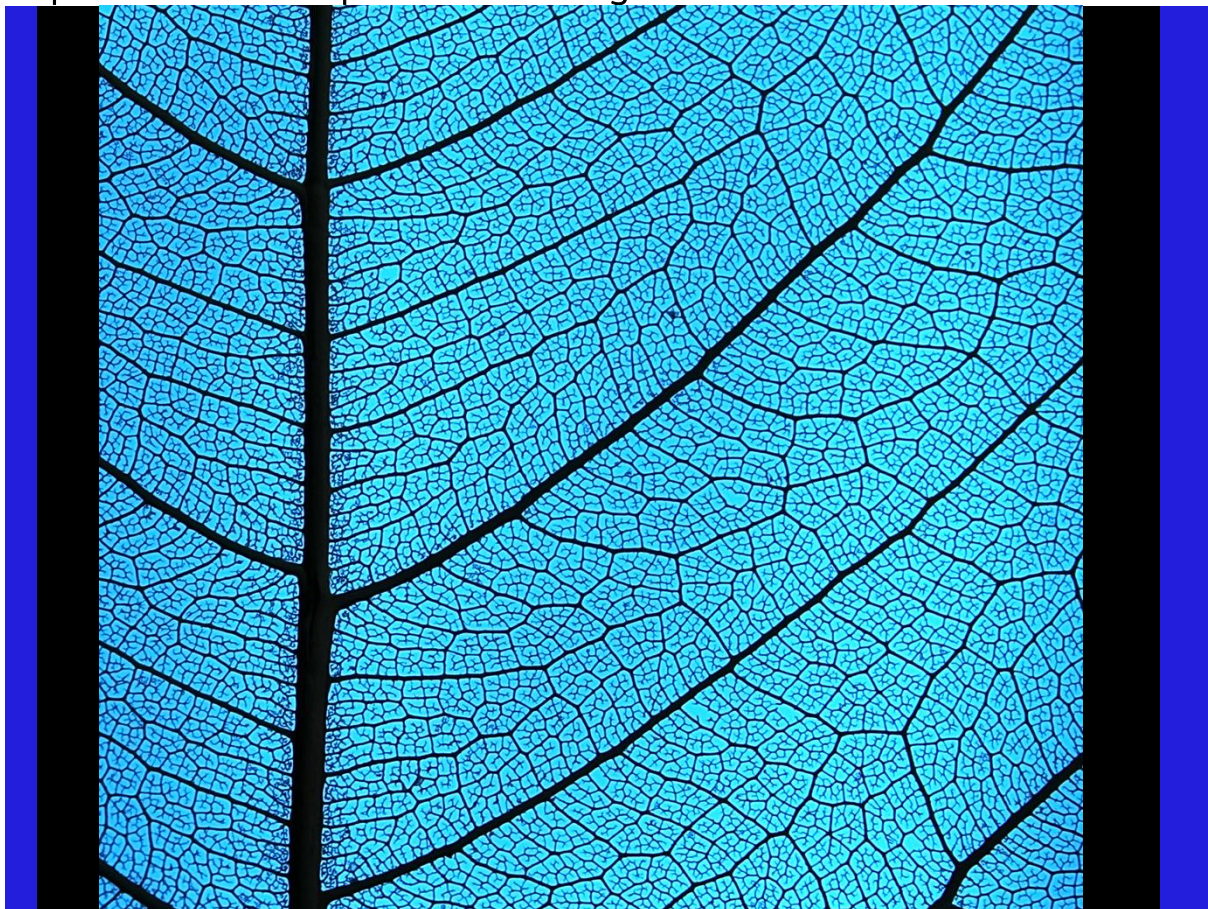


Contamination Management Framework (CMF)

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Contamination Management Framework (CMF)

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Acronyms

ACM	asbestos containing material
BG	Brighton Group
CEMP	Construction environment management plan
CHMP	Cultural heritage Management Plan
CMAP	contamination management action plan
CMF	Contamination Management Framework
CoPP	City of Port Phillip
CPTED	Crime Prevention Through Environmental Design
CSEP	Community and stakeholder engagement plan
CUSFARP	EPA Victoria Clean Up to the Extent Practicable (under Environment Protection Act 2017 (State Government of Victoria, 2017))
CUTEP	EPA Victoria Clean Up to the Extent Practicable
DTF	Department of Treasury and Finance
DTP	Department of Transport and Planning
EMP	Environmental management plan
EPA	Environment Protection Authority
GED	General Environmental Duty
HASP	Health and Safety Plan
HHRA	Human Health Risk Assessment
HIL	health investigation levels
HSL	human screening levels
JSEA	Job Safety Environmental Analysis
LOR	levels of reporting
mBGL	metres below ground level
NAPL	Non-aqueous phase liquid
NDD	Non-destructive digging
NEPC	National Environment Protection (Assessment of Site Contamination) Measure (2013)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure (1999)
OHS	Occupational Health and Safety
OVb	older volcanics basalts
PAH	Polycyclic aromatic hydrocarbons
PID	photo-ionisation detector
PMS	Port Melbourne Sands
PPE	personal protective equipment
PSV	Passive soil vapour
SWMS	Safe Work Method Statement
TRH	Total recoverable hydrocarbons
VOC	Volatile organic compounds
WSUD	Water sensitive urban design

1. Introduction

1.1 General

The Department of Transport and Planning (DTP), formerly the Department of Treasury and Finance (DTF) engaged Jacobs to prepare a Contamination Management Framework (CMF) for Gasworks Arts Park, located at 21 Graham Street, Albert Park, VIC ("the Park") within the City of Port Phillip (CoPP). The CMF is required to meet recommendations of a Human Health Risk Assessment (HHRA) for the Park, undertaken in 2018 (EnRisksS, 2018).

The HHRA identified that exposure risks from shallow soils (0.0 – 0.3 metres below ground level [mBGL]) to users of the Park (including commercial workers, maintenance workers, recreational users including off leash dog walking) was acceptable, provided that surface covers were maintained. Further information on the HHRA is provided in Section 4.3.

City of Port Phillip (CoPP) identified that enhancements to existing Park features are required to maintain surface covers and ensure that Park users are protected from underlying shallow soils. Additionally, upgrades to replace ageing infrastructure and improve Park facilities are proposed, as presented in the Gasworks Arts Park – Park Plan 2022 [draft] (City of Port Phillip, 2022) ("Park Plan"), presented as Appendix C.

Intrusive works required to facilitate proposed upgrades will involve removal of surface covers and excavation of sub-surface soils. As such there is potential for maintenance workers and recreational users to be exposed to underlying shallow soil contamination.

It is acknowledged that the Park is listed on the Heritage Victoria inventory and any intrusive works must to be completed in accordance with the appropriate consent requirements of Heritage Victoria.

1.2 Purpose and Intent of the CMF

The purpose and intent of this CMF is to:

- Present sub-surface site contamination conditions based on previous investigations undertaken at the Park.
- Provide a management framework to mitigate the potential for unacceptable human health and environmental exposure risks from soil and water contamination during Park upgrade works proposed under the Park Plan (City of Port Phillip, 2022).
- Provide a management framework for CoPP and meet recommendations presented in the HHRA. It is understood that CoPP will refer to this CMF when planning Park enhancements and upgrades to assist with identification of management measures that mitigate potential exposure risks to Park users and workers.
- Present management goals for maintaining surface coverage of the Park to minimise the potential for park users to come in contact with contaminated soil.
- Address the recommendations presented in HHRA (EnRisksS, 2018).
- Comply with the duties under the Environment Protection Act 2017 (State Government of Victoria, 2017), as detailed in Section 3.1.

1.3 Stakeholders, Roles and Responsibilities

Roles and responsibilities of the primary stakeholders involved in implementing the Park Plan and adhering to this CMF are presented in Table 1-1.

Table 1-1. Stakeholder Roles and Responsibilities

Stakeholder	Role/Responsibilities	Accountabilities	Interactions
DTP	<ul style="list-style-type: none"> DTP has facilitated the environmental investigations at the Park and are responsible for the development of this CMF. Ensure Park upgrade works are implemented and executed in accordance with Victorian State objectives, standards and procedures. Management and delivery of the Environmental Audit. Relay decisions and expectations of stakeholders. Project funding and approval of project expenditure relating to contamination. 	<ul style="list-style-type: none"> State Government of Victoria 	<ul style="list-style-type: none"> CoPP State Government of Victoria Environmental Consultant Environmental Site Auditor
City of Port Phillip (CoPP)	<ul style="list-style-type: none"> Provision of the Park Plan (City of Port Phillip, 2022), including detailed design of construction elements. Lead and implement stakeholder engagement through internal resources or a third-party appointed to manage consultation with the public, local residents and other stakeholders. Facilitate implementation of the CMF. Develop documentation required under this CMF (refer Section 6 Consultation with Heritage Victoria regarding consent requirements for Park upgrade works. 	<ul style="list-style-type: none"> Local Rate Payers Park users 	<ul style="list-style-type: none"> DTP Environmental Consultant(s) Subcontractors engaged to undertake upgrades under the Park Plan (City of Port Phillip, 2022) The community groups Professional stakeholder engagement company (if required)
Environmental Site Auditor	<ul style="list-style-type: none"> Perform the role of Environmental Auditor for the Park Audit the work of the Environmental Consultant and contractors engaged to undertake proposed works under the Park Plan. Prepare statutory site audit reports at the conclusion of the environmental audit. 	<ul style="list-style-type: none"> DTP State Government of Victoria (EPA) 	<ul style="list-style-type: none"> DTP Environmental Consultant
Environmental Consultant	<ul style="list-style-type: none"> Inspection of construction works and third party confirmatory sampling, analysis and reporting of contaminant management measures, to confirm compliance with this CMF. Validation of the construction works in accordance with the HHRA requirements and reporting on completion of contaminant management measures. Provide guidance and expertise on development of management plans, as required. 	<ul style="list-style-type: none"> DTP CoPP 	<ul style="list-style-type: none"> CoPP Contractors engaged to undertake proposed works under the Park Plan. Environmental Site Auditor
Construction and contaminant management contractor	<ul style="list-style-type: none"> Implement CMF and adhere to associated management plans. 	<ul style="list-style-type: none"> CoPP 	<ul style="list-style-type: none"> CoPP Environmental Consultant

1.4 Limitations of this CMF

This CMF presents management measures required to mitigate potential risks of exposure for general park users and maintenance workers during upgrade works under the Park Plan (City of Port Phillip, 2022). The CMF excludes management requirements for contaminated soils at depth (>1.5 mBGL), or groundwater management. Any work involving, excavation or movement of larger quantities of soils, interaction with soils >1.5mBGL, or potential contact with the groundwater requires separate consultation with DTP.

It should be noted that during the preparation of this CMF further investigation and reporting works were being conducted to assess the potential for an EPA Victoria Clean Up to the Extent Practicable (CUTEP) (now CUSFARP, under Environment Protection Act 2017 (State Government of Victoria, 2017)) process to be implemented for groundwater at the Park. The outcomes of this process should be referred to should works which could potentially intercept groundwater occur at the Park. Management measures identified to mitigate unacceptable aesthetics impacts associated with the solid waste in surface soil were determined through discussions with the relevant stakeholders during the development of the CMF.

2. Gasworks Arts Park Background and Environmental Setting

2.1 Description

The Park, located within Albert Park, covers an area of approximately 2.84 hectares (ha) and is bound by Graham Street to the south, Pickles Street to the west, Richardson Street to the north and Foote/Bridport Streets to the east.

The Park is surrounded by residential properties beyond Graham, Pickles, Foote and Richardson Streets. The Southport Community Nursing Home is located adjacent to the Park boundary to the northeast and the Multinet South Melbourne Depot is adjacent to the northwest boundary. The June 2019 Park layout is presented in Appendix A, Figure 1.

2.2 History

Historically, the Park formed part of the South Melbourne gasworks and was used for gas manufacturing from 1873 until the facility was decommissioned in 1955. Approximately two thirds of the northern portion of the Park was landscaped and turfed in 1982, forming what is now known as Gasworks Arts Park. No remediation was undertaken (GHD, 2014).

The Park's historic gasworks operations included a comprehensive coal carbonisation facility, involving the main process and several ancillary processes. The main coal carbonisation process was located on the western and central portion of the Park on land that is now the main central parkland area. Vertical and horizontal retorts were operated at the Park, with the main gas holders located offsite immediately to the west of Pickles Street. An oil reforming plant and carburetted water gas plant was located on the western and south-western part of the Park. Gas purifiers, tar wells and liquor wells were located on the eastern and north-eastern portion of the Park. Historic features of the Gasworks are presented in Appendix A, Figure 2.

2.3 Geology and Hydrogeology

2.3.1 Geology

Previous intrusive investigations undertaken at the Park indicate that shallow soil comprises sandy/clayey fill containing gasworks waste. Fill has been encountered at the Park at depths varying between the surface and 3.0 mBGL. Fill is underlain by disturbed Port Melbourne Sands (consisting of raised beach ridges or well sorted sand, shelly sand, minor silty or clayey sand) or Brighton Group sediments comprising sequences of soil, sand and clays).

Based on information from publicly available sources and previous intrusive investigations, the following geological units are applicable to the Park:

- Port Melbourne Sands (PMS) - the upper geological formation at the site, which discontinuously underlies the fill, and has been identified in lenses up to 2.6 m thick in the southern portion of the site.
- Brighton group (BG) - encountered underlying the fill and, where present, have been identified extending to a maximum depth of 22 mBGL.
- The older volcanics basalts (OVb) - identified underlying the Brighton Group sediments at approximately 18 mBGL in the north-eastern portion of the site. The OVb deposits are noted to comprise predominantly gravely clay materials at the upper surface of this deposit.
- Werribee Formation - Eocene age sand and silty-sands with clays, with pyritic and lignitic sands.
- Dargile Formation - comprising sandstone and siltstone.

2.3.2 Hydrogeology

Groundwater beneath the Park has been encountered at depths of 7.0 – 8.0 mBGL. Multiple potential aquifer units have been identified beneath the Park, within the following geological units:

- The BG sediments are considered likely to be the primary transmitter of groundwater beneath the Park.
- The OVb are likely to be hydraulically separate from the overlying BG sediments aquifer.

Although the shallow PMS may be a water bearing zone, it is not considered to constitute an aquifer beneath the Park due to its limited capacity to store and transmit water as a result of its shallow, intermittent distribution.

Regional groundwater flow is expected to be in a south, south westerly direction towards Port Phillip Bay, located approximately 400 m from the Park. Previous groundwater investigations have indicated that local groundwater flow in the shallow BG sediments is influenced by the deep, brick lined sewer systems which surround the Site on three sides. As such, local groundwater flows towards the nearby deep sewers located along Foote/Bridport Street, Graham Street and Pickles Street where vertical drawdown of the water table by several metres has been previously recorded.

2.4 Current Park Features

The Park is comprised of a large, grassed area and landscaped garden beds. Gravel paths provide off-grass access throughout the Park and several buildings are present around the Parks perimeter. The current Park layout is presented in Appendix A, Figure 1.

Features and activities held with the Park include:

- Monthly farmers market
- Outdoor sunset cinema (during summer months);
- Art and music-based activities including theatre performances, art exhibitions and indoor and outdoor art and sculpture installations;
- Studios (sculpture, ceramic, visual arts, arts & crafts);
- Children's swing;
- Off leash dog area;
- Barbeque area;
- Passive recreation spaces;
- Meeting and gathering spaces; and
- Café facilities.

2.5 Park Plan

CoPP has developed a draft Park Plan (City of Port Phillip, 2022) that identifies preliminary proposed locations ('usage zones') for upgraded infrastructure and assets such as garden beds, lawn areas and paved paths. The usage zones and key design elements are outlined in **Table 2-1**.

A final plan identifying the locations of works to be performed is not available.

Table 2-1. Gasworks Arts Park – Draft Park Plan 2022

Usage Zone	Key Design Elements
Maintain green open space for the community	<ul style="list-style-type: none">▪ Retain the central grassed areas and dog off-leash zone.▪ Retain all mature trees, where safe to do so.▪ Upgrade the irrigation system to provide a centrally controlled system for the grassed area and some garden beds.▪ Create courtyard spaces with shade and seating for building users.▪ Revitalise the existing bushland planting, allowing for sightlines and considering Crime Prevention Through Environmental Design (CPTED)▪ Reintroduce plant information signs and bush trail including play and water elements.▪ Formalise planting in some areas while keeping the native planting palette.▪ Plan for future tree succession planting.
Paved Surfaces / Path upgrades	<ul style="list-style-type: none">▪ Maintain an accessible pathway network throughout the park, including concrete and granitic surfaced paths.▪ Path defines the boundary of the off-leash dog area
Bring play to the park	<ul style="list-style-type: none">▪ Existing play space to be removed from off-leash dog area.▪ New play space proposed in southwest corner.▪ Provide a neighbourhood/district sized play space that celebrates the parks history and aesthetics.▪ Focus on nature play and art play.▪ Existing shade trees are retained.▪ Space to include art and sculptural elements.
Off-leash Dog Area	<ul style="list-style-type: none">▪ Turf improvements,

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Usage Zone	Key Design Elements
	<ul style="list-style-type: none"> ▪ Retain open space for community use and off leash dog access. ▪ Upgraded irrigation system and drainage improvements. ▪ Separation from play and picnic spaces.
Garden Beds	<ul style="list-style-type: none"> ▪ Indigenous plant palette. ▪ Replacement canopy and shade trees.
Plaza and Market Area	<ul style="list-style-type: none"> ▪ Revitalise the existing plaza space to allow vehicle access. ▪ increase areas of tree planting and garden beds and introduce avenue planting and seating.
General	<ul style="list-style-type: none"> ▪ Ensure accessible and welcoming entrances to all buildings. ▪ Ensure sightlines to buildings. ▪ Review condition of existing public art. ▪ Plan for future pieces. ▪ Allow for temporary art exhibitions. ▪ Allow for outdoor performances. ▪ Follow guidance from EPA and State Government to manage soil and groundwater with minimal disruption to park use and existing trees. ▪ Improve access around buildings and allow for amenities such as seating, shade, barbecues and landscaping. ▪ Nature play nodes throughout the Park, including indigenous plant information and interactive art play opportunities. ▪ Incorporate sustainable principles to guide the Park development, including water sensitive urban design (WSUD) and recycled or sustainable materials.

Prior to finalising the Park Plan, a materials durability assessment should be undertaken, to ensure construction materials (i.e. irrigation system) are resistant to the identified sub-surface contamination including hydrocarbons and sulphates.

3. Regulatory Framework

3.1 Environmental Duties

Under the Environment Protection Act (2017), several duties related to managing contaminated land apply to anyone in management or control of contaminated land. These include:

- **General Environmental Duty (GED):** Under the GED a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable. The GED is applicable to contaminated land where activities are undertaken which may disturb contaminated land, such as excavation of contaminated soil.
- **Duty to manage contaminated land:** The duty to manage requires those in control or management of contaminated land to take reasonably practicable measures to minimise risks of harm to human health and the environment from the contamination.
- **Duty to notify of contaminated land:** The duty to notify of contaminated land applies to contamination above thresholds specified by the Environment Protection Regulations. The duty to notify of contaminated land applies to you if you are in management or control of land and should reasonably have been aware of notifiable contamination of the land.

3.2 Site Regulatory process

3.2.1 Environmental Audit

An environmental audit under section 53X of the Environment Protection Act 1970 (State Government of Victoria, 1970) was commissioned for the Park in 2016. The purpose of the Audit was to establish the Park's suitability for ongoing use for recreational purposes and commercial activities. It is understood that the environmental audit is proposed to be transferred to an environmental audit under the EP Act 2017 (State Government of Victoria, 2017).

DTP has engaged Mr Paul Fridell of Environmental Resources Management (ERM) as the environmental auditor for the site.

