**

<b>Soil contaminant concentrations (refer Table3.2)</b>	<b>Management procedures</b>
Below Auckland Cleanfill Criteria	Watercare standard earthworks procedures and no additional environmental controls or precautions shall be required for the soil
Above Auckland Cleanfill Criteria but below NES SCS for Commercial/Industrial Outdoor Workers (unpaved)	Follow management procedures in Sections 4 and 5
Above NES SCS for Commercial/Industrial Outdoor Workers (unpaved)	Follow management procedures in Sections 4 - 9

## 4 Site Management Procedures

Site management procedures are outlined to ensure proper handling of contaminated materials and potentially contaminated materials throughout the project works area.

### 4.1 Earthwork procedures

The following general handling procedures should be followed where contamination is identified, is suspected, or has not been able to be confirmed (refer Section 3.2):

- Material excavated shall be reused on site where practicable, if soil contaminant concentrations are below the NES SCS for the site final land use. If the soil is not able to be reused on the site, it shall be loaded by the contractor directly onto trucks for offsite disposal, or temporarily stockpiled immediately adjacent to the excavation to prevent contamination of other areas. Stockpiling should be in accordance with Section 4.2.
- Trucks shall be loaded within the site where runoff and possible spills during loading can be controlled and contained.
- Trucks shall have their wheels either swept down or washed before they leave site. Each truck will have a tracking document signed onsite and collected at the receiving facility to track each load of material.
- Trucks shall have their loads covered by tarpaulins during transport of material to licensed landfill. These shall be affixed before leaving site.
- A permit/manifest shall be obtained by the contractor from the landfill destination prior to transportation. The contractor is responsible for obtaining this approval.
- All contaminated material removed from site shall be disposed of as per the procedures set out in Section 5.

### 4.2 Stockpiling of contaminated or potentially contaminated soil

If stockpiling of contaminated soil on site is required, it shall be managed by the contractor as follows:

- Sediment control measures shall encircle the stockpile, this may include:
  - earth bunds with a minimum height of 0.3m;

- hay bales;
- silt fences; and
- proprietary products such as filter socks etc;
- If the stockpile is to remain for more than 1-2 days, the stockpile shall be covered with clean soil, geotextile or a polythene cover to prevent rainfall induced erosion and dust; and
- The stockpile shall be fenced or otherwise secured so that the general public cannot access the stockpile.

### **4.3 Imported material procedure**

If any material is to be imported to the site for the purposes of filling, the material shall be sampled by the Environmental Consultant at a rate of 1 sample for every 100m<sup>3</sup> and analysed for contaminants including metals, total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAH). It is preferable that the fill is tested at its source prior to its disposal at the site. However, if not, then the contractor shall stockpile the fill on site until test results are available.

Basecourse/hardfill does not require testing, provided it is sourced directly from a quarry. The contractor shall require all compounds in imported fill, other than fill directly from a quarry, to meet the cleanfill criteria provided in **Table 3.2**.

### **4.4 Procedure for removing and reporting on unforeseen structures**

It is possible that subsurface structures with potential to cause ground contamination may be encountered during the works. Structures of concern are those associated with the storage, transfer or disposal of fuels, chemicals or wastes. These may include underground storage tanks (USTs), pipelines, waste tanks or sumps. If unforeseen structures of this type are encountered, the Environmental Consultant shall inspect the structures and advise on handling, disposal, and site validation procedures. Any abandoned drainage lines shall be capped off with concrete and inspected by the Environmental Consultant prior to reinstatement.

The contractor shall keep a record (location and description) of all identified structures of this type. These records shall be provided to the Environmental Consultant on request.

### **4.5 Dust control**

From an environmental and human health perspective, dust generated during earthworks on a contaminated site has the potential to contain contaminants and, during windy conditions, may discharge offsite.