3.2.2 Assessment framework

The current and intended future use of the Park is for recreational and commercial purposes. As such, investigation and screening criteria developed for the protection of open spaces and commercial/industrial land uses were adopted and applied to the assessment of environmental data.

The National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM), as amended 2013, NEPC (2013) provides health investigation levels (HILs) applicable for assessing human health risks via relevant exposure pathways for a range of metal and non-volatile organic substances. The HIL C and HIL D applicable to recreational and commercial/industrial land use settings respectively are adopted. HILs are generic to all soil types and apply generally to a depth of 3 m below the surface.

The NEPM presents human screening levels (HSLs) applicable for assessing human health risk via the inhalation and direct contact exposure pathways for TRH, BTEX and naphthalene (collectively known as BTEXN).

The HSLs developed for recreational / open land use (HSL C) and commercial/industrial land use (HSL D) are considered the most appropriate criteria to assess the current and proposed land use.

4. Environmental Condition of the Park

4.1 Environmental Investigations

The Park has been subject to numerous environmental investigations since at least 1985. Key investigations relevant to this CMF are summarised in **Table 4-1**.

Table 4-1. Key environmental investigations relevant to this CMF

Environmental Investigation	Key Findings
S53V Audit GHD 2014 & 2014 Golder Associates HHRA	Commissioned by CoPP, investigations focussed on the assessment of soil and groundwater contamination, including the quality of near surface soils within the recreational parkland area. Elevated concentrations of PAHs in shallow soils were reported. The preferred contaminant management measures option proposed a full capping solution to mitigate the potential human health risks identified. GHD 2014 found that this was an acceptable solution to mitigate risks, however, this solution was not deemed acceptable to the local community and the remedial works were not undertaken.
Investigation Strategy (IS) (CH2M, 2016a)	DTP took ownership of managing contamination at the Park and instigated the Environmental Audit. CH2M (now Jacobs) developed the goal to deliver an environmental assessment that is consistent with the requirements of the Environmental Audit. Further information on the Environmental Audit is presented in Section 3.2.1.
Gasworks Arts Park – Soil Exposure Depth Review (CH2M, 2016b).	CH2M 2016b proposed a methodology that focused on shallow soils at depths ranging from 0.0 – 0.3 mBGL, for contaminant exposure applicable to recreational users of the Park. It was concluded that less frequent exposure could be assumed for recreational users for soils between 0.1 and 0.3 mBGL. Soil disturbance levels, which were an important consideration for usage scenarios for the parkland, were also set at a maximum depth of 0.6 m as it was noted from international studies that soil disturbance below a depth of 0.6 m was unlikely in recreational use.
Shallow soil investigation - February/March 2017	Fieldworks for the shallow soil investigation were undertaken by Jacobs. A total of 112 locations on a 15 x 15 m grid were investigated targeting the top 0.6 m of soil. A deeper soil investigation was also conducted to target potential sources of volatile contaminants and coal tars. The deeper soil investigation involved extending the soil bores at 29 locations to depths of up to 3.0 mBGL. The results from the shallow soil investigation were also assessed against relevant EPA waste soil classification criteria (Appendix A- Figures 3a, 3b, 3c and 4). The waste classification performed was preliminary in nature and it is noted that EPA waste classification criteria have since been updated. The shallow soil investigation identified the presence of elevated PAHs, non-aqueous phase liquid (NAPL) and asbestos containing material (ACM) at various locations across the Park. Findings of the shallow soil investigation triggered the need for a more detailed HHRA to evaluate potential risks to human health from direct contact exposures associated with the identified PAHs in shallow soil. Further information regarding findings of the soil investigation is presented in Section 4.2.1 .
EnRiskS in 2018	A HHRA was undertaken based on recommendations of the 2017 shallow soil investigation. The HHRA considered general recreational users and visitors, dogs, commercial workers, general maintenance workers and subsurface maintenance workers. The HHRA calculated direct contact risks posed to Park users from carcinogenic PAHs in shallow soils (0.0 - 0.3 mBGL). It concluded that no remedial works were required, however management actions were required to maintain an acceptable level of risk. This CMF has been prepared in response to recommendations of the HHRA. Further information regarding the HHRA is presented in Section 4.3.

In addition to soil investigations there has been extensive investigation of groundwater at the Park and surrounds. Under the current conditions, groundwater beneath the Park is not considered to be a risk to recreational park users, maintenance workers or subsurface maintenance workers due to its depth below the ground surface.

4.2 Contaminants of Concern

The following contaminants of potential concern have been identified at the Park:

- Polyaromatic hydrocarbons (PAH)
- Total recoverable hydrocarbons (TRH)
- Phenols
- Presence of NAPL (including coal tars)
- Cyanide, ammonia, sulfate and heavy metals.
- Asbestos containing material (ACM)

4.2.1 Soil contamination/Shallow soil conditions

As described in Section 2.3, remnant gasworks waste has been identified in soil at the Park at varying depths below the surface. The presence of odours or staining associated with observed gasworks waste has been largely encountered at depths greater than 0.3 mBGL. For the purpose of assessing human health risks associated with direct contact to soil, the HHRA (EnRisksS, 2018) separated the soil into the following profiles:

- Surface soil is defined as soil from 0.0-0.1 mBGL.
- Shallow soil is defined as soil from 0.0-0.3 mBGL.
- Deeper soil is defined as soil greater than 0.3 mBGL.

Table 4-2 provides a spatial breakdown of specific areas of the Park where waste materials may be encountered, based on observations made during the shallow soil investigation.

Table 4-2. Summary of Identified Gasworks Waste in Soil

Depth (mBGL)	Sub-surface Observations	Waste Identified & Location
Surface 0 – 0.1	<ul style="list-style-type: none"> ▪ Concrete, rock, brick, coke, basalt, slag, quartz, ceramic, white material, red material, blue wire, spent lime. ▪ Weak PAH/hydrocarbon odour. 	<ul style="list-style-type: none"> ▪ Non-viscous coal tar fragments were observed within the following Park areas and near buildings; <ul style="list-style-type: none"> ▪ Garden beds ▪ Park entry points ▪ Circuit path ▪ Off-leash dog area ▪ Gasworks Theatre ▪ Sculpture Studio
Shallow 0.0 – 0.3	<ul style="list-style-type: none"> ▪ Charcoal, coke, slag, brick, concrete, rock, bluestone, wood, grey wire, spent limestone. ▪ PAH/hydrocarbon odour, green and purple staining. ▪ Non-viscous tar. ▪ ACM. 	<ul style="list-style-type: none"> ▪ PAH/hydrocarbon odours were observed within the following Park areas and near buildings; <ul style="list-style-type: none"> ▪ Garden beds ▪ Park entry points ▪ Gasworks Theatre ▪ ACM (single bonded cement sheet fragment) was identified at 0.25 mBGL at BH89 in the central area of the Park.
Deeper Soil >0.3	<ul style="list-style-type: none"> ▪ Coke, slag, brick, ash, clinker, concrete, timber, glass, lime, oxidised copper, white chalk-like material, plastic. ▪ PAH/hydrocarbon odour, hydrocarbon staining, green and blue staining. ▪ Viscous and non-viscous tar. ▪ ACM. 	<ul style="list-style-type: none"> ▪ Viscous coal tar NAPL was observed within the following proposed future Usage Zones. <ul style="list-style-type: none"> ▪ Circuit path ▪ Off-leash dog area ▪ Garden beds ▪ Southeast corner ▪ ACM (single bonded cement sheet fragment) was identified at 0.5 mBGL at BH35 in the northwest of the Park.

4.2.2 Soil vapour assessments and findings

Passive soil vapour (PSV) investigations were undertaken across the Park (CH2M, 2017) to identify shallow sources of volatile organic compounds (VOC). The PSV investigations identified several areas where elevated VOC masses were present in shallow soil vapour including:

- Former infrastructure including the brick layers store and workshop on the western boundary, the bulk store on the northern boundary and the engine room/laboratory on the southern boundary (refer Figure 2); and
- Near former retorts and coke storage/handling areas where coal tar is present (refer Figure 2).

Subsequent soil vapour investigations (CH2M, 2018) were undertaken to assess the potential impacts of soil vapour in buildings (6 locations within 4 buildings) and a targeted open space area where a higher soil vapour mass had been reported during the PSV investigation.

The investigation concluded that concentrations of contamination were below the laboratory levels of reporting (LOR) with the exception on naphthalene which was identified at concentrations below the assessment criteria. Based on these findings, soil vapour was not considered to pose an unacceptable risk at the Park.

4.3 Human health risk assessment (HHRA)

4.3.1 HHRA objectives

The objectives of the HHRA (EnRisks, 2018) were to:

- Evaluate the potential direct contact risk issues (oral/dermal contact and inhalation of dust) from contamination in shallow soil, in the context of the ongoing use of the Park.
- To provide a qualitative evaluation of any other potential risk issues that may affect any requirements for capping of the site (e.g. aesthetic issues).
- On the basis of the HHRA, identify any additional data that may be required to assist in refining the assessment of risk or in considering additional risk management measures that may be needed.

4.3.2 Park receptors and potential exposure activities

The HHRA (EnRisks, 2018) identified the likely receptors (i.e. Park users) and potential exposure activities in the context of the existing use of the Park. A summary of Park receptors and potential exposure examples is provided in Table 4-3.

Table 4-3. Potential Park receptors and exposure activities

Park Receptor	Example of Potential Exposure
Commercial workers (adults)	Resident artists and occupiers of existing buildings around the perimeter of the Park.
Recreational users (adults and children) who visit the Park for recreational use	Those who walk dogs or visit the farmers market, art spaces and events or children's swing,
Dogs	Accompanying recreational users
Maintenance workers (adults) to depths of 0.3 mBGL	Includes garden maintenance to shallow depths
Subsurface maintenance workers (adults) to depths of up to 1.5 mBGL	Subsurface maintenance workers installing new infrastructure such as lighting, play equipment

Activities undertaken by commercial workers and recreational users is considered to involve potential exposure to:

- Surface soils between 0 – 0.1 mBGL
- Shallow soils between 0–0.3mBGL
- Deeper soils greater than >0.3mBGL

Potential exposure to soils between 0.1 – 0.3 mBGL may occur but it is thought that this would occur occasionally (i.e. dog digs a deep hole which is left unfilled) (EnRisks 2018). It was assumed that maintenance workers may come into contact with soils between 0 – 1.5 mBGL. These Park users, activities and exposure risks are summarised in Table 4-4.

Table 4-4. Park Users, Soil Profiles and Exposure Risk Summary

Park Users	Soil Exposure Depths	Exposure Pathway	Risk	Comment
Commercial workers	0.0 to 0.1 mBGL with occasional exposure to soils between 0.1-0.3 mBGL.	<ul style="list-style-type: none"> Incidental ingestion Dermal contact Inhalation of dust 	Calculated risks are acceptable with surface cover maintained.	Includes resident artists, administration staff, gallery and theatre workers.
Recreational Users	0.0 to 0.1 mBGL with occasional exposure to soils between 0.1-0.3 mBGL.	<ul style="list-style-type: none"> Incidental ingestion Dermal contact Inhalation of dust 	Calculated risks are acceptable with surface cover maintained.	Includes adults and children visiting the Park for activities like dog walking or visiting the farmers market, art galleries, events or the playground.
Dogs	0.0 to 0.1 mBGL with occasional exposure to soils between 0.1-0.3 mBGL.	<ul style="list-style-type: none"> Incidental ingestion Inhalation of dust 	Calculated risks are acceptable.	Includes dogs digging holes to depths of 0.3 mBGL.
Maintenance Workers	0.0-0.3 mBGL.	<ul style="list-style-type: none"> Incidental ingestion Dermal contact Inhalation of dust 	Calculated risks are acceptable with surface cover maintained.	Includes basic gardening activities such as shallow plantings, mulching, lawn mowing etc.
Subsurface maintenance workers	0.3-1.5 mBGL.	<ul style="list-style-type: none"> Incidental ingestion Dermal contact Inhalation of dust Vapour Intrusion 	Risks to subsurface maintenance workers below 0.3 mBGL may be unacceptable.	Includes activities that provide exposure to soils below 0.3 mBGL such as Installation of infrastructure (foundations, underground services) and deeper plantings (i.e. for planting large trees requiring holes >0.3 mBGL).

4.3.3 HHRA Findings

The HHRA concluded that although the Park is covered in grass, landscaping or gravel that prevents or limits direct exposures to soil, management measures are required to ensure that an appropriate cover is maintained into the future, and deeper and more heavily impacted soil is not left at the surface following soil disturbance works. The HHRA specified that the Park be covered by a contamination management action plan (CMAP (i.e. this CMF)), to ensure that the management of the Park meets the needs of the community and provides a mechanism for the implementation of control measures to protect the community during necessary soil disturbance works.

With the implementation of an appropriate CMAP, direct contact risks posed to recreational users and visitors from shallow soil contamination would be acceptable. Direct contact risks posed to maintenance workers in excavations up to 0.3 mBGL and direct contact risks to dogs were areas calculated to be acceptable.

4.3.4 HHRA Recommendations

The HHRA recommended the following management measures be included in the CMAP/CMF:

- Management measures that reduce exposure to surface soil. This could include filling in any holes with gravel and watering to maintain grass cover.
- A management plan, including OHS plan, that is required to be implemented during all excavation and soil disturbance works. The management plan should include the following:
 - Requirements for personal protective equipment (PPE) and good personal hygiene practices during all works to prevent direct contact exposures with soil.

Contamination Management Framework (CMF)

- The requirement for precautionary risk mitigation measures to control potential risks associated with NAPL and odours/vapours at depths and in areas where these have been previously identified.
 - The requirement that works are to cease if tar NAPL or strong odours are identified during works in any other areas of the Park, so that appropriate mitigation measures can be implemented.
 - The requirement for all excavated soil to be backfilled at the depth it was sourced from or appropriately classified for off-site disposal in accordance with the relevant regulations.
 - Other environmental management measures as appropriate e.g. requirements for the importation of any required fill.
- Appropriate control measures, including those for OHS, for any excavations shallower than 1.5 m depth at the Park.
 - The identification of the potential presence of ACM in soil, and appropriate environmental management and OHS procedures to be implemented during all future soil disturbance works to manage potential risks from ACM.
 - Any management measures concluded to be required to mitigate unacceptable aesthetic impacts associated with the solid waste in surface soil, as determined through discussions with the relevant stakeholders during the development of the CMAP.

This CMF has incorporated each of these recommendations and therefore, with the implementation of this CMF the Park would be considered suitable for ongoing public open space and commercial land uses.

5. Contamination Management Framework

As discussed in Section 4.3, the HHRA (EnRisks5, 2018) identified that management measures are required to protect Park receptors from contamination that may pose a risk to human health and the environment. This section identifies the likely hazards and risks associated with Park upgrade works and associated management considerations and mitigation measures that may be implemented to protect receptors during the works.

The Contamination Management Framework includes:

- Description of construction elements proposed under the Park Plan (Section 5.1).
- Roles and Responsibilities of stakeholders (Section **Table 1-1**)
- Identified potential hazards and risks relevant to the Construction Element proposed (Section 5.2)).
- Management plan considerations and procedures (Section 6).

5.1 Construction Element Summary

Key design elements of for proposed upgrade works under the Park Plan (City of Port Phillip, 2022) are described in Section 2.5. It is predicted that the primary construction elements involving ground disturbance will include the following:

- Turf upgrades.
- Automated irrigation system.
- Mulching.
- Paved surfaces/path upgrades.
- Physical barriers (i.e. bollards, fencing, gates).

A description of the likely works associated with each construction element is provided in **Table 5-1**. It is noted that the Park Plan (City of Port Phillip, 2022) has not been finalised and detail regarding the nature of the upgrade is subject to change.

Table 5-1 Proposed Construction Elements

Construction Element	Description
Turf upgrades	<p>Proposed in areas of high use to maintain grass coverage.</p> <p>This activity may involve excavation of between 0.05 and 0.07 m of soil below the existing surface level and it is assumed it may involve the off-leash dog area or between garden beds. Excavated soil requiring testing and classification for off-site treatment or disposal to landfill is required. .</p>
Mulching	<p>Proposed to be placed on garden beds to create a separation layer between the surface and underlying soils.</p> <p>Mulch will be distributed on the beds to a minimum thickness of 0.075 m. As there is no excavation involved in the distribution of the mulch this is a low-risk activity compared to other elements. Waste soil is not expected to be produced during distribution of the mulch. Mulching work should adhere to the CEMP (refer Section 6.2) and HASP (refer Section 6.1).</p>
Planting of trees and shrubs	<p>Proposed at various locations cross the Park however information regarding locations and types of plantings is not available.</p> <p>The depth of excavation required for plantings is unknown. GHD (GHD, 2014) indicated that future plantations must be designed to minimise likelihood that root growth will penetrate the base of the old purifiers, and that landscaping parameters should include planting vegetation with shallow root systems; and positioning future plantations in areas where buried infrastructure is less likely to be encountered (refer Figure 2 for historic site layout) . As such, it is assumed that plantings will not require excavation of soil > 0.3 mBGL.</p>
Paved surfaces / path upgrades	<p>An impermeable circuit path is proposed to form a circuit around the central off-leash dog area</p> <ul style="list-style-type: none"> ▪ A concrete path is proposed to provide a durable surface for maintenance vehicle access. Construction of the concrete circuit path may require excavation to depths of 0.23 m below the current surface to install 0.075 m of compacted crush rock base and a concrete slab 0.15 m thick. ▪ Impermeable asphalt surfaces with 0.075 m of compacted crush rock base and 0.04 m of asphalt, requiring excavation to 0.12 m to be flush with existing surfaces. ▪ Natural stone or brick impermeable paved surfaces with 0.075-0.10 m of crushed rock base and paving material set in 0.03 m of mortar base, requiring excavation to 0.13 m to be flush with existing surfaces ▪ Granitic or loose gravel semi-permeable to permeable surfaces with 0.05 m of compacted crushed rock base and 0.05-0.075 m of compacted granitic/loose gravel at the surface. This may require excavation to 0.13 m. ▪ Solid permeable layer (of unspecified material) with 0.075 m of crushed rock base with .075-0.1 m solid permeable layer above. This may require excavation to 0.18 m.
Automatic irrigation system:	<p>Proposed to be installed in turfed areas to maintain the grass cover.</p> <p>The areas likely to be irrigated are the off-leash dog area and grassed locations between garden beds however no detailed plans are available. Installation of the irrigation system will involve laying irrigation pipelines at depths of 0.5 mBGL via trenching or boring. Spoil material from the trench excavations is proposed to be used as backfill material where suitable with excess material disposed off-site. Any material disposed of off-site must be classified in accordance with EPA Publication 1828.2 (EPA Victoria, 2021)..</p>
Physical barrier (i.e. bollards, fencing, gates)	<p>Physical barriers such as bollards, fencing and gates are proposed to be used to prevent vehicle ingress into the Park or access paths, and to separate areas such as the off-leash dog area from picnic and play space areas. Footings for these elements are expected to be installed to depths of 0.8 mBGL.</p>

Construction Element	Description
Play Space	Playground upgrades are proposed to include a mix of traditional, nature and creative play opportunities. This activity may include turf upgrades to maintain surface coverage. Proposed for the southwestern area of the Park, this activity may involve excavation of >0.3 m to facilitate installation of play equipment. Excess, excavated soil will require classification in accordance with EPA Publication 1828.2 (EPA Victoria, 2021)

5.2 Potential Hazards and Risks

The potential hazards and risks relevant to the construction elements required to deliver upon the Park Plan are presented in **Table 5-2**. Construction elements have been separated into the following two groups, based on the anticipated depth of soil disturbance:

- **Activity 1:** All surface disturbance and excavations: Applies to all works involving surface disturbance at any depth; and
- **Activity 2:** Applies to any excavation deeper than 0.3 mBGL.

Table 5-2 Potential Hazard, Exposure Risks and Management Requirements

Construction Element	Potential Hazard	Risks	Management Requirements
Activity 1: All surface disturbance and excavations: Applies to all works involving surface disturbance			
<ul style="list-style-type: none"> ▪ Turf upgrades ▪ Automatic irrigation system ▪ Mulching ▪ Paved surfaces/path upgrades ▪ Physical barrier (i.e. bollards, fencing, gates) ▪ Planting of trees and shrubs 	<p>Exposure to contaminated soil:</p> <ul style="list-style-type: none"> ▪ ACM, Concrete, brick, charcoal, coke, slag, spent lime and non-viscous coal tar fragments observed in soils between 0.0-0.3 mBGL throughout the Park. ▪ Posts or equipment supports implanted in the soils can produce gaps between the surface of the post or support and the soil allowing soil vapours to flow through the gaps. ▪ Potential damage to remnant underground infrastructure during excavation and movement of heavy vehicles. 	<ul style="list-style-type: none"> ▪ Dermal contact. ▪ Offensive odour generation. ▪ Dust generation - migration of contaminants. ▪ Exposure to ACM. 	<ul style="list-style-type: none"> ▪ Pre-excavation activities including: <ul style="list-style-type: none"> – Survey to identify works boundaries and property features. – Identification of existing infrastructure to be protected. – Location of underground services to be identified (e.g. power, gas, telecommunications, sewer and water supply lines). – Park establishment (including erection of temporary fencing and signage) with an area large enough to provide a safe construction buffer and to prevent ingress by the public. – Planning of access for vehicles to mitigate the requirement for vegetation removal. Removal of vegetation disturbs soils and consideration should be given to prevent cross contamination of other areas of the Park (e.g. requirement for vehicle wash down before leaving the work zone). ▪ Work hours to mitigate disruption to Park users and nearby residents. ▪ Protection of groundwater monitoring wells. It is preferable that disturbance of the wells is avoided to prevent the cost of decommissioning and potential requirement for replacement. ▪ Consideration given to excavation method so as to minimise the generation of spoil material and costs of disposal. ▪ Soil excavated from shallower depths should be segregated from soils at greater depths (>0.3 mBGL). ▪ Soils noted to have significant amounts of coke should be segregated from other soils as this material is likely to cause a category A waste classification, requiring treatment prior to disposal. Removal of existing infrastructure (if required). All waste demolition materials which are not soils should be disposed of appropriately, as classified construction/demolition wastes, with auditable waste tracking records retained. ▪ Existing turf removed with soil attached to the vegetation will need to be classified as waste soils in accordance with EPA Publication 1828.2 (EPA Victoria, 2021).
	<p>Soil with restricted reuse/disposal options:</p> <ul style="list-style-type: none"> ▪ Soil classification category is likely to increase with depth (i.e. more fill material locations closer to the surface and more Category A soil below 0.3 mBGL). 	<ul style="list-style-type: none"> ▪ Limited soil reuse options. 	
	<p>Contaminated stormwater:</p> <ul style="list-style-type: none"> ▪ Stormwater may pool within excavations, which would pose an exposure risk to maintenance workers. ▪ Contaminated stormwater may discharge and contaminate nearby areas both onsite and off-site. 	<ul style="list-style-type: none"> ▪ Dermal contact. ▪ Discharge to the environment. 	

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Construction Element	Potential Hazard	Risks	Management Requirements
			<ul style="list-style-type: none"> Spoil material not suitable to be reused onsite will require classification in accordance with EPA Publication 1828.2 (EPA Victoria, 2021). Noise, odour and dust mitigation measures included in the CEMP to minimise disruption to Park users and exposure to contaminants. Contingency plans for stop work procedures should asbestos containing materials (ACM), NAPL or historic infrastructure be identified within the work zone. Accurate record keeping of work site activities, daily excavations and backfill volumes, inspection reports, equipment decontamination, waste profiling, photographic logs etc.
Activity 2: Excavations >0.3 mBGL			
<ul style="list-style-type: none"> Automatic irrigation system Physical barrier (i.e., bollards, fencing, gates) Planting of trees and shrubs Lighting upgrades that include substantial footing design (ie >0.3m) Play space (i.e. installation of footings for play equipment) 	<p>Exposure of recreational users to contaminated soil.</p> <ul style="list-style-type: none"> Viscous coal tars have been observed below 0.3 mBGL in the central and eastern areas of the Park and coke fragments at depths of approx. 0.4-0.5 mBGL in much of the central areas of the Park where former coke conveyors and retort houses were located (Appendix A, Figure 2). <p>Unexpected Finds:</p> <ul style="list-style-type: none"> Remnant infrastructure may be encountered and or damaged during excavations >0.3 mBGL. Remnant infrastructure remains buried and may contain tars, NAPL. A preliminary soil classification indicated Category A soil present at depths > 0.3 mBGL. 	<ul style="list-style-type: none"> Potential for NAPL to be released into the environment if damage to underground infrastructure was to occur. Dermal contact. Offensive odours. Soils with restricted reuse/disposal options. Exposure to ACM. Unexpected finds. 	<p>As per Activity 1</p> <ul style="list-style-type: none"> Materials durability assessment– Irrigation materials should be resistant to exposure to contamination including hydrocarbons and sulphates. Unexpected Finds Procedure – Engagement with DTP is likely in the event historic infrastructure/NAPL is encountered. Underground utility clearance

6. Management Plans

The management requirements outlined in **Table 5-2** should be implemented into management plans designed to manage the hazards and risks associated with each construction element. Recommended management plans for each construction element and the responsible stakeholder for preparing the management plan are listed in Table 6-1.

The subsequent sections 6.1 to 6.4 provides further information on each management plan.

Table 6-1. Management Requirements for each Construction Element

Description of works	Management Plan Requirements	Responsible Stakeholder	Document Reference
Activity 1: All surface disturbance and excavations			
▪ Turf upgrades	Final Park Plan, including materials durability assessment.	CoPP	Section 2.5
▪ Mulching	Health and Safety Plan (HASP), including: ▪ Safe Work Method Statements (SWIMS) ▪ Personal Protective Equipment (PPE)	CoPP	Section 6.1
▪ Paved surfaces / path upgrades			
▪ Planting of trees and shrubs	Construction Environment Management Plan (CEMP), including: ▪ Vapour Management ▪ Odour Management ▪ Soil Management ▪ Dust Management ▪ Asbestos Management ▪ Stormwater and Sediment Management ▪ Vegetation Planting Management ▪ Unexpected Finds Procedure	CoPP, with guidance from a suitably qualified expert such as an Environmental Consultant	Section 6.2
	Cultural Heritage Management Plan (CHMP)	DTP	Section 6.4
	Community and Stakeholder Engagement Plan (CSEP)	CoPP	Section 6.3
Activity 2: Excavations >0.3 mBGL			
▪ Automatic irrigation system ▪ Physical barrier (i.e. bollards, fencing, gates) ▪ Lighting upgrades/installation	▪ As above – all management plans for Activity 1 also apply to Activity 2.	▪ As above ▪ Final Park Plan ▪ Unexpected finds procedure	Section 6.2

6.1 Health and Safety Plan (HASP)

A comprehensive HASP should be prepared to document how occupational health and safety will be achieved during construction activities associated with the Park upgrade. The HASP should cover the following elements:

- Personal Protective Equipment (PPE)
- Job Safety Analysis and Environmental Analysis (JSEA)
- Safe Work Method Statement (SWMS)

6.1.1 Personal Protective Equipment (PPE)

The following PPE requirements should be considered during review of the construction elements to be implemented. In addition to the following PPE requirements, consultation with WorkSafe Victoria guidance be undertaken:

- | | | |
|------------------------------|----------------------------|-----------------|
| • Hi-vis day/ night clothing | • Face shield | • Gas monitor |
| • Steel cap boots | • Gloves (Nitrile) | • First aid kit |
| • Hard hat | • P2 Dust mask | |
| • Safety Glasses | • Air purifying respirator | |

6.1.2 Job safety and Environmental Analysis (JSEA)

The purpose of a JSEA is to identify potential hazards associated with a task (i.e., construction element), assess risks and record controls. The potential hazards and risks associated with construction elements and information included in the Park Plan have been assessed upon the understanding of contamination present at the Park.

6.1.3 Safe Work Method Statement (SWMS)

A SWMS is developed and provided by sub-contractors engaged to complete high risk construction work. The SWMS will include details relevant to the equipment used and activities undertaken by the sub-contractor in addition to hazards, risks and mitigation measures associated with working in contaminated environments.

6.2 Construction Environment Management Plan (CEMP)

The CEMP will outline how construction activities associated with the Park upgrade will be managed to avoid or minimise environmental impacts and how environmental management requirements will be implemented. The CEMP should contain information to demonstrate that potential impacts on the environment, and public health and amenity have been identified, and suitable measures to mitigate those impacts will be implemented.

As described in Table 6-1, the CEMP should be prepared by CoPP in consultation with a suitably qualified expert such as an Environmental Consultant, where required. The construction contractor is responsible for implementing the CEMP during the Park upgrade works. The CEMP should be reviewed and endorsed by the environmental auditor.

The CEMP should cover the following elements, which are outlined in Sections 6.2.1 to 6.2.8.

- Vapour Management (see Section 6.2.1)
- Odour management (see Section 6.2.2)
- Soil Management (see Section 6.2.3)
- Dust Management (see Section 6.2.4)
- Asbestos Management (see Section 6.2.5)
- Stormwater and Sediment Management (see Section 6.2.6)
- Unexpected finds procedure (see Section 6.2.8)

The CEMP should be prepared in accordance with EPA Publication 1834, *Civil construction building and demolition guide*, November 2020 [EPA Publication 1834 (EPA Victoria, 2020)]. .

6.2.1 Vapour management

Any excavation work has the potential to expose historic gasworks infrastructure or NAPL, increasing the risk of encountering hazardous vapours. Management of vapours should be identified in the CEMP and may include monitoring using hand-held equipment such as a photo-ionisation detector (PID) to measure atmospheric conditions during works.

Any future enclosed buildings comprising concrete slabs (i.e. slab on ground) should have an assessment of potential vapour risks undertaken prior to construction/disturbance of the existing concrete slab.

6.2.2 Odour management

Hydrocarbon, naphthalene or creosote like odours have been encountered during soil investigation works at the Park. As such, there is potential for odours to be generated during soil disturbance and excavation works associated with Park upgrade works.

Best practicable measures to control odour during Park upgrade works should be implemented to minimise disturbance to Park users. Odour mitigation measures may include:

- Appropriate planning to minimise the time odorous soils are exposed at the surface.
- The use of odour suppressants, including materials for protective barriers (such as coloured geofabric) or soft fall mulch.
- Monitoring for odours during Park upgrade works.

6.2.3 Soil management

Park upgrade works will expect soil excavation, trenching and stockpiling. The following soil management requirements are described in the sections below.

- Classification of soil for off-site disposal.
- Stockpile management
- Excavation Management
- Backfilling
- Import/Reuse of soils
- Dewatering
- Record Keeping
- Validation and verification sampling

6.2.3.1 Classification of soil for off-site disposal

The EPA provides requirements for managing industrial waste, including soil under Part 4.2 (Industrial Waste and Priority Waste) of the Environment Protection Regulations (State Government of Victoria, 2021) [the regulations]. EPA Publication 1828.2 *Waste disposal categories – characteristics and thresholds*, July 2021 (EPA Victoria, 2021) [EPA Publication 1882.2] provides the characteristics and thresholds necessary for complying with the Regulations and determining waste disposal categories.

Soils for off-site disposal are classified as Category A through to D or fill material, depending on specific characteristics of the waste, and contaminant total and leachable concentrations. Fill material is generally suitable to remain onsite for reuse purposes unless aesthetic characteristics such as solid inclusions (rocks or debris) or odours make it unsuitable for re-use. Category D soil may be disposed to landfill, or contained or reused onsite in accordance with an A17 permit under Section 81 of the Environment Protection Act (State Government of Victoria, 2017). Category B and C soils can be disposed of to an accepting landfill. Category A soils must be treated prior to disposal to land fill.

A preliminary waste classification for soils at the Park was conducted based on analysis from previous soil investigations. The soil analytical results were compared to guideline criteria in EPA Publication 1882.2, as presented in Appendix B.

Generally, soils at depths from:

- 0.0 to 0.1 mBGL largely fall within classifications ranging from Fill Material up to Category B, with a very small number of locations being preliminarily classified as Category A waste material.
- 0.1 to 0.3 mBGL are predominantly preliminarily classified as Category B, with some other areas falling within Fill Material, Category D and Category C classifications, and an even smaller amount being preliminarily classified as Category A.
- 0.3 to 1.5 mBGL are mostly category A with some areas containing coal tars.

The preliminary soil classification provided above has been provided for indicative purposes only. Prior to disposal of soil off-site, soil must be classified in accordance with EPA Publication 1882.2 (EPA Victoria, 2021).

6.2.3.2 Stockpile management

Excavated soil may be temporarily stockpiled onsite to enable sampling and classification for off-site disposal. In addition, imported material for backfilling of excavations may also be temporarily stockpiled onsite.

Guidance on controls for stockpile management is provided in EPA Publication 1834 (EPA Victoria, 2020) and may include:

- Locating stockpiles in a secure, designated area away from sensitive receptors.
- Stockpiling of soil on a prepared pad lined with plastic sheeting.
- Use of bunding or sediment control fencing.
- Covering stockpiles with plastic weather-proof sheeting.

Excavated soil cannot be transported off-site until it has been classified in accordance with EPA Publication 1882.2 (refer Section 6.2.3.1).

6.2.3.3 Excavation management

Excavation of soil, where required will generally be performed using conventional earth moving equipment.

Guidance on controls for managing excavations is provided in EPA Publication 1834 (EPA Victoria, 2020), and may include:

- Fencing of open excavations to restrict access.
- Engineering controls, such as a demarcation layer and geofabric layer.
- Where possible, excavation and backfilling activities should be performed in an uninterrupted manner to limit the exposed soil areas, which can give rise to odours and vapours, and minimise the collection and ponding of water from precipitation.

6.2.3.4 Backfilling

Backfilling options for excavated soil include the following:

1. Excavated soil is backfilled at the depth and order it was sourced from; or
2. Excavated soil is classified for off-site disposal in accordance with the relevant regulations.

Selection of backfilling option will be based upon odour and visual impact (i.e., aesthetic impact) identified at the time of excavation. In the event excavated soil is observed to be odorous or present visual evidence of contaminations then it is recommended that the soil be immediately reinstated (Option 1) and access to the excavation are be restricted to avoid further impact and or contact (bollards, signage, tape etc). This will allow for sufficient time for the area to be assessed to determine next course of action.

Backfilling activities may incur a surplus of soil that cannot be reintroduced due to no space available within the excavation. In this instance this soil management requirements for surplus soil include:

1. Import / Reuse of soils (section 6.2.3.5); or
2. Offsite disposal (section 6.2.3.1).

6.2.3.5 Import / Reuse of soils

Generally, only soils classified as fill material or Category D (under an A17 permit under Section 81 of the Environment Protection Act (State Government of Victoria, 2017)) can be reused on-site, provided there are no aesthetic impacts (odour or visual evidence of contamination).

Where material is required to be imported to site, the imported material should be obtained from a reliable source, with appropriate documentation to confirm it is not sourced from contaminated land. The material should be sampled, and samples analysed at a laboratory for the suite of contaminants contained in EPA 1828.2. Records of analysis and volumes of imported material should be retained.

Any backfill will be placed and spread in accordance with geotechnical design in discrete layers compacted with a roller or hand operated compaction equipment considering the end use of the Zone including any foundations and plantings. In-place quality control compaction testing should be performed by an independent geotechnical testing firm to ensure specified compaction has been achieved.

6.2.3.6 Dewatering

Should rainwater enter an open excavation, this water has the potential to be contaminated and must be managed in accordance with the Regulations (State Government of Victoria, 2021) and disposed of appropriately to an off-site licensed waste management facility.

Given that groundwater is approximately 7.0 to 8.0 mBGL, it is not expected to be encountered during Park upgrade works and therefore no specific groundwater management will be required.

Guidance on dewatering is provided in EPA Publication 1834 (EPA Victoria, 2020), and may include:

- Minimise the time that excavations are open to limit opportunity of precipitation and pooling of water.
- Test the water for contaminants.
- Identify if the water can be reused onsite for activities such as dust suppression.
- Identify wastewater disposal options in accordance with the Regulations (State Government of Victoria, 2021).

6.2.3.7 Record keeping

Any movement of soil both within the Park and offsite must be recorded. Record should include management and tracking of clean and contaminated soil that has been reused within the Park or transported offsite for disposal.

Guidance of maintaining waste records is provided EPA Publication 1834 (EPA Victoria, 2020), and may include:

- Location (include source location, and storage locations), type and quantity of wastes.
- Source location of any backfill material imported to the Park.
- Date and quantity of waste transported and received.
- Registration number of the waste transporter's vehicle.
- Waste receipt dockets from the landfill.
- Waste assessment and categorisation reports.
- Written procedures and plans for managing waste, including handling and storage procedures and incident response plans.
- Development applications, including waste management plans or environmental management plans addressing waste.
- Site assessments including contaminated site assessments, and environmental and geotechnical studies.

Recording of soil management activities is required to be maintained for the audit.

6.2.3.8 Validation and verification sampling

Exposure to contaminants in soils will be managed through this CMF rather than through total remediation. Much of the impacted soils will remain on-site and exposure to contaminants will be controlled through

maintaining a surface barrier between recreational users and personnel conducting maintenance in shallow soils. As impacted soils will remain on-site, validation sampling of excavations to confirm removal of contaminated soils will not be required.

6.2.4 Dust management

Any land disturbance works including excavation and stockpiling of soil, and vehicle movements including trucks transporting waste soil, have the potential to generate dust if not properly managed. Receptors potentially impacted by dust generation include Park users and users of surrounding roadways and footpaths.

EPA Publication 1834 (EPA Victoria, 2020) provides guidance on dust management control measures, including:

- Monitor weather conditions and avoid working in hot, dry or windy conditions.
- Use of water to wet down and suppress dust. Watering of surfaces requires appropriate controls to prevent sediment runoff.
- Appropriate stockpile management (refer Section 6.2.3.2).
- Dedicated haul roads.
- Covering of loads carried by trucks.
- Confirming that the vehicles (particularly the undercarriage and tyres) leaving are free from soil prior to leaving the work zone.
- Engaging a street sweeper (if deemed necessary).

6.2.5 Asbestos management

Personnel undertaking the upgrade works should be familiar with the identification of ACM. A stop work procedure should be incorporated into planning for the works in the event that potential ACM be identified. The stop work procedure should include positive identification, suitable isolation and signage, appropriate removal procedures for the material, and relevant clearance obtained via a qualified independent person prior to recommencement of work in the area. Any asbestos identified would need to be removed by a suitably qualified asbestos removal contractor to minimise the dispersion of fibres.

6.2.6 Stormwater and sediment management

The CEMP should include best practicable means to protect stormwater and minimise sediment run off during excavation works.

EPA Publication 1834 (EPA Victoria, 2020) provides guidance on noise and vibration control measures, which may include:

- Reducing and/or redirecting stormwater from entering the work area.
- Installation of sediment fencing around stockpiles to contain coarse soil and sediment.
- Restricting vehicle and people access to waterways.
- Installation of temporary sediment screens/filters around stormwater pits.
- Scheduling works to avoid times of the year where high rainfall is expected should be considered prior to undertaking excavations.

6.2.7 Vegetation management

A vegetation management plan should be included as part of the CEMP. The plan should include:

- Careful planning to minimise the requirement to remove existing vegetation.
- Provisions to ensure that any removal of trees or vegetation is performed in accordance with CoPP and Heritage Victoria requirements.
- Planting of shallow rooted trees to mitigate the potential for root systems to penetrate and damage redundant gasworks infrastructure.