In order to control the generation of contaminated dust, the contractor shall:

- Limit the amount of contaminated soil to be excavated as much as practicable;
- Limit vehicle access onto contaminated areas;
- Utilise a water truck or portable water sprays in trafficked areas to dampen dust during dry and windy conditions;
- Cover stockpiled material awaiting laboratory testing and removal with geotextile to prevent dust generation;
- Visually monitor dust emissions in the vicinity of the excavation until exposed contaminated material has been covered by clean material; and
- Avoid work during windy conditions.

When utilising water to control dust, the contractor shall ensure that:

- The volume of water used for dust suppression does not exceed soil field capacity of the wetted areas;
- The application does not cause surface runoff that would discharge into natural water bodies; and
- The application of water does not induce soil erosion and soil pugging.

#### **4.6 Stormwater and sediment control measures**

During earthworks on contaminated sites, rainwater has the potential to come into contact with contaminated material and become contaminated itself. Contaminated sediment may also become entrained in the stormwater.

The contractor shall liaise with the Environmental Consultant and ensure that the stormwater and sediment control procedures specific to and appropriate for the potential contaminants in each area, are put in place prior to any groundbreaking works commencing. The procedures shall include as a minimum:

- Limiting the duration of exposure of contaminated ground as much as possible;
- Containment of any runoff during rainfall events within the excavation;
- Bund stockpiles as set out in Section 4.2;
- Implement sediment and erosion control measures as set out in the Erosion and Sediment Control Plan; and
- Controlled site exit points and dry brushing equipment shall be put in place to prevent soils being tracking offsite by vehicles.

#### **4.7 Dewatering**

The quality of any dewatering discharges on confirmed contaminated sites shall be tested prior to the disposal of the water to stormwater. In the absence of confirmatory testing, the waste water shall be disposed to trade waste/sewer.

In addition, the Environmental Consultant shall be notified if any unusual/unexpected ground and groundwater conditions are encountered during the project works. The Environmental Consultant shall assess the need to test or treat the water, and advise on appropriate disposal methods.

#### **4.8 Odour control**

Odorous material is not expected to be encountered, however, if odorous material is uncovered during excavation works the following odour control measures shall be implemented to prevent a nuisance to neighbouring houses and to ensure the health of workers:

- All work in the immediate vicinity of odorous material shall cease and the exposed material shall be covered, for example with tarpaulin, polyethylene sheeting or a layer of clean soil to prevent further discharge of odour. The contractor shall then seek advice from the Environmental Consultant. The Environmental Consultant shall assess the potential for volatile compounds and advise on health and safety requirements. Assessment of volatility may include use of a Photoionisation Detector (PID) and soil sampling and testing;
- Wind conditions shall be assessed and if necessary work shall cease until conditions are more favourable for minimising discharge of odour;

- A ventilation or other mitigation system, for example odour suppression sprays, shall be established if natural dispersion is not adequate; and
- Health & safety procedures as set out in Section 6 shall be employed.

## 5 Soil Disposal

The contractor shall remove all contaminated soil to a managed disposal facility, such as Puketutu Managed Fill or a licensed landfill such as Redvale Landfill. The confirmation of contamination concentrations present in the soil, as determined by Section 3.2, shall determine the suitable disposal location. Acceptance must be confirmed by the landfill prior to disposal.

In general, material for managed fill disposal must be free of anthropogenic waste material such as metal, rubber and plastic, although concrete is allowed if it contains no more than minimal reinforcing steel. Up to 5% organic material is allowed, including tree roots, branches and leafy vegetation. Material that does not meet managed fill acceptance criteria must be disposed of at a licensed landfill.

The contractor shall be required to keep records of the material disposed (weighbridge dockets, etc) and this information shall be provided to the Environmental Consultant on request.