6.2.8 Unexpected Finds Procedure

While a relatively detailed map of the historic gasworks infrastructure is available, the potential exists for unknown underground infrastructure to remain in-situ. An unexpected finds procedure should be developed to document procedures in the event that redundant historic infrastructure is encountered during Park upgrade works. The procedure should include stop work and isolation scenarios.

In addition, underground utility clearance activities (i.e. power, gas, telecommunications, sewer and water supply lines) should be undertaken prior to any excavation works to identify the location of underground services and avoid unwanted damage to utilities. Procedures for identifying underground services may include:

- Review available plans, maps and drawings identifying underground utilities (current and historic) and infrastructure. Public underground utility information is available at www.byda.com.au.
- Avoid excavating in areas of known underground services or infrastructure where possible.
- Engage an underground utility locator to identify the presence of underground utilities within areas of proposed excavation.
- Undertake non-destructive digging (NDD) techniques where possible.
- Undertake monitoring for indicators of underground utility contact during mechanical excavation works.

6.3 Community Stakeholder Engagement Plan (CSEP)

Consultation with the public, local residents and other stakeholders to maintain stakeholder engagement during planning and implementation of the Park upgrade and ongoing use of the Park. A community and stakeholder engagement plan (CSEP) should be considered to appropriately manage stakeholder engagement.

6.4 Cultural Heritage Management Plan (CHMP)

The Park is listed on the Heritage Victoria inventory, therefore intrusive works require likely require preparation of a Cultural Heritage Management Plan (CHMP) in accordance with appropriate Heritage Victoria consent requirements. Clarification of specific requirements should be sought during the planning phase.

6.5 Reporting and Documentation

Records of project information pertinent to field activities should be recorded throughout the construction and upgrade works and may include the following:

- Details waste records as described in Section 6.2.3
- Details of any movement of soil within the Park
- Active excavation areas
- Daily excavation and backfill volumes
- Inspection reports
- Equipment decontamination
- Placement of demarcation barrier
- Waste profiling
- Project manifests

Any Park related data should be stored in a single database maintained by the environmental consultant.

Recording of spoil management activities is required to be maintained for the audit. The spoil management

A project photo log should be prepared and maintained throughout the construction activities to provide photo documentation of pre-existing conditions, field activities and post restoration conditions.

Final depths of excavations and the location of buried utilities or other structures encountered in the excavation area will be surveyed prior to backfilling.

All documents, records and data should be placed in a structured database. Access to this information will be provided to appropriate stakeholders.

7. Post Park Upgrade - Management Requirements

7.1.1 Environmental Management Plan

Given that remnant gasworks waste and contamination will remain at the Park post upgrade works, it is likely that an Environmental Management Plan (EMP) will be required for the ongoing management of the Park. It is expected that an EMP will be required as part of the Environmental Audit.

8. References

CH2M, 2016a, Investigation Strategy.

CH2M, 2016b, Gasworks Arts Park – Soil Exposure Depth Review.

CH2M, 2017, Gasworks Arts Park – Passive Soil Vapour Investigation.

CH2M, 2018, DTF Gasworks Arts Park-Soil Vapour Sampling.

CoPP, 2022, Draft Park Plan Design Principles including Usage Zone Plan, Planting Plan, Infrastructure Improvement Plan and Construction Elements.

EnRiskS, 2018, Human Health Risk Assessment, Gasworks Arts Park, South Melbourne, Victoria.

Environment Protection Act 2017 (State Government of Victoria, 2017)).

EPA Publication 1828.2 (EPA Victoria, 2021), Waste Disposal Categories- Characteristics and Thresholds.

EPA Publication 1834, Civil construction building and demolition guide, November 2020 [EPA Publication 1834 (EPA Victoria, 2020)].

GHD, 2014, Section 53V Environmental Audit, Gasworks Park, Albert Park.

NEPC 1999 amended 2013a, Schedule B1, Guideline on Investigation Levels for Soil and Groundwater, National Environment Protection (Assessment of Site Contamination) Measure, National Environment Protection.

Appendix A. Figures

Figure 1. June 2019 Park Layout

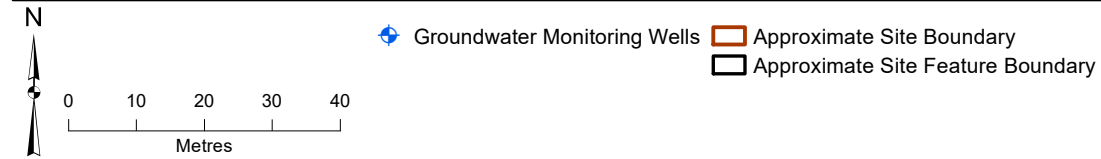
Figure 2. Historic Gasworks Site Layout

Figure 3a. Preliminary Soil Waste Classification (0.0 – 0.1 mBGL)

Figure 3b. Preliminary Soil Waste Classification (>0.1 – 0.3 mBGL)

Figure 3c. Preliminary Soil Waste Classification (>0.3– 1.5 mBGL)

Figure 4. Areas of Concern to Foundations/Underground Infrastructure






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Note:
 1. Imagery: © 2016 [nearmap](#)

Figure 1
 June 2019 Park Layout
 Contaminant Management Action Plan
 Department of Treasury and Finance
 Gasworks Arts Park, Albert Park, Victoria

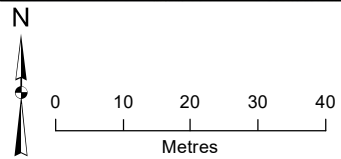


 Approximate Site Boundary
 Approximate Historic Building

Note:
1. Imagery: © 2016 

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Figure 2
Historic Gasworks Site Layout
Contaminant Management Action Plan
Department of Treasury and Finance
Gasworks Arts Park, Albert Park, Victoria

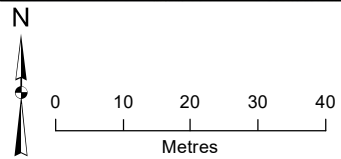


Approximate Site Boundary	Fill Material	Category B
Category D	Category C	Category A
Coal Tar		

Note:
1. Imagery: © 2016

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Figure 3a
Preliminary Soil Waste Classification (0.0 - 0.1 mbgl)
Contaminant Management Action Plan
Department of Treasury and Finance
Gasworks Arts Park, Albert Park, Victoria



Approximate Site Boundary

Waste Class

Fill Material

Category D

Category C

Category B

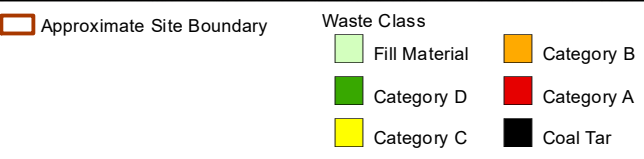
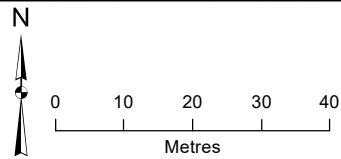
Category A

Coal Tar

Note:
1. Imagery: © 2016 [nearmap](#)

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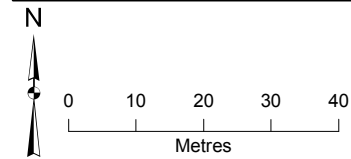
Figure 3b
Preliminary Soil Waste Classification (>0.1 - 0.3 mg/l)
Contaminant Management Action Plan
Department of Treasury and Finance
Gasworks Arts Park, Albert Park, Victoria



Note:
1. Imagery: © 2016 [nearmap](#)

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Figure 3c
Preliminary Soil Waste Classification (>0.3 - 1.5 mg/l)
Contaminant Management Action Plan
Department of Treasury and Finance
Gasworks Arts Park, Albert Park, Victoria



Approximate Site Boundary

- Area of Concern
- TRH
 - Sulfate
 - Coal Tar
 - TRH and Coal Tar
 - TRH and Sulfate

Note:
1. Imagery: © 2016 [nearmap](#)

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Figure 4
Areas of Concern to Foundations/Underground Infrastructure
Contaminant Management Action Plan
Department of Treasury and Finance
Gasworks Arts Park, Albert Park, Victoria

Appendix B. Preliminary Waste Classification

Table A
Preliminary Waste Classification Buildings and Infrastructure Management Limits

				Inorganics				BTEX				TPH		TRH				PAH				Phenols								
				Sulphate	Cyanide Total	CEC	pH (aqueous extract)	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C9	C10-C36 (sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	Benzo(a)pyrene (BaP)	Polycyclic aromatic hydrocarbons (sum total)	2-chlorophenol	2,4-dichlorophenol (2,4-DCP)	2,4,6-trichlorophenol (TCP)	2,4,5-trichlorophenol	Phenols (non-halogenated) EPAVic	Arsenic	Barium	Beryllium	Boron	Cadmium	
				mg/kg	mg/kg	meq/100g	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				30	5	0.05	0.1	0.1	0.1	0.1	0.3	20	50	20	50	100	100	0.05	0.05	0.2	0.2	0.2	0.2	0.2	20	2	1	1	3	0.4
Exceeds EPA 1828.2 Category B Upper Limit					10000		<4 and >9	16	4800	12,800	9600	2600	40000					160	400	4800	3200	320	64,000	2200	2000	25,000	400	60,000	400	
Exceeds EPA 1828.2 Category C Upper Limit					2500			4	1200	3200	2400	650	10000					40	100	1200	800	80	16,000	560	500	6250	100	15,000	100	
Exceeds EPA 1828.2 Category D Upper Limit					2500			4	1200	3200	2400	325	5000					20	50	1200	800	80	16000	560	500	6250	100	15000	100	
Exceeds EPA 1828.2 Fill Material Upper Limit					50			1				100	1000					1	20					60	20				3	
Management Limits - Public Open Space														700 ^{#1}	1000 ^{#1}	2500 ^{#1}	10000 ^{#1}													
Buildings and Structures				10000 ^{#2}																										
Location	Sampled Date	Field ID	Sample Depth Range																											
BH17	28/02/2017	BH17_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	19.9	-	-	-	-	-	2.4	13	<2	<10	<0.4	
BH17	28/02/2017	BH17_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.8	19	<2	<10	<0.4	
BH18	28/02/2017	BH18_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	10.9	-	-	-	-	-	8.2	18	<2	<10	<0.4	
BH18	28/02/2017	BH18_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	13.7	-	-	-	-	-	12	20	<2	<10	<0.4	
BH51	6/03/2017	BH51_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	106.1	-	-	-	-	-	6.7	44	<2	<10	0.5	
BH51	6/03/2017	BH51_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	432	-	-	-	-	-	6.7	33	<2	<10	<0.4	
BH51	6/03/2017	BH51_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	520.8	-	-	-	-	-	-	-	-	-	-	
BH52	6/03/2017	BH52_0.0-0.1	0-0.1	<30	<5	-	-	<0.1	<0.1	<0.1	<0.3	<20	1008	<20	52	820	380	3.3	29.7	-	-	-	-	-	7.8	34	<2	16	<0.4	
BH52	6/03/2017	BH52_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	84.2	-	-	-	-	-	6	41	<2	<10	0.6	
BH53	6/03/2017	BH53_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	96.8	-	-	-	-	-	10	73	<2	12	1.1	
BH53	6/03/2017	BH53_0.2-0.3	0.2-0.3	-	-	8.4	8	-	-	-	-	-	-	-	-	-	-	14	119.7	-	-	-	-	-	13	81	<2	<10	1.2	
TP1	1/01/2011	TP1_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	<0.5	-	-	-	-	-	<5	-	-	-	<1	
TP1	1/01/2011	TP1_0.3-0.35	0.3-0.35	-	<1	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	<0.5	-	-	-	-	-	<5	-	-	-	<1	
TP1	1/01/2011	TP1_0.35-0.4	0.35-0.4	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	130	<100	<0.5	1	-	-	-	-	-	10	-	-	-	<1	
TP8	1/01/2011	TP8_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	180	<200	3.8	39	-	-	-	-	-	6	-	-	-	<1	
TP8	1/01/2011	TP8_0.6-0.7	0.6-0.7	-	<1	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<150	<0.5	5	-	-	-	-	-	28	-	-	-	<1	
TP9	1/01/2011	TP9_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	100	<150	0.8	9	-	-	-	-	-	<5	-	-	-	<1	
TP9	1/01/2011	TP9_0.4-0.5	0.4-0.5	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	2	-	-	-	-	-	54	-	-	-	<1	
TP9	1/01/2011	TP9_0.7-0.8	0.7-0.8	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	1520	510	31.4	336	-	-	-	-	-	10	-	-	-	<1	
BH13	1/01/2011	BH13_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<0.5	-	-	<10	<50	220	<100	3.1	41	-	-	-	-	-	<5	-	-	-	<1	
BH13	1/01/2011	BH13_0.1-0.2	0.1-0.2	-	4	-	-	<0.2	<0.5	<0.5	<0.5	-	-	<10	<50	250	190	3.2	35	-	-	-	-	-	5	-	-	-	<1	
BH13	1/01/2011	BH13_0.3-0.4	0.3-0.4	<100	1	-	-	<0.2	<0.5	<0.5	<0.5	-	-	<10	<50	110	<100	1.2	15	-	-	-	-	-	<5	-	-	-	<1	
BH13	1/01/2011	BH13_0.6-0.7	0.6-0.7	-	-	-	-	<0.2	<0.5	<0.5	<0.5	-	-	<10	80	1610	440	29.8	379	-	-	-	-	-	26	-	-	-	<1	
BH13	1/01/2011	BH13_1.1-1.3	1.1-1.3	-	-	-	-	0.3	<0.5	<0.5	<0.5	-	-	<10	410	9450	2090	157	2400	-	-	-	-	-	12	-	-	-	<1	
BH15	1/01/2011	BH15_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<0.5	-	-	<10	<50	<100	<100	<0.5	<8	-	-	-	-	-	6	-	-	-	<1	
BH15	1/01/2011	BH15_0.4-0.5	0.4-0.5	-	8	-	-	<0.2	<0.5	<0.5	<0.5	-	-	<10	<50	790	250	16.9	169	-	-	-	-	-	<5	-	-	-	<1	
BH15	1/01/2011	BH15_0.8-0.9	0.8-0.9	-	-	-	-	<0.2	<0.5	0.6	12.9	-	-	20	2030	14700.00	2420	416	7729	-	-	-	-	-	25	-	-	-	<1	
BH100	7/03/2017	BH100_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	21	-	-	-	-	-	2.6	47	<2	<10	<0.4	
BH100	7/03/2017	BH100_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	67.3	-	-	-	-	-	4.5	150	<2	<10	<0.4	
BH100	16/03/2017	BH100_0.9	0.9-1	-	-	-	-	-	-	-	-																			

				Inorganics				BTEX				TPH		TRH				PAH				Phenols								
	Sulphate	Cyanide Total	CEC	pH (aqueous extract)	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C9	C10-C36 (sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	Benzo(a)pyrene (BaP)	Polycyclic aromatic hydrocarbons (sum total)	2-chlorophenol	2,4-dichlorophenol (2,4-DCP)	2,4,6-trichlorophenol (TCP)	2,4,5-trichlorophenol	Phenols (non-halogenated) EPAVic	Arsenic	Barium	Beryllium	Boron	Cadmium				
	mg/kg	mg/kg	meq/100g	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			
	30	5	0.05	0.1	0.1	0.1	0.1	0.3	20	50	20	50	100	100	0.05	0.05	0.2	0.2	0.2	0.2	20	2	1	1	3	0.4				
Exceeds EPA 1828.2 Category B Upper Limit		10000		<4 and >9	16	4800	12,800	9600	2600	40000					160	400	4800	3200	320	64,000	2200	2000	25,000	400	60,000	400				
Exceeds EPA 1828.2 Category C Upper Limit		2500			4	1200	3200	2400	650	10000					40	100	1200	800	80	16,000	560	500	6250	100	15,000	100				
Exceeds EPA 1828.2 Category D Upper Limit		2500			4	1200	3200	2400	325	5000					20	50	1200	800	80	16000	560	500	6250	100	15000	100				
Exceeds EPA 1828.2 Fill Material Upper Limit		50			1				100	1000					1	20					60	20				3				
Management Limits - Public Open Space											700 ^{#1}	1000 ^{#1}	2500 ^{#1}	10000 ^{#1}																
Buildings and Structures	10000 ^{#2}																													
Location	Sampled Date	Field ID	Sample Depth Range																											
LIF002	18/07/2017	DUP01_170718	5.6-5.6	-	-	-	-	400	23	380	410	1300	24630.00	1800	17000.00	6300	180	100	6980	<5	<5	<10	<10	860	-	-	-	-	-	
LIF002	18/07/2017	LIF002_5.6	5.6-5.6	-	-	-	-	500	24	430	420	1400	20400.00	2000	11000.00	6700	330	100	7683	<50	<50	<100	<100	1110	-	-	-	-	-	
LIF002	18/07/2017	SPLIT01_170718	5.6-5.6	-	-	-	-	490	34	590	650	2600	25000.00	3800	13000.00	9800	1400	130	10000.00	<50	<50	<50	<50	-	-	-	-	-		
LIF002	26/07/2017	LIF002_10.3	10.3-10.3	-	-	-	-	17	1.3	25	24	<200	1070	<200	590	270	<100	4.6	297.7	<0.5	<0.5	<1	<1	59	-	-	-	-	-	
LIF002	26/07/2017	LIF002_11.9	11.9-11.9	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	<0.5	<0.5	<0.5	<1	<1	<20	-	-	-	-	-	
LIF002	26/07/2017	LIF002_14.2	14.2-14.2	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	<0.5	<0.5	<0.5	<1	<1	<20	-	-	-	-	-	
LIF002	26/07/2017	LIF002_6.5	6.5-6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP10	1/01/2011	TP10_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<150	210	0.8	8	-	-	-	-	-	5	-	-	-	-	<1
TP10	1/01/2011	TP10_0.5-0.6	0.5-0.6	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	2000	700	38.5	459	-	-	-	-	-	12	-	-	-	-	<1
TP10	1/01/2011	TP10_1.0-1.1	1-1.1	-	198	-	-	1.1	<0.5	1.1	0.8	-	-	<10	300	3710	1080	83.4	1366	-	-	-	-	-	26	-	-	-	-	<1
TP11	1/01/2011	TP11_0.0-0.2	0-0.2	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<350	<0.5	2	-	-	-	-	-	<5	-	-	-	-	<1
TP11	1/01/2011	TP11_1.2-1.3	1.2-1.3	6710	254	-	-	0.4	<0.5	<0.5	<3.2	-	-	<10	<50	1640	540	35.4	418	-	-	-	-	-	10	-	-	-	-	<1
TP11	1/01/2011	TP11_2.0-2.1	2-2.1	240	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	1.5	26	-	-	-	-	-	<5	-	-	-	-	<1
BH1	1/01/2011	BH1_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<1	-	-	<10	<50	250	<100	1.5	19	-	-	-	-	-	<5	-	-	-	-	<1
BH1	1/01/2011	BH1_0.3-0.4	0.3-0.4	-	3	-	-	<0.2	<0.5	<0.5	<1	-	-	<10	<50	1080	210	7	98	-	-	-	-	-	16	-	-	-	-	<1
BH1	1/01/2011	BH1_1.0-1.1	1-1.1	-	-	-	-	<0.2	<0.5	<0.5	<1	-	-	<10	<50	110	<100	1.1	15	-	-	-	-	-	<5	-	-	-	-	<1
BH109	8/03/2017	BH109_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	2	23.3	-	-	-	-	-	-	3.2	21	<2	<10	<0.4		
BH109	8/03/2017	BH109_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	9.5	146.3	-	-	-	-	-	-	6.5	26	<2	<10	<0.4		
BH111	8/03/2017	BH111_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	11.4	-	-	-	-	-	-	5.5	33	<2	<10	<0.4		
BH113	8/03/2017	BH113_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	4.7	83.4	-	-	-	-	-	-	3.8	27	<2	<10	<0.4		
BH113	8/03/2017	BH113_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	6.4	72.8	-	-	-	-	-	-	13	60	<2	<10	<0.4		
BH114	8/03/2017	BH114_0.0-0.1	0-0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	123	<20	<50	100	<100	1	13.3	-	-	-	-	-	<2	31	<2	<10	<0.4	
BH114	8/03/2017	BH114_0.3-0.4	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	65	1104	-	-	-	-	-	-	3.6	110	<2	33	<0.4		
BH114	8/03/2017	DUP02_170308	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	1.1	13.3	-	-	-	-	-	-	2.5	19	<2	<10	<0.4		
BH114	8/03/2017	SPLIT02_170308	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	0.34	3.8	-	-	-	-	-	-	<4	25	<1	<3	<0.4		
BH114	16/03/2017	BH114_0.9	0.9-1	-	-	-	-	-	-	-	-	-	-	-	-	70	1287	-	-	-	-	-	-	-	-	-	-	-	-	
BH115	8/03/2017	BH115_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	0.9	6.9	-	-	-	-	-	-	10	59	<2	<10	<0.4		

				Inorganics				BTEX				TPH		TRH				PAH				Phenols								
				Sulphate	Cyanide Total	CEC	pH (aqueous extract)	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C9	C10-C36 (sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	Benzo(a)pyrene (BaP)	Polycyclic aromatic hydrocarbons (sum total)	2-chlorophenol	2,4-dichlorophenol (2,4-DCP)	2,4,6-trichlorophenol (TCP)	2,4,5-trichlorophenol	Phenols (non-halogenated) EPAVic	Arsenic	Barium	Beryllium	Boron	Cadmium	
				mg/kg	mg/kg	meq/100g	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				30	5	0.05	0.1	0.1	0.1	0.1	0.3	20	50	20	50	100	100	0.05	0.05	0.2	0.2	0.2	0.2	20	2	1	1	3	0.4	
Exceeds EPA 1828.2 Category B Upper Limit					10000		<4 and >9	16	4800	12,800	9600	2600	40000					160	400	4800	3200	320	64,000	2200	2000	25,000	400	60,000	400	
Exceeds EPA 1828.2 Category C Upper Limit					2500			4	1200	3200	2400	650	10000					40	100	1200	800	80	16,000	560	500	6250	100	15,000	100	
Exceeds EPA 1828.2 Category D Upper Limit					2500			4	1200	3200	2400	325	5000					20	50	1200	800	80	16000	560	500	6250	100	15000	100	
Exceeds EPA 1828.2 Fill Material Upper Limit					50			1				100	1000					1	20					60	20				3	
Management Limits - Public Open Space														700 ^{#1}	1000 ^{#1}	2500 ^{#1}	10000 ^{#1}													
Buildings and Structures				10000 ^{#2}																										
Location	Sampled Date	Field ID	Sample Depth Range																											
BH29	1/03/2017	DUP01_170301	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	75.8	-	-	-	-	-	4.4	26	<2	<10	<0.4	
BH29	1/03/2017	SPLIT01_170301	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	62	-	-	-	-	-	<4	29	<1	4	<0.4	
BH30	1/03/2017	BH30_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	75.7	-	-	-	-	-	4.7	23	<2	<10	<0.4	
BH30	1/03/2017	BH30_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	434.3	-	-	-	-	-	7.5	37	<2	<10	<0.4	
BH31	1/03/2017	BH31_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	87.1	-	-	-	-	-	2.2	12	<2	<10	<0.4	
BH31	1/03/2017	BH31_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	1180	-	-	-	-	-	8.2	45	<2	<10	<0.4	
BH31	1/03/2017	BH31_0.5-0.55	0.5-0.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	4887	-	-	-	-	-	-	-	-	-	-	
BH31	1/03/2017	DUP02_170301	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	153.5	-	-	-	-	-	4.2	34	<2	13	<0.4	
BH31	1/03/2017	SPLIT02_170301	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	170	-	-	-	-	-	6	33	<1	9	<0.4	
BH31	14/03/2017	BH31_1.4	1.4-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	2568	-	-	-	-	-	9.1	41	<2	11	<0.4	
BH32	1/03/2017	BH32_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	2.5	17	<2	<10	<0.4	
BH32	1/03/2017	BH32_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	1.8	-	-	-	-	-	4.6	17	<2	<10	<0.4	
BH33	1/03/2017	BH33_0.0-0.1	0-0.1	34	<5	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	1.9	-	-	-	-	-	4.2	120	<2	<10	<0.4	
BH33	1/03/2017	BH33_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	8.8	-	-	-	-	-	5.3	49	<2	<10	<0.4	
BH34	3/03/2017	BH34_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	2.3	-	-	-	-	-	3.2	75	<2	<10	<0.4	
BH34	3/03/2017	BH34_0.2-0.3	0.2-0.3	170	<5	-	-	-	-	-	-	-	-	-	-	-	-	4.3	46.4	-	-	-	-	-	9.2	61	<2	<10	<0.4	
BH35	1/03/2017	BH35_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.2	110	<2	<10	<0.4	
BH35	1/03/2017	BH35_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	5.2	89	<2	<10	<0.4	
BH37	3/03/2017	BH37_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	2.8	100	<2	<10	<0.4	
BH37	3/03/2017	BH37_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	1.8	-	-	-	-	-	2.9	130	<2	<10	<0.4	
BH38	3/03/2017	BH38_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	8.3	30	<2	<10	<0.4	
BH38	3/03/2017	BH38_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.3	130	<2	<10	<0.4	
BH39	3/03/2017	BH39_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	3.6	-	-	-	-	-	5.4	93	<2	<10	<0.4	
BH39	3/03/2017	BH39_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	8.1	-	-	-	-	-	39	53	<2	<10	<0.4	
BH40	3/03/2017	BH40_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	4.1	19	<2	<10	<0.4	
BH40	3/03/2017	BH40_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	50.8	-	-	-	-	-	13	29	<2	<10	<0.4	
BH41	3/03/2017	BH41_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.2	92	<2	<10	<0.4	
BH41	3/03/2017	BH41_0.2-0.3	0.2-0.3	120	<5	-	-	-	-	-	-	-	-	-	-	-	-	0.6	4.9	-	-	-	-	-	3.8	150	<2	<10	<0.4	
BH42	3/03/2017	BH42_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-																	

				Inorganics				BTEX				TPH		TRH				PAH				Phenols								
				Sulphate	Cyanide Total	CEC	pH (aqueous extract)	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C9	C10-C36 (sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	Benzo(a)pyrene (BaP)	Polycyclic aromatic hydrocarbons (sum total)	2-chlorophenol	2,4-dichlorophenol (2,4-DCP)	2,4,6-trichlorophenol (TCP)	2,4,5-trichlorophenol	Phenols (non-halogenated) EPAVic						
																									mg/kg					
				30	5	0.05	0.1	0.1	0.1	0.1	0.3	20	50	20	50	100	100	0.05	0.05	0.2	0.2	0.2	0.2	20	2	1	1	3	0.4	
Exceeds EPA 1828.2 Category B Upper Limit					10000		<4 and >9	16	4800	12,800	9600	2600	40000					160	400	4800	3200	320	64,000	2200	2000	25,000	400	60,000	400	
Exceeds EPA 1828.2 Category C Upper Limit					2500			4	1200	3200	2400	650	10000					40	100	1200	800	80	16,000	560	500	6250	100	15,000	100	
Exceeds EPA 1828.2 Category D Upper Limit					2500			4	1200	3200	2400	325	5000					20	50	1200	800	80	16000	560	500	6250	100	15000	100	
Exceeds EPA 1828.2 Fill Material Upper Limit					50			1				100	1000					1	20					60	20				3	
Management Limits - Public Open Space														700 ^{#1}	1000 ^{#1}	2500 ^{#1}	10000 ^{#1}													
Buildings and Structures				10000 ^{#2}																										
Location	Sampled Date	Field ID	Sample Depth Range																											
BH50	3/03/2017	BH50_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	1.3	-	-	-	-	-	3.4	93	<2	<10	<0.4	
BH50	6/03/2017	BH50_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	10.4	-	-	-	-	-	3.7	120	<2	<10	<0.4	
BH50	15/03/2017	BH50_0.9	0.9-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	203.5	-	-	-	-	-	-	-	-	-	-	
BH54	6/03/2017	BH54_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	2.6	-	-	-	-	-	3.2	93	<2	11	<0.4	
BH54	6/03/2017	BH54_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.3	130	<2	<10	<0.4	
BH54	6/03/2017	BH54_0.5-0.6	0.5-0.6	190	<5	-	-	-	-	-	-	-	-	-	-	-	-	43	497.4	-	-	-	-	-	-	-	-	-	-	
BH55	6/03/2017	BH55_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	182.1	-	-	-	-	-	4.7	58	<2	<10	0.6	
BH56	6/03/2017	BH56_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	87.7	-	-	-	-	-	5.1	59	<2	<10	<0.4	
BH56	6/03/2017	BH56_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	18.5	-	-	-	-	-	3.6	70	<2	<10	<0.4	
BH57	6/03/2017	BH57_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	3.6	-	-	-	-	-	11	84	<2	<10	<0.4	
BH57	6/03/2017	BH57_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	14.6	-	-	-	-	-	4.4	140	<2	<10	<0.4	
BH58	6/03/2017	BH58_0.0-0.1	0-0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	87	<20	<50	100	<100	3.9	39.2	-	-	-	-	-	7.6	42	<2	<10	<0.4	
BH58	6/03/2017	BH58_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	137	-	-	-	-	-	48	74	<2	12	<0.4	
BH59	6/03/2017	BH59_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	52.3	-	-	-	-	-	5.4	46	<2	<10	<0.4	
BH59	6/03/2017	BH59_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	110.6	-	-	-	-	-	9	19	<2	<10	<0.4	
BH60	6/03/2017	BH60_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	62	-	-	-	-	-	4.6	30	<2	<10	<0.4	
BH60	6/03/2017	BH60_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	169.4	-	-	-	-	-	10	44	<2	<10	<0.4	
BH61	6/03/2017	BH61_0.0-0.1	0-0.1	<30	<5	-	-	-	-	-	-	-	-	-	-	-	-	1.2	12.2	-	-	-	-	-	3.8	20	<2	<10	<0.4	
BH61	6/03/2017	BH61_0.2-0.3	0.2-0.3	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	140	<20	<50	160	<100	5.2	51.2	-	-	-	-	-	4	12	<2	<10	<0.4	
BH61	15/03/2017	BH61_2.3	2.3-2.4	81	110	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	-	-	-	-	-	-	-	29	13	<2	<10	<0.4	
BH62	6/03/2017	BH62_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	4.9	-	-	-	-	-	3.6	14	<2	<10	<0.4	
BH62	6/03/2017	BH62_0.2-0.3	0.2-0.3	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	440	<20	<50	360	<100	7.1	74.5	-	-	-	-	-	13	68	<2	<10	<0.4	
BH62	15/03/2017	BH62_2.4	2.4-2.5	41	10	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	-	-	-	-	-	-	-	9.3	<10	<2	<10	<0.4	
BH63	6/03/2017	BH63_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	0.7	-	-	-	-	-	3.7	17	<2	<10	<0.4	
BH63	6/03/2017	BH63_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	210.2	-	-	-	-	-	6.3	35	<2	<10	<0.4	
BH63	15/03/2017	BH63_1.4	1.4-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	0.5	-	-	-	-	-	-	-	-	-	-	
BH64	6/03/2017	BH64_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	2.5	-	-	-	-	-	4.7	21	<2	<10	<0.4	
BH64	6/03/2017	BH64_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	13.2	-	-	-	-	-	4.8	28	<2	<10	<0.4	
BH65	6/03/2017	BH65_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	8.4	-	-	-	-	-	7.2	24	<2	<10	<0.4	
BH65	6/03/2017	BH65_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	2.7	-	-	-	-	-	26	43	<2	<10	<0.4	
BH66	6/03/2017	BH66_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	6.6	-	-	-	-							

681342.13	Preliminary waste classification only. Do not use for waste soils leaving the Park.	24/03/2023
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				Inorganics				BTEX				TPH		TRH				PAH				Phenols								
				Sulphate	Cyanide Total	CEC	pH (aqueous extract)	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C9	C10-C36 (sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	Benzo(a)pyrene (BaP)	Polycyclic aromatic hydrocarbons (sum total)	2-chlorophenol	2,4-dichlorophenol (2,4-DCP)	2,4,6-trichlorophenol (TCP)	2,4,5-trichlorophenol	Phenols (non-halogenated) EPA Vic	Arsenic	Barium	Beryllium	Boron	Cadmium	
				mg/kg	mg/kg	meq/100g	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				30	5	0.05	0.1	0.1	0.1	0.1	0.3	20	50	20	50	100	100	0.05	0.05	0.2	0.2	0.2	0.2	0.2	20	2	1	1	3	0.4
Exceeds EPA 1828.2 Category B Upper Limit					10000		<4 and >9	16	4800	12,800	9600	2600	40000					160	400	4800	3200	320	64,000	2200	2000	25,000	400	60,000	400	
Exceeds EPA 1828.2 Category C Upper Limit					2500			4	1200	3200	2400	650	10000					40	100	1200	800	80	16,000	560	500	6250	100	15,000	100	
Exceeds EPA 1828.2 Category D Upper Limit					2500			4	1200	3200	2400	325	5000					20	50	1200	800	80	16000	560	500	6250	100	15000	100	
Exceeds EPA 1828.2 Fill Material Upper Limit					50			1				100	1000					1	20					60	20				3	
Management Limits - Public Open Space														700 ^{#1}	1000 ^{#1}	2500 ^{#1}	10000 ^{#1}													
Buildings and Structures				10000 ^{#2}																										
Location	Sampled Date	Field ID	Sample Depth Range																											
BH88	7/03/2017	DUP06_170307	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	98.8	-	-	-	-	-	7.2	38	<2	<10	<0.4	
BH88	7/03/2017	SPLIT06_170307	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	150	-	-	-	-	-	6	37	<1	4	<0.4	
BH88	15/03/2017	BH88_2.0	2-2.1	-	-	-	-	170	<50	220	190	<10,000	30100.00	<10,000	9600	19000.00	1100	360	10550.00	<5	<5	<10	<10	770	-	-	-	-	-	
BH88	15/03/2017	BH88_2.5	2.5-2.6	-	-	-	-	<0.5	<0.5	<0.5	<1.5	<100	427	<100	190	230	<100	5.9	208.3	<5	<5	<10	<10	<100	-	-	-	-	-	
BH88	15/03/2017	BH88_4.3	4.3-4.4	500	<5	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	-	-	-	-	-	-	<2	<10	<2	<10	<0.4		
BH88	15/03/2017	DUP01_170315	2-2.1	-	-	-	-	95	<50	130	160	<10,000	34700.00	<10,000	13000.00	22000.00	1200	380	11900.00	<5	<5	<10	<10	283	-	-	-	-	-	
BH88	15/03/2017	SPLIT01_170315	2.5-2.6	-	-	-	-	<0.2	<1	<0.5	<1	<25	<50	<25	<50	<100	<100	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-		
BH89	7/03/2017	BH89_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	40.1	-	-	-	-	-	3.7	28	<2	<10	<0.4	
BH89	7/03/2017	BH89_0.2-0.3	0.2-0.3	-	-	-	-	0.2	<0.1	0.2	<0.3	<20	2549	<20	190	2000	140	37	455.4	-	-	-	-	-	11	75	<2	<10	<0.4	
BH89	15/03/2017	BH89_0.5	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	83.7	-	-	-	-	-	-	-	-	-	-	
BH90	7/03/2017	BH90_0.0-0.05	0-0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	40.7	-	-	-	-	-	4.3	35	<2	<10	<0.4	
BH90	7/03/2017	BH90_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	81.8	-	-	-	-	-	5.1	33	<2	<10	<0.4	
BH91	7/03/2017	BH91_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.1	120	<2	<10	<0.4	
BH91	7/03/2017	BH91_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.2	120	<2	<10	<0.4	
BH92	7/03/2017	BH92_0.0-0.1	0-0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	52	<20	<50	<100	<100	<0.5	1.4	-	-	-	-	-	2.9	86	<2	<10	<0.4	
BH92	7/03/2017	BH92_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	3.1	130	<2	<10	<0.4	
BH93	7/03/2017	BH93_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	24.7	-	-	-	-	-	2.3	18	<2	<10	<0.4	
BH93	7/03/2017	BH93_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.1	92.4	-	-	-	-	-	12	36	<2	<10	0.5	
BH94	7/03/2017	BH94_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5.8	-	-	-	-	-	<2	19	<2	<10	<0.4	
BH94	7/03/2017	BH94_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	15.9	-	-	-	-	-	3.3	46	<2	<10	<0.4	
TP12	1/01/2011	TP12_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	2	22	-	-	-	-	-	5	-	-	-	<1	
TP12	1/01/2011	TP12_0.2-0.3	0.2-0.3	390	35	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	790	230	17.1	200	-	-	-	-	-	5	-	-	-	<1	
TP12	1/01/2011	TP12_0.6-0.7	0.6-0.7	-	204	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	1840	560	36.3	436	-	-	-	-	-	15	-	-	-	<1	
TP13	1/01/2011	TP13_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	0.6	5	-	-	-	-	-	<5	-	-	-	<1	
TP13	1/01/2011	TP13_0.3-0.35	0.3-0.35	-	17	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	600	140	16.2	179	-	-	-	-	-	6	-	-	-	<1	
TP13	1/01/2011	TP13_0.8-0.85	0.8-0.85	-	20	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	260	7120	1730	189	2458	-	-	-	-	-	<5	-	-	-	<1	
TP14	1/01/2011	TP14_0.1-0.15	0.1-0.15	-	2	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<120	<0.5	<0.5	-	-	-	-	-	<5	-	-	-	<1	
TP14	1/01/2011	TP14_0.85-0.9	0.85-0.9	-	-	-	-	1.8	<0.5	1.5	1.2	-	-	13	1460	18500.00	3460	353	7045	-	-	-	-	-	6	-	-	-	<1	
TP14/ DUP3	1/01/2011	TP14/ DUP3_0.5-0.6	0.5-0.6	-	3	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	3.6	75.6	-	-</									