## 6 Health and Safety Procedures

Watercare shall prepare and implement a Health and Safety Plan (HSP) in compliance with the Health and Safety in Employment Act, 1992, its amendments, and associated regulations, and other applicable legislation, regulations, codes and guidelines. The Health and Safety Plan shall address all potential hazards associated with the proposed works. General protocols related to the presence of potentially contaminated material are described in this section and shall be included in the HSP.

### 6.1 Site establishment

The following shall be put in place by Watercare prior to ground works commencing:

- The site will be fenced to restrict entry to authorised workers and prevent access by the general public. Appropriate warning signs (e.g. *“Restricted entry”*, *“Danger open excavations”*) shall be erected around the fenced site;
- Health and safety inductions shall be completed; and
- Health and safety facilities as required by the hazard management procedures, such as wash facilities, personal protection equipment stores and first aid points shall be provided.

### 6.2 General safety requirements

Watercare shall, as a minimum, implement the following measures:

- While the excavations remain open, entry to the site shall be restricted to authorised workers only;
- A health and safety officer (HSO) shall be appointed for the works. The role of the HSO shall be to ensure workers are wearing the correct protective equipment and respond to new hazards as they arise;
- All workers shall be inducted prior to carrying out works at the sites. The inductions shall describe the PPE requirements and outline the potential hazards of the contamination that is likely to be encountered at the construction sites;

- Contact with contaminated soil by workers is expected to be minimal because the potential for contamination has been identified as low in most of the sites and earthworks are proposed to be undertaken by mechanical methods. However, as a precautionary measure, any worker that is required to manually handle contaminated or potentially contaminated soil shall be required to wear disposable gloves. The resistance of the gloves to the contaminants encountered on site shall be confirmed prior to use;
- Dust masks shall be made available at the project area at all times. Workers shall use these if visible dust clouds are present within the project area;
- Additional requirements such as safety glass, disposable or splash/water proof overalls, and/or half mask respirators with organic filters may be required depending on the nature of the contamination present on site and the scale and location of the works. the conditions under which the need for additional requirements will be triggered shall be identified in the HSP; and

Hand to mouth contact (including eating, drinking and smoking) within the project area shall not be permitted except within a designated support zone(s).

### **6.3 Emergency procedures**

It is the responsibility of the HSO to ascertain the availability of appropriate emergency services and equipment prior to the start of works. These will include:

- The location of the nearest telephone;
- Location of the nearest first aid kit; and
- Appropriate local medical emergency numbers.

The HSO shall be immediately notified of any injury or accident occurring at the site. If serious harm occurs, Occupational Safety and Health (OSH) must be notified immediately.

The following is a list of emergency numbers:

Emergency	111
Auckland Hospital	09 367 0000
Auckland Fire Department	09 302 5142
Auckland Police	09 302 6400
OSH Inspectors	0800 20 90 20
Consultant:	To be determined
Contractor:	To be determined

## **7 Monitoring Programme**

The following sets out the monitoring programme to be carried out during earthworks.

### **7.1 Earthworks Control**

Monitoring shall be undertaken by Watercare or its contractor and shall involve regular inspections of earthworks areas for:

- Sediment control and compliance with plan;
- Water accumulation; and

- Dust generation.

Watercare or its contractor shall also visually inspect excavations for significant odours or discoloration and notify the Environmental Consultant if any are observed.

## 7.2 Validation Testing

As full remediation is not being carried out, validation sampling and testing of excavated areas is not proposed.

As discussed in Section 4.3, validation testing of imported fill is required.

In addition, should unexpected contamination conditions be encountered the appointed Environmental Consultant shall inspect the material and provide additional advice regarding its safe handling and disposal and the requirement for the collection of any validation samples.

If undertaken, validation sampling shall be undertaken by a suitably qualified Environmental Consultant and collected according to the "Ministry for the Environment *Contaminated Land Management Guidelines No.5: Site Investigation and Analysis of Soils* or other equivalent standards approved in writing by the Auckland Council.