				Inorganics				BTEX				TPH		TRH				PAH				Phenols								
				Sulphate	Cyanide Total	CEC	pH (aqueous extract)	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C9	C10-C36 (sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	Benzo(a)pyrene (BaP)	Polycyclic aromatic hydrocarbons (sum total)	2-chlorophenol	2,4-dichlorophenol (2,4-DCP)	2,4,6-trichlorophenol (TCP)	2,4,5-trichlorophenol	Phenols (non-halogenated) EPAVic	Arsenic	Barium	Beryllium	Boron	Cadmium	
				mg/kg	mg/kg	meq/100g	pH_Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				30	5	0.05	0.1	0.1	0.1	0.1	0.3	20	50	20	50	100	100	0.05	0.05	0.2	0.2	0.2	0.2	0.2	20	2	1	1	3	0.4
Exceeds EPA 1828.2 Category B Upper Limit					10000		<4 and >9	16	4800	12,800	9600	2600	40000					160	400	4800	3200	320	64,000	2200	2000	25,000	400	60,000	400	
Exceeds EPA 1828.2 Category C Upper Limit					2500			4	1200	3200	2400	650	10000					40	100	1200	800	80	16,000	560	500	6250	100	15,000	100	
Exceeds EPA 1828.2 Category D Upper Limit					2500			4	1200	3200	2400	325	5000					20	50	1200	800	80	16000	560	500	6250	100	15000	100	
Exceeds EPA 1828.2 Fill Material Upper Limit					50			1				100	1000					1	20					60	20				3	
Management Limits - Public Open Space														700 ^{#1}	1000 ^{#1}	2500 ^{#1}	10000 ^{#1}													
Buildings and Structures				10000 ^{#2}																										
Location	Sampled Date	Field ID	Sample Depth Range																											
TP25	1/01/2011	TP25_1.2-1.3	1.2-1.3	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	<0.5	-	-	-	-	-	<5	-	-	-	-	<1
TP26	1/01/2011	TP26_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	<0.5	-	-	-	-	-	<5	-	-	-	-	<1
TP26	1/01/2011	TP26_0.5-0.6	0.5-0.6	-	108	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	70	2050	600	39.1	597	-	-	-	-	-	17	-	-	-	-	<1
TP26	1/01/2011	TP26_1.8-1.9	1.8-1.9	-	4	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	5	-	-	-	-	-	<5	-	-	-	-	<1
TP26	1/01/2011	TP26_2.5-2.6	2.5-2.6	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	8	-	-	-	-	-	14	-	-	-	-	<1
TP5	1/01/2011	TP5_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	2	21	-	-	-	-	-	9	-	-	-	-	<1
TP5	1/01/2011	TP5_0.8	0.8	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	130	3780	1140	108	898	-	-	-	-	-	-	-	-	-	-	-
TP5	1/01/2011	TP5_1.8	1.8	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<200	<250	<0.5	<8	-	-	-	-	-	<5	-	-	-	-	<1
TP6	1/01/2011	TP6_0.25-0.3	0.25-0.3	-	1	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	520	200	12.8	158	-	-	-	-	-	23	-	-	-	-	<1
TP6	1/01/2011	TP6_1.75-1.8	1.75-1.8	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	100	1790	520	42.4	472	-	-	-	-	-	13	-	-	-	-	<1
TP7	1/01/2011	TP7_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	70	1150	440	21.4	243	-	-	-	-	-	<5	-	-	-	-	<1
TP7	1/01/2011	TP7_0.3-0.4	0.3-0.4	-	176	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	120	2230	830	41.5	402	-	-	-	-	-	19	-	-	-	-	<1
TP7	1/01/2011	TP7_1.75-1.8	1.75-1.8	16200.00	252	-	-	21.6	3.1	18.1	23.4	-	-	83	8230	29500.00	4460	570	13490.00	-	-	-	-	-	9	-	-	-	-	<1
TP7	1/01/2011	TP7_2.9-3.0	2.9-3	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<120	<200	<0.5	2	-	-	-	-	-	-	-	-	-	-	-
BH11	1/01/2011	BH11_0.5-0.6	0.5-0.6	-	-	-	-	13.7	1.5	10.4	24.2	-	-	67	7320	24100.00	3770	1040	28600.00	-	-	-	-	-	<5	-	-	-	-	<1
BH11	1/01/2011	BH11_1.3-1.4	1.3-1.4	-	-	-	-	<0.2	<0.5	<0.5	<0.5	-	-	<10	<50	<100	<100	<0.5	1	-	-	-	-	-	<5	-	-	-	-	<1
BH25	28/02/2017	BH25_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	49.8	-	-	-	-	-	12	41	<2	12	0.4	
BH25	28/02/2017	BH25_0.2-0.3	0.2-0.3	-	-	-	8.1	-	-	-	-	-	-	-	-	-	-	9	102.8	-	-	-	-	-	13	36	<2	11	<0.4	
BH25	14/03/2017	BH25_2.4	2.4-2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	209.3	-	-	-	-	-	4.8	35	<2	<10	<0.4	
BH26	28/02/2017	BH26_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	24.7	-	-	-	-	-	11	38	<2	18	0.5	
BH26	28/02/2017	BH26_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	153.2	-	-	-	-	-	2	49	<2	41	1.8	
BH27	1/03/2017	BH27_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	12.5	-	-	-	-	-	2.8	86	<2	<10	<0.4	
BH27	1/03/2017	BH27_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	16	-	-	-	-	-	3.9	130	<2	<10	<0.4	
BH28	1/03/2017	BH28_0.0-0.1	0-0.1	180	<5	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	1.1	-	-	-	-	-	4.7	87	<2	<10	<0.4	
BH28	1/03/2017	BH28_0.2-0.3	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	1	-	-	-	-	-	17	51	<2	<10	<0.4	
BH36	3/03/2017	BH36_0.0-0.1	0-0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-	-	2.1	35	<2	37	<0.4	
TP24	1/01/2011	TP24_0.0-0.1	0-0.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	1	-	-	-	-	-	<5	-	-	-	-	<1
TP24	1/01/2011	TP24_0.5-0.6	0.5-0.6	-	2	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	2	-	-	-	-	-	40	-	-	-	-	<1
TP24	1/01/2011	TP24_1.1-1.2	1.1-1.2	-	-	-	-	<0.2	<0																					

Table A
Preliminary Waste Classification Buildings and Infrastructure Management Limits

				Inorganics				BTEX				TPH		TRH				PAH				Phenols								
				Sulphate	Cyanide Total	CEC	pH (aqueous extract)	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C9	C10-C36 (sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	Benzo(a)pyrene (BaP)	Polycyclic aromatic hydrocarbons (sum total)		2-chlorophenol	2,4-dichlorophenol (2,4-DCP)	2,4,6-trichlorophenol (TCP)	2,4,5-trichlorophenol	Phenols (non-halogenated) EPAvic	Arsenic	Barium	Beryllium	Boron	Cadmium
				mg/kg	mg/kg	meq/100g	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
				30	5	0.05	0.1	0.1	0.1	0.1	0.3	20	50	20	50	100	100	0.05	0.05	0.2	0.2	0.2	0.2	20	2	1	1	3	0.4	
Exceeds EPA 1828.2 Category B Upper Limit					10000		<4 and >9	16	4800	12,800	9600	2600	40000					160	400	4800	3200	320	64,000	2200	2000	25,000	400	60,000	400	
Exceeds EPA 1828.2 Category C Upper Limit					2500			4	1200	3200	2400	650	10000					40	100	1200	800	80	16,000	560	500	6250	100	15,000	100	
Exceeds EPA 1828.2 Category D Upper Limit					2500			4	1200	3200	2400	325	5000					20	50	1200	800	80	16000	560	500	6250	100	15000	100	
Exceeds EPA 1828.2 Fill Material Upper Limit					50			1				100	1000					1	20					60	20				3	
Management Limits - Public Open Space														700 ^{#1}	1000 ^{#1}	2500 ^{#1}	10000 ^{#1}													
Buildings and Structures				10000 ^{#2}																										
Location	Sampled Date	Field ID	Sample Depth Range																											
GW37	1/01/2011	GW37_11.0-11.1	11-11.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	
GW38	1/01/2011	GW38_11.0-11.1	11-11.1	-	-	-	-	<0.2	<0.5	<0.5	<3.2	-	-	<10	<50	<100	<100	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	
GW45	19/07/2017	GW45_5.0	5-5	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	<0.5	<0.5	<0.5	<1	<1	<20	-	-	-	-	-	
GW45	19/07/2017	GW45_9.6	9.6-9.6	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	0.9	<0.5	<0.5	<1	<1	<20	-	-	-	-	-	
GW48	24/07/2017	GW48_0.1	0.1-0.1	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	2806	<20	140	2700	190	36	403.6	<5	<5	<5	<10	<10	<100	-	-	-	-	-
GW48	24/07/2017	GW48_11.0	11-11	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	<0.5	<0.5	<0.5	<1	<1	<20	-	-	-	-	-	
GW48	24/07/2017	GW48_6.6	6.6-6.6	-	-	-	-	<0.1	<0.1	<0.1	<0.3	<20	<50	<20	<50	<100	<100	<0.5	<0.5	<0.5	<0.5	<1	<1	<20	-	-	-	-	-	

#1:NEPM 2013 Management Limits - Open Space C for TPH fractions Coarse Soil, Table 1B (7)
#2:AS3600-2009 Concrete Structures - Table 4.8.1 Classification B1 in Soil Condition B

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit				500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit				500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
BH17	28/02/2017	BH17_0.0-0.1	0-0.1	-	12	67	0.3	5.8	<2	45
BH17	28/02/2017	BH17_0.2-0.3	0.2-0.3	-	26	51	0.1	5.7	<2	43
BH18	28/02/2017	BH18_0.0-0.1	0-0.1	-	43	55	<0.1	8.3	<2	45
BH18	28/02/2017	BH18_0.2-0.3	0.2-0.3	-	22	23	<0.1	12	<2	39
BH51	6/03/2017	BH51_0.0-0.1	0-0.1	<1	56	160	0.1	30	-	110
BH51	6/03/2017	BH51_0.2-0.3	0.2-0.3	<1	22	78	<0.1	25	-	78
BH51	6/03/2017	BH51_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH52	6/03/2017	BH52_0.0-0.1	0-0.1	<1	35	67	<0.1	27	-	160
BH52	6/03/2017	BH52_0.2-0.3	0.2-0.3	<1	68	210	0.5	39	-	190
BH53	6/03/2017	BH53_0.0-0.1	0-0.1	<1	140	300	0.2	47	-	210
BH53	6/03/2017	BH53_0.2-0.3	0.2-0.3	<1	150	370	0.2	54	-	220
TP1	1/01/2011	TP1_0.0-0.1	0-0.1	-	5	5	<0.1	17	-	17
TP1	1/01/2011	TP1_0.3-0.35	0.3-0.35	-	30	8	<0.1	96	-	38
TP1	1/01/2011	TP1_0.35-0.4	0.35-0.4	-	21	11	<0.1	36	-	20
TP8	1/01/2011	TP8_0.0-0.1	0-0.1	-	113	222	<0.1	47	-	132
TP8	1/01/2011	TP8_0.6-0.7	0.6-0.7	-	<5	6	<0.1	3	-	6
TP9	1/01/2011	TP9_0.0-0.1	0-0.1	-	14	42	<0.1	4	-	38
TP9	1/01/2011	TP9_0.4-0.5	0.4-0.5	-	<5	8	<0.1	4	-	6
TP9	1/01/2011	TP9_0.7-0.8	0.7-0.8	-	20	148	0.3	9	-	150
BH13	1/01/2011	BH13_0.0-0.1	0-0.1	-	6	10	<0.1	3	-	16
BH13	1/01/2011	BH13_0.1-0.2	0.1-0.2	-	20	41	0.4	29	-	87
BH13	1/01/2011	BH13_0.3-0.4	0.3-0.4	-	9	15	<0.1	13	-	30
BH13	1/01/2011	BH13_0.6-0.7	0.6-0.7	-	13	146	0.8	15	-	124
BH13	1/01/2011	BH13_1.1-1.3	1.1-1.3	-	18	84	0.3	15	-	59
BH15	1/01/2011	BH15_0.0-0.1	0-0.1	-	<5	<5	<0.1	<2	-	6
BH15	1/01/2011	BH15_0.4-0.5	0.4-0.5	-	8	40	0.2	6	-	42
BH15	1/01/2011	BH15_0.8-0.9	0.8-0.9	-	<5	12	<0.1	5	-	30
BH100	7/03/2017	BH100_0.0-0.1	0-0.1	<1	23	44	3.4	15	-	66
BH100	7/03/2017	BH100_0.2-0.3	0.2-0.3	<1	30	63	1.1	54	-	78
BH100	16/03/2017	BH100_0.9	0.9-1	-	-	-	-	-	-	-
BH126	8/03/2017	BH126_0.0-0.1	0-0.1	<1	<5	7.2	<0.1	<5	-	20
BH126	8/03/2017	BH126_0.2-0.3	0.2-0.3	<1	36	150	0.3	50	-	110
BH126	8/03/2017	BH126_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH127	8/03/2017	BH127_0.0-0.1	0-0.1	<1	14	21	<0.1	6.5	-	35
BH128	8/03/2017	BH128_0.0-0.1	0-0.1	<1	6	8.5	<0.1	<5	-	46
BH128	8/03/2017	BH128_0.2-0.3	0.2-0.3	<1	36	120	0.5	31	-	120
BH14	1/01/2011	BH14_0.05-0.15	0.05-0.15	-	22	126	0.2	14	-	58
BH14	1/01/2011	BH14_0.4-0.5	0.4-0.5	-	14	484	3.8	68	-	293
BH14	1/01/2011	BH14_0.7-0.8	0.7-0.8	-	24	273	1.3	67	-	233
BH14	1/01/2011	BH14_1.3-1.4	1.3-1.4	-	7	95	0.5	26	-	110
BH95	7/03/2017	BH95_0.0-0.1	0-0.1	<1	16	44	0.6	13	-	72
BH95	7/03/2017	BH95_0.2-0.3	0.2-0.3	<1	75	100	0.6	32	-	200
BH96	7/03/2017	BH96_0.0-0.1	0-0.1	<1	15	37	0.1	14	-	77
BH96	7/03/2017	BH96_0.2-0.3	0.2-0.3	<1	39	97	0.4	42	-	120
BH96	16/03/2017	BH96_0.7	0.7-0.8	-	31	79	0.3	41	<2	91
BH97	7/03/2017	BH97_0.0-0.1	0-0.1	<1	14	20	<0.1	7.4	-	28
BH97	7/03/2017	BH97_0.2-0.3	0.2-0.3	<1	38	62	0.2	20	-	100
BH98	7/03/2017	BH98_0.0-0.1	0-0.1	<1	5.8	10	<0.1	<5	-	29
BH98	7/03/2017	BH98_0.2-0.3	0.2-0.3	<1	6.8	26	0.1	7.5	-	28
BH99	7/03/2017	BH99_0.0-0.1	0-0.1	<1	12	31	0.1	12	-	72
BH99	7/03/2017	BH99_0.2-0.3	0.2-0.3	<1	1300	220	0.6	38	-	830
TP17	1/01/2011	TP17_0.0-0.1	0-0.1	-	<5	11	<0.1	5	-	13

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit				500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit				500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
TP17	1/01/2011	TP17_0.3-0.4	0.3-0.4	-	67	161	0.2	24	-	191
TP17	1/01/2011	TP17_1.0-1.1	1-1.1	-	24	254	1.6	30	-	232
TP18	1/01/2011	TP18_0.0-0.1	0-0.1	-	10	30	0.1	6	-	52
TP18	1/01/2011	TP18_0.25-0.3	0.25-0.3	-	20	64	0.1	19	-	80
TP18	1/01/2011	TP18_0.7-0.8	0.7-0.8	-	<5	6720	1.2	6	-	312
TP19	1/01/2011	TP19_0.0-0.1	0-0.1	-	<5	6	<0.1	<2	-	<5
TP19	1/01/2011	TP19_0.3-0.4	0.3-0.4	-	19	77	0.2	11	-	66
TP19	1/01/2011	TP19_0.6-0.7	0.6-0.7	-	26	69	0.2	25	-	36
BH101	7/03/2017	BH101_0.2-0.3	0.2-0.3	<1	7.2	16	<0.1	12	-	27
BH101	8/03/2017	BH101_0.05-0.1	0.05-0.1	<1	5.3	10	<0.1	5.6	-	20
BH102	7/03/2017	BH102_0.0-0.1	0-0.1	<1	5.6	11	<0.1	<5	-	15
BH102	7/03/2017	BH102_0.2-0.3	0.2-0.3	<1	18	65	0.2	23	-	80
BH103	8/03/2017	BH103_0.0-0.1	0-0.1	<1	19	22	0.2	30	-	83
BH103	8/03/2017	BH103_0.2-0.3	0.2-0.3	<1	15	10	<0.1	30	-	49
BH103	15/03/2017	BH103_1.2	1.2-1.3	-	-	-	-	-	-	-
BH103	15/03/2017	BH103_2.3	2.3-2.4	-	<5	9	<0.1	<5	<2	97
BH104	8/03/2017	BH104_0.0-0.1	0-0.1	<1	11	12	<0.1	19	-	47
BH104	8/03/2017	BH104_0.2-0.3	0.2-0.3	<1	15	12	<0.1	31	-	52
BH105	8/03/2017	BH105_0.0-0.1	0-0.1	<1	13	30	<0.1	24	-	49
BH105	8/03/2017	BH105_0.2-0.3	0.2-0.3	<1	14	590	0.3	22	-	81
BH106	8/03/2017	BH106_0.0-0.1	0-0.1	<1	9.4	11	<0.1	17	-	44
BH106	8/03/2017	BH106_0.2-0.3	0.2-0.3	<1	17	11	<0.1	37	-	55
BH106	8/03/2017	BH106_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH106	15/03/2017	BH106_1.6	1.6-1.7	-	18	620	3.1	38	<2	400
BH107	8/03/2017	BH107_0.0-0.1	0-0.1	<1	24	63	<0.1	19	-	56
BH107	8/03/2017	BH107_0.2-0.3	0.2-0.3	<1	18	220	0.7	64	-	160
BH107	8/03/2017	BH107_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH108	8/03/2017	BH108_0.0-0.1	0-0.1	<1	8.9	20	0.1	13	-	37
BH108	8/03/2017	BH108_0.2-0.3	0.2-0.3	<1	19	12	<0.1	37	-	59
BH110	8/03/2017	BH110_0.0-0.1	0-0.1	<1	9.4	38	<0.1	14	-	42
BH110	8/03/2017	BH110_0.2-0.3	0.2-0.3	<1	18	160	0.6	23	-	91
BH110	16/03/2017	BH110_0.9	0.9-1	-	8.5	80	0.3	9.7	<2	110
BH110	16/03/2017	BH110_3.4	3.4-3.5	-	<5	15	<0.1	<5	<2	<5
BH112	8/03/2017	BH112_0.0-0.1	0-0.1	<1	18	17	<0.1	28	-	59
BH112	8/03/2017	BH112_0.2-0.3	0.2-0.3	<1	18	15	<0.1	37	-	59
BH121	8/03/2017	BH121_0.0-0.1	0-0.1	<1	19	29	<0.1	9.3	-	45
BH121	8/03/2017	BH121_0.2-0.3	0.2-0.3	<1	44	110	0.9	66	-	91
BH121	16/03/2017	BH121_3.1	3.1-3.2	-	150	2100	1.4	31	<2	330
BH122	8/03/2017	BH122_0.0-0.1	0-0.1	<1	9.3	28	<0.1	7.3	-	35
BH122	16/03/2017	BH122_0.9	0.9-1	-	38	230	2.2	38	<2	330
BH123	8/03/2017	BH123_0.0-0.1	0-0.1	<1	24	48	0.1	19	-	78
BH123	8/03/2017	BH123_0.2-0.3	0.2-0.3	<1	18	110	0.3	15	-	72
BH123	15/03/2017	BH123_2.1	2.1-2.2	-	24	180	1.2	30	<2	180
BH124	8/03/2017	BH124_0.0-0.1	0-0.1	<1	16	57	0.2	58	-	48
BH124	8/03/2017	BH124_0.2-0.3	0.2-0.3	<1	18	390	1.4	55	-	78
BH124	8/03/2017	BH124_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH124	8/03/2017	DUP03_170308	0-0.1	-	17	55	<0.1	60	<2	42
BH124	8/03/2017	SPLIT03_170308	0-0.1	-	21	89	0.6	60	<2	61
BH124	16/03/2017	BH124_0.9	0.9-1	-	11	170	0.2	13	<2	33
BH125	8/03/2017	BH125_0.0-0.1	0-0.1	<1	8.1	31	0.2	5.6	-	33
BH125	8/03/2017	BH125_0.2-0.3	0.2-0.3	<1	17	140	0.3	39	-	130
BH125	8/03/2017	BH125_0.4-0.5	0.4-0.5	-	-	-	-	-	-	-

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit				500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit				500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
LIF002	18/07/2017	DUP01_170718	5.6-5.6	-	-	-	-	-	-	-
LIF002	18/07/2017	LIF002_5.6	5.6-5.6	-	-	-	-	-	-	-
LIF002	18/07/2017	SPLIT01_170718	5.6-5.6	-	-	-	-	-	-	-
LIF002	26/07/2017	LIF002_10.3	10.3-10.3	-	-	-	-	-	-	-
LIF002	26/07/2017	LIF002_11.9	11.9-11.9	-	-	-	-	-	-	-
LIF002	26/07/2017	LIF002_14.2	14.2-14.2	-	-	-	-	-	-	-
LIF002	26/07/2017	LIF002_6.5	6.5-6.5	-	-	-	-	-	-	-
TP10	1/01/2011	TP10_0.0 - 0.1	0-0.1	-	18	56	<0.1	15	-	78
TP10	1/01/2011	TP10_0.5-0.6	0.5-0.6	-	13	303	0.3	16	-	135
TP10	1/01/2011	TP10_1.0-1.1	1-1.1	-	50	537	1	41	-	251
TP11	1/01/2011	TP11_0.0 - 0.2	0-0.2	-	14	14	<0.1	29	-	55
TP11	1/01/2011	TP11_1.2-1.3	1.2-1.3	-	19	435	1.4	14	-	126
TP11	1/01/2011	TP11_2.0-2.1	2-2.1	-	<5	124	<0.1	<2	-	8
BH1	1/01/2011	BH1_0.0 - 0.1	0-0.1	-	14	17	<0.1	24	-	36
BH1	1/01/2011	BH1_0.3-0.4	0.3-0.4	-	15	36	<0.1	27	-	78
BH1	1/01/2011	BH1_1.0-1.1	1-1.1	-	<5	5	<0.1	2	-	9
BH109	8/03/2017	BH109_0.0-0.1	0-0.1	<1	6.7	17	<0.1	5.6	-	37
BH109	8/03/2017	BH109_0.2-0.3	0.2-0.3	<1	7.6	52	0.1	9.8	-	33
BH111	8/03/2017	BH111_0.0-0.1	0-0.1	<1	13	58	0.2	9.6	-	100
BH113	8/03/2017	BH113_0.0-0.1	0-0.1	<1	8.1	17	<0.1	8.3	-	37
BH113	8/03/2017	BH113_0.2-0.3	0.2-0.3	<1	9.2	57	0.1	12	-	64
BH114	8/03/2017	BH114_0.0-0.1	0-0.1	<1	65	47	9.4	13	-	40
BH114	8/03/2017	BH114_0.3-0.4	0.3-0.4	<1	38	48	1.8	47	-	43
BH114	8/03/2017	DUP02_170308	0-0.1	-	44	32	7.8	6.6	<2	35
BH114	8/03/2017	SPLIT02_170308	0-0.1	-	55	39	7.1	8	<2	35
BH114	16/03/2017	BH114_0.9	0.9-1	-	-	-	-	-	-	-
BH115	8/03/2017	BH115_0.0-0.1	0-0.1	<1	28	95	1.3	15	-	120
BH116	8/03/2017	BH116_0.0-0.1	0-0.1	<1	34	83	2	19	-	94
BH116	8/03/2017	BH116_0.2-0.25	0.2-0.25	<1	41	52	1.1	46	-	110
BH117	8/03/2017	BH117_0.0-0.1	0-0.1	<1	48	160	2.4	45	-	120
BH117	8/03/2017	BH117_0.2-0.25	0.2-0.25	<1	160	980	3.8	58	-	98
BH118	8/03/2017	BH118_0.0-0.1	0-0.1	<1	43	60	4.8	19	-	81
BH118	8/03/2017	BH118_0.2-0.3	0.2-0.3	<1	38	60	1.2	91	-	85
BH119	8/03/2017	BH119_0.0-0.1	0-0.1	<1	12	48	0.6	11	-	56
BH119	8/03/2017	BH119_0.2-0.3	0.2-0.3	<1	31	1100	5.7	85	-	250
BH119	16/03/2017	BH119_0.5	0.5-0.6	-	7.2	82	<0.1	<5	<2	21
BH120	8/03/2017	BH120_0.0-0.1	0-0.1	<1	27	130	0.2	14	-	190
BH120	8/03/2017	BH120_0.2-0.3	0.2-0.3	<1	21	170	0.1	10	-	170
BH2	1/01/2011	BH2_0.0 - 0.1	0-0.1	-	24	102	0.6	15	-	120
BH2	1/01/2011	BH2_0.2-0.3	0.2-0.3	-	<5	27	<0.1	6	-	33
BH2	1/01/2011	BH2_0.9-1.0	0.9-1	-	<5	<5	<0.1	<2	-	17
BH3	1/01/2011	BH3_0.0 - 0.1	0-0.1	-	38	136	1.4	48	-	124
BH3	1/01/2011	BH3_0.2-0.3	0.2-0.3	-	<5	686	<0.1	10	-	84
BH3	1/01/2011	BH3_0.6-0.7	0.6-0.7	-	18	10	<0.1	28	-	16
BH4	1/01/2011	BH4_0.0 - 0.1	0-0.1	-	24	137	<0.1	8	-	122
BH4	1/01/2011	BH4_0.2-0.3	0.2-0.3	-	456	466	5.5	42	-	54
BH4	1/01/2011	BH4_0.6-0.7	0.6-0.7	-	56	332	5.9	39	-	56
GW39	1/01/2011	GW39_11.4-11.5	11.4-11.5	-	-	-	-	-	-	-
BH10	1/01/2011	BH10_0.2-0.3	0.2-0.3	-	<5	21	<0.1	10	-	17
BH10	1/01/2011	BH10_1.6-1.7	1.6-1.7	-	<5	<5	<0.1	3	-	<5
BH29	1/03/2017	BH29_0.0-0.1	0-0.1	-	12	75	0.2	11	<2	68
BH29	1/03/2017	BH29_0.2-0.3	0.2-0.3	-	17	88	0.2	17	<2	94

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit				500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit				500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
BH29	1/03/2017	DUP01_170301	0.2-0.3	-	25	160	0.4	9.5	<2	170
BH29	1/03/2017	SPLIT01_170301	0-0.1	-	15	70	<0.1	7	<2	72
BH30	1/03/2017	BH30_0.0-0.1	0-0.1	-	16	130	0.4	10	<2	72
BH30	1/03/2017	BH30_0.2-0.3	0.2-0.3	-	30	360	0.5	19	<2	100
BH31	1/03/2017	BH31_0.0-0.1	0-0.1	-	5	53	0.3	<5	<2	24
BH31	1/03/2017	BH31_0.2-0.3	0.2-0.3	-	8.9	81	0.2	13	<2	42
BH31	1/03/2017	BH31_0.5-0.55	0.5-0.55	-	-	-	-	-	-	-
BH31	1/03/2017	DUP02_170301	0-0.1	-	12	110	0.3	13	<2	72
BH31	1/03/2017	SPLIT02_170301	0-0.1	-	11	52	<0.1	9	<2	57
BH31	14/03/2017	BH31_1.4	1.4-1.5	-	9.5	35	<0.1	16	<2	34
BH32	1/03/2017	BH32_0.0-0.1	0-0.1	-	5.8	20	<0.1	9.2	<2	33
BH32	1/03/2017	BH32_0.2-0.3	0.2-0.3	-	<5	26	0.3	9.2	<2	30
BH33	1/03/2017	BH33_0.0-0.1	0-0.1	<1	15	13	<0.1	24	-	47
BH33	1/03/2017	BH33_0.2-0.3	0.2-0.3	<1	13	10	<0.1	42	-	41
BH34	3/03/2017	BH34_0.0-0.1	0-0.1	<1	17	47	<0.1	28	-	78
BH34	3/03/2017	BH34_0.2-0.3	0.2-0.3	<1	17	170	<0.1	18	-	140
BH35	1/03/2017	BH35_0.0-0.1	0-0.1	<1	12	13	<0.1	22	-	48
BH35	1/03/2017	BH35_0.2-0.3	0.2-0.3	<1	11	11	<0.1	22	-	38
BH37	3/03/2017	BH37_0.0-0.1	0-0.1	<1	17	16	<0.1	34	-	56
BH37	3/03/2017	BH37_0.2-0.3	0.2-0.3	<1	17	12	<0.1	34	-	51
BH38	3/03/2017	BH38_0.0-0.1	0-0.1	<1	7.1	15	<0.1	9.8	-	35
BH38	3/03/2017	BH38_0.2-0.3	0.2-0.3	<1	18	12	<0.1	37	-	58
BH39	3/03/2017	BH39_0.0-0.1	0-0.1	<1	5.7	14	<0.1	7.5	-	25
BH39	3/03/2017	BH39_0.2-0.3	0.2-0.3	<1	5.3	11	<0.1	10	-	8.3
BH40	3/03/2017	BH40_0.0-0.1	0-0.1	<1	8	18	<0.1	6.2	-	39
BH40	3/03/2017	BH40_0.2-0.3	0.2-0.3	<1	5.2	18	<0.1	7.3	-	20
BH41	3/03/2017	BH41_0.0-0.1	0-0.1	<1	17	14	<0.1	23	-	59
BH41	3/03/2017	BH41_0.2-0.3	0.2-0.3	<1	17	13	<0.1	34	-	55
BH42	3/03/2017	BH42_0.0-0.1	0-0.1	<1	11	18	<0.1	11	-	39
BH42	3/03/2017	BH42_0.2-0.3	0.2-0.3	<1	5.6	12	<0.1	7.3	-	14
BH42	3/03/2017	BH42_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH42	3/03/2017	DUP01_170303	0-0.1	<1	8.3	16	<0.1	8.7	-	32
BH42	3/03/2017	SPLIT01_170303	0-0.1	-	7	15	<0.1	7	<2	33
BH43	3/03/2017	BH43_0.0-0.1	0-0.1	<1	15	13	<0.1	27	-	53
BH43	3/03/2017	BH43_0.2-0.3	0.2-0.3	<1	12	8.3	<0.1	28	-	40
BH44	3/03/2017	BH44_0.0-0.1	0-0.1	<1	11	24	<0.1	17	-	40
BH44	3/03/2017	BH44_0.2-0.3	0.2-0.3	<1	5.6	16	<0.1	5.5	-	27
BH45	3/03/2017	BH45_0.0-0.1	0-0.1	<1	17	19	<0.1	29	-	65
BH45	3/03/2017	BH45_0.2-0.3	0.2-0.3	<1	17	15	<0.1	31	-	52
BH46	3/03/2017	BH46_0.0-0.1	0-0.1	<1	16	22	<0.1	24	-	74
BH46	3/03/2017	BH46_0.2-0.3	0.2-0.3	<1	5.6	23	<0.1	8.9	-	29
BH47	3/03/2017	BH47_0.0-0.1	0-0.1	<1	16	18	<0.1	30	-	60
BH47	3/03/2017	BH47_0.2-0.3	0.2-0.3	<1	11	17	<0.1	20	-	39
BH47	3/03/2017	DUP02_170303	0.2-0.3	<1	17	14	<0.1	36	-	56
BH47	3/03/2017	SPLIT02_170303	0.2-0.3	-	13	11	<0.1	24	<2	39
BH48	3/03/2017	BH48_0.0-0.1	0-0.1	<1	9.6	35	<0.1	9.9	-	37
BH48	3/03/2017	BH48_0.2-0.3	0.2-0.3	<1	<5	22	<0.1	7.1	-	25
BH49	3/03/2017	BH49_0.0-0.1	0-0.1	<1	78	210	0.1	28	-	110
BH49	3/03/2017	BH49_0.2-0.3	0.2-0.3	<1	13	61	0.2	19	-	48
BH49	3/03/2017	DUP03_170303	0-0.1	-	-	-	-	-	-	-
BH49	3/03/2017	DUP03_170303	0.2-0.3	<1	25	75	0.2	21	-	62
BH49	3/03/2017	SPLIT03_170303	0.2-0.3	-	11	44	0.1	14	<2	42

	Metals						
	Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit	2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit	500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit	500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit	1	100	300	1	60	10	200
Management Limits - Public Open Space							
Buildings and Structures							

Location	Sampled Date	Field ID	Sample Depth Range							
BH50	3/03/2017	BH50_0.0-0.1	0-0.1	<1	19	18	<0.1	26	-	52
BH50	6/03/2017	BH50_0.2-0.3	0.2-0.3	<1	20	11	<0.1	38	-	54
BH50	15/03/2017	BH50_0.9	0.9-1	-	-	-	-	-	-	-
BH54	6/03/2017	BH54_0.0-0.1	0-0.1	<1	15	21	<0.1	25	-	64
BH54	6/03/2017	BH54_0.2-0.3	0.2-0.3	<1	15	11	<0.1	34	-	56
BH54	6/03/2017	BH54_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH55	6/03/2017	BH55_0.2-0.3	0.2-0.3	<1	54	210	0.2	27	-	150
BH56	6/03/2017	BH56_0.0-0.1	0-0.1	<1	10	28	<0.1	16	-	47
BH56	6/03/2017	BH56_0.2-0.3	0.2-0.3	<1	9.8	17	<0.1	19	-	39
BH57	6/03/2017	BH57_0.0-0.1	0-0.1	<1	14	16	<0.1	23	-	52
BH57	6/03/2017	BH57_0.2-0.3	0.2-0.3	<1	18	15	<0.1	37	-	59
BH58	6/03/2017	BH58_0.0-0.1	0-0.1	<1	7.9	22	<0.1	11	-	34
BH58	6/03/2017	BH58_0.2-0.3	0.2-0.3	<1	11	35	<0.1	18	-	70
BH59	6/03/2017	BH59_0.0-0.1	0-0.1	<1	8.7	20	<0.1	12	-	36
BH59	6/03/2017	BH59_0.2-0.3	0.2-0.3	<1	<5	13	<0.1	10	-	25
BH60	6/03/2017	BH60_0.0-0.1	0-0.1	<1	9	32	<0.1	7.7	-	39
BH60	6/03/2017	BH60_0.2-0.3	0.2-0.3	<1	30	110	0.1	12	-	79
BH61	6/03/2017	BH61_0.0-0.1	0-0.1	<1	7.3	30	<0.1	5.2	-	37
BH61	6/03/2017	BH61_0.2-0.3	0.2-0.3	<1	<5	14	<0.1	<5	-	18
BH61	15/03/2017	BH61_2.3	2.3-2.4	<1	<5	6.9	<0.1	<5	-	<5
BH62	6/03/2017	BH62_0.0-0.1	0-0.1	<1	7.1	12	<0.1	<5	-	21
BH62	6/03/2017	BH62_0.2-0.3	0.2-0.3	<1	8.2	26	<0.1	9.7	-	25
BH62	15/03/2017	BH62_2.4	2.4-2.5	<1	<5	<5	<0.1	<5	-	5.8
BH63	6/03/2017	BH63_0.0-0.1	0-0.1	<1	6.1	29	0.1	6.7	-	19
BH63	6/03/2017	BH63_0.2-0.3	0.2-0.3	<1	8.7	15	<0.1	13	-	31
BH63	15/03/2017	BH63_1.4	1.4-1.5	-	-	-	-	-	-	-
BH64	6/03/2017	BH64_0.0-0.1	0-0.1	<1	6.1	29	<0.1	<5	-	23
BH64	6/03/2017	BH64_0.2-0.3	0.2-0.3	<1	<5	11	<0.1	<5	-	13
BH65	6/03/2017	BH65_0.0-0.1	0-0.1	<1	7.3	29	<0.1	6.7	-	30
BH65	6/03/2017	BH65_0.2-0.3	0.2-0.3	<1	5.7	15	<0.1	12	-	17
BH66	6/03/2017	BH66_0.0-0.1	0-0.1	<1	9	50	<0.1	9.1	-	36
BH66	6/03/2017	BH66_0.2-0.3	0.2-0.3	<1	7	26	<0.1	11	-	23
BH66	6/03/2017	BH66_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH66	14/03/2017	BH66_1.4	1.4-1.5	-	16	7	<0.1	32	<2	47
BH67	6/03/2017	BH67_0.0-0.1	0-0.1	<1	8.3	13	<0.1	13	-	32
BH67	6/03/2017	BH67_0.2-0.3	0.2-0.3	<1	<5	12	<0.1	5.5	-	14
BH67	14/03/2017	BH67_0.9	0.9-1	-	-	-	-	-	-	-
BH68	6/03/2017	BH68_0.0-0.1	0-0.1	<1	<5	9.8	<0.1	6.6	-	22
BH68	6/03/2017	BH68_0.1-0.2	0.1-0.2	<1	9.6	29	0.2	15	-	39
BH69	6/03/2017	BH69_0.0-0.1	0-0.1	<1	6.9	17	<0.1	10	-	29
BH69	6/03/2017	BH69_0.2-0.3	0.2-0.3	<1	7	20	<0.1	16	-	18
BH70	6/03/2017	BH70_0.0-0.1	0-0.1	<1	<5	<5	<0.1	5.9	-	15
BH70	6/03/2017	BH70_0.2-0.3	0.2-0.3	<1	17	18	<0.1	38	-	52
BH71	6/03/2017	BH71_0.0-0.05	0-0.5	<1	16	14	<0.1	28	-	46
BH71	6/03/2017	BH71_0.2-0.3	0.2-0.3	<1	14	22	<0.1	31	-	26
BH71	14/03/2017	BH71_0.9	0.9-1	-	<5	6.7	<0.1	<5	<2	<5
BH72	6/03/2017	BH72_0.0-0.1	0-0.1	<1	12	16	<0.1	11	-	29
BH72	6/03/2017	BH72_0.2-0.3	0.2-0.3	<1	12	18	<0.1	19	-	31
BH73	6/03/2017	BH73_0.0-0.1	0-0.1	<1	39	75	0.1	34	-	88
BH73	6/03/2017	BH73_0.2-0.3	0.2-0.3	<1	24	17	<0.1	40	-	66
BH73	14/03/2017	BH73_1.9	1.9-2	-	6.1	9.2	<0.1	16	<2	18
BH74	6/03/2017	BH74_0.0-0.1	0-0.1	<1	20	180	0.2	8.6	-	56