## 8 Staff Training

Environmental training for all earthwork staff working on the project shall be undertaken as part of the site induction programme. All workers shall be made aware of the potential for contamination and understand ways in which contamination can be identified on site (refer Section 2.1). This is particularly important if sampling and testing of the material cannot be undertaken prior to excavations on the potentially contaminated sites or if contamination is encountered during the course of works on sites where potentially contaminating activities have not been identified, including works within the road corridor.

If any of the following are noted in the excavation, or the excavated soils, it is an indication that contamination may be present:

- A solvent or hydrocarbon odour (petrol, diesel, kerosene type odour, etc)
- Other abnormal odours not normally associated with soil
- Discoloured soil (i.e. areas of soil with dark staining, abnormal or unnatural colouring)
- Soil with waste material or building debris (i.e. plastics, metal, bricks, timber etc) indicating the ground has been filled
- An oily substance or sheen on the surface of soil, or on the surface of water in the excavation

If any of the above indications of contamination are identified, work in the immediate vicinity of the contamination shall cease. The contractor shall notify the Project Environmental Consultant who will visually inspect the material, take samples for confirmatory testing (Section 3.2), if required, and provide additional advice regarding its safe handling and disposal.

## 9 Validation Reporting

Validation is the process of confirming that the objectives and goals of this SMP have been achieved. A Site Validation Report (SVR) shall be prepared by the Environmental Consultant on completion of the earthworks and upon receipt of all necessary documentation. The report shall document:

- Variations from the strategies outlined in this plan and the reasons why variations were necessary;
- Provide results of validation testing of any imported soils to confirm they meet the acceptance criteria set out in **Table 3.2**;
- Confirm the excavation soil disposal volume and destination;
- Results of soil validation samples (if any);
- Evidence that groundwater and surface water was disposed in an appropriate manner; and
- Requirements for further work, if any.

The validation report shall comply with the Ministry for the Environment *Guidelines for Reporting on Contaminated Sites in New Zealand* (June 2001).

Information is required from the Contractor for inclusion in the SVR. The information requirements are:

- Copies of weigh bridge summaries for the disposal destination for contaminated soil;
- Documentation (for example copies of weigh bridge summaries or invoices) confirming the source of the material and location of placement of any materials imported to the site;
- Records of visits by council representatives;
- Details of any complaints related to contamination and how they were resolved; and
- Details of any health and safety incident related to the contamination and how they were resolved.

## 10            **Applicability**

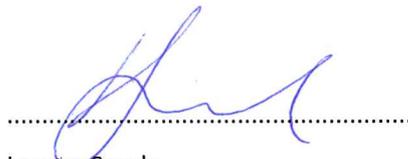
This report has been prepared for the benefit of Watercare Services Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:



Lauren Sunde

Environmental Geologist

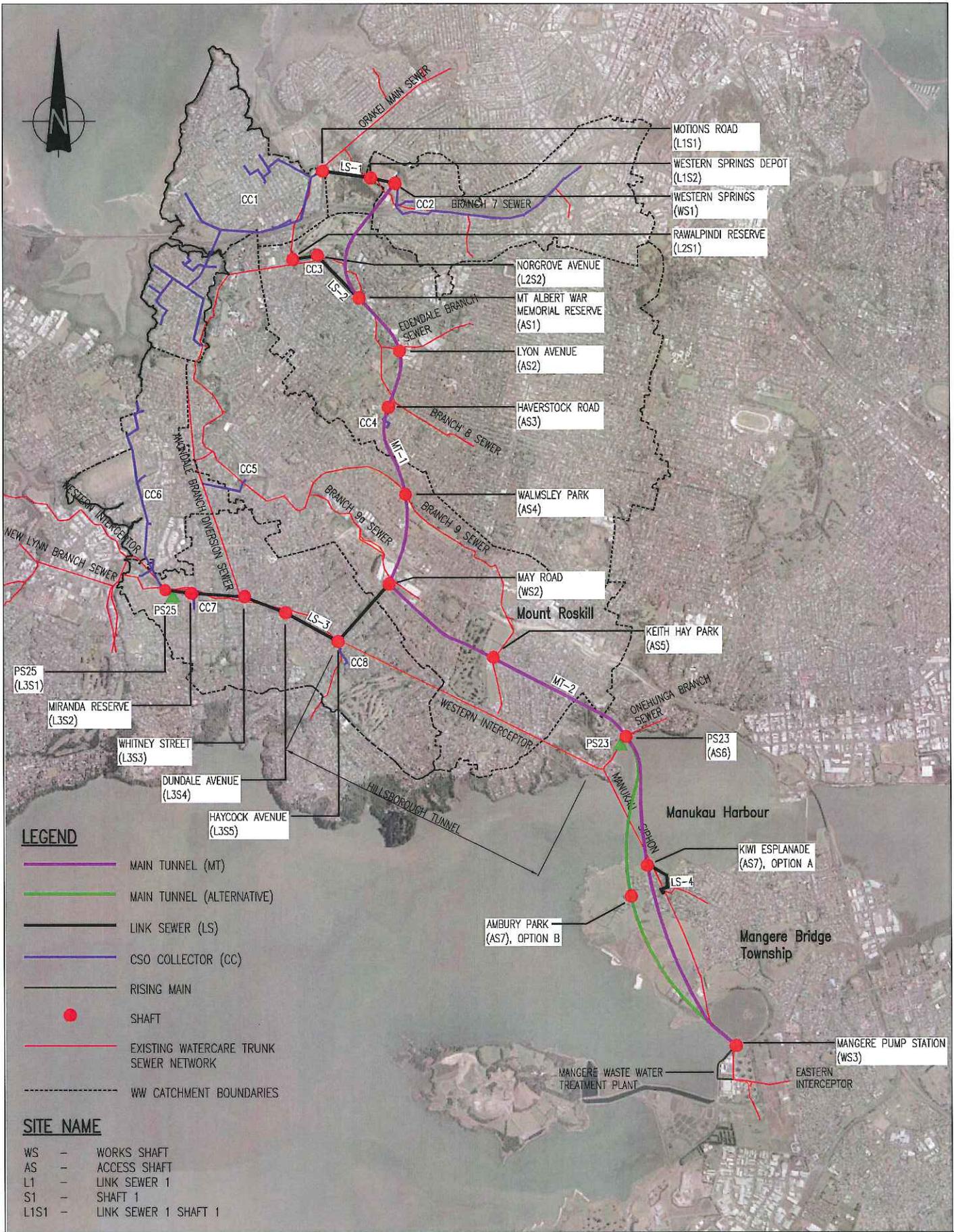


Gerard Bird

Environmental Group Manager

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**Appendix A: Figure**



**LEGEND**

- MAIN TUNNEL (MT)
- MAIN TUNNEL (ALTERNATIVE)
- LINK SEWER (LS)
- CSO COLLECTOR (CC)
- RISING MAIN
- SHAFT
- EXISTING WATERCARE TRUNK SEWER NETWORK
- - - WW CATCHMENT BOUNDARIES

**SITE NAME**

- WS - WORKS SHAFT
- AS - ACCESS SHAFT
- L1 - LINK SEWER 1
- S1 - SHAFT 1
- L1S1 - LINK SEWER 1 SHAFT 1

5	
4	30/05/12
3	16/03/12
2	17/02/12
1	22/12/11
ISSUE	DATE

**CENTRAL INTERCEPTOR  
GENERAL  
OVERALL SITE LAYOUT**

**DRAFT**

**AEI MARCH 2012**



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CAD FILE FIGURE 1.1		DATE 30-May-12	
ORIGINAL SCALE A4		CONTRACT No.	
1:62500 A4		0538	
DRAWING No.		ISSUE	
FIGURE 1.1		5	