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit				500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit				500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
BH74	6/03/2017	BH74_0.2-0.3	0.2-0.3	<1	36	78	<0.1	40	-	190
BH74	6/03/2017	BH74_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH75	6/03/2017	BH75_0.0-0.1	0-0.1	<1	15	50	<0.1	13	-	45
BH75	6/03/2017	BH75_0.2-0.3	0.2-0.3	<1	15	34	<0.1	18	-	60
BH75	6/03/2017	DUP01_170306	0-0.1	<1	14	40	<0.1	12	-	46
BH75	6/03/2017	SPLIT01_170306	0-0.1	-	13	80	<0.1	12	<2	47
BH75	14/03/2017	BH75_1.4	1.4-1.5	-	30	120	9.6	13	<2	110
BH76	7/03/2017	BH76_0.0-0.1	0-0.1	<1	110	90	0.2	67	-	150
BH76	7/03/2017	BH76_0.2-0.3	0.2-0.3	<1	21	28	<0.1	13	-	30
BH77	7/03/2017	BH77_0.05-0.1	0.05-0.1	<1	17	27	0.1	14	-	75
BH77	7/03/2017	BH77_0.2-0.3	0.2-0.3	<1	9.7	19	<0.1	12	-	24
BH77	7/03/2017	BH77_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH78	7/03/2017	BH78_0.0-0.1	0-0.1	<1	20	24	<0.1	9.2	-	48
BH78	7/03/2017	BH78_0.2-0.3	0.2-0.3	<1	7.6	18	<0.1	16	-	18
BH79	7/03/2017	BH79_0.0-0.1	0-0.1	<1	9.9	11	<0.1	8.6	-	35
BH79	7/03/2017	BH79_0.2-0.3	0.2-0.3	<1	5.8 - 23	11 - 28	<0.1	9.7 - 16	-	23 - 130
BH79	7/03/2017	DUP01_170307	0-0.1	<1	8.8	11	<0.1	8.7	-	32
BH79	7/03/2017	SPLIT01_170307	0-0.1	-	8	11	<0.1	11	<2	42
BH80	7/03/2017	BH80_0.2-0.3	0.2-0.3	<1	8.2	13	<0.1	8.7	-	21
BH80	7/03/2017	DUP02_170307	0-0.1	<1	25	33	<0.1	16	-	120
BH80	7/03/2017	SPLIT02_170307	0-0.1	-	14	21	<0.1	8	<2	69
BH80	14/03/2017	BH80_1.4	1.4-1.5	-	-	-	-	-	-	-
BH80	16/03/2017	BH80_0.0-0.1	0-0.1	-	19	9.5	<0.1	11	<2	93
BH81	3/03/2017	BH81_0.0-0.1	0-0.1	-	-	-	-	-	-	-
BH81	7/03/2017	BH81_0.0-0.1	0-0.1	<1	17	19	<0.1	15	-	41
BH81	7/03/2017	BH81_0.2-0.3	0.2-0.3	<1	25	19	<0.1	37	-	56
BH81	7/03/2017	DUP04_170307	0-0.1	<1	16 - 22	24 - 25	<0.1 - 0.1	18 - 21	-	45 - 55
BH81	7/03/2017	SPLIT04_170307	0-0.1	-	190	21	<0.1	14	<2	44
BH82	7/03/2017	BH82_0.2-0.3	0.2-0.3	<1	27	<5	<0.1	100	-	69
BH82	7/03/2017	DUP03_170307	0.2-0.3	<1	18	<5	<0.1	46	-	49
BH82	7/03/2017	SPLIT03_170307	0.2-0.3	-	12	6	<0.1	25	<2	46
BH83	7/03/2017	BH83_0.0-0.1	0-0.1	<1	24	62	<0.1	18	-	60
BH83	7/03/2017	BH83_0.2-0.3	0.2-0.3	<1	24	84	<0.1	13	-	110
BH83	14/03/2017	BH83_0.9	0.9-1	-	-	-	-	-	-	-
BH83	14/03/2017	BH83_1.8	1.8-1.9	<1	9.6	<5	<0.1	<5	-	16
BH84	7/03/2017	BH84_0.0-0.1	0-0.1	<1	14	21	<0.1	11	-	49
BH84	7/03/2017	BH84_0.2-0.3	0.2-0.3	<1	9.7	14	<0.1	9.2	-	21
BH84	7/03/2017	BH84_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH84	14/03/2017	BH84_0.9	0.9-1	-	-	-	-	-	-	-
BH85	7/03/2017	BH85_0.0-0.1	0-0.1	<1	15	33	<0.1	22	-	46
BH85	7/03/2017	BH85_0.2-0.3	0.2-0.3	<1	13	37	0.2	12	-	35
BH85	15/03/2017	BH85_0.9	0.9-1	<1	7.8	<5	<0.1	24	-	62
BH86	7/03/2017	BH86_0.0-0.1	0-0.1	<1	26	60	<0.1	15	-	56
BH86	7/03/2017	BH86_0.2-0.3	0.2-0.3	<1	14	250	0.2	28	-	87
BH86	7/03/2017	DUP05_170307	0-0.1	<1	25	48	<0.1	12	-	48
BH86	7/03/2017	SPLIT05_170307	0-0.1	-	15	45	<0.1	9	<2	40
BH87	7/03/2017	BH87_0.0-0.1	0-0.1	<1	12	31	<0.1	11	-	34
BH87	7/03/2017	BH87_0.2-0.3	0.2-0.3	<1	16	22	<0.1	31	-	55
BH87	15/03/2017	BH87_3.1	3.1-3.2	<1	<5	5.5	<0.1	<5	-	<5
BH88	7/03/2017	BH88_0.0-0.1	0-0.1	<1	14	79	0.2	15	-	130
BH88	7/03/2017	BH88_0.2-0.3	0.2-0.3	<1	24	260	1	36	-	140
BH88	7/03/2017	BH88_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit				500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit				500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
BH88	7/03/2017	DUP06_170307	0-0.1	<1	15	97	0.3	17	-	98
BH88	7/03/2017	SPLIT06_170307	0-0.1	-	11	75	0.2	10	<2	95
BH88	15/03/2017	BH88_2.0	2-2.1	-	-	-	-	-	-	-
BH88	15/03/2017	BH88_2.5	2.5-2.6	-	-	-	-	-	-	-
BH88	15/03/2017	BH88_4.3	4.3-4.4	<1	<5	<5	<0.1	7.4	-	<5
BH88	15/03/2017	DUP01_170315	2-2.1	-	-	-	-	-	-	-
BH88	15/03/2017	SPLIT01_170315	2.5-2.6	-	-	-	-	-	-	-
BH89	7/03/2017	BH89_0.0-0.1	0-0.1	<1	18	50	<0.1	13	-	36
BH89	7/03/2017	BH89_0.2-0.3	0.2-0.3	<1	19	390	0.5	25	-	150
BH89	15/03/2017	BH89_0.5	0.5-0.6	-	-	-	-	-	-	-
BH90	7/03/2017	BH90_0.0-0.05	0-0.05	<1	11	42	<0.1	15	-	46
BH90	7/03/2017	BH90_0.2-0.3	0.2-0.3	<1	11	48	0.1	12	-	35
BH91	7/03/2017	BH91_0.0-0.1	0-0.1	<1	19	15	<0.1	34	-	64
BH91	7/03/2017	BH91_0.2-0.3	0.2-0.3	<1	19	11	<0.1	37	-	56
BH92	7/03/2017	BH92_0.0-0.1	0-0.1	<1	14	13	<0.1	27	-	51
BH92	7/03/2017	BH92_0.2-0.3	0.2-0.3	<1	18	10	<0.1	37	-	54
BH93	7/03/2017	BH93_0.0-0.1	0-0.1	<1	22	55	<0.1	13	-	53
BH93	7/03/2017	BH93_0.2-0.3	0.2-0.3	<1	98	240	0.3	29	-	140
BH94	7/03/2017	BH94_0.0-0.1	0-0.1	<1	11	23	<0.1	7.6	-	39
BH94	7/03/2017	BH94_0.2-0.3	0.2-0.3	<1	13	23	<0.1	15	-	46
TP12	1/01/2011	TP12_0.0-0.1	0-0.1	-	7	47	<0.1	6	-	31
TP12	1/01/2011	TP12_0.2-0.3	0.2-0.3	-	11	133	0.1	16	-	49
TP12	1/01/2011	TP12_0.6-0.7	0.6-0.7	-	15	460	0.7	14	-	218
TP13	1/01/2011	TP13_0.0-0.1	0-0.1	-	7	22	<0.1	7	-	24
TP13	1/01/2011	TP13_0.3-0.35	0.3-0.35	-	8	19	<0.1	14	-	30
TP13	1/01/2011	TP13_0.8-0.85	0.8-0.85	-	16	70	<0.1	38	-	63
TP14	1/01/2011	TP14_0.1-0.15	0.1-0.15	-	<5	10	<0.1	<2	-	19
TP14	1/01/2011	TP14_0.85-0.9	0.85-0.9	-	17	73	0.4	8	-	54
TP14/ DUP3	1/01/2011	TP14/ DUP3_0.5-0.6	0.5-0.6	-	<5	18	<0.1	6	-	13
TP15	1/01/2011	TP15_0.5-0.6	0.5-0.6	-	<5	12	<0.1	10	-	9
TP15	1/01/2011	TP15_1.0-1.1	1-1.1	-	20	52	0.2	8	-	77
TP15	1/01/2011	TP15_2.4-2.5	2.4-2.5	-	-	-	-	-	-	-
TP16	1/01/2011	TP16_0.4-0.5	0.4-0.5	-	8	48	0.1	10	-	131
TP16	1/01/2011	TP16_1-1.1	1-1.1	-	35	399	<0.1	28	-	90
TP16	1/01/2011	TP16_2.0-2.1	2-2.1	-	-	-	-	-	-	-
TP2	1/01/2011	TP2_0.0-0.1	0-0.1	-	18	56	<0.1	10	-	108
TP2	1/01/2011	TP2_0.95-1.0	0.95-1	-	20	45	<0.1	5	-	141
TP2	1/01/2011	TP2_1.5-1.6	1.5-1.6	-	<5	<5	<0.1	<2	-	<5
TP20	1/01/2011	TP20_0.1-0.2	0.1-0.2	-	12	11	<0.1	26	-	42
TP20	1/01/2011	TP20_0.6-0.7	0.6-0.7	-	<5	12	<0.1	<2	-	<5
TP20	1/01/2011	TP20_0.8-0.9	0.8-0.9	-	<5	56	0.2	3	-	89
TP21	1/01/2011	TP21_0.0-0.1	0-0.1	-	18	140	0.1	10	-	77
TP21	1/01/2011	TP21_0.45-0.5	0.45-0.5	-	11	9	<0.1	24	-	37
TP21	1/01/2011	TP21_0.8-0.9	0.8-0.9	-	<5	17	<0.1	5	-	26
TP22	1/01/2011	TP22_0.0-0.1	0-0.1	-	8	16	<0.1	8	-	52
TP22	1/01/2011	TP22_0.3-0.4	0.3-0.4	-	<5	20	<0.1	9	-	43
TP22	1/01/2011	TP22_0.6-0.7	0.6-0.7	-	-	-	-	-	-	-
TP22	1/01/2011	TP22_2.4-2.5	2.4-2.5	-	-	-	-	-	-	-
TP23	1/01/2011	TP23_0.0-0.1	0-0.1	-	7	6	<0.1	19	-	19
TP23	1/01/2011	TP23_0.4-0.5	0.4-0.5	-	16	12	<0.1	4	-	8
TP23	1/01/2011	TP23_1.0-1.1	1-1.1	-	<5	16	<0.1	8	-	11
TP25	1/01/2011	TP25_0.0-0.1	0-0.1	-	<5	11	<0.1	3	-	82

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
Exceeds EPA 1828.2 Category C Upper Limit				500	5000	1500	75	3000	10,000	35000
Exceeds EPA 1828.2 Category D Upper Limit				500	5000	1500	75	3000	10000	35000
Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
TP25	1/01/2011	TP25_1.2-1.3	1.2-1.3	-	<5	<5	<0.1	<2	-	<5
TP26	1/01/2011	TP26_0.0-0.1	0-0.1	-	<5	<5	<0.1	6	-	12
TP26	1/01/2011	TP26_0.5-0.6	0.5-0.6	-	5	19	0.3	7	-	51
TP26	1/01/2011	TP26_1.8-1.9	1.8-1.9	-	<5	<5	<0.1	6	-	<5
TP26	1/01/2011	TP26_2.5-2.6	2.5-2.6	-	<5	8	<0.1	9	-	<5
TP5	1/01/2011	TP5_0.0-0.1	0-0.1	-	6	26	<0.1	5	-	28
TP5	1/01/2011	TP5_0.8	0.8	-	-	-	-	-	-	-
TP5	1/01/2011	TP5_1.8	1.8	-	<5	<5	<0.1	<2	-	15
TP6	1/01/2011	TP6_0.25-0.3	0.25-0.3	-	14	58	<0.1	11	-	58
TP6	1/01/2011	TP6_1.75-1.8	1.75-1.8	-	20	64	0.8	27	-	211
TP7	1/01/2011	TP7_0.0-0.1	0-0.1	-	6	85	0.1	4	-	43
TP7	1/01/2011	TP7_0.3-0.4	0.3-0.4	-	24	633	1.9	25	-	238
TP7	1/01/2011	TP7_1.75-1.8	1.75-1.8	-	36	153	0.6	22	-	68
TP7	1/01/2011	TP7_2.9-3.0	2.9-3	-	-	-	-	-	-	-
BH11	1/01/2011	BH11_0.5-0.6	0.5-0.6	-	<5	<5	<0.1	4	-	<5
BH11	1/01/2011	BH11_1.3-1.4	1.3-1.4	-	<5	<5	<0.1	<2	-	<5
BH25	28/02/2017	BH25_0.0-0.1	0-0.1	-	51	100	<0.1	22	<2	110
BH25	28/02/2017	BH25_0.2-0.3	0.2-0.3	-	38	100	0.4	19	<2	160
BH25	14/03/2017	BH25_2.4	2.4-2.5	-	6.7	12	<0.1	14	<2	20
BH26	28/02/2017	BH26_0.0-0.1	0-0.1	-	35	110	0.5	19	<2	140
BH26	28/02/2017	BH26_0.2-0.3	0.2-0.3	-	30	140	0.3	17	<2	91
BH27	1/03/2017	BH27_0.0-0.1	0-0.1	-	14	450	0.2	27	<2	77
BH27	1/03/2017	BH27_0.2-0.3	0.2-0.3	-	17	34	<0.1	37	<2	60
BH28	1/03/2017	BH28_0.0-0.1	0-0.1	-	14	33	0.3	29	<2	54
BH28	1/03/2017	BH28_0.2-0.3	0.2-0.3	-	6.3	28	0.2	13	<2	29
BH36	3/03/2017	BH36_0.0-0.1	0-0.1	<1	30	19	<0.1	41	-	130
TP24	1/01/2011	TP24_0.0-0.1	0-0.1	-	10	10	<0.1	19	-	34
TP24	1/01/2011	TP24_0.5-0.6	0.5-0.6	-	<5	9	<0.1	5	-	<5
TP24	1/01/2011	TP24_1.1-1.2	1.1-1.2	-	<5	<5	<0.1	3	-	7
TP4	1/01/2011	TP4_0.0-0.1	0-0.1	-	8	23	<0.1	8	-	38
TP4	1/01/2011	TP4_0.25-0.3	0.25-0.3	-	<5	12	0.1	4	-	17
TP4	1/01/2011	TP4_0.5	0.5	-	31	446	0.6	21	-	257
BH16	1/01/2011	BH16_0.7-0.8	0.7-0.8	-	12	90	<0.1	27	-	556
BH19	28/02/2017	BH19_0.0-0.1	0-0.1	-	190	320	0.2	47	<2	190
BH19	28/02/2017	BH19_0.2-0.3	0.2-0.3	-	78	190	<0.1	24	<2	82
BH20	28/02/2017	BH20_0.0-0.1	0-0.1	-	42	130	<0.1	20	<2	140
BH20	28/02/2017	BH20_0.2-0.3	0.2-0.3	-	110	220	<0.1	34	<2	110
BH21	28/02/2017	BH21_0.0-0.1	0-0.1	-	8.4	23	<0.1	8.8	<2	38
BH21	28/02/2017	BH21_0.2-0.3	0.2-0.3	-	9.1	33	0.1	18	<2	55
BH21	28/02/2017	BH21_0.3-0.4	0.3-0.4	-	10	8.6	<0.1	13	<2	19
BH21	28/02/2017	BH21_0.5-0.6	0.5-0.6	-	-	-	-	-	-	-
BH22	28/02/2017	BH22_0.0-0.1	0-0.1	-	5.6	13	<0.1	9.7	<2	26
BH22	28/02/2017	BH22_0.2-0.3	0.2-0.3	-	5.4	30	0.7	13	<2	43
BH22	28/02/2017	BH22_0.6-0.7	0.6-0.7	-	-	-	-	-	-	-
BH22	15/03/2017	BH22_2.5	2.5-2.6	<1	5.1	12	<0.1	25	-	14
BH23	28/02/2017	BH23_0.0-0.1	0-0.1	-	15	16	<0.1	30	<2	62
BH23	28/02/2017	BH23_0.2-0.3	0.2-0.3	-	9.7	18	<0.1	20	<2	49
BH24	28/02/2017	BH24_0.0-0.1	0-0.1	-	<5	<5	<0.1	<5	<2	9
BH24	28/02/2017	BH24_0.3-0.35	0.3-0.35	-	<5	<5	<0.1	<5	<2	<5
TP3	1/01/2011	TP3_0.0-0.1	0-0.1	-	14	18	<0.1	17	-	54
TP3	1/01/2011	TP3_0.3	0.3	-	6	16	<0.1	4	-	17
TP3	1/01/2011	TP3_1.4	1.4	-	<5	<5	<0.1	<2	-	<5

				Metals						
				Chromium (hexavalent)	Copper	Lead	Mercury	Nickel	Selenium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				1	1	1	0.1	1	2	1
Exceeds EPA 1828.2 Category B Upper Limit				2000	20000	6000	300	12000	40,000	140000
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Exceeds EPA 1828.2 Fill Material Upper Limit				1	100	300	1	60	10	200
Management Limits - Public Open Space										
Buildings and Structures										
Location	Sampled Date	Field ID	Sample Depth Range							
GW37	1/01/2011	GW37_11.0-11.1	11-11.1	-	-	-	-	-	-	-
GW38	1/01/2011	GW38_11.0-11.1	11-11.1	-	-	-	-	-	-	-
GW45	19/07/2017	GW45_5.0	5-5	-	-	-	-	-	-	-
GW45	19/07/2017	GW45_9.6	9.6-9.6	-	-	-	-	-	-	-
GW48	24/07/2017	GW48_0.1	0.1-0.1	-	-	-	-	-	-	-
GW48	24/07/2017	GW48_11.0	11-11	-	-	-	-	-	-	-
GW48	24/07/2017	GW48_6.6	6.6-6.6	-	-	-	-	-	-	-

#1:NEPM 2013 Management Limits - Open Space C for TPH fractions Coarse Soil, Table 1B (7)
#2:AS3600-2009 Concrete Structures - Table 4.8.1 Classification B1 in Soil Conditic

Appendix C. CoPP Park Plan



Project Opportunities

Improve outdoor spaces around buildings

- Ensure accessible and welcoming entrances to all buildings
- Create courtyard spaces with shade and seating for building users
- Ensure sightlines to buildings
- Maintain accessible pathway network throughout the park with a mix of concrete and granitic surfaces

Revitalise the Art in the Park

- Review condition of existing public art
- Plan for future pieces
- Allow for temporary art exhibitions
- Allow for outdoor performances
- Allow for interactive art that encourages play

A sustainable and safe park for the future

- Follow guidance from EPA and State Government to manage soil and ground water with minimal disruption to park use and existing trees.
- Use sustainable principles to guide park development such as WSUD and recycled or sustainable materials

Bring play to the park

- Provide a neighbourhood/district sized playspace at the park that celebrates the parks history and aesthetic
- Focus on nature play and art play

Maintain green open space for the community

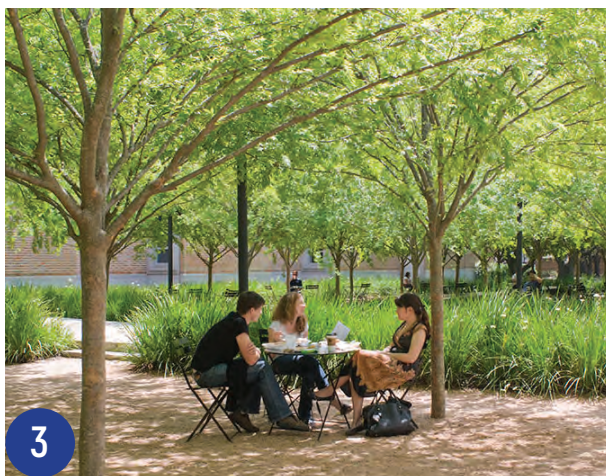
- Retain the central grassed area as a dog off-leash zone
- Provide a centrally controlled irrigation system for the grassed area and some garden beds

Celebrate and protect the indigenous landscape

- Revitalise the existing bushland planting, allowing for sightlines and considering CPTED
- Retain all mature trees, where safe to do so
- Reintroduce plant information signs and bush trail including play and water elements
- Formalise planting in some areas while keeping the native planting palette
- Plan for future tree succession planting

Legend

- Existing Tree
- Succession Tree Planting
- Nature play nodes including indigenous plant information, interactive art and play opportunities
- Lawn
- Indigenous garden bed



1 Playspace with mix of traditional, nature and creative play opportunities unique to Gasworks Art Park

2 Revitalise Plaza space allowing vehicle access and markets and introducing avenue planting and seating

3 Improve access around buildings and allow for amenities such as seating, shade, barbeques and landscaping

4 Retain open space for community use and off leash dog access. Upgrade irrigation system

5 Nature play nodes throughout park including indigenous plant information and interactive art play opportunities

6 Art feature, possibly an aerial bird bath